

The Power of Electricity and its problems in India

Sayan Sarkar

Student, M.A in Education, Netaji Subash University

Abstract:- Electricity and power generation play a crucial role in economic development. Electricity is the most versatile form of energy and provides an important infrastructure for economic development. It is a vital input for industry and agriculture and is of particular importance to a developing rural sector which needs more power for its agricultural operations, for its small-scale and agro-industries.

Keywords: Power generation, electricity, thermal power, nuclear power, hydroelectricity, energy sources etc.

Introduction:

All sectors of the economy need electricity for their common needs of water supply, transport, communication and domestic lighting. The food production, food processing and preservation industries, the increase in the power-intensive industries such as aluminium, fertilizer, petrochemical etc and the increasing dependence on electric traction for transport there is hardly any community or sector which is not affected by a power shortage today. Electricity power supply is essential for our daily life. For our daily power consuming, t.v, radio, light, fan, cooking electric heater all are running by the power of electricity without which man cannot do any work. Industrial sector heavily depends on power supply. For running machines electric power is necessary. In agricultural sector also for irrigation water supply pumping machines are running by electricity. Therefore, the future development of the country will depend upon the rate of growth of power generation capacity. This research paper tries to pinpoint the power generation of the electricity board and its weakness and tries to find out the ways for solving the problems of electricity.

Objectives of the study: The objectives of the study are-

- 1) To study about the necessity of electric power and its role in human's daily life.
- 2) To know about the power generation system and its problem and to suggest the measures for solving the problems.
- 3) To analyze the nature of the problem and to give the actual picture of the process of electric power supply.
- 4) To put forward an ideal model for developing the infrastructure of electric power supply and compare it with total electric power supply in India.
- 5) To put forward the recommendations for improving the electric power supply system.

Methodology of the study: The paper is based on both primary and secondary data sources have been collected through extensive survey in different electricity supply board offices and various villages and towns searching power supply facilities and capacity. The primary data have been collected mostly by direct contact method from the employees of different electric power supply authority and general people in various rural and urban areas by knowing their opinion and experience about electric power supply. The questionnaires and interview schedules have been taken to carry out the whole investigation. The secondary information have been obtained from different literatures like magazines, newspapers, journals, books, reports published by government authority, websites, university libraries, planning commission, govt. publications (central and state), state and district wise electric power supply office, district wise statistical office, electric power supply committees etc. Most popular electric power supply office are repeatedly visited and various information's were documented time to time.

Major Sources of electricity power: There are five major sources of power supply, viz., water, coal, gas, oil and radioactive elements like uranium, thorium, and hydro-electricity. Coal, oil and gas are sources of thermal power. Atomic energy is generated from uranium, thorium and plutonium.

1) Hydro-electricity: It's share in the total energy generated in the country was 46.8% in 1980-81 which declined to 12.3% in 2014-15. The hydel power resources are located unevenly in India. Punjab, Himachal Pradesh, Jammu and Kashmir, Kerala, Karnataka and the states of the North-east have substantial hydel power potential. Bihar, Rajasthan, Madhya Pradesh and West

Bengal have very little hydel power potential. Andhra Pradesh, U.P, Assam, Maharastra and Tamil Nadu may not have large hydel power potential but if the facilities of hydel power generation are available then they can meet a substantial portion of their demand for electricity. The development and distribution of hydel power depends on supply and flow of water in rivers, lakes, reservoirs, dams, etc. Rainfall and snow are the two major sources of water in the rivers of this country. Snowfed rivers of the North India have perennial water supply while water in the rained rivers of the south is stored in dams or reservoirs and released regularly to generate electricity. Heavy investment is required to build dams and power houses and for maintaining of these power projects.

2) Thermal Power: The development of thermal power plants which use coal, oil or natural gas to generate electricity is common where these fuels are available. The generation of thermal power, causes pollution. Further the fuels used to generate thermal power are exhaustible. In the case of thermal plants, the initial cost is generally low but their maintained cost and power generation costs are heavy. In India thermal power has been developed on a larger scale. In 2014-15 share of thermal plants in total power generation was 83%. In India since oil resources are limited the main source of thermal power is coal which is the most polluting fuel having disruptive effect on environment. Presently about three-fourths of coal production is used for power generation. These coal reserves are non-renewable and are exhaustible. Therefore in future, the dependency on coal for power generation should be tried to reduce.

3) Nuclear Power: its share in the total power generation is very little. In 2014-15, its share by the power utilities was just 3.4%.

Problems in the Electricity Sector: While there has been a rapid expansion in power generation capacity, there have been substantial gaps between targets and achievements. The electricity sector faces a number of problems which are as follows-1) there has been an inordinate delay in installing and commissioning of projects. The causes of these delays are pre-construction problem like land and inter-state water disputes, poor project management, late delivery of structural steel, cement and power equipment, labour disputes, funding constraints and technological change as reflected in the progression of unit sizes of thermal plants.

1) State electricity boards face a number of problems like poor financial and commercial performance which has crippled their capacity to finance future programmes, inability to pay their full dues to the Central Power Utilities which has adversely affected the latter's future investment plans, managerial inefficiencies and heavy T&D (transmission and distribution) losses. T & D losses in India continue to be among the highest in the world and are estimated to be in the range of 35-45% in eleventh plan. Those losses are due to a variety of problems like energy sold at low voltage, sparsely distributed loads over large rural areas, inadequate investments in the distribution system, improper billing and theft.

2) Cost recovery in distribution is very poor: The revenue collection from selling electricity in most states fall short of buying or producing it. Many state governments are providing electricity at very low rates even free in some cases, to the agricultural sector which result is heavy burden of subsidy. While electricity is supplied free or at very low rates to the agricultural sector and below cost to the household sector, industrial sector is charged tariffs that are much above the cost of supply and about ten times greater than agricultural tariffs. As a result of cross-subsidisation, the competitiveness of business sector is adversely affected and the price of electricity for Indian households is amongst the lowest in the world, whereas the price paid by Indian industry is among the highest in the world. Moreover, irregular and low quality of power hampers the industrial production.

3) Due to general inefficiency in operations and management system, the commercial losses of SEBs have risen continuously over the years.

Expansion of generation capacity: There has been considerable expansion in generation capacity during the period of planning. The total installed generating capacity in the country rose from only 2300MW in 1950 to as high as 3,18,800MW in 2015. Electricity generated rose from 55.8 billion in 1970 to as high as 264.3 billion KWh in 1991 and further to 1,173,6 billion KWh in 2015-16. There was a expansion of the transmission and distribution networks also. In order to facilitate grid operation and transfer of power from surplus to deficit areas construction of inter-state and inter-regional lines was undertaken. These developments left a gap between the demand for and the supply of electricity. Consequently, power shortages have become a normal phenomenon in almost every part of the country. This situation has arisen because of the slippages in the capacity additions, unsatisfactory performance of the thermal station and due to non-completion of transmission lines. Remembering the adverse effects of power shortages on the productive activity in passing years, attempts have been made to accelerate the pace of power development under various five years planning period. The total capacity

addition in the Ninth Plan was targeted at 40,245 MW, however the achievement was only 19,015 MW. Similarly the total capacity addition in the Tenth Plan was targeted at 41,110 MW, and however the achievement was only 21,080 MW. The burden of power development in the past has been mostly borne by state governments. But now due to highly capital intensive projects the states cannot afford for running the cost. To meet the projected power demand by 2012 an additional capacity of 78,700 MW was envisaged in the Eleventh Five Year Plan of which 19 % was hydel, 75% thermal and the rest nuclear. But the actual capacity addition during the eleventh plan was only 54,964MW. The target for additional capacity addition in the Twelfth Plan is 88,537 MW.

Recommendations:

- 1) To expand electricity power generation, the government should establish more power generating plants especially, thermal and hydro electric plants and also giving them more facilities & accommodations so that they can increase their capacity of power generation.
- 2) The government should expand the electricity power distribution system so that it reached to each and every part of regions of the country even remote villages and hilly area also.
- 3) The government should develop the infrastructure of electricity power generation and distribution system and for this purpose should increase more money investment. The government should establish electricity office in every block of the districts and expand their number of branches. To make strong to the electricity management system, more employees should be appointed for collecting electric meter reading and preparing the electric bill properly and accurately so that no one can escape from this. Electric meter readings should be collected according to the use of electricity and those should be collected by going and observing meter box in each and every home.
- 4) To stop theft of electricity the government should apply strict punishable rule.
- 5) To improve electricity system the government should adopt various policies and should introduce special Electricity Act.

The government's undertaken measures for removing the power generation problems: The government has introduced the Electricity Act, 2003 is an important piece of legislation for the power sector to provide a liberal and progressive framework for growth of power sector by introducing competition in different segments of generation, trading and distribution of electricity. It has removed barriers to entry of private sector in these segments. This new legislation brings into effect many measures to ensure protection of interests of the consumers in terms of quality of service, price regulation, right to get service on demand and redressed of grievances. The Act also provides appropriate institutional mechanisms for achieving the goal of supply of electricity to all areas. Under the new statutory regime, generation of power is completely delicensed and captive power generation is freely allowed. It also opens access to transmission network under regulatory supervision. Any generating company is now free to seek distribution license and vice versa. The present opaque cross subsidies will be slowly phased out, and replaced by a transparent and explicit subsidy to meet the social objectives prioritized by the state governments. For rural and inaccessible areas, standalone systems involving generation and distribution are allowed without the requirement of license and decentralized system of local distribution would be allowed through Panchayats, user associations, co-operatives or franchises. In this liberalized framework, multiple players in generation, supply and trading will complete in marketplace under the overall sight of the regulator.

Conclusion:

Power of electricity plays a crucial role in economic development. Rapid growth of gross domestic product and increase in gross national income in the country are caused by an expansion of electricity power generation and equally distribution to all over the country recovering even remote village and hilly areas also. This is especially so in India, where large sections of the population are still without access to electricity. Electricity facility does not reach too many interior villages and the areas where communications & transportation system is very poor. Moreover many industries are suffering from irregular and shortage supply of electricity power which hampers their production. Besides this, theft of electricity in many areas becomes the common problem of recent days. More investment of money is necessary for power generation which India has shorter supply. To remove all this problems, the government should take strong necessary steps as early as possible.

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