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ELECTRICITY SECTOR IN KARNATAKA: AN ECONOMIC ANALYSIS

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Abstract:- This paper aims to examine the Role of Electricity Sector in Karnataka. The study is primarily based on secondary sources. The present paper articulates the current problems of electricity with analyze the process and consequences of decline such sector in Karnataka. To capture the different aspects of State Electricity Board (SEB), the study has carried out the new horizon in SEB development particularly its rural areas as well as empowerment of weaker sector of the society. The major finding may reflect a role of govt. in infrastructural development of the state so far as the present status of SKB is concerned. Issues like development through electricity sector, long term visions its importance for socio-economic. Growth and to invest more in order to overcome the perennial problem of electricity sector that has emerged in the study area. Further, the paper highlights the Electricity generation and distribution the paper concludes with some suggestive measures in combating the Role of Electricity (energy) in the economic development of the state.

Keywords: Electricity sector, Economic growth, Electricity generation and distribution.

INTRODUCTION:

Electricity generation and distribution in Karnataka has a history of over 100 years. The first generating station started operation in Shivanasamudram in as early as 1902 (in the then State of Mysore) and was Asia's first hydroelectric generating station. Generation in the State was entirely from hydroelectric power until Raichur thermal power station (RTPS) started operations in 1985. Even before power sector reforms were adopted in the rest of the country, the State had separate entities for generation and distribution. Karnataka Power Corporation Ltd. (KPCL), started in 1970 owned generation while the transmission and distribution networks were owned by Karnataka Electricity Board (KEB). In 1999, Karnataka Electricity Reforms Act was passed by the State legislature and led to major reforms in the power sector. Along with the corporatisation of KEB into Karnataka Power Transmission Corporation Ltd. (KPTCL), the Karnataka Electricity Regulatory Commission (KERC) was also constituted in the same year as an autonomous body to regulate all aspects of the power sector in the State. In 2002, KPTCL was further unbundled to form a transmission company as well as distribution companies with mandate for distribution and retail supply of electricity to consumers in the State.

Currently, the main entities in Karnataka's power sector are the State-owned KPCL in generation, the State-owned KPTCL in transmission and five electricity supply companies (ESCOMs) - the Bangalore Electricity Supply Company (BESCOM), the Mangalore Electricity Supply Company (MESCOM), the Hubli Electricity Supply Company (HESCOM), the Gulbarga Electricity Supply Company (GESCOM) and the Chamundeshwari Electricity Supply Corporation Limited (CESC). Additionally, Hukkeri Rural Electric Cooperative Society (HRECS), the only cooperative society in the State with a distribution license, distributes power to consumers in Hukkeri Taluk and a few other villages in the area. The State Load Despatch Centre (SLDC), under KPTCL, performs the role of system operator with duties of real-time load despatch in the State's power system.

In 2007, Government of Karnataka also set up a Special Purpose Vehicle (SPV) viz. Power Company of Karnataka Limited (PCKL). PCKL is responsible for procurement of power on behalf of all the ESCOMs in the State – both through long-term options like power purchase agreements (PPA), and short-term options like exchanges, banks and bilateral transactions.

III. OBJECTIVES:-

1. To analyze the Performance of the State electricity Boards (SEBs)
2. To find out the demand and supply situation in the state.
3. To give recommendation to improve in the electricity supply in the state

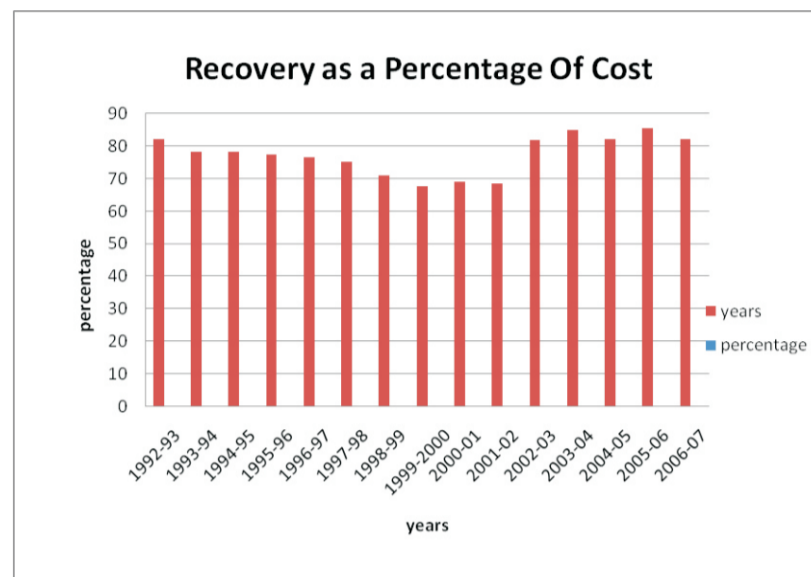
II. METHODOLOGY:

The study is based on secondary data. The period covers consider 2000-01 to 2010-11. To examine the power sector, statistical tools like, ratio, percentage and average. The sources of data include published and unpublished reports Data has been collected from Central Electricity Authority (CEA) and Central Electricity Regulatory Commission (CERC), Statistical survey of India, Articles, Papers, journals, Internet, Magazine and Annual report.

IV. PERFORMANCE OF THE STATE ELECTRICITY BOARDS (SEBS)

Though the SEBs were expected to give a rate of return of 3% on their net assets in accordance with the provisions of the VI Schedule of the Electric Supply Act 1948, There was trouble right from the very beginning. While the policy makers while debating on the Electricity Bill 1946 had envisaged that the Boards would be professionally run by competent personnel, whose work would not be interfered with, nothing of that sort happened. The SEBs virtually functioned as extension of the Government department in charge of power. The finances of the SEB had started causing concern by the mid-fifties itself. The Venkataraman Committee which reported in 1964 found that the return on their investments was poor. The Committee, however, did concede that a part of the poor returns was on account of the fact that the SEBs had the responsibility of electrifying the rural areas as well where both, expenditure and losses were high. One factor which merits special mention is the onset of green revolution in India around the mid-sixties which had a direct bearing on the financial performance of the SEBs. The Green revolution required high doses of inputs of fertilizers and water. In some states, green revolution allowed for two to three crops in a year and profits in the agriculture sector jumped manifold. This translated into vote banks and this started the process of a close correlation between the power sector and politics. The political decision to provide free or subsidized electricity in many states completely destroyed the financial position of the SEBs. Subsidies which were announced by the State Governments were not necessarily paid. Announcement of subsidies was done purely to garner votes during elections. Farmers were offered electricity at flat rates based on pump capacity rather than by extent of use measured through a meter. This according to many had several negative effects, for example, the World Bank estimated that the SEBs paid an annual subsidy of about \$4.6 billion (1.5 percent of GDP) to agricultural and residential users. Payment at a flat rate for agricultural purposes, led to "de-meterisation". It also had a negative spill over effect on the overall management practices of the SEBs. It is frequently reported that the subsidies were actually cornered by the well-off farmers who had the resources to invest in irrigation infrastructure. The irony, however, is that the farming community in general was willing to pay the required tariff for receiving good quality power. The SEBs started attributing all losses to agriculture as it could not be measured. It is estimated that about 30 to 40 percent of the consumption shown against the agricultural sector is an overestimate. This means that losses even in industry, which was happening on account of a nexus between the ground staff of the SEBs and the errant consumers, were being put on the account of agriculture since the agriculture sector had no meters or had defective meters. Over time, the performance of the SEBs went from bad to worse. The return on assets has become negative for most of the SEBs. The poor financial performance stems from many factors. To begin with, there is a very high degree of commercial losses, meaning theft. Theft can be of various types. It can be of the form of direct tapping from distribution lines and it can also mean tampering with the meter. The net result is that the consumer does not pay for the electricity he consumes. To make things worse, the tariff that is set is not determined on the basis of any economic rationale but on political expediency. No political party would like to increase tariffs for fear of loss of vote banks and as a result, power subsidies kept on rising to astronomical levels. The regime of cross subsidy became more and more stringent whereby the commercial and the industrial sector along with railway traction made up for a part of the revenue lost through sale of electricity to the agricultural and domestic sectors. It may be added that over time, the revenue earned through cross subsidy could finance smaller and smaller portions of the total subsidy requirements. This led to a steep rise in electricity price for the industrial sector which harmed them since they slowly became uncompetitive.

It also encouraged the industrial sector to set up their own captive plants and free themselves from the stranglehold of the SEBs. The losses of the SEBs deteriorated further since quite often the Government did not pay their dues. The following table indicates how the tariffs progressively recovered smaller and smaller portions of the cost of supply. There is a clear disconnect in the data from 2002-03 onwards since the data from 2002-03 is being collected by the Power Finance Corporation (PFC). Prior to this, it was being collected by the Planning Commission. The PFC was collecting information on the basis of audited accounts of the utilities whereas the Planning Commission was collecting the data on the basis of the resource plan of the state. Divergence between the data, therefore, was inevitable.



IV. ELECTRICITY PROFILE OF KARNATAKA STATE:

The availability of power in the State has increase over the years and so has the demand. Peak power and energy shortages in FY'04 and FY'05 declined due to commissioning of generating units. The generating capacity of the state at present is 4588 MW out of which 2147 MW is thermal power while 2441 MW is Hydro power. Madhya Pradesh is rich in low-grade coal suitable for power generation and also has immense potential of hydro-energy. Total installed power generation capacity in year 2000-2001 was 2900 M.W. There are eight hydroelectric power stations with 747.5 MW installed capacity. A total of 50,271 out of 51806 villages had been electrified by 2000-2001. Power generation is 14023.7 m.k.w.h.The installed capacity of SEB as on 31.03.2006 is 2,990.45 MW. Further, State has share of 1,665.85 Mw in the Central Sector Project and additional allocation of 50 MW.

A part from the above, 1,000 MW from Hydro-Electric Power (HEP) and 712.5 MW. The total capacity of 1,094 MW is likely to be added from State sector, the percentage of villages electrified to total inhabited villages was 97.43 percent as on 31st March 2006. The number pump-sets and tube wells reached in 2005-06 to 13.40 lakh. Similarly, against the targeted additional generation capacity of 2355.40 MW, the additional generation capacity anticipated to be created is 2466.5 MW, (Tenth Five Year plan 2002-07). 14.88 percent of total outlay were spent on electricity sector In the tenth five year plan (2002-07) but in the eleventh plan (2007-12) only 13.46 per cent of the out lay of the plan will be spend on the electricity sector, This is less than previous five year plan and it is not a fine indicator for energy sector. In recent years, private sector has shown interest in the creation of generation capacities and the state too has shown positive response in promoting such partnerships.

AVAILABILITY OF ELECTRICITY:

As late as 2010-11 only 42 per cent of all households had domestic power connections. A larger proportion around 70 per cent had access to electricity is some way, but even this is very far from the national average or the goal of universal access Predictably, the situation is especially bad in rural areas, where more than 70 per cent of the households do not have their own domestic power connection and 40 per cent of the households still do not have any access to electricity.

Availability of Electricity in Karnataka:

Particular	Capacity
State Electricity Power house	2857.5 (M.W.)
State Water electricity power house	922.95 (M.W.)
Achieve % of electricity from central electricity sector	2375.98 (M.W.)
Captive production capacity	1690.00 (M.W.)
Total available electricity capacity	7846.43(M.W)

In last five years electricity production capacity has been increased at macro level. It was 9458.08 (m.w.) in 2007, 9658.45 (m.w.) in 2009 (210 m.w. increase) Now 10202.93 (m.w.). This is show that progress has been painfully slow, with

less than 100 villages added to the number of electrified villages in the recent years. Once again, regional differences have also increased. The impact of electricity access on quality of life is so obvious that it surely requires no elaboration, yet in this most basic of indicators, public provisioning has sadly been lacking.

ELECTRICITY CONSUMPTION IN KARNATAKA STATE:

State ESCOMs with KERC for each year from FY08 and FY12. This is used to determine the 4-year Compounded Annual Growth Rate (CAGR) for each consumer category (Table). With FY12 data as the base year, this was used to project the category-wise demand on a yearly basis till FY22. The CAGR growth rates between FY08 and FY12 are used for all consumer categories except agriculture. As mentioned in the previous section, agriculture consumption for FY12 showed a sudden and steep increase, in spite of the decline in State's agricultural productivity in the year. Since the cause for the sudden increase cannot be reasonably ascertained, we have considered FY12 as an outlier for agricultural consumption and excluded it from calculation of CAGR. The 4-yr CAGRs for the consumer categories hence arrived at are listed below:

ELECTRICITY CONSUMPTION IS SHOWN IN TABLE:

Electricity Consumption in Karnataka State

Consumer category	(CAGR)
LT-Domestic	8.5%
HT-Domestic	5.2%
LT-commercial	12.1%
HT-industries	10.2%
HT-industries	2.4%
Agriculture(LT)	4.6%
BJ/KJ	9.3%
Others	7.5%

The consumer category-wise CAGRs recently estimated by PRDC for KPTCL,

Rural Electrification in Karnataka:

According to revised new definition of rural electrification percentage is 74 of and according to old definition of rural electrification it was 97. For the complete total electrification of 48 district govt. sanctioned 2600 crore to REC Ltd. under. Rajeev Gandhi Rural Electrification scheme rural present govt. targets year 2012-13 whole rural electrification year.

State Govt. expenditure on Energy:-

When we analyze there is no consistency has been found in expenditure in the electricity sector. It reflects that government doesn't have any long term plan for development of electricity sector in the state. Annual budget for such sector shows that govt. of Karnataka state is not bothering for electricity problem but the main objective of the Tenth Plan (2002-2007) was to improve the physical infrastructure like power and roads. For achieving this objective the proportion of the outlay on energy has increased from 17.33 per cent in the Ninth Plan to 21.39 per cent in the Tenth Plan.

Access to power – A comparative analysis:

According to the 2001 census and the Karnataka State Electricity Board (SEB), the status of household electrification is displayed in

Table-2 Number of Households Electrified in Karnataka State Electricity Board

Source-wise Total Number of HHs and Electrified HHs	Total	Rural	Urban
Occupied Households in Lakhs (Census 2001)	109.20	81.25	27.95
Electrified Households in Lakhs (Census 2001)	76.42	50.63	25.79
Percentage of Households Electrified (Census 2001)	70.00	62.30	92.30
Occupied Households as on 31st March 2004 in Lakh (Projected on the basis of Census 1991 and Census 2001)	109.24	81.28	27.96
Electrified Households as on 31st March 2004 in Lakh (SEB)	46.35	22.76	23.59
Percentage of Households Electrified as on 31st March 2011-12	42.40	28.00	84.40

The basic issue of household access to electricity has seen progress in the state. 43.3 per cent Households had been estimated (Census of India, 1991) to be electrified in 1991. This figure has gone up substantially to 70 per cent for all households and 62.3 per cent for rural households (Census of India, 2001), However, there are two disturbing factors-one is that if we see the number of households with domestic connections, as registered in the SEB, it is just 43 per cent overall, and 29 per cent in rural. Karnataka signifying that either many household do not have a valid connection or that actually only 29 per cent rural households have proper connections that deliver power as supplied. The high loss levels till 2005 indicates that the probability of the farmer is higher.

The second disturbing factor is the low per capita energy consumption. If we compare it with some of the other 'more developed' status such as Maharashtra and Gujarat, the difference becomes very clear. The inter-district variations within Karnataka State, Place some region in a very poor power scenario. However this low per capita consumption does not present the right picture because the losses on account of illegal connections are actually consumption and hence actual data for per capita consumption may be higher than indicated. There is also substantial inter-district variation in basis access to electricity as estimated in the Census of India, 2001.

The state of supply of Electricity in Karnataka State:

The Transmission and Distribution (T&D) losses for Karnataka state in 2006 at 42 percent are much higher than the national average (33 per cent). It has been noted that high sub-transmission and distribution losses reduce the viability of distribution companies, thereby weakening their ability to source more power and invest in infrastructure and in new

production. In general, the supply position in the state has improved over the past few years but it is still unsatisfactory, particularly in headquarters, smaller towns, and rural belts. Supply restrictions are imposed during every season due to demand supply mismatch, resulting because of an additional load of about 2000 MW of agricultural pumps that have come onto the system. The peak demand and peak availability projected for the next five years is shown in table

Table-3 Projected Peak Demand and peak Availability:

Year	Estimated Peak Demand (MW)	Peak Availability (MW)	Shortage (MW)
2006-07	7114	5783	1331
2007-08	7492	6248	1244
2008-09	8091	7570	521
2009-10	8738	8038	700
2010-11	9437	9446	Surplus
2011-12	10192	10452	Surplus

Source: SEB Estimates

Table 3 states that Karnataka State has acute power shortage in the past, SEB estimates are showing some indication of relief to the consumer that they can have sufficient electricity supply in the future.

V. CONCLUSION:

The State Electricity Board faces multiple challenges to provide access to electricity to all. The Main challenges are – Low per capita consumption of electricity, Estimated demand growth of power at 6-7% specially in Rabi season it increased up to 15-Privatization of SEB, Rationalization of the tariff, structures, Alarming level of transmission and distribution losses., Metering of consumers act so on, Politically sensitive issues such as subsidies, mad equate power generation capacity and Percent of received electricity from CEB is low. To sum up, electricity should have universal coverage and should be accessible and affordable to all households. The lack of adequate and assured supply of power to villages and to households is holding back a large part of our population from a better quality of life that comes with availability of power. Barriers to access should be given greater attention in investment and management planning, particularly those that prevent the poor from accessing the benefits of such services. This study will suggest better way to implementation is such sector. It is expected to provide an automatic the study in relevant both with respect to enriching the theoretical base and its applied aspect. This is important to alleviate poverty in more systematic way. In particular, the cost of power connection for the poor rather than the cost of delivering power may be subsidized. Stop commercial loss special in transmission and in distribution. To less in difference in availability and demand, need for quality improvement in electricity supply, improve quality of service and greater transparency in billing, both poor and non poor consumer would be more willing to pay the full cost of power, investment should be made in the complementary infrastructure that promoter producing less of power. It is also essential to monitor the physical progress achieved in rural electrification programs.

REFERENCES:

- 1.Amulya K. N. Reddy, (2002), "Towards a new paradigm for power sector reform in India", Energy for Sustainable Development, Vol. VI, No.4, December 2002, pp.22-29.
- 2.Amulya K. N. Reddy (2002), "The evolution of an energy analyst: Some Personal Reflections", Annual Review of Energy and the Environment, 27, 2002, pp. 23–56.
- 3.Antonette D'Sa and K.V.Narasimha Murthy, (2002), "Karnataka's Power Sector and Suggested Ways Forward, prepared by , available at www.iei-asia.org All India Region wise generating installed capacity of Power (2013), "Central Electricity Authority", Ministry of Power, Government of India, January.
- 4.<http://www.renewindians.com/2012/12/Renewable-energycontribution-in-india.html> (2012).
- 5.Emmanuel M. Akpabio and Nseabasi S. Akpan (2010), "Power supply and environmental sustainability in the University of Uyo: An agenda for full-blown research in Nigeria", Journal of African Studies and Development, 2(6), 132-143, September (2010)
- 6.Sharma P.S., Nairb C. and Balasubramianc R. (2005), "Performance of Indian power sector during a decade under Restructuring: a Critique". Energy Policy, 33, 563-576
- 7.Iimi A ((2004), "Power Market Architecture in India", JBIC Institute. 15 April
- 8.NTPC Ltd (2011), 36th Annual Report, New Delhi, 17-43,

9. Financial Performance—Annual Report 2011-12 <http://planningcommission.nic.in>
10. Gupta, P.S. Jagannatha, 2002. Note on Capital Investment on Transmission & Distribution for eleven years (from 2001-2 to 2011-12)
11. Government of Karnataka, 2001 (b). Detailed Policy Statement, Karnataka
12. Power Sector Restructuring and Privatisation Programme, Energy Department, Government of Karnataka.

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