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Power Availability in Kerala – A Study on the Role of Kerala State Electricity Board, India

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Abstract:
A high rise in the demand of power in Kerala due to heavy consumption in the various developed sectors as well as regular domestic purposes has been in the limelight for decades and needs crucial addressing by enhancing supply. The epileptic power supply, often falling far below the minimum requirements of the state had been more pronounced due to inability to timely completion of power projects. With the question of restricting consumption being over ruled a number of initiatives not only to generate more electricity but also to prevent misuse and overuse of the resource ha to be explored. The Kerala government has to think of the of the box and even initiate non conventional energy resources rather than relying on environmental non friendly hydroelectric projects on the anvil.

Keywords: *Power generation, power transmission, power distribution, power consumption and cost inflation*

1. Introduction

Undoubtedly, energy generation stands out as a significant aspect in any region, which endeavours to support its domestic population with unending supply of power as well as the industries to carry out their operational functions and bloom in the global market. Hydropower emerges as the primary source of producing electricity in Kerala. As Head (2000) points in the work, despite the fact that here are a number of developments that the state sees in recent years; nonetheless, Kerala's power supply sector is found to be under severe pressure at constant intervals because of the high demand of the power supply. Thus, it faces a high pressure in bridging the gap that exists between the high rate of demand and the constraints rates of supply. Hence, this particular essay endeavours to work on different aspects in relation to the role of availability of power supply in Kerala and the problems that it faces in meeting with the demands. It comes up with the various projects that the Government comes up with to improve the situations.

2. Genesis of Power Generation in Kerala

Records suggest that one can trace back to the history of generating power in Kerala by focussing on the establishment of a small hydroelectric power plant at Munnar in the year 1906. Kannan Devan Hill Produce Company undertakes this project in order to generate power with an installed power capacity of 200-250 KW (Correspondent, 2014). At this stage, the organisation primarily stressed on the usage of the plant solely by the tea factories of the firm in the tea estates found in Munnar. The capacity of the station, however, is found to increase gradually to around 1950 MW. Nonetheless, it is important to note that the government has come up with its initiatives much later, in fact more than two decades later (i.e. in 1929), when it inaugurates small thermal station in Thiruvananthapuram, thereby generating around 5 MW on an approximate. Time experiences two other establishments of thermal power stations consecutively, one at Kottayam in the year 1931 and the other at Nagarcoil in the year of 1933 (India, 2014).

In fact, researcher like Sayigh (2013) reveals that during that era the Kerala Government mainly used to concentrate on offering cheaper quality electricity in order to meet the industrial and agricultural demands of the state. It is in the year 1933 that the Kerala Government eventually forms an Electricity Department, which came up with projects based on the extraction of certain river systems.

3. An Increasing Demand of Power Consumption

Researches done by Head (2000) points that the rate of consumption of electricity per capita seems to increase highly in Kerala. Since about 35%-40% of the households in Kerala are still not electrified, therefore it is evident enough that there is increasing demand among the already prevailing customers. This in turn highlights the heightening consumeristic trends that prevail in Kerala, in the middle and premium classes of people to be specific. Critic like Craddock (2008) however argues that apart from the inhabitant population an increasing pressure for electricity demand is also available from various other developing sectors. For instance, in this era of globalisation, the economy hopes to get a hike due to the effect of tourism, openings of entertainment parks, establishments of star hotels and urbanization. However, all these developments not only to support the state's economy, but also leads to the high demands of power supply, which in turn creates crises. In fact, as Strauss (2010) points in the work, power supply during the night

time, tends to be much more at time in comparison to the day-time consumption, thereby leading to an abnormal demand of the power supply during the peak hours (6:30 pm-10:30 pm)

4. Development of Power Projects

It is to be noted that the Kerala government at present, finances a number of power projects with a motive to bestow a better and bright future upon its people. It is during the eighth plan that the Kerala government handled various factors related to the environment, which formed an obstacle in undertaking new hydroelectric projects (India, 2014). However, the commissioning of Idukki as well as Idamalayar projects has helped in adding on more capacity to the electric system. Moreover, an increase in the rate of consumption is noticed in Kerala (i.e. the Kerala's population consume around 160KWH in comparison to the national average of consumption of 230 KWH) (Correspondent, 2014). Thus, the government takes the initiative to introduce a number of significant projects, such as Asutha diversion, and Kakkad in order to enhance the availability of power in Kerala. Even a number of hydroelectric schemes like Chimony, lowerPeriyar, Malankara, Pooyamkutty have been undertaken during this period (Venugopal, 2014). Since there are a number of rivers in the regions of Kerala, therefore the hydroelectric power stands out as the primary source of power in Kerala. Hence, a number of power stations are built near the riversides in order to obtain the water and generate hydroelectric power.

5. Transmission and Distribution

Researches done by Craddock (2008) reveal that for almost half a century, Kerala proves its insufficiency in maintaining inappropriate T&D systems (Transmission and Distribution systems), which in turn leads to heavy T&D losses. While a notably reduced rate of T&D losses is identified in the developed nations, Kerala seems to witness huge amount of T&D loss since it has never shown much concern towards this matter because of cheap as well as surplus amount of electricity available in Kerala in earlier times. However, the crisis of adequate power supply alarms the Kerala government to make an effective transmission and distribution of power in several parts of Kerala. As critic such as Strauss (2010) argues, it is necessary to build up proper channels in order to receive power from outside the state's boundary. About the operations of the transmission sector, 66Nos of substationsas well as 600km of transmission lines are targeted for commissioning. In fact, around five substations as well as 110km of lines are already commissioned. At present, there are two substation of a capacity of 400KV, which are at Pallippuram and Madakkathala. Table 1 depicts the details of infrastructures and facilities in Kerala.

Transmission Infrastructure

Sl. No	Item	Target	Unit	Achievement	Unit	Percentage of Achievement
1	400 KV Substation	Nil	Nos	Nil	Nos	
2	220 KV Substations	3	Nos	2	Nos	66.67
3	110 KV Substations	20	Nos	9	Nos	45.00
4	66 KV Substations	4	Nos	-	Nos	0
5	33 KV Substations	39	Nos	18	Nos	46.15

Source: KSEB

Transmission facilities in Kerala (As on 30.9.2010)

Capacity	Substation (Nos)	Lines (Ct km)
400 KV	2*	260**
220 KV	17	2701
110 KV	123	4002
66 KV	82	2387
33 KV	111	1400
Total	**338**	**10490**

Table 1: Transmission Infrastructure and Facilities in Kerala as on 2010
Source: official website of KSEB

Certain projects related to the transmission procedures include the construction ofa substation of around 400KV at Arecode in the Malapuram district, which is undertaken by PGCIL (India, 2014). Even though there have been a series of T&D loses prior to 2008, researches prove that during the phase of 2008-2009 the rate of T&D loses reduced to less than 20%. It is KSEB, which deserves full recognition for its achievements, thereby, replacing faulty metres, installing new transmission and distribution lines as well as substations, intensification of identification of theft, and eventually upgrading the entire distribution and transmission network with the help of APDRP scheme (KSEB Postgraduate Engineers Association, 2004).

6. Cost Inflation and Delaying in Executing Projects

Modern researcher such as Sayigh (2013) put forward that most of the hydro projects that the KSEB plans to execute ultimately are delayed because it cannot be completed. The rise in the cost of the purchase of power stands out as a vital reason behind such delay or incompletion of projects.

Moreover, reports point out that the power tariff goes for a hike of 25% in case of domestic users from 16 August 2014 to the end of March 2015. However, in order to encourage lower consumption of power, the State Government of Kerala along with State Electricity Regulatory Commission offers an exemption from any form of payment of tariffs to those people who consume less than 40-50 units of energy on a monthly basis (Correspondent, 2014). Only the BPL families can enjoy this particular facility, as the Commission lays down. The remaining part of this category follows the rate of around Rs 2.75 per unit and needs to pay accordingly. It is to be noted that the charges for energy consumption per month does increase on a regular interval in regards to the slab system. For instance, the rates can go up to Rs 7-8 per unit for those customers who consume more than 500 units each month (KSEB Postgraduate Engineers Association, 2004).Nonetheless, in the case of industrial customers the charges amount to 10% on an average. This leads to an abnormal rise in the cost of supply by about 20%.Researcher likeStrauss (2010) reveal that even though the commission claims to make a nominal increase in the taxes for different types of commercial customers it is in reality the rates of tariffs are much higher than the costs of supply of power. The agricultural customers, for instance, obtain power supply at highly subsidized rates, along with an increased tariff of 25-35%.

7. Present Situation in Kerala

In the present scenario, as the KSEB (Kerala State Electricity Board) announces that the state experiences interrupted form of electricity supply, especially during the peak hours of consumption (which is around 6:30- 10:30 pm). In fact, as the reports, indicate the peak hour shortage of the electricity supply rates upto 350 MW to 450 MW of power (Nair, 2013). Usually whenever the KSEB identifies a deficiency or gap in the power availability, it tends to purchase power from the power exchange. Nonetheless, it is found in the current times that the rates of power supply during peak hour raises too high, i.e. around Rs 20-Rs25, per unit.

The officials of KSEB are found to be under too much pressure and tension, thereby predicting that the people can experience a number of lightless nights in the upcoming summer. Research done by Sayigh (2013), show that the state has recently experienced a good monsoon because of which the power reservoirs are comparatively full and that there is reasonably lower demand of power consumption on a daily basis due to the occurrence of favourable weather conditions. However, it is estimated that the levels of power in the power reservoir tends to dip during the summer, whereas the consumption of power tends to heighten largely during summer months. In fact, there is a possibility to witness a rise in theday-to-day consumption of power in Kerala from around 6 million units to 75 million units during the months of summer (Venugopal, 2014). This inturn can raise an abnormal growth in the peak-hour load on the grid to an extent of 20% from the current level, thereby leading to the possibility of the occurrence of exhausting hours of load shedding (see figure 1).

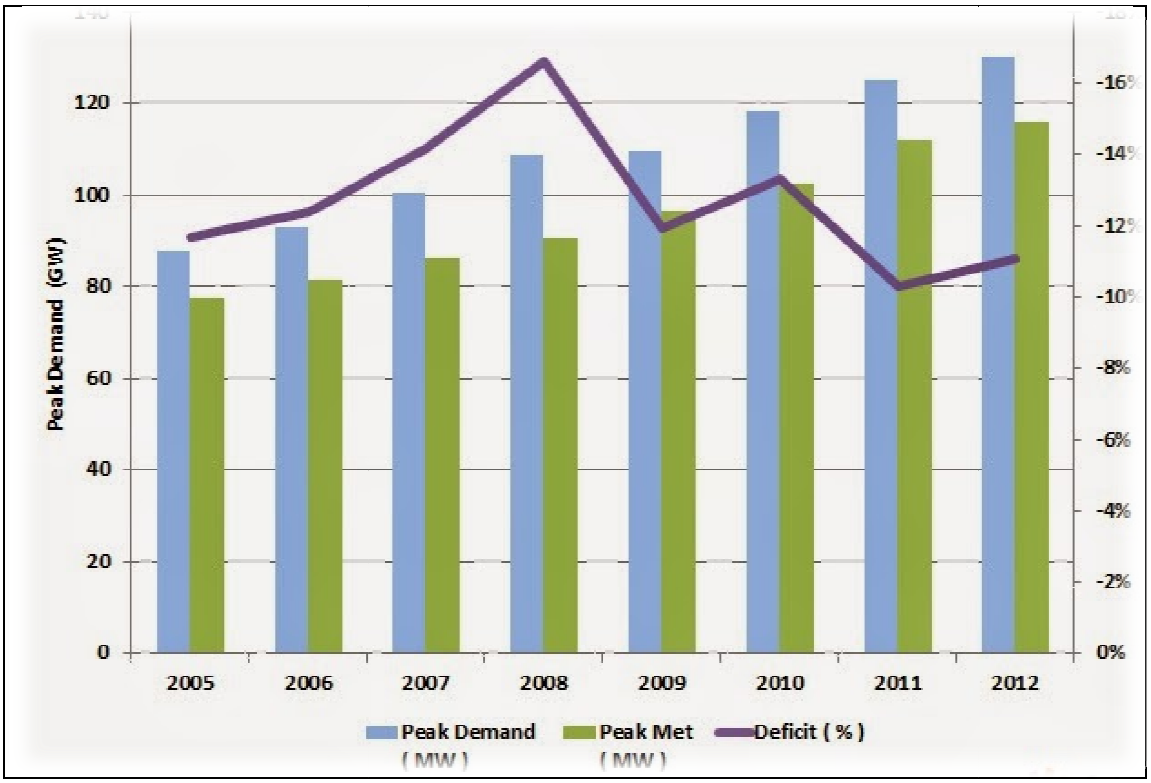

Figure 1: Graphical Representation of Peak Demand Peak Met and Peak Deficit of Electricity in Kerala
Source: official website of KSEB

8. Current Ventures

With an attempt to meet the demands and requirements of the industrial sectors and domestic purposes, the State Government of Kerala undertakes a venture with NTPC Vidyut Vyapar Nigam Ltd (a power manufacturing organisation), based on which the

organisation agrees to supply around 350MW electricity on a regular basis to Kerala for a tenure of 3years beginning from March 2014. It also endeavours to render electricity supply at a price of Rs.4-Rs.5 per unit. In fact, reports suggest that NVVN outsources around 7 to 8 billion units of power from Chhattisgarh to supply it to Keraladuring this period (India, 2014).
Moreover, the central grid is restored eventually and thus offers around 24 million units of power in the month of April 2013. Even researches reveal that NTPCs Kayamkulam plant offers around 7.92 MUs along with KSEB offering about 3 MUs of power from its thermal unit located at Brahmapuram and Kozikhode (Nair, 2013). It is to be noted that upcoming ventures include supply of power to Kerala from Gujarat. However, the transmission lines seem not to be commissioned properly yet. Thus the agreement, which was supposed to be put into effect in the middle of 2014, was delayed for about half a year. Nonetheless, the daily demand of 2013 is found to amount around 60mus.

9. Conclusion

It may be concluded that there is a high rise in the demand of power in Kerala due to its heavy consumption in the various developed sectors as well as for regular domestic purposes. In fact, the KSEB and the Kerala government often face a number of restrictions in meeting the requirements and demands of the people because of the incomplete power projects. However, the Government is found to attempt to resolve the continuous problem of shortage of power supply as well as the high level of consumption rates. It aims to undertake a number of initiatives to not only generate more electricity but also prevent misuse and overuse of the resource. Thus, the Kerala government even encourages people to make an appropriate usage of the power, thereby offering tariff cuts to poor part of the population.

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