RIVER BASIN STUDY

Siul IV Hydro Electric Project
(2 x 2.0MW)

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1. Introduction

Electrical power is the most vital and essential infrastructure for economic development of any country. The standard of living of people and status of industrialization of any cowitry largely depends upon the extent of the use of electricity and can be judged by its per capita consumption. In India, concrete efforts have been made to increase the availability of power by private sector participation to give a fillip to its economy. Accordingly, numbers of hydro' power schemes in the state/ private sector have come up and ultimate/optimum exploitation of hydro potential is the goal of new hydro policy. Siul IV Hydroelectric Project is envisaged as a run-of-the river development on Siul nallah, a tributary of river Ravi in Chamba district of Himachal Pradesh and will supply power to the northern grid comprising the states of UP, Uttaranchal, Rajasthan, Haryana, Punjab, Himachal Pradesh, Jammu & Kashmir, Delhi and Union Territory of Chandigarh. Toe following paras deal with the existing and anticipated power position of Himachal Pradesh and the northern region. The power system in this region is operating in an inter-connected and co-ordinated manner. The installed capacity, possible additions to generating capacity in future, existing and anticipated energy and power demand patterns for Himachal Pradesh and the northern region of India are discussed in this chapter with a view to establish the necessity of the Siul IV Hydro-electric Project.

1.1 Hydro potential

- The generating capacity in the country was only 1750 MW which has since increased to 3,74,199.1 MW as in November 2020. The annual generation has grown from about 5 billion units to 1389.1 billion units during 2019-20 Despite the rapid increase in population over this period of time, the per capita consumption has increased from a mere 15 kWh to 632 kWh in 2005-06 and to 665 kWh in 2006-07, and to 1181 kWh by 2018-19.
- Despite the fact that India is the 6th largest country in terms of Power generation, the over all electricity shortages continue to be a major concern. The peaking shortages are about 13.8% as on 31.03.2007 on all India basis. Though, peaking shortage has been reduced to about 0.5%, in 2019-20 considering requirement of electricity for vast population and rapid growth of industrialization it would be prudent to take necessary steps well in advance to give impetus to growth of electricity generation.
- In the wake of continuous improvements in the Plant Load Factors, and addition of new generating plants, electricity generation has been growing consistently from 7.56% in 2009-10 to 5.19% during 2018-19. This growth rate has peaked at 9.14% in the year 2011-12.

To meet the present demand for peaking and non-peaking power, it is estimated that a hydro-thermal mix of 40:60 would be an ideal mix. At present (Nov 2020), the total installed capacity in the country is 3,74,199.1 MW and hydro share accounts for 45,699.2MW (12.2%).

1.2 Power development in India

The power sector since independence has undergone a tremendous change and grown from 104971 MW in 2002 to 374199.1 MW in November 2020. The share of northern regional Grid of about 87158.36 MW during the year 2019-20 accounts for 23.3% of the total installed capacity in the

country. Development of the large untapped hydro-electric potential of India is being presently favoured due to its renewable, non-polluting and low generating cost characteristics.

Our country is endowed with an enormous hydro power potential, last assessed to be about 84,000 MW at 60% load factor, which translates to 1,48,700 MW in terms of installed capacity. In addition to the above, 6,782 MW of installed capacity has been assessed from small, mini and micro hydel schemes (i.e schemes of capacity up to 25 MW). Further, 56 potential pumped storage sites, with an aggregate installed capacity of 94,000 MW, have also been identified. In India total installed capacity for Hydro is 45.4 GW as on dated: 31.08.2019. Immediate target ahead is to commission another 30 GW by 2030.

1.3 Power planning concept

T he country bas been divided into five power regions for the purpose of planning and development of electric power. The concept of regional planning has been adopted as energy resources are not evenly distributed amongst the various regions. This approach in various Five Year Plans has been found extremely useful for exploitation of available resources and to achieve proper mix of hydro and thennal energy in the region, which is essential to achieve cost economy in power production.

Central Electricity Authority (CEA), which is responsible for the fonnulation of National Power Policy and co-ordination of planning for power development in the country, draws long term perspective plans. In drawing up such plan, CEA identifies the projects wnich cou ld be considered for implementation during the successive Five Year Plan periods to achieve a proper mix of hydro and thermal power in a particular region. Such identification helps the executing agencies to proceed with further detailed investigations and preparation of detailed project reports. The names of the com1,:itue nt states and union territories in the various regions are given below:

Northern Region :- Haryana, Himachal Pradesh , Jammu & Kashmir, Punjab, Rajasthan, Uttar Pradesh, Chandigarh(UT), Delhi, Uttaranchal and Central Sector.

Western Region : Gujarat, Madhya Pradesh, Maharashtra. Goa, Dadra & Nagar Haveli (UT), Daman and Diu (UT), Chhattisgarh and Central Sector.

Southern region : Andhra Pradesh, Karnataka, Kerala, Tamil Nadu, Pondicheny (UT), Lakshadweep and Central Sector .

Eastern Region : Bihar, DVC (system), Orissa, West Bengal, Sikkim, Andaman & Nicobar Islands (UD, Jharkhand and Central Sector.

North Eastern Region : Assam, Manipur, Meghalaya, Nagaland,Tripura, Arunachal Pradesh, Mizoram and Central Sector .

Power development work in various states of the respective regions is being done by various State Govts. /State Electricity Boards, PSUs and lPPs.

1.4 Central sector participation

Central Government is also setting up a number of hydro and thermal power projects in the various regions to supplement the efforts of the State governments/ State Electricity Boards in order to remove the imbalance of power development among several states and for optimum utilization of energy resources through agencies like BBMB, NTPC, NHPC, DVC, NLC, NEEPCO etc. Some pro)ects are being executed jointly by the State and Central Governments through SJVNL, HPPCL and TIIOC etc.

1.5 Total Installed capacity

The total installed generating capacity in the country (utilities only) as on November, 2020 is 374199.1 MW, distributed as below *(source npp.gov.*in):

Table 1.1: installed generating capacity

Ownership/Sector	Modewise breakup							Grand Total
	Thermal				Nuclear	Hydro	RES	
	Coal	Gas	Diesel	Total				
	(MW)	(MW)	(MW)	(MW)	(MW)	(MW)	(MW)	(MW)
STATE SECTOR	66921.50	7119.85	236.01	74277.36	0.00	26958.50	2381.53	103617.40
PVT SECTOR	76003.00	10598.74	273.70	86875.45	0.00	3394.00	86385.27	176654.72
CENTRAL SECTOR	62930.00	7237.91	0.00	70167.91	6780.00	15346.72	1632.30	93926.93
TOTAL	**205854.5**	**24956.5**	**509.7**	**231320.7**	**6780.0**	**45699.2**	**90399.1**	**374199.1**

RES includes small hydro power, Bio mass, Wind and solar power

As per CEA report the total installed generation capacity in our country, which was only 1,358 MW at the time of Independence, is 374199.1 MW as on November 2020. The share of hydro with 45,699.2 MW capacities is only 12.2%. Thermal (including gas and diesel) accounts for the maximum share of 61.8% with 231320.7 MW. Nuclear capacity is about 1.8% with 6,780.00 MW and other renewable sources with a capacity of 90399.1 MW i.e. 24.2%. This is graphically depicted in Figure below.

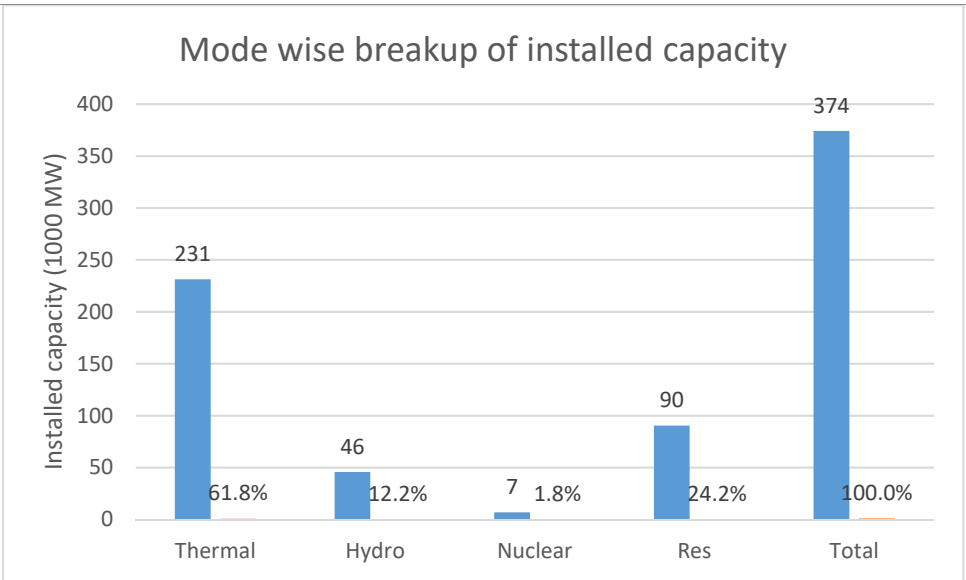

Figure 1.1:breakup of installed capacity

2. Northern region and Himachal pradesh

2.1 Growth rate in electricity consumption

The requirement of power in the country is assessed at national level periodically by power survey committees set up by Ministry of Power, Government of India under the chairmanship of Chairman, Central Electricity Authority (CEA). The demand projections for various categories of consumers in the country are studied, reviewed and finalized by these committees.

Although the country has made a significant improvement in the development of power sector, which could be visualised from the fact that installed capacity has increased from 1363 MW (as on 31.12.1947) to 374199.1 MW (as on 30th Nov 2020).But due to the growing power demand. country is still facing power shortage and industries are forced to impose restrictions both on peak demand and energy requirements.

Access to affordable and reliable electricity is critical to a country's growth and prosperity. The country has made significant progress towards the augmentation of its power infrastructure. In absolute terms, the installed power capacity has increased from only 1713 MW (megawatts) as on 31 December 1950 to 374199.1 MW (as on 30th Nov 2020). The all India gross electricity generation, excluding that from the captive generating plants, was 5107 GWh (gigawatt-hours) in 1950 and increased to 1,389,102 GWh in 2019-20). Energy requirement increased from 390 BkWh (billion kilowatt-hours) during 1995/96 to 1291 BkWh (energy) by the year 2019/20, and peak demand increased from 61 GW (gigawatts) to 183.8 GW over the same time period. The country experienced energy shortage of 0.5% and

peak shortage of 0.7% during 2019/20. Though, the growth in electricity consumption over the past decade has been slower than the GDP's growth, this increase could be due to high growth of the service sector and efficient use of electricity.
Per capita electricity consumption rose from merely 15.6 kWh (kilowatt-hours) in 1950 to 1181 kWh in 2018/19 (Wikipedia). However, it is a matter of concern that per capita consumption of electricity is among the lowest in the world. Moreover, poor quality of power supply and frequent power cuts and shortages impose a heavy burden on India's fast-growing trade and industry.

Table 2.1: The power supply position in the country during 2009-10 to 2020-21 :

	Energy				Peak			
Year	Requirement	Availability	Surplus(+)/Deficts(-)		Peak Demand	Peak Met	Surplus(+) / Deficts(-)	
	(MU)	(MU)	(MU)	(%)	(MW)	(MW)	(MW)	(%)
2009-10	8,30,594	7,46,644	-83,950	-10.1	1,19,166	1,04,009	-15,157	-12.7
2010-11	8,61,591	7,88,355	-73,236	-8.5	1,22,287	1,10,256	-12,031	-9.8
2011-12	9,37,199	8,57,886	-79,313	-8.5	1,30,006	1,16,191	-13,815	-10.6
2012-13	9,95,557	9,08,652	-86,905	-8.7	1,35,453	1,23,294	-12,159	-9
2013-14	10,02,257	9,59,829	-42,428	-4.2	1,35,918	1,29,815	-6,103	-4.5
2014-15	10,68,923	10,30,785	-38,138	-3.6	1,48,166	1,41,160	-7,006	-4.7
2015-16	11,14,408	10,90,850	-23,558	-2.1	1,53,366	1,48,463	-4,903	-3.2
2016-17	11,42,929	11,35,334	-7,595	-0.7	1,59,542	1,56,934	-2,608	-1.6
2017-18	12,13,326	12,04,697	-8,629	-0.7	1,64,066	1,60,752	-3,314	-2
2018-19	12,74,595	12,67,526	-7,070	-0.6	1,77,022	1,75,528	-1,494	-0.8
2019-20	12,91,010	12,84,444	-6,566	-0.5	1,83,804	1,82,533	-1,271	-0.7
2020-21	8,34,672	8,31,937	-2,735	-0.3	1,77,019	1,76,413	-605	-0.3

Source: powermin.nic.in

2.2 Power scenario in the Northern region

Presently the installed capacity of the Northern Region is 23.27% of the total installed capacity of the country. The region-wise distribution of total installed generation capacity of 3,74,199.1 MW is shown

in Table 1.3. This includes allocated shares in joint & central sector utilities. Installed capacity of Northern Region as on 31st October 2020 was 87,094 MW, comprising 49,020 MW (63.2%) of thermal,19023 MW (25.1%) of hydro, 1,620.00 MW of nuclear (2.6%) and 17430 MW from renewable energy sources (9.1%). Thermal includes 5781 MW of gas turbine, 0 MW of diesel generation units and the remaining 43,239 MW is based on coal. Sector wise details of the installed capacity of 87,094 MW are given in Table 2.4.

Table 2.2: Region wise distribution of installed capacity

Regions	Modewise breakup							Grand Total
	Thermal				Nuclear	Hydro	RES	
	Coal	Gas	Diesel	Total				
	(MW)	(MW)	(MW)	(MW)	(MW)	(MW)	(MW)	(MW)
Northern	43239.00	5781.26	0.00	49020.26	1620.00	19023.27	17494.83	87158.36
Southern	40762.50	6491.80	433.66	47687.96	3320.00	11694.50	43452.31	106154.77
Eastern	34827.00	100.00	40.05	34967.05	0.00	5862.45	1598.36	42427.86
Western	86276.00	10806.49	0.00	97082.49	1840.00	7392.00	27484.70	133799.19
North Eastern	750.00	1776.95	36.00	2562.95	0.00	1727.00	368.91	4658.86
							Total	**374199.0**

Table 2.3: breakup of Installed capacity in India

Ownership/Sector	Modewise breakup							Grand Total
	Thermal				Nuclear	Hydro	RES	
	Coal	Gas	Diesel	Total				
	(MW)	(MW)	(MW)	(MW)	(MW)	(MW)	(MW)	(MW)
STATE SECTOR	66921.5	7119.85	236.01	74277.36	0	26958.5	2381.53	103617.4
PVT SECTOR	76003	10598.74	273.7	86875.45	0	3394	86385.27	176654.72
CENTRAL SECTOR	62930	7237.91	0	70167.91	6780	15346.72	1632.3	93926.93
TOTAL	**205854.5**	**24956.5**	**509.7**	**231320.7**	**6780**	**45699.2**	**90399.1**	**374199.1**

Source :npp.gov.in

Table 2.4: breakup of Installed capacity in Northern region

	Thermal				Nuclear	Hydro	RES	Grand Total
	Coal	Gas	Diesel	Total				
	(MW)	(MW)	(MW)	(MW)	(MW)	(MW)	(MW)	(MW)
state	16909	2879.2	0	19788	0	4992.8	725.51	25506
private	14450	558	0	15008	0	2514	16326	33848
central	11880	2344.1	0	14224	1620	11517	379	27740
total	**43239**	**5781.3**	**0**	**49020**	**1620**	**19023**	**17430**	**87094**

Source : npp.gov.in

2.3 Long Term Forecast for Northern Region

On the basis of the addition of capacity during the 12th Plan period, the CEA has estimated the requirements of energy and peak load of the Northern Region as shown in Table below.

Table 2.5: load forecast for Northern region

Period	Energy (GWh)	Peak Load (MW)
2021 - 22	556768	89913

(Source: 17th EPS)

From the above table it can be seen that the peak demand in Northern Region over a period of 10 years is likely to be increased by around 123% from 40248 MW in 2011 – 12 to as much as 89913 MW in 2021-22.

3. Power scenario in Himachal pradesh

Himachal Pradesh along with the States of Haryana, Jammu & Kashmir, Punjab, Rajasthan, Uttar Pradesh, Uttaranchal, Chandigarh and Delhi is part of the Northern Region. Installed capacity of Himachal Pradesh as on 30th Nov 2020, including allocated shares in joint & central sector utilities, is 10772.36 MW, comprising 0.0 MW (0%) of thermal, 0.0 MW (0.0%) of nuclear, 9809.02 MW (91.06%) of hydro and 963.34 MW (8.94%) from renewable energy sources. Sector wise details of the installed capacity of 10772.36 MW are given below:

Figure 3.1: Installed capacity in Himachal pradesh

Ownership /Sector	Modewise breakup							Grand Total
	Thermal				Nuclear	Hydro	RES	
	Coal	Gas	Diesel	Total				
	(MW)	(MW)	(MW)	(MW)	(MW)	(MW)	(MW)	(MW)
STATE SECTOR	0.00	0.00	0.00	0.00	0.00	777.00	256.61	1033.61
PVT SECTOR	0.00	0.00	0.00	0.00	0.00	1784.00	706.73	2490.73
CENTRAL	0.00	0.00	0.00	0.00	0.00	7248.02	0.00	7248.02
Total	0.00	0.00	0.00	0.00	0.00	9809.02	963.34	10772.36

Source : npp.gov.in

The coal required for thermal projects is not available in Himachal Pradesh. Therefore pit head power stations are not feasible in the state. For load centre stations the distance from pit head to load centre will increase the cost of coal at load centre. In case of imported coal, apart from its much higher cost as compared to domestic coal, the freight charges for the distance from port to load centre (Himachal Pradesh) will increase the cost of coal at load centre tremendously. Thus use of imported coal is not an economically viable solution for Himachal Pradesh. Further for load centre stations, the rail network is also not well developed in Himachal Pradesh, which is required for coal movement from pit head. Thus the development of thermal power is not very much feasible in the state. This has gradually lead to replacement of thermal plants with Hydro and other renewable plants.

The anticipated power supply position in Himachal Pradesh for the month of January 2021 is as below

Table 3.1: anticipated power supply position Jan-2021

Energy Required	Energy available	Energy surplus/deficit	Energy surplus/deficit	Peak demand	Availability during demand	Peak Energy surplus/deficit	Peak Energy surplus/deficit	Peak demand month
(MU)	(MU)	(MU)	(%)					
9760	14270	4510	46.21%	1650	2520	870	52.73%	Jan-21

Source : LGBR 2020-21

As per above there is a surplus of 46.21% in energy during off-peak period and 52.73% surplus during peak period in Himachal Pradesh in Jan-2021. However looking at power supply position in neighboring states there is a vast scope of further development on power sector to mitigate the deficit in neighboring states. Following states show deficit in supply in the early months of 2021.

Table 3.2: power deficit in neighboring states

states	Jan-21	Feb-21	Mar-21
UTs of J&K and LADAKH	-12.20%	-9.30%	-1.80%
Uttarakhand	-14.20%	-16.50%	-1.50%

Source: LGBR 2020-21

4. River basins in Himachal pradesh

Electric energy has a vital and significant role to play in the economy of any state. Availability of Power has been recognized as the surest index of a country's overall economic growth as it is one of the basic inputs for industrial as well as agricultural development. The coal is not available in the state of Himachal Pradesh. Due to logistic problems and high cost for transportation of coal, the development of coal based plant in the region is techno economically not viable. However, the state has large potential for small as well as big hydropower schemes. There are five major river systems in the State, namely the Satluj, the Beas, the Ravi, the Chenab and the Yamuna. Apart from the major rivers, the State has many small rivulets which are perennial in nature and provide ideal condition for developing Hydro electric projects.

4.1 Satluj River

Satluj rises from beyond Indian borders in the Southern slopes of the Kailash Mountain near Mansarover Lake from Rakas lake, as Longcchen Khabab river (in Tibet). It has total length of 1448 Km and is the largest among the five rivers of Himachal Pradesh. It enters Himachal at Shipki (altitude = 6,608 metres) and flows in the South-Westerly direction through Kinnaur, Shimla, Kullu, Solan, Mandi and Bilaspur districts. Its course in Himachal Pradesh is 320 Km. from Shipki, with famous tributaries viz. the Spiti, the Ropa, the Taiti, the Kashang, the Mulgaon, the Yula, the Wanger, the Sorang and the Rupi as right bank tributaries, whereas the Tidong, the Gayathing, the Baspa, the Duling and the Soldang are left bank tributaries. It leaves Himachal Pradesh to enter the plains of Punjab at Bhakhra, where the world's highest gravity dam has been constructed on this river. Its total catchment area in Himachal Pradesh is 20,000 km^2. Its vedic name is Satudri and Sanskrit name Shatadru. The Satluj finally drains into the Indus in Pakistan. The catchment area of about 50,140 km^2 is located above the permanent snow-line at an altitude of 4,500 metres. The upper tracts of the Satluj valley are under a permanent snow cover. The prominent human settlements that have come on the banks of the Satluj river are Namgia, Kalpa, Rampur, Tattapani, Suni and Bilaspur.

Figure 4.1: Rivers in Himachal Pradesh

Siul IV hydro project is proposed to harness hydro potential of part of the Siul river flowing in the district Chamba. River map of Chamba is presented as below.

Figure 4.2: Rivers in district Chamba

4.2 Beas River

The River emerges from a cavern at the Rohtang pass and assume different identities as the seasons go by. From a clear blue easy flowing mountain river to an awesome torrent during the monsoon. On the right of Rohtang pass lies the source of the river Beas also known as Beas Rishi. To the South of this source lies another source known as Beas Kund. Both these mountain streams meet at Palachan village, 10 km. North of Manali to form the river Beas. From Manali, this holy river after passing through dense evergreen forests reaches the town of Kullu. After covering hundreds of Kilometres through the hills, the river embraces the river Satluj at Hari Ka Patan in Ferozpore district of Punjab before flowing into Pakistan. Its main tributaries are Parbati, Sainj in the East; and the Solang, the Manalsu, the Fozal and the Sarvari Streams in the West. In Kangra, it is joined by Binwa, Neugal, Banganga, Gaj, Dehr and Chakki from North, and Kunah, Maseh, Khairan and Man from the South. The Beas enters district Kangra at Sandhol and leaves it near Mirthal. At Bajaura, it enters Mandi district situated on its left bank. In Mandi district, its own Northern feeders are Hansa, Tirthan, Bakhli, Jiuni, Suketi, Panddi, Son and Bather. The northern and Eastern tributaries of the Beas are perennial and snow fed, while Southern are seasonal. Its flow is maximum during monsoon months. At Pandoh, in Mandi district, the waters of the Beas have been diverted through a tunnel to join the Satluj. It flows for 256 km. in Himachal Pradesh.

4.3 Ravi River

Ravi river rises from the Bara Banghal (a branch of Dhauladhar) as a joint stream formed by the glacier-fed Badal and Tant Gari. The right bank tributaries of the Ravi are the Budhil, Tundah Beljedi, Saho and Siul; and its left bank tributary worth mentioning is Chirchind Nala. Town Chamba is situated on the right bank of the river Ravi. The Ravi river flows by the foot of Dalhousie hill, through the famous Chamba valley. The river with its length of about 158 km. in Himachal has a catchment area of about 5,451 km^2.

4.4 Chenab River

Two streams namely Chandra and Bhaga rise on the opposite sides of the Baralacha pass at an elevation of 4,891 metres and meet at Tandi at an elevation of 2,286 metres to form the river Chenab. The Chandra rises from the South-East and Bhaga from the North-West of the Baralacha pass. It enters Pangi valley of Chamba district near Bhujind and leaves the district at Sansari Nala to enter Podar valley of Kashmir. It flows in Himachal for 122 km. With its total length of 1,200 km, it has a catchment area of 61,000 km^2 out of which 7,500 km^2 lie in Himachal Pradesh. It is the largest river of Himachal Pradesh in terms of volume of waters. The Chenab valley is a structural trough formed by the great Himalayan and Pir Panjal ranges.

4.5 Yamuna River

It enters Himachal Pradesh at Khadar Majri in Sirmaur district. Yamuna river is the largest tributary of the Ganga. Its famous tributaries are Tons, Pabbar and Giri or Giri Ganga. Its total catchment area in Himachal Pradesh is 2,320 km. It leaves the state near Tajewala and enters into the Haryana state

4.6 Basin wise development of Hydro projects

Basin wise development of Hydro projects in Himachal Pradesh as per Directorate of Energy, Himachal Pradesh till 22/12/2020 is presented as below.

Table 4.1: basin wise allotment of Hydro projects in Himachal pradesh

River basins	YAMUNA	BEAS	RAVI	SATLUJ	CHENAB
Installed capacity (MW)	433.95	4714.2	3626.7	9612.93	971

The projects are in different stages of development.

5. Development of Hydro power in Himachal Pradesh

The economy of the Himachal Pradesh is predominantly dependent on agricultural and allied sectors which contribute nearly 40% to the state domestic product and provide direct employment to about 69% of the population. The state government has provided numerous incentives, which have given impetus to the industrial growth in the state. The electric power, being a vital and essential infrastructure has a significant role to play in economic development and upliftment of the state. Realising the importance of power in the overall development of the state and taking advantage of the Central Govt's decision to allow participation of private sector for execution of power projects, the State Govt. has invited entrepreneurs and has signed MOUs with them for the development/exploitation of hydel potential in the state. Realizing the importance of availability of power in the overall development of the state, hydel power development has been accorded top priority by the govt. from the sixth plan onwards. The installed generating capacity of hydro plants in the state sector has risen from about 112 MW in 1980-81 to about 7950 MW in December, 2012.In the field of rural electrification, the state has attained remarkable achievements. Despite being a late entrant in the field of rural electrification and located in difficult terrain, the state has been able to electrify all of its 16,807 in habitated villages.

Due to limited resources available with the Central and State Government, the Govt. of India has approved the participation of the private sector in the generation, supply and distribution of electricity in the country in order to overcome the anticipated power shortage. As a result, the Himachal Pradesh has Govt. decided to allow private sector participation in respect of hydroelectric projects. Highlights of new Hydro Policy on Privatization are as follows:

(a) Selection of Developer on MOU Route allowed for projects up to 100 MW

(b) Selection of Developer on ICB route for Projects above 100 MW.

(c) No Clearances necessary from CEA for projects selected on competitive bidding route for projects costing upto Rs. 2500 crores.

(d) Secondary energy rate to be at par with primary energy. Premium on peak power proposed.

(e) Process of Transferring clearances to IPP's simplified.

(f) 100% Foreign Equity permitted on the automatic approval route provided it does exceed Rs. 1500 Crores.

(g) Limit of 40% financing from Indian Financial Institutions waived off.

(h) Tariff determination by SERC/CERC.

(i) Projects upto 25 MW to be transferred to MNRE.

(j) HPSEB to purchase power upto Rs. 4.69/kWh from projects upto 5 MW capacity

(k) Banking & Wheeling Facilities permitted @ 2% including transmission losses.

(l) Incentives for small HEP as per GOI Guidelines.

(m) Moratorium of 5 years for payment of Electricity duty by companies which consume electricity produced by them.

The Govt. of Himachal Pradesh has allotted hydropower projects to state and central sector and also to independent power producers initially on MOU route and subsequently through International competitive bidding route.

6. References

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