

# Electricity Generation in Bihar: A Journey Ahead

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## Introduction:-

Light, power, and energy play an integral role in our lives. Infact, Electricity is the basic requirement after food, clothing and housing. In developed countries one finds a remarkable correlation between the large per capita consumption of electricity and the high per capita level of income. In underdeveloped countries, both the consumption of electricity and the level of income are very low. Since electricity is an essential input to all productive activities, the process of economic development inevitably demands increasingly higher levels of consumption of electricity.

During British era, Kolkata became the third city in the world after Newyork and London to get electricity. The great Taj Hotel of Bombay was the first hotel in India to get electricity and Bombay's Cotton Mills were the first industry to use electricity. India's first electrical train started between Victoria Terminus and Kurla Harbor in 1925. By 1930s, electricity was quite common in factories, offices, bungalows and urban centers of India. However, it was only after India elected its first provincial government in 1935 that the common people got access to electricity.

In 1910, the Electricity Act was introduced to govern the Indian Power sector. The Electricity (Supply) Act 1948 was introduced after independent, when the Government of India decided to entrust the development of electricity to respective states through the creation of State Electricity Boards.

Bihar the second most populous state of India, where several large-scale industrial units are located, largely remains a backward state. The development of the state largely depends on the development of the electricity in the state.

## Objectives of the Study:-

The main objectives of the study are: to analyze the growth journey of Power Sector in Bihar, to assess the role of Bihar State Electricity Board in Power generation, Transmission and Distribution areas. The study also highlights the problem faced by the state regarding power scarcity, mainly in rural areas. The study also tries to reveal the causes of backwardness of State in terms of power shortage.

## Hypotheses

- There is a positive and direct relation between power crisis and backwardness of the state.
- Power Conservation and effective transmission and distribution system may prove effective tool to fulfill the electricity needs of people of state.

## Methodology

The present study is based on the primary data as well as secondary data. Important persons and institutions, top management experts, organization and associations connected with the various aspects and their views have been obtained. Secondary date have been obtained from various published and unpublished record, reports and journals of government of India and Bihar State electricity board and other concerning departments.

## Journey of Electricity in Bihar

Power is the most important form of energy and one of the basic essentials of the economic progress. It is now well recognized that whenever power supply falls behind, the economy suffers serious setback. Although power generation and distribution system has developed but Bihar is still a backward state in the field of Electrical development.

Coming to the development of the electricity in the state of Bihar, it is to be noted that before independence, the electricity industry in Bihar comprised of privately owned companies providing electricity in important towns, mainly for lighting minimum sized industries. Electricity reached Bihar for the first time after the establishment of TISCO at Jamshedpur in 1907. Before independence, the supply of electricity in Bihar was taken care of by PESCO (Patna Electricity Supply Company), a Calcutta based company and other private electric utilities. PESCO supplied electricity to Dakbunglow and Rajbhawan through a generator in 1921. In 1936, Karbigahia Thermal Power Plant was established by PESCO with installed capacity of 8MW (3X1.5 MW and 2x2.5 MW), which was later shut down in 1999, due to its low capacity and lesser efficiency.

The Bihar government launched an irrigation project utilizing electricity called the Patna Bakhtiyarpur Barh Ekangar Sarai Scheme (PBBES) in 1937. When Dehri and Sasaram became the first towns in Bihar to get electricity in 1939, it was not for a factory or to light up the Sahib's bungalows but for irrigational purposes.

By 1947, the governments of Bihar, West Bengal and Central government reached an agreement for the generation, transmission and distribution of electricity under the Damodar Valley Corporation (DVC) Act.

## Development of Power Sector in Bihar after Independence

The state government of Bihar created a separate Electricity Department in 1949 under the Electricity Supply Act, 1948. During the period of 1949-58., the electricity department was organized by way of circles, divisions and sub-divisions. Gaya and Patna were the only two divisions in Bihar at that time.

The Bihar State Electricity Board (BSEB) was set up by a notification dated March 27, 1958 as per the provisions made in the Indian Electricity Supply Act, 1948 and it started functioning from April, 1958. With creation of BSEB, electricity generation and distribution scheme under Electricity Department were transferred to the Board which became responsible thereafter for all works relating to the power development in the state.

## Growth and performance of BSEB

By the end 2<sup>nd</sup> plan the Board as supply energy to 694 towns and villages covering about 24 thousand consumers in North Bihar and 1781 consumers in South Bihar. In North Bihar, station with a total installed capacity of 11 MW while in South Bihar 75MW power was being purchased from DVC for distribution.

## Power Generation in Bihar

The most important step taken by the BSEB in the 2<sup>nd</sup> plan, however, was initiation of measures for the establishment of thermal power stations at Barauni and Patratu and for extension of high tension lines.

### **Barauni Thermal Power Station**

The Barauni Thermal Stations was established with technical help of Yugoslavia and Poland, while the USA helped finance the project. Until one was commissioned by the end of 1996, unit 111 and 11 supplied by a Yugoslavian Company on a Turnkey basis. Two more units of 50MW each were commissioned in 1969 and 1971 respectively. To meet the rising demand and rapid growth of industry in the region, further extension of the power station was contemplated by adding two units of 110 MW each.

### **Patratu Thermal Power Station**

With a view to meet the demand for power of the Heavy Engineering Corporation at Ranchi, a Thermal Power Station with capacity of 50 MW at Patratu was installed with Russian aid at a total cost of Rs. 1282 Crores.

### **Tenughat Thermal Power Station**

In 1987, TVNL was set up by Bihar Govt. under the companies Act of 1956. The Plant situated on the upstream of Tenughat Dam at Lalpania in the district of Giridih. The construction of stage 1 (2X110 MW UNITS) of Tenughat TPS was, however, taken up by BSEB earlier in 1982.

### **Muzaffarpur Thermal Power Station**

First started in 1985, MTPS At Kanti Power Plant had an initial installed capacity of 110X2 MW.

### **Hydro Electric Power Generation in Bihar**

Apart from setting up of thermal power, two Hydel power stations were constructed- The Koshi Hydel Power Station with 4.8 MW installed capacity of four units and Gandak Hydel Power Station with installed capacity of 4.5 MW each of three units. Besides these two, Subarnarekha Hydel Power Stations set up near Ranchi during fifth Plan period.

### Unit wise details of Power Stations owned and Operated by the BSEB

SI No.	Name of Power Station	Unit number	Date/Year of commencement	Mark
1	Patratu Thermal Power station	1	26 July, 1966	Russia
		2	27 May, 1967	Russia
		3	16 October, 1968	Russia
		4	31 October, 1969	Russia
		5	31 March, 1971	Russia
		6	31 March, 1971	Russia
		7	31 August, 1977	BHEL
		8	16 May, 1979	BHEL
		9	30 March, 1984	BHEL
		10	2 February, 1986	BHEL
2	Barauni Thermal Power station	4	October, 1969	Poland
		5	December, 1971	Poland
		6	March, 1963	BHEL
		7	1985-86	BHEL
3	Muzaffarpur Thermal Power station	1	August, 1985	BHEL
		2	1985-86	BHEL
4	Karbigahia Thermal Power station	1	1936 (G.E.C)	England
		2	1936 (G.E.C)	England
		3	1936 (G.E.C)	Switzerland
		4	1950 (G.E.C)	England
5	Kosi Hydel Power station	1	November, 1950	Japan
		2	March, 1971	Japan
		3	October, 1973	Japan
		4	October, 1978	Japan
6	Subernrekha Hydel Project	1	14 October, 1977	BHEL
		2	18 October, 1980	BHEL

Source : Annual Reports BSEB 1997-98

### Power Transmission in Bihar

Power is supplied to various categories of consumers through a transmission network, which also involves the transformation of high voltage power to lower voltage. The transmission network serves as an important link between the generation and distribution of electricity.

BSEB constructed its first 132 KV transmission line using its own resource from Sonenagar to Rihand(UP) in 1961. Later in the same year, the 132/33 KV Karamnasha GSS (Grid Substation) was constructed primarily to supply power for railway station.

Continuing the legacy in the field of power transmission the first 220 KV GSS was commissioned in Bihar at Bodhgaya in 1971. In North Bihar, Pandaul GSS (Madhubani district) was commissioned in 1976 with two 20 MVA BHEL transformers manufactured in 1966 and 1967. The first 220 KV Grid Sub-station of Patna was commissioned at Biharsharif and it was connected to TIPS (Tenughat Thermal Power Station) through a 400 KVA transmission line.

Load Dispatch Centre of BSEB was set up 1956 for 24X7 MONITORING of Grid operation at Chandauti (Gaya) Grid substation. Later in 1969, the Load Dispatch Centre was shifted to Vidyut Bhawan, Patna. Central Load Dispatch Centre has now been renamed as State Load Dispatch Centre (SLDC).

## Power Transmission in Bihar

The Bihar State Electricity Board is responsible for distribution of power and extension of power supply to all parts of the state including remote rural areas and farms. The number of towns and villages served or electrified up to 47202 (69.93%) by Board as on 31.03.1998.

## Rural Electrification in Bihar

Rural Electrification involves supply of energy for two types of programs-i) Production oriented activities like minor irrigation, rural industries etc. ii) Electrification of villages. Under rural electrification programme 5, 06, 920 villages out of 5, 87, 258 villages have been electrified up to March 2000. Similarly, 1, 24, 45, 010 pump sets have been energized up to February 2000.

Under Kutir Jyoti Program over 38 Lakh Single point connections were released and Rs. 212 crore disbursed to the household of rural families below poverty line by march 2000. In 2005, all rural electrification programs were merged into a new scheme called 'Rajiv Gandhi Gramin Vidyutkiran Yojana (RGGVY)'.

## Reforms and Restructuring in Power Sector

The Government of India has been playing a catalytic role in unleashing and accelerating the reforms process in the country. The status of reforms is described in brief as under:

**Electricity Regulatory Commission Act, 1998:** The Act provides for the establishment of a Central Electricity Commission (CERC) and State Electricity Regulatory Commissions (SERCs),

Rationalization of electricity tariff, transparent policies regarding subsidies, promotion of efficient and environmentally benign policies and for matters connected therewith or incidental thereof.

**Central Electricity Regulatory Commission:** Under the provisions of the Act, the Central Government has constituted the Central Electricity Regulatory Commission in July 1998. The

objectives of the CERC are to promote competition, efficiency and economy in bulk power markets, improve the quality of supply, promote investment and advise government on the removal of institutional barriers to bridge and demand –supply gap and thus foster the interests of consumers.

**Draft Electricity Bill, 2000:** The Draft Electricity Bill, 2000 is a comprehensive legislation for the electricity sector prepared with the objective of simplifying and rationalizing the existing legislative framework and introducing new features which would accelerate the ongoing reforms. The Bill has been circulated widely to generate a debate on its various provisions.

**Finding & Conclusion:-**

- Distribution is an extremely important component of the whole electricity supply chain, as this is the only arm that generates revenue. Thus, a major challenge of the power sector reforms lie in the efficient management of the distribution sector.
- In the recent past, Bihar has progressed immensely in terms of availability of power across the state.
- Given the anticipated increase in power demand, the state government has taken various short term and long term measures such as addition to the capacity, improvement in operational efficiency, rehabilitation and extension of distribution network etc.
- It is necessary to review continuously the performance of transmission and distribution system and take timely steps to effort the necessary strengthening of the lines and substations and introduce high voltage feeds at the load centers were considered necessary.
- Completion of the continuing schemes of generation and transmission should be given highest priority, it will also relieve the power shortage conditions prevailing in large areas of the state.

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