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Research Article

POWER SCENARIO OF RAJASTHAN AND ITS CHALLENGES

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ABSTRACT

This research article aims to present an overview of Rajasthan Power sector. Since the formation of the state in the 1949 energy security has been an issue and despite various reforms, growing power deficit highlights the failure of this sector to tackle the problem of power crisis. The total installed capacity of Rajasthan has increased from 13.27 MW in 1950 to 17228MW in 2014-15. But despite considerable growth of electricity sector over the years, the growing power deficit remains to be very high resulting in power deficit(demand for power is more than the supply). Growing power deficit has forced the government to increase the installed capacity manifold and to purchase power at higher prices from neighboring states which has aggravated the problem of power sector in the form of mounting debts, which is more than 65000Cr. An attempt has been made in this article to highlight the problem of Rajasthan power sector and suggest some effective strategies to trickle down the problem of growing power deficit in the state.

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INTRODUCTION

No doubt the economic development of the state largely depends on its infrastructure and in the pace of rapid economic development, supply of adequate power is considered to be a most important component of infrastructure. Rajasthan, the largest state of the nation is located in the North western region of India with Aravali on one side and sand dunes of Great Indian Desert on the other side. The State is not only rich in natural resources but also endowed with tradition, heritage, culture and beauty. During last two decades the state has shown a very healthy path of development and it is one of the fastest growing states in the country during 2005-2012(Rajasthan State Profile). Rajasthan ranks 12th in terms of investment, infrastructure, agriculture and education in the country. Infrastructural developments are inevitable for any nation to attain rapid economic development and among all the components of infrastructure electricity in the modern era are considered as one of the critical inputs for economic development and the per capita consumption of power is considered as an effective indicator of growth and development. Since the entire development process of the economy is totally dependent on the power, the power sector development was conceived through by the government. Rajasthan as a state was formed in the year 1949 with the total installed capacity of 13.27 MW but the supply of electricity was restricted only to few cities. Realizing the

importance of power RSEB (Rajasthan State Electricity Board) was formed on 1st of July 1957 and in order to strengthen the power sector around 28-30% of its plan outlay was spend towards the growth of power sector. The service area of RSEB was 4,32,000 sq km which was geographically very large. Around 66% of the area was desert with a very low density of population. RESB has grown considerably in terms of all the aspects related to installed capacity energy supplied, number of consumers, transmission and distribution network. The state power sector has witnessed rapid growth of around 9 % per year and the sale of power has increased at an annual average rate of 11% (Rajasthan Power Sector Vision 2020).

Power Scenario of Rajasthan

Since the formation of the state in 1949 government of Rajasthan and power sector together have taken serious efforts to increase the installed capacity of power in order to bring a balance between the growing demand and supply of power and also drive the economy on the path of development. The growth of installed capacity of the state is shown in the table 1 and figure 1.

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Table 3 Rajasthan power supply position Total installed capacity of Rajasthan since 1990

S.no	Year	Total installed capacity
1	1990-91	2720.92
2	1991-92	2652.42
3	1992-93	2690.32
4	1993-94	2984.69
5	1994-95	3009.72
6	1995-96	3049.01
7	1996-97	3082.27
8	1997-98	3097.37
9	1998-99	3355.90
10	1999-2000	3689.40
11	2000-01	3998.06
12	2001-02	4516.78
13	2002-03	4547.18
14	2003-04	5167.43
15	2004-05	5296.10
15	2005-06	5453.88
17	2006-07	6089.43
18	2007-08	6420.69
19	2008-09	7019.48
20	2010-11	8076.51
21	2011-12	9188.22
22	2012-13	9860.12
23	2013-14	11850.10

Source: Annual reports of VidhyutBhawan, Jaipur.

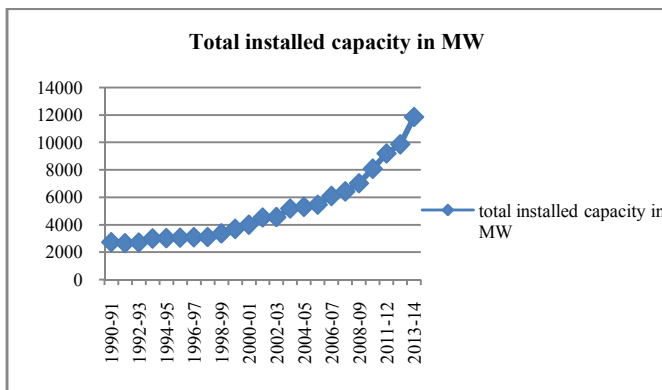


Figure 1 Growth of Installed capacity

The above table and the figure clearly indicate that the installed capacity of the state has increased manifold i.e. from 13.57 MW in 1950-51 to 11850 MW in 2013 -14 which is more than 800 per cent increase. This tremendous increase in the installed capacity of state has no doubt imposed excessive financial stress on both the government as well as power sector leading to financial deficit. But in spite of increasing the installed capacity manifold the power sector of the state has not been successful in bridging the gap between the growing demand and supply of power or narrow down the gap. The demand and supply position of the state is clearly shown in the table 2 and figure 2.

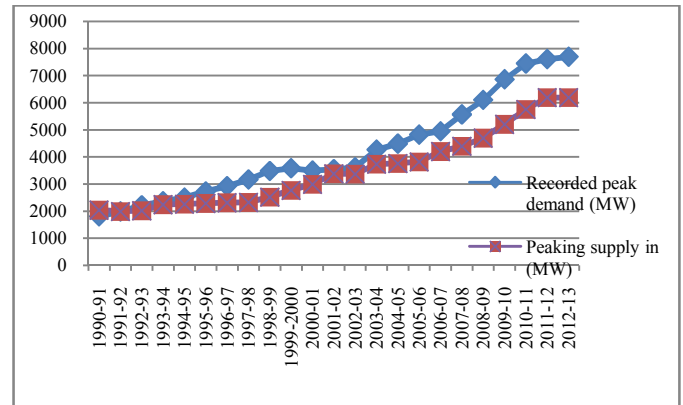


Figure 2 Growing deficit of power of Rajasthan since 1990

The above table clearly shows that the energy deficit during the year 1991-92 was only 0.02 MW but now in 2012-13 it has increased to around 1438.50 MW (VidhyutBhawan, Jaipur). In spite of increasing the energy supply manifold Rajasthan power sector has not been successful in overcoming the power deficit. In order to bring a balance between the Demand and Supply of Power Government has also been allocating more funds from the budget outlay so as to increase the installed capacity.

Table 2 Demand and supply position of power in Rajasthan since 1990

Year	Installed Capacity (MW)	Peaking capability(MW)	Recorded peak demand (MW)	Deficit (MW)	Deficit (%)
1990-91	2720.92	2040.69	1810	230.69	12.75
1991-92	2652.42	1989.31	1989	0.31	0.02
1992-93	2690.32	2017.74	2214	-196.26	-8.86
1993-94	2984.69	2238.52	2367	-128.48	-5.43
1994-95	3009.72	2257.29	2505	-247.71	-9.89
1995-96	3049.01	2286.76	2728	-441.24	-16.17
1996-97	3082.27	2311.70	2925	-613.30	-20.97
1997-98	3097.37	2323.02	3169	-845.98	-26.97
1998-99	3355.90	2516.93	3482	-965.08	-27.72
1999-2000	3689.40	2765.55	3583	-817.45	-22.81
2000-01	3998.06	2991.71	3497	-505.29	-14.45
2001-02	4516.78	3374.46	3547	-172.54	-4.86
2002-03	4547.18	3365.28	3620	-254.72	-7.04
2003-04	5167.43	3730.74	4267	-536.26	-12.57
2004-05	5296.10	3757.11	4487	-729.89	-16.27
2005-06	5453.88	3814.87	4822	-1007.13	-20.89
2006-07	6089.43	4195.11	4946	-750.89	-15.18
2007-08	6420.69	4390.72	5564	-1173.28	-21.09
2008-09	7019.48	4690.11	6101	-1410.89	-23.13
2009-10	8076.51	5199.39	6859	-1659.61	-24.20
2010-11	9188.22	5750.12	7442	-1691.89	-22.73
2011-12	10308.45	6181.05	7605	-1423.95	-18.72
2012-13 (Nov 2012)	10572.58	6251.50	7690	-1438.50	-18.71

Source: VidhyutBhawan, Jaipur

It is also estimated that by the year 2015-16 in order to overcome the problem of power crisis a major portion i.e 42% of Rajasthan budget has to be spent on power sector from total budget outlay (17th Electric Power Survey). The allocation of budget outlay to the power sector during the planning period is shown in the table 3

Table 3 Total plan outlay for Rajasthan power sector since First Five Year Plan

Five Year Plan	Total Plan Outlay (Cr)	Total Outlay for Power Sector (Cr)	Actual Plan Expenditure on Power Sector (Cr)
I	64.5	9.58	1.24
II	105.27	19.99	15.15
III	236	35	39.36
3 Annual Plans	132.72	47.29	46.82
IV	306.21	90.37	93.98
V	847.16	242.30	248.97
Annual Plan	275	90	100
VI	2025	650.61	566.14
VII	3000	927.48	921.77
2 Annual Plans	1262	555.92	622.24
VIII	11500	3255.49	3253.90
IX	27650	6528.00	5258.06
X	31831.75	8460.43	10461.46
XI	71731.98	25606	---
XII	196993	73734.47	----

Source: Directorate of Economics and Statistics, Rajasthan

It is seen that in order to bridge the gap between the demand and supply of power Government has continuously increased the investment on the State Power Sector. During the First Five Year Plan out of the Total Plan outlay 64.50 Cr nearly 15% was allocated for Power sector of the State i.e. 9.58 Cr .But out of the allocated fund only 1.24 Cr was actually spend on Power Sector which was very much below the targeted outlay. Again during the second Five year Plan focus was on strengthening the State Power Sector and out of the total plan outlay 105.27 Cr around 20 Cr was allotted for power sector which was nearly one fifth of total plan outlay. During the Second plan also the actual expenditure made on power sector was less than the targeted one i.e. out of 20 Cr only 15 Cr was actually spent. The total outlay made for power sector during the third plan was 35 Cr which was around 15% of total outlay but the actual planned expenditure was more than the targeted outlay for the first time in State Power Sector. The Period 1966-69 witnessed serious fluctuations and therefore plan holiday was announced and three annual plans were taken up during this period and even this period priority was given to power sector so as to increase the installed capacity of the state. During the Annual Plan out of the total plan outlay 36% was allotted for strengthening the Sate Power Sector and the actual expenditure was also in accordance with the targeted one and development in terms of rural electrification and installed capacity was witnessed during this period.

During the Fourth Five Year Plan of the State focus was again on development of overall Infrastructure of the State and Power was given vital importance. Around 30% of the total Plan outlay was made for Power Sector i.e. 0.37 Cr. But it was seen that during this Plan the actual expenditure made on Power Sector of the State was higher than the targeted outlay since the State understood the importance of power in the process of Economic development. Even in the consequent Plans importance was given to strengthen the power sector and overcome the problem of power deficit. During the Fifth Plan

29%, Sixth Plan 28%, Seventh Plan 30%, Eighth plan 28%, Ninth plan 24% and Tenth plan 27% of total outlay was allocated for the development of State Power Sector. During the Eleventh plan the allocation made on Power was 36% of total plan outlay (DES Rajasthan). The total allocated fund for power sector in the XII plan is the highest of the entire plan which is 37.43% of total plan outlay (Report of Vidhyut Bhawan 2013). But In spite of huge investments made by the State on power sector still the Energy Scenario of the State is not satisfactory.

If the condition of state power sector continues in the same manner then it would be very difficult to overcome the problem of power deficit in future. It is estimated that the demand for power would grow rapidly in the future as shown in the table 4

Table 4 Category Wise Load Forecast for Rajasthan in Million Units

Year	Domestic	Commercial	Agriculture	Industrial	Others	Total
2005	3633.29	1068.63	5689.15	5358.96	1803.09	17553.93
2010	5338.49	1570.17	8359.23	7874.08	2650.52	25792.48
2015	8285.82	2264.56	10973.55	10935.77	3894.48	36354.19
2020	13962.09	3176.17	12968.37	13957.12	5722.27	49786.02

Source: 17th Electric Power Survey

The above table clearly brings out the fact that the consumption of power is likely to increase exorbitantly and if adequate efforts are not taken at the right time it would lead to the fall in the economic growth rate of the economy as the economic growth is determined by adequate supply of power. It is also seen from the following figure that growth in the consumption of power is the highest in residential (domestic sector) i.e there is huge potential to conserve energy in residential sector if effective strategies are taken to curb excessive demand of power in Rajasthan. Strategies to overcome Power deficit in Rajasthan

Figure 1.3 reflects that the forecast for growth in power consumption by 2020 in the domestic sector is the highest. This emphasizes the significance of research in DSM of residential electricity consumption in the State.

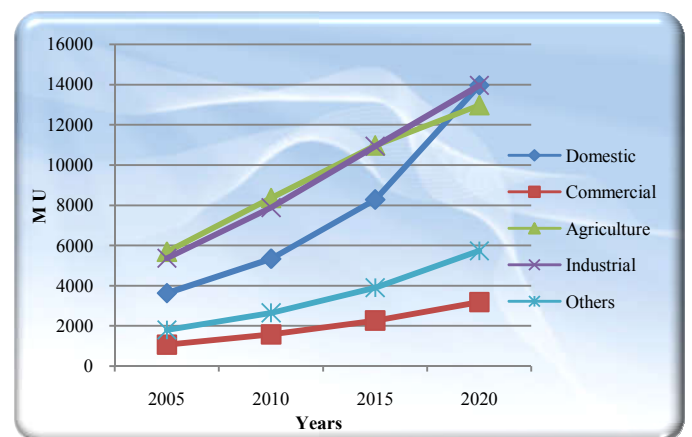


Figure 3 Category Wise Load Forecast for Rajasthan (Million Units)

Our Economy has witnessed rapid growth in the past few decades. It is true that all these developments have been possible by the use of energy, as energy and economic development are positively related to one another. Of all the

forms of energy, electrical energy significantly affects the all around development of the nation. Rajasthan, the largest state of the Nation has shown a very healthy path of development in the past two decades. But in spite of the efforts taken by the government, Rajasthan economy could not attain the targeted growth rate due to lack of adequate infrastructure. Power, one of the crucial infrastructures is not sufficient to carry out the planned developmental activities. Around 28 to 30 per cent of the total plan outlay has been allocated to strengthen the state power sector but still could not meet out the energy needs fully. Presently, Rajasthan power sector is confronted with two major problems i.e. growing power deficit and rising debt. In order to overcome the above stated problems the possible two strategies are shown in fig 1.1

Strategies to overcome Power Deficit

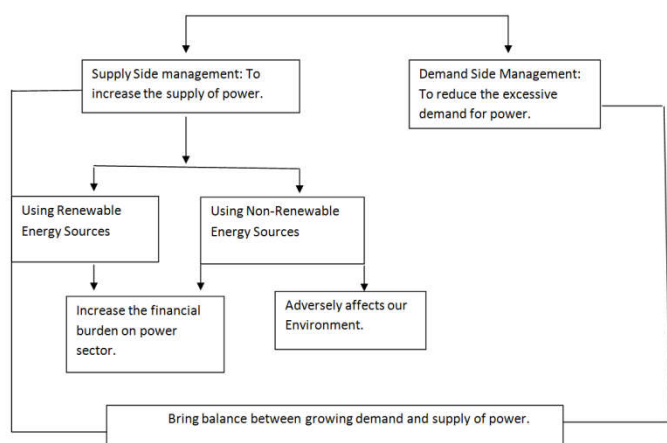


Fig 1.4 depicts the fact that supply side management using renewable sources will be effective strategy as it does not have negative impact on our environment but would require huge financial investments which our economy lacks. But Demand Side Management strategy is one of the best options that could be adopted in short as well as long run to overcome power deficit.

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