CHAPTER 2

HIMACHAL PRADESH AND HYDRO-POWER PRODUCTION: EFFORTS FOR GETTING STATUS OF A 'POWER STATE'
The beautiful valleys, gleaming glaciers, gigantic pines, gushing rivers and exquisite flora and fauna compose the symphony that is Himachal Pradesh. Situated in the north western lap of the Himalayas, it is one of the most beautiful and well developed states of India. Many important rivers of the Indian subcontinent either originate or pass through here. These rivers are the Beas, Chenab, the Ravi, the Satluj and the Yamuna. In the last 3-4 decades water from these rivers has increasingly been seen as a precious resource for generating electricity. The identified power potential of these rivers is estimated to be 20415 MW, which is about 14 percent of the total hydro power potential of the country.¹ In this chapter we will see how Himachal, after attaining statehood, strived to harness this hydro potential to become a ‘Power State’. The chapter is divided into two sections. The first section discusses the five river systems of Himachal and their hydro-power potential. It also discusses the details of major hydro-projects in the Beas Basin. The second section analyses how Himachal has attempted to harness hydro-power to acquire the status of a ‘Power State’.

In pre as well as during the colonial period a large part of Himachal was ruled by chiefs, called Ranas or Rajas.² The British entered into these hills after the Anglo-Gurkha war of 1814-15, and occupied some of the areas which were under the gurkhas for about a decade. The British occupied some areas directly and a large part was allowed to be ruled by small hill chiefs. These princely states were called Punjab Hill States during the colonial period. The British developed hill stations and Shimla became the summer capital of the British in the late 19th century.³

After independence these hill states were constituted into a Chief Commissioner’s province on 15th April 1950. Himachal Pradesh was initially declared as

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³ For more details on Shimla hill states and Gorkha Wars refer to Raja Bhasin’s, Shimla: The Summer Capital of British India, Penguin Books India, Delhi, 1992.
a centrally administered territory in 1948 with the integration of 31 hill states of Punjab province. These states were Baghat, Bhajji, Baghal, Bejer, Balsan, Busheer, Chamba, Darkoti, Deloth-Dhadi, Dhami, Ghund, Jubbal, Khaneti, Koti, Kumarsain, Kunihar, Kuthar, Mandi, Sirmaur, Suket, Tharoch, and Theog. Himachal Pradesh comprised of six districts, namely, Mahasu, Mandi, Chamba, Sirmaur, Bilaspur and Kinnaur until 1966. When Shimla, Kangra, Kullu, Lahaul, Spiti, Nalagarh and a few areas of Hoshiarpur and Gurdaspur districts were added to Himachal Pradesh on 25th January 1971, Himachal Pradesh was granted full statehood. It had 10 districts which were rearranged into 12 districts, namely, Bilaspur, Chamba, Hamirpur, Kangra, Kinnaur, Kullu, Lahul and Spiti, Mandi, Shimla, Sirmaur, Solan and Una in 1972.

It was primarily the efforts of the first Chief Minister of the state, Dr. Yashwant Singh Parmar, that Himachal could finally gain the status of a state. This was achieved after a long struggle. Full statehood was demanded to develop its resources, especially hydro. It was believed that proper development was not possible under a centrally administered state. Once statehood was achieved, Himachal marched in this direction. But before we discuss that strategy, let’s explore the resources at the disposal of the states and a brief history of hydro projects.

**Section I: Geographical Advantages of the State to Develop Hydropower.**

The Indus, along with its tributaries, the Jhelum, Chenab, Ravi, Beas and Sutlej, constitutes one of the largest river systems in the Indian Subcontinent with annual flow of

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4 For better understanding of the process of Himachal attaining full statehood refer to Visheswar Verma’s, The Emergence of Himachal Pradesh A survey of Constitutional Developments, Indus, Delhi, 1995.

5 Dr. Parmar while advocating for the Statehood wrote for Tribune in 1968, ‘Himachal had a precarious childhood to be followed by a shaky adolescence, as being always a special ward of the centre, its gains were outmatched by its lack of confidence and capacity to take decisions, and in the absence of peoples association, its resources, such as hydel potential were taken by neighboring states for development and benefit.’ Quoted in Himachal Pradesh Human Development Report 2002, Planning Department, Government of Himachal Pradesh, Government Press, Shimla, p. 58.
approximately one hundred and seventy million-acre-feet. This system plays a crucial role in socio-economic life of the people of the sub-continent. People have always used the water of these rivers for various purposes. The Indus system facilitated agriculture in the north-western India right from ancient times. The water of Indus system provided powerful stimulant to the economic development of the northwestern part of our country, particularly after independence. To understand the geographical advantages of Himachal, a brief discussion on the Indus river system is desirable. There is a sharing agreement on the use of Indus water with Pakistan, which shall be analysed.

The British recognised the immense potential of the Indus and its tributaries and constructed several irrigation canals on this system. Beginning with the Bari Doab canal (1859), the drive climaxed with the Triple canal Project (1916). The guiding principle behind these constructions was the generation of more revenue, an increase in the production of grains for the protection against famine and for the commercialisation of agriculture. They built a series of perennial, all season canals that opened million of acres of arid land for new agricultural settlements. These canals not only generated revenue for the state, they also represented the triumphs of ‘imperial sciences’.

The development of irrigation system in the Indus Basin generated inter-state dispute even during the colonial period. Union commissions were set up by the colonial government to distribute water among the Punjab, Sind, Bhawalpur and Bikaner. On the eve of the partition of the subcontinent in 1947, distribution of the water of the Indus

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7 Rohan D’Souza, ‘Damming the Mahanandi river: The emergence of multipurpose river valley development in India (1943-46)’, The Indian Economic and Social History Review, 40, 1 (2003), p. 82.


system became an intractable problem. The international boundary between India and west Pakistan led to division of the irrigation system of the Bari Doab and the Sutlej Valley Project in two parts. The headwork fell in India while, the canals in Pakistan.\(^{11}\) As it became difficult for the two countries to arrive at a reasonable agreement an intervention of the World Bank was sought. The World Bank invited the two countries for consultations and negotiations.

**The Indus Water Treaty**

To resolve the issue of water sharing, the first meeting of the representatives of the two countries under the auspice of the World Bank was held in Washington in May 1952. In what came to be known as the Bank proposal of May 1954,\(^{12}\) it was suggested that the entire flow of the western rivers (the Indus, Jhelum and Chenab) would go to Pakistan and the entire flow of eastern rivers (the Ravi, Beas and Sutlej) would be availed by India. India accepted the proposal but Pakistan viewed the proposal with more trepidation and gave only qualified acceptance. Pakistan wanted India to assume financial responsibility for ‘replacement facilities’, increased storages facilities, and enlarged link canals in Pakistan, which could be recognised as the cost replacement of pre-partition canals. India did not accept the proposal put forward by Pakistan. In 1959 the Bank suggested an alternative plan under which India was offered help for construction of a dam on the Beas.\(^{13}\) Similar help was also offered to Pakistan. With these conditions both sides agreed to a fixed payment settlement and a ten-year transition period for water flows from India. This agreement was signed in Karachi on 19\(^{th}\) September, 1960.

With the signing of ‘The Indus Water Treaty’, the government of India with renewed vigor made elaborate plans to use the water of three rivers-the Ravi, Beas and

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\(^{11}\) ‘River Basin Geology and Natural History-Saraswati River History’, an Article on www.transwaterboundry.com


\(^{13}\) ‘Indus Water Treaty Case Summary’, an article on www.transwaterboundry.com, visited on 24\(^{th}\) April, 2007.
Sutlej. Construction of the Bhakra Dam at the Sutlej was already in progress and plans were prepared to harness the water of the Ravi and the Beas subsequently.

As all these rivers flowed through Himachal, hence intense national planning for the development of the hydro power started here. We will discuss all the five river systems of Himachal and their Hydro potential. Since this thesis focuses on the Beas Basin, we discuss the salient features of all the major projects on this river and its tributaries.

**River systems**

The Satluj rises near Mansarover Lake in Tibet. It is the largest among the five rivers of Himachal Pradesh. It enters Himachal at Shipkilla (altitude = 6608 meters) 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 Rakas Tal to Bhakra. Some of its tributaries are the Spiti, the Ropa, the Mulagaon, the Throng and the Rupi are on the right bank, whereas the Baspa, the Duling and the Soldang are on the left bank. Its total catchment area in Himachal Pradesh is 20000 sq. km. Its Vedic name is Satudri and Sanskrit name Shatadru. The Satluj finally drains into the Indus in Pakistan. A gross fall of 2180 m is available in its riverbed from Shipkilla to Bhakra. The Satluj River and its basin, because of its inherent geographical features, are excellent for the development of hydro in Himachal.\(^{14}\) The total Hydro potential of Satluj Basin is 9412.25 MW.\(^{15}\)

The Ravi is one of the important rivers of the Indus Basin. It originates in Tantagri glaciers of the Himalayan ranges near Rohtang pass at an elevation of 4000 m above mean sea level. It traverses a course of about 240 km, enters Punjab at Madhopur, and then passes to Pakistan. Dhauladhar encloses the river catchment on the left and Pir-Panjal ranges on the right. Within Indian Territory, the river course is generally rocky and

\(^{14}\) Power Development in Satluj Basin September 2004, Ministry of Power, Central Electricity Authority, pp. 3-5.

\(^{15}\) Hydro Power Policy 2006, p. 179. The details of all the projects in Satluj Basin along with their generation capacity are provided in the Annexure I.
passes through steep gradient of Himalayan ranges. The Holi, Kalihen, Budhil, Tundah, Suil, Sewa and Ujh are its major tributaries. The average elevation of the river is around 1870 m. and is subjected to considerable amount of snowfall in the upper catchment of the river basin. Under the Indus Water’s treaty, the Ravi is one of the eastern rivers and there is no restriction for constructing storages on this river. Apart from Thein and Chamera Stage-I, no other storage scheme has so far been envisaged on this river. The total hydro potential of Ravi basin is 2294 MW.16

Figure 2.1 River Basins of Himachal Pradesh.

Source- Map taken from the Map collection of the SCSET


17 Hydro Power Policy 2006, p. 178. The details of all the projects in Ravi Basin along with their generation capacity are provided in the Annexure II.
The Chenab River is formed by the confluence of the Chandra and Bhaga rivers at Tandi, located in the upper Himalayas, in the Lahul and Spiti District of Himachal Pradesh. In its upper reaches it is also known as the Chandrabhaga. After traversing 144 Kms, it enters into Jammu & Kashmir State and flows generally southwest up to Akhnoor near the Pakistan border. The total length of the Chenab is approximately 960 kilometres. The waters of the Chenab are allocated to Pakistan under the terms of the Indus Waters Treaty. The total hydro potential of Chenab River is 2728MW and it is the most underutilized basin for hydro development with only one under-construction project of 5.30MW.  

The Yamuna River rises from Jamnotri in the Himalayas at the height of 7,924 m from the mean sea level. After crossing through the Garhwal of Uttarakhand, it enters district Sirmour at village Khodari Majri. In Himachal it covers only 22 km and then enters Uttar Pradesh. Although the course of this river in Himachal is short, it has important tributaries from the point of Hydro development. The main tributaries are the Giri, the Markanda, the Ghaggar, the Bata, the Tons, the Jalal, and the Pabbar. The total hydro potential of the Yamuna basin is 591.52 MW.  

The Beas is the principal tributary of the Sutlej in the Indus Basin. It originates in the high Himalayas near Rohtang Pass and flows in the east-westerly direction in Himachal Pradesh and emerges in the plains near village Talwara in the Hoshiarpur District of Punjab. The length of its course up to its confluence with river Sutlej is about 397km and the length up to Beas Dam at Pong is 230 km. It has a large number of tributaries. Of these, Parbati is one of the most important because of its large catchment

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18 Ibid., p. 176. The details of all the projects in Chenab Basin along with their generation capacity are provided in the Annexure III.

19 Hydro Power Policy 2006, p. 173. The details of all the projects in Yamuna Basin along with their generation capacity are provided in the Annexure IV.

area (1520 sq.) and a fall in elevation level of 3153 m. The other important tributaries for hydro development are the Sainj, Malana, Tirthan, Uhl, GajKhad, Neogal, Rana khad and Binwa khad. The total potential of Beas Basin is 4589.50 MW.\textsuperscript{21}

The Beas was notorious for its floods which, years after years in the past, added to the woes of the people downstream and left behind annual legacy of the damage of million of rupees of public property.\textsuperscript{22} The planners felt that the water of the Beas could irrigate many acres.\textsuperscript{23} The success stories of the western Yamuna canal (1817-23), the Upper Bari Doab Canal (1879), the Sirhind Canal (1887) gave rise to the idea of using the water of the river Beas for irrigating the parts of Thar Desert.\textsuperscript{24} Hence a reservoir was planned at Pong in Kangra District (then in Punjab) to achieve this objective.\textsuperscript{25}

The agricultural economy of Punjab had been shattered after the partition, as it got only 20 percent of the irrigated land of the pre-partition Punjab, while 50 percent of its population. The planners gave stress on providing irrigation and electricity, hence works on the multi-purpose projects intensified. Sumi Krishna rightly argues that the harnessing of river water for irrigation, flood control, and the generation of hydroelectric power became a central feature of development policy. Storage reservoir seemed the best solution to prevent floods and conserve water for the dry season to generate power.\textsuperscript{26} Our successive Five Year Plans gave stress on the multipurpose river valley projects. The Bhakra Beas complex is one such project and is the largest of its kind in India.

\textsuperscript{21} Hydro Power Policy 2006, p. 172. The details of all the projects in Beas Basin along with their generation capacity are provided in the Annexure V.

\textsuperscript{22} O.P. Dutta, ‘The Beas Dam- A Harbinger of Prosperity’, The Engineering Times of 21\textsuperscript{st} June, 1979, p. 7.

\textsuperscript{23} C.C. Hukmani, ‘Beas Dam Project-A Dream comes true’, The Engineering Times of 21\textsuperscript{st} June, 1979, p. 8.

\textsuperscript{24} Gilmartin, ‘Scientific Empire and Imperial Sciences’, p. 1137.

\textsuperscript{25} The canal built in the Thar Desert was named Indira Gandhi Nahar Project and the water was to come from the Beas impounded in the Himachal Pradesh.

\textsuperscript{26} Sumi Krishna, Environmental Politics People’s lives and Development Choices, Sage Publications, N. Delhi 1996.
**Major Hydro-electric Projects in the Beas Basin**

The focus of this work is on the Beas Basin. We briefly discuss various projects built in the basin. The major hydro-electric projects in the Beas Basin are as follows:-

**Shanan Project (Uhl Stage-I) 1932**

This project is a run-of-the-river project comprising diversion of the Uhl and Lambadug Rivers by means of small weirs near village Barot in Mandi district of Himachal. This project utilizes a drop of about 518 m into power house at Shanan near Jogindernagar. It was constructed by the Punjab government in 1925-32 with an installed capacity of 48 MW (4x12MW) and is still under their control. In 1970, on improvement of hydrological data, PSEB renovated and extended the Shanan Project and now it has an installed capacity of 110 MW.

**Pong Dam - Beas Project Unit II, 1974**

The Beas Dam is located at Pong. Pong is a tiny hamlet on the right Bank of the river Beas in Kangra District, which was a part of Punjab state till 1966. On the creation of Himachal Pradesh in 1966, it became a part of the new state. The Unit II, called Beas Dam at Pong, is the main storage project on the Beas for meeting primarily the irrigation requirements, but it also produces some power. Pong Dam was completed in 1974. Initially planned as an irrigation project, a power plant was provided for in the final scheme in view of the increasing demand for power.

Four units each of 60 M.W. were installed at the Pong Power plant with an additional provision for the installation of two more units of same capacity at a later stage. Now the Pong Power House produces on an average 170 million units annually.\(^{27}\)

The water from the Pong reservoir was to go to the Indira Gandhi Canal, which is 649 km long. The canal was to run through the areas of Hanumanghar, Ganganagar, Raisinghnagar, Gharsana, Bikaner, Anoopghar, Suratghar, Nachna and Jaisalmer in

Rajasthan. This water was expected to irrigate 1,673 million acres of land in Punjab and 3.51 million acres land in Rajasthan.

**Figure 2.2 The General Layout Of The Beas Project I and II**


**The Beas-Sutlej Link Project 1978**

The Beas-Sutlej link Project (BSL) was basically designed as a power project. This project was planned to fully utilize the waters of the Beas so as to relieve the power shortage, which existed even after the completion of Bhakra dam. This was to provide flexibility to BBMB authorities in case water from the Sutlej fell short of desirable level.\(^28\) It envisages diversion of about 4716 mcm water of the Beas into the Sutlej, falling through the elevation difference of about 320 meters. The water is further utilized to augment power at Bhakra (by 148 MW). This Project with the tunnel length of 25.45

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\(^{28}\) *History of Beas Satluj link Project*, Bhakra Beas Management Board, Chandigarh. Published by the Board in 1994, p. 4.
km was the largest tunneling project in the country at that time and was completed on July 7, 1977. The tunnel was considered an outstanding achievement considering the complex geological conditions existing in the lower Himalayan range.

The BSL project is a joint venture of three states i.e., Punjab, Haryana and Rajasthan and power is shared in the ratio 48:32:20 respectively. The Dehar Power plant was the largest hydro-electric power plant in respect of installed capacity under a single roof in India and one of the biggest in Asia at the time of its completion in 1977. The hydro-generators were indigenously manufactured by BHEL.

This project consists of several components. The first component is the Pandoh dam, which actually is a diversion dam on the Beas at Pandoh and diverts 3.82 MAF of the Beas waters annually into the Sutlej. The second component is the tunnel. The water from here is carried through a 13.1 km long tunnel known as Pandoh-Baggi Tunnel (PBT) which opens up at Baggi. From Baggi, 11.8 km long open channel takes the water to the open reservoir in Sundernagar and is known as Sundernagar Hydel Channel. The third component is the Balancing Reservoir at Sundernagar. It has a live storage capacity of 370 hectare meters (3000 Acre feet) and was constructed to provide diurnal storage to take care of the variation between the supply and actual water demand of Dehar Power Plant. The fourth component is again a tunnel, from this reservoir which takes water to the Dehar power plant. This is known as Sundernagar Sutluj Tunnel and is 12.38 km long. The last component of this project is the Dehar Power plant with an installed capacity of 990 MW and comprises six unit of 165 MW each. The water finally falls into the Sutlej.

Now the longest tunneling project is the Nathpa-Jhakri project on River Satluj in Shimla and Kinnaur district of Himachal Pradesh.


Figure 2.3 Hydro-power potential of Beas Basin.

Source- map prepared by the scientists of SCSET, Shimla.

**Larji Project, 2003**

This is a Himachal government project executed by the State Electricity Board. It is a ROR project which is situated at Aut in Mandi district of Himachal Pradesh. It has an
installed capacity of 126 MW, three units of 42 MW each. It utilizes the water of Beas and the Sainj, which then reaches the Pandoh dam to be diverted to Dehar power plant.

The project is infamous for massive cost overrun and delays. While, the cost per-MW in India rarely exceeds Rs. 5 million in case of the Larji project it has turned out to be double of that amount at Rs. 10 million, making it the most expensive project in the country.

**Malana Project 2007**

The Malana Hydro Electric Project is a private sector development proposed by Rajasthan Spinning and Weaving Mills Limited. The project is on the Malana Nallah, which is a tributary of the Parbati River. The project is approximately 33 kilometers from the town of Kullu, and has the installed capacity of 86 MW. It is one of the earliest projects given to private promoters.

**Parbati Hydro Electric Projects**

The Parbati Hydro Electric Project proposes to harness the river Parbati and Sainj Rivers in Kullu valley in three stages. The construction work for Stage II and III is going on. But the work on Stage I has not started because it could not get the environmental clearance from the Union Environment Ministry so far.

Stage II is a ROR scheme that envisages the utilization of river Parbati’s water and five nallahs (small streams) namely the Jigari, Manihar, Pancha, Hurla and Jiva to generate 800 MW. The project activities are spread over three valleys namely the Manikaran, Gharsa and Sainj valleys. The project will have a 91 meter concrete gravity dam on the Parbati. The dam will be located just downstream from the confluence of the Tosh Nallah. The project includes a spillway section that is 39 meters long with four bays controlled by four radial gates, two 4.5 meter intake tunnels, and a 6 meter head race tunnel.

The Stage III project is proposed on the Sainj. It is again a run-of-the river scheme with a proposed power generation capacity of 520 (130×4) MW at Suind. This project would generate 1977.23 million units. It envisages utilisation of water released from
tailrace of the Parbati Stage II. After using this water in power house at Suind, it ultimately will be discharged into the Sainj. The project comprises a concrete gravity dam 75 meters high, a spillway section 59 meters long having four bays controlled by radial gates, two 5.8 meter intake tunnels, and a 7.5 meter head race tunnel. An underground powerhouse will be constructed near village Bihali.

**Allain Duhangan Project**

Rajasthan Spinning and Weaving Mills Limited (RSWML), a private limited company incorporated in India, is setting up Allain - Duhangan Hydroelectric Project (ADHEP) of 2 x 96 MW (192 MW hydropower generation facility on the Allain and the Duhangan tributaries of Beas river) in Tehsil Manali, District Kullu, Himachal Pradesh in India. The project is located near village Prini, approximately 3 km South East of Manali town. It is a ROR scheme to utilise the combined discharge of the Allain and Duhangan streams.

**Section II: The Growth of Hydro-power in Himachal**

Since India gained independence, policy makers always saw generation of power essential for the development of the country. Until recently, however, it was largely regarded as a task to be carried out by the Union Government, as state governments and the private sector lacked resources. The government of India gave considerable importance from the very beginning to generation of power. The few dams that were built in the 1950s and 1960s became representatives of the resurgence of India. In fact, power generation started with hydropower. Slowly the state governments also started taking interest in utilising their own resources. Here, we examine how Himachal Pradesh has strived to achieve this objective. Over time this acquired greater significance and Himachal Pradesh even began to project itself, particularly from the 1990s, as a state with a large power potential. It has a long history of constructing power projects. We begin by examining how early projects were planned and built, how Himachal overcame its early difficulties of resource mobilization. What did it learn from the early experiences? And
how that experience is being used to create infrastructure in power generation for the 21st century.

Himachal Pradesh intended to use hydro power from the very beginning; however it had to operate under various constraints. It had emerged as a small centrally administered territory with the merger of 30 odd princely states after independence. Thus the attention of the local leaders was more on acquiring full statehood than to embark on any ambitious plan. The territory of Himachal was split into two parts, the district of Chamba being cut off from the other four districts, namely, Mandi, Mahasu, Bilaspur and Sirmour by a corridor of Punjab State. Roads had to pass through Punjab and Himachal had to do most of its business through Punjab. The hydro projects of Himachal – Bhakra and Shanan were manned and controlled by Punjab with no advantages to Himachal. The Himachal that emerged on 15th April, 1948 was under a ‘feudal set up’ for centuries and was thus underdeveloped. It was not easy for the new state to immediately embark on the path of development.

Being a hilly tract, transportation and communications were difficult and inadequate. This was a big hindrance for the growth of the state. Moreover, without the development of proper infrastructure, industries of any kind could not be developed. In Himachal villages were scattered over a large area and a majority of them were inaccessible. This situation was not favorable for the easy expansion of public services.

33 Verma, The Emergence of Himachal Pradesh.
36 P.S. Lokanathan, the then Director General of National Council of Applied Economic Research (NCAER) also stated, ‘Himachal is a frontier territory, predominantly rural, with a large tribal population, highly inaccessible, historically neglected and undeveloped and heavily dependent on Central revenues for day-to-day administration’, P.S. Lokanathan, ‘Preface’, Techno-Economic Survey of Himachal Pradesh, 1961, p. viii.
Himachal was one of the poorest states of India and was dependent on the Union Government for the funds. Most important of all Himachal being a Union Territory was largely guided by the central policies. It, however, focused on road development in the initial plans considering it critical to development. Due to these constraints the newly created state could not embark on the path of hydro development.

However, as Amartya Sen and Dereze point out, Himachal as a Union Territory had some advantages as well in its initial years of inception. It had a fairly prosperous rural economy (mainly because of its apple orchards), high level of per capita government expenditure (because of massive assistance from the centre), low population growth, and high number of persons employed in public sectors (especially army). Apart from these, Himachal had a relatively favorable social context, which includes the comparative lack of sharp social disparities in village communities and a strong tradition of local cooperative action. These were a few of the advantages, which ultimately greatly benefitted Himachal Pradesh.

Though an era of development started with the first plan by laying emphasis on infrastructural works by giving priority to construction of roads, forest farming and horticulture and towards hydel, it actually intensified only after 1971 when it was awarded full statehood.

The history of Hydro-power generation can be broadly divided into three stages; The First Phase covers time period from 1908 to 1947, the second Phase from 1947 to 1971 and the third phase from 1971 to 2007.

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40 Ibid., p. 179.
First Phase (1908-1947): Early Years of Hydro-Power generation

The history of hydropower development in Himachal Pradesh is almost a century old. It started because of the initiative of an independent ruler of a small principality. Like in many other parts of the country the main objective of the ruler was to light up the major towns of his kingdom. It was in case of only a few princely states that their rulers had resources to install small hydro electric plants for providing electricity to their palaces or towns.

Three projects stand out for their historicity. These are Bhuri Singh Project in Chamba, Chaba project in Shimla and Shanan project in Jogindernagar. The Bhuri Singh project dates back to 1908. It was in Chamba, which was a principality during the colonial period. It was due to the efforts of Raja Bhuri Singh of Chamba that north India got its first powerhouse, even much before the Viceroy of India had the privilege to avail this facility in Shimla. Soon after his coronation in 1904, the Raja took up the task of developing his state with a great vigor. Realizing that progress depended on availability of electricity, he set up a hydel power station of 35 kW capacities for the Chamba town. He set up a power station at a time when idea of hydro generation was still new to the country. Thus, Chamba town came on the generation map of the country and acquired a distinction that other large towns and cities of the country achieved much later.

This powerhouse had a wooden flume, which used to be replaced quite often, resulting in the temporary closure of the powerhouse. To overcome this difficulty the Chief engineer of Chamba town Gurditta Mal Mahajan suggested to the ruler of Chamba Raja Ram Singh for shifting the power house to a better location and the

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42 The cost of installation of the hydro station, distribution system as well as the water supply to the town involved an expenditure of Rs. 2.75 lacs. ‘Century of Hydropower Development in India 1897-1997’, Central Board of Irrigation and Power, New Delhi, 1997, p. 22. The fact is inscribed in the Historical records at the powerhouse also. The researcher herself collected them during her visit to Chamba on 16th October, 2006.

43 The first Hydro-power plant in India was set up at Sidrapong (Darjeeling) in 1897, Century of Hydropower Development in India 1897-1997, p. 22.

44 Father of the late Padam Shri Kailas Chand Mahajan, who contributed tremendously for the advancement of hydro power in Himachal. He was the Chairman and Secretary power from 1981-90.
powerhouse was shifted in 1938 and another unit of 35 kW was added. Because more water was available, another unit of 100 kW was installed raising the total capacity to 170 kW. All the work of modification was carried out under the control of the State electrical engineer Sh. Gulam Mohammad, affectionately known as ‘Saheb’ by the people of Chamba under the overall control of Gurditta Mal.\(^{45}\)

The powerhouse is located near Chamba town on the right bank of the Sal river, a tributary of the Ravi. When the powerhouse was first built, no motorable road existed beyond Banikhet town. The material and equipment for the powerhouse had to be carried from Banikhet to Chamba by hand driven trolleys or on mule-back via Kohlri road.\(^{46}\) In 1957, capacity of the powerhouse was raised to 200 kW.

In the early 1980s there was a proposal to divert the water of river Sal to river Ravi for higher potential, thereby rendering Bhuri Singh power house without water. The powerhouse was to turn into a Museum. This proposal, however, was resisted strongly by the local people. They objected to erasing the first power house of Himachal Pradesh. Another reason for rejection of the proposal was that Kailash Chand Mahajan, the then Chairman State Electricity Board, had emotional attachment with this project because of his father’s involvement in the project.\(^{47}\) In 1983 a third unit of 250 kW was added to the powerhouse and its capacity was raised to 450 kW. The powerhouse is the pride of Himachal and Chamba district and still supplies power to the town.

This project was followed by the commissioning of the Chaba Power house in 1912 by the British government to meet the water and electricity requirements of Shimla. This powerhouse was built on the Nauti khad, a tributary of the Sutlej and had the installed capacity of 1750 kW.

\(^{45}\) The fact is inscribed in the Historical records of the powerhouse itself.

\(^{46}\) Ibid.

\(^{47}\) Mr. B.D. Awasthi, Chief Engineer Pabbar Valley Project, interviewed on 6\(^{th}\) March, 2007, Shimla. He is an employee of HPSEB from 1972, was Assistant Engineer with the Sal Project at that time.
Another important project to come up in Himachal was UHL project also known as Shanan Power House in Mandi district. The project is based on two rivers the Uhl— from which it derives its name— and the Lambadug River, both tributaries of the Beas. The idea to harness the power potential of these two rivers was envisaged by Col. B.C. Battye, the then Chief Engineer of Government of Punjab, in 1922. It was with great difficulty that he could get his scheme approved from the Punjab Government, which considered the project cost of about 2 lakhs 53 thousand rupees, too huge at that time, and the power potential of 48 MW in the first stage was considered to be much more than that was needed at that time.\(^8\) The head works were to be constructed at Barot, a picturesque valley at an altitude of about 6000 ft above the mean sea level. The powerhouse was located at a place which came to be known as Joginder nagar after the name of Raja Joginder Sen of Mandi in whose state the project was being constructed. The Raja of Mandi and the Punjab government entered into an agreement about the transfer of the land and their shares in the generated power.\(^9\) The Mandi Durbar leased this land to the Punjab government for 99 years and in return 500 kW electricity was to be provided to the Mandi state. A single line was drawn from Jogindernagar to Mandi Palace for its electrification.

Since the project was coming up at a place which was not thickly populated, the means of communications were nonexistent. Thus for the construction of the project a narrow gauge railway line was constructed between Pathankot and Joginder Nagar.\(^50\) This proved to be a boon for the people in the Kangra valley. To take the construction material up to the village Barot, a haulage way system was constructed from Jogindernagar to

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\(^8\) *Century of Hydropower Development in India 1897-1997*, p. 61.

\(^9\) The details of this agreement are not available with the Himachal government. Although the Deputy Commissioner of Mandi is trying to procure the agreement from the Punjab State electricity Board so that a case for the reverting of the Shanan project to Himachal Pradesh could be mooted. Mr. Subhashish Panda, D.C. Mandi, interviewed on 2\(^{nd}\) April, 2007, Mandi.

\(^50\) During the World War II, the same railway tracks were uprooted and utilised at the Burma Border. They were later returned and the track between Pathankot and Jogindernagar were restored. Mr. B.D. Awasthi, Chief Engineer Pabbar Valley Project, interviewed on 6\(^{th}\) March, 2007, Shimla.
Barot, at a cost of Rs. 10.19 lakh. This haulage way system is unique, and still operational for the maintenance of the project. The ride up the haulage way is picturesque and quite adventurous at times.

The pace of progress of hydropower development up to independence was slow. In the early years, electricity supply to industry was organised by the private enterprise. The main aim for the power generation was lighting up of the major cities. Supplying power to industries had not yet acquired significance as there were hardly any industries at that time in this part of the country.

**Second Phase (1947-1971): The Emerging significance of hydro-power**

During this phase it was the union government that primarily built hydro projects, some of them in Himachal. Himachal was union territory and political leadership was striving for statehood. Though demand was made from time to time to produce hydro-power but the state lacked resources.

As early hydro projects were constructed by the centre in Himachal Pradesh, the benefits of these had mainly gone to adjoining areas of the plains. The Bhakra Nangal project was the pride of the nation and for it the people of Himachal Pradesh, had to sacrifice their agricultural land and homes. Similarly for the Beas Project II (the Pong Dam), the people of Kangra district had to make sacrifices. These projects resulted in submergence of large fertile agricultural land. They created problems of resettlement of oustees and local people did not get any direct benefit from them. Despite having big projects like Bhakra, Jogindernagar and Beas, Himachal had to buy electricity from the centre and that too not at concessional rates. The state government now decided to

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51 The state government wants to develop it as a tourist attraction but the project authorities are not allowing it on the pretext of security reasons. Surendra Kant Sharma, Resident Engineer Jogindernagar Power House. Interviewed on 14th December, 2007, Jogindernagar.

52 The state of Bilaspur was finally merged with Himachal in the year 1954. This was done to continue the work of Bhakra project without any hindrance.

53 As was the case with Joginder Nagar project, Bhakra Dam and Pong Dam.

assert its claim to royalty or compensation from the centrally built projects to compensate Himachal.\(^{55}\) The state demanded a share in electricity, produced in Himachal by Union government. The demand of the state centered around 12 percent of free electricity. It is also demanding 7.19 percent of free electricity as per the Punjab State reorganization Act.\(^{56}\) In fact, the royalty on electricity generated by hydro-projects situated in Himachal Pradesh is becoming a major demand because it will be a good income source for the cash strained state.\(^{57}\)

Initially there was no institutional setup to take up hydro power generation. Till 1964, Electricity Section was only a branch attached to the Public Works Department. It was only in early 1964, when Dr. K.L. Rao, Union Minister for Irrigation and Power visited Himachal that the idea of exploiting its own hydel potential got a boost. Himachal was promised all help from GOI. Hence a Department of Multipurpose Projects and Power was established in 1964 for facilitating hydropower development, assessment of the real potential of the river basins, and also to extend irrigation facilities where feasible.\(^{58}\)

A new dawn emerged for Himachal on 1\(^{st}\) November, 1966. After reorganization of the erstwhile Punjab, some new areas were merged with Himachal. Himachal was finally awarded full statehood on 25\(^{th}\) January, 1971. Despite many members of the commission favoring its merger with Punjab, this dream became a reality mainly because of the chairperson of the Commission, Mr. Fazl Ali, who argued that 'In the small states, the administration will be more accessible to people and there will be a livelier sense of local needs.'\(^{59}\) The faith Mr. Ali imposed on Himachal proved to be true and now it is one of the leading states in India in all parameters of development.


\(^{56}\) Ajay Mittal, Principal Secretary Power, Government of Himachal Pradesh, interviewed on 7\(^{th}\) September, 2008, Shimla.

\(^{57}\) Ibid., p. 100.


\(^{59}\) As quoted in M.G. Singh, *Social, Cultural and Economic Survey of Himachal Pradesh*, p. 78.
Many new projects fell within the boundary of Himachal- Bhakra, Pong and Bassi. Parmar frequently emphasized in his Budget Speeches that Himachal had advantages of abundance of natural resources, but the challenge was to tap it. In fact one of the strongest arguments put forward for statehood was of generating power which would improve revenue base of the government.  

In light of these developments the construction work of Giri project was taken up earnestly in 1967. The assessment work of various other sites also started. The central government was also taking keen interest in hydro potential of the state. Dr. K.L. Rao, Union minister for Power and irrigation, had assured all possible help for the exploitation of its electricity potential. According to him a single project on the Sutlej, with a generation capacity of 600-1600 MW can generate Rs. 18 to 48 crores for the state. Hence, the Department of multipurpose projects envisaged construction of six dams on the Sutlej above Bhakra with a generating capacity of 2200 MW of power yielding yearly revenue of Rs. 66 crores. The exploitation of other rivers- the Chenab, Ravi, Beas, Yamuna and their tributaries- in short held the prospects of a gold mine of hydel power generation with its inexhaustible resources.

This was preparatory time. The state, under its Department of Multi-purpose-projects and Power, successfully completed the two projects, namely, Giri (60 MW) and Bassi (60 MW). The assessment work for various rivers had started and few mini projects were on the verge of completion. Many centre owned projects were completed and were under progress. Bhakra was operational; work for Pong had started with Beas Sutlej Link project (BSL) ready to start in near future.

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60 Dr. Y.S. Parmar, *Himachal Pradesh its proper shape and Status*, Published by Himachal Government 1965, Preface, p. 1.


62 Both these projects were completed in stages starting from 1971 to 1976. *Hydro Power policy 2006, Shimal*, p. 28.
**Third Phase: (1991-2007) - Towards Higher Goals**

Gaining of statehood on 25<sup>th</sup> January, 1971 paved the way for realization of the dream of tapping the underutilised hydro-potential of the state. The hydro planning started with the establishment of Himachal Pradesh State Electricity Board (HPSEB) in 1971 with Mr. U. N. Sharma as its Chairman. The purpose was to ‘expedite the construction, transmission and distribution of hydropower’. The main functions of the Department of Multipurpose Projects and Power were transferred to the Board. The main advantage of the HPSEB at that time was securing of loans from the Central Government for the electrification of villages of Himachal, from the Village Electrification Scheme of Government of India.

The assessment work for recognition of true potential was picked up with higher urgency. In 1971-72, 50 lakhs of rupees were allocated just for the assessment work of hydro projects. The mini and micro hydel projects under construction were; Uhl (Mandi), Giri (Sirmaur), Nagoli (Mahasu), Gharola (Chamba), Rukti (Kinnaur), Sissu (Lahul-Spiti) and Baira-Siyul. The major projects for which the assessment work had to be carried out were Parbati in Kullu District and Wangtu in Kinnaur. In the next few years some more projects were added to this list. They were Nathpa Jhakri, Bhaba and Baspa on Satluj, and Chamera on Ravi in Chamba. The Sanjay Vidyut Pariyojna or

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63 The press also welcomed the statehood of Himachal but felt that the state could only progress through Hydel development. ‘The march towards the destiny can take place without further road blocks. But it will have to tap additional resources to ensure economic viability, a sine qua non of statehood. A revision of priorities involving the fullest exploitation of the State’s vast hydel potential and its forest wealth will doubtless be among the immediate tasks to be tackled.’ ‘Himachal Comes of Age’, *The Tribune*, Chandigarh, 25<sup>th</sup> January, 1971, p. 4.

64 Vide Government Notification No. 6-168/70-MPP (Secct) dated 2<sup>nd</sup> April 1971. *Administrative Report* 1971-72


67 In the year 1970 only 10 lacs of rupees were allotted for the assessment work. Ibid., p.185.
Bhaba Hydel Project (120 MW) became the first major project undertaken (1978) and commissioned successfully by the HPSEB in 1989.\(^6^8\)

**Figure 2.4 Hydel Power potential of Himachal Pradesh**

The planners kept repeating themselves every year that Himachal had great hydro potential, but in reality no new major project could be built until 1990. Between 1971 and 1990 the only central government project that came up was the Chamera I Project (540 MW) on the Ravi. The project was executed by the National Hydro Power Corporation

\(^{68}\) *Annual Administrative Report 1989-90, State Electricity Board.*
(NHPC). The construction started in 1984 and the project was commissioned in 1994. The state got 12 percent free electricity from this project, a privilege denied in the previous central government projects.\(^69\)

Although much noise was made little progress was made in building projects from 1971 to 1990. The planners attribute many reasons for the slow progress.\(^70\) Firstly, the state was cash starved. The main activities of HPSEB between 1971 and 1990, therefore, were confined to the assessment work for the hydro projects. Secondly, at the national level, with a shift in the priority from agriculture to industrial sector, the requirement of power increased rapidly. This demand was fulfilled by quickly building coal and gas based thermal projects. Hydro power was neglected.\(^71\) Due to this no centre owned project came to Himachal during this period. Thirdly, the massive submergence, long gestation period, problems of rehabilitation also diminished the appeal of hydro projects.\(^72\) Fourthly, with no Regional or National grids, the distribution of surplus electricity to a longer distance was not very easy.

Even though power generation might not have accelerated in Himachal during these years, the state nevertheless did achieve 100 percent electrification of census villages by 1988.\(^73\) It was a tremendous achievement considering the topography and climate of the state. It is said that electricity had reached even those parts of Himachal where the roads will take long to reach.

\(^69\) Thein Dam was the first project which accorded 4.6 percent free electricity to Himachal government in 1979. Himachal as a state was not accorded any share in the power sharing of BBMB projects. It was a condition of the Reorganization of States to provide 7.19 percent of free electricity of the total generation of BBMB projects to Himachal. In fact, since early 1970s the state government is trying to get its rightful share, but has not succeeded so far.


\(^71\) The first Nuclear Plant was commissioned at Tarapur with an installed capacity of 420 MW.

\(^72\) Himachal was still reeling under the pressure of the oustee’s problem of Bhakra and Pong and had already sacrificed its prime agricultural land in Bilaspur and Kangra district.

\(^73\) Hydro Power Policy, 2006, Shimla, p. 28.
The challenge, now, before the planners was to envisage a scheme which would not require huge finances and also a technique which would minimize the submergence and reduce the oustee problem. The concern about the technology was addressed substantially with the shift towards run-of-the-river (ROR) projects. In absence of any cogent evaluations of its human and environmental impacts, it is also proclaimed as the state-of-the-art green alternative to the archaic large dam technology.74

To address the issue of cash crunch, an alternative in the form of joint ventures was proposed.75 The first joint venture project was the Nathpa Jhakri project with an installed capacity of 1500 MW. An independent Corporation (Nathpa Jhakri Power Corporation Limited – NJPC) was constituted to execute this project. This was a joint venture of Government of India (GOI) and the Government of Himachal Pradesh (GOHP).76 Major funding for Nathpa was to come from the World Bank. Himachal was to get 12 percent free electricity (in lieu of the utilisation of resources of the state) and 25 percent electricity at the production cost (in lieu of the money invested by Himachal government). Thus, Himachal was to get 510 MW of electricity out of which 180 MW was to be free and rest at the production cost.77 The project was an ROR with almost negligible displacement.

Making further progress in this direction, the Himachal government took initiatives in October 1990 to involve private companies in construction of hydro-electric

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74 With the exception of Kol dam, all major hydel projects under construction in Himachal Pradesh are of the run-of-the-river variety. Ashwini Chhatre and Vasant Saberwal, Politics, Democracy, and Visions of Nature: Conflicts around conservation in the Western Himalayas, www.duke.edu/~ac43/ChhatreSaberwalJPS2005.PDF

75 Mr. B.D. Awasthi who has closely worked with Mr. Kailash Chand Mahajan, Chairman State Electricity Board (1980-90), says that Mr. Mahajan was one of the prime motivators of joint ventures with some share of Himachal government. Interviewed on, Chief Engineer Pabbar Valley Project on 6th March, 2007, Shimla


77 Sri. Shanta Kumar, Budget Speech, 11th May 1990, Budget Speeches by Chief Ministers/Revenue Ministers, p. 617.
projects. The Government of India (GOI) in 1991 not only mooted the policy of privatisation of power projects in India but also sanctioned the demand of Himachal for 12 percent free electricity from all hydro projects to be commissioned in future, be it centre owned, PSU or private projects. With the new confidence of getting private investment and free electricity, the then chief minister of the state Sri Shanta Kumar declared in his Budget Speech that his government vows to make Himachal a 'Power State'. After horticulture in the 80s and tourism in the 90s, it was the turn of hydel power to be the vanguard of development in Himachal.

With the opening of private investment in hydro in 1991 the situation further improved for Himachal. Under the new schemes projects could be allotted to private investors with the stipulation that the project will revert back to the state government after a lapse of 40 years, along with 12 percent free electricity. The new projects were also to pay money to various departments of the state to compensate for the protection of the environment under the provisions of the Environment Protection Act 1994. Himachal government realised that they stand to gain substantial revenues without actually investing money or directly getting involved in the execution. The first two projects to be allotted to the private sector were Baspa II (300 MW), and Malana (86 MW) in 1992. The micro projects (up to 5 MW) were entrusted under the care of Himurja in 1995. The small and large projects were to be handled by the HPSEB and Department of Power. The state government allotted the largest hydro-project of the state, Parbati

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79 Sri. Shanta Kumar, Budget Speech, 5th March 1992, Budget Speeches by Chief Ministers/Revenue Ministers, p. 655.
80 Ibid., p. 654.
81 Himurja is a Himachal Government organization which was only looking after unconventional energy source in Himachal till 1995.
project (2051 MW) to NHPC in 1998 and Kol dam (800 MW) to National Thermal Power Corporation (NTPC) in 2001. Many more projects were announced for bidding.

Hydro potential of Himachal evinced interest of many investors. Initially the process remained a little slow. The planners grappled with various issues of policies and technicalities and struggled to put in place a workable framework. Investors at times complained of gaps, ambiguity and inconsistency in these guidelines. The confusion was compounded by adhoc experimentation of policy measures. Issue of environment assumed prominence and engaged attention of the government.

By 2005 a clear conceptual policy had evolved and the investors had a better idea of their obligations and incentives. After consultation with all the stake holders and a thorough review of existing guidelines and directions, the state government announced the 'Hydro Power Policy' in December 2006. The main features of the policy have been discussed in the Annexure 3. This comprehensive policy is aimed at establishing a delicate balance between the need to harness power and to safeguard environment. It was particularly concerned with rights and interests of the people of the state and the environment. In fact, Himachal became the first state to insist upon the release of 15 percent water discharge downstream of projects, especially during the lean season. The government also decided not to construct four projects, namely; Gara Gosain (25MW) falling in Tirthan Valley which is kept free for the natural breeding of Trout fish, Baspa-I (210MW) to protect the Birch tree in Kinnaur, Chamba project (126MW) and Gharopa

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82 This was the first project to be executed by NTPC in Himachal Pradesh.
83 For details of the policy refer to Hydro Power Policy 2006, Department of Power, Himachal Pradesh.
84 Allotment of projects had by now become major political issue. The awareness of the people near the potential sites had reached a high degree. Politicians are educating them to be vigilant so that 'outsiders' do not take away the flowing wealth. They, however, did not tell them the costs and expertise involved in tapping this wealth. A good number of persons connected with power got few of these projects allotted to them. Mr. J.P. Negi, Principal Secretary Power and Environment 2003-2007, government of Himachal Pradesh, interviewed on 23rd October, 2007, Shimla.
(99MW) in Kullu valley. A total of 450 MW have been abandoned as they were detrimental to the environment.\textsuperscript{86}

Opening of hydro sector to private investment saw a mad rush of private investors. The allotment to private promoters also introduced system of patronage and spoils in grant of these projects, particularly in projects below 100 MW which were available without bidding. Allegations of corruption and political interference in allotment of these projects started dominating newspaper and Vidhan Sabha debates. Governments came under criticism for handing over projects to the private investors. The opposition in Vidhan Sabha critisised government for allotment of projects particularly to outsiders. A defensive government came out with a policy of reserving projects for locals.\textsuperscript{87}

The state started earning good revenues from hydro projects. In 2007 itself the Himachal government received Rs. 1200 crores from the sale of free power allotted to it.\textsuperscript{88} Revenues earned and likely to accrue from power projects allotted to Public Sector Enterprises and to private investors gave confidence to the government to take execution into its own hand. Further government could have easily raised money from multilateral agencies like World Bank and Asian Development Bank. There is also a grant portion attached to these loans. Such a combination was irresistible.\textsuperscript{89} Hence, a decision was taken to create state owned corporation to take specific projects. These corporations were

\textsuperscript{86} These measures can at best be described as half hearted. Detailed analysis of environmental impact has been made in Chapter 3, 4 and 5.

\textsuperscript{87} Small Hydro Projects up to 2.00 MW capacities shall be exclusively reserved for the bonafide Himachali’s and Co-operative Societies comprising of the bonafide Himachali’s. While allotting such projects up to 5.00 MW, preference will be given to the bonafide Himachali’s. Not more than 3 Projects shall be allotted for implementation to an IPP. \textit{Hydro Power Policy 2006}, p.

\textsuperscript{88} Mr. Arvind Mehta, Principal Secretary Finance, Government of Himachal Pradesh, Shimla, interviewed on 8\textsuperscript{th} September, 2008, Shimla.

\textsuperscript{89} ‘With ADB loans in hand Himachal govt. set to match others’, \textit{www.himvani.com/news/2008/04/29/}. 

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also a legal necessity as after the Electricity Act 2003 HPSEB’s legal status to carry such execution became doubtful. Also HPSEB’s only major venture, the 126-MW Larji project, turned out to be a major embarrassment for the government following huge time and cost over-runs, and also large-scale financial irregularities.

A new H.P. Power Corporation Limited was constituted in 2007 to take up major power projects for execution under the State Sector. Initially, three projects - 240-MW Kashang, 100-MW Sainj, 402-MW Shongtong-Karcham and the 111-MW Sawra Kuddu projects are planned to be executed by it. Power harnessing now is a combined endeavour of Central Government, State Government, Central PSUs, State PSUs, Private Companies, Foreign Entities, Societies, Partnerships and Individuals.

That Himachal has a tremendous power potential was not a secret when Himachal was born. Planners were very sure that harnessing hydro power generation is the prescription to alleviate all ills of poverty and backwardness. Aspirations, however, remained dreams only till 1991 when windows of opportunities were flung open. Of the identified hydel-power potential of only 6418 MW stands actualised. Projects aggregating 5951 MW have been allotted and are at different stages of execution. 8220 MW of hydropower projects still need to be allotted. Table 2.1 show the assessed and


92 Two corporations, Pabbar Valley Power Corporation (PVPCL) and Kinnar Kailash Power Corporation Limited (KKPCL), which were constituted in 2004 to take up hydro development in Pabbar Valley and in Kinnaur were merged with this new corporation.

93 CM Budget Speech 2008-2009 check citation available at http://himachal.gov.in/finance/Budget08.htm
actualized potential of Himachal Pradesh and Table 2.2 show the projects commissioned so far by the different agencies.

Table 2.1 Potential of Himachal Assessed and Actualised till 2008

<table>
<thead>
<tr>
<th>Basin</th>
<th>Total Assessed Potential MW</th>
<th>State Sector</th>
<th>Private Sector</th>
<th>Central/Join t Sector</th>
<th>Himurja</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Satluj</td>
<td>9866.55</td>
<td>150.25</td>
<td>300.00</td>
<td>2825.00</td>
<td>1.30</td>
<td>3276.55</td>
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<tr>
<td>Beas</td>
<td>4626.90</td>
<td>226.50</td>
<td>102.00</td>
<td>1496.00</td>
<td>42.05</td>
<td>1866.55</td>
</tr>
<tr>
<td>Ravi</td>
<td>2345.25</td>
<td>10.25</td>
<td>0.00</td>
<td>1038.00</td>
<td>11.40</td>
<td>1059.65</td>
</tr>
<tr>
<td>Chenab</td>
<td>2251.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
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<tr>
<td>Yamuna</td>
<td>602.52</td>
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<td>0.00</td>
<td>131.57</td>
<td>4.00</td>
<td>215.52</td>
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<tr>
<td>Other small rivers</td>
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<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
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<td>466.95</td>
<td>402.00</td>
<td>5490.57</td>
<td>58.75</td>
<td>6418.27</td>
</tr>
</tbody>
</table>


Table -2.2 Projects Commissioned and Capacity Installed till 2008

<table>
<thead>
<tr>
<th>Sr.no.</th>
<th>EXECUTING AGENCY</th>
<th>CAPACITY INSTALLED in MW</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>BBMB</td>
<td>2711.00</td>
</tr>
<tr>
<td>2</td>
<td>PSEB</td>
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<tr>
<td>3</td>
<td>NHPC</td>
<td>1038.00</td>
</tr>
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<td>4</td>
<td>UPSEB</td>
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</tr>
<tr>
<td>5</td>
<td>SJVNKL</td>
<td>1500.00</td>
</tr>
<tr>
<td>6</td>
<td>HPSEB</td>
<td>466.95</td>
</tr>
<tr>
<td>7</td>
<td>IPPs</td>
<td>402.00</td>
</tr>
<tr>
<td>8</td>
<td>HIMURJA</td>
<td>58.75</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>6418.27</td>
</tr>
</tbody>
</table>


Himachal has definitely emerged as an important player in hydro power generation. The state is expecting to generate huge revenue from it in coming years.\(^\text{94}\) It

\(^{94}\) By 2012 this income is likely to go up to 2000 crore and will constitute the biggest share of the state’s revenue. Ajay Mittal, Principal Secretary Power, Government of Himachal Pradesh , interviewed on 7th September 2008, Shimla.
has also become the first state in India to be granted a loan of 800 million U.S. dollars from the Asian Development Bank to develop some of its hydro projects.\footnote{The Loan has been granted in October 2008. It is for the first time that the ADB has granted such a huge amount of money to Hydro sector. Anuradha Thakur, Director ADB, Ministry of Finance, Government of India, interviewed on 8th December 2008.}

Himachal has made commendable stride in generating hydro-power. It has also succeeded in formulating a comprehensive ‘Hydro power Policy’ while the centre is still struggling. The revenues generated by the hydro-projects will be the major contributor in the state exchequer in coming years. In this sense it can be said to be ‘power state’. However, what is critical is to examine the viability of building so many projects. Are they environmentally feasible? Will they serve the long term interest of the state and the people? Or is it just a mad race to generate resources for the state, without giving enough thought for the time. These are some of the issues we are addressing in the coming chapters.