

## ENVIRONMENTAL AND SOCIAL IMPACTS OF TEESTA V HYDROELECTRIC PROJECT, SIKKIM: AN INVESTIGATION REPORT<sup>1</sup>

The Teesta V hydroelectric project, is the first to be taken up in the six stage 'cascade' plan to harness 3635 MW of hydropower, all within 175 kms. of the river Teesta in Sikkim. It is a run-of-the-river scheme, involving a concrete gravity dam 96.45 m high and 182.5 m long at Dikchu which will raise the water level upstream before it is diverted through a 17.5 km long 'head race tunnel' (HRT) to the powerhouse at Balutar. The project was started in 1999 and is due to be completed by 2006. The project, being implemented by the National Hydroelectric Power Corporation (NHPC) is expected to generate 510 MW. Clearances under the Environmental (Protection) Act, 1986 and Forest (Conservation) Act, 1980 were obtained in May 1999. The Memorandum of Understanding (MoU) was signed between the State Government and the NHPC in the year 2000.

The project is spread over three districts of Sikkim (East, North and South), with most of the land from East District. The traditional communities of Sikkim, the Lepchas and Bhutias are in a minority here as in the whole state. Their demographic status changed to being a minority community due to the influx of Nepali and other communities into Sikkim. The Lepcha community is often referred to as 'the vanishing tribe'. The Maharaja of Sikkim, through a proclamation<sup>2</sup> in 1956 safeguards the rights of these traditional communities over their land in North Sikkim. Dzongu is an area within North Sikkim that is reserved only for the Lepcha community. Although, most of the area on which the project is located is inhabited by the Nepali community, some land from Dzongu has also been acquired.

### Problems at the stage of planning and decision making

The relatively smaller submergence and lesser regulation of water as compared to a 'storage dam' has been used to project this scheme as being 'environmentally benign'. This perception conveniently ignores the impacts of several features intrinsic to this design. The project involves extensive tunneling in a geologically fragile landscape, the environmental and social impacts of which are grossly underestimated.

**Environmental Public Hearing:** The environmental public hearing for Teesta V was held on December 2, 1997 as mandated by the Environmental Impact Assessment Notification, 1991. The venue was the forest department premises in the state capital, Gangtok. It was attended by some local groups. Had it been held closer to the project site, more people to be affected by the project would have had a chance to participate in the hearing. Several pertinent questions regarding the problems due to influx of labour, employment for locals, loss of agricultural lands, environmental damage were raised at the meeting. However, NHPC did not provide specific answers to any of them. They probably had no specific answers as the environmental impact assessment studies were still to be completed and the Rehabilitation and Resettlement plan was yet to be prepared by a committee. Shanti Bhattarai, of Yuva Jagruti Manch, Lower Samdong went to attend the hearing after having got the news about the event through a friend. Even after the meeting, the villagers and he remained ignorant of the technical aspects and probable impacts of the project. It is only after the project was initiated that the people of Lower Samdong started realising the impacts of this hydel project.

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1. This report is based on an investigation done by Manju Menon and Neeraj Vaghlikar of Kalpavriksh Environmental Action Group in May 2004.
  2. The Proclamation of His Highness Sir Tashi Namgyal dated Aug 30, 1956 and the Notification No. 3069 of Home Department, Govt of Sikkim (March 24, 1958) protect the rights of the Lepchas and Bhutias over their lands by not allowing sale of lands to non- Lepcha/Bhutia Sikkimese citizens.

**Clearance granted before reports submitted:** The Expert Committee<sup>3</sup> on River Valley Projects of the Ministry of Environment and Forests (MoEF) in its meeting held on 11.1 99 sought that detailed studies on ethnography and biodiversity are needed to understand the impacts of the proposed project on biodiversity and local communities of Sikkim before granting clearance to the project. Prior to this, the Environmental Impact Assessment report was examined and found to be inadequate on these aspects.

Following this, the ethnographic study was awarded to the Water and Power Consultancy Services (WAPCOS). As desired by MOEF, the biodiversity study was entrusted to Wildlife Institute of India, Dehradun. However, the issue regarding environmental clearance was discussed between Secretary (Ministry of Power) and Additional Secretary (MOEF) wherein it was felt that the environmental clearance of the project need not be held up till completion of the ethnographic and biodiversity studies<sup>4</sup>. The project was granted environmental clearance before these studies were completed. In effect, biodiversity and ethnographic concerns were not considered in the process of clearance of the project.

The expert committee also stated that the project should be cleared only after a carrying capacity study of river Teesta is done. However this was not agreed to by the project proponents<sup>5</sup>. As a result Teesta V was delinked from the carrying capacity study and considered for clearance. One of the conditions of clearance was that no new projects would be allowed on river Teesta in Sikkim until such a study is done.

**Citizen's inputs not given consideration:** The period during which the Memorandum of Understanding (MoU) was to be signed between the state and NHPC saw a lot of action by a citizens group called the Joint Action Committee (JAC)<sup>6</sup>. Formed in April 1999, comprising mostly citizens of North Sikkim, their main concerns with regard to the Teesta projects (Teesta V as well as the other upstream projects that are proposed to be taken up in the future) were about demographic changes that the project(s) would lead to due to influx of labour from outside Sikkim, whether the project(s) would generate long term employment opportunities and the environmental impacts of the project.

The JAC worked out a detailed list of points that should go into the MoU, however most of them were not included. The JAC members we spoke to indicated their extreme disappointment that an opportunity to plan a large project with care and execute it by ensuring that the benefits of the project be maximised in favour of local people was grossly underutilised. This occurred despite the constitution of an MoU committee by the Chief Minister.

The JAC feels that the state should have sought more than the mandatory 12% of generated power that is given free of cost. The labour permit system could have been made more systematic. They also feel that a full department should have been created to oversee the implementation of all aspects of this project. At present, there are several aspects of the project that need to be monitored. A few monitoring committees have been set up but it is unclear as to what aspects each of the committees is supposed to monitor. They all function independent of each other. There is ambiguity regarding who the members of some of the committees are and how often they need to meet to fulfil their task. Most importantly, citizens have very little information about these committees and their mandate.

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3. This committee comprising experts from diverse fields makes recommendations to the MoEF regarding clearance of projects and the conditions under which projects should be cleared.

4. Feasibility Report on Teesta H.E Project (stage V), March 1999, Pg 13

5. Minutes of the Expert Committee meetings

6. 'Sikkim hydel project encounters ethnic resistance', The Times of India, August 31, 2000

## **Environmental and Social impacts**

**Tunneling and blasting:** The work on the Head Race Tunnel (HRT) and the associated ‘adits’<sup>7</sup> at five places along the tunnel length have already caused serious problems. Complaints of cracking houses, drying up of water resources and landslides have been streaming in from local people living above the tunnelling area. The list of project affected persons is clearly much longer than what was calculated in the planning stages (only those whose homes or lands were going to be submerged were listed).

In May 2004, the villagers of Amdara, situated above the damsite, started moving out of their damaged homes. The blasting of rock for tunnelling has resulted in cracking of constructions above this area. The villagers pointed out that the problem had begun two- three years ago. The problem has not been redressed although they have petitioned the district authorities. During this summer (2004) a few of the buildings along the main road developed deep cracks following a land slide induced by the blasting at the project site. The residents decided to have a meeting with the District Commissioner.

As per their last communication with the project authorities, they had been asked to move out temporarily on the condition that the cost of the rental accommodation would be borne by the project authorities. There was no indication of where such accommodation was available. After construction activities ceased, they could come back to their homes if they were not damaged. If they were damaged, they would be repaired/rebuilt. The solution is ad hoc and piece meal. There were no written commitments made by NHPC.

The project suffered a huge setback when the surge shaft collapsed. During the investigation of the surge shaft collapse, a resident of Khamdong bazaar told the news reporter that NHPC had callously felled all trees in and around the area loosening the soil. He added that the walls of the Lower Khamdong Primary school had developed huge cracks as it was just near the fencing of the shaft. The report on the causes of the surge shaft collapse by the State department of Mines and Geology states “Lower Khamdong Primary School area where the failed shaft is today is a small spur with a history of stability as indicated by the geomorphology, soils and orientation of the in-situ rocks, especially below the Singtam-Dikchu road level. The effected spot is subjected to massive excavation (road building, shaft construction), vibrations (dynamite blasts, heavy vehicular movement, earthquakes) and development of stress relief features, negligence and untimely rectification of these adverse features...”

The biogas plants established by Khadi and Village Industries Commission (KVIC) two years ago in Lower Samdong village have also become dysfunctional as they have developed cracks. KVIC is not willing to repair these plants under the guarantee scheme, as the scheme does not cover these kind of physical damages. The villagers formed a committee of affected persons six months ago and have petitioned the NHPC and the DC regarding this matter but no action has come out of this so far.

The village is also facing water shortages. Some of their drinking water sources, which were perennial streams, have now turned seasonal and dry up in the summer months. The villagers relate this problem directly to the tunneling activity going on beneath their land. The villagers also said that their crops and trees are also beginning to get affected by this activity. They feel that the gas used in drilling and blasting may have brought down the productivity of cardamom crop by 50%. This is the main cash crop of the area and important for the livelihood of the local people.

The dust pollution caused by the stone crusher near Adit III is very high. It is located right in front of the government school. Students and teachers are facing a great problem due to the dust and

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7. A horizontal passage from the Head Race Tunnel opening into the river.

noise that is generated all day. The villagers say that the dust also affects the flowers of fruiting trees and their productivity.

**Excavation of muck:** The tunneling also makes necessary the removal of huge quantities of muck and rock debris. NHPC has earned itself the name '*Uttani Musa*' (Mountain Mouse in Nepali) for digging the insides of the Sikkim mountains. The disposal of muck has been handled very poorly in the project. Large quantities of muck have been dumped directly into the river, constricting the river flow and increasing the threat to downstream areas. The V-shaped valleys offer limited flat lands for disposal too. Even though there are muck disposal sites demarcated in the Environment Management Plan, the disposal has been done in nearby reserved forest areas as it saves the company time and resources that would have otherwise been required for transportation of muck.

In May this year, the bridge across the river connecting the Lepcha village of Lum with Dikchu and Singtam collapsed<sup>8</sup>. This was due to the muck which was being dumped from the left bank which had already encroached a significant portion of the river and water of the river was being forced through a constricted passage. In such a situation the river is likely to have scoured the right bank where the concrete pillar supporting the bridge was lodged. It also seemed that some of the muck might have been dumped directly on the bridge. A day after the collapse, some people from Lum crossed the river using ropes and stormed into the NHPC office at the project site. They were angry as the bridge was the only link to the other side of the river and access to markets and other towns. It was this bridge that a local group, Affected Areas People's Representation Forum had been requesting NHPC to repair since 2002.

Students had begun to face a serious problem as the school was situated on the other bank. The absence of the bridge would also make life difficult for the aged and the ill as they had now lost access to the Primary Health Centre located in Dikchu.

**Loss of biodiversity:** 'From the limnological point of view, there will be no doubt an ocean change in the ecology of river Teesta, when dam is constructed. Here the running water system is suddenly forced to become a stagnant water system which will have a tremendous influence on the biodiversity of the area. The species composition is subjected to undergo a drastic change from torrential species to stagnant species. The dam itself may pose a barrier to migratory fishes like Mahaseer and others... Similarly the reduced volume of water cascading downstream will also have a far flung effect on the downstream aquatic life.' (quoted from Environment Impact Assessment report of Teesta V)

"Sikkim is a land of mists, with rhododendron and orchid blooms adorning the slopes in season. Lichen clothes the trees of the region and Himalayan tahr, bharal and the red panda (the symbol of Sikkim) hang on tenuously to existence in its forests. Incidentally, there are more butterflies in Sikkim than in the entire United Kingdom and the survival of each of these butterfly species is intimately linked with specific flowering plants that the project seeks to drown", says Bittu Sahgal editor of Sanctuary Magazine.

**Loss of land:** One the aspects used as a justification for the Teesta V project was that unlike projects with large submergence, this project will utilise only 67.75 ha of land. The total non- forest land used for the project is 204.5 ha. Sikkim is a small, mountainous state. 80% of the state is under the administrative control of the Forest Department. Approximately 11% of the total geographical area is under agriculture. Upto 65% of the population is engaged in agriculture of which almost 8% are agricultural labourers.<sup>9</sup> This indicates the importance of agriculture in the economic activities of

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8. 'Bridge collapses at NHPC site', North-Eastern Weekend Review, May 21-27, 2004.

9. Sikkim State Biodiversity Strategy and Action Plan (Draft report), Department of Forest, Environment and Wildlife, Government of Sikkim, 2003

the state and the extent of population supported by the limited agricultural lands. The lands along the river are the most fertile and productive. The acquisition of fertile agricultural lands by a project affects the population dependent (owners of lands and wage labourers) on it until and even after new sources of revenue generation are found. The loss of such land for the local people due to the project should be seen in light of the limitations already posed by the terrain and the ownership of the land as well as the extent of dependence on it.

**Random constructions for rentals:** The demand for rental accommodation by the labourers has caused many new constructions to come up near the project area. Some of these are hastily built, multi storied constructions without adequate attention given to safety norms.

**Resettlement and Rehabilitation:** The rehabilitation and resettlement plan indicated that two sites in Khamdong and Lower Samdong would be created for the oustees. However it was later found that the villagers of Lower Samdong refused to allow the resettlement in their village. So all the families displaced are to be rehabilitated in one site. It is not known if the village had earlier agreed to resettlement of oustees in their village and subsequently changed their mind or whether they did not know of the plan and stated their opposition to it when they finally got to know of it. The oustees later rejected the site proposed for R and R.

In its monitoring report in 2002, the State government brought to the notice of NHPC that their activities had displaced families without providing them the R and R package as committed.

The number of fully affected families at the time of clearance and signing of MoU was 72. This number came down to 49 subsequently. Whether this number is based on a subsequent survey is not known. These families who had lost their land and homes were eligible for a job as per the MoU. But this did not come easily to them. Only some of them were employed by the Company initially despite the lobbying by several politicians and affected families. One individual from each of the 42 families displaced by the project was given a job by NHPC. This exercise was completed just prior to the assembly elections in May 2004 although these families have been seeking it for the last two years.

**Influx of people:** The Expert Committee required the project authorities to conduct an ethnographic study before considering clearance of the project since it is situated in close proximity to the settlements of the Lepchas and Bhutias. Water and Power Consultancy Services, New Delhi was asked to do this study.

The study identifies that the project will bring along with it a large number of outsiders and this will have an irreversible impact on the Lepcha and Bhutia communities residing in the area. The report raises fears that besides the direct impact of loss of their lands, the influx of large number of labourers may affect the culture and way of life of the community, may cause “ a sense of deprivation and loss of ethnic identity” result in “dilution of their social customs and practices” and may affect the availability of labour for work on their remaining fields. The presence of a large number of people in an area which was earlier sparsely populated may also result in health problems and outbreak of diseases including those that may not have occurred in the past within the community<sup>10</sup>.

However the environmental clearance letter granted before the completion of this report only states that the labour camps should be located outside the Lepcha and Bhutia settlements and that when the project is completed, the labour force must not be allowed to settle anywhere in Sikkim. These

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10. Ethnographic Study. Impact of Teesta (Stage V) H.E. Project, Sikkim, on the tribal communities with special reference to Lepchas and Bhutias. Centre for Environment, Water and power Consultancy Services (India) Ltd., New Delhi, July 1999.

conditions laid down are easier said than done and may not go very far in protecting the tribal communities from the influx of a large population of migrant workers for a minimum of six to eight years.

**Health impacts:** The influence of the project and its labour on the health of the local communities needs to be studied urgently. The Targeted Intervention (TI) programme under the Sikkim State Aids Control Society has already undertaken AIDS and Sexually Transmitted Diseases (STD) awareness programmes in the entire project site through a few local NGOs. The programme identifies migrant workers like those who are employed by the Teesta V project as a vulnerable group. There is reason to believe that the number of persons with STDs has gone up tremendously after the project started. The highest number of STD cases are reported from East district in 2003 (96 from East, 3 from South, 18 from West and 0 from North)<sup>11</sup>. During the year 2003, the 178 patients accessed the services of the Drop- in Centre run by the Dikchu Youth Welfare Association that works on Aids and STD awareness near the project site. Of these 64 patients were suffering from STDs (36%).

As per the observations and discussions with local people and the Association, the labourers who have not been provided accommodation by the project authorities rent out rooms or entire homes of locals. This arrangement means that locals and migrant workers interact closely. One of the coordinators of the TI programme told us that the number of STD cases in Adit II and IV is much higher as the work site is very close to the villages and many labourers have rented accommodation there. The Adit III site is at a distance from Makha, this could be a reason for fewer cases here.

We spoke extensively to the members of Yuva Jagruti Sangh, another NGO working on the TI programme of the State AIDS cell. They have been working with 1500 labourers in the Lower Samdong, Makha and Singbel areas, where work is taking place for Adit II, III and IV of the hydel project. According to them, although it is impossible to establish that the labourers are responsible of affecting the locals with STDs due to lack of baseline data, it is confirmed that many workers suffer from STDs and there is no screening of workers before they are brought in to Sikkim for work. This along with the fact that the highest reporting of STDs in the state is from the project site gives reason to believe that there is a positive correlation between the emergence/increase of STDs and the presence of migrant labourers.

The NGO members also told us that the Company dispensary does not cater to this problem of the labourers. As a result, the workers depend on the services of the NGO and the state.

The residents of Lower Samdong told us *“We first welcomed this project as it was supposed to bring development to the state. But until now we have only seen the negative impacts of the project. So we cannot speak positively about the project now. We have been dealing with the negative impacts phase-wise. First was the issue of compensation, now it is of the impacts of blasting. When you come here next, the issue then may be something else”*.

### **Violations by NHPC**

The project received environmental clearance from the Union Ministry of Environment & Forests (MOEF) in 1999 and the MoU between the Government of Sikkim and NHPC for the project was signed in August 2000. Since early 2001 the Department of Forests, Environment and Wildlife (DFEW) started detecting violations. They identified that NHPC had been dumping of huge quantities of excavated muck and debris into the river, on the river banks and surrounding Reserved Forests. These are a violation of state forest laws as well as the mandatory conditions of clearance granted under Central laws such as the Forest (Conservation) Act, 1980, and the Environment

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11. CMIS Report No.TII 10-A, dated May 27, 04

(Protection) Act, 1986. In addition, it amounts to a violation of the MoU signed with the Sikkim Government. Most importantly, this poses grave environmental and social risks in the downstream areas, particularly due to narrowing of the river course. In 2002, the Teesta waters washed away a temporary bridge and a huge quantity of muck from the powerhouse site. Repeated warnings by the DFEW earlier had resulted in the removal of only 2% of the illegally dumped muck by NHPC!

Other violations detected by the state government in the early stages include setting up labour housing illegally on forest land, land set aside for muck disposal as per the Environment Management Plan (EMP) used for setting up other project components, untreated sewage being released straight into the river. While corrective action was taken for some of these violations, many remain unaddressed.

Continued non-compliance by NHPC despite repeated summons/notices/reports forced the DFEW to file a petition in the court of the District Judge (East & North) Sikkim (Civil Suit No. 28 of 2002) against the company and its contractors in late 2002. A compensation of 14 crores has been sought by the Department. In November 2002 the court issued an ad-interim injunction restraining the company from violating the law. Till today the DFEW has filed several contempt petitions since NHPC has failed to comply with the orders. The Ministry of Environment & Forests (MoEF) verified the violations and in September 2003 gave a show-cause notice to NHPC for violations of environment and forest laws, thus supporting the state government's action.

These are not the only violations that NHPC is guilty of. One of the mandatory clearance conditions requires the company to ensure thorough examination and adequate treatment of all labourers to be engaged in the project by health personnel before issuing them work permits. This condition assumes great importance, since one of the prime concerns expressed in the project planning stage by the Sikkimese people was the impact of the influx of a huge number of labour in the state. The data on sexually transmitted diseases (STDs) from the damsite would not have been so alarmingly high if this condition was complied with. This is a sensitive issue and needs to be addressed with great care.

Every project promises to create employment opportunities for locals and Teesta V was not exception to this case. But there seemed to be a lot of cynicism and displeasure among locals regarding this promise that was not kept by NHPC and other contractors. The labourers that we spoke to indicated that they were all from outside Sikkim and that many had also worked on earlier hydro projects built by NHPC and the contractor, Jaypee Company. The construction works requires skilled manpower and this reduced the possibilities of employment opportunities for local people.

The monitoring report of the Government of Sikkim (March 02) states "The Rehabilitation and Resettlement Plan has not been implemented at all and from the site visit of the project area it was found that many people have been made oustees without giving any R and R package. This is a major non-compliance of condition stipulated and the project authority should not have started the work without giving R and R package to the oustees. Neither the state government nor the district administration have been informed by the project authority that some people have already been made oustees. Even the selection of the R and R site has been made without taking the oustees into confidence and without the knowledge of the R and R State level committee. The construction at the site have also been started without the knowledge of above."

The demonstration of the problems associated with Teesta V has caused the Lepcha and Bhutia communities of North Sikkim to vehemently register their protest against the proposed stages I, II, III and IV of the Teesta cascade development plan. In a letter dated 7.6.2003, written to the Vice Chairman of the National Commission on Scheduled Castes and Scheduled Tribes, Namgyal

Lepcha, President of a local Lepcha organisation, highlights the environmental, social, cultural and political problems foreseen by the Lepcha community if these projects are allowed to come up within their territory<sup>12</sup>. In Nov 2003, Dawa Lepcha, a vocal member of his community along with many others wrote to the Governor of Sikkim seeking the review of the mega Stage III and IV projects proposed to be built in North Sikkim due to the overwhelming opposition to these projects. He states that “the land which we have under our possession is our ancestral land tied to our culture and history and dear to us. Our religion based on nature will be destroyed by the advent of such a large project. Our delicate social, cultural and historical fabric will be destroyed by the advent of such a project. The delicate ecosystem of the valley will also be destroyed. The coming of large number of workers for the project will unbalance the demographics of the area having long term repercussions on the survival of our tribe.”

The local communities living around the project area have unfortunately been made to bear consequences of an ill-conceived project. NHPC, the project proponent has been repeatedly violating the conditions of clearance in mindless and complete disrespect for the laws of the land and the security of the local people and the environment. It is high time that the monitoring agencies, government departments and financial institutions get NHPC to mend its ways.

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12. ‘Lepcha Youth Association meets Vice Chairman of NCSTSC’, Gangtok Times, June 16-22, 2003



## Annexures

1. 'NHPC continues dumping in contempt, alleges Forest Department', Now!, August 28, 2004
2. 'Marchak slide endangers 8 houses, NHPC tunnelling blamed', Now!, August 28, 2004
3. 'Violating the Teesta', The Statesman, June 26, 2004
4. (1) Lum hanging on to nightmare ladder  
(2) Lum hanging on to nightmare ladder, North-Eastern Weekend Review, June 20, 2004
5. Photo 1: Muck and debris heap in Teesta (Manju Menon) Size: 163 KB (JPEG).



Photocredit: Manju Menon

A huge mound of muck and debris (left of picture) encroaches the river bank and course downstream of the damsite. This was responsible for bringing down the bridge (centre of picture) connecting the Lum village in the Dzongu area (right of picture) in May 2004.

6. Photo 2: Muck dumped in river (Neeraj Vagholikar) Size: 190 KB (JPEG).  
Photocredit: Neeraj Vagholikar  
Suggested caption: Muck and debris (right of picture) encroaching the river course. This was responsible for bringing down the bridge connecting the Lum village in the Dzongu area (left of picture) in May 2004.