

# Sikkim's Initiatives in Hydropower

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**Abstract:** Sikkim is rich in hydropower potential in spite of its small area. National Hydroelectric Power Corporation Limited (NHPC) and other private developers are entering in hydropower sector of Sikkim. Though some of local people are in the protest of dams, the Government of Sikkim is hopeful and determines to achieve benefit largely from hydropower

**Keywords:** Sikkim, Himalayas, hydropower, environment

**Sikkim, formerly a** Himalayan kingdom is a small state in the northeast of India. Its total area is 7,096 sq. km with a total population of 540,851 (2001 census). Sikkim consists of very high mountains, nearly two-thirds of which are partly covered with snow from glaciers like the Zemu, Chamgsang, Lhonak and Talung. The geographic terrain ranges from 300m to 8,583m, and is drained by a large number of perennial rivers, the most prominent being the Teesta and the Rangit.

## Hydropower potential

India's hydropower potential is about 148,700 MW and currently about 32,442 MW is under operation. In 1974, a committee was constituted to study the hydropower potential in Sikkim. A preliminary survey revealed that power on river Teesta can be generated in a cascade arrangement in six stages.

At present, Sikkim has 95.7 MW in its power system, out of which 68.4 MW (12% of energy generated by NHPC) are received as free energy from Individual Power Producers (IPPs) and 5 MW from thermal plants. The rest is contributed to the system by small hydropower plants, though some of them are not in normal operation.

Sikkim welcomes private developers for developing and exploiting its hydropower potential, which has been assessed to 8000 MW peak with a firm base of 3000 MW. The Sikkim Power Development Corporation Limited has granted permission for 22 different hydropower projects, which will generate 4,924 MW. The list of upcoming hydropower projects are shown in Table 1. The total estimated cost of these project is about Indian Currency (IC) 25,000 crore (US \$ 62 billion).

	Project Name	Capacity (MW)	Developer Company	Probable Date of Commissioning	Present Status
1	Teesta Stage -I	280	Himalayan Green Energy (P) Ltd	2012-13	Under Investigation
2	Teesta Stage -II	330	Him Urja Infra (P) Ltd	2011-12	Under Investigation
3	Teeta Stage -III	1200	Teesta Urja Ltd	2011-12	DPR ready
4	Teesta Stage-IV	495	NHPC Ltd	2011-12	Under Investigation
5	Teesta Stage-VI	500	Lanco Energy (P) Ltd	2011-12	DPR ready
6	Lachen	210	NHPC Ltd	2011-12	Under Investigation
7	Panan	280	Himgiri Hydro Energy (P) Ltd	2011-12	DPR ready
8	Rangyong	117	BSCPL-SCL Joint Venture	2011-12	Under Investigation
9	Rongnichu	96	Madhya Bharati Power Corporation	2011-12	DPR ready
10	Sada-Mangder	71	Gati Infrastructures Ltd	2011-12	DPR ready
11	Chuzachen	99	Gati Infrastructures Ltd	2009-10	Under Construction
12	Bhasmey	51	Gati Infrastructures Ltd	2011-12	DPR ready
13	Rolep	36	Amalgamated Transpower India Ltd	2009-10	DPR ready

	Project Name	Capacity (MW)	Developer Company	Probable Date of Commissioning	Present Status
14	Chakung Chu	50	Amalgamated Transpower India Ltd	2011-12	Under Investigation
15	Ralong	40	Amalgamated Transpower India Ltd	2011-12	Under Investigation
16	Rangit-II	60	Sikkim Ventures (P) Ltd	2011-12	DPR in final stage
17	Rangit-IV	120	Jal Power Corporation Ltd	2011-12	DPR
18	Dikchu H	96	Sneha Kinetic Power Projects Ltd	2011-12	
19	Jorethang Loop	96	DANS Energy (P) Ltd	2011-12	
20	Thangchi	499	Lachung Power (P) Ltd	2011-12	Under Investigation
21	Bimkyong	99	Teesta Power (P) Ltd	2011-12	Under Investigation
22	Bop	99	Chungthang Power (P) Ltd	2011-12	Under Investigation
<b>Total</b>		<b>4924</b>			

Table 1. Upcoming Hydropower Projects in Sikkim  
(Source: www.sikkimpower.org)

As a rule, Sikkim gets 12% free energy produced in Sikkim by IPP. This will increase to 15% after 12 years of project completion. After 35 years of operation, the project would be transferred to the State Government free of cost. Besides that, the Sikkim

government can invest having equity of 26:74 ratios in some of the hydropower projects. Presently, the Sikkim government is collecting about IC 100 crore as annual revenue from power sector.

Chief Minister Dr. Pawan Chamling claims that by the year 2015 Sikkim will be earning INR 1140 crore (US \$ 280 million) per year from hydropower. Dr. Chamling has lead the Government of Sikkim since 1994.

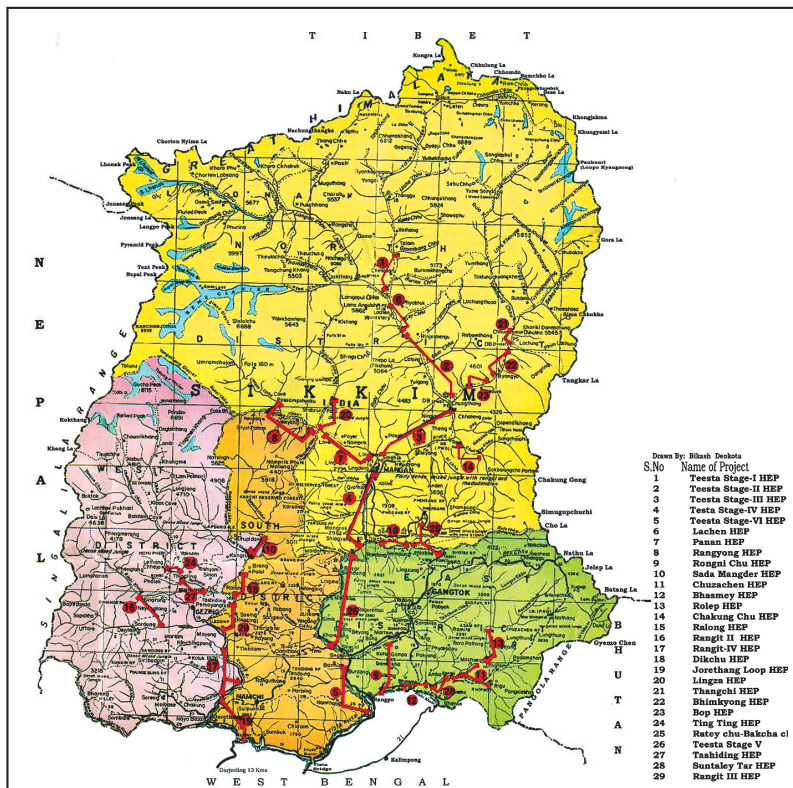


Figure 1. Power Map of Sikkim (Source: www.sikkimpower.org)

### NHPC in Sikkim

The National Hydroelectric Power Corporation Limited (NHPC), a Government of India enterprise, is the first developer in Sikkim to have Rangit-III of 60 MW, which was commissioned in 1997. Secondly, the NHPC has developed the Teesta Stage-V project of 510 MW installed capacity, which was commissioned in April, 2008. Both are run-of-the-river schemes.

The NHPC has planned other two hydropower projects: Teesta Stage-IV of 495 MW and Lachen of 210 MW. In the downstream area of the Teesta, located in Darjeeling District, the NHPC has been engaged in developing other hydropower projects. The Teesta Low Dam-III Hydroelectric Project (HEP) is under construction and will be commissioned by September 2009 with a capacity of 132 MW. The NHPC has also planned to implement another project, the Teesta Low Dam-IV with

a capacity of 160 MW in the Darjeeling.

### Protests of Affected Citizens Teesta

Though mostly the upcoming hydropower projects already have environmental clearance (EIA approval), some people are arguing that these projects are neither environmentally friendly nor socially acceptable. The indigenous Lepchas, in particular, are unhappy and are protesting the hydropower projects in Dzongu area of northern Sikkim. Seven hydropower projects of different capacities have been proposed in the Lepcha Reserve of Dzongu.

According to the 2001 census, there are about 7,000 Lepchas living in the Dzongu reserve. Their main concern is that the huge influx of work force for construction and operation of these projects would demographically and culturally inundate the Lepchas in their last stronghold.



Hunger Strike against Hydropower Projects  
(Photo by Author)

The conservationists are continuing their movement to stop these hydropower projects under the banner of the Affected Citizens of Teesta (ACT). The ACT website condemning NHPC mentions that environmental issues have been neglected while executing the Rangit-III HEP and the Teesta Stage-V HEP. The website further states that carelessness by the implementing agencies and the inability of the regulatory bodies at the central and state levels to safeguard the interests of the people have made local people panic and detest the projects.

There are about 30 major enactments related to protection of environment now being administered by the central and state governments of India (Goel 2000).

### Hydropower: No option

Over the last few years, Sikkim has achieved an economic growth rate of 8.5%. The government effort has started yielding significant results to Sikkimese people. For example, over 90% of the state's villages

have been electrified. Sikkim aims to keep pace with India, especially with regard to organic farming, tourism and, largely, the hydropower.

Contrary to the ACT, a faction of people from northern Sikkim is strongly in favor of the proposed hydropower projects. They visited Chief Minister Dr. Chamling during the first week of April 2008 and presented a demand to implement the projects as soon as possible. If not, they threatened to stage a pro-hydropower movement.

The Sikkim Government is determined to go ahead implementing the hydropower projects. The government is committed to mitigate adverse impacts and enhance beneficial impacts from the projects. New policy is coming forth in 2008 by which 1 percent of royalty will go towards development of project affected areas in addition to the existing environmental levy at rate of IC 0.001 per unit energy.

Ultimately, a compromise should be made with responsible attitude and investing adequate budget for environment and socio-economic concerns during both the construction and operations phases of the projects. A mountainous state like Sikkim has no other viable options.

### Lessons for Nepal

The prerequisite for hydropower development are political stability and willpower. The concern authority authorities in Nepal should determine how hydropower development can be achieved and, at least, publish a list of upcoming hydropower projects for the public. Hydropower developments should be conceived so that local people in project areas feel that they are beneficiaries, not victims.

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### Notes

1. This article is based on a field visit during April 2008 and interviews with the following persons in Gangtok, Sikkim: Mr C.L. Thakur (Gen. Mgr.) and Mr P.D. Chaktha (Asst. Mgr., Sikkim Power Development Corp. Ltd); Mr G. Chhetri (Superintendent Engineer/Electrical, Energy and Power Department, Government of Sikkim); Ms M. Lepcha (Gen. Secretary, Concerned Lepchas of Sikkim), Mr. I. Lepcha (Member, ACT); and Dr S.K. Bajpayee (Asst. Mgr./Environment, National Hydroelectric Power Corp. Ltd, Teesta Stage-V Hydroelectric Project).

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