

SOCIAL IMPACT ASSESSMENT OF TEESTA STAGE IV PROJECT

PART I: STUDY REPORT



**Centre for Excellence in Management of Land Acquisition,
Resettlement and Rehabilitation (CMLARR),
Administrative Staff College of India (ASCI),
Hyderabad, India**

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Administrative Staff College of India
Bella Vista : Hyderabad

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ASCI Study Team

PREFACE**SIA Study of Teesta Stage IV Project**

The intimation for initiation of the Social Impact Assessment (SIA) Study was first received by the Study team in October, 2016. The Study team visited the area in November, 2016, shared requirements for data with the district administration/ NHPC and conducted field testing of the census/socio-economic survey questionnaire at Tingchim Chandey with the support of the Panchayat officials. The Notification for the SIA study was published in the District Gazette on December 15, 2017 and the same was shared in local language with the Panchayats during the first week of January, 2018, after which the census survey was initiated in the affected Panchayats of the Left Bank. The project envisages a total land requirement of 272.84 hectares i.e. 177.43 ha of private land, 3.31 ha of government departmental land and 92 ha of forest land (khasmal) from ten Gram Panchayat Units (GPU) of North Sikkim District (Mangshila Tibuk, Tingchim Chandey, Ringhim Nampatam, Ramthang Tanyek, Namok Swayem and Singhik GPUs on the left Bank of Teesta river and Passingdang Safo, Lingdong Barfok, Hee Gyathang and Lum Gor GPUs on the Right Bank).

The Study received enthusiastic participation from the Panchayat officials and all other stakeholders from the six GPUs of the left bank who are looking forward for a swift roll out of the much delayed project. However, the survey on the right bank (Dzongu region) was resisted by the representatives of the Panchayats. Dzongu region, famously known as the abode or reserve of the indigenous Lepchas holds historical significance for the Lepcha community. It is important to understand that the region saw a revolt against the hydro projects during the period 2006-08. The Affected Citizens of Teesta (ACT), Concerned Lepchas of Sikkim (CLOS), Indigenous Lepcha Tribal Association (ILTA) were groups that led the movement. The Lepchas were known to have organized hunger strike in three different places—Gangtok, Kalimpong and Darjeeling. The long drawn hunger strike at Gangtok in June, 2007 was called off only after the announcement by the Government of Sikkim to stop construction of four planned projects in the Dzongu region. The two projects that were not scrapped included the Panan HEP III, to be developed by Himagiri Hydro Energy Private Limited and the Teesta IV project to be developed by NHPC Ltd (for which the present SIA Study is conducted).

Presently, the affected community of Dzongu region seems deeply divided between two factions; first comprising of people who would not like the project to be constructed in the area and second comprising of those who would like the project to come up swiftly and uplift the socio-economic development of the region. The former category is being led by the representatives of the Panchayats and activist organisations supporting the anti project movement while the latter category, primarily includes the landowners whose lands are proposed to be acquired for the project. In January 2018, during the initiation of the SIA Study and in response to a letter by the District Collector inviting the attention of the Panchayats to the Study, a representation recording their opposition towards the Teesta-IV project was submitted by the Panchayats from Lingdong-Barfok, Hee-Gyathang, Gor Taryang and Safo-Passingdang GPUs. The grounds for the objection included the rejection of the project by majority of Gram Sabhas in Dzongu (right bank) as per

the Schedule Tribes and other Forest Dwellers (Recognition of Forest Rights Act, 2006). In March, 2018, during the second phase of SIA consultations process, another letter for boycott of the consultation meetings was sent by the Panchayats of Hee Gyathang and Gor Taryang. The notice for public hearing from the district administration (on 2nd and 3rd June, 2018 at Hee Gaythang and Lum Gur Sangtok) was also boycotted by the Panchayats with a request for postponement. However, majority of landowners took a special permission to attend the public hearing held at Mangan on 30th June, 2018. Despite the challenges encountered by the Study team outlined above, the team diligently went through the SIA Study.

The Study team made several formal/informal efforts to reach out to the representatives of the Panchayats of Dzongu area to be part of the Study and put forth their recommendations, grievances or views relating to the project. It was also stressed time and again that the SIA is a platform for consultation with the affected community and provides them an opportunity to record their grievances and reasons for opposing the proposed project. However, for reasons that may have to do with the discouraging past experiences with projects or the prevailing environment of mistrust, the local Panchayat officials remained steadfast in their stand. As the Study team apprised the district administration about the stand taken by the Panchayats, their lack of cooperation in the SIA Study and pondering over the alternatives in the given scenario, the affected landowners from Dzongu found ways of reaching out to the SIA Study team and volunteered for the census survey and consultation process. The landowners vociferously argued that they have been awaiting the project for a decade and that the Study team should give credence to their views as primary stakeholders. The arguments put forward by the landowners certainly could not be ignored. Accordingly, the Study team conducted the census survey of landowners of various GPUs of the Dzongu area, covering 70 percent of the landowners proposed for acquisition for the project. The mandate of the SIA Study is to forecast the impacts caused by the proposed project to the project affected families/ community and design appropriate mitigation mechanisms. The census survey is one of the tools considered for the purpose. After giving the households multiple opportunities to participate in the surveys, the Study team went ahead with the completion of the Study, also making use of other tools viz. key informant interviews, consultations / discussions with other stakeholders volunteering to air their views etc.

Among the pro-project initiatives, in July 2015, the affected landowners of Dzongu area had sent a representation to the District Collector, with a copy to the Chief Minister, Secretary (Land & Revenue Department) stating that after the joint survey of the Land & Revenue Department and Forest Department in 2008-09, the authorities had forbidden any kind of cultivation on the lands proposed for acquisition. In December 2015, the affected landowners of Dzongu region sent another representation to the District Collector requesting compensation and R & R in line with the RFCTLARR Act, 2013. The formation of Stage IV HEP Affected Area Development Committee by the landowners of both left and right banks is a joint initiative by the pro-project landowners to push for development initiatives by NHPC while securing their rights for fair compensation and R & R benefits under the existing law. The objective laid out for the Committee include project awareness programmes, ensure maximum employment opportunities for the local youth, ensure

proper compliance of labour laws for labour influx issues, preservation of local arts, crafts and tradition and infrastructural developments in the area.

Though the Study team would not like to put on record the oral allegations/counter allegations made by the opposing groups, it remains a fact that the project has undergone years of delay and changes of stand by stakeholders in the Dzongu area. In December 2009, a representation submitted to the Chief Minister and signed by the Panchayat representatives of the three affected Panchayats of the Dzongu region, Gor Taryang, Lingdong-Barfok and Hee-Gyathang, categorically stated that the project is of national importance and presented a charter of 44 demands to protect their special status while conveying their consent for the project. The Panchayats of the Dzongu region also subsequently wrote to the Chief Minister requesting for a Written Deed Declaration regarding the 44 demands vide a Notification in the Sikkim Gazette. However, innumerable efforts of the Study team to reach out to the Panchayats and learn the credible reasons for their changing position with regard to land clearance did not yield results.

Indigenous people have a deep relationship with their natural habitat and so is the case of the affected people of the proposed Teesta IV. Dzongu holds immense cultural and religious significance to the Lepchas. The traditional culture and customs of the Lepchas seem to have originated from different folktales that are centred on Dzongu. Even the primogenitors of the Lepchas are believed to have stayed in Dzongu after their creation from the Kanchenjunga. The Lepchas of Dzongu have religiously guarded their protected area status unlike the situation in many other areas of North Sikkim where resolution No 3069 (that grants protected area status to North Sikkim) is diluted. They primarily are nature worshippers and believe that nature would take care of their needs. The Dzongu region neither has any hotels, business establishment or industry. Despite the onslaught of forces of modernity trying to isolate the traditional societies, the Lepchas of Dzongu seem to have retained much of their cultural identity and are deeply rooted to their natural environment (famous for its rich and diverse flora and fauna). Those opposing the project feel that the project can only come up at the cost of Lepcha identity and culture. The legacy issues relating to the persistence of social and environmental problems arising from the already commissioned projects also contributes to the mistrust and scepticism of the community.

Where development/interests of the minority gets overlooked in the quest of larger good of humanity and nation, the notion of development itself becomes a matter of immense debate. It is not the aggregation of costs and benefits that matter, rather its distribution. The local population have been using water and other natural resources since time immemorial and contribute to project development by sacrificing their access to or use of natural resources in the project-affected area. The resistances against projects owe to the recognition that the large majority of domestic customers and enterprises benefiting on a long term basis from the project are located outside the affected area, often in urban centres. On the other hand, the benefits to the landowners/population of the affected area who sacrifice their land (ancestral properties in the present project) remains piecemeal often confined to the short term compensation/mitigation measures. For a project to be called favourable, it must be equitable for the local community. A project must ensure not only fair compensation for project-affected landowners but also a fair redistribution of project benefits across segments of the affected areas. The Study recognises that

the risk of leakage of redistributed benefits away from project-affected communities is higher in regions lacking in infrastructure, industry, public and commercial services as well as local institutional capacity. This risk is exceptionally high in the proposed project area and particularly in Dzongu region. The project-affected population of all the ten GPUs should not only be meaningfully involved in the process but also receive benefits from the project.

The legacy issues of the existing projects with regard to poor monitoring and lack of equitable distribution of benefits have tremendous psychological impact on the affected community opposing the project and came in the way of the Study team's efforts to instil confidence. While the adverse impact of the hydro projects on the local environment (springs and water-resources, deterioration of environment etc.) cannot be denied, the participation of the local communities in planning, implementation and monitoring process have been extremely limited in the existing projects. Given the discouraging experiences of similar projects, the Study has put forward a framework for distribution of benefits of the project in all the affected GPUs, with an aim of bringing about a perceptible improvement in the standard of living of the people in the affected area. The study takes note of the resentment among sections of the community of Dzongu area against the project and the adverse impact on their culture, tradition and way of life due to influx of outsiders in the region. The Study tries to holistically address the concerns expressed by various segments of the community. Considering the protected area status of the Dzongu region, the Study has developed a Dzongu Indigenous People Development Plan (DIPDP), also including the measures demanded by the Panchayats themselves in return for their consent to the project in the year 2012. The Study Report accords a primacy to the involvement of the indigenous people for implementation and monitoring of the Plan. This will be extremely critical for the success of the proposed measures.

The Study Report is presented in two Volumes; Part I covering the Findings of the Study and Part II covering the Annexures.

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ABBREVIATIONS

ACT	Affected Citizens of Teesta
ANM	Auxiliary Nurse Midwifery
BL	Bhutia-Lepcha
BOOM	Build, Own, Operate & Maintain
BPL	Below Poverty Line
CD	Community Development
CEA	Central Electricity Authority
CHC	Community Health Centers
CLOS	Concerned Lepchas of Sikkim
CMC	Central Monitoring Centre
COI	Certificate of Identification
CPR	Common Property Resources
CSR	Corporate Social Responsibility
CWC	Central Water Commission
DAMC	Dzongu Area Monitoring Committee
DC	District Collector
DESM&E	Department of Economics, Statistics, Monitoring & Evaluation
DIPDP	The Dzongu Indigenous People Development Plan
DPR	Detailed Project Report
DT	Diversion Tunnel
EA	Executing Agency
EMP	Environment Management Plan
ESMC	Environment and Social Management Cell
FAO	Food and Agriculture Organization
FC	Financing Charges
FGD	Focused Group Discussions
FRA	Forest Rights Act
FRL	Full Reservoir Level
GNM	General Nurse Midwifery
GPU	Gram Panchayat Units
GRC	Grievance Redressal Committees
GRM	Grievance Redressal Mechanism
GSI	Geological Survey of India
HEP	Hydro Electric Project
HHs	House holds
SHGs	Self Help Groups
HOP	Head of the Project
HRT	Head Race Tunnel
HSC	Health Sub-Center
IAY	Indira Awaas Yojana
IDL	Interest During Construction
IEC	Information, Education and Communication
ILO	International Labour Organization
ILTA	Lepcha Tribal Association
KWH	Kilowatt Hour
LA	Land Acquisition
LADC	Local Area Development Committee
LADF	Local Area Development Fund

LAO	Land Acquisition Officer
LARR	Land Acquisition, Resettlement and Rehabilitation
LBMC	Left Bank Monitoring Committee
LPG	Liquid Petroleum Gas
MAW	Minimum Agricultural Wage
MGNREGA	Mahatma Gandhi National Rural Employment Guarantee Act
MOU	Memorandum of Understanding
MW	Mega Watt
NCDs	Non-Communicable Diseases
NGO	Non-Government Organisation
NMC	National Monitoring Committee
NRRP	National Rehabilitation and Resettlement Policy
O & M	Operation and Maintenance
OBC	Other Backward Caste
OC	Other Caste
OPD	Out Patient Department
OSR	Own Source of Revenue
PAFs	Project Affected Families
PDFs	Project Displaced Families
PHC	Primary Health Centers
PIC	Public Information Centres
PMC	Project Monitoring Committee
PN	Preliminary Notification
PNG	Pipelined Natural Gas
PPP	Public Private Partnership
PRO	Public Relations Officer
PIC	Public Information Centres
PSU	Public Sector Undertaking
PTG	Primitive Tribe Group
R&R	Resettlement and Rehabilitation
RFCTLARR	The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act.
SCs	Scheduled Castes
SDM	Sub Divisional Magistrate
SDO	Social Development Officer
SIA	Social Impact Assessment
SIMP	Social Impact Management Plan
SMC	State Monitoring Committee
STs	Scheduled Tribes
STDC	Sikkim Tourism Development Corporation
STP	Sewage Treatment Plant
TRT	Tail Race Tunnel
UN-FAO	United Nations Food and Agriculture Organisation

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CHAPTER I**EXECUTIVE SUMMARY****1.1 Project and Public Purpose**

NHPC Limited, a Government of India Enterprise proposes to construct Teesta Stage-IV Hydro Electric Project (HEP), a run-off the river hydro project with an installed capacity of 520 MW. The project is a part of the Teesta cascade evolved by the Central Water Commission (CWC) and is located between Teesta-III HE Project on the upstream and Teesta-V Project in the downstream.

The RFCTLARR Act, 2013 (2013 Act, henceforth) states that provisions relating to land acquisition, compensation, rehabilitation and resettlement, shall apply, when the appropriate Government acquires land for its own use, hold and control, including for Public Sector Undertakings (PSU) and for public purpose. NHPC Ltd. is a wholly owned undertaking of the Government of India, established with an objective to plan, promote and organise an integrated and efficient development of hydroelectric power in the country. The proposed land acquisition is, hence, for a PSU and for generation of electricity which is an activity classified as a public purpose in the 2013 Act.

1.2 Location

The project is located in Mangan subdivision of North district in Sikkim. The project envisages construction of 65m high concrete gravity dam across the river Teesta near Chandey village, an underground power house having four units of 130MW each. The water of Teesta river will be diverted through two Head Race Tunnels (HRT) of about 6.6 & 6.5 kms length respectively to an underground power house proposed to be located on the right bank of the river near village Phidang which falls in Dzongu area of North Sikkim.

Teesta River flowing through North Sikkim

1.3 Size and Attributes of Land Acquisition

The project envisages acquisition of private land in fourteen revenue blocks of North District. Out of these 14 revenue blocks, 8 blocks are located on left bank while 6 blocks are located on right bank of River Teesta. The total land requirement for the project is 272.84, out of which 177.43 is private land and 92.10 ha is Khasmal land. The proportion of Khasmal land is more on the right bank of the river. About 58 percent of the private land proposed to be acquired lie on the left bank of the river, with the revenue blocks of Zimchung, Upper Mangshila and Tingchim together comprising more than 80 percent of this requirement. The two revenue blocks of Gor Taryang and Hee Gyathang have about 66 percent of the land on the right bank of the river.

Besides private land and Khasmal land, the proposed acquisition also entails acquisition of 3.31 ha of land belonging to government departments. This includes land of the Forest Department in Tanyek (1.432 ha), Barfok (1.594 ha), Passingdang (0.0536 ha) and Animal Husbandry Department in Gor Taryang (0.23 ha).

1.4 Alternatives Considered

The original dam axis of Teesta IV project, proposed by the CWC was located on the Namprikdang Mela ground, an area of immense historical and cultural importance for the Lepcha community. The small and grassy flatland in the Dzongu valley is believed to connect the mythical abode of Lepcha ancestors. The first alternative to safeguard the ground against submergence was the lowering of the Full Reservoir Level (FRL). However, despite a substantial reduction in the FRL it would not have been possible to avoid damage to the Mela ground due to construction activities. Hence, alternatives for locating the most promising dam location were carried out. Out of the four alternatives considered, two were rejected on technical grounds. The third alternative was rejected owing to its potential for creating disturbance to the mela ground. Among the alternatives considered by the Project Authority, the only other technically feasible alternative is the one that damage the culturally important Mela ground.

In the revised alignment now proposed for the project, the location for the dam axis is located at the downstream of the confluence of Runchu nallah, with an underground Power House on the right bank. This is nearly 4 kms from the Namprikdang Mela Ground. The FRL was reduced by 13 m i.e., from El 768 m to El 755 m to reduce the adverse impacts. The project structures on the right bank have been kept underground except for Adit portals, Right Bank dam abutment and Tail Race Tunnel (TRT) outlets. To reduce the impacts on the day-to-day activities of the community, the access to the various project components are planned through access tunnels. The feasibility of underground project components on the left bank was assessed and found technically not feasible.

1.5 Social Impacts

I. Direct Impact on Land and Assets

Affected Landowners

- The total land requirement for the project is 272.84, out of which 177.43 is private land. There are 290 landowners/ 275 landowner families who will lose their private land for the project. The affected landowners who are only losing private land (and not their place of residence) comprise the majority of the affected families. Among the 231 families surveyed, 224 families belong to this category.
- The magnitude of impact is high on 64 landowner families. After the acquisition of land for the project, nine families will become landless and 55 others will become marginal landowners.

Displaced Families

(i) **Landowners:** Contrary to earlier reports, the project entails some displacement. There are seven Project Displaced Land owner Families (PDFs) on the left bank who will lose their residential structure along with land in the affected area. The displaced landowners belong to Mangshila Tibuk GPU (4) and Tingchim-Chandey GPU (3).

(ii) Non-titleholders

- There are 76 non-titleholder families (population of about 400 people) residing on private land in the affected area through informal arrangements (cash/kind) with the landowner. About 87 residential structures of non-titleholders exist in the affected area, out of which seven were vacant and few were inaccessible. Out of the 76 resident families residing in the area and surveyed by the Study team, 41 are Nepali citizens and 35 are Indians. Importantly, 8 out of 35 Indian non-titleholders residing in the affected area have bonafide Certificate of Identification (COI). About 68 percent of the houses are constructed by the non-titleholders themselves.
- Barring three households who primarily depend on farming in the affected area, the other non-titleholder resident families are engaged in various occupations such as labourers with Border Roads Organisation/Quarry; carpenters, drivers, and mistry with contractors; shop keepers, tailors, etc. These households will not bear a direct impact on their livelihood as a result of displacement. However, the transitional/relocation phase will be critical. Many such families have been staying in the affected area for more than a decade and are living a settled life with domesticated animals. Besides the residential structures, there are 32 hen-sheds, 23 cows-sheds, 23 goat-sheds and 21 pig-sheds in the affected area.

(iii) Encroachers/Squatters on Government Land

- There are seven families staying in land owned by the Forest Department at Tanyek. Out of the seven families, three families are staying on rented houses constructed by the one of the encroachers.

Land Use on Proposed Land

- The land use of the affected area reflects a mix of farm crops, forest vegetation and vacant plots. The proportions of land under farm crops and forest vegetation are reportedly 44 percent and 43 percent respectively. These figures are based on the information provided by the landowners during the survey. However, the

verification exercise conducted by the SIA team in the affected area indicated marginal to low levels of farm crops. Further, the satellite images (gathered from NRSC, Hyderabad) confirms a massive decline in farm crops and forest vegetation over the last decade. The prominent farm crops cultivated in the area include Cardamom, Maize, Ginger, Amliso and Iskus. The important trees are Panisaz, Chilowni, Lapsi, Utis Bamboo, Katus and Kimbu (i.e., Mulberry tree). Fruits grown in the orchards include Banana, Oranges, Jackfruits, etc.

- There are two quarries, one on the private land and another one on the forest land that is proposed for acquisition.
- The departmental land proposed for acquisition in Gor Taryang houses a veterinary hospital of the animal husbandry department (0.23 ha), and a nursery belonging to the forest department in Tanyek (1.432 ha). A nursery is also being planned by the forest department at Barfok where 1.594 ha of departmental land is proposed to be acquired.

II. Impact on Common Property Resources (CPR)

- About 2.35 percent of total khasmal land in the ten affected Gram Panchayat Units (GPU) is proposed to be diverted for the project. The largest proportion of khasmal land is proposed to be diverted from Zimchung (22.39%), Upper Mangshila (7.46%) and Lingdong (5.38%). Most of the affected households have domesticated dairy animals, the products of which are either used for self consumption or for supplementing their primary source of income. According to the census survey conducted by the SIA Study, 43 percent of the total surveyed households use firewood for cooking. This proportion is significantly higher at 68 percent in Dzongu region.
- The riverine area also serves as provisioning food products to the local communities and, hence, acquisition of forest land will adversely impact nutrient rich food availability and increase pressure on forest resources. The recognition of individual and community claims is a process still in progress. The impact on households will be varied depending on the steps taken to ensure access to the remaining Khasmal land that will be available for the community.

III. Impact on Vulnerable Households

Any land acquisition project causes differential impacts and some households/individuals are more prone to the risks of poverty. Though vulnerability may not be project-induced, the pre-existing conditions get accentuated by the project-induced impacts. The following categories are identified as vulnerable households:

- Land owners who become landless/marginal after acquisition: There will be nine landless and 55 landowners becoming marginal post acquisition.
- Vulnerable women-headed households: There are four vulnerable women headed families among the landowners and three among the non-titleholder families.
- Families with disabled/chronically ill members (Mental/Physical): Out of the 19 families that were classified under this category, 12 PAFs have members with recurring health needs.
- Elderly population (with high support needs): There are 24 people above 70 yrs of age and 14 people above 80 years of age among the PAFs.

IV. Impact on Social and Cultural Life of the Tribal Community

- The potential for conflicts between the migrant workers and the local community owing to their religious, cultural or ethnic differences is high. The influx of workers and service providers into communities may increase the rate of crimes, risk of communicable disease and cause environmental issues, if not adeptly managed.
- The impact of labour influx is a significant concern for the community on both the banks. The apprehension that many of the incoming population will stay back does have substance. At least half of the non-titleholders have been staying in the affected area for more than a decade and more than one-third of them have been residing for two or more decades; some of whom are also possessing documents like Voter ID, Aadhar and ration cards.

V. Impact on Environment

The community in all the affected areas has raised serious concerns about the environmental impacts during the construction/operation phase of the project. These relate to aesthetic impacts (damage to the serene/beautiful natural environment); long term environment impacts to the region (blasting in environmentally fragile area; stoppage of free flow of the natural river; improper rim treatment, etc.); economic impacts (damage to houses/crops); and health impacts (pollution related and entry of migrant force in the region).

V. Impact on Indigenous People of Dzongu Region

- Our perception towards tribal/indigenous communities are mostly coloured by our view of development and ways and means of bringing these communities within the realm of the same. However, to provide a fairer understanding of the aspirations and conflicts within the community, it is important to have a broader exploration of the contextual history and current realities facing these communities.
- The Dzongu region, from where 75/54 hectares of private/ forest land is proposed for the project apart from housing the underground components of the project, is a Lepcha reserve, an area where outsiders require a special permit to enter and where none other than resident Lepchas of Dzongu can own land. Presently, this holy land of Lepchas is a deeply divided society. This is indeed one of the most important adverse impact of the project. While the majority of land owners are supporting the project (given that they voluntarily travelled to the left bank to meet the SIA study team and be part of the census survey/consultations and attended the public hearing at Mangan after taking permission from the District Collector), the ordinary residents of the area perceive the project as causing irreparable damage to their natural environment and also not benefiting them in any significant manner. In other words, the division may be propelled by the perception that it is only few landowners who would benefit from the project while adverse environmental impacts will be borne by the entire community.
- The socio-economic risks that are of primary concern to the Dzongu community include 'threat to the 'protected area status of Dzongu' /indigenous culture and tradition owing to influx of outsiders into the region, tardy implementation of

Environment Management Plan (EMP) on the environment and life of the indigenous people of the Dzongu area who worship their natural environment', inequitable distribution of project benefits and lack of benefit sharing mechanisms.

- The representatives of GPUs had resisted innumerable formal and informal request of the Study team to take part in the process or share their views. This was the greatest challenge faced by the Study. Despite the above challenges, the Study carried out elaborate informal consultations and extensive survey of literature/documents specifically on the Dzongu region.

1.6 Mitigation Measures

- The Social Impact Management Plan (SIMP) has recommended measures for avoidance/minimization of potential risks to the community in the project affected area. The plan also provides for comprehensive mitigation measures for the unavoidable impacts during various phases of the project cycle. The plan has recommended a comprehensive grievance redressal mechanism, monitoring and evaluation arrangements and also strengthening the institutional arrangements to implement the plan. The mitigation measures proposed for the Pre-construction phase include a Community Engagement Plan, R & R Plan and a Plan for the Vulnerable Households. The Construction phase includes a Labour Influx Management Plan and a Muck Disposal Plan. The Plans for implementation during the project life cycle/operation phase includes Community Development Plan, Livelihood Promotion Plan and Local Area Development Plan.
- The mitigation steps proposed to compensate impacts includes four measures – first, the compensation and R & R as outlined in the 2013 Act; second, measures that the Requiring Body has already committed in its EMP along with supplementary measures for strengthening implementation by the SIA Study; and third, the additional measures proposed by the SIA Study and that the requiring body has agreed to implement; fourth, additional recommendations put forth by the community during public hearing (incorporated through a lump sum amount in the SIMP budget).
- Though the 2013 Act provides for a specific formula for calculation of land compensation under Sections 26-30 and Schedule I, the transaction of agricultural land which is inherited from one generation to another is almost negligible/nil in North Sikkim. There are also extremely limited/nil transactions of land in half of the affected revenue blocks. The Study, therefore recommends the State Government to arrive at the floor price of land so that landowners receive a fair compensation for their ancestral land.
- The Study recognises that Teesta Stage IV is a much delayed project. Not only has the project suffered in terms of the time/cost overruns, but also the affected landowners have been prevented from making productive investments in the lands proposed for acquisition. A declining cardamom cultivation and absence of major tourism infrastructure has done little for the general prosperity of the region. The Study has therefore proposed a comprehensive R & R plan for all the Project Affected Families (PAFs), in line with the entitlements prescribed in the

Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement (RFCTLARR) Act, 2013 (2013 Act, henceforth). From 231 landowner families, 802 separate family units (787 units for PAFs and 15 for PDFs) have been carved out for provision of separate R & R entitlements.

- All the affected and displaced families including the three identified non-titleholders losing livelihood are entitled to compensation and R & R as per the 2013 Act. For the seven displaced landowner families, the Study has recommended their housing entitlements within the colony area of NHPC in Tingchim. The non-titleholders of Indian/Nepali origin and the encroachers/squatters losing structures have been recommended varying entitlements comprising compensation for structure, cost of Indira Awaas Yojana (IAY) house, transportation allowance etc. The Study recommends special provisions for the vulnerable households beyond the mandate of the 2013 Act. This includes land for land/additional compensation for 1 ha of land, if government land is not available to landowners becoming landless/marginal after acquisition (provided in the EMP); priority for facilitating land purchase in case of the most vulnerable households (belonging to landless category); additional rehabilitation grant of Rs. 75000/- and priority in self employment/skill building initiatives for vulnerable women headed households; medical allowance of 1 lakh/2 lakhs for the 70 plus/80 plus members of PAFs and free treatment in NHPC project hospital and financial sponsorship in NHPC's empanelled hospitals to chronically ill/non-insured members of landowner families. The total budget for R & R plan of surveyed families is estimated at 60.41 crores (including provisioning for non-surveyed families; forest title-holders and contingency). This is excluding the Rs 14.12 crore already provided under the project EMP R & R plan
- The Study recommends a Comprehensive Dzongu Indigenous People Development Plan (DIPDP) aimed at addressing concerns raised by the community as well as benefiting the region as a whole. To address security issues from the influx of outsiders into the region, the Study recommends introduction of modern computerized check posts at Phidang, Bringbong and Sanklang; stringent procedures for issuance of Identity Cards to Contractors/Construction Workers; issuance of permits, etc. To address issue of fair price to the land owners, the plan strictly recommends the floor price to be fixed by the State Government for land compensation. For improving accessibility, the DIPDP proposes a motorable road from Rangrang (Bringbong) check post to Dzongu. The plan also proposes measures for promotion of cultural/eco-tourism in the area through various measures. Besides the renovation of the Nampridang Mela ground (which is already proposed in the project EMP), additional measures suggested in the SIMP include development of parks, fencing, compound wall, etc., in affected GPUs of Dzongu area; development of the natural lake at Gyathang as a tourist spot, construction of a Museum at Hee Gyathang for preservation of tradition, construction of Statue of the Lepchas Guardian Deity Thung Munsolong, traditional welcome gates at the entry points of Dzongu, etc. Some of these have been long standing demands of the community. To promote indigenous culture and tradition of the Lepcha community, the Study recommends sponsoring traditional events and festivals of the Lepcha community in Dzongu area, support to institutions promoting tradition and culture of the indigenous Lepchas of Dzongu area on a continuing basis. On the

institutional front, the DIPDP proposes a customized Stage II Grievance Redressal Committee, Dzongu Area Monitoring Committee (DAMC) for effective implementation of the Plan besides strengthening the NHPC Implementation Cell with a Public Relations Officer from Dzongu. The landowners raised few other demands for infrastructural development/tourism promotion during public hearing. A lump sum amount of Rs. four crores for each Bank has been included in the SIMP budget to cater to the additional demands/fulfillment of earlier commitments by NHPC during various consultation meetings.

- Though it is not the mandate of the SIA Study to discuss the technicalities of the environmental issues in the construction phase, (covered under the EMP), the socio-cultural impacts from these merit serious attention, important among them being the issues of labour influx, muck disposal and blasting/pollution related impacts on houses/crops. The Study, therefore recommends comprehensive measures in addition to those already suggested in the Project EMP. These include steps for maximizing on the local work force in the construction phase, measures for enhancing community participation in the monitoring and implementation of the plan, suggestive inclusions in the contractual agreements to address the issue including penalties for non-adherence, measures to reduce the scope for labour-community interface and measures to address issues relating to women's security. For both issues of labour influx and muck disposal, the Study recommends community participation in the monitoring. In both cases, Committees headed by SDM, Mangan/SDM, Dzongu with members of respective wards (where labour camps/muck disposal sites are planned), representative(s) of affected landowners along with a representative of NHPC has been recommended. To provide for prompt settlement of claims (damage to houses/crops) during construction phase, the Study has recommended that an amount of 5 crores may be kept at the disposal of the District Collector in a specially designated account maintained for the purpose.
- The most important demand put forth by the community in all consultations was the provision for employment for local community. According to the information shared by NHPC, the estimated strength of the employees in class-III & IV categories during construction stage of the project under the 'direct recruitment' category is 103 and per the MoU signed between NHPC and Government of Sikkim, maximum of 52 persons can be recruited from the local area. The vacancies, posts, eligibility, remuneration (Gross and Net), skills/certification and age limit for the posts, as received from NHPC is included in the Report. Though the MoU provides for only 50 percent employment of locals (and not specifically to the PAFs) for the direct posts, the Study recommends that all the 52 jobs should be extended to the 275 landowner families from the ten GPUs, duly relaxing the experience clause provided for some categories. Looking at the vacancies available and the qualifications, each land owner family may nominate one representative for the preferred post. The final 52 direct posts may be strictly based on merit. NHPC may conduct an examination to select the candidate on merit (due weightage for performance in the exam, qualification and merit).
- The Study also recommends that after selection of direct recruits based on merit, those land owner families whose no member could get direct employment may be provided with employment option with the contracting agencies of the

project during the construction/operation phase (not lower than the minimum wages provided for any other law). However, after the commissioning of the project, if he/she (one representative of landowner family) could not be provided any other contractual jobs during O&M stage, or if they desire to leave the job at any point of time, they may be offered annuity option of Rs. 2000/-per month for 20 years per landowner family or one time lump sum payment of Rs. 5 lakhs. This additional provision is recommended for one nominated representative from each landowner families.

- In addition to the initiatives for skill development in the EMP, the SIMP recommends putting in appropriate measures to ensure that maximum extent of all employment openings in both the construction phase and operation phase of the project is received by the locals from the ten affected GPUs of North Sikkim. The Study recommends rigid clause in the contract that mention that employment in both the skilled/unskilled category will be provided to outsiders only if eligible qualified people do not exist in the 10 affected GPUs of Teesta Project. The Study recommends sharing the information on the nature of jobs during construction phase and O & M phase (provided in the Report) of the project with the ten local GPUs for skill based training, preparing a roster of interested workers and their skills, planning training programs to enhance the skills of eligible candidates and providing the list of such potential candidates to the contractors for recruitment consideration. Wherever appropriate, it can be emphasized that work permits can be provided only for workers with skills that are unavailable locally.
- NHPC may promptly start a special drive for need-based skill training in the affected GPUs. All affected landowner families may be allowed to nominate two members for the skill building training of their choice. Further, all the remaining households in the ten affected GPUs (approximately 3000) of the affected area. may also be provided an opportunity to nominate a member for the skill building initiatives. The Study also recommends priority to locals of affected GPUs while allotting petty Contracts during construction stage. Special workshops for e-tendering of petty contracts may be organized in all affected GPUs. The other areas where households from the ten GPUs may be provided job opportunities include running of project canteens, supply of dairy products, shops in shopping complexes, hiring of vehicles etc. Given that more than 100 locals have been engaged in the Indian Reserve Battalion for project security and as Home guards in the neighbouring Teesta V Project of NHPC, such opportunities may be extended to Teesta IV project too. NHPC should also strengthen their existing Environmental Cell by recruiting additional staff including two Public Relations Officers (PRO) and two officers for the Public Information Centre (PIC) from the affected GPUs.
- The Study recognizes the declining yield of cardamom, the primary crop in the area and the vastly reduced agricultural area under cultivation and, hence, recommends enhanced livelihood promotion activities to address the issue holistically. The Study recommends promotion of tourism as an activity that has the potential to create many spinoffs for overall development of the area. Lying between Gangtok/Siliguri and Lachen/Lachung, Mangan, the district Head Quarters of North Sikkim District, holds tremendous potential as a tourism axis of

the region. Owing to paucity of local attractions, Mangan and the vicinity areas are unable to exploit its strategic location. The reservoir of the Teesta Stage IV project, once built, could serve as a major tourist activity spot and attract tourists to the area. The reservoir created by the project can also provide facilities for water sports, and can by itself become a standalone tourist attraction, besides attracting the tourists travelling to Lachung/Lachen Valleys for a stopover. The Study recommends facilities for infrastructure development at Zimchung Block (reservoir area) along with institutional arrangements for its implementation. While the funding of the initiative must be by NHPC, the operation can be taken by the Sikkim Tourism Development Corporation and private operators. A Tourism Fund is proposed with contributions from operators and through revenues flowing from the tourism initiatives for maintenance and development of the infrastructure. Similarly, the historical legacy of Dzongu may be used as a basis to develop branding strategies for promoting tourism on the right bank. The specific initiatives that will provide a boost to tourism in Dzongu area is provided in the in the DIPDP.

- The Study recognizes the importance of a Benefit Sharing Mechanism (BSM) in hydro projects. The BSMs go beyond compensation/mitigation measures; cover communities in the entire project affected area and stretches into operational phase while R & R concludes before the construction phase. The BSMs addresses adverse impacts of communities that are not covered under the resettlement program. Equitable and Inclusive, the BSMs can make the affected communities in the entire project affected area partners in the development process. With this objective, the Study has proposed a framework for institutionalization and implementation of the Local Area Development Fund (LADF). The revenue collected from the sale of one percent of free power (contributed by NHPC) may be transferred by the State Government to the LADF of the ten affected GPUs. The Study proposes distribution of 80 percent of the amount equally among all GPUs and 20 percent additional entitlement for the affected wards. The Study recommends constitution of a Local Area Development Committee (LADC) with community participation for administration of the LADF (after due approval of annual shelf of projects by the panchayats of the ten affected GPUs).
- Integrating CSR for the affected communities and those in the periphery area of the project is extremely important. The Study recommends NHPC to commit at least four crores annually during the construction phase towards the CSR expenditure in the ten affected GPUs of Teesta Stage IV Project. The Study recommends educational support/scholarship for meritorious students of the ten GPUs of the project for higher studies, support for SHGs and upgradation of social infrastructure, particularly health through the CSR funds. These recommendations are based on the the inputs received by the Study team during the consultation process. The Study recommends that the LADC proposed for implementation of the LADF may be constituted at the outset and be provided with the additional mandate of approving the annual shelf of projects to be implemented through CSR funds in each GPU.
- Given the scale of the project, a robust Grievance Redressal Mechanism (GRM) is a critical requirement for addressing the issues emerging from the project/SIMP

implementation in a hassle free manner. The Study proposes a two stage Grievance Redressal Committees (GRC) for the project, the constitution of which will be issue based. While Stage I GRC will be based at the project level, Stage II GRC is proposed to be the Monitoring Committees for each Bank; the Dzongu Area Monitoring Committee (DAMC) and Left Monitoring Committee (LBMC). For grievances relating to Labour Influx and Muck Disposal, the DAMC and LBMC will have representatives of the respective wards in which labour camps/muck disposal sites are planned. In order to maintain transparency and to keep PAFs informed, the Study recommends establishment of two Public Information Centres (PIC), one each in the right and left bank. The PICs may be established before the formulation of the R & R plan and may continue to function till the implementation of the R & R plan/community and social development plan.

- For effective and timely implementation of the mitigation measures proposed, putting in appropriate institutional arrangements for monitoring and implementation is vital. To provide exclusive focus to the issue and ensure community participation, the Study has proposed additional institutional arrangements for monitoring of specific issues relating to EMP implementation that were flagged as extremely critical by the community. The Monitoring Committees proposed with community participation should be constituted before the construction phase of the project. Adequate budget has been provided for effective functioning of the Committees. For implementation of R & R, the 12-member Project level R & R Committee as prescribed by the 2013 Act shall be mandatorily constituted. For effective monitoring of R & R, the Study recommends development of a web-based monitoring tool, the cost of which has been included in the SIMP budget. To lend more transparency and to ensure effective implementation of the SIMP, the Study proposes engaging of an independent agency to undertake external monitoring of the project implementation. This may begin with the preliminary notification to the implementation of the R & R plan/Community and Social development plan. The External Monitor will assess if the mandatory norms as the 2013 Act and those mitigation measures proposed in the SIMP/R & R plan are being implemented as provided for, suggest recommendations for improvement and also conduct impact evaluation on a sample basis during mid-term and project completion. The impact evaluation will provide an assessment of the status of the affected community and area after the implementation of the proposed mitigation measures in the SIMP.
- The successful implementation of the all the mitigation measures proposed in the Study requires a strong dedicated team within NHPC that can support the district administration. Most projects see poor implementation of the mitigation plans because of inadequate understanding of the enormity of the tasks/activities that requires to be undertaken to achieve success in the planned initiatives. The Study recommends naming the Project Environment Cell in NHPC as the 'Environment and Social Management Cell (ESMC)' and strengthening the ESMC with dedicated Officers; recruitment of a Social Development Officer (SDO) with requisite educational background and experience to supervise and monitor overall activities of R & R/Community and Social Management Plan; and Grievance Officer to handle grievances effectively. Besides, as already explained above, the Study recommends recruiting at least two Officers, one

from each of the Bank as Public Relation Officers during the implementation phase of SIMP. The Study recommends partnering with an experienced NGO for implementation of community/social development initiatives, particularly relating to skilling and self employment. In case of services of a good NGO with extensive experience in livelihood/income restoration is not found, NHPC may consider recruitment of Livelihood Expert along with Community Liaison officers from the affected GPUs. The Study proposes a budget of 3.05 crores for the institutional strengthening and effective monitoring mechanisms (including development of a software for monitoring and grievance management).

- The Study has provisioned a budget of Rs. 122.70 crores for effective implementation of the SIMP including Rs. 28.23 crores provided in the Project EMP for R & R/Community Development.

1.7 Assessment of Social Costs and Benefits

Social Costs and Mitigation Measures: The SIA Study comprehensively covers the social impacts of the project activities in different phases of the project cycle. These include the direct and indirect impacts of the acquisition of land and other issues relating to culture/security in the project affected areas at different stages of project construction. The Study recommends enhanced community engagement and transparent sharing of information with the affected communities to enhance the trust and rapport with the community. The Study recommends mitigation measures to address each of the identified risks. The proposed mitigation measures aims at the holistic development of the ten affected GPUs and, thus, goes far beyond the mandatory compensation/R & R norms prescribed by the 2013 Act. The Study also recommends benefit sharing mechanism in terms of institutionalization of the LADF with annual contribution of one percent annual power sales revenue to the 10 GPUs.

The Study proposes comprehensive internal and external monitoring mechanisms, including community participation measures to ensure effective implementation of the SIMP. The mitigation measures have been appropriately budgeted. The Study also recommends a committed amount of Rs. 4 crores towards Corporate Social Responsibility (CSR) till the completion of the construction phase. The Study recognizes that elaborate plans often fail to succeed and make an impact because of lack of appropriate monitoring arrangements (including community participation) and, most importantly, absence of dedicated staff for implementation. All these weaknesses have been duly addressed in the recommendations proposed.

Social Benefits: The Project is expected to generate 2373 MU of clean and green power and also act as a peaking power station for stabilizing the eastern grid. The State of Sikkim will receive 12 percent of free power (expected to be about Rs. 130 crore approximately). The specific benefits for the project affected families and local community of the ten GPUs are given below:

- Enhanced benefits beyond mandatory compensation and R & R benefits provided under RFCTLARR Act, 2013.
- Increased employment opportunities (direct and indirect) to the local people during project construction and Operation and Maintenance (O & M) phases.

- Increased tourism potential in the area, leading to more income-generating opportunities for the local community.
- Improved infrastructure development through committed expenditure in the EMP, SIMP, CSR and LADF.
- Improved health care and educational facilities in the area.

If the SIMP is implemented as conceptualised, this will not only address the social costs imposed by the project, but also bring about overall development to the entire community/area. The revenue contribution to the State Government will be an indirect contribution for the development and prosperity of the State.

For the success of the plan, the following is extremely important and hence should be assured before going ahead with the project.

- Commitment of the State Government to institutionalize the LADF and constitute LADC for its effective implementation in the ten affected GPUs.
- Commitment by NHPC to finance and support implementation of the recommended mitigation plans in letter and spirit, including strengthening of the Project ESMC.
- Constitution of various committees with the participation of affected communities as recommended by the Study.

CHAPTER II**PROJECT DESCRIPTION****Chapter Outline**

- ❖ Project Background
- ❖ Rationale for Proj – Public Purpose Criteria in RFCTLARR Act, 2013
- ❖ Details of the Project
- ❖ Examination of Alternatives
- ❖ Phases of Construction
- ❖ Workforce Requirements
- ❖ Details of Environmental Impact Assessment Report
- ❖ Applicable Legislations and Policies

2.1 Project Background

Project Background: The Teesta-IV HE Project was initially conceptualized by the Central Water Commission (CWC) with an installed capacity of 495 MW under cascade development programme of Teesta Basin. The Detailed Project Report (DPR) for the Teesta-IV HE Project was submitted by CWC in 1995. However, no work was done on this project till 2005. The letter of intent for implementation of Teesta-IV HE Project in favour of NHPC Ltd. was issued by the State Government in March, 2005. The Memorandum of Agreement (MoU) for implementation of Project on Build, Own, Operate & Maintain (BOOM) basis was signed between the NHPC and the Govt. of Sikkim in March, 2006.

After signing the MOU, NHPC started the survey and investigation of this project and a new DPR was prepared and submitted to Central Electricity Authority (CEA) by NHPC in March 2008. The revised DPR, incorporating the recommendations of CEA, Geological Survey of India (GSI) and CWC was submitted in April, 2010.

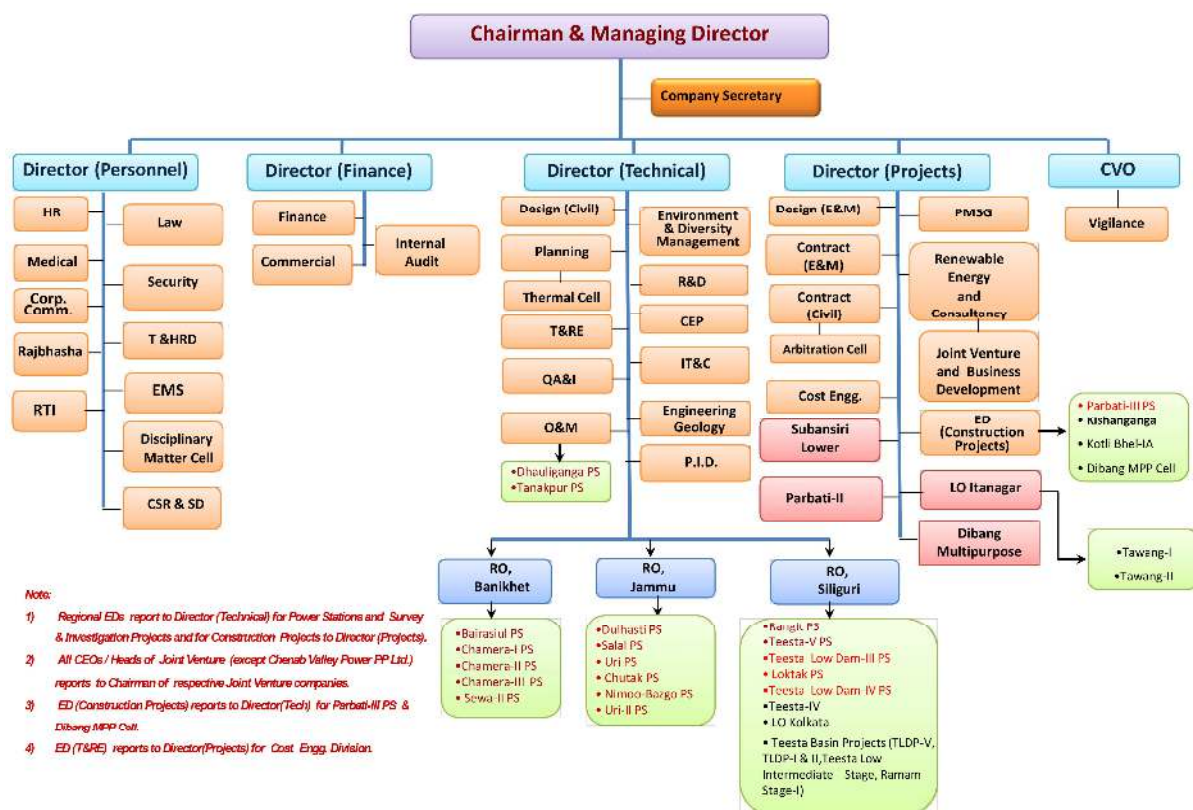
Project Developer: NHPC Limited is a Mini Ratna Category-I Enterprise of the Government of India, incorporated in the year 1975 with an authorised share capital of Rs. 2,000 million and with an objective to plan, promote and organise an integrated and efficient development of hydroelectric power. It is a premier organization in the country for development of hydropower. NHPC has executed 20 projects with an installed capacity of 6507 MW on ownership basis including projects executed by NHDC Limited, a Subsidiary Company of NHPC Limited. NHPC has also executed 5 projects with an installed capacity of 89.25 MW on turnkey basis. Two of these projects have been commissioned in neighbouring countries i.e., Nepal and Bhutan. During 2016-2017, NHPC Power Stations achieved the generation of 23275 MU.

In 1982, Govt. of India handed over Rangit HE Project (Stage – III) to NHPC for implementation and subsequently to update the DPR of Teesta Stage-III HE Project (1200 MW). Rangit (60 MW) and Teesta-V (510 MW) were commissioned in 1999 & 2008 respectively. Presently, NHPC is providing consultancy services for Teesta-III HE Project (1200 MW). Teesta IV will be the second project to be executed by NHPC

across the Teesta River after Teesta-V Power Station (510 MW) which is generating power.

The organizational structure of the NHPC is given below in Figure 2.1

Figure 2.1: Organisation Structure of NHPC



2.2 Rationale for Project – Public Purpose Criteria in RFCTLARR Act, 2013

Section 2 (1) of the 2013 Act states that the land may be acquired only for public purpose. The Act states that the provisions relating to land acquisition compensation, rehabilitation and resettlement, shall apply, when the appropriate Government acquires land for its own use, hold and control, including for Public Sector Undertakings (PSU) and for public purpose. Infrastructure projects are among the purposes included as 'public purpose' under the Act. Further, electricity projects are included among the infrastructure projects in the notification issued by the Department of Economic Affairs, Government of India (Section 2(1) (b) (i), RFCTLARR Act, 2013). The proposed land acquisition is, thus, for a PSU and for generation of electricity which is an activity classified as a public purpose in the 2013 Act.

2.3 Details of Project

Teesta Stage-IV is a run-off the river hydro project with a proposed installed capacity of 520 MW. The dam site of Teesta-IV HE Project is proposed at the confluence of the Teesta River with Tolung Chu. The project is a part of the Teesta cascade evolved by CWC and is located between Teesta-III HE Project on the upstream and Teesta-V Power Station on the downstream.

The project is located on the Teesta river in North Sikkim District at latitude/longitude of 27025' – 27030' N/ and 88030' – 88032' E. The project envisages construction of 65m high concrete gravity dam across the river Teesta near Chandey village, and an underground power house having four units of 130MW each on the right bank near Gor Taryang village. The water of Teesta river will be diverted through two Head Race Tunnels (HRT) of about 6.6 & 6.5 kms length respectively to an underground power house proposed to be located on the right bank of the river near village Phidang which falls in Dzongu area in North Sikkim. The two Tail Race Tunnels (TRT) through which the diverted water is returned to river of origin are 622m and 627m long. The core design features of the project are given in Table 2.1.

Table 2.1 Salient Features of Teesta IV HE Project

I Power Generation		
1	Installed Capacity	520MW
2	Annual Energy Generation	2262MU(in 90% dependable year)
II Location		
1	Dam Site	Latitude: 27 ° 28' 50"N; Longitude: 88° 31' 23" E
2	Power House	Latitude: 27° 25' N; Longitude: 88° 30' 35" E
III Hydrology		
1	Catchment Area	3910 sq. Km
2	Average Annual Rainfall	2546 mm
3	Design flood	13000 cumecs
4	River diversion design flood	3800 cumecs
IV Reservoir		
1	Full reservoir level (FRL)	EL 755 m
2	Minimum draw down level	EL 740 m
3	Gross storage at FRL	18.6 Mm ³
4	Live storage	8.2 Mm ³
5	Length of reservoir	4.37 Km along Teesta; 644 m along Tolungchhu
V Diversion Tunnel		
1	Number & Size	2 Nos., 12.5 m Diameter
2	Shape	Horse –Shoe type
3	Length of DT	822 m (DT-1) & 706 m (DT-2)
VI Dam		
1	Type	Concrete Gravity Dam
2	Max. Height of dam above river bed level -65 m	
3	Max. Height of dam above deepest bed level -108.50 m	
4	Length of dam at Top	197.20 m
VII Spillway		
1	Type	Gated Low Level Sluice Spillway
2	Crest of spillway	EL 716 m
3	Number and size of sluices	Six nos. 9m (W) x 14.5(H)
VIII Coffer Dam (Upstream)		Coffer Dam (Downstream)
1	Top Level - EL 728 m	Top Level - EL 710 m
2	Height of Coffer Dam-32 m	Height of Coffer Dam-18m
3	Length at the Top-160 m	Length at the Top-110m

IX HRT		
1	Number/Diameter/Shape	2 Nos. / 8 m/ Horse-Shoe
2	Length	6.6 km (HRT-1) & 6.5 km (HRT-2)
IX Surge Shaft		
1	Number and Type	2 Nos. / Underground, Restricted orifice type
2	Shape & diameter	Circular, 23 m
3	Height of surge shaft	116.5 m
IX Power House		
1	Type	Underground
2	Installed capacity/Units	520 MW/ 4 nos. of 130 MW each
IX TRT		
1	Number/Size/Shape	2 Nos./ 8 m Diameter/ Horse Shoe
2	Length	668m (TRT-1) & 643 m (TRT-2)

Project Cost: The total cost of the project is Rs. 5694.33 cores at July 2017 price level with Interest during Construction (IDL) of Rs. 963.22 crore and Financing Charges (FC) of Rs. 9.97 crore. The cost of Rs. 5694.33 crore is proposed to be financed on a debt equity ratio of 70:30. The flow of equity is to be in paripassu to the flow of commercial loan. The interest on loan is assessed at 8 percent per annum and one time financing charges @ 0.25 percent have been assessed. The financing of equity is proposed to be funded from the internal resources of NHPC. The financing of the debt component will be through international/domestic financial institutions (tie up to be done after receiving government sanction). The per kilowatt hour (kWh) cost i.e., leveled tariff at July 2017 price level is Rs. 5.24.

2.4 Examination of Alternatives

When alternatives for project alignments are considered, the good practice is to consider socio-economic parameters for these alternatives¹. This would provide a holistic understanding of the impacts and help us choose an alternative that would not only be technically feasible but also cause least impact to the community from a socio-economic and cultural perspective. There is also an assessment of the culturally sensitive areas and the broad community support for the project in alternate alignments.

In case of Teesta-IV project, the original dam axis proposed by the CWC was located on the Namprikdang Mela ground. This area has historical significance. The cultural festival of Sikkim, Namprikdang Namsoong is celebrated every year at the confluence of rivers Teesta and Tholung Chu in Upper Dzongu region of Northern part of the state. The celebrations for Namsoong first commenced in the year 1976 on the Namprikdang ground, a small and grassy flatland in the Dzongu valley that is believed to connect the mythical abode (called Mayal Lang Country) of Lepcha ancestors. To safeguard the ground against submergence, the earlier FRL of the

¹ The indicative socio-economic indicators to be considered for alternate alignments include quantum of private land, forest land, agricultural land, multi-crop irrigated land, number of affected families, displaced families, number of residential structures, commercial structures, religious structures, cultural sites, public infrastructure, social infrastructure, impact on Common Property Resources (CPR), broad community support, etc.

project in the CWC report was required to be lowered. However, it was recognised that despite a substantial reduction in the FRL, it would not have been possible to avoid damage to the Mela ground due to construction activities. A reconnaissance survey was therefore carried out for locating the most promising dam location in place of the original one selected by CWC.

Lepcha Traditional Folk dance at Namprikdang during Namsoong Festival



State Level Tribal Festival celebration at Namprikdang ground in Upper Dzongu



(1) Downstream of Rang-Rang Nallah: The axis lies about 200 m downstream of the Rang-Rang Nallah. The axis was particularly chosen for reconnaissance survey with a view to locate the power components of the project on the left bank of the river so as to avoid Dzongu area. The width of the valley at this axis was estimated to be about 250 m. With the FRL at El 755 m, the tentative dam height above the river bed level would be around 65 m. It was estimated that the depth of the overburden at this location would be around 30 m, making the total dam height to be about 90 m. The site was not selected due to following demerits:

- The Rang-Rang Nallah flows along an active fault. In the upstream reaches above the Rang-Rang Bridge, the continuing activity of the crumbling of rock could be seen on the surface on both the banks of the nallah. The activity is also perceptible from the fact that the nallah is carrying a lot of sediment even in the lean season. Placing a dam in the vicinity of an active thrust/fault is not desirable.
- The left bank would involve a huge excavation of about 70 m depth and is in immediate vicinity of the state highway.

This axis was also studied by the CWC during formulation of DPR and was not preferred due to proximity with the Rang-Rang slide. The longitudinal profile of the river depicts a sudden fall in the bed level below the confluence of the Rang-Rang nallah with the river, and as such the lower stretch would result in a much larger height of the dam. Also, since the valley opens up further, the length of the dam would also be larger. Therefore, it was construed that the river stretch downstream of the Rang-Rang is not likely to offer a good site for the dam and the further study was confined to the river stretch upstream of Rang-Rang.

Rang-Rang bridge and Sikkim Orchids (Left). Military trucks crossing the Rang-Rang bridge in Sikkim. The bridge sways sideways and vertically when the trucks cross over (Right)



(2) Downstream of Runchhu Adit: Runchhu Nallah, a deep incision on the right bank of the river, meets the river at about 2.5 Km upstream of the Rang-Rang nallah. About 150 m downstream of this nallah, a prospective site for the dam and appurtenant structures was located. The left bank exhibits a slide scar but the valley is bounded by massive rock on the right bank, which offers a good location for housing the intake structure as well as a diversion tunnel on the right bank. This site was originally not considered by the CWC during formulation of DPR due to larger height of the dam.

(3) Upstream of Runchu Adit: This site was traversed from the right bank up to approachable distance from the road where after the terrain ends on the top of a vertical cliff. The terrain comprises of slope wash material having large boulders embedded into its matrix and is presently under cultivation. However it appears that the rock cliff attains a sufficient height for the purpose of siting of the dam and this slope wash material is not likely to be disturbed due to the construction activities. The left bank exhibits a steep but massive rock. However, in order to cross the Runchu nallah the tunnel may have to be aligned deep inside the hill to achieve the requisite lateral as well as superincumbent cover.

(4) Sankalang Bridge: An old suspension bridge exists at Sankalang providing a link to Mangan from the Dzongu area on the right bank. This was also considered for a prospective site for a dam/barrage. The right abutment of the bridge comprises of a steep quartzite phyllite formation. The left abutment of the old bridge was seen founded on a rock exposure which appears to be extending on the upstream as well under thin cover. Thus, good tying points are likely to be available. However, it was observed that the road to the Mela ground passes through this stretch on the right bank and, therefore, the disturbance to the Mela ground during construction cannot be ruled out.

Sankalang Check-post, North Sikkim



An assessment of alternatives considered for the dam include doing away with the initial alignment owing to submergence of an area that holds tremendous cultural significance to the community. Other socio-economic parameters of this alternative are not known for a broader comparison with the other alternatives. However, such a comparison may also not be important in the present case as the consultations with the community during the Study revealed that the issue of submergence of Mela ground was of primary importance to them.

The first alternative examined looked at the possibility of locating the project components on the left bank of the river so as to avoid the sensitive Dzongu area. The option was seemingly not considered owing to technical challenges, deep dissections in the left bank with prominent nallahs. Out of the four alternatives considered (explained above), two alternatives including the first and the third were rejected on technical grounds, while the third alternative was rejected owing to the disturbance to the same mela ground. The second alternative i.e., downstream of the confluence of Runchu nallah is now finally proposed with underground Power House on right bank. The FRL was reduced by 13 m i.e., from EL 768 m to EL 755 m from the earlier proposal. The following aspects have also been considered by the project to reduce the impacts:

- The project structures on the right bank have been kept underground except for Adit portals, Right Bank dam abutment and TRT outlets.
- To reduce the impacts on the day-to-day activities of the community, the access to the various project components is planned through access tunnels.

2.5 Phases of Construction

Construction Schedule: According to the construction schedule prepared by NHPC for the major construction activities, the overall estimated construction time for the project is about 72 months i.e. 6 years. The construction schedule envisaged in the Detailed Project Report (DPR) is given as Annexure II.

The contractors are responsible for the construction of camps for its work force. Migrant labourers will be settled in labour camps located at dam site and power house site on left bank of the Teesta River. The labour camps are proposed to be located in Zimchung, Upper Mangshila, Tanyek, and Swayem blocks. These blocks

are near the construction facility areas of the dam, adit II and power house. All these camps will be of temporary nature and has to be dismantled after the completion of the construction works. The temporary land requirements during construction phase are given in Table 2.2.

Table 2.2 Temporary Land Requirements during Construction Phase

S. No.	Description of Area	Area (Ha)
1.	Quarry Areas	8.7
2.	Muck Disposal Areas	32.03
3.	Aggregate crushing and plant and some other area in Power House Complex	3.27
4.	E&M and HM Storage Yard in Power House Complex	4.99
5.	Contractor Facility Area in Adit-II Area	2.05
Total		51.04

Quarry Sites: The estimated requirement of material for construction of the project is 17.05 lakhs cum of coarse aggregate, 8.55 lakhs cum of fine aggregate, 1.8 lakhs cum of rock fill and 0.08 lakh cum of filter material. To meet this requirement, about 18 quarry sites were initially proposed for the excavation of the sand and rock material. These sites included various river shoal deposits, clay deposits, rock quarries and excavated material from the dam, HRT and powerhouse. After detailed geophysical investigations, information shared by NHPC reveals eleven sites for quarrying of construction material viz., coarse aggregate, fine aggregate, rock fill material, impervious soil, etc. The total area of above eleven quarry sites will be 13.38 Ha. However, area of two quarry sites (4.69 ha) which are in the upstream of dam site, has been included in the area acquired for reservoir and after commissioning of the project these quarry site will become submerged. The remaining land acquired for the quarry sites (8.69) has to be returned by NHPC to the State Government.

Quarrying activities on progress at Kazor GPU, North Sikkim

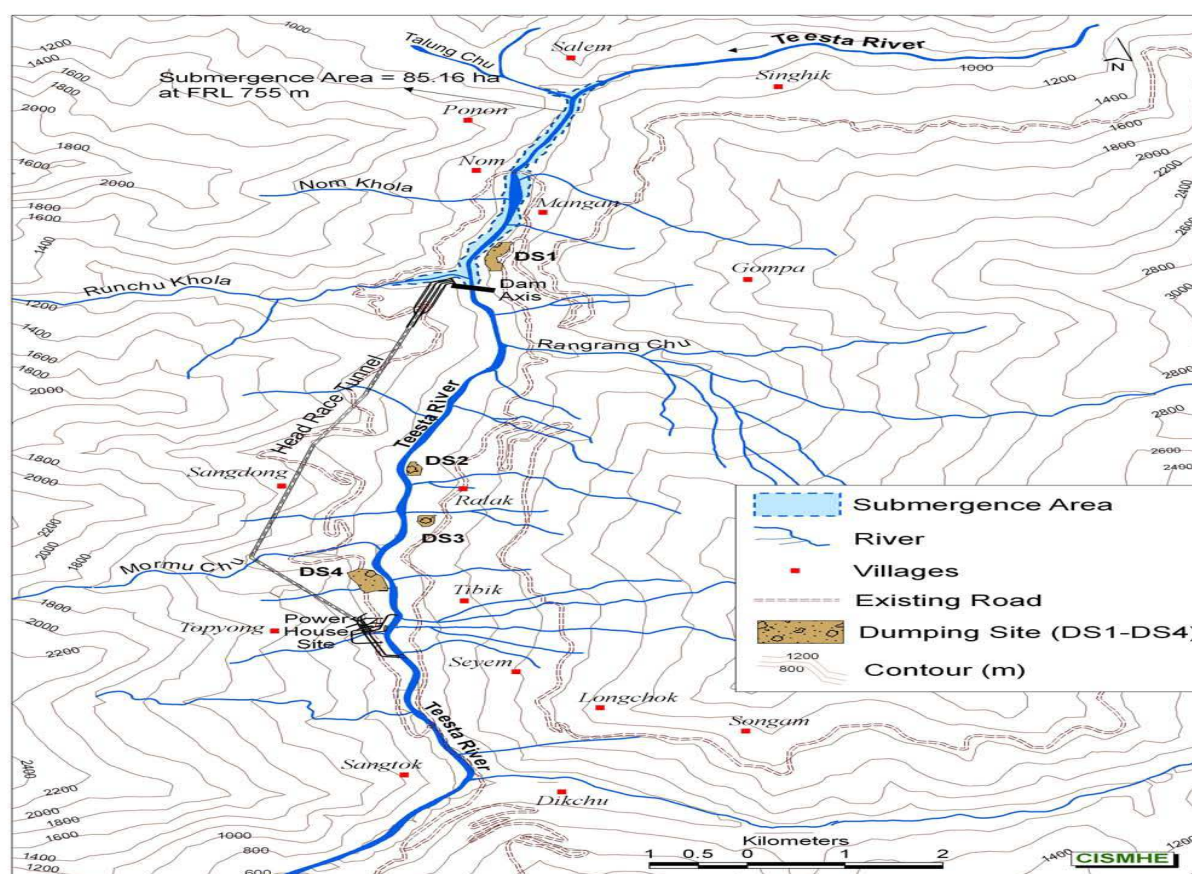


Spoil and muck disposal area: About 37.56 lakh cum of muck is estimated to be generated from surface and subsurface excavation at different appurtenant structures like diversion tunnel, dam, adits, HRT, and power house complex etc. About 39 percent of the excavated material is envisaged to be used as construction material. The remaining muck has to be disposed safely. Based on this assumption,

the spoil disposal sites for the excavated muck have been planned. About 14.5 lakh cum of the muck will be utilised as construction material in the form of aggregate and sand (NHPC DPR, 2010). The volume of remaining muck after utilization as construction material shall be 23.06 lakh cum. Part of this muck may be utilized in various activities like development of benches, retaining walls, widening of roads and job facilities wherever required.

Figure 2.2 depicts the muck dumping sites of the Teesta Stage-IV project. It is estimated that the total muck volume requiring safe disposal would be 29.98 lakh cum. Four dumping sites have been earmarked at different locations to rehabilitate the generated muck. The total land required for these sites is 32.03 ha. This area is entirely private land. Considering the fact that the utilization of the muck as construction material will begin at a later stage, provision for sufficient land has been kept in the DPR for disposal of the excavated muck. At 70 percent of their volume, these four muck disposal sites have the capacity to accommodate 41.58 lakh cum of muck. The dumping sites are located at Lower Mangshila, Upper Mangshila, Zimchung and Gor Taryang.

Figure 2.2 Muck Dumping Sites of Teesta Stage IV Project



Source: Project EMP Report, 2014

2.6 Workforce Requirements

The details of workforce requirements (direct recruitment) as well as outsourced / temporary employment opportunities are presented in Chapter 6.

2.7 Details of Environmental Impact Assessment Report

The Environmental Management Plan for Teesta IV Project was prepared by the Centre for Inter-Disciplinary Studies of Mountain & Hill Environment, University of Delhi, Delhi. The Final Report was submitted in January 2014. The Resettlement and Rehabilitation (R & R) package is based on the NHPC R & R policy (2007).

The total financial outlay for R & R Package provided in the EMP is Rs. 1412.30 lakh. The EMP also provides for a Community and Social development plan for 1411.00 lakh as per the details given in Table 2.3. The EMP, thus, envisages a total of Rs. 2823.30 lakh for the Resettlement and Rehabilitation Plan.

Table 2.3 Expenditure for R&R/Community Development Plan in EMP

		(in Lakhs)
S.No.	Particulars	Amount
Community and Social Development Plan		
I	Infrastructure Development	650.00
1	Construction of footpaths	75.00
2	Bus stops/Rain Shelters	50.00
3	Water supply facilities for the villages	100.00
4	Upgradation of infrastructure	125.00
5	Community welfare centres	50.00
6	Protection of cultural heritage and old monuments	50.00
7	Improvement of Namprikdang Mela Ground	200.00
II	Model Village	154.00
1	Link road, footpaths, sanitation system, street light, primary health centre, play ground, community centre/panchayat ghar, afforestation, water pipeline, garbage pits, and maintenance during two years.	
III	Economic Development	107.00
1	Capacity Building Programmes	47.00
2	Formation of Self Help Groups (SHGs)	50.00
3	Awareness & LPG Distribution Programme	10.00
IV	Contribution to ITI in the Project Area	500.00
	Total	1411.00
R & R Plan		1412.30
Grand Total		2823.30

According to the EMP, there are 256 landowners, including 3 tenant tillers, who are going to be affected due to land acquisition. Out of 256 affected landowners, after land acquisition, 67 would become landless, 32 would become marginal farmers, 40 and 114 would become small and large farmers respectively (EMP, Executive Summary, 2014, Page 26). The R & R package for the Project Affected Families (PAFs) in the EMP include the following:

- Land for land for those rendered landless/marginal after acquisition;
- Land Development Assistance OF Rs. 20,000 per PAF;
- Seed, Pesticides and Fertiliser Subsidy of Rs. 15000 for etc per PAF;
- Irrigation Support Rs 2 lakhs to a group of five PAFs;
- Rehabilitation Grant of Rs. 75000/1000 days MAW to each landless PAF;
- Rehabilitation Grant of Rs. 55000/750 days MAW to other PAFs losing agricultural land;
- Rehabilitation Grant of Rs. 50000/700 days MAW to tenant tillers;
- Marriage Grant of Rs. 10,000 to PAFs belonging to landless, marginal and tenant category at the time of marriage of their dependant daughter or sister.
- Subsistence Grant Rs 2500/month equivalent to 25 days of MAW as for a period of 12 months or till he/she is gainfully engaged, whichever is earlier payable to every widowed daughter (s) or sisters (s) (more than 18 years of age), unmarried daughter(s) (more than 30 years of age) and every son (more than 25 years of age), living with the head of the family but not owning any house or land.
- Scholarships to children of PAFs.

The EMP states that there are no families losing homestead land/house in the affected zone and that package for resettlement colony and houseless families are not relevant to this project. This observation is contrary to the findings of the SIA Study.

2.8 Applicable Legislations and Policies

In 1947 when India became independent, King Tashi Namgyal of Sikkim was successful in getting a special status of protectorate for Sikkim. The treaty signed between India and Sikkim ratified the status of Sikkim as a protectorate with Chogyal as the Monarch. On 16th May, 1975, Sikkim became a full-fledged State of the Indian Union. The institution of Chogyal was subsequently abolished. Article 371-F was inserted in the Indian Constitution through the 36th Constitution Amendment Act. The Article provides special provisions for the State of Sikkim in the Constitution of India. The Article states that all laws in force in the State shall continue to be in force therein until amended or repealed by a competent Legislature or other competent authority. Given the background, the following pre-independence resolutions merits attention in case of Sikkim and the Study area.

I. Proclamation of His Highness Sir Tashi Namgyal, Maharaja of Sikkim, August, 1956:

The Maharaja of Sikkim, through a proclamation in 1956, safeguarded the rights of the traditional communities over their land in North Sikkim. Dzongu is an area within North Sikkim that is reserved only for the Lepcha community. The following are some important excerpts from the proclamation:

1. No unauthorised transfer of land (transfer without the written permission of the Sikkim Darbar) by Bhutia and Lepcha Sikkimese to Nepali Sikkimese subsequent to the issue of this Proclamation shall henceforward be held valid by the Courts irrespective of such laws, rules, regulations and usages regarding limitation of suits as may be applicable in other cases.

2. The rules relating to the settlement and or the carrying on of any occupation in such areas (i.e. North of the line formed by the Dick Chhu from the Chola, down the Teesta to Ranghap Chhu, up the Ranghap Chhu till it meets the 27' 25 minutes latitude and thence along it to the Western border of Sikkim) by outsiders (non-indigenous) would be permitted only on a permit issued by the Sikkim Darbar shall continue to hold force.

II. Notification No. 3069/O.S, Home Department, Government of Sikkim, March, 1958

1. The Notification was issued with reference to the 24th March, 1958 proclamation. It was ordered that any outsider, (non-indigenous) settling and/or carrying on any occupation in the prescribed areas without a permit issued by the Sikkim Darbar shall be liable to imprisonment up to three years and/ or fine up to RS.1000, in default imprisonment up to six months.
2. Where any outsider (non-indigenous) has settled and or has continued to carry on any occupation in the prescribed areas even after receiving a written notice, he shall, if he shall not have removed himself from the prescribed areas within one month of receipt of such notice, be imprisoned for a period of three months or more, but not exceeding one year, and also be liable, in addition, to pay a fine up to RS.1000, in default six months' imprisonment. The land upon which such person has settled, as well as such crops as may be attached to it, shall be confiscated to the Darbar. The Darbar may pass orders regarding the restoration of the land and crops, or part thereof, to the original owner.

III. Notification No. 16/Home Department, Government of Sikkim, February, 2006

The State Government delegated the power to the District Collector, North Sikkim to issue permits within North Sikkim. This included a permit to Dzongu for the residents of North Sikkim. The permit was to be issued for the required duration on a case to case basis.

IV. Notification No. 25/Home Department, Government of Sikkim, February, 2008

In February 2008, the Govt. of Sikkim issued a Notification detailing the procedure for issue of permit for entry into Dzongu area in North Sikkim. The notification also exempted two categories of people from the need for securing permits for entry into Dzongu – the government officials on official duty and the locals. While government officials would only require the production of a valid Identity card, the locals may be required to produce a copy of their COI/EPIC/Ration card as proof of their identity.

V. Government of Sikkim Gazette Notification, November, 2006:

Recognition was accorded to Lepcha Community as the Primitive Tribe Group (PTG) in the State of Sikkim. Lepchas became the first group in the state to be accorded the status through the resolution. The community was previously listed as a Scheduled Tribe along with Bhutias, Limboos and Tamangs. While according the special status, the notification observed the following about the community:

1. The Lepcha community is one of the three ethnic communities of Sikkim.
2. Except a small fraction of the community in the urban areas, the bulk of the population of the Lepcha tribal community live in remote areas of the State and in small settlements, where the soil and topography of land are not conducive for

agriculture but more suitable for their traditional way of living viz. hunting, fishing, collecting forest produces etc.

3. Their simple and shy nature always hindered their socio-economic and educational growth and developments
4. Due to their poor economic condition and literacy, there is a high rate of infant mortality rate in the community, resulting in their declining population.
5. To protect and safeguard this vanishing tribe and to uplift their socio-economic, educational, political status, and to give them a distinct identity, the State Government has deemed it expedient to confer special status to the community.

VI. Central Law-The RFCTLARR Act, 2013

When the government acquires land for a PSU and for a public purpose, the following procedures of 2013 Act is applicable. These components are explained in detail in the subsequent sub-section.

- Land acquisition
- Compensation
- Resettlement and Rehabilitation

Land Acquisition: The process flow as outlined in the 2013 Act is explained in Figure 2.3. The transparency provisions laid out in the 2013 Act that would have to be followed during the land acquisition process is shown in Figure 2.4.

Compensation: Section 26 to 30 along with Schedule I relates to the provisions of determination of compensation in the 2013 Act. This has to be mandatorily followed for the proposed acquisition. According to Section 26 of the Act, the higher of the (i) Market value, if any specified in the Indian Stamp Act (ii) average sale price for similar type of land situated in the nearest vicinity (iii) consented amount of compensation in case of acquisition of lands for private companies or for Public Private Partnership (PPP) projects. The market value is to be fixed as on the date of 11(1) notification. Given the above, the basic value or minimum value as specified by Indian stamp Act 1899 is to be ascertained. The average sale price for similar type of lands in the vicinity area, duly taking three years registered transactions immediately proceeding to the date of 11(1) notification is to be assessed. The average sale price should be determined by taking 50 percent of sales in descending order of value per acre. The market value calculated is to be multiplied by factor 1 for urban area i.e., area notified under nagarpalikas / municipalities / municipal Corporation and factor 1.5 in the rural area.

On the procedural front, the details of registered sale transaction for the period of three year proceeding the date of 11(1) notification that had taken place in the village/vicinity area is to be obtained from the sub-registrar office. According to the Apex Court (various Judgements), lands to be considered as similar lands for market value determination should be a bonafide sale, located nearer to the lands under acquisition, are similar in nature, the size of the land covered by sale should be comparable to that of the land under acquisition etc. The valuation of structures, trees etc., also has to be got prepared by concerned engineering department/horticultural/agricultural/fisciculture/sericulture and forest department and shall be included in the valuation statement.

While the above methodology is to be strictly followed for the determination of value of compensation, the 2013 Act also empowers the Collector to exclude the values of those sale transactions that are not representing the true market value as compensation on earlier occasion in the district under the Act shall not be taken in to consideration. The components of land compensation provided in the 2013 Act is given in Box 2.1.

Box 2.1 Land Compensation as per the RFCTLARR Act, 2013

Market Value as determined under S.26 (1) X Multiplier (1.5/1 in rural/urban area)
 + Value of structures and assets
 + 100 solatium of compensation (Market Value plus Assets/Structures)
 + 12% of market value of land from Preliminary Notification to Award/Possession
 Section 69/2)

Section 26 (3) deals with those areas proposed for acquisition where the market value under Section 26 cannot be determined. This may happen because land is situated in an area where the transactions in land are restricted, the registered sale deeds for similar land may not be available for the immediately preceding three years; or market value has not been specified under the Indian Stamp Act, 1899. In such cases, the appropriate government/Collector should specify the floor price or minimum price per unit area of the said land. Further, an important provision in Section 26 (3) states that the Collector shall, before initiation of any land acquisition proceedings in any area, take all necessary steps to revise and update the market value of the land on the basis of the prevalent market rate in that area.

Resettlement and Rehabilitation Provisions

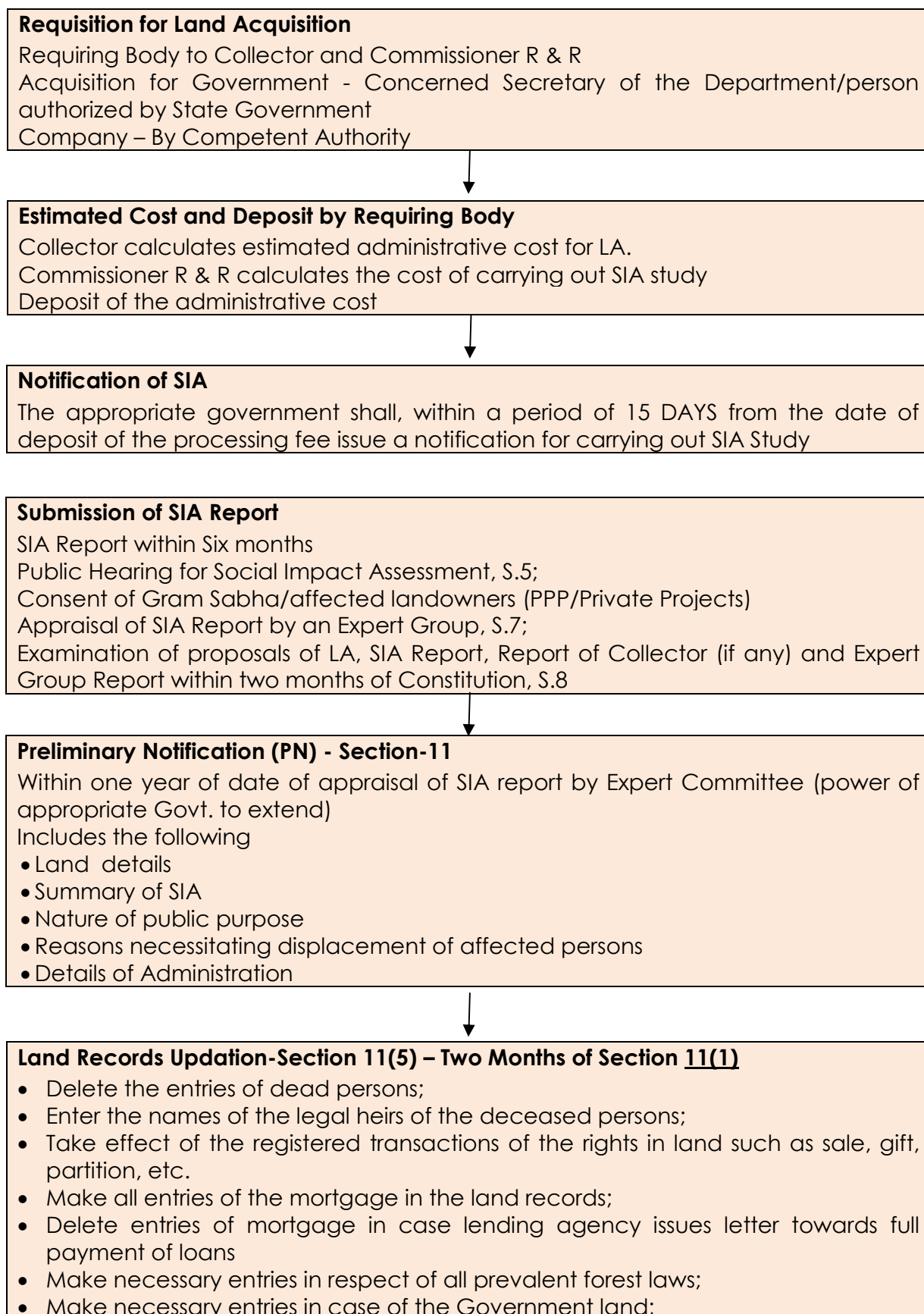
According to the provisions of the RFCTLARR Act, 2013, after the preliminary notification for acquisition is published, an Administrator has to be appointed. The Administrator has to conduct a survey and prepare the R&R scheme. This scheme should be discussed in the Gram Sabha in rural areas. Subsequently, the Administrator should prepare a report and submit it to the Collector. The Collector should review the scheme and submit it to the Commissioner, R&R who has to give the final approval for the scheme. The Administrator shall then be responsible for the execution of the scheme. The Commissioner (R & R) shall supervise the implementation of the scheme.

In case of acquisition of more than 100 acres, an R&R Committee shall be established to monitor the implementation of the scheme at the project level. The present SIA Study with a survey of the land losing families will help the state government in the process of arriving at an appropriate R & R plan for the affected families. A separate R & R Committee is required for monitoring of the R & R since the acquisition of land is more than 100 acres. The provisions of R & R as per the RFCTLARR Act, Section 31 and Schedule II are given below in brief:

- Provision of house unit for Project Displaced Families (PDFs): - If a house is lost in rural area, a house as per norms of IAY shall be provided or equivalent cash and in case of urban area a constructed house with 50 Sq.Mt. in plinth area, even in multi storied building complexes or Rs 1,50,000/-. The benefit will also be applicable for an affected family with out having home stead land residing in

the affected zone continuously for a period of not less than three years preceding the date of notification.

- Choice of annuity or employment for Project Affected Families (PAFs): Where jobs are created, mandatory employment with at least minimum wage payment for each project affected family in the project/any other project or a One-time payment of Rupees 5 lakhs per affected family or Payment of Rs 2000 per month per family for 20 years with indexation to consumer price index for agricultural labour, through annuity policies.
- Subsistence grant for PDF's; - Rs 3000 per month per a period of one year from the date of Award.
- Transportation Cost for PDF's: - PDF's are entitled to have a financial assistance of Rs 50,000/- for shifting family, building belongings and cattle.
- Construction grant for Cattle-shed/petty shop: - PDF's having cattle or PAF's having petty shop shall get a one-time financial assistance as fixed by government subject to minimum of Rs 25,000/ for construction of cattle shed/petty shop.
- Grant to artisan/small traders & other PAF's:- Artisan/self employed families or families owning non-agricultural, commercial, industrial structure in the affected area shall get financial assistance as fixed by government subject to minimum of Rs 25,000/-
- Resettlement allowance: - Each affected family shall be given a one time resettlement of Rs 50,000/- in lieu of loss of livelihood

Figure 2.3 Process flow under the RFCTLARR ACT, 2013

- Make necessary entries in respect of assets in the land like trees, wells, etc.
- Make necessary entries of share croppers in the land
- Make necessary entries of crops grown or sown and the area of such crops, and
- Any other entries or up-dating in respect of land acquisition, rehabilitation and resettlement.



Hearing of Objections - Section 15 (1)- Within 60 days of PN Publication

Objection to the

- Area and suitability of land
- Justification offered for public purpose
- Findings of the SIA Report

Submission of Report on Objections and recommendations by LAO to Collector

Decision of Collector Final



Preparation of Draft R & R Scheme by Administrator

- Preliminary survey of land, S.12
- Conduct of Census and Survey by Administrator by door to door visits and verifying SIA data within two months of PN , section 16 (1) and data on the following
 - ✓ List of likely to be displaced families;
 - ✓ List of infrastructure in the affected area;
 - ✓ List of land holdings in the affected area;
 - ✓ List of trades/business in the affected area;
 - ✓ List of landless people in the affected area;
 - ✓ List of persons belonging to disadvantageous groups –SCs, STs, handicapped persons etc
 - ✓ List of landless agricultural labourers in the affected area;
 - ✓ List of unemployed youth in the affected area.
- Preparation of draft R & R Scheme, S.16 (2)
- Preparation of Development Plan for SCs/STs
- Draft R&R Scheme to be given wide publicity 16(4)
- Public hearing on Draft R & R & Raising of objections, S. 16 (5)
- Review/approval of draft of R & R Scheme by Collector & Commissioner, S.17
- Finalization & publication of approved R & R Scheme in Gazette/local bodies, S. 18



Publication of Declaration and Summary of R & R-One year of Section 11 (1)

Publication of Declaration and Summary. Includes the following:

- Demarcated details of lands with full particulars of all interest holders
- Details of land required for 'resettlement area'
- Summary of R&R Scheme

Deposit of funds by Requiring body compulsory before final notification



Notices to Persons Interested - Section 21

Claims to Compensation and Claims to R & R



Award, Section 23; within One year of Section 19

Award shall comprise of two components, viz. LA and R&R

- Section-23 Enquiry and Land Acquisition Award by Collector
- Section-30 Individual Award with respect to land
- Section-31 (1) R & R Award by Collector

**Possession of Land, Section 38**

Power to take possession only after:

- Full payment of compensation (3 months)
- Monetary part of R & R (6 months) from the date of Award;
Irrigation projects/Hydel projects – R & R to complete 6 months before submergence.

38(2): Collector to ensure that R & R is completed in all its aspects before displacing the affected families.

Figure 2.4 Transparency Provisions under the RFCTLARR Act, 2013**Notification of SIA, Section 4 (1) and (2)**

- ✓ Consultation with Gram Panchayat, Municipality or Municipal Corporation to carry out a SIA Study
- ✓ Publication in local language to the Gram Panchayat, Mandal Parishad, Municipality or Municipal Corporation and in offices of the DC/SDM/Tahsildar
- ✓ Public notice by affixing at some conspicuous places in the affected areas
- ✓ Uploading on the website of the State Government.

SIA Report and SIMP, Section 5

- ✓ Public hearing in affected area after publicity about time/venue/place
- ✓ Publication in local language to the Gram Panchayat, Mandal Parishad, Municipality or Municipal Corporation and in offices of the DC/SDM/Tahsildar
- ✓ Public notice by affixing at some conspicuous places in the affected areas
- ✓ Uploading on the website of the State Government.

Recommendations of the Expert Group, Section 7(6)

- ✓ Publication of SIA Notification in local language to the Gram Panchayat, Mandal Parishad, Municipality or Municipal Corporation and in offices of the DC/SDM/Tahsildar
- ✓ Public notice by affixing at some conspicuous places in the affected areas
- ✓ Uploading on the website of the State Government.

Decision of Appropriate Government on SIA Report & SIMP, Section 8(3)

- ✓ Publication in local language to the Gram Panchayat, Mandal Parishad, Municipality or Municipal Corporation and in offices of the DC/SDM/Tahsildar
- ✓ Public notice by affixing at some conspicuous places in the affected areas
- ✓ Uploading on the website of the State Government.

Preliminary Notification, Section 11 (1) and (2)

- ✓ Official Gazette
- ✓ Two daily newspapers circulating in the area, one of which is in local language
- ✓ Publication in local language to the Gram Panchayat, Mandal Parishad, Municipality or Municipal Corporation and in offices of the DC/SDM/Tahsildar
- ✓ Public notice by affixing at some conspicuous places in the affected areas
- ✓ Uploading on the website of the State Government.
- ✓ Special meeting at gram sabha/municipalities/autonomous Councils

Draft R & R Scheme, 16, (4), (5) (6)

- ✓ Wide publicity in affected area and to be discussed in concerned gram sabhas or municipalities
- ✓ Public hearing in affected area (every gram sabha/municipality where more than 25 percent of land belonging to that area is going to be acquired) after ensuring adequate publicity about the time, venue and place.

Publication of Declaration & Publication of Summary of R & R Scheme, Section 19 (4)

- ✓ Official Gazette
- ✓ Two daily newspapers circulating in the area, one of which is in local language
- ✓ Publication in local language to the Gram Panchayat, Mandal Parishad, Municipality or Municipal Corporation and in offices of the DC/SDM/Tahsildar
- ✓ Public notice by affixing at some conspicuous places in the affected areas
- ✓ Uploading on the website of the State Government.

Notices to Persons Interested Inviting Claims to Compensation/R&R- Section 21

- ✓ Public notice at convenient places on or near the land by Collector
- ✓ Public notice on website by Collector
- ✓ Notice to all occupiers and on all persons known to be interested therein

Award Finalisation, Section 37 (2) and (3)

- ✓ Notice to persons interested who were not present personally at the time of Awards.
- ✓ Summary of entire proceedings including amount of compensation awarded to each individual along with details of land acquired on the website.

Mandatory Time Line Extension

- ✓ Mandatory timeline of one year between SIA Appraisal and PN, One year between PN and Declaration and One year between Declaration and Award can be extended at the discretion of the appropriate government.
- ✓ However, the same has to be notified and uploaded on the dedicated website.

VII. The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of the Scheduled Tribes and Other Forest Dwellers (Recognition of Forest Rights) Act, 2006 and its Rules, 2007

The Act recognises the rights of forest-dwelling Scheduled Tribes and Other Traditional Forest Dwellers over the forest areas inhabited and provides a framework for their rights. This Act became effective from 1st January, 2008. The settlement of rights (if any) under the Act has to be initiated and completed or bearing on operationalisation of the FRA before the proposals are granted for the final approval. The enclosures of evidence shall be in the form of following:

- A letter from the State Government certifying that the complete process for identification and settlement of rights under the FRA has been carried out for the entire forest area proposed for diversion, with a record of all consultations and meetings held;
- Letter from the State Government certifying that proposals for such diversion (with full details of the project and its implications, in vernacular/local languages) have been placed before each concerned Gram Sabha of forest-dwellers, who are eligible under the FRA;
- Letter from each of the concerned Gram Sabhas, indicating that all formalities/processes under the FRA have been carried out, and that they have given their consent to the proposed diversion and the compensatory and ameliorative measures if any, having understood the purposes and details of proposed diversion;

-
- Letter from the State Government certifying that the diversion of forest land for facilities managed by the Government as required under section 3(2) of the FRA have been completed and that the Gram Sabhas have consented to it;
 - Letter from the State Government certifying that discussions and decisions on such proposals had taken place only when there was a quorum of minimum 50% of members of the Gram Sabha present;
 - Obtaining the written consent or rejection of the Gram Sabha to the proposal;
 - Letter from the State Government certifying that the rights of Primitive Tribal Groups and Pre-Agricultural Communities, where applicable, have been specifically safeguarded as per section 3(1)(e) of the FRA;
 - The State/UT Governments, where process of settlement of Rights under the FRA is yet to begin, are required to enclose evidences supporting that settlement of rights under FRA 2006 will be initiated and completed before the final approval for proposals.

CHAPTER III**STUDY METHODOLOGY****Chapter Outline**

Introduction

- ❖ Study Objectives
- ❖ Study Methodology and Nature of Data Collected
 - Desk Review
 - Land Survey
 - Census Survey of Potential Affected Families
 - Socio-economic Survey
 - GIS tagged information on Structures in the Affected Area
 - Stakeholders' Consultations
 - Focus Group Discussion
- ❖ Team Composition
- ❖ Study Limitations and Challenges
- ❖ Stakeholder Consultations
- ❖ General Profile of the Study Area
 - Climatic conditions, Socio-economic and Demographic Characteristics, Changes in Agriculture Sector and Basic Amenities

Introduction: Infrastructure projects involving appropriation of land have the potential of adversely impacting the livelihood of the local communities. Depending on the scale of intervention, the social effects may be on individuals, families, communities and the larger population of the area. Adequate measures should be taken to minimize the adverse impact on the communities and to ensure that those adversely affected are supported in their Resettlement and Rehabilitation (R&R) process. The scale of effort and the amount of social information required will vary according to the range and level of social impacts associated with each project.

3.1 Study Objectives

Conduct a Social Impact Assessment in line with the Requirements of the RFCTLARR Act, 2013. This will involve:

- Gaining a good understanding (i.e. profiling) of the communities likely to be affected by the project so as to appreciate differing needs and interests of the various sections of the community.
- Identifying the project affected communities and collecting their baseline data
- Providing space for participatory processes and facilitating community discussions about the acceptability of the likely impacts and the proposed benefits.
- Comprehensively studying of the likely significant negative/positive impacts
- Developing a Social Impact Mitigation Plan (SIMP) that incorporates the benefits, mitigation measures, monitoring arrangements and institutional arrangements.

3.2 Study Methodology and Nature of Data Collected

To achieve the objectives mentioned above, several pre survey activities – literature review, selection of teams for data collection, logistic arrangements, collection of background information about the villages, visit to the project sites and affected villages – were undertaken. The team established contacts with the stakeholders at different levels i.e., at the corporate, project and community levels followed by field testing of the instruments (schedules, guidelines, etc.) of field data collection. During November 2016, the SIA team from ASCI had a Workshop for ten Statistical Investigators of Department of Economics & Statistics Monitoring & Evaluation (DESM&E) on SIA data collection.

Both primary and secondary sources of data were used in the preparation of this Report. The secondary data sources included census data, village revenue records, project documents and maps, documents related to legal cases, etc. The primary data included information from the household survey, census and socio-economic study. The primary data, secondary data, inputs from stakeholder consultations, Focused Group Discussions (FGDs) and field observations have become the base for compiling the report.

1. Desk review: These included a review of the project documents, collection of secondary data, review of the 2013 Act, and identification of gaps in the existing information and sources for such information.

At the macro level (district and block levels), a number of indicators covering climatic conditions, socio-economic and demographic characteristics, changes in agriculture sector, and basic amenities are examined. While trends in climatic conditions are analyzed in terms of rainfall, temperature, wet days and precipitation, demographic characteristics are assessed in respect of number of households, ethnic composition, population density, sex ratio, literacy rate, rural workforce, etc. The indicators used for examining changes in agriculture sector include land use pattern, distribution of irrigated holdings and area by different sources, size of land holding, irrigated area and intensity of irrigated cropping, and cropping intensity in relation to irrigation. The basic standard of living is assessed with regards to housing structure & its ownership, sources of drinking water & lighting, type of cooking fuel, access to kitchen facility & sanitation, asset possession & banking facility, and extent of peoples' dependence on Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) works for generating livelihood.

While the data on trends of climatic conditions are sourced from India Water Portal (i.e., http://www.indiawaterportal.org/met_data/), that on changes in the agriculture sector are obtained from the web portal of Agriculture Census Division, Ministry of Agriculture and Family Welfare, Government of India, New Delhi (i.e., <http://agcensus.nic.in/>). Data on the socio-economic & demographic features and standard of living indicators are collected from the web portal of Census of India (2011), Office of the Registrar General & Census Commissioner, Ministry of Home Affairs, Government of India, New Delhi (i.e., <http://censusindia.gov.in/>). The variable description, measurement and data sources used in the Study are given in Table 3.1.

Table 3.1 Variable Description, Measurement and Data Sources

Sl. No.	Broad Variables	Indicators	Measurement	Data Type	Data Source
1	Climatic Conditions	Temperature	Monthly trends in degree Celsius	Time Series (1991-2002)	India Water Portal. (http://www.indiawaterportal.org/met_data/)
		Wet Day	Frequency of days (No.)		
		Precipitation	Monthly trends in millimeters		
		Rainfall	Annual trends (during the months from June to October) in millimeters	Time Series (2010-2016)	Hydromet Division, India Meteorological Department, New Delhi. (http://hydro.imd.gov.in/hydrometweb/(S(4zvarmeccirpk55qs35utnd))/DistrictRaifall.aspx)
2	Geographical Area & Demographic Profile	Geographical area	In Square Kms.	One Data Point (i.e., 2011)	Census of India (2011), Office of the Registrar General & Census Commissioner, Ministry of Home Affairs, Government of India, New Delhi. (http://censusindia.gov.in/)
		No. of households	Absolute No. and the percentage share in total		
		Total Population			
		Population Density	No. of persons per square Kms.		
		SC population	Absolute No. and the percentage share in total		
		ST population			
3	Education Status	Effective Literacy Rate	The ratio of literates to the total population age of 7 years and above expressed as a percentage	One Data Point (i.e., 2011)	Census of India (2011), Office of the Registrar General & Census Commissioner, Ministry of Home Affairs, Government of India, New Delhi. (http://censusindia.gov.in/)
		Gender Disparity Index	Ratio of the difference between male and female literacy rate to female literacy rate		

Sl. No.	Broad Variables	Indicators	Measurement	Data Type	Data Source
4	Rural Workforce Composition	Total Workers	Absolute No. and the percentage share in total	One Data Point (i.e., 2011)	Census of India (2011), Office of the Registrar General & Census Commissioner, Ministry of Home Affairs, Government of India, New Delhi. (http://censusindia.gov.in/)
		Main Workers			
		Marginal Workers			
		Non-Workers			
		Cultivators			
		Agricultural Workers			
		Work Participation Rate	Total workers as a percentage of the total population		
5	Land Use Patterns	Operational Holding	Percentage share in total geographical area of the district/state	Two Data Points (i.e., 2005-06 & 2010-11)	Agriculture Census Division, Ministry of Agriculture and Family Welfare, Government of India, New Delhi. (http://agcensus.nic.in/)
		Net Sown Area			
		Area under Current Fallows			
		Net Cultivated Area			
		Other Un-cultivated Land			
		Fallow Land			
		Culturable Waste			
		Total Un-cultivated Area			
		Land Not Available for Cultivation			

Sl. No.	Broad Variables	Indicators	Measurement	Data Type	Data Source
6	Changes in Agriculture Sector	Irrigated Holdings	Percentage of total no. of holdings receiving irrigation	Two Data Points (i.e., 2005-06 & 2010-11)	Agriculture Census Division, Ministry of Agriculture and Family Welfare, Government of India, New Delhi. (http://agcensus.nic.in/)
		Irrigation Area	Percentage of total area of holdings receiving irrigation		
		Net Irrigated Area	Percentage share of net irrigated area in net sown area		
		Intensity of Irrigated Cropping	Gross irrigated area as a percentage of net irrigated area		
		Cropping Intensity	Gross cropped area as a percentage of net sown area		
		Net Irrigation Ratio	Net Irrigated Area as a percentage of Net Sown Area		
7	Basic Standard of Living	Type of Housing and Ownership	Percentage of Households have access to basic amenities and financial inclusion	One Data Point (i.e., 2011)	Census of India (2011), Office of the Registrar General & Census Commissioner, Ministry of Home Affairs, Government of India, New Delhi. (http://censusindia.gov.in/)
		Sources of Drinking Water			
		Sources of Lighting			
		Cooking Fuel and Kitchen Facility			
		Sanitation Facility			
		Asset Possession			
		Banking Facility			

Sl. No.	Broad Variables	Indicators	Measurement	Data Type	Data Source
8	Dependence on MGNREGA	Expenditure on Wages	Percentage share	Time Series (2013-2017)	Ministry of Rural Development, Government of India, New Delhi. Retrieved from http://www.nrega.nic.in/netnrega/home.aspx
		Works Completed			
		Average Person-days	Per household in days		
		Average Wage Rate	Per day Per person in INR		
		SC person-days	As a percentage of total person-days		
		ST person-days			
		Women Participation	Percentage share		
		Completed 100 days of Work	Percentage of Households		
9	Poverty	Incidence of Poverty	Absolute and Proportion of the total population below poverty line. The identification of BPL households is based on combinations of income perspective, expenditure perspective and basic needs perspective (details provided in the text of Chapter 3)	One Data Point (undated)	Study conducted by the Department of Economics, Statistics, Monitoring and Evaluation, Government of Sikkim.

- 2. Land Survey:** The plot numbers mentioned in the SIA Notification has been taken as the base for the list of households that was to be included in the survey process. To understand the location and present use of required land, field verification of the project area was carried. This included carrying out a transect walk and discussions with local community. To understand the land tenure status and the present enjoyers/users/occupiers of land and CPR, an assessment of land records, field verification and discussions with revenue staff, local communities & affected people were carried out. The following documents were collected for the purpose:
- (i) Land revenue maps to identify the project designated land.
 - (ii) Land revenue records for listing land holders losing land for the project including the category and extent of land. This included the *parcha* that was collected from the landowners.
 - (iii) Project boundary coordinates and Use of Satellite Imagery to assess the land use in the project area over the years.
- 3. Census Survey of Potential Affected Families:** Based on the land assessment, land records and potential project impacts, a census survey of identified affected families was carried out. The survey provided an estimate of the number of affected families in terms of the following main groups of losses:
- Land losers (private land)
 - Loss of structures and other immovable assets
 - Loss of livelihood-trade/business, wages, loss of clients, etc.
 - Loss of access to infrastructure and civic amenities
 - Other losses
- The household level analysis was carried out using primary data and structured household schedule (Annexure-I) collected from all the land owners and non-titleholder families residing in the affected area across ten affected Gram Panchayat Units (GPUs) including Barfok Lingdong, Hee Gyathang, Gor Taryang, Mangshila Tibuk, Namok Swayam, Ramthang Tanyek, Singhik Sentham, Tingchim Chandey, Passingdang Safo, and Ringhim Nampatam.
- 4. Socio-economic Survey:** The Socio-economic survey was carried out for all the affected households along with the census survey. The assessment was carried on different parameters including demographic features, work participation and employment, migration, indebtedness, household assets, access to government schemes, sources of income and income levels, access to government schemes, factors contributing to livelihood, etc.
- 5. Use of Technology (Satellite Imagery) to understand Changing Landuse:** Satellite imagery was made use of to understand the changing land use in the proposed area as well as authenticating claims by the landowners. The land-cover changes were mapped between 2006 (the year of signing of MoU between NHPC and Govt. of Sikkim) using satellite images and socio-economic data.
- 6. Transect Walks and Physical Verification of Project Area to Identify Displaced Families:** The census survey revealed structures and habitation in the area. However, the physical survey of the area revealed many more structures than those constructed and revealed by the landowners.

- 7. GIS tagged information on Structures in the Affected Area:** After receiving primary information from the census survey regarding the structures on the affected area, two rounds of physical verification were conducted. The photographs of the structures were geo tagged to reflect their precise location in the project affected area.

A survey was also actioned for verifying the physical structures existing on the affected land and capturing basic information about the non-titleholders (locally called as 'Kutias') residing therein. The information gathered from the field survey on the non-titleholders households include (though not limited to) house ownership status, residing tenure, nationality, COI holding, livelihood dependence on the affected area, and occupation.

- 8. Multiple Surveys and Verification Exercises to ascertain Livelihood Loss:** After the initial survey in January 2018, the Study team returned to the affected area during March 2018 to verify the details of livelihood loss of the families residing in the affected area. The following factors were considered for determination of their livelihood loss

- Whether the landless family residing in the area are normal residents of the area for more than three years
- Whether the livelihood activity is carried out on the land that is proposed for acquisition?
- Whether the livelihood activity carried out in the proposed project area form their primary source (more than 50 percent of the family income)
- Whether the family members are citizens of India

- 9. Stakeholders' Consultations:** This included a study of:

- Willingness of the people to contribute their land required for project activities
- Concerns about direct and indirect impacts from the project
- Other issues of concern to the affected people/other stakeholders.

- 10. Focus Group Discussion (FGD):** Multiple FGDs concerning women and general consultation meetings of all stakeholders were also carried out for understanding the gendered impact and community's perception of the proposed project. It is important to bring in the voices of all the stakeholders into this report. The grievances of the villagers were documented and FGDs were held with women, landowners, claim-landowners, etc., to understand their aspirations for the future, perceptions, and apprehensions about the project. The issues raised were suitably studied at depth and ameliorative measures suggested in the study.

The Study team also received representations submitted by the Panchayats/villagers/individuals regarding issues concerning the project and also request letters from individuals to include their land in the project area.

3.3 Team Composition

The core SIA team included a six member academic team from the Centre for Excellence in Management of Land Acquisition, Resettlement and Rehabilitation (CMLARR), Administrative Staff College of India (ASCI), Hyderabad including a Gender Expert and two Research Associates. The census and socio-economic

survey was conducted using the services of Statistical Investigators of DESME. The survey team was divided into two groups, each group under a Group leader. The support for logistic planning for census survey was provided by the State SIA Unit. The Assistant Director of DESME was the Operational In-charge for the exercise.

Given the non-availability of project coordinates at the time of structure survey, assistance for ascertaining the project boundary was taken from the Revenue Surveyors of district administration.

Table 3.2: Team Composition for SIA Study of Teesta Stage IV HE Project

S. No	Name	Position	Educational Qualification
1.	Dr. Reshmy Nair Professor, ASCI	Project Leader	• M.Phil. and Ph.D. (Economics) from Jawaharlal Nehru University
2.	Dr. Saswat Kishore Mishra Asst. Professor, ASCI	Lead Team Member	• Ph.D. (Economics) from IIT, Kharagpur
3.	Dr. Sreerupa Sengupta Asst. Professor, ASCI	Gender Expert Team Member	• Ph.D. and M.Phil. (Women's Studies) from Jadavpur University
4.	Ms. T S L Shyamala Academic Associate, ASCI	Data Analyst	• MBA (HR & IT) from Institute of Computers of Business Management, Punjab Technical University
5.	Ms. Lakit Lepcha Research Associate	Research Associate	• Master of Arts
6.	Mr. Jai Prakash Chetri Research Associate	Research Associate	• Bachelor of Computer Applications
Survey Team (Statistical Investigators from DESME)			
1.	Mr. Dipesh Sharma (Group Leader)		
2.	Mr. Sonam Zangpo (Group Leader)		
3.	Mr. Nabeen Sharma		
4.	Ms. Seema Rai		
5.	Ms. Hollika Rai		
6.	Mr. Jeet Kumar		
7.	Ms. Alisha Basnet		
8.	Mr. Tenzing Bhutia		
9.	Mr. Sonam Lepcha		
10.	Ms. Suzu Subba		
Logistic Support for Survey			
1.	Mr. Rikzing Gyatso Lepcha, Asst. Director, DESME		

3.4 Study Limitations and Challenges

1. Non-cooperation of Panchayats of Dzongu Area: Community participation in SIA is a valued end in itself and not to be misunderstood as a means by which projects are legitimized. The representatives across four affected GPUs of Dzongu region did not extend the requisite cooperation, both for conducting the Survey and holding the Stakeholder consultation meetings. The four GPUs include Hee-Gyathang, Gor-Taryang, Barfok-Lingdong and Passingdang-Safo. The dissent by the local representatives is despite several conscientious efforts (both formal and informal) made by the Study team to reach out and apprise them about the significance of SIA Study under the 2013 Act. Consequently, this prevented adequate formal consultations at the community level to happen in the Dzongu region. On the other hand, the pro-project landowners from Dzongu region vociferously articulated their support for the project through repeated meetings with the SIA team.

2. Lack of Data/Delay in receipt of required data: The total landholdings mentioned by the landowners, in many cases, did not match with the information shared by the district administration. Further, there is lack of data on consolidated land holdings owned by the landowners beyond the revenue block over and beyond the area reflected in one *Khatian*. This constrained the Study team to identify with precision the extent of landless and marginal landowners in the affected region. Eventually, the results of the verification exercise carried by the District Administration are taken as the base to arrive at the estimate and entitlements of the landless/marginal (though the total landholdings of individual landowners still remain unclear).

The Study team sought secondary data/information on a number of indicators covering key aspects of socio-economic-demographic profile, assets holding, social infrastructure, farming practices, etc., at Block/GPU level from the district administration. Similarly, data were sought from the NHPC office on the requirement of manpower for the project (skilled/semi-skilled/unskilled), sources of workforce, CSR, etc. The RFCTLARR (Sikkim) Rules, 2015 provides that all data sought by the SIA team should be furnished within seven days. However, there was an inordinate delay in providing the requisite data/information owing to staff constraints/ineluctable official modalities. This also delayed the SIA Study process.

3. Unavailability of Land Coordinates: A scientific assessment of land area using technology was constrained in the initial stages due to unavailability of project component and plot-wise land coordinates. The project area-wise land coordinates, received during the latter part of the Study however provided useful inputs for verification and assessment.

4. External Challenges: The Study faced few external challenges. First, the Notification for the SIA study was published in the District Gazette on December 15, 2017. However, the following fortnight served no purpose to the Study team as the Notification could not be translated into local language and shared with the affected GPUs owing to festival time in North Sikkim. This was eventually completed only by first week of January after which the SIA Study was initiated. Second, untimely heavy rain spells imposed extreme challenges during the second round of residential structure verification exercise in the affected area during March, 2018.

5. Recognition of Forest Rights: The estimation/survey of landowner families whose rights are recognized under the Scheduled Tribes and Other Forest Dwellers

Recognition of Forest Rights Act, 2006 (FRA, in short) could not be done as a part of the SIA Study since the process is still being carried out in the affected areas of North Sikkim. Ideally, the implementation of FRA should have been done before the initiation of the Study.

6. Issues relating to Land Records Updation: About one-fourth of the landowners in the records have already expired. This imposed huge challenges for the census survey. There were also few other issues of land records updation.

7. Missing/Non-Consenting Landowners: A total of 296 landholdings (plot owners) are notified in the notification issued for SIA. Table 3.3 presents the details of landowner families surveyed. After eliminating duplication (land owners owning multiple plots) and land owned by multiple landowners residing in the same family, the actual estimated number of landowners down to 275. Out of this, 16 landowners could not be surveyed on the left bank after multiple rounds of trying to reach out to them. The local Panchayats were also been unable to trace these landowners. Though such issues are common in all SIA Studies, it would still have been better if the survey could be undertaken for all households not only to gauge their individual views and concerns but also to have a more precise estimate of R & R cost. From the right bank, 29 of the 88 landowners did not come forward for the census survey.

Table 3.3: Revenue Block-wise Details of Landowner Families

S. No.	Revenue Block	Land Extent (Ha)	Land Holdings (Ha)	Land-Owners	Land Owner Families	Surveyed Landowner Families	Not Surveyed (Land Extent in Ha)
1	Tanyek	1.288	6	6	6	4	2(0.33)
2	Swayem	4.854	14	14	14	14	0
3	Lower Mangshila	3.236	4	4	4	3	1(2.00)
4	Upper Mangshila	28.5273	55	54	50	47	3(2.17)
5	Tingchim	25.021	52	50	46	41	5(1.59)
6	Zimchung	29.548	40	40	38	35	3(0.73)
7	Malling Singhik	4.924	14	13	13	12	1(0.07)
8	Kazor	4.825	20	18	16	16	0
	Left Bank Total	102.2230	205	199	187	172	15 (6.89)
1	Gor Taryang	25.163	31	31	29	22	7(3.68)
2	Gnon Sangdong	9.19	7	7	7	2	5(6.78)
3	Hee-Gyathang	24.54	29	29	28	17	11(6.22)
4	Barfok	1.702	1	0	0	0	0
5	Lingdong	13.5365	21	22	22	17	5(1.62)
6	Passingdang	1.072	2	2	2	1	1(0.03)
	Right Bank Total	75.2035	91	91	88	59	29 (18.33)
	Grand Total	177.4268	296	290	275	231	45 (25.22)

3.5 Stakeholder Consultations

Consultations with affected communities should be an on-going process throughout planning and implementation of projects involving acquisition of land. The SIA Study team strongly believed that the voluntary participation of affected people is important for understanding their genuine needs and issues. The Study team made every possible effort to reach out to all stakeholders and local representatives. The much delayed project seemed to have an issue of survey fatigue with the landowners. The primary query in all such meetings was the start date for the initiation of the project.

The Panchayats from the Left Bank facilitated the interactions with landowner families and other stakeholders. The Teesta Stage-IV Affected Area Development Committee (comprising of landowners from the both the banks) facilitated the consultation exercises with the landowners on the right bank. The Study team also travelled to the right bank and held informal consultations with the willing members of the community. Since the community consultations revealed a significant number of people raising demands for improvement in health delivery, the SIA Study team also visited the Primary Health Centres (PHCs) and held discussions with the doctor/medical staff to understand the facilities available and requirements.

The mode of consultation made use of were individual interactions at the household level, community meetings, FGDs with landowners, claim landowners, women, non-titleholders, squatters etc., informal discussions and unstructured interviews with Key Informants. The summary of the consultation exercises are clubbed within three heads – Community Consultations, Consultations with Women and Consultations with Medical Practitioners. The brief of the consultations are categorized into two heads – Primary Issues of Concern to the Community and Expectations from the Project.

Community Consultations: The brief summary of the important large scale community level consultations where more than 15 members of different stakeholders participated are summarized in Table 3.4. Consultations in small groups of community members were held at different parts of the project affected area throughout the SIA Study process. The gist of primary issues of concern for the community and the expected benefits from the project are summarized below:

Primary Issues of Concern: Influx of migrant labourers and associated issues is a major concern among the people across the affected GPUs. In particular, people fear increase in crime rates and social insecurity as a result of in-migration of labourers from other states and neighbouring countries. In addition, migrant labourers also pose livelihood menaces as they tend to push out the local workforce out of casual works on account of cheap labour wages. Preservation of aquatic life, particularly *Asala Fish* is a point of concern for the local people. Adversely affected quarry landowners expressed their concerns about proper rehabilitation measures to ensure sustainable livelihood for their families after acquisition of land. In Mangshila Tibuk, people called for exclusion of *burial ground* from the proposed land acquisition. A major concern among the participants in Tingchim Chandey was if land locked issues will be appropriately addressed. People in general are apprehensive that they may not be able to utilize the monetary compensation

amount judiciously and, therefore, suggested for *investment advisory services* to be extended to the landowners. People are also very apprehensive about effective implementation of EMP and damage to their natural environment during the construction phase of the project.

Expected Benefits: People in the affected GPUs expect significant improvements in their general standard of living. They anticipate wide scale increase in livelihood opportunities through creation of employment for the local force including regular jobs for the educated members of the affected landowner families and transparent apportioning of petty contracts during construction, operation and maintenance through village level committees. In Ringhim Nampatam, people emphasized on providing land to all those who are rendered landless in the acquisition process. In Mangshila Tibuk, people expect the funds from *Local Area Development Fund* and CSR to be spent within the 10 affected GPUs. Besides, people hope enhancement of social infrastructure (including up-gradation of district hospital and monasteries), focused promotion of tourism, compensatory afforestations in non-forest land, and medical health insurance for the community. People in the affected GPUs showcased interest to undertake training on manufacture of bamboo-based products. They held that special training should be held for technical jobs in the mechanical/civil/electrical area. They also highlighted the need to provide training and funds to the Self Help Groups (SHGs).

Table 3.4: Summary of Community Consultations

Place	Date	Expectations and Issues of Concern
Different Stakeholders - Tingchim Chadey GPU	10 th January, 2018	<p>➤ Expectations</p> <ul style="list-style-type: none"> → Employment to local workforce → Petty contracts through village level committees → Up-gradation of social infrastructure in the area → Promotion of Afforestations → Medical insurance for community <p>➤ Issues</p> <ul style="list-style-type: none"> → Labour influx and associated security concerns → Landlocked issues → Access road to cremation site
Different Stakeholders - Mangshila Tibuk	13 th January, 2018	<p>➤ Expectations</p> <ul style="list-style-type: none"> → Improved living standard and better benefits → Petty contracts in all affected areas → Employment including regular jobs to educated members of affected landowner families → Expenditure of funds pertaining to LADF and CSR with the involvement of the committees in the 10 affected GPUs → Promotion of tourism <p>➤ Issues</p> <ul style="list-style-type: none"> → Employment → Labour influx → Environmental issues → Setting up a registered association for environment management

Place	Date	Expectations and Issues of Concern
		<ul style="list-style-type: none"> → Preservation of aquatic life (e.g., <i>Asala</i> fish) → Exclusion of burial ground from the proposed acquisition ➤ Skills/Training Sought <ul style="list-style-type: none"> → Manufacture of bamboo-based products
Teesta Stage IV Affected Area Development Committee	14 th January, 2018	<ul style="list-style-type: none"> ➤ Issues <ul style="list-style-type: none"> → Projects have already come up in Upper Dzongu – a sensitive area → Dzongu area requires development projects as it has more economically poor sections
Different Stakeholders - Ringhim Nampatam	15 th January, 2018	<ul style="list-style-type: none"> ➤ Expectations <ul style="list-style-type: none"> → Provisions of land for landless people → Qualified people from landowner families to get regular employment → Preference to the local community in contracts during construction, operation and maintenance → Up-gradation of district hospital and <i>Gumpas</i> ➤ Issues <ul style="list-style-type: none"> → Proper rehabilitation of the adversely affected quarry landowners to be rehabilitated → Investment advisory services should be extended to the landowners ➤ Skills/Training Sought <ul style="list-style-type: none"> → Special training for technical jobs in the mechanical/civil/electrical area → SHGs training and fund management

Stakeholder Consultation Meeting held at Mangshila-Tibuk GPU



Stakeholder consultation with the landowners of the Right bank held at the helipad under Ringhim Nampatam GPU



SIA Team discussing with the Officials of Dzongu Block Administration regarding the boycott of stakeholder consultation meeting at Hee-Gyathang GPU



Consultations with Women Group: The gist of primary issues of concern for women members and the expected benefits from the project are presented in Table 3.5 and summarized below:

Primary Issues of Concern: Women are not slow to voice opinion that migrants cause security related worries among community members. They fear that once the project begins, an increase in the influx of migrant workers from other states and neighboring countries may pose increased social risks for women, making them more vulnerable to crimes. Women members of SHGs perceive high risk of loss of livelihood, income and availability & access to common resources as a result of land acquisition for the proposed project. The women were also vocal about the general challenges that they face as members of SHGs. These relate to markets for their products, lack of information about weekly *markets/mandis/melas/exhibitions* held in adjoining GPUs that prevent them from selling their produce, etc. Women, reportedly dependent on land (to be acquired) for sustenance of their families,

were worried about their future. In cases where women are mostly home makers and cultivation is an ancillary occupation of the household, income from crops, fruits, etc., grown on land to be acquired aids them in contributing to household expenses, thereby providing a sense of empowerment and enhancing their voice in household financial decision making.

Expected Benefits from the Project: Women respondents emphasized on the need for infrastructural development in the area which would increase their levels of mobility and ensure greater access to education. They look forward to establishment of schools with computer training centres, setting up of monastery and kitchen within monastery, installation of pipelines for continuous supply of water, water tank, health centre/ hospital with trauma centres and better equipments, pharmacy, ambulance service, school bus for children, solar panels for uninterrupted supply of electricity, formation of centre for skill development, and centre for geriatric care in the affected region. Besides, women want adult learning centres for those who have had to give up education due to marriage. There is also high expectation among women regarding increased employment opportunities arising out of the project. Given the educational qualification in the community, women identified activities that they can undertake during the course of the project. Some such activities include working as supervisor at the project site, security guard, data entry operator, supplier of food and dairy products to people on project site, cook in makeshift canteen, unskilled labourer in the organisation, etc. Women members also expect financial assistance for the elderly who have no source of income, setting up of shops, purchase of land for setting-up/promotion of home stay which can be run by the women SHG. Women also expect financial assistance for setting up vegetable stalls in the local market, purchase of vehicle for the SHGs, animal rearing and purchase of photocopy & knitting machines to set up micro business.

Women in the region wish to undertake training for mushroom farming, organic farming, orchid cultivation, food processing, animal rearing, catering, bamboo-based handicraft making, and candle making. Women also wished to acquire practical knowledge on tailoring/knitting, toy making, soap making, fashion designing, beautician course, and carpet weaving.

FGD with Women Landowners/Other Stakeholders from Right Bank



FGD with Women from Swayem GPU in the Left Bank



Women SHGs in the Affected GPUs: In the affected GPUs, each SHG is generally comprised of 10 members. In case of Lingdong, formation of SHGs is still at a nascent stage. Majority of women members have access to banking facility. The SHGs have been functioning with a major purpose of providing loans to women. A large section of productive loans are for vegetable farming, piggery and poultry activities. Many SHGs have also experimented with activities like making pickles, paper bags, soft toys like teddy bears, etc. Agriculture & Food Security Department, Horticulture & Cash Crops Development Department, and Rural Management & Development Department have imparted necessary training to the SHG members on appropriate methods of cultivation/production. Over the years, some banking institutions also seem to have come forward and provided financial and institutional support to the SHGs.

Table 3.5 Summary of Consultations with Women Stakeholders

Date of Meeting	6 th Jan. 2018	9 th Jan. 2018	9 th Jan. 2018	10 th Jan. 2018	10 th Jan. 2018	13 th Jan. 2018
Venue	Mangshila	Mangshila	Tingchim	Rangrang	Swayam	Helipad
No. of Women Participants	14	10	16	17	04	05
Occupation	06 Farmer / ASHA workers, 07 Anganwadi	07 Home makers, 02 students, 01 Anganwadi	11 Home makers, 03 Panchayat members	16 Home makers, 01 student	03 Home makers, 01 student	04 Home makers, 01 Professional

Source: Primary Survey

Consultation with Women (Non-titleholders): The details of consultation meeting with women non-titleholders is shown in Table 3.6. Women primarily work as farmers on these plots of land. They share the produce of the land with the landowners. However, a larger part of the produce is consumed by them. Proximity of the land to the forests further helps women to collect food, firewood and fodder for free. They

also rear animals (pig, chicken) on the land. During the consultation meeting, all women unanimously opined that the proposed project has positive aspects as it will create new avenues of work, augment income and generate more employment. Concurrently, women also have apprehensions that the proposed project will take away their dwelling houses and lack adequate resources to set up another house. Loss of income will also impact their daily lives and may result in pushing out of their children from schools. Women rued that most of the tenant families do not have the means to buy vegetables or fruits from the market. Some of the women stated that in the absence of any rehabilitation and resettlement, they will be forced to migrate to other states in search of employment. Few others said they will go to their native villages in Nepal where they still have a small plot of land.

Table 3.6 Summary of Consultation Meeting with Women Non-titleholders

Date of Meeting	19 th Jan. 2018
Venue	Namok
No. of Women Participants	06
GPU	Namok Swayam
Ownership of Land	Women do not own land. They work and reside on their landowner's land.
Occupation	04 Farmers, 02 Students

Source: Primary Survey

Consultations with Medical Officers /Paramedical Staff in PHCs: The survey team visited *Hee Gyathang PHC*, *Passingdang PHC* and *Ramthang Tangyek HSC*. Though the primary health care system in the surveyed centers, in general, boasts of a good primary health care system, the focus largely prioritises reproductive, maternal, neonatal, child and adolescent health. As per the information shared by the Medical Officers, there are certain challenging issues in their respective centers which require immediate remedial measures.

Hee Gyathang PHC: It is a ten-bedded health center having one medical officer (Dr. Dupjor Lepcha) and 16 staff members (including one cook and one compounder). Earlier a HSC, it was converted into a PHC recently. But it is yet to acquire the infrastructural requirements of a full-fledged PHC. The PHC has one doctor's vehicle provided by NHPC and one ambulance that functions sporadically. There is lack of adequate space and necessary infrastructure (including chairs) for dental care. The PHC is also said to be failing to relieve patients as per their needs due to lack of adequate rooms and nursing staff pertaining morning and night shifts. However, the labour room appears to be well-equipped with the center having successfully carried out nine institutional deliveries over the years. Among others, the PHC largely deals with and provides treatment to old-age patients suffering from non-communicable diseases (NCDs). However, adequate stock of necessary medicines concerning NCDs and urinary tract infection are found wanting in the PHC.

Hee-Gyathang Primary Health Centre, Lower Dzongu, North Sikkim**Dr. Dupjor Lepcha, Medical Officer, Hee-Gyathang Primary Health Centre, Lower Dzongu, sharing his concerns with the Study team**

Passingdang PHC: It is a 30-bedded award-winning PHC in the district with Dr. H. K. Rai as its Medical Officer. The PHC caters to majority of institutional deliveries in the right bank. It mainly deals with patients suffering from viral infections, NCDs and communicable diseases. However, the incidence of blood pressure and diabetes is said to be on the rise. However, requisite medicines concerning the same are not adequately available. Alike Hee Gyathang PHC, this center also suffers from lack of infrastructure in dental care. The strength of Auxiliary Nurse Midwifery (ANM) and General Nurse Midwifery (GNM) needs to be improved as presently the PHC has only two ANMs and one GNM. The Baby ward in the labour room is also lying dysfunctional. There is a general lack of adequate support staff and the PHC also does not have an X-ray machine. Although there is one Type-II *van-based* ambulance for providing basic life support and transfer of patients, the PHC requires a Type-IV ambulance given the terrain of the region.

Passingdang Primary Health Centre, Upper Dzongu, North Sikkim

Ramthang Tangyek PHC: It is a 10-bedded hospital functioning round the clock on all days of a week. It has one Medical Officer Dr. (Mrs.) Sur Rekha Rai. The PHC has five nursing personnel, one pharmacist, one lab technician and three *Safai Karmacharis*. It also has a fully functional ambulance. But the PHC needs to have more medical officers to have a round the clock presence and attend critically ill patients during emergency. Although this PHC falls in the jurisdiction of North district, more than 90 percent patients come from East district. As a result, the PHC reportedly did not receive the required support from NHPC Stage-V. However, NHPC-IV has extended vital aid by means of providing a vehicle for programmes, conducting health camps, supplying medicines, etc. There are no X-ray machines and associated technical support staff. Unlike the other two health centers, this PHC has poor levels of cleanliness and hygiene. Tiles need to be laid down on the floors and walls to promote cleanliness and effective maintenance at the earliest. A clean environment is primarily essential to meet psychological needs of the patients. This PHC attracts relatively larger number of patients every day. Yet it suffers from frequent breakdown of power supply.

Ramthang Tanyek Primary Health Centre, North Sikkim

Table 3.7 provides the distribution of affected households by health status and services. It is revealed that about 33 households have at least member who is

suffering from chronic illness. Incidence of such diseases is seen to be relatively higher in the right bank. Around 31 percent households face accessibility problems to various health services available in the affected area. Further, around 21 percent households are yet to provide necessary vaccination to their children.

Table: 3.7 Distributions of Households by Health Status and Services

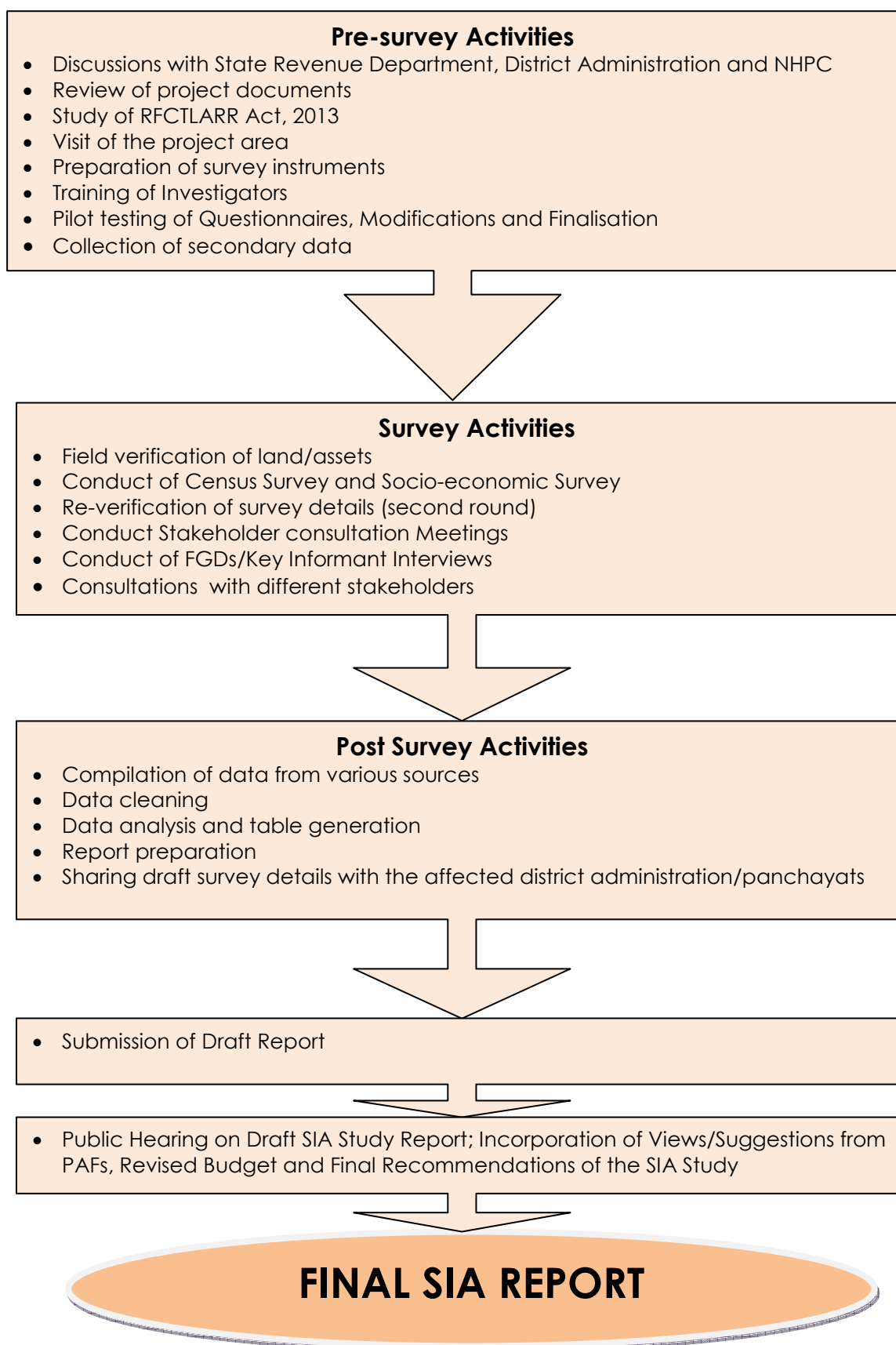
	All Households			Left Bank			Right Bank		
	Frequency	Total HHs	Percentage Share	Frequency	Total HHs	Percentage Share	Frequency	Total HHs	Percentage Share
Accessibility	161	234	68.8	117	172	68.0	44	62	71.0
Vaccination	184	234	78.6	130	172	75.6	54	62	87.1
Chronic Illness	33	234	14.1	22	172	12.8	11	62	17.7

Source: Primary Survey

The challenges imposed by the limited staff and requirement of additional staff were a consistent demand in all the health centres. Based on the consultations held with various stakeholders of health centres (including the Medical Officers), the following are the major infrastructural requirements (Table 3.8).

Table: 3.8 Summary of Infrastructure Requirements in PHCs

Primary Health Centre (PHC)	Requirements
Hee-Gyathang	Infrastructure (including chairs) for dental care.
	Adequate stock of medicines concerning non-communicable diseases and urinary tract infection.
	Repairing/replacing the existing ambulance
Passingdang	Adequate stock of medicines concerning blood pressure and diabetes.
	Improving the infrastructure of dental care
	Type-IV Ambulance
	Baby ward in the labour room
Ramthang Tangyek	X-ray machines and associated technical support staff
	Improving hygiene by laying down tiles on floors/walls
	Un-interrupted supply of power

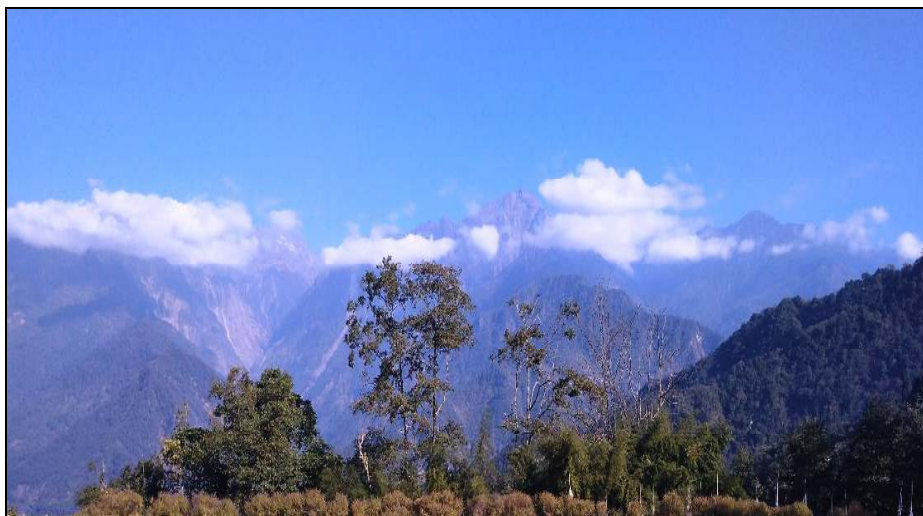
Figure 3.1: Key Activities of SIA Study at a Glance

3.6 General Profile of the Study Area

General Characteristics of North District: North Sikkim is the largest in terms of land area yet the least populated district of the Indian Himalayan State of Sikkim. With a population share of 7.16 percent in the state, North district has a total population of 43,709, of which 39,065 live in rural areas and 4,644 reside in urban areas (Census, 2011). The population density of the district is ten inhabitants per square Km with a sex ratio of 769 females per thousand males and a population growth rate of 5.7 percent (Ibid.). The population comprises of three major ethnic groups – the *Lepcha*, the *Bhutia* and the *Nepali*. The *Lepcha* and the *Bhutia* tribes are predominant inhabitants of the region. The steep gradient and the innumerable lakes on the higher reaches facilitate ideal conditions for generation of hydro-electric power. North Sikkim is the least developed district of Sikkim and has *infamously* earned the distinction of being one of the 250 most backward districts in the country. However, North district is regarded as the world capital of large cardamom.

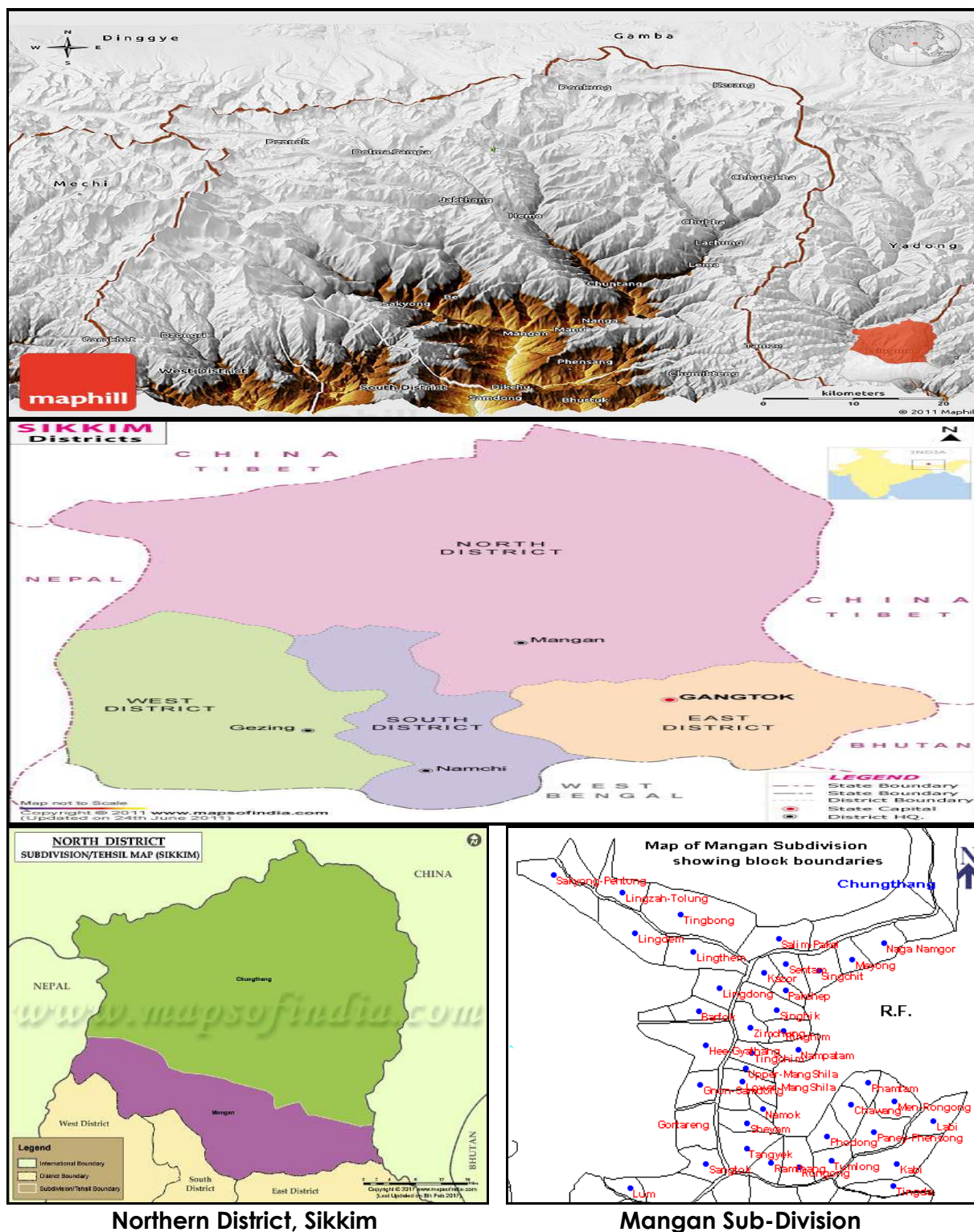
Location, Geography and Administrative Divisions: North district is a hilly region located at Latitude: 27°46' - 28°48'N and Longitude: 88°58' - 88°25'E. The district shares its boundary with China in the North and in the East and both China and Nepal in the West. The remaining three districts of Sikkim lie to the South of North district. It covers an area of 4,226 Km² sharing 59.5 percent of the total area of the state. The district is divided into two administrative sub-divisions, i.e. (i) Chungthang sub-division, and (ii) Mangan sub-division. These two Sub-divisions are further held up by a network of four Block Administrative Centres and twenty one Gram Panchayat Units. Mangan Nagar Panchayat, the only town and the district headquarters of North district, is located in the Mangan sub-division at an elevation of 610 meters above sea level. The district administration is headed by the District Collector/District Magistrate and supported by the Additional District Collector, the Sub-divisional Officers as supporting magistrates and the heads of respective departments. Peculiarly, an indigenous traditional administrative system established during the first-half of the 19th century, called the *Dzumsa* and headed by the *Pipon* (village head), still continues to function in *Lachen* and *Lachung* villages under Chungthang sub-division of North district.

Agro-Climatic/Ecological Conditions: North district holds a mountainous landscape with steep valleys. The district is thoroughly picturesque due to the presence of a legion of waterfalls, snow-clad mountains, glaciers and lakes. About 31 percent of the total area of the district is covered by various types of forest. While the vegetation is dense all the way up to the alpine altitude, it usually thins out to desert scrub further towards the northern part.

Landscape Views of North District, Sikkim

The vegetation alters from temperate to alpine to tundra at higher altitudes further north. Nomadic high-altitude livestock herding (primarily goats, sheep and yaks) is found in the North district approaching the Tibetan Plateau. The climate and terrain in North district is ideally suited for cultivation of the larger variety of Cardamom. Up to an elevation of 1000 meters, paddy is the major crop. Other important crops are maize, ginger, wheat, pulses, oilseeds and vegetables. Sub-tropical fruits including citrus fruits, Banana, Papaya, etc. are also grown. Above 1000 meters and up to 2000 meters altitude, large Cardamom and Oranges are the main cash crops. Beyond 2000 meters elevation, the climate is suitable for growing Seed-Potato. Potato is cultivated in northern parts of North Sikkim during summer months. Other alternative crops are temperate fruit plants, cabbage, peas, radish, and other winter vegetables, soybean and high altitude maize. Off season cabbage cultivation is common. Cultivable land is not available at an elevation above 4000 meters and the vegetation is mainly medicinal herbs. The prevalent broad soil groups in North district are *Shallow-medium deep soils*, *Loamy brown soils* and *Red hill soils*. Temperatures range from about 25 degrees to below -40 degrees in the extreme where the altitude is in excess of 6,000 meters. *Kanchenjunga* is the highest peak at over 8,000 meters, ranging its western border with Nepal.

Figure 3.2 Map of North Sikkim



Northern District, Sikkim

Mangan Sub-Division

Table 3.9 Broad Aspects of Agro-Climatic Conditions in North District

Sl. No.	Aspect	Northern District
1	Agro-climatic Zone	Sub tropical humid to temperate alpine.
2	Agro-ecological Situation	Hotspot of Biodiversity. Warm Per-humid Eco-Region
3	Weather	Tundra
4	Geographical Coordinates	Latitude: 27°46' - 28°48'N; Longitude: 88°58' - 88°25'E; Altitude 4,800 -15,000 msl
5	Mean Annual Rainfall (MM), 2010-16	419
6	Broad Soil Groups	Shallow-medium deep soils, Loamy brown soils, Red hill soils

Source: Agriculture Contingency Plan for District: North Sikkim. Retrieved from <http://www.crida.in/CP-2012/statewiseplans/Sikkim/SKM2-North%20Sikkim-30.10.12.pdf> on 22nd February, 2018.

Trends of Climatic Conditions in North District: Table 3.10 reports the monthly trends of temperatures from 1991 to 2002 in North district of Sikkim. The trends suggest that except in the months of March and October, temperature has recorded an increasing trend in the district. The temperatures may have risen owing to global warming, possibly causing stresses on water and land resources in the regions.

Table 3.10 Temperature (in degree Celsius) in North District during 1991-2002

Dist rict		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Nor th Dist rict	Max	12.0	12.9	17.9	22.4	21.6	22.4	21.3	21.6	21.6	21.1	18.1	14.6
	Min	-4.1	-1.5	2.6	6.6	8.6	11.4	12.7	13.0	11.1	7.0	2.3	-0.6
	Avg	4.4	5.8	10.1	12.9	15.1	16.9	17.3	17.1	16.1	14.3	10.3	7.0
	SD	1.2	1.1	1.1	1.3	1.0	0.8	0.5	0.3	0.5	0.9	1.0	0.7
	GR* (%)	2.5	2.2	-0.8	0.7	0.4	0.4	0.1	0.01	0.1	-0.1	1.7	1.7

Note: *Growth Rate

Source: India Water Portal. Retrieved from http://www.indiawaterportal.org/met_data/ on 22nd February, 2018.

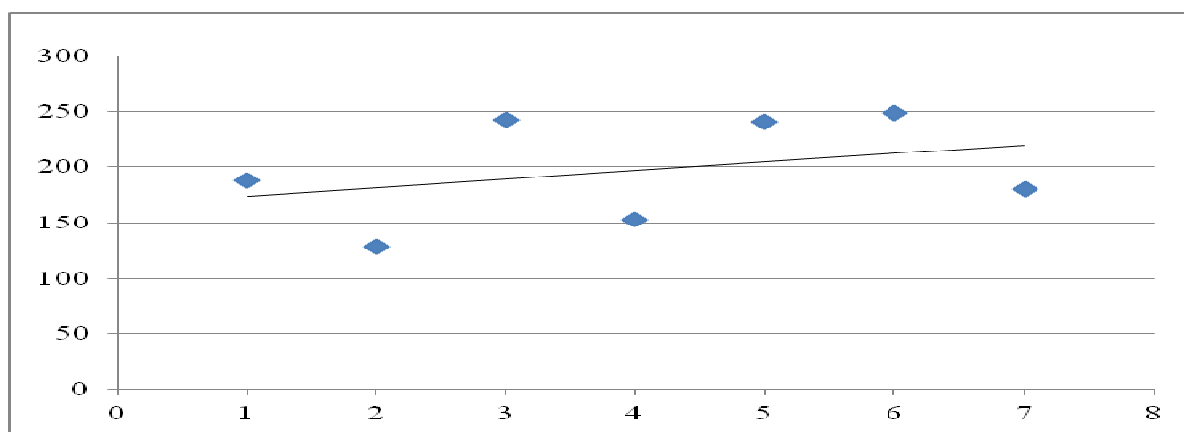
The trends in rainfall during the months of June to October in North district are shown in Table 3.11. It is found that the trends of average rainfall have turned out to be positive indicating more rainwater received by the district during 2010-16. However, the standard deviation of total rainfall received during this period has showed an increasing trend (Figure 3.3) indicating erraticness in the level of rainfall over the years. This may cause adverse implications in respect of promotion of sustainable livelihoods of the rural households and maintaining ecological balance in the district.

Table 3.11 Rainfall (in mm) in North District for during June-October (2010-16)

District		2010	2011	2012	2013	2014	2015	2016	Growth Rate (%)
North District	Maximum	599	443	785	530	652	796	638	4.2
	Minimum	107	127	302	227	37	103	140	-6.1
	Average	430	324	520	337	444	456	423	1.7
	Total	2149	1622	2599	1683	2221	2278	2115	1.7
	SD	188	128	242	153	241	248	180	4.3

Source: Hydromet Division, India Meteorological Department, New Delhi. Retrieved from

[http://hydro.imd.gov.in/hydrometweb/\(S\(4zvarrmeccirpk55qs35utnd\)\)/DistrictRaifall.aspx](http://hydro.imd.gov.in/hydrometweb/(S(4zvarrmeccirpk55qs35utnd))/DistrictRaifall.aspx) on 22nd February, 2018.

Figure 3.3 Standard Deviation of Rainfall in North District (June-October), 2010-16

The frequencies of wet days during 1991 to 2002 in North district are reported in Table 3.12. In North Sikkim, on an average, about 6 months in a year have registered declining growth of number of wet days which suggests prevalence of dry spells in the district around half the year.

Table 3.12 Wet Day Frequency (in no. of days) in North District during 1991-2002

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Max	3.4	1.9	4.0	7.3	13.3	20.1	19.7	21.8	16.5	6.2	3.8	1.5
Min	0.3	1.1	1.0	0.9	6.6	12.5	15.5	17.4	9.0	1.0	0.2	0.0
Avg	1.9	1.4	2.4	4.3	10.6	16.0	18.4	19.3	12.5	2.9	1.3	0.7
Total	22.6	16.3	29.3	51.7	126.7	192.2	220.4	231.4	150.2	35.3	15.3	8.8
SD	0.9	0.3	1.0	1.7	1.8	2.1	1.4	1.4	2.4	1.6	1.0	0.6
GR* (%)	-9.2	-2.1	2.9	-3.1	2.6	1.1	0.5	-0.7	-0.4	5.9	-8.8	0.2

Note: *Growth Rate

Source: India Water Portal. Retrieved from http://www.indiawaterportal.org/met_data/ on 22nd February, 2018.

Precipitation is another important indicator of climatic condition prevailing in the region. It is observed that precipitation in North district has registered negative growth for 8 months during 1991-2002 (Table 3.13). Importantly, the negative growth

is seen mostly during the months which are critical for the agriculture sector. While this is contrary to the rising trend of rainfall in the district, declining trend of precipitation is an indication of increasing probability of water stress in the region.

Table 3.13 Precipitation (in millimeters) in North District during 1991-2002

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Max	97.6	62.4	91.6	141.6	282.9	558.6	636.2	649.0	489.2	197.6	83.4	23.3
Min	0.3	3.2	9.7	0.9	60.4	136.3	309.2	392.9	160.6	1.4	0.2	0.0
Avg	32.3	24.1	36.8	77.2	170.5	310.9	433.4	485.2	322.9	58.8	21.3	4.8
Total	388.0	289.0	441.7	926.8	2045.8	3730.4	5201.1	5822.0	3874.9	705.9	255.6	57.3
SD	35.6	18.6	25.4	43.3	62.6	101.9	104.7	90.9	94.5	62.8	28.6	7.5
GR* (%)	-26.8	-9.1	-5.8	-3.1	5.6	0.8	0.8	-2.7	-1.0	17.8	-18.4	-14.1

Note: *Growth Rate

Source: India Water Portal. Retrieved from http://www.indiawaterportal.org/met_data/ on 22nd February, 2018.

Demographic Profile of Rural Households in Mangan Block of North Sikkim

Geographical Area and Demographical Profile: Table 3.14 presents the demographic profile of the rural households in Mangan Community Development Block (hereinafter referred simply as Mangan) of North Sikkim. Rural Mangan covers an area of 975.15 Km² sharing 23.08 percent of the total area of rural North district. With a total of 5,893 households, Mangan shares as high as 75.37 percent of the total households in the district. Similarly, with a total population of 29,027, Mangan accounts for 74.30 percent of the total population residing in the district. The population density of rural Mangan is 30 inhabitants per Km² which is significantly higher as compared to that of the district as a whole. The rural population preponderantly comprises of the Scheduled Tribe (ST) community, accounting for more than three-fourth (76.52 percent) of the total population of Mangan. On the contrary, a measly 2.14 percent of the total population belongs to the Schedule Caste (SC) community. The sex ratio in Mangan CD block (892 females per 1000 males) is prominently higher as compared to that in the district as a whole (754 females per 1000 males).

Table 3.14 also presents the demographic profile of the affected revenue villages (17 no.) under Mangan CD block. While Hee-Gyathang, Gor, Barfok, Gnon-Sangdong and Lingdong villages are located on the right bank of the Teesta River, the remaining villages are situated on the left bank. Four out of five villages of the right bank under study have larger land area with Hee-Gyathang occupying the largest area (19.2 Km²) followed by Gor (9.2 Km²), Barfok (8.4 Km²), and Gnon-Sangdong (6.9 Km²). However, the densities of population in Gnon-Sangdong (48), Hee-Gyathang (61) and Barfok (70) are among the least in the group of affected villages. Interestingly however, the average population density in the affected revenue villages (196 inhabitants per Km²) is significantly higher as compared to that in Mangan (30 inhabitants per Km²). The share of ST population is more than three-

fourths of the total population in the 12 revenue villages which includes all five villages from the right bank. Sex ratios in most of the revenue villages (13 no.) are higher as compared to Mangan except in Tingchim (674 females per 1000 males), Ringhim (847 females per 1000 males), Gnon-Sangdong (850 females per 1000 males) and Namok (891 females per 1000 males).

Table 3.14: Demographic Profile of Rural Households in Mangan CD Block, 2011

	Geographical area (sq. km.)	No. of households	Total Population	Population Density *	SC population	ST population	Sex Ratio **
North District	4224.24 (59.85)	7819 (8.38)	39065 (8.55)	09	804 (3.95)	26695 (15.97)	754
Mangan Block	975.15 (23.08)	5893 (75.37)	29027 (74.30)	30	621 (2.14)	22211 (76.52)	892
Revenue Villages							
Gor	9.2	165 (2.80)	861 (2.97)	94	01 (0.12)	731 (84.90)	913
Gnon-Sangdong	6.9	64 (1.09)	333 (1.15)	48	–	311 (93.39)	850
Hee-Gyathang	19.2	227 (3.85)	1180 (4.07)	61	04 (0.34)	1102 (93.39)	990
Barfok	8.4	111 (1.88)	586 (2.02)	70	01 (0.17)	556 (94.88)	909
Lingdong	4.7	119 (2.02)	667 (2.30)	141	01 (0.15)	541 (81.11)	997
Zimchung	3.0	242 (4.11)	1145 (3.94)	385	71 (6.20)	636 (55.55)	928
Singhik	3.8	290 (4.92)	1268 (4.37)	330	71 (5.60)	696 (54.89)	978
Ringhim	2.4	155 (2.63)	811 (2.79)	337	26 (3.21)	600 (73.98)	847
Nampatam	4.6	76 (1.29)	381 (1.31)	83	04 (1.05)	327 (85.83)	974
Tingchim	6.0	184 (3.12)	1021 (3.52)	171	13 (1.27)	648 (63.47)	674
Upper Mangshila	3.1	196 (3.33)	1057 (3.64)	340	08 (0.76)	917 (86.75)	936
Lower Mangshila	3.0	216 (3.67)	1172 (4.04)	396	100 (8.53)	893 (76.19)	893
Namok	3.3	132 (2.24)	588 (2.03)	178	08 (1.36)	452 (76.87)	891
Swayem	3.9	163 (2.77)	854 (2.94)	217	03 (0.35)	757 (88.64)	941
Tangyek	4.5	146 (2.48)	686 (2.36)	152	41 (5.98)	428 (62.39)	922

	Geographical area (sq. km.)	No. of households	Total Population	Population Density *	SC population	ST population	Sex Ratio **
Ramthamg	5.8	99 (1.68)	438 (1.51)	76	01 (0.23)	416 (95.00)	955
Kazor	2.6	145 (2.46)	642 (2.21)	246	24 (3.74)	284 (44.20)	916

Note: Figures in the parentheses refers to the %age share in total state/district/block for North District/Mangan/Revenue Villages respectively. *No. of persons per Sq. Km. **No. of females per 1000 males.†Refers to the age group of 15-59 years.

Source: Census of India (2011), Office of the Registrar General & Census Commissioner, Ministry of Home Affairs, Government of India, New Delhi.

Education Status: The literacy rate of rural households in Mangan is shown in Table 3.15. The state of rural effective literacy rate in Mangan is 76.59 percent which is only slightly lower (low by lesser than one percentage point) than that of North district (77.34 percent). As per the Census of India (2011), India has achieved a literacy rate of 74.0 percent with 67.77 percent of the rural population being literate. The level of literacy in North district and particularly in Mangan is considerably higher than the national average for the rural masses. In the revenue villages, Lingdong registers the highest literacy rate (87.35 percent), followed by Gnon-Sangdong (85.06 percent), Singhik (83.70 percent), Hee-Gyathang (83.43 percent), Barfok (80.81 percent), Ringhim (78.00 percent) and Sheyam (77.75 percent). The literacy rates in these villages are higher than the concerned figures at the block, district and national levels. On the other hand, literacy rates are extremely low in four villages of the left Bank, i.e., Tingchim (48.30 percent), Zimchung (53.22 percent), Tangyek (55.78 percent), and Ramthamg (60.04 percent). This has considerable implications for livelihoods of rural households and socially inclusive development of the district. Interestingly, despite having lower literacy levels, Tingchim and Ramthamg villages have the least gender disparity in education.

Table 3.15: Literacy Rate of Rural Households in Mangan CD Block, 2011

	Effective Literacy Rate* (%)	Gender Disparity Index**
North District	77.34	0.18
Mangan Block	76.59	0.11
<i>Revenue Villages</i>		
Gor	74.40	0.09
Gnon-Sangdong	85.06	0.11
Hee-Gyathang	83.43	0.07
Barfok	80.81	0.17
Lingdong	87.35	0.14
Zimchung	53.22	0.27
Singhik	83.70	0.12
Ringhim	78.00	0.22
Nampatam	74.45	0.07
Tingchim	48.30	-0.08
Upper Mangshila	71.44	0.16

	Effective Literacy Rate* (%)	Gender Disparity Index**
Lower Mangshila	70.04	0.20
Namok	68.13	0.14
Sheyam	77.75	0.09
Tangyek	55.78	0.18
Ramthamg	60.40	-0.01
Kazor	72.91	0.02

Note: *Effective literacy rate is defined as the percentage of literates to the total population age of 7 years and above. A person aged 7 years and above who can both read and write with understanding in any language is taken as literate.

**Gender disparity index in education is calculated as – {(Male Literacy Rate – Female Literacy Rate)/ Female Literacy Rate}.

Source: Census of India (2011), Office of the Registrar General & Census Commissioner, Ministry of Home Affairs, Government of India, New Delhi.

Composition of Rural Workforce: Table 3.16 and Table 3.17 show the composition of rural workforce in Mangan by type and gender respectively. With a total of 14,686 workers, Mangan accounts for 68.0 percent of the total rural workforce of North district. This figure is significantly higher as compared to the rural workforce share of North district (8.9 percent) in the state. However, the work participation rate in Mangan (50.6 percent) is well below than that of the district (55.3 percent). In addition, the share of main workers in Mangan (65.6 percent) is also lower as compared to the district (72.2 percent). Accordingly, the shares of cultivators (14.7 percent) and agricultural workers (2.9 percent) in rural Mangan are also found to be lower than the district's share. Besides, the share of non-workers in Mangan (49.4 percent) is lower as compared to the district (44.7 percent). With a total of 9,058 male and 5,628 female workers, Mangan accounts for 61.7 percent and 81.2 percent of the rural male and female workforce of North district (Table 3.16). While the female work participation rate remains by and large the same, the male work participation rate in Mangan (59.0 percent) is visibly lower as compared to that in North district (65.9 percent). Further, the shares of male (70.1 percent) and female (58. percent 4) main workers are also lower in Mangan. Expectedly, the shares of cultivators and agricultural workers are seen to be higher in Mangan across both gender groups.

Interestingly, while the share of female non-workers remains more or less the same, the share of male non-workers in Mangan (41.0 percent) is higher than that of North district as a whole (34.1 percent). However, contrary to what is observed at block level, the share of rural workforce in the revenue villages cuts a dismal picture. The shares of rural workforce in the villages are found to be at abjectly low levels, the highest jointly being in Hee-Gyathang (4.5 percent) and lower Mangshila (4.5 percent), Tingchim (4.3 percent), Gor (4.0 percent) and Singhik (4.0 percent). The remaining 12 revenue villages have a rural workforce share of less than four percent. While the work participation rates in as many as nine villages are higher than the block level figure, it is lower in case of the rest eight villages. It is the highest in case of Gnon-Sangdong (80.8 percent), followed by Nampatam (79.3 percent), Gor (68.4 percent), Tingchim (61.6 percent), Tangyek (61.5 percent) and Ramthamg (60.5 percent). Lowest work participation rate is seen to be in Lingdong (28.8 percent), followed by Zimchung (31.7 percent), and Singhik (46.2 percent). The average share

of main workers in the right bank villages (57.5 percent) is far less as compared to that of the left bank villages (79.3 percent).

Table 3.16 Composition of Rural Workforce in Mangan CD Block, 2011

	Total Workers	Main Workers	Marginal Workers	Non- Workers	Work Participatio n Rate*	Cultivators	Agricultural Workers
North District	21612 (8.9)	15598 (72.2)	6014 (27.8)	17453 (44.7)	55.3	4701 (12.0)	957 (2.4)
Mangan Block	14686 (68.0)	9640 (65.6)	5046 (34.4)	14341 (49.4)	50.6	4256 (14.7)	840 (2.9)
<i>Revenue Villages</i>							
Gor	589 (4.0)	274 (46.5)	315 (53.5)	272 (31.6)	68.4	176 (20.4)	34 (3.9)
Gnon-Sangdong	269 (1.8)	169 (62.8)	100 (37.2)	64 (19.2)	80.8	125 (37.5)	08 (2.4)
Hee-Gyathang	664 (4.5)	128 (19.3)	536 (80.7)	516 (43.7)	56.3	–	–
Barfok	293 (2.0)	174 (59.4)	119 (40.6)	293 (50.0)	50.0	82 (14.0)	38 (6.5)
Lingdong	192 (1.3)	191 (99.5)	01 (0.5)	475 (71.2)	28.8	137 (20.5)	–
Zimchung	363 (2.5)	351 (96.7)	12 (3.3)	782 (68.3)	31.7	05 (0.4)	03 (0.3)
Singhik	586 (4.0)	518 (88.4)	68 (11.6)	682 (53.8)	46.2	98 (7.7)	87 (6.9)
Ringhim	392 (2.7)	201 (51.3)	191 (48.7)	419 (51.7)	48.3	–	81 (10.0)
Nampata m	302 (2.1)	302 (100.0)	–	79 (20.7)	79.3	175 (45.9)	100 (26.2)
Tingchim	629 (4.3)	564 (89.7)	65 (10.3)	392 (38.4)	61.6	366 (35.8)	01 (0.1)
Upper Mangshila	552 (3.8)	540 (97.8)	12 (2.2)	505 (47.8)	52.2	444 (42.0)	03 (0.3)
Lower Mangshila	657 (4.5)	432 (65.8)	225 (34.2)	515 (43.9)	56.1	346 (29.5)	–
Namok	345 (2.4)	133 (38.6)	212 (61.4)	243 (41.3)	58.7	34 (5.8)	06 (1.0)
Sheyam	421 (2.9)	217 (51.5)	204 (48.5)	433 (50.7)	49.3	73 (8.5)	25 (2.9)
Tangyek	422 (2.9)	328 (77.7)	94 (22.3)	264 (38.5)	61.5	175 (25.5)	35 (5.1)
Ramthamg	265 (1.8)	257 (97.0)	08 (3.0)	173 (39.5)	60.5	222 (50.7)	–
Kazor	309 (2.1)	301 (97.4)	08 (2.6)	333 (51.9)	48.1	81 (12.6)	57 (8.9)

Note: Figures in the parentheses refers to the %age share in total district/block/village.

*The Work Participation Rate is defined as total workers as a percentage of the total population.

Source: Census of India (2011), Office of the Registrar General & Census Commissioner, Ministry of Home Affairs, Government of India, New Delhi.

Table 3.17: Composition of Rural Workforce in Mangan CD Block, Gender, 2011

		Mangan Block	North District
Total Workers	Rural Total	14686	21612
	Rural Male	9058 (61.7)	14677 (9.9)
	Rural Female	5628 (81.2)	6935 (7.3)
Main Workers	Rural Total	9640 (65.6)	15598 (72.2)
	Rural Male	6354 (70.1)	11474 (78.2)
	Rural Female	3286 (58.4)	4124 (59.5)
Marginal Workers	Rural Total	5046 (34.4)	6014 (27.8)
	Rural Male	2704 (29.9)	3203 (21.8)
	Rural Female	2342 (41.6)	2811 (40.5)
Non-Workers	Rural Total	14341 (49.4)	17453 (44.7)
	Rural Male	6284 (41.0)	7597 (34.1)
	Rural Female	8057 (58.9)	9856 (58.7)
Work Participation Rate*	Rural Total	50.6	55.3
	Rural Male	59.0	65.9
	Rural Female	41.1	41.3
Cultivators	Rural Total	4256 (14.7)	4701 (12.0)
	Rural Male	2473 (16.1)	2764 (12.4)
	Rural Female	1783 (13.0)	1937 (11.5)
Agricultural Workers	Rural Total	840 (2.9)	957 (2.4)
	Rural Male	540 (3.5)	639 (2.9)
	Rural Female	300 (2.2)	318 (1.9)

Note: Figures in the parentheses refers to the %age share in total district/block.

*The Work Participation Rate is defined as the percentage of total workers to the total population.

Source: Census of India (2011), Office of the Registrar General & Census Commissioner, Ministry of Home Affairs, Government of India, New Delhi.

Land Use Pattern: The changes in land use patterns in Mangan block of North district for the period 2005-06 to 2010-11 are shown in Table 3.18. It is found that the shares of operational holding and net sown area in the total land area have declined both in Mangan and North district. However, the rates of decline are evidently more substantial in Mangan. Yet the absolute shares of operational holding and net sown area presently are higher in Mangan as compared to the district's absolute share figures. Similarly, the shares of other un-cultivated land, fallow land, culturable waste, total uncultivated area and land not available for cultivation have all declined in Mangan over the period. The same is true for North district as a whole though the rates of decline are less in case of Mangan. On the other hand, there has been an increase in the share of area under current fallows both in Mangan and North

district. Interestingly, the share of net cultivated area in Mangan has reduced phenomenally though it is seen to have increased in the district.

Table 3.18: Changes in Land Use Patterns* in Mangan CD Block, 2005-10

	Mangan			Northern District		
	2005-06	2010-11	% age Change	2005-06	2010-11	% age Change
Operational Holding	14.14	10.16	-28.1	4.07	3.78	-7.0
Net Sown Area	9.51	5.64	-40.71	2.48	2.47	-0.38
Area under Current Fallows	0.73	1.35	85.33	0.22	0.36	63.40
Net Cultivated Area	10.24	6.98	-31.76	2.71	2.84	4.86
Other Un-cultivated Land**	0.82	0.76	-7.28	0.32	0.20	-36.63
Fallow Land***	1.52	0.96	-36.63	0.40	0.24	-38.78
Culturable Waste	0.78	0.68	-12.61	0.22	0.17	-23.68
Total Un-cultivated Area	3.12	2.40	-22.94	0.94	0.61	-34.54
Land Not Available for Cultivation	0.78	0.77	-1.31	0.42	0.33	-21.78

Note: *The figures stand for percentage share in geographical area of the district/state. **Excludes Fallow Land, ***Other than Current Fallows.

Source: Agriculture Census Division, Ministry of Agriculture and Family Welfare, Government of India, New Delhi. Retrieved from <http://agcensus.nic.in/> on 22nd February, 2018.

Distribution of Irrigated Area: Table 3.19 shows that North district, in general, and Mangan, in particular, are wholly irrigated by other sources. Overall, it can be said that there has been a slack in the government driven investment in Mangan towards promotion of irrigation projects. Contrarily, the sole presence of other sources of irrigation such as streams, springs, etc., might have more likely been driven by household investment in water conservation infrastructure.

Table 3.19: Distribution of Irrigated Area† by Different Sources in Mangan, 2005-10

	Mangan			Northern District		
	2005-06	2010-11	% age Change	2005-06	2010-11	% age Change
Canals	–	–	–	–	–	–
Tanks	0.35	–	-100.00	0.33	–	-100.00
Wells	–	–	–	–	–	–
Tube Wells	–	–	–	–	–	–
Other	99.65	100.00	0.35	99.67	100.00	0.33
Total	100.0	100.00		100.00	100.00	

Note: †The figures stand for percentage of total area of holdings receiving irrigation.

Source: Agriculture Census Division, Ministry of Agriculture and Family Welfare, Government of India, New Delhi. Retrieved from <http://agcensus.nic.in/> on 22nd February, 2018.

Irrigated Area and Intensity of Irrigated Cropping: The change in irrigated area and intensity of irrigated cropping from 2006-07 and 2011-12 is shown in Table 3.20. The gross irrigated area, which should be close to twice of the net irrigated area, has remained roughly equal to it both in Mangan and North district. Improvements could be seen in Mangan on account of the net and gross irrigated areas per holding which have increased by 21.7 percent and 29.9 percent respectively. However, the same is not to be in case of district as a whole where the net and gross irrigated areas per holding are not only low but have also gone down over time. The poor values of gross irrigated areas indicate poor crop rotation in the district largely due to lack of irrigation facilities. Further, the intensity of irrigated cropping area (which should ideally be 200 percent) in Mangan is though languishing at a lower level but has gone up over the period of time. The same is also seen to be true at the aggregate district level.

Table 3.20: Irrigated Area and Intensity of Irrigated Cropping in Mangan Sub-division of North District, 2005-10

	Mangan			Northern District		
	2005-06	2010-11	% age Change	2005-06	2010-11	% age Change
Net Irrigated Area per Holding (Hect.)	0.103	0.125	21.65	0.089	0.078	-12.43
Gross Irrigated Area per Holding (Hect.)	0.103	0.134	29.92	0.089	0.083	-6.50
Intensity of Irrigated Cropping* (%)	100.21	107.02	6.79	100.20	106.98	6.77

Note: *The figures stand for gross irrigated area as a percentage of net irrigated area.

Source: Agriculture Census Division, Ministry of Agriculture and Family Welfare, Government of India, New Delhi. Retrieved from <http://agcensus.nic.in/> on 22nd February, 2018.

Standard of Living of Rural Households in Mangan Sub-division

Distribution of Households by Type of Housing and its Ownership: The distribution of households by type of housing as per the data of Census (2011) is shown in Table 3.21. It is important to notice that there is not much divergence between the overall and the rural picture. The share of good housing in rural Mangan (49.7 percent) is slightly lower than the district aggregate (50.9 percent). The share of dilapidated housing in the region (4.1 percent) is also found to be quiet low. There is a lot of divergence in terms of good housing share in the affected revenue villages. For example, eight villages have good housing share of more than 50 percent which is higher than the aggregate of the block. These villages include Gnon-Sangdong (highest share of 81.0 percent), Singhik (80.5 percent), Namok (80.0 percent), Tangyek (60.2 percent), Barfok (58.7 percent), Hee-Gyathang (54.4 percent), Sheyam (52.5 percent), and Ringhim (50.7 percent). However, less than a quarter of the total rural households in the villages of Lower Mangshila (15.2 percent), Nampatam (10.7 percent), Tingchim (7.4 percent), Upper Mangshila (7.4 percent), and Zimchung (lowest share of 4.2 percent), dwell in good housing conditions.

Interestingly, the average share of good housing in the right bank villages (48.8 percent) is visibly higher than that of the left bank villages (36.7 percent). However, the average share of dilapidated housing in the right bank villages (11.7 percent) is more than three times of that in the left bank villages (3.4 percent), possibly due to increasing pull and push migration pressures.

Table 3.21: Distribution of Households by Type of Housing, 2011 (Percent)

		Housing Type			
		Good	Livable	Dilapidated	Total
Northern District	Total	53.8	42.7	3.5	100.0
	Rural	50.9	45.4	3.7	100.0
Mangan	Total	53.7	42.5	3.8	100.0
	Rural	49.7	46.2	4.1	100.0
<i>Revenue Villages</i>					
Gor		28.5	51.5	20.0	100.0
Gnon-Sangdong		81.0	19.0	–	100.0
Hee-Gyathang		54.4	41.6	04	100.0
Barfok		58.7	35.8	5.5	100.0
Lingdong		21.5	61.1	17.4	100.0
Zimchung		4.2	95.8	–	100.0
Singhik		80.5	18.5	1.0	100.0
Ringhim		50.7	46.5	2.8	100.0
Nampatam		10.7	89.3	–	100.0
Tingchim		7.4	90.9	1.7	100.0
Upper Mangshila		7.4	90.1	2.5	100.0
Lower Mangshila		15.2	72.0	12.8	100.0
Namok		80.0	19.3	0.7	100.0
Sheyam		52.5	46.9	0.6	100.0
Tangyek		60.2	39.8	–	100.0
Ramthamg		33.3	59.2	7.5	100.0
Kazor		38.0	61.3	0.7	100.0

Source: Census of India (2011), Office of the Registrar General & Census Commissioner, Ministry of Home Affairs, Government of India, New Delhi.

Distribution of Households by Sources of Drinking Water: Table 3.22 shows the distribution of households by the sources of drinking water in the year 2011. It is found that a majority of households (69.5 percent) in rural Mangan use tap water for drinking purposes. The coverage of tap water is high in the region and there is a vast deal of convergence between the overall figures and the figures for the rural areas. In addition, a little higher than a quarter of the rural households source drinking water from the springs in Mangan. The location of sources is a good indicator of ease of availability of water. But there are huge variations across revenue villages on this account. All households in Gnon-Sangdong, Ringhim and Nampatam villages use tap water for drinking purpose. On the other hand, all households in Zimchung depend upon spring water for meeting their drinking requirements. Besides, more than half of the households in Gor and Tingchim villages also rely upon springs for quenching their needs, indicating that water may not be easily available. Given the

poor quantity of water supply, the households need to be provided with piped water supply in these villages.

Table 3.22: Distribution of Households by Sources of Drinking Water, 2011 (Percent)

		Main Source of Drinking Water			
		Tap water	Spring	Others*	Total
Northern District	Total	71.9	25.0	3.1	100.0
	Rural	69.5	27.3	3.2	100.0
Mangan	Total	72.9	23.4	3.7	100.0
	Rural	69.7	26.2	4.1	100.0
<i>Revenue Villages</i>					
Gor		40.0	59.4	0.6	100.0
Gnon-Sangdong		100.0	–	–	100.0
Hee-Gyathang		92.9	6.2	0.9	100.0
Barfok		94.5	–	5.5	100.0
Lingdong		95.0	–	5.0	100.0
Zimchung		–	100.0	–	100.0
Singhik		63.5	36.5	–	100.0
Ringhim		100.0	–	–	100.0
Nampatam		100.0	–	–	100.0
Tingchim		41.7	54.3	4.0	100.0
Upper Mangshila		81.3	13.3	5.4	100.0
Lower Mangshila		85.3	8.5	6.2	100.0
Namok		94.8	3.0	2.2	100.0
Sheyam		91.1	7.0	1.9	100.0
Tangyek		91.7	4.5	3.8	100.0
Ramthamg		84.9	7.5	7.6	100.0
Kazor		96.0	–	4.0	100.0

Note: *Includes Tube Well/Bore Well/Hand Pump, Well, River/Canal, Tank/Pond/Lake, etc.

Source: Census of India (2011), Office of the Registrar General & Census Commissioner, Ministry of Home Affairs, Government of India, New Delhi.

Distribution of Rural Households by Sources of Lighting: Table 3.23 shows the distribution of households by the sources of lighting in the year 2011. As it could be observed here also, there is not much divergence between the overall and the rural scenario by means of access to electricity. While the status of rural electrification in the region is impressive, there needs to be a push towards 100.0 percent rural electrification given the context and the sector (i.e., power) in which Mangan is poised to lead the district/state economy.

There are variations, though relatively slender, in terms of extent of usage of various sources for lighting purpose across villages. For example, more than a quarter of the households in Nampatam, Tingchim, Barfok and Gor villages across Mangan still depend upon kerosene for lighting purpose.

Table 3.23: Distribution of Households by Sources of Lighting, 2011 (Percent)

		Main Source of Lighting			
		Electricity	Kerosene	Others†	Total
North District	Total	87.9	10.6	1.5	100.0
	Rural	86.6	11.8	1.6	100.0
Mangan	Total	87.1	11.6	1.3	100.0
	Rural	85.1	13.4	1.5	100.0
Revenue Villages					
Gor		74.5	25.5	–	100.0
Gnon-Sangdong		96.8	3.2	–	100.0
Hee-Gyathang		90.8	8.8	0.4	100.0
Barfok		74.3	25.7	–	100.0
Lingdong		86.8	13.2	–	100.0
Zimchung		90.4	2.1	7.5	100.0
Singhik		98.0	1.3	0.7	100.0
Ringhim		80.3	19.0	0.7	100.0
Nampatam		61.3	38.7	–	100.0
Tingchim		69.7	29.7	0.6	100.0
Upper Mangshila		89.6	8.4	2.0	100.0
Lower Mangshila		87.7	10.4	1.9	100.0
Namok		88.1	11.9	–	100.0
Sheyam		75.3	22.2	2.5	100.0
Tangyek		91.7	7.5	0.8	100.0
Ramthamg		79.6	20.4	–	100.0
Kazor		84.0	16.0	–	100.0

Note: †Includes Solar Energy, Castor Oil, etc.

Source: Census of India (2011), Office of the Registrar General & Census Commissioner, Ministry of Home Affairs, Government of India, New Delhi.

Distribution of Rural Households by Cooking Fuel and Kitchen Facility: The distribution of households by cooking fuel requirement is shown in the Table 3.24. The LPG coverage is very poor particularly in the rural areas of Mangan with roughly 20.0 percent households using this cleaner form of energy for cooking. More than three-fourths of the households are seen burning firewood for cooking purpose, implying potential negative impacts on human health (such as respiratory, pulmonary and heart ailments) and local environment due to high emissions. In all villages except Singhik, Kazor and Zimchung, more than three-fourth households use dirty forms of fuel including Firewood, Kerosene, crop residue, etc, for cooking.

Overall, the condition is comparatively worse in the right bank villages where more than 90.0 percent households on an average depend upon unclean fuels for cooking.

Table 3.24: Distribution of Rural Households by Cooking Fuel, 2011 (Percent)

		Type of Fuel used for Cooking				
		LPG/PNG	Firewood	Kerosene	Others*	Total
North District	Total	26.3	64.1	5.4	4.2	100.0
	Rural	20.5	70.9	4.2	4.4	100.0
Mangan	Total	27.6	66.9	4.2	1.3	100.0
	Rural	19.8	76.5	2.2	1.5	100.0
Revenue Villages						
Gor		7.9	90.9	1.2	–	100.0
Gnon-Sangdong		9.5	88.9	–	1.6	100.0
Hee-Gyathang		15.5	81.4	1.8	1.3	100.0
Barfok		0.9	98.2	–	0.9	100.0
Lingdong		7.4	90.9	0.8	0.9	100.0
Zimchung		37.7	59.8	0.4	2.1	100.0
Singhik		57.4	39.6	2.0	1.0	100.0
Ringhim		7.7	88.8	3.5	–	100.0
Nampatam		5.3	94.7	–	–	100.0
Tingchim		13.7	81.1	1.1	4.1	100.0
Upper Mangshila		7.9	90.1	2.0	–	100.0
Lower Mangshila		5.7	88.1	3.3	2.9	100.0
Namok		23.0	71.8	1.5	3.7	100.0
Sheyam		19.6	78.5	–	1.9	100.0
Tangyek		5.3	93.9	–	0.8	100.0
Ramthamg		9.7	89.2	–	1.1	100.0
Kazor		31.3	53.3	14.7	0.7	100.0

Note: *Includes Crop Residue, Cow Dung Cake, Coal/Lignite/Charcoal, Biogas, etc.

Source: Census of India (2011), Office of the Registrar General & Census Commissioner, Ministry of Home Affairs, Government of India, New Delhi.

Distribution of Rural Households by Sanitation Facility: Table 3.25 shows the distribution of households by sanitation facility in Mangan. The sanitation facility is a crucial indicator of the standard of living. Access to toilets remains a huge problem in rural Mangan for around 22.0 percent households which do not have sanitation facility within their home premises. Further, as many as 43.0 percent households have no bathrooms. The extent of inaccessibility to sanitary toilets prominently differs across the affected revenue villages. Household share of inaccessibility is below the block average in as many as 12 of the 17 villages. Besides, the average share of households without sanitation facilities in the left bank villages is about 34.0 percent, as opposed to roughly 29.0 percent in case of right bank villages. This indicates possible practice of open defecation in the region.

Table 3.25: Distribution of Rural Households by Sanitation Facility, 2011 (Percent)

		Households having	
		Sanitation Facility Within Premises	Bathroom Facility
Northern District	Rural	77.4	58.0
	Total	75.0	54.2
Mangan	Rural	77.7	57.4
	Total	74.5	52.0
<i>Revenue Villages</i>			
Gor		63.0	33.9
Gnon-Sangdong		95.2	87.3
Hee-Gyathang		82.3	67.7
Barfok		69.7	23.8
Lingdong		46.3	30.6
Zimchung		53.6	41.8
Singhik		96.6	90.3
Ringhim		67.6	45.8
Nampatam		73.3	30.7
Tingchim		55.4	42.3
Upper Mangshila		66.0	40.3
Lower Mangshila		61.6	28.9
Namok		78.5	62.9
Sheyam		75.9	38.6
Tangyek		66.2	19.5
Ramthamg		78.5	58.1
Kazor		43.3	33.3

Source: Census of India (2011), Office of the Registrar General & Census Commissioner, Ministry of Home Affairs, Government of India, New Delhi.

Distribution of Rural Households by Asset Possession and Banking Facility: As per the data on asset possession, the distribution of households is shown in Table 3.26. About a quarter of the households (25.9 percent) have no asset possession in Mangan. The situation is slightly better in the rural areas of the block. The figures at a further disaggregate level reveal that in as many as 11 villages, the share of households without asset possession is below the block average. The share of rural households in the block without banking services stands at 34 percent. But the rural-urban gap in terms of access to banking services is mostly inexistent. This is a positive sign concerning financial inclusion in rural areas though there is a need for improvement in the absolute coverage. The average share of households without asset holding in right bank villages (21.9 percent) is much lower than that in the left bank villages (28.2 percent). Similarly, the average share of households availing banking services is fairly higher in the right bank villages, implying better financial inclusiveness in the villages located on the right of Teesta river bank.

Table 3.26: Distribution of Rural Households by Asset Possession and Banking Facility, 2011 (Percent)

		Households with/having	
		No Asset Possession†	Banking Services
Northern District	Rural	21.4	63.9
	Total	23.5	63.4
Mangan	Rural	22.7	66.0
	Total	25.9	65.6
<i>Revenue Villages</i>			
Gor		21.2	75.2
Gnon-Sangdong		9.5	96.8
Hee-Gyathang		25.7	86.7
Barfok		25.7	32.1
Lingdong		27.3	67.8
Zimchung		5.4	92.5
Singhik		9.1	85.6
Ringhim		12.7	39.4
Nampatam		64.0	52.0
Tingchim		41.7	24.6
Upper Mangshila		27.6	54.7
Lower Mangshila		37.0	72.5
Namok		23.7	82.2
Sheyam		23.4	66.5
Tangyek		40.6	66.9
Ramthamg		32.3	96.8
Kazor		22.0	40.7

Note: †Household assets include – Radio/Transistor, Television, Computer/Laptop, Telephone/Mobile Phone, Bicycle, Scooter/Motorcycle/Moped, and Car/Jeep/Van.
Source: Census of India (2011), Office of the Registrar General & Census Commissioner, Ministry of Home Affairs, Government of India, New Delhi.

Dependence of the Local Affected Population on MGNREGA: Table 3.27 makes a comparison of the extent of dependence of households on MGNREGA on key indicators between Mangan and Dzongu blocks during 2013-17. The averages are taken to deal with abrupt fluctuations in the performance indicators. The average share of wages in the total expenditure is higher in Dzongu (62.4 percent) as compared to that in Mangan (58.0 percent). The trend of wage share in total expenditure is showing an increasing trend in Dzongu as opposed to a declining trend in Mangan. The proportion of works completed during this period is observed to be lower in Dzongu (37.2 percent) as compared to that in Mangan (41.4 percent). But the same cannot be said in respect of average person days of employment generated and proportion of households having completed 100 days employment. The average person days of work generated in Dzongu (63 days) is fairly higher than that generated in Mangan (56 days). Interestingly however, the pattern of average person days generated is showing a declining trend both in Dzongu and Mangan. The share of households having completed 100 mandays in Dzongu (22.2 percent) is also reasonably more prominent as compared to that in Mangan (15.0 percent).

Besides, the share of socially marginalized communities in employment is higher as well in Dzongu block. The average share of women participation is prominently higher in Mangan (38.4 percent) as opposed to Dzongu (29.7 percent). Interestingly, participation rate of women is seen to have increased over the years both in Dzongu and Mangan blocks. Overall, the figures suggest relatively greater dependence of people on MGNREGA works in Dzongu block vis-à-vis Mangan.

Large cardamom plantation works taken up under MGNREGA in convergence with Horticulture & Cash Crop Department in North Sikkim



Table 3.27: Dependence of the Local Affected Population on MGNREGA

S.No.	Indicator	Mangan Block					Average (2013-17)	Dzongu Block					Average (2013-17)
		2013	2014	2015	2016	2017		2013	2014	2015	2016	2017	
1	Share of expenditure on wages	64.4	25.9	95.9	55.2	48.5	58.0	73.9	40.7	62.1	68.7	66.4	62.4
2	% of Works Completed	39.4	55.6	27.9	34.9	49.3	41.4	24.3	51.4	72.7	32.4	5.5	37.2
3	Average person-days per household (in days)	93.0	20.0	69.0	69.0	30.0	56.0	98.0	30.0	64.0	79.0	44.0	63.0
4	Average Wage rate per day per person (Rs.)	134.5	155.0	167.0	172.0	176.8	161.1	135.0	155.0	167.0	171.9	177.0	161.2
5	SC person-days (as a %age total person-days)	0.6	1.4	2.5	2.0	2.7	1.9	–	–	–	–	–	–
6	ST person-days (as a %age total person-days)	91.9	92.9	90.5	90.4	88.8	90.9	98.6	98.2	98.1	98.2	97.8	98.2
7	Women Participation (%)	36.1	34.3	36.5	38.4	38.4	36.8	27.1	28.0	32.5	29.6	31.3	29.7
8	% of HHs who have completed 100 Days	65.9	–	3.3	5.6	–	15.0	77.8	–	5.4	25.6	2.2	22.2

Source: Official Website of Mahatma Gandhi National Rural Employment Guarantee Act 2005, Ministry of Rural Development, Government of India, New Delhi. Retrieved from <http://www.nrega.nic.in/netnrega/home.aspx> on 22nd February, 2018.

CHAPTER IV**SOCIO-ECONOMIC AND CULTURAL PROFILE****Chapter Outline**

Introduction

I Socio-economic and Cultural profile (Landowner Families)

- ❖ Demographic details of the population
- ❖ Income and poverty levels
- ❖ Vulnerable groups
- ❖ Local economic activities
- ❖ Factors that contribute to local livelihoods
- ❖ Kinship patterns and social and cultural organization
- ❖ Health Status and Accessibility
- ❖ State of Migration
- ❖ Landowners' Perception about the Project

II Socio-economic and cultural profile (Non-titleholder Families)

Introduction: The demographic and socio economic information is the base on which the entire SIA is founded. The size of the affected population determines the extent of efforts required to collect required data. The social capital (including education and skills for economic pursuits) of the population determines the nature and size of mitigation measures required to support this population in restoring and improving their livelihood. The primary function of census survey and the demographic description of the affected population are to identify the affected population and to assess the type and extent of impacts on individual affected families.

The chapter is divided into two parts. First part covers the detailed analysis of the Socio economic profile of the landowner families and results of the census/socio-economic survey undertaken for them. The demographic characteristics of the project-affected area are discussed in terms of religion, caste, family, gender, age-group, employment status, and level of education of the landowner families whose land is proposed to be acquired for the project. Second part undertakes a detailed census of the non-titleholder families residing in the affected area. This is presented in the second part of the Chapter.

I Socio-economic and Cultural profile (Landowner Families)**4.1 Demographic Details of Project**

Table 4.1 presents the distribution of households by religion, caste and family type. Though 231 families were surveyed, the survey captures information of three additional families as they were separately interviewed. Majority of the affected landowner households practice Buddhism (72.6 percent), followed by Hinduism (21.8 percent) and Christianity (5.6 percent). Buddhism is the predominant religion practiced among the households in all GPUs excepting *Mangshila Tibuk* where the majority (84 percent) follows Hinduism. The composition of households by caste shows that the affected population majorly comprises of the Scheduled Tribe (ST) community, accounting for 97.0 percent of the total sample households. It is further revealed that the households across GPUs primarily prefer to live in nuclear family than in joint family system excepting in *Namok Swayam*.

Table 4.1: Distribution of Landowners By Religious, Caste and Family Type

		All Households	Gram Panchayat Units (GPUs)									
Religion			Barfok Lingdong	Hee Gyathang	Gor Taryang	Mangshila Tibuk	Namok Swayam	Ramthamg Tangyek	Singhik Sentham	Tingchim Chandey	Passingdang Safo	Ringhim Nampatam
Hindu	No.	51	01	–	01	46	01	–	01	01	–	–
	%	21.8	5.9	–	4.5	83.6	14.3	–	4.8	1.7	–	–
Buddhist	No.	170	16	21	20	05	06	04	19	57	01	21
	%	72.6	94.1	95.5	91	9.1	85.7	100.0	90.4	96.6	100	80.8
Christian	No.	13	–	01	01	04	–	–	01	01	–	05
	%	5.6	–	4.5	4.5	7.3	–	–	4.8	1.7	–	19.2
Total	No.	234	17	22	22	55	07	04	21	59	01	26
	%	100	100	100	100	100	100	100	100	100	100	100
Caste												
OC	No.	05	–	01	0	01	0	0	0	01	0	02
	%	2.1	–	4.5	–	1.8	–	–	–	1.7	–	7.7
ST	No.	227	17	21	22	53	07	04	21	58	01	23
	%	97.0	100.0	95.5	100.0	96.4	100.0	100.0	100.0	98.3	100.0	88.5
SC	No.	01	–	–	–	–	–	–	–	–	–	01
	%	0.4	–	–	–	–	–	–	–	–	–	3.8
OBC	No.	01	–	–	–	01	–	–	–	–	–	–
	%	0.4	–	–	–	1.8	–	–	–	–	–	–
Total	No.	234	17	22	22	55	07	04	21	59	01	26
	%	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

			Gram Panchayat Units (GPUs)									
Religion		All Households	Barfok Lingdong	Hee Gyathang	Gor Taryang	Mangshila Tibuk	Namok Swayam	Ramthang Tangyek	Singhik Senthom	Tingchim Chandey	Passingdang Safo	Ringhim Nampatam
Family Type												
Joint	No.	86	06	07	08	14	05	02	09	27	–	08
	%	36.8	35.3	31.8	36.4	25.5	71.4	50.0	42.9	45.8	–	30.8
Nuclear	No.	147	1	15	14	41	02	02	12	32	01	17
	%	62.8	64.7	68.2	63.6	74.5	28.6	50.0	57.1	54.2	100.0	65.4
Individual	No.	01	–	–	–	–	–	–	–	–	–	01
	%	0.4	–	–	–	–	–	–	–	–	–	3.8
Total	No.	234	17	22	22	55	07	04	21	59	01	26
	%	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Primary Survey

Table 4.2 shows the distribution of households by gender, age and employment status. As regards the distribution of households by gender, it is observed that the total surveyed population comprises of 795 males and 789 females with the sex ratio poised at 992 (females per 1000 males). Interestingly, the sex ratio is seen to be skewed in favor of females in all GPUs excepting in *Gor Taryang*, *Namok Swayam* and *Ramtham Tangyek*. As per information shared by the respondents, more than quarter share of households (27.4 percent) seem to be economically dependent upon the earnings of woman members.

Although a significant proportion of the sampled population is in the working age-group of 15-59 years (71.1 percent), a large section of them are found to be unemployed (11.8 percent). This includes a substantial share of the population covered in the age-group of 16-35 years (44.4 percent). But the youth unemployment rate (in the age-group of 15-29 years) is found to be critically high (14.8 percent). The marginal employment share in the working age group is as high as 18.0 percent while that in the youth age group is found to be 8.5 percent, indicating low income levels generated from part-time works which may be inadequate to support a decent living for their families. The unemployment rate in the working age population is more than 8 percent in all GPUs excepting *Gor Taryang* and *Hee Gyathang*. Similarly, the youth unemployment rate is the maximum in *Tingchim Chandey* (25.0 percent) and *Ringhim Nampatam* (25.0 percent), followed by *Namok Swayam* (22.2 percent) and *Hee Gyathang* (15.9 percent). On an average, the youth unemployment rate in the left bank GPUs (16.8 percent) is a lot higher as compared to that in the right bank GPUs (12.0 percent).

Table 4.2: Distribution of Households By Gender, Age and Employment Status

			Gram Panchayat Units (GPUs)									
		All Households	Barfok Lingdong	Hee Gyathang	Gor Taryang	Mangshila Tibuk	Namok Swayam	Ramthang Tangyek	Singhik Sentham	Tingchim Chandey	Passingdang Safo	Ringhim Nampatam
Gender Group (for total persons covered)												
Male	No.	795	52	84	97	190	35	24	64	174	03	72
	% Share	50.2	49.1	49.7	55.4	49.2	54.7	63.2	49.2	49.0	42.9	46.8
Female	No.	789	54	85	78	196	29	14	66	181	04	82
	% Share	49.8	50.9	50.3	44.6	50.8	45.3	36.8	50.8	51.0	57.1	53.2
Total	No.	1584	106	169	175	386	64	38	130	355	07	154
	% Share	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Sex Ratio†		992	1038	1012	804	1032	829	583	1031	1040	1333	1139
Women-headed Households	No.	64	08	03	06	19	01	01	04	18	–	04
	Total	234	17	22	22	55	07	04	21	59	01	26
	% Share	27.4	47.1	13.6	27.3	34.5	14.3	25.0	19.0	30.5	–	15.4
Age Group (for total persons covered)												
15 years and below	No.	344	24	48	36	104	09	03	28	58	–	34
	% Share	21.7	22.6	28.4	20.6	26.9	14.1	7.9	21.5	16.3	–	22.1
16-35 years	No.	703	39	62	92	177	34	23	65	152	04	55
	% Share	44.4	36.8	36.7	52.6	45.9	53.1	60.5	50.0	42.8	57.1	35.7
36-60 years	No.	416	36	43	39	80	16	10	28	110	02	52
	% Share	26.3	34.0	25.4	22.3	20.7	25.0	26.3	21.5	31.0	28.6	33.8
61-70 years	No.	82	05	08	05	21	03	01	07	23	01	08
	% Share	5.2	4.7	4.7	2.9	5.4	4.7	2.6	5.4	6.5	14.3	5.2
71 years and above	No.	39	02	08	03	04	02	01	02	12	–	05
	% Share	2.5	1.9	4.7	1.7	1.0	3.1	2.6	1.5	3.4	–	3.2

		Gram Panchayat Units (GPUs)										
		All Households	Barfok Lingdong	Hee Gyathang	Gor Taryang	Mangshila Tibuk	Namok Swayam	Ramthang Tangyek	Singhik Sentham	Tingchim Chankey	Passingdang Safo	Ringhim Nampatam
Total	No.	1584	106	169	175	386	64	38	130	355	07	154
	% Share	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Working age population††	No.	1126	74	109	132	258	51	34	94	264	05	105
	% Share	71.1	69.8	64.5	75.4	66.8	79.7	89.5	72.3	74.4	71.4	68.2
<i>Employment Status (for total persons covered)</i>												
Unemployed* (15-59) years	No.	132	08	08	04	27	10	03	08	48	01	15
	Total Persons	1122	74	109	132	257	51	34	94	261	05	105
	% Share	11.8	10.8	7.3	3.0	10.5	19.6	8.8	8.5	18.4	20.0	14.3
Marginally Employed** (15-59) years	No.	202	18	27	35	59	08	08	12	27	–	08
	Total Persons	1122	74	109	132	257	51	34	94	261	05	105
	% Share	18.0	24.3	24.8	26.5	23.0	15.7	23.5	12.8	10.3	–	7.6
Unemployed (15-29) years	No.	77	04	07	04	17	06	02	02	25	–	10
	Total Persons	520	27	44	77	134	27	17	50	100	04	40
	% Share	14.8	14.8	15.9	5.2	12.7	22.2	11.8	4.0	25.0	–	25.0
Marginally Employed (15-29) years	No.	44	05	04	07	19	01	01	04	02	–	01
	Total Persons	520	27	44	77	134	27	17	50	100	04	40
	% Share	8.5	18.5	9.1	9.1	14.2	3.7	5.9	8.0	2.0	–	2.5

Note: † refers to the number of females per 1000 males in population; †† refers to the age group of 15-59 years; * & ** includes both sexes between the respective age groups who reported as being unemployed and marginally employed respectively.

Source: Primary Survey

The distribution of the households by their educational level is shown in Table 4.3. While only about 9 percent of the population have no formal education, 2 percent are found to be neo-literates who have acquired the skills of literacy at later stages of their lives through formal or informal approaches. Around 57 percent population has education up to secondary level or less. Nearly 14 percent population has attained higher secondary education and a little more 15 percent have graduated. The share of population with 'lama' education in Monastery schools (or popularly called *Gompa*) is found to be very low.

Overall it may be inferred that the proportion of educated people in the affected region is fairly high. *Hee Gyathang* is home to a maximum share of illiterates (13.5 percent), followed by *Mangshila Tibuk* (12.7 percent) and *Namok Swayam* (11.3 percent). It is further observed that the average illiteracy rate in the right bank GPUs (10.0 percent) is higher than their left bank counterparts (8.2 percent). However, not much variation is found across education levels of the sample population for all GPUs.

Table 4.3: Distribution of Landowners by Education Level

		All Households	Gram Panchayat Units (GPUs)									
Level of Education*			Barfok Lingdong	Hee Gyathang	Gor Taryang	Mangshila Tibuk	Namok Swayam	Ramthang Tangyek	Singhik Sentham	Tingchim Chandey	Passingdang Safo	Ringhim Nampatam
No formal education	No.	140	06	21	17	44	07	02	06	28	–	09
	% Share	9.5	6.1	13.5	10.3	12.7	11.3	5.4	5.0	8.4	–	6.3
Neo-literate**	No.	30	01	03	03	05	–	01	04	09	–	04
	% Share	2.0	1.0	1.9	1.8	1.4	–	2.7	3.4	2.7	–	2.8
Primary (I-IV)	No.	264	22	42	30	67	11	02	14	55	–	21
	% Share	18.0	22.4	26.9	18.2	19.3	17.7	5.4	11.8	16.6	–	14.7
Middle (V-VII)	No.	323	23	31	42	91	15	07	33	54	01	26
	% Share	22.0	23.5	19.9	25.5	26.2	24.2	18.9	27.7	16.3	14.3	18.2
Secondary (VIII-X)	No.	248	22	23	22	64	03	08	22	62	–	22
	% Share	16.9	22.4	14.7	13.3	18.4	4.8	21.6	18.5	18.7	–	15.4
Higher Secondary (XI-XII)	No.	204	10	15	31	41	12	06	22	41	01	25
	% Share	13.9	10.2	9.6	18.8	11.8	19.4	16.2	18.5	12.3	14.3	17.5
Graduation and above	No.	230	12	18	16	35	13	11	16	71	05	33
	% Share	15.7	12.3	11.6	9.7	10.1	21.0	29.7	13.4	21.4	71.4	23.1
Others***	No.	27	02	03	04	–	01	–	02	12	–	03
	% Share	1.90	2.0	1.9	2.4	–	1.6	–	1.6	3.6	–	2.1
Total Persons	No.	1466	98	156	165	347	62	37	119	332	07	143
	% Share	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Note: *For total persons covered between (the age-group of) 7 years and above; **Includes All those acquired the skills of literacy who at a later stage of their lives through formal or informal approaches; ***Includes 'Lama' education attained in Monastery schools – popularly known as 'Gompa'. Source: Primary Survey

4.2 Income and Poverty

The income status of the project-affected landowner households is assessed by means of occupation, land holding, annual income level, and consumption expenditure pattern. Similarly, the incidence of poverty in the region is examined in terms of proportion of households living below poverty line (BPL) as per information shared by the respondents. The incidence of poverty is also studied with the help of data gathered from a recent study conducted by the DESME, Government of Sikkim. Besides, the basic standard of living indicators including housing structure, sanitation facility, electricity connectivity, fuel used for cooking, sources of lighting and drinking water, possession of durable assets, and banking facilities are also analysed for understanding the level of income and extent of poverty in the project area.

Table 4.4 presents the distribution of households across levels of annual income. A sizeable section of the households (29.9 percent) are seen to be in the lowest income range, i.e., INR 1,00,000 or less. A significant share of households (37.7 percent) belongs to the moderate income group, i.e., the range between INR 1, 00,000 to 3, 00,000. At the same time, a fairly large section of households (32.5 percent) are also found to be in the high income range or above. Significantly higher proportion of households falls within low to moderate income group in both the left and the right-bank (65.1 percent and 74.2 percent respectively). No substantial differences are found in the share of households falling within the higher income groups across both the banks.

Table 4.4: Distribution of Landowners by Annual Income

	All Households		Left Bank		Right Bank	
Range of Income (INR)	Frequency	%Share	Frequency	%Share	Frequency	%Share
Less than 1,00,000	69	29.9	44	26.0	25	40.3
1,00,000 – 3,00,000	87	37.7	66	39.1	21	33.9
3,00,000 – 5,00,000	20	8.7	17	10.1	03	4.8
5,00,000 and Above	55	23.8	42	24.9	13	21.0
Total	231	100.0	169	100.0	62	100.0

Note: **Includes only the landowners with legal land entitlement.

Source: Primary Survey

The consumption expenditure pattern of the households is depicted in Table 4.5. The figures reveal that more than quarter share of the households (27.4 percent) spend a minimum of Rs. 5,000 on food products every month. It is also revealed that expenditure towards health ailments does not account for a major share in the total expenditure of households. This may be possibly because of adequate access to publicly funded health services in the affected region. Expenditure on education is also not quite substantial possibly owing to free education provided by the state up to higher secondary level to all school going children belonging to families having bonafide *Certificate of Identification* (COI).

Table 4.5: Consumption Expenditure Pattern of Affected Households

All Households								
Avg. Monthly Expenditure (Rs.)	Food	Other Consumer Items	Transport	Utility Charges (Electricity/ water)	Health	Education	Social Functions	Misc
<500	–	46 (20.7)	40 (17.7)	86 (37.6)	88 (38.6)	21 (11.1)	14 (6.7)	35 (30.4)
500-1000	15 (6.4)	87 (39.2)	66 (28.9)	71 (31.0)	36 (15.8)	27 (14.3)	51 (24.5)	46 (40.0)
1000-3000	69 (29.5)	55 (24.8)	79 (34.6)	62 (27.1)	72 (31.6)	49 (25.9)	69 (33.2)	18 (15.7)
3000-5000	86 (36.8)	21 (9.5)	27 (11.8)	08 (3.5)	21 (9.2)	39 (20.6)	37 (17.8)	10 (8.7)
5000-10000	47 (20.1)	11 (5.0)	10 (4.4)	01 (0.4)	07 (3.1)	30 (15.9)	18 (8.7)	04 (3.5)
>10000	17 (7.3)	02 (0.9)	06 (2.6)	01 (0.4)	04 (1.8)	23 (12.2)	19 (9.1)	02 (1.7)
Total	234 (100.0)	222 (100.0)	228 (100.0)	229 (100.0)	228 (100.0)	189 (100.0)	208 (100.0)	115 (100.0)
Left Bank								
<500	–	25 (15.6)	27 (16.1)	59 (34.9)	63 (37.5)	16 (11.4)	07 (4.7)	20 (23.5)
500-1000	07 (4.1)	62 (38.8)	46 (27.4)	52 (30.8)	27 (16.1)	21 (15.0)	32 (21.3)	38 (44.7)
1000-3000	54 (31.4)	44 (27.5)	63 (37.5)	49 (29.0)	52 (31.0)	38 (27.1)	50 (33.3)	14 (16.5)
3000-5000	64 (37.2)	18 (11.2)	21 (12.5)	07 (4.1)	18 (10.7)	24 (17.1)	28 (18.7)	07 (8.2)
5000-10000	34 (19.8)	09 (5.6)	07 (4.2)	01 (0.6)	06 (3.6)	23 (16.4)	17 (11.3)	04 (4.7)
>10000	13 (7.6)	02 (1.2)	04 (2.4)	01 (0.6)	02 (1.2)	18 (12.9)	16 (10.7)	02 (2.4)
Total	172 (100.0)	160 (100.0)	168 (100.0)	169 (100.0)	168 (100.0)	140 (100.0)	150 (100.0)	85 (100.0)
Right Bank								
<500	–	21 (33.9)	13 (21.7)	27 (45.0)	25 (41.7)	05 (10.2)	07 (12.1)	15 (50.0)
500-1000	08 (12.9)	25 (40.3)	20 (33.3)	19 (31.7)	09 (15.0)	06 (12.2)	19 (32.8)	08 (26.7)
1000-3000	15 (24.2)	11 (17.7)	16 (26.7)	13 (21.7)	20 (33.3)	11 (22.4)	19 (32.8)	04 (13.3)
3000-5000	22 (35.5)	03 (4.8)	06 (10.0)	01 (1.7)	03 (5.0)	15 (30.6)	09 (15.5)	03 (10.0)
5000-10000	13 (21.0)	02 (3.2)	03 (5.0)	–	01 (1.7)	07 (14.3)	01 (1.7)	–
>10000	04 (6.5)	–	02 (3.3)	–	02 (3.3)	05 (10.2)	03 (5.2)	–
Total	62 (100.0)	62 (100.0)	60 (100.0)	60 (100.0)	60 (100.0)	49 (100.0)	58 (100.0)	30 (100.0)

Source: Primary Survey

Table 4.6 presents the distribution of households by below poverty line status. The figures on households and population below poverty line (BPL) are sourced from a recent study conducted by the DESME. The identification of BPL households is based on a combination of income, expenditure and basic needs perspective. The approach for identifying the poor is an exclusionary one. Households who possessed any of the following are not considered as BPL.

1. Households having any member as government employee including work charge
2. Households having any member as PSU employee
3. Households having any member as central government employee including work charge
4. Households having muster roll member with any other member employed in other sector or trades
5. Households having any member as government contractor of Class I and II
6. Households having any member who has an income over Rs 3000 per month
7. Households having total income of Rs 3000 per month
8. Households having Pucca structure
9. Households having paddy or Cardamom or orchards or Floriculture land of 2.5 acres or above
10. Households having barren or other lands over 5 acres
11. Households having agriculture/horticulture/animal husbandry production of more than Rs 60,000 per year
12. Households having more than 6 cattle
13. Households having more than 10 goats
14. Households having more than 10 sheep
15. Households having more than 6 yaks
16. Households having more than 30 poultry
17. Households having more than 6 buffalo
18. Households having more than 10 horses
19. Households having more than 50 rabbits

It is observed that the share of BPL population in the right bank (measured as a percentage of total BPL population in the district) is around 37 percent whereas that in the left bank is nearly 54 percent. Incidence of poverty in the left bank is found to be significantly more than that in the right bank. Share of BPL population is jointly more in *Tingchim & Mangshila* (28.3 percent), followed by *Lum Gor Sangtok* (14.1 percent) and *Namok Swayam* (12.3 percent). In the remaining GPUs, the BPL population share is seen to be less than 10 percent.

Table 4.6: Incidence of Poverty in the Affected GPUs

GPU	Below Poverty Line			
	Households		Population	
	No.	% Share	No.	% Share
Passingdang Safo	45	6.8	217	6.4
Barfok Lingdong	48	7.3	230	6.8
Hee Gyathang	58	8.8	316	9.3
Lum Gor Sangtok	90	13.6	476	14.1
<i>Right Bank</i>	241	36.4	1239	36.6
Ramthang Tangyek	63	9.5	330	9.7
Namok Swayam	89	13.4	416	12.3
Tingchim & Mangshila	168	25.4	959	28.3
Ringhim Nampatam	59	8.9	244	7.2
Singhik Sentham	42	6.3	199	5.9
<i>Left Bank</i>	358	54.1	1818	53.7
North District	662		3387	

Source: The Department of Economics, Statistics, Monitoring and Evaluation, Government of Sikkim, Gangtok.

The distribution of households by below poverty line status as per Information by the respondents is presented in Table 4.7. It is seen that 15.4 percent of the households belong to BPL category. Incidence of poverty is more acute in the left bank with 18.0 percent households below poverty line as compared to that in the right bank where 8.1 percent households are found to under the poverty line. Ironically, a considerably large section of the households (38.9 percent) are seen to be incognizant whether or not they belong to BPL category.

Table 4.7: Distribution of Households by Below Poverty Line Status as per Information by the Respondents

		All Households		Left Bank		Right Bank	
		Frequency	Percentage Share	Frequency	Percentage Share	Frequency	Percentage Share
BPL Category	Yes	36	15.4	31	18.0	05	8.1
	No	110	45.7	79	45.9	28	45.2
	Don't Know	92	38.9	63	36.0	29	46.8
	Total	235	100.0	173	100.0	62	100.0

Source: Primary Survey

4.3 Vulnerable Groups

The United Nations Food and Agriculture Organisation (UN-FAO) defines vulnerable groups as comprising of two groups; first, those households which would be vulnerable under any circumstances. For example, where the adult(s) is (are) unable to provide an adequate livelihood for the household for reasons of *disability, illness, age or some other characteristics*; second, those households whose resource endowments are inadequate to provide sufficient income from any available source. However, no definition of "vulnerable" is complete. It is also considered appropriate to identify certain household characteristics such as size, age, dependency ratios, female headed, etc. In fact, the ability to provide adequate *safety-nets* for "vulnerable" groups hinges, in turn, on the ability to identify the appropriate households.

The National Rehabilitation and Resettlement Policy, 2007 defined vulnerable persons as the disabled, destitute, orphans, widows, unmarried girls, abandoned women, or persons above fifty years of age; who are not provided or cannot immediately be provided with alternative livelihood, and who are not otherwise covered as part of a family; In this respect, it is important to define what constitutes a "vulnerable" household. In view of the definition provided by FAO and NRRP, 2007 and in context of the present Study, the following categories are identified as vulnerable households:

- (i) **Landless and Marginal Landowners (Post Acquisition):** Those households who become landless and marginal after acquisition of land constitute a distinct category of the most vulnerable group. The total land holding of the family is considered as the consolidated extent owned by them in North Sikkim district.
- (ii) **Women-headed Households:** Women-headed families tend to be the most marginalized and poverty prone in any given community. They generally score lower than other households on economic parameters, educational attainment, etc.
- (iii) **Families with Disabled Members:** Households with physically/mentally challenged persons is likely to have high support needs.
- (iv) **Household Dependency Rate:** The dependency rate of households is gauged in terms of three parameters—child dependency, aged dependency and total dependency rates. The dependency ratio is equal to the number of individuals aged below 15 or above 64 divided by the number of individuals aged 15 to 64, expressed as a percentage. The dependency ratio is an age-population ratio of those typically not in the labor force (the *dependent* part ages 0 to 14 and 65+) and those typically in the labor force (the *productive* part ages 15 to 64). The distribution of households by Child and Aged dependency ratios is given in Table 4.8

Table 4.8: Distribution by (Average) Child and Aged Dependency Ratios* (Percent)

	Gram Panchayat Units (GPUs)										
	All Households	Barfok Lingdong	Hee Gyathang	Gor Taryang	Mangshila Tibuk	Namok Swayam	Ramthamg Tangyek	Singhik Sentham	Tingchim Chaney	Passingdang Safo	Ringhim Nampatam
Child Dependency Rate	31.3	38.0	39.1	29.1	41.8	18.2	6.5	31.8	17.2	17.4	39.1
Aged Dependency Rate	12.0	14.6	21.5	8.4	8.8	12.5	5.0	6.4	15.1	15.1	10.8
Total Dependency Rate	43.3	52.6	60.6	37.5	50.5	30.7	11.5	38.2	32.3	32.4	49.9

Note: *The dependency ratio is equal to the number of individuals aged below 15 or above 64 divided by the number of individuals aged 15 to 64, expressed as a percentage.

Source: Primary Survey

Table 4.9 shows the distribution of households by type of housing, access to sanitation facility and electricity connectivity. In line with what is observed at the block level, close to half the total households (49.6 percent) dwell in good housing conditions. On the other hand, the share of livable houses in total households is found to be 31.2 percent, which is far less than what is revealed at the block level (see Table 3.20). The remaining, 19.2 percent houses are seen to be in a dilapidated condition. This is also contrary to what is observed at block level. It is noticed that more than half the households in the left bank (53.5 percent) live in good housing as opposed to 38.7 percent households in the right bank. On the contrary, the share of dilapidated housing structures in the left bank (20.3 percent) is more than that in the right bank (16.1 percent).

The share of accessibility to independent or personal toilets across all households is found to be 68.8 percent. This is lesser in comparison with the finding at macro level for rural Mangan where 77.7 percent households are seen to have sanitation within house premises (Table 3.24). While around 30 percent of the study households are seen to be using common or shared toilets, very negligible share of households (approximately 1 percent) are reported to be practicing open defecation. Access to independent toilet facility for the left bank households (73.3 percent) is distinctly higher than those for the right bank households (56.5 percent).

The state of electrification is impressive with close to 100.0 percent households having access to electricity. Only a slender share of the total households (1.3 percent) has no electricity connection. Besides, electricity is found to be the sole source of lighting in the study area.

From the distribution of households by cooking fuel requirement, it is seen that 56 percent households use cleaner form of energy for cooking, i.e., LPG. However, 43.2

percent of the households are found to use firewood for cooking energy source. The households' use of crop residue, cow dung and kerosene for cooking is almost non-existent. While majority of the households in the left-bank (65.1 percent) use LPG for cooking, its proportion is found to be almost half (30.6 percent) in the right-bank area as compared to the left-bank. Overall, the condition is comparatively worse in the right bank as a significantly high share of households (67.7 percent) is observed to be dependent on firewood for cooking.

It is also found from the table that a majority of households (64.1 percent) in the study area use spring water for drinking purposes. This is also opposite to what is seen for rural Mangan (Table 3.21). Similarly, in both left and right-bank, households' use of spring water is considerably high (67.4 percent and 54.8 percent respectively). While 35 percent of the total households are observed to be using piped water for drinking purpose, its share in left and right banks is 32.0 percent and 43.5 percent respectively. This indicates that the coverage of piped water is not that good in the study region. Proportion of households depending on wells and other sources of drinking water are found to be meager.

Table 4.9: Distribution of Households by Type of Housing and Basic Amenities

		All Households		Left Bank		Right Bank	
		Frequency	Percentage Share	Frequency	Percentage Share	Frequency	Percentage Share
House Structure	Dilapidated	45	19.2	35	20.3	10	16.1
	Livable	73	31.2	45	26.2	28	45.2
	Good	116	49.6	92	53.5	24	38.7
	Total	234	100.0	172	100.0	62	100.0
Sanitation Facility	Common	71	30.3	45	26.2	26	41.9
	Independent	161	68.8	126	73.3	35	56.5
	Open Defecation	02	0.9	01	0.6	01	1.6
	Total	234	100.0	172	100.0	62	100.0
Electricity	Permanent Connection	230	98.3	168	97.7	62	100.0
	Temporary Connection	02	0.9	02	1.2	–	–
	No Connection	02	1.3	02	1.2	–	–
	Total	234	100.0	172	100.0	62	100.0
	LPG	131	56.0	112	65.1	19	30.6

		All Households		Left Bank		Right Bank	
		Frequency	Percentage Share	Frequency	Percentage Share	Frequency	Percentage Share
Fuel used for Cooking	Firewood	101	43.2	59	35.3	42	67.7
	Crop residue / Cow dung	01	0.4	–	–	01	1.6
	Kerosene	01	0.4	01	0.6	–	–
	Total	234	100.0	172	100.0	62	100.0
Source of Lighting	Electricity	232	99.1	170	98.8	62	100.0
	Kerosene	02	0.9	02	1.2	–	–
	Total	234	100.0	172	100.0	62	100.0
Source of Drinking Water	Spring	150	64.1	116	67.4	34	54.8
	Piped	82	35.0	55	32.0	27	43.5
	W1`ells/Others	02	0.8	01	0.6	01	1.6
	Total	234	100.0	172	100.0	62	100.0

Source: Primary Survey

The distribution of households on asset possession is shown in Table 4.10. It is observed that cell phones (93.6 percent) and TV (79.1 percent) constitute the major contributors to the gross assets basket of the households. Refrigerators (38.9 percent) and Cars (20.5 percent) are found to be the third and fourth largest household asset holdings followed by computers/laptops (16.9 percent) and motorcycles/scooters (9.4 percent). The lowest contributors to the assets basket are found to be bicycles (1.7 percent), water purifiers (6.8 percent) and washing machines (9.4 percent). No significant variations in the figures are found at a further disaggregate level. Besides, possession of bicycle is found to be nil for the right-bank households.

Table 4.10: Asset Holding of the Households (Percentage)

Assets	All Households		Left Bank		Right Bank	
	Frequency	Percentage Share	Frequency	Percentage Share	Frequency	Percentage Share
TV	185	79.1	142	82.6	43	69.4
Refrigerator	91	38.9	76	44.2	15	24.2
Computer/laptop	39	16.9	32	18.6	07	11.3
Bicycle	04	1.7	04	2.3	–	–
Motorcycle/Scooter	22	9.4	20	11.6	02	3.2
Car	48	20.5	35	20.3	13	21.0
Mobile	219	93.6	161	93.6	58	93.5
Water purifier	16	6.8	13	7.6	03	4.8
Washing machine	22	9.4	19	9.9	05	8.1

Source: Primary Survey

The distribution of households by banking facility and debt position is depicted in Table 4.11. The share of households with banking services stands at 98.3 percent. While the proportion of households availing banking facility is 97.7 percent in the left-bank, the figure for the same is 100.0 percent in the right-bank, implying better financial inclusiveness of the households on the right bank. However, the share of households having financial obligations is found to be only 26.5 percent. Besides, no significant variation on financial obligations is found in the left and right-bank households. House construction (33.3 percent) is observed to be the major purpose of borrowing in the study area followed by agriculture (28.3 percent). By and large, the same is seen to be true for the left-bank households. However, almost half of the households reported agriculture (47.1 percent) as the major purpose of borrowing in the right-bank households, followed by animal husbandry (11.8 percent) and for day-to-day expenditure requirements (17.6 percent). Marriage/Social functions and commercial activities are found to be the least important factors which drive households to borrow. Banks are the major source of households borrowing (76.2 percent) in the area, and evidently so its contribution in both left (73.9 percent) and right-bank (82.4 percent) is found to be highly significant. Apart from banks, borrowings from relatives (15.9 percent) is reported to be the second major source in study area.

Table 4.11: Distribution of Households by Banking Facility and Debt Position

	All Households			Left Bank			Right Bank		
	Frequency	Total HHs	Percentage Share	Frequency	Total HHs	Percentage Share	Frequency	Total HHs	Percentage Share
Households availing Banking Services	230	234	98.3	168	172	97.7	62	62	100.0
Households having Financial Obligations	62	234	26.5	45	172	26.2	17	62	27.4
<i>Major Purpose of Borrowing</i>									
Household Expenditure	04		6.3	03		6.5	01		5.9
Agriculture	18		28.3	10		21.7	08		47.1
House Construction	21		33.3	20		43.5	01		5.9
Commercial	04		6.3	03		6.5	01		5.9
Animal Husbandry	03		4.8	01		2.2	02		11.8
Marriage/ Social Functions	02		3.2	01		2.2	01		5.9
Others*	11		17.5	08		17.4	03		17.6
Total HHs	63		100.0	46		100.0	17		100.0
<i>Major Source of Borrowing</i>									
Banks	48		76.2	34		73.9	14		82.4
Relatives	10		15.9	09		19.6	01		5.9
Private Money Lenders	01		1.6	01		2.2	–		–
Others	04		6.3	02		4.3	02		11.8
Total HHs	63		100.0	46		100.0	17		100.0

Note: *Includes day-to-day expenses

Source: Primary Survey

4.4 Local Economic Activities

Distribution of the sample population by economic activities is showed in Table 4.12. It is observed that more than quarter share (25.9 percent) of the workforce is engaged in farming. It is thus a major occupation among the people in the affected region, followed by professional services (23.0 percent) and non-agriculture labour (16.7 percent). A significant share (26.0 percent) of households is also found to be dependent on other services that include non-farm activities like the less remunerative works as *lama* and *nun*, non-salaried works as contractors, and skilled works such as carpenter, etc. Only a slender share of the population is engaged in business and trade (3.5 percent), allied agriculture (3.0 percent), and agriculture labour (1.9 percent). Farming is seen to be the primary occupation among the households in the right bank (38.2 percent) whereas the proportion of farmers in the workforce is comparatively lesser in the left bank (21.0 percent). Access to and

dependency on government/private sector services is a lot more among households residing in the left bank (with a single largest share of 26.2 percent) as compared to those in the right bank (15.1 percent).

Table 4.12 Distribution of the Surveyed Population by Occupation

<i>Occupation (for total persons covered)</i>	All Households		Left Bank		Right Bank	
	Frequency	Percentage Share	Frequency	Percentage Share	Frequency	Percentage Share
Farming	181	25.9	105	21.0	76	38.2
Allied Agriculture	21	3.0	14	2.8	07	3.5
Agricultural Labourer	13	1.9	11	2.2	02	1.0
Non-agricultural Labourer	117	16.7	81	16.2	36	18.1
Professionals*	161	23.0	131	26.2	30	15.1
Business and Trade	24	3.5	15	3.0	09	4.5
Others	182	26.0	143	28.6	39	19.6
Total	699	100.0	500	100.0	199	100.0

Note: *Includes those engaged in government or private sector services.

Source: Primary Survey

Table 4.13 depicts the major economic activities undertaken by women members in their respective households. Although women in the affected region are observed to be engaged in various kinds of economic activity, maximum share of households (44.4 percent) have women involved in farming. The extent of dependence among women is seen to be high in the right bank as more than half the households (56.5 percent) involved in farming. Interestingly, a prominent section of households (31.6 percent) has their women members engaged in services sector as well. Alike their male counterparts, the extent of access to such coveted jobs by women are found to be more among the left bank households (33.7 percent) as compared to the right bank households (25.8 percent). Significant shares of households in the affected region also have women members undertaking allied agriculture activities (30.8 percent) and working in the non-farm sector as wage labourers (26.9 percent). A fair share of households (22.2 percent) too has women involved in collection of fodder, fuel wood, etc. However, the extent of women's dependence on allied agriculture (46.8 percent) and forest produce (30.6 percent) is noticed to be significantly high among households residing in the right bank.

Table 4.13: Major Economic Activities of Women

Economic Activity	All Households			Left Bank			Right Bank		
	Frequency	Total HHs	Percentage Share	Frequency	Total HHs	Percentage Share	Frequency	Total HHs	Percentage Share
Farming/Cultivation	104	234	44.4	69	172	40.1	35	62	56.5
Other Activities allied to Agriculture	72	234	30.8	43	172	25.0	29	62	46.8
Collection of fodder/fuel wood/etc.	52	234	22.2	33	172	19.2	19	62	30.6
Collection and sale of forest produce	06	234	2.6	03	172	1.7	03	62	4.8
Trade & Business	06	234	2.6	05	172	2.9	01	62	1.6
Agricultural Labour	16	234	6.8	10	172	5.8	06	62	9.7
Non-agricultural Labour	63	234	26.9	45	172	26.2	18	62	29.0
Service (Govt./Private)	74	234	31.6	58	172	33.7	16	62	25.8
Average Monthly Income (Rs.)	10, 880			12, 265			7, 090		

Source: Primary Survey

4.5 Factors that Contribute to Local Livelihood

Table 4.14 draws the contribution of various sectors to the total income of households. It is observed that government service sector is the major contributor (31.4 percent) to the household's total income. Cultivation in own land holds the second highest share (18.2 percent) in total household income, followed by wage labour in non-agriculture (13.3 percent) and allied agriculture (12.2 percent) sectors.

As regards non-farm wage labour sector, it is important to note that MGNREGA works have been providing employment to members of a sizeable share of households (68.8 percent) (Table 4.15). Further, it is also found that both in the left and right-banks, government sector services contribute considerably more towards total household income followed by agriculture/cultivation in own lands, non-agriculture wage labour and livestock & allied agriculture. Fishing activity contributes least of all economic activities undertaken by the sample households.

Table 4.14: Contribution of Economic Activities to Livelihood Households (Percent)

	All Households	Left Bank	Right Bank
Agriculture/Cultivation in Own Lands	18.2	17.3	21.2
Wage labour (Agriculture)	3.7	3.6	3.5
Wage labour (Non-agriculture)	13.3	15.1	9.0
Livestock and allied agriculture	12.2	13.1	9.2
Small enterprise/Contractor	2.1	2.1	2.0
Service in Govt. Sector	31.4	31.2	32.3

	All Households	Left Bank	Right Bank
Service in Private Sector	7.4	6.8	8.6
Business and trading/ Other self-employed activity	5.5	6.1	3.6
Fishing	0.05	0.01	0.2
Others*	6.1	4.5	10.5
Total	100.0	100.0	100.0

Note: *Includes less remunerative or marginal or unskilled works besides working in monastery, etc.

Source: Primary Survey

Table 4.15: Participation in MGNREGA Works

	All Households			Left Bank			Right Bank		
	Frequency	Total HHs	Percentage Share	Frequency	Total HHs	Percentage Share	Frequency	Total HHs	Percentage Share
MGNREGA	161	234	68.8	118	172	68.6	43	62	69.4

Source: Primary Survey

4.6 Kinship Pattern and Social & Cultural Organization

Communities, Cultures, religious and customs of different hues intermingle freely here in Sikkim to constitute a homogenous blend. Hindu coexists with Buddhist monastery and there are even a few church, Muslim mosque and Sikh gurudwars. The pre dominant communities of the project area comprises of three major ethnic groups – the *Lepcha*, the *Bhutia* and the *Limboo*. The Lepcha is the earliest ethnic group to have settled in Sikkim. The word Sikkim was derived from *Sukhim* in Limbu/Subba language meaning new palace. It is believed they are the autochthones while others considered that they were settled by the thirteenth century, coming from the hills before the arrival of the Tibetan Bhutias. The Bhutia who immigrated to Sikkim claimed descent from a common ancestor, a *Khampa* prince or chief named *Khye-ebum-sar*, and were divided into fourteen main families. The Limbus or the *Tsongs* are a Nepali Kirati tribe indigenous to the tract west of Teesta who believe they are the original inhabitants of Limbuwan, a part of which is still retained in West Sikkim. Relations between the Lepcha and Tibetan peoples began in the thirteenth century with the signing of a blood brotherhood by the Lepcha Chief *Thekong Tek* and the Tibetan Prince *Khye Bumsa* at Kabi Lungchok in North Sikkim. The Bhutias introduced Buddhism to the region. The kinship pattern and social and cultural organization of these ancient tribes are discussed below.

The Lepchas: The Lepcha language has a small number of kinship terms. They generally make no distinction in addressing their kin along maternal and paternal lines, the exception here being the mother's brother. The language also seldom acknowledges gender difference. Membership to a group is almost always along patrilineal descent. Lepchas define kinsmen rather broadly and defined strictly, the

affine cannot be included in the kindred as they do not share common ancestry. Yet the Lepchas treat in-laws like kinsmen who are potential reservoir of help. Today, however, it is argued by many scholars that the migratory Nepali labour force in Dzongu has considerably changed the traditional practices of communal labour in agricultural practices.

Marriage is seen as a transaction between kin-groups comprising whole families and not merely two individuals. A girl in the Lepcha household may not possess any transferable rights in her natal household but great emphasis is laid upon the affinal relations and their maintenance. The bond between the married daughter and her kin is maintained by frequent visits to her original *busti* and family. The *busti* persists as a social group with the knitting together of the agnatic and matrilineal bonds. While the traditional practices of *levirate*, *sororate*, and sister-exchange marriages are not very common these days, the practice of the would-be-son-in-law working for his future son-in-law has also almost ceased. The marriage is negotiated between the families of the bride and the groom. If the marriage deal is settled, the lama will check the horoscopes of the boy and girl to schedule a favourable date for the wedding. Then the boy's maternal uncle, along with other relatives, approaches the girl's maternal uncle with a *khada*, a ceremonial scarf, and one rupee, to gain the maternal uncle's formal consent. The wedding takes place at noon on the auspicious day. The groom and his entire family leave for the girl's house with some money and other gifts that are handed over to the bride's maternal uncle. Upon reaching the destination, the traditional *Nyomchok* ceremony takes place, and the bride's father arranges a feast for relatives and friends. This seals the wedding between the couple.

Lepcha Musicians and Dancers



Lepcha Attire for Different Occasions



It is relevant to note that in spite of the widespread use of the Nepali language in Dzongu, the common terminology and the medium to address the kin group is still the Lepcha term – with the exception of the commonly used *behani* and *daaju*, or sister and brother respectively, which is mainly used to address the migratory Nepali population in Dzongu. It may be observed that the Lepcha kinship system shows little digression from its traditional pattern and thus suggests its elementary role in the social organization of the Lepcha society.

The Lepcha have their own language, also called Lepcha. It belongs to the *Bodish-Himalayish* group of Tibeto-Burman languages. The Lepcha write their language in their own script, called *Róng* or Lepcha script, which is derived from the Tibetan

script. It was developed between the 17th and 18th centuries, possibly by a Lepcha scholar named *Thikúng Mensalóng*, during the reign of the third *Chogyal* (Tibetan king) of Sikkim. The world's largest collection of old Lepcha manuscripts is found with the Himalayan Languages Project in Leiden, Netherlands, with over 180 Lepcha books.

Lepchas are divided into many clans (Lepcha: *putsho*), each of which reveres its own sacred lake and mountain peak (Lepcha: *dâ* and *cú*) from which the clan derives its name. While most Lepcha can identify their own clan, Lepcha clan names can be quite formidable, and are often shortened for this reason. For example, *Simíkmú* and *Fonyung Rumsóngmú* may be shortened to *Simik* and *Foning*, respectively. Some of the names of the clans are *Sada*, *Rongong*, *Karthakmu*, *Sungutmu*, *Phipon*, *Brimu*, etc.

Most Lepchas are Buddhists, a religion brought by the Bhutias from the north, although a large number of Lepchas have today adopted Christianity. Some Lepchas have not given up their shamanistic religion, which is known as *Mun*. In practice, rituals from *Mun* and Buddhism are frequently observed alongside one another among some Lepchas. For example, ancestral mountain peaks are regularly honoured in ceremonies called *cú rumfát*. Many rituals involve local species. In Sikkim, Lepchas are known to use over 370 species of animals, fungi, and plants

The Lepcha society shows elements of what is known as a “Kinship Society” as opposed to a “market dominated society”. But the Lepcha community differs from a kinship society as there are no inharmonious traits overwhelming the socio-political system that are prevalent in the kinship system. Being largely un-stratified, it can be said that the indigenous system of power and status in the Lepcha society is based on relative egalitarianism and democracy. With the amalgam of Sikkim in the Indian Union, the Lepchas of Dzongu have adopted the popularly elected Gram Panchayat system that, to some extent, bears a resemblance to their indigenous one of *Lyang-Gambu* or village elders. Therefore, it would not be incorrect to say that the shift to the Panchayat system is not a rupture of the indigenous governing traditions of the Lepchas, as the village elder council has long been a characteristic of the Lepcha *busties*. The elimination of the powerful offices appointed during the monarchy and, conversely, the introduction of the council “Kyoung Shezum” or *Samaj* also points towards the continuing practice of their native democratic traditions merged with the adopted Indian system. The Lepchas have the following village governing bodies – *Busti Panchayat*, *Gompa Society*, *Mandal Committee*, *Gyapon Society*, *Youmi*, *Mukhtiar*, *Lyang-Gambu*, and *Kyoung Shezum* or *Samaj* or Society members.

The Bhutias: Literally the word ‘Bhutia’ has been derived from the Nepalese language called “Bhotay” which means the people of the *Bhot* (Tibet). They are the Tibetan origin. They had migrated from southern parts of the Tibet like *Chumbi Valley*, *Kham* etc., in the thirteen century. In their own language they called themselves as ‘Lhopos’ or ‘Lhorees’ which means the dweller of the southward and one of the earliest inhabitants of “The Greater Sikkim”. They were the descendent of *Kye_Bum_Sa*, the chieftain of Bhutia people. *Kye_Bum_Sa* has three sons namely, (i) *Kya-bo-rab* (Swindler) (ii) *Mi-Pon-Rab* (leader of men) and (iii) *Lang-bo-rab* (Plough

Men). Kya_Bo_rab has always shifted from one place to another and even they always changing their living place so that his descendent was also known as "Yul_Ten_pa". The descendent of Lang_Bo_Rab was called "Linzer_pa". The most intellectual son of Kye_Bum_Sa was Mi_Pon_Rab. He had married with the Sakya lady and he has four sons, the eldest son named called "Zhan_Po_Tar" because this son was born at his maternal uncle's house. Second son named called "Tshes_Behu_Tar" means was born on the 10th day of the month. Third son named called "Nyi_Ma Gyaspa" means born on the Sunday. And last son named called "Guru Tashi" the Saint one. *Lingserpa*, the descendents of these who gradually got separated afar were said to have been called *Beb_Tsan_Gyat* (8 Clans) these are (i) *Phenpas*, (ii) *Gonsarpas* or *Gantaputas*, (iii) *Namtsangkors*, (iv) *Tagchungdars*, (v) *Karsorpas*, (vi) *Gyonto_pas*, (vii) *Tsungyapas* and (viii) *Topas* or *Dokhangpas*. Again *Phenpas* are sub-divided into five classes. These are (i) *Nadik* (ii) *Lhasung* (iii) *Wo-Cha-Bonpos*, (iv) *Nabons* and (v) *Phenchung*. All these constituted the original Bhutia clans who settled in Sikkim prior to time of *Chogyal Phungtsog Namgyal* in the year 1642.

Traditional Bhutia dance



Traditional Bhutia costume



The principal concentration of Bhutias is found in all districts of Sikkim. But the highest concentration of the Bhutias population is found in northern part of Sikkim including *Lachen-Lachung*, *Kabi Lenchok*, *Phodong-Phensang* and *Mangan*. Bhutia, who are all Buddhist and quite distinct from the other communities like Lepcha and Nepalese, converted the indigenous Lepcha people to their religious faith, established matrimonial relations with them and thereby paved the way for cultural and social assimilation of the two races. The Bhutia community is one of the ST categories in Indian Constitution. The Bhutias aristocrats are called *Kazis* after similar land lord titles in neighbouring regions, especially in modern day Bangladesh. And some of Bhutias depends on agriculture, dairy farming and pastoralism. When Sikkim was an independent monarchy, among the Bhutias, the *Lachungpas* and *Lachenpas* had their own traditional legal system called "Dzumsa" which means the meeting place of the people. The Dzumsa is headed by the village headman known as the 'Pipon' and have been given full protection by the state government by deeming a status of Panchayat ward and the *Pipon*, a status of Panchayat head. The Bhutias are known by their place of habitation such as the *Drukpas* are people from *Drukul* of Bhutan, the *Chumbipas*, people from the *Chumbi* valley, *Dhophthapas*, inhabitants *Dhophtha*, a place in south Tibet, the *Tromopas* or *Do-mu-pas*, inhabitants of *Do-mu*.

The families of the Bhutia people are mostly patriarchal. Father is the head of the family and followed by the mother and also the eldest son. All the important decisions within the family are taken by the father or jointly by the parents. In their absence, the eldest son has responsible to take decisions. Within the Bhutia community the daughters are not given that much priority in decision-making process. In case of the father's death, the mother takes the all responsibility until the eldest son gets married.

The status of Bhutia women are distinct from others community. Earlier, women held equal right with the men but not on property. But nowadays women have equal right to get the property. They do not have restrictions in going to school, colleges and also for higher education. The idea of the Bhutias women empowerment has taken over the minds of increasing number of people in recent times. They are now widely employed in the press, on television, in political and legal services. Although the Government of India has encouraged greater participation of women in India in Panchayat Raj System both in political and administrative spheres, economic development has increased opportunities for women to participate in fields such as medicine, academia, administrative, etc. Many studies have found that the Bhutia men and women enjoy equal status in the family. Females are allowed to join in any gainfully employment opportunities available to them.

The kinship system of the Bhutias may be termed as "Classificatory" as the fundamental features of the system is the application of the same terms for a number of persons, belonging to both lineal as also collateral relationship. In earlier times *polyandry* was the system of marriage in all Bhutia households and also mostly they were arranged marriages. Inter caste marriages were not preferred except between the Bhutias and the Lepchas as they were treated as equal caste in terms of status. Nowadays, the inter-caste marriages are allowed in the Bhutia community. *Sororate* junior and *levirate* junior are also in practice. Modes of acquiring mates were by service in the early days but negotiation has been a common practice now. Presently, *monogamy* is the general practice. Most of the families are seen to be nuclear and vertically extended, though some carry remnants of the joint family also. During the marriage ceremony, a representative from the groom's house arrives at the bride's house with gifts and raises the offer of marriage. The marriage procedure of Bhutias is very elaborative and expensive.

Buddhism was the main religion of the Bhutia Community in Sikkim in the seventeenth century. It was professed by the Bhutia people of Sikkim. The introduction of Buddhism in Sikkim coincides with the establishment of a political institution. The three monks who had come to Sikkim from Tibet started propagating the religion and constructing monasteries. There were two types of Buddhism: *Mahayana* (The Large Vehicle) and *Hinayana* (The Small Vehicle). But a majority was Mahayana Buddhism. There were two sects of Mahayana Buddhism in which the majority of the Buddhists in Sikkim were organized, the *Nyingmapa* and the *Karma_Kadgupa*. Most of the Bhutias believed in Nyingmapa Sect.

Bhutia tribe has its own language and scripts. Studies have found that in the house, the Bhutia people speak and communicate with each other by their own language but outside the house they generally speak Nepali language. The younger

generation, due to establishment of English medium Convent schools throughout the state, mostly does not their scripts completely.

The Limboos: The history of Limboos, a fringe tribe, is hidden beneath the histories of great Kingdoms, war and conquest, and their resistance and survival. Believed to be brave and cruel in battle, this marginal hill tribe collaborated with the state building processes both in Nepal and Sikkim. Political antagonism resulted in their land being divided into two, thereby making the Limboos, a community which straddles the two nations of Nepal and India. Great battles were fought, political boundaries changed, old system of Governance was replaced by new ones; this ethnic group, however, has managed to survive despite such sharp changes. The origin and migration issue of the Sikkimese Limboos is still a matter of debate and controversies and, without relevant documentary sources, has not, nor seems likely to be elucidated by the historians. They are said to be among the earliest settlers of the land of Sikkim. Their oral narratives categorized them as *Kasi*, *Lasha* and *Bhuiphuta gotra* on the basis of their migration. Such division amongst the Limboo is highly rejected by this community on the ground that it is a *hinduised* and a theoretical construct and not a historically accurate one. The history of this tribe rests on the narration of their stories by different agents in different periods of time; and it is these fragmented memories that have gained acceptance in present day. Several scholars have alleged their own theories explaining the origin and migration of the Sikkimese Limboos. According to the *Kirata* theory, the Limboos are descended from family of *Kirat-asura*, who once fought against the Aryans. Designating the Limboos as *Kirata* and varying in the issue of the migration, the authors have put forward different stories to support their theory.

Symbol of Limbu Community



Community elders dressed in traditional Limbu attire



Limboo is one of the few Sino-Tibetan languages of the Central Himalayas to possess their own pre-20th century scripts. Culturally, they practice many of their own life cycle rituals. They believe that lineage is not transmitted patrilineally. Rather, a woman inherits her mother's gods, and when she marries and lives with her husband she brings with her the deities that will then be recognized as the household deities. Limboo bury their dead and observe for two-to-three days through practiced death rituals. During death ceremony, they put the head of dead in *chares ko thal* and coin on forehead. They block the nose, ear and put alcohol on the lips of the dead body. *Nikwasamma* is a dead ritual done to cleanse the house by *Phedangma*. Relatives, neighbours and visitors bring money as respect and put offering on the top of the dead body. Sons of dead body shave head and eyebrows to respect the

body of the dead. They will be known as the new heir in the family. They bury the dead body covered with white cloth in wooden box. The length of the mourning period varies depending on the gender of the deceased. Weddings, mourning, gift exchanges, and settlement of conflicts involve consumption of alcohol, i.e., liquor, especially the Limboo traditional beer popularly known as *thee* which is also drunk in a container called *Tongba*. Dancing parties are arranged for visitors to the village. These affairs give the young Limboo girls and boys a chance to meet and enjoy dancing and drinking.

Dhaka is the traditional fabric of the Limboos which are made by weaving it in geometric patterns in a handloom. The art of making *dhaka* is taught by one generation to another. A Limboo man clad is often seen in *dhaka topi* (hat) and scarf, and a Limbu lady in *dhaka saree*, *mekhli*, *blouse* and *shawl*. In the olden days, the Limboos were skilled in silk farming. The *Kiratis* were also known as silk traders.

The Limboos traditionally practiced subsistence farming. Rice and maize comprised their principal crops. Although there is an abundance of arable land, productivity is greatly limited by insufficient technology. Excess crops are often traded for food that cannot be grown in the region. Limboo women weave *Dhaka* fabric cloth on their traditional small hand looms made from bamboo and wood. A sizable number of Limboo youths are enlisted in the Nepalese army, British and Indian *Gorkha* regiments.

Limboos generally marry within their own community. A Limboo will not be allowed to marry their own clans for up to 7 generations back to ensure that they are not related. Cross-cousin marriage is not allowed in Limboo culture. Marriage between a man and the widow of his elder brother can take place if they mutually agree. Marriage between a man and a woman outside the clan is also possible either by arrangement or by mutual consent of the man and woman in question. It is conventionally said that the customs and traditions of Limboos were established in the distant past by *Sawa Yethang* (council of eight kings). The marriages are mostly arranged by parents or they can also result when a man elopes with a woman. Asking for a woman's hand is an important ceremony. In that system, the woman can ask for anything, including an amount of gold, silver, etc. This confirms to the woman's family that the man is financially secure enough to keep their daughter happy. A few days after the wedding, the man's family members have to visit the woman's house with a piglet and some alcoholic and non-alcoholic beverages, depending upon the financial standard of his house. The most important ceremonies of a Limboo wedding take place in the groom's house rather than the bride's because the bride has to stay with her husband. There are two special dances in this ceremony; one is called "*Yalakma*" or *dhan nach* in Nepali (rice harvest dance) and "*Kelangma*" or *Chyabrung* in Nepali.

The Limboos follow the social rules and regulation of *Mundhum* oral 'scripture' and a religious book. The high god of the Limbu is called *Tagera Ningwaphumang*, which may be translated simply as "Supreme Body of Knowledge". Their God *Tagera Ningwaphuma* is described as a forceful power the creator of life on earth. But now most of the Limbu people follow *Kirat* religion also. As of the changing time some of the Limboo people are Christian and Hindu also but it is believed that their main religion is *Mundhum*. A very different reformist tradition was established by the

Limboo guru *Phalgunanda*, who established the 'Satyahan' religion. Alcohol is significantly and religiously important to the Limboo culture.

4.7 Health Status and Accessibility

Health infrastructure in nine affected GPUs under Mangan Sub-Division of North district is presented in Table 4.16. Primary healthcare infrastructure developments in rural area basically consist of a three-tier system, i.e., health sub-centers (HSC), primary health centers (PHC), and community health centers (CHC). There are 19 health sub-centres and five primary health centres, besides one district medical hospital, in North district. All GPUs excepting *Hee Gyathang*, *Passingdang*, and *Mangshila Tibuk* have one HSC each whereas *Lum Gor Sangtok* has two HSCs. While there are no CHCs in the affected GPUs, one PHC each is situated in *Hee-Gyathang*, *Passingdang*, and *Ramthang Tanyek* respectively.

Table 4.16: Health Infrastructure in Affected GPUs of North District, Sikkim

GPU	No. of Health Sub-centers	No. of Primary Health Centers	No. of Community Health Centers
Barfok Lingdong	01	–	–
Hee Gyathang	–	01	–
Passingdang Safo	–	01	–
Lum Gor Sangtok	02	–	–
Mangshila Tibuk	–	–	–
Namok Swayam	01	–	–
Ramthang Tanyek	01	01	–
Singhik Sentham	01	–	–
Tingchim Chandey	01	–	–
Mangan SD	–	–	(One District Hospital)
North District	19	05	–

Source: Office of the Chief Medical Officer, North District, Sikkim.

4.8 State of Migration

Table 4.17 outlines the status of migration of the local workforce from the affected villages under study. The rate of out-migration among the households in the affected region is seen to be low (6.8 percent). It is observed that one-third share of the out-migrants stream out to nearby districts.

Table 4.17: Status of Migration in the Affected Villages

	All Households			Left Bank			Right Bank		
	Frequency	Total HHs	Percentage Share	Frequency	Total HHs	Percentage Share	Frequency	Total HHs	Percentage Share
Status of Out-migration	16	234	6.8	11	172	6.4	05	62	8.1
<i>Location</i>									
Within District	02		12.5	02		18.2	–		–
Outside District	12		75.0	08		72.7	04		80.0
Outside State	02		12.5	01		9.1	01		20.0
Total	16		100.0	11		100.00	05		100.0

Source: Primary Survey

4.9 Landowners' Perception about the Project

Perceptions of households are studied in terms of expected benefits and adverse impacts of the project and preferences toward rehabilitation measures and utilization of compensation amount.

Distribution of households by expected benefits about the project is presented in Table 4.18. A dominant share of households (94.0 percent) perceives enhanced employment as a result of the project. There is high expectation of the landowner households regarding increased jobs opportunities arising out of the project. Households expect more livelihood opportunities related to the project and associated petty contracts and informal sector to come up, wherein they would find gainful employment. However, caution needs to be exercised here, as over expectation and its non fulfillment may cause discontent or disengagement with the project authority later on. The survey finding further indicates that the local affected households expect improved quality of social/economic infrastructure and provision of livelihood improvement on account of the project. Large section of the households also expect provision of electricity (beyond the present norms) at lower costs. The project is perceived to boost trade, transportation and tourism sectors in the affected area.

Table 4.18: Perception of Landowner about Expected Benefits from the Project

Expected Benefits	All Households		Left Bank		Right Bank	
	Frequency	Percentage Share	Frequency	Percentage Share	Frequency	Percentage Share
Enhanced employment/livelihood opportunities	220	94.0	161	93.6	59	95.2
Provision of livelihood improvement	202	86.3	147	85.5	55	88.7
Improved social / economic infrastructure	212	90.6	154	89.5	58	93.5
Electrification (at lower costs)	168	71.8	117	68.0	51	82.3
Promotion of Trade, Transportation & Tourism	156	66.7	116	67.4	40	64.5
Others	16	6.8	12	7.0	04	6.5
Total Households	234	100.0	172	100.0	62	100.0

Source: Primary Survey

In addition, there is apprehension among a large section of the households (72.6) that the project will have various adverse impacts on the local community and natural environment. This is depicted in Table 4.19. While this may lead to tension/dissatisfaction amongst the affected households, it concurrently presents an opportunity for finding ways to address the underlying (perceived) issues.

The perception is that adverse impact on culture, unequal distribution of benefits & losses, and inaccessibility to common property resources may increase. This has the potency to create conflicting interests and trigger social unrest. Local population fears that an increase in the influx of migrant workers may spark-off crime rate in the region posing increased social risk to women. The survey further reveals that health issues (particularly HIV/AIDS) may increase with the industry coming up in the vicinity. Moreover, there is an understanding amongst the affected households that the project might lead to ecological hazards, specifically higher noise and air pollution levels and drying up of springs and riverine fisheries. This caution is also a case of opportunity for the requiring body and it may tap channels – governmental and societal to propagate information allaying such fears. The firm should attempt to convert this area of concern into opportunity by adopting proactive means.

Table 4.19: Perception of Landowner about Negative Impacts of the Project

		All Households		Left Bank		Right Bank	
		Frequency	Percentage Share	Frequency	Percentage Share	Frequency	Percentage Share
Perceive Adverse Impact	Yes	170	72.6	132	76.7	38	61.3
	No	64	27.4	40	23.3	24	38.7
	Total	234	100.0	172	100.0	62	100.0
<i>Factors</i>							
Impact on culture/religion		57	24.4	49	28.5	08	12.7
Unequal distribution of impacts		66	28.2	57	33.1	09	14.5
Lack of access to common property resources		72	30.8	62	36.0	10	16.1
Accessibility Issues		51	21.8	42	24.4	09	14.5
Influx of migrant workers		134	57.3	105	61.0	29	46.8
Increased social risk to women		144	61.5	111	64.5	33	53.2
Increased cases of HIV/AIDS/diseases		134	57.3	101	58.7	33	53.2
End of informal institutions		47	20.1	37	21.5	10	16.1
Drying up of spring water/riverine fisheries		94	40.0	74	43.0	20	32.3
Dusting & pollution during construction		159	67.9	124	72.1	35	56.5
Increased noise pollution		155	66.2	117	68.0	38	61.3
Others*		12	5.1	11	6.4	01	0.6
Total Households		234	100.0	172	100.0	62	100.0

*Transmission lines causing radiation and adverse impacts on public, particularly pregnant women; vulnerability to landslides and earthquakes; and issues concerning land-locking.

Source: Primary Survey

Interviewing the Affected Landowners of Right and Left Banks (Randomly Selected)

Sri. Karma Lepcha, Gor-Taryang



Sri. Nagel Lepcha, Gor-Taryang

Sri. Kancho Lepcha, Gor-Taryang



Sri. Dil Bdr Limboo, U. Mangshila

Sri. Kinzang Lepcha, Gor-Taryang



Smt. Juntit Lepcha, Gor-Taryang



Sri. Kyongkop Lepcha
Gnon-Sangdong



Sri. Rongdokchen Lepcha
Lingdong



Sri. Sanchahang Limboo
U. Mangshila



Sri. Pem Tsh. Lepcha, Zimchung



Sri. Nima Tenzing, Zimchung



Sri. Norbu R. Lepcha, Zimchung

SIA Team holding discussions with the affected landowners of Swayem and Kazor Revenue Blocks



II Socio-economic and cultural profile (Non-titleholder Families)

The demographic characteristics of the non-titleholder households residing in the affected area are discussed in terms of nationality, religion, caste, family, gender, age-group, employment status, and level of education.

Table 4.20 presents the distribution of non-titleholder households by nationality, religion, caste and family type. A total of 76 such households were surveyed over the two phases of surveys. It is observed that more than half of tenant households (53.9 percent) are migrants from Nepal while the remaining (46.1 percent) are the nationals of India. A majority of tenant households practice Hinduism (68.4 percent), followed by Buddhism (22.4 percent) and Christianity (9.2 percent). The composition of households by caste shows that a significant section of the affected tenants comprise of the ST community (42.1 percent) followed by OBC (38.1 percent), Other Caste (13.1 percent), and SC (6.6 percent). It is further seen that the tenant households across GPUs primarily live in nuclear family than in joint family system.

Table 4.20: Distribution of Non-titleholder Households By Nationality, Religious, Caste and Family Categories

			Gram Panchayat Units (GPUs)					
		All Households	Mangshila Tibuk	Namok Swayam	Ramthamg Tangyek	Singhik Sentham	Tingchim Chandey	Ringhim Nampatam
Nationality								
Indian	No.	35	04	–	07	6	12	06
	% Share	46.1	66.7	–	100.0	40.0	37.5	75.0
Nepali	No.	41	02	08	–	09	20	02
	% Share	53.9	33.3	100.0	–	60.0	62.5	25.0
Total	No.	76	06	08	07	15	32	08
	% Share	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Religion								
Hindu	No.	52	05	07	02	15	17	06
	% Share	68.4	83.3	87.5	28.6	100.0	53.1	75.0
Buddhist	No.	17	–	–	03	–	13	01
	% Share	22.4	–	–	42.9	–	40.6	12.5
Christian	No.	07	01	01	02	–	02	01
	% Share	9.2	16.7	12.5	28.6	–	6.2	12.5
Total	No.	76	06	08	07	15	32	08
	% Share	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Caste								
OC	No.	10	01	01	–	02	05	01
	% Share	13.2	16.7	12.5	–	13.3	15.6	12.5
ST	No.	32	05	06	03	01	14	03
	% Share	42.1	83.3	75.0	42.9	6.7	43.8	37.5
SC	No.	05	–	–	–	02	02	01
	% Share	6.6	–	–	–	13.3	6.2	12.5
OBC	No.	29	–	01	04	10	11	03
	% Share	38.1	–	12.5	57.1	66.7	34.4	37.5
Total	No.	76	06	08	07	15	32	08
	% Share	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Family Type								
Joint	No.	21	02	02	02	01	11	03
	% Share	27.6	33.3	25.0	28.6	6.7	34.4	37.5
Nuclear	No.	54	04	06	04	14	21	05
	% Share	71.1	66.7	75.0	57.1	93.3	65.6	62.5
Individual	No.	01	–	–	01	–	–	–
	% Share	1.3	–	–	14.3	–	–	–
Total	No.	76	06	08	07	15	32	08
	% Share	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Primary Survey

Table 4.21 shows the distribution of tenant households by gender, age and employment status. As regards gender, it is observed that the total surveyed population residing in the affected area comprises of 196 males and 188 females with the sex ratio at 959 (females per 1000 males). The sex ratio is seen to be skewed in favor of females in *Ramthamg Tangyek* and *Singhik Sentham*. As per information shared by the tenants, around 32 percent households possibly are economically dependent upon the earnings of their woman members. A significant proportion of tenant population is in the working age-group of 15-59 years (66.4 percent). However, a fairly large section of them are found to be unemployed (10.6 percent). This includes a substantial share of population surveyed in the age-group of 16-35 years (42.2 percent). But the youth unemployment rate (in the age-group of 15-29 years) is pretty much the same as the overall unemployment rate, i.e., 10.8 percent. Interestingly, the general levels of unemployment among the non-titleholders are much lower as compared to those among the landowners in the study area. The marginal employment share in the working age group is as high as 29.8 percent while that in the youth age group is found to be 14.2 percent, indicating meager income levels generated from part-time works. Such works may not be adequate to financially support a decent living for a significantly large number of non-titleholder families in the affected region.

Table 4.21: Distribution of Non-titleholder Households By Gender, Age and Employment Status

		Gram Panchayat Units (GPUs)						
		All Households	Mangshila Tibuk	Namok Swayam	Ramthamg Tangyek	Singhik Sentham	Tingchim Chandey	Ringhim Nampatam
Gender Group (for total persons covered)								
Male	No.	196	15	20	22	28	95	16
	% Share	51.2	57.7	54.1	45.8	50.0	51.6	50.0
Female	No.	188	11	17	26	29	89	16
	% Share	49.1	42.3	45.9	54.2	51.8	48.4	50.0
Total	No.	383	26	37	48	56	184	32
	% Share	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Sex Ratio†		959	733	850	1182	1036	937	1000
Women-headed Households	No.	24	02	02	01	06	10	03
	Total	76	06	08	07	15	32	08
	% Share	31.6	33.3	25.0	14.3	40.0	31.2	37.5
Age Group (for total persons covered)								
15 years and below	No.	101	5	7	11	14	56	8
	% Share	26.3	19.2	18.9	22.9	24.6	30.4	25.0
16-35 years	No.	162	13	16	25	22	78	8
	% Share	42.2	50.0	43.2	52.1	38.6	42.4	25.0
36-60 years	No.	98	8	12	11	15	41	11
	% Share	25.5	30.8	32.4	22.9	26.3	22.3	34.4

		Gram Panchayat Units (GPUs)						
		All Households	Mangshila Tibuk	Namok Swayam	Ramthamg Tangyek	Singhik Sentham	Tingchim Chandey	Ringhim Nampatam
61-70 years	No.	16	–	2	1	2	7	4
	% Share	4.2	–	5.4	2.1	3.5	3.8	12.5
71 years and above	No.	07	–	–	–	4	2	1
	% Share	1.8	–	–	–	7.0	1.1	3.1
Total	No.	384	26	37	48	57	184	32
	% Share	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Working age population††	No.	255	19	28	35	37	118	18
	% Share	66.4	73.1	75.7	72.9	64.9	64.1	56.3
Employment Status (for total persons covered)								
Unemployed* (15-59) years	No.	27	01	02	04	03	15	02
	Total Persons	255	19	28	35	37	118	18
	% Share	10.6	5.3	7.1	11.4	8.1	12.7	11.1
Marginally Employed** (15-59) years	No.	76	5	10	10	14	31	6
	Total Persons	255	19	28	35	37	118	18
	% Share	29.8	26.3	35.7	28.6	37.8	26.3	33.3
Unemployed (15-29) years	No.	13	–	02	02	01	07	01
	Total Persons	120	09	11	18	14	63	05
	% Share	10.8	–	18.2	11.1	7.1	11.1	20.0
Marginally Employed (15-29) years	No.	17	01	–	03	02	10	01
	Total Persons	120	09	11	18	14	63	05
	% Share	14.2	11.1	–	16.7	14.3	15.9	20.0

Note: † refers to the number of females per 1000 males in population; †† refers to the age group of 15-59 years; * & ** includes both sexes between the respective age groups who reported as being unemployed and marginally employed respectively.

Source: Primary Survey

The distribution of the households by their educational level is shown in Table 4.22. Nearly 20 percent of the population has no formal education while around 6 percent are found to be neo-literates. Around 61 percent population has education up to secondary level or less. While 6.8 percent population has attained higher secondary education, a marginally lesser population share than that has graduated.

Table 4.22: Distribution of Non-titleholder Households By Education Level

Level of Education*		All Households	Gram Panchayat Units (GPUs)					
			Mangshila Tibuk	Namok Swayam	Ramthamg Tangyek	Singhik Sentham	Tingchim Chandey	Ringhim Nampatam
No formal education	No.	73	06	07	06	12	33	09
	% Share	19.8	24.0	18.9	13.6	21.8	18.9	28.1
Neo-literate**	No.	23	–	02	–	04	15	02
	% Share	6.2	–	5.4	–	7.3	8.6	6.2
Primary (I-IV)	No.	86	01	07	08	15	47	08
	% Share	23.4	4.0	18.9	18.2	27.3	26.9	25.0
Middle (V-VII)	No.	83	07	12	09	05	44	06
	% Share	22.6	28.0	32.4	20.5	9.1	25.1	18.8
Secondary (VIII-X)	No.	56	04	05	10	11	22	04
	% Share	15.2	16.0	13.5	22.7	20.0	12.6	12.5
Higher Secondary (XI-XII)	No.	25	04	02	03	05	09	02
	% Share	6.8	16.0	5.4	6.8	9.1	5.1	6.2
Graduation and above	No.	22	03	02	08	03	05	01
	% Share	6.0	12.0	5.4	18.2	5.5	2.9	3.1
Total Persons	No.	368	25	37	44	55	175	32
	% Share	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Note: *For total persons covered between (the age-group of) 7 years and above;
 **Includes 'Lama' education attained in Monastery schools – popularly known as 'Gompa'.

Source: Primary Survey

Interviewing the Non-titleholders Residing in the Affected Area (Randomly Selected)



Smt. Santa Maya Chettri, Zimchung
(Landowner: Smt. Reemu Lepcha)



Sri. Kancha Sherpa, Zimchung
(Landowner: Sri. L.G.Tenzing)



Sri. Basant Pradhan, M. Singhik
(Landowner: Karma C. Bhutia)

Interviewing the Non-titleholders Residing in the Affected Area (Randomly Selected)

Smt. Bir Maya Rai, Zimchung
(Landowner: Dawa Tamang)



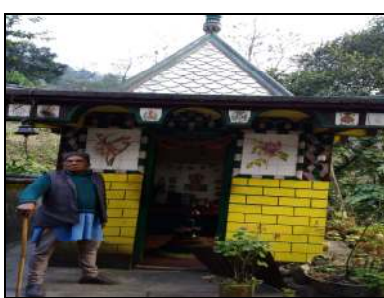
Smt. Sarita Karki, Zimchung
(Landowner: Naksuk Lepcha)



Sri. Bhakta B. Chettri, Zimchung
(Landowner: Karma C. Bhutia)



Smt. B. B. Chettri, M. Singhik
(Landowner: Nima Tsh. Lepcha)



Sri. Nir Bahadur Barnet Chettri
(Landowner: Nima Choden)



Sri. Arjun K. Chettri, M. Singhik
(Landowner: Nima Choden)

CHAPTER V**SOCIAL IMPACTS & INVENTORY LOSS****Chapter Outline**

Introduction

I Land Assessment

- ❖ Project Area of Impact
- ❖ Project Land Requirement
- ❖ Present use of any Public, Unutilised Land in the Vicinity of the Project Area
- ❖ Land (if any) Already Purchased, Alienated, Leased or Acquired
- ❖ Quantity, Location and Intended Use of the Land Proposed
- ❖ Nature, Present Use and Irrigation Status
- ❖ Landholdings and Residential Structure
- ❖ Land Prices

II Social Impacts

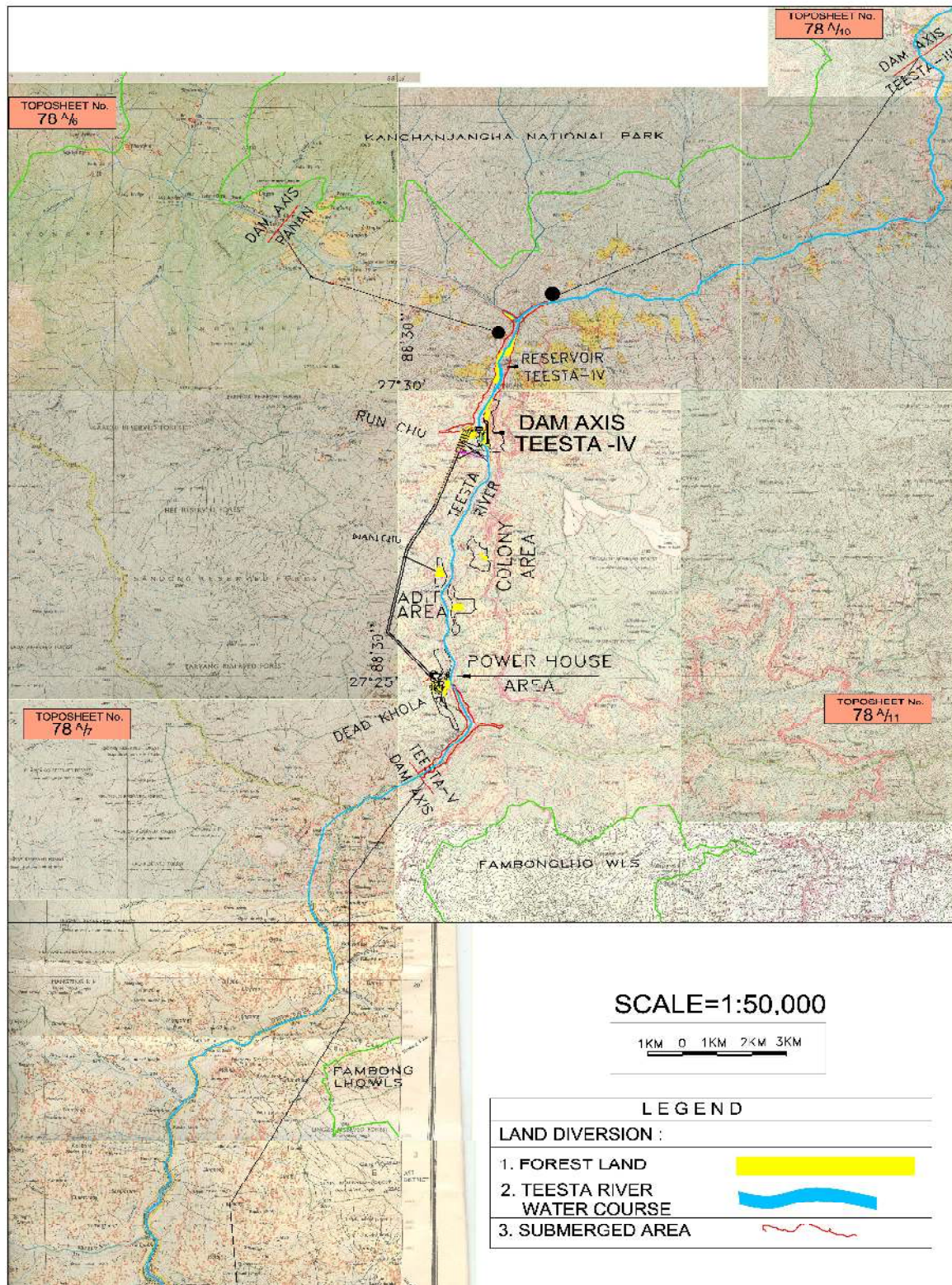
- ❖ Framework and Approach to Identifying/Assessing Impacts
- ❖ Description of Impacts at Various Stages of the Project Cycle

III Estimation of Impacts and Affected Families

- ❖ Directly Affected (Land Owners) Families
- ❖ Displaced Families
- ❖ Dependents on land (Non-Titleholders)
- ❖ Forest Right Title-holders
- ❖ Vulnerable Households
- ❖ Impacts on Government (Departmental) Land
- ❖ Impacts on Common Property Resources (Khasmal Land)
- ❖ Impact on Cultural/Religious Sites
- ❖ Other Social Impacts

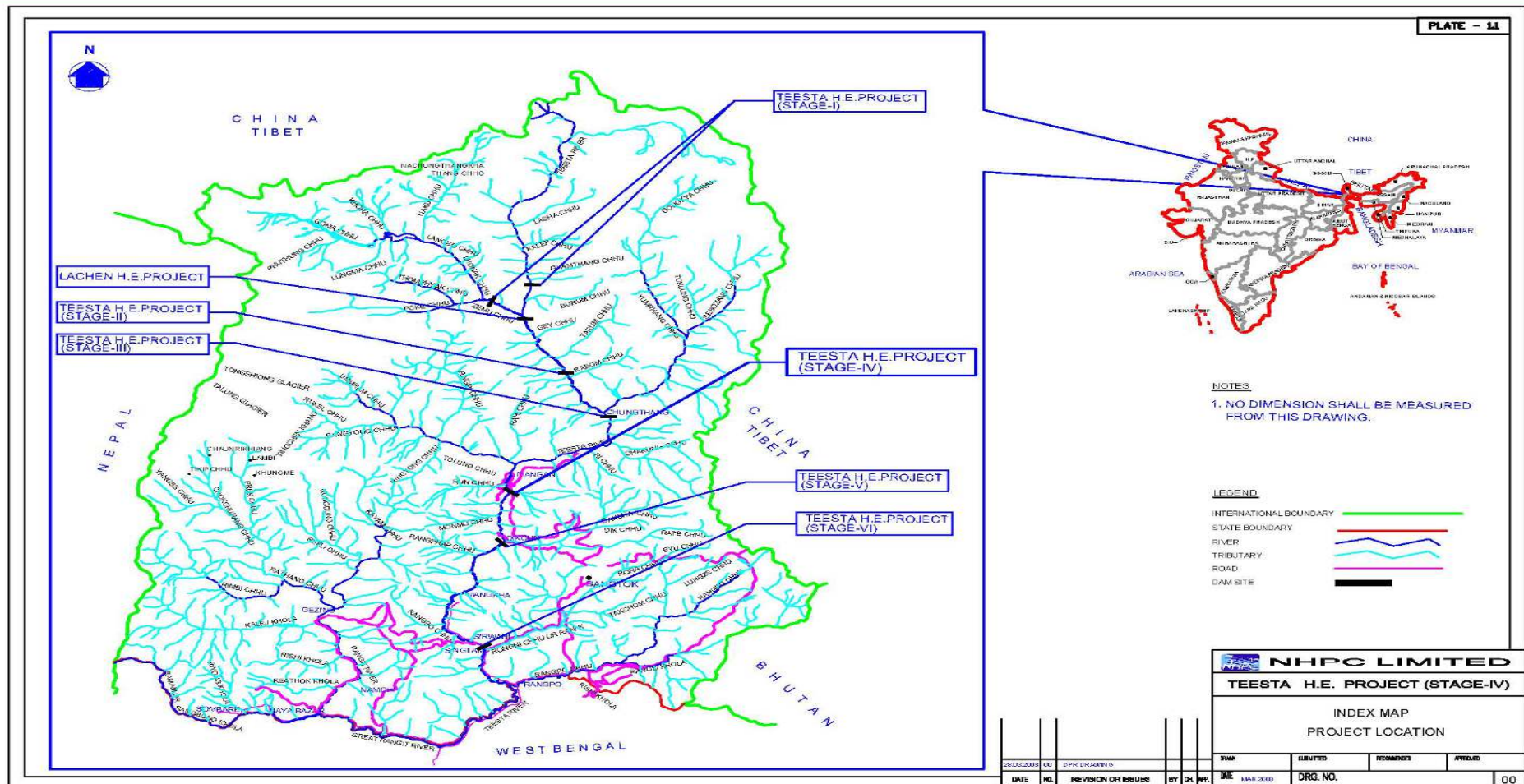
Introduction: The Teesta River, on which the Teesta Stage IV project is proposed to be constructed, is the largest river of Sikkim. The Stage IV Project is a part of cascade development of hydro power on the river. Out of the projects conceptualized on Teesta river, Teesta I, II and Lachen are not to be taken up as per recommendation of the carrying capacity study while Teesta III (by Teesta Urja) and Teesta V (by NHPC) have already been commissioned. The project envisages acquisition of private land in fourteen revenue blocks of North District. Out of these 14 revenue blocks, 8 blocks are located on left bank while 6 blocks are located on right bank of the River Teesta.

Figure 5.1 Project Area in a Geographical Map



Source: Project Report, NHPC

Figure 5.2 Hydro-electric Projects on Teesta River



Source: Project EMP Report

I Land Assessment**5.1 Project Area of Impact**

The project area of impact will include all areas which will have direct or indirect impact because of the project. The total land requirement for the project, both permanent and temporary will come under the direct impacted area of the project. The project envisages a total land requirement of 272.84 ha, out of which 172.4268 ha is private land. The temporary land requirement for quarry, dumping area etc also comes under the direct influence of the project. The temporary land requirements that are acquired will not be returned to the landowners and hence will constitute a permanent impact.

The project area of influence will extend beyond the areas under acquisition to areas where the community loses access to a resource (landed resource/CPR). In the case of Teesta IV, the loss of access issues has been reported for both categories – private land and Khasmal land (from where the community meets fuel/fodder requirement). The downstream areas of the project may also be impacted by the project in terms of reduced water flow and consequent adverse impact on the flora and fauna. In areas where fishing is a livelihood source, these cause serious livelihood disruption impacts. However, for Teesta IV project, the community consultations revealed that fishing is not undertaken as a commercial activity in the affected areas. The Project EMP states that there will be no major impact in the downstream as 15 cumecs of environmental flow will be continuously released from the dam body for the sustenance of aquatic life in the lean season and 20 cumecs in the monsoon season. Though there may not be any perceptible economic impact of the project in the downstream owing to the above-mentioned reasons, for a community (particularly in the Dzongu area) that reveres and worships the nature, the barrier to the free flowing river has a religious/cultural impact. These areas, where issues of land access issues/secondary impacts emerge because of the project will also be areas of influence of the project. The indirect impacts may also be a transitory phenomenon, for instance areas where during the construction phase, water source (springs) may be adversely impacted resulting in potential disruption of water source). Such areas will also come under the project area of influence.

5.2 Project Land Requirement

The total land requirement for the project is 272.84 ha, out of which 177.43 ha is private land, 3.31 ha is departmental land and 92.10 ha is Khasmal land. The proportion of Khasmal land is more on the right bank of the river. About 58 percent of the private land proposed to be acquired lie on the left bank of the river, with the revenue blocks of Zimchung, Upper Mangshila and Tingchim comprising more than 80 percent of this requirement. The two revenue blocks of Gor Taryang and Hee-Gyathang have about 66 percent of the land on the right bank of the river. Besides private land and Khasmal land, the project area would also entail acquisition of 3.3096 ha of land of government departments. This includes land of the Forest Department in Tanyek (1.432 ha), Forest Department in Barfok and Passingdang (1.594 and 0.0536 ha respectively) and Animal Husbandry Department in Gor Taryang (0.23 ha); Passingdang. The block-wise land requirement is given in Table 5.1.

Table 5.1: Proposed Land Requirement for Teesta Stage IV Project

S.No	Name of Block	Private Land	Govt./Dept Land	Khasmal land	Total
Left Bank					
1	Tanyek	1.288	1.432	1.4100	4.13
2	Swayem	4.854	0	0	4.854
3	Lower Mangshila	3.236	0	0	3.236
4	Upper Mangshila	28.5273	0	4.1798	32.7071
5	Tingchim	25.021	0	0.8680	25.889
6	Zimchung	29.548	0	23.4830	53.031
7	Malling Singhik	4.924	0	1.8920	6.816
8	Kazor	4.825	0	5.8490	10.674
Total		102.2230	1.4320	37.6818	141.3371
Right Bank					
1	Gor Taryang	25.163	0.23	12.0820	37.475
2	Gnon Sangdong	9.19	0	9.1210	18.311
3	Hee Gyathang	24.54	0	14.3160	38.856
4	Barfok	1.702	1.594	6.8660	10.162
5	Lingdong	13.5365	0	11.1076	24.6441
6	Passingdang	1.072	0.0536	0.9288	2.0544
Total		75.2035	1.8776	54.4214	131.5025
Grand Total		177.4268	3.3096	92.1032	272.8396

Note: The total private land proposed for acquisition in the SIA Notification was 178.1868. The district administration has excluded 0.76 ha (plot Nos 211 and 212) of land belonging to Karnma Girnik Bhutia from Tingchim block from the proposed acquisition. Transmissions towers have come up on the plots. The above does not include river course.

Table 5.2 Affected GPUs/Wards Directly Affected by Proposed Land Acquisition

S.No	GPU	Wards	Wards Directly Affected by Acquisition of Land
LEFT BANK			
1	Ramthang Tanyek	1. Ramthang Khyongu 2. Ramthang Phayagu 3. Ramthang Gongkha 4. Tanyek 5. Lungchuk Sangam	1. Tanyek
2	Namok Swayem	1. Swayem 2. Deythang 3. Tikpu 4. Namok 5. Rabi Chingthang	1. Sawyem
3	Mangshila Tibuk GPU	1. Tingzey 2. Ralak 3. Lower Jhusing 4. Upper Jhusing 5. Tibuk	1. Ralak 2. Lower Jhusing
4	Tingchim Chadey GPU	1. Mola 2. Tingchim 3. Tadong 4. Rang Rang 5. Chadey	1. Tingchim 2. Chadey
5	Ringhim Nampadam	1. Nampadam 2. Kalaw 3. Ringhim 4. Upper Singhik 5. Maling 2. Lower Singhik	1. Lower Singhik
6	Singhik	1. Pakshep 2. Kazor 3. Singhik 4. Blu-Tungbook 5. Lingding Ringdang	1. Kazor
RIGHT BANK			
7	Passingdang Saffo	1. Salim Pakil 2. Saffo Liching 3. Leek 4. Nom Panang 5. Passingdang	1. Nom Panang
8	Lingdong Barfok	1. Lower Lingdong 2. Upper Lingdong 3. 3. Lower Barfok 4. Upper Barfok 5. Mangzing	1. Lower Lingdong 2. Lower Barfok
9	Hee Gyathang	1. Sudur Bringbong 2. Bringkatam Ravong 3. Mantyang- Tungkyong 4. Hee Gyathang 5. Sangdong 6. Gnon	1. Sudur Bringbong 2. Mantyang-Tungkyong 3. Gnon
10	Lum Gor	1. Taryang 2. Gor 3. Santok 4. Sagyong 5. Lum	2. Taryang 3. Gor

5.3 Present use of any Public, Unutilised Land in the Vicinity of the Project Area

According to the North Sikkim district administration, there is no public unutilised land in the project area.

5.4 Land (if any) already Purchased, Alienated, Leased or Acquired

According to the information received from the project authorities, no land has been leased for Teesta IV project. NHPC has leased some private buildings/ houses from private parties for their administrative/field offices. At present NHPC has three offices, hired on lease from private parties; Administrative Office at Tingchim (9050 sq.ft.); Field Office-cum-Office at Mangan (4026 sq.ft.) and Field Office at Phidang (1755 sq.ft.).

5.5 Quantity, Location and Intended Use of the Land Proposed

The impact of project components varies and hence it is important to understand the precise requirement for which a plot of land is being acquired. However, the plot-wise geographical coordinates are not available to accurately superimpose this on the project components. Accordingly, the intended use of each plot of land that is proposed to be acquired is reflected from the following:

- Maps of the plot-wise land to be acquired in respective revenue blocks (Annexure-XII)
- Land requirement for each project component in the affected revenue block (Tables 5.3 and 5.4).

Table 5.3 Land Requirement (Project Component-wise) in Left Bank

S. No	Name of Block	Project Component	Private Land	Govt./ Dept Land	Total
1	Tanyek	Power House complex	1.29	2.84	4.13
2	Swayem	Power House complex	4.85	0.00	4.85
3	Lower Mangshila	Dumping area for Adit	3.24	0.00	3.24
4	Upper Mangshila	Adit II Area	24.41	4.18	28.59
		Dumping (Adit)	2.56	-	2.56
		Quarry	1.56	-	1.56
		Total	28.53	4.18	32.71
5	Tingchim	Colony Area	25.78	0.87	26.65
		Quarry	-	1.25	1.25
		Total	25.78	2.12	27.90
6	Zimchung	Dam complex	7.72	15.98	23.70
		Reservoir Area	5.75	7.50	13.25
		Dumping (Dam)	14.60	-	14.60
		Quarry(Chandey Clay)	1.48	-	1.48
		Total	29.55	23.48	53.03
7	Malling Singhik	Reservoir Area	4.92	1.89	6.82
8	Kazor	Reservoir Area	4.83	5.85	10.67
	Total		102.98	40.36	143.34

The reservoir of the Teesta Project will submerge 73.86 ha of land i.e. Zimchung (13.21 ha), Malling Singhik (6.82 ha) and Kazor (10.67 ha) on the left bank and Lingdong (24.64 ha), Barfok (10.16 ha), Hee Gyathang (6.23 ha) and Passingdang (2.08 ha) on the right Bank. The colony for the project is proposed in Tingchim block (26.65 ha). The power house complex is proposed to be located in Tanyek, Swayem and Gor Taryang. The quarry areas are proposed in Hee-Gyathang, Zimchung and Upper Mangshila and the dumping area that is a critical area for effective monitoring is proposed to be located in Lower Mangshila, Upper Mangshila, Zimchung and Gor-Taryang.

Table 5.4 Land Requirement (Project Component-wise) in Right Bank

S. No	Name of Block	Project Component	Private Land	Govt./ Dept Land	Total
1	Gor Taryang	Power House Complex	13.53	12.08	25.65
		Dumping (Power house)	11.63	-	11.63
		Total	25.16	12.08	37.24
2	Gnon Sangdong	Adit II Area	9.19	9.12	18.31
3	Hee Gyathang	Dam Complex	19.80	12.82	32.62
		Reservoir Area	4.74	1.50	6.24
		Quarry	-	1.12	1.12
		Total	33.73	24.56	39.98
4	Barfok	Reservoir Area	1.70	8.46	10.16
5	Lingdong	Reservoir Area	13.54	11.11	24.64
6	Passingdang	Reservoir Area	1.07	1.01	2.08
	Total		75.20	57.22	132.42

Note: There are some minor changes in the component-wise area received from the Project Authority and the total requirement. In Gor Taryang, the departmental land is not included.

5.6 Nature, Present Use and Irrigation Status

Table 5.5 shows the land use patterns in the affected area across GPUs. It is observed that 44.2 percent of the total affected area is under farm crops. Crops that are said to be widely cultivated include *Cardamom*, *Maize*, *Ginger*, *Amliso* (i.e., *thysanolaena*, also known as *Nepali broom grass*), and *Iskus* (i.e., *Squash*). Crops that are sparsely cultivated include *millets*, seasonal vegetables such as *Simbal*, *Spinach*, *Pumpkin*, etc. People also seem to grow *Avocado*, *Bitter Gourd*, *Paddy*, etc., though on a minor scale. While 42.2 percent area is under trees, a meagerly 1.2 percent area is under orchard plantation. The important trees are *Panisaz*, *Chilowni*, *Lapsi* (i.e., *Choerospondias axillaris*, also known as '*Nepali hog plum*'), *Utis* (i.e., *Alder tree*), *Bamboo*, *Katus* (i.e., *Rashberry tree*), and *Kimbu* (i.e., *Mulberry tree*). Fruits grown in the orchards include *Banana*, *Oranges*, *Jackfruits*, etc. About 12.3 percent of the private land in the affected area is lying vacant according to the information furnished by landowners in the survey. The share of farm crops in the total affected area in the left bank (52.6 percent) is significantly higher as compared to that in the right bank (31.2 percent). On the other hand, the share of area under trees in the right bank (59.7 percent) is almost twice as high as that in the left bank (30.9 percent). The proportion of vacant area in the left bank (15.3 percent) is nearly twice as high as that in the right

bank (7.6 percent). Overall, it is observed that 20.3 percent of the total holdings in the respective block will be affected by the proposed acquisition.

An assessment of distribution of irrigated area by different sources of irrigation revealed that canals, tanks, wells, and tube wells do not cater to the irrigation needs in the project area. The area under agriculture crops primarily uses other sources of irrigation such as the springs, streams, lakes etc.

The productivity data and satellite imagery however shows significant decline in land under cultivation. The land use in the project area has seen a vast change over the years. The following figures show the comparison of the project area through satellite images from 2006 (when NHPC signed the MoU with the Government of Sikkim). It is seen that the area under agriculture has vastly reduced and plantation/natural trees have increased manifold.

The satellite image of the project area in 2006 is shown in Figure 5.3. For more clarity, the comparative picture of a sample site is shown in Figures 5.4 and 5.5.

Figure 5.3 Satellite Image of Land Cover in Project Area (November 2006)

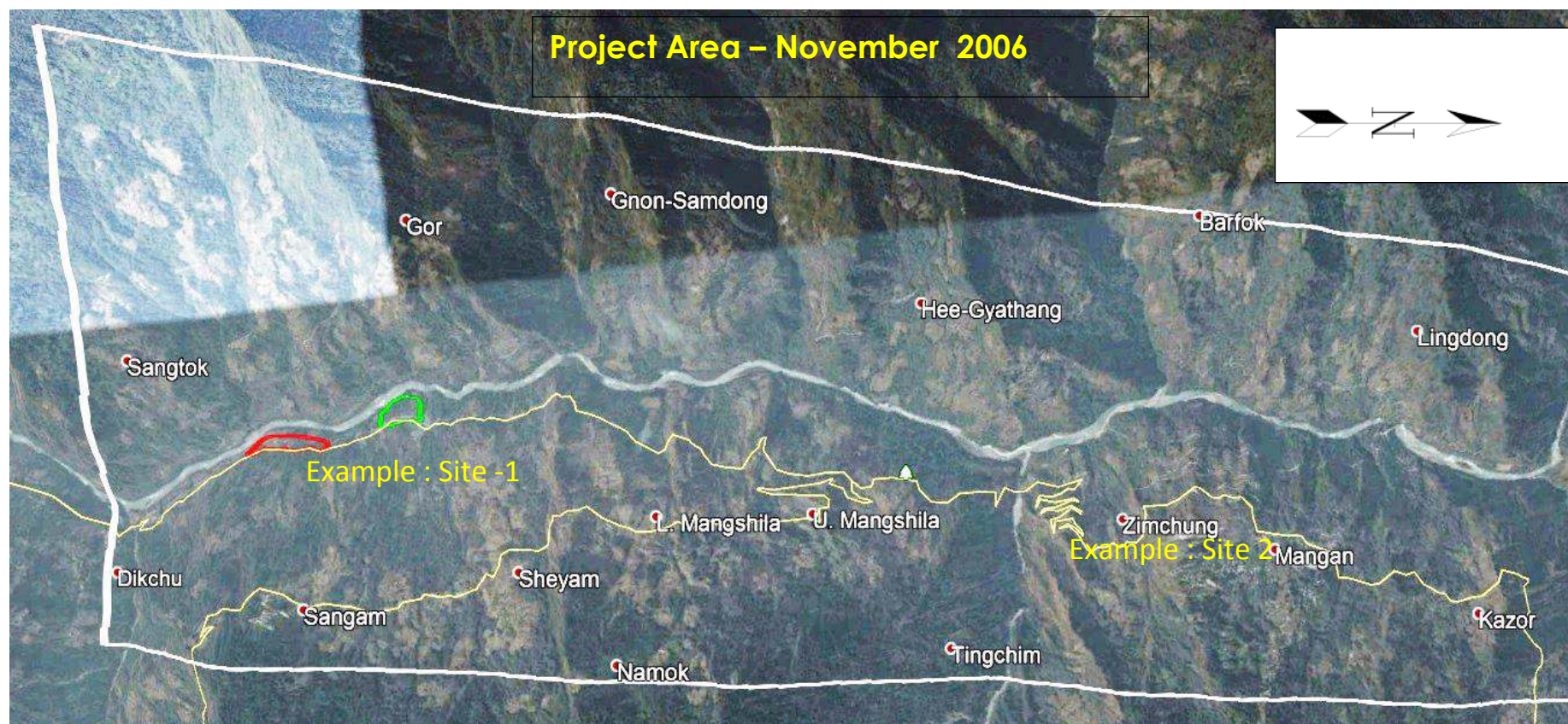


Figure 5.4 Satellite Image of Project Area under cultivation, 2006 (Sample Site)



Figure 5.5 Satellite Image of Project Area under cultivation, 2017 (Sample Site)

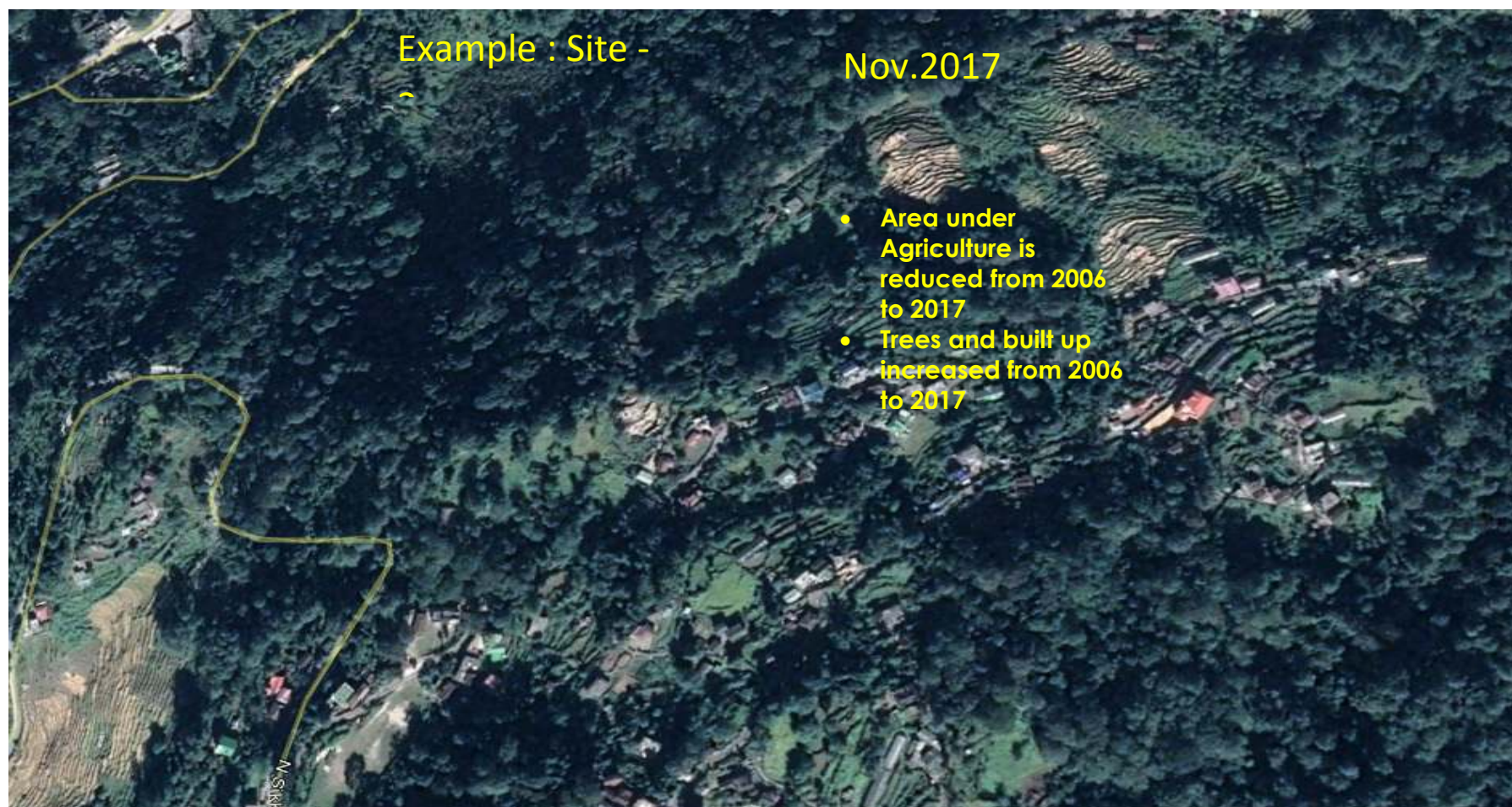


Table: 5.5 Land use Patterns in the Affected Area of the GPUs

S. No.	Name of the GPU	Affected Area (ha)	Land Use Pattern* (area in ha)			
			Farm Crop	Trees	Orchard	Vacant
1	Lingdong Barfok	10.915	6.341	3.379	0.197	0.998
2	Hee-Gyathang	26.807	4.520	19.277	0.000	3.010
3	Gor Taryang	21.283	7.650	12.478	0.650	0.504
4	Passingdang Safo	0.236	–	0.236	–	–
<i>Right Bank Total Area (ha)</i>		<i>59.241</i>	<i>18.511</i>	<i>35.370</i>	<i>0.847</i>	<i>4.512</i>
% Share			31.2	59.7	1.4	7.6
5	Mangshila-Tibuk	25.778	18.320	5.334	0.798	1.326
6	Namok Swayam	3.368	0.464	2.842	0.062	–
7	Tangyek Ramthang	1.092	0.184	0.908	–	–
8	Singhik Senthom	5.354	2.525	1.437	0.085	1.307
9	Tingchim Chandey	41.63	20.1548	14.3333	0	7.142
10	Ringhim Nampatam	14.133	6.416	3.3425	0.156	4.2185
<i>Left Bank Total Area (ha)</i>		<i>91.355</i>	<i>48.064</i>	<i>28.197</i>	<i>1.101</i>	<i>13.994</i>
% Share			52.6	30.9	1.2	15.3
% Share in Total Affected Area			44.2	42.3	1.2	12.3

Note: *In case of 16 landowners, there is lack of clarity on the quantum of land diverted towards cultivation across categories.

Source: Primary Survey

5.7 Landholdings and Residential Structures

Based on the information received from the district administration on total landholdings of the affected landholders in each block, the distribution of households across amount of land holding is presented in Table 5.6. A considerable proportion of households (32.1 percent) are marginal landowners (i.e., landholding size of less than one hectare). This includes about 20 percent households having less than 0.5 hectares landholding. Roughly half of the households (50.6 percent) have landholding maximum up to two hectares or less that includes 18.5 percent small landowners (i.e., with landholding between 1-2 hectares).

While a substantial proportion of households (30.0 percent) are medium landowners (with landholding between 2-5 hectares), the remaining share (19.4 percent) may be classified as semi-medium and large landowners (holding land to the extent of 5 hectares and above). Comparatively, the concentration of marginal landowners in left bank (36.8 percent) is roughly twice as much as that in the right bank (19.7 percent). Similarly, the share of small landowners in the left bank (19.9 percent) is also higher as compared to those in the right bank (14.8 percent).

Table 5.6: Distribution of Landowners by Land Holding Size

Range of Land Holding	All Households		Left Bank		Right Bank	
	Frequency	%	Frequency	%	Frequency	%
>0.5 hectares	45	19.8	40	24.1	05	8.2
0.5 – 1 hectares	28	12.3	21	12.7	07	11.5
1 – 2 hectares	42	18.5	33	19.9	09	14.8
2 – 5 hectares	68	30.0	51	30.7	17	27.9
5 hectares and Above	44	19.4	21	12.7	23	37.7
Total	227	100.0	166	100.0	61	100.0

The magnitude of impact and status of landholding after acquisition of land is presented in Table 5.7 and 5.8. The total holdings represent that owned by the landowner in the respective block. It is observed that 56 landowners will be left with no land in the block in the post-acquisition phase. About 10.0 percent households (23 no.) will lose between 51.0 percent to 99.0 percent of their present total land holding while about 14.0 percent households (34 no.) will end up giving somewhere between quarter share and half share of their total land holding. However, more than 50.0 percent of the landowner households (123 no.) will still be having at least 75 percent of their total holding despite losing their share of affected land area to the project.

Table 5.7 indicates that about 19.0 percent households will become marginal landowners, i.e., with holding of less than one hectare land, and about 18.0 households will end up as small landowners, i.e., with holding between one to two hectares land. The average proportion of right bank households (38.4 percent) on the verge of becoming marginal landowners is distinctly more as compared to that of the left bank households (20.3 percent). On the contrary, the average proportion of right bank households (10.9 percent) becoming small landowners is comparatively less as opposed to left bank households (16.9 percent). But the average share of large landowners, i.e., with landholding of at least five hectares and more, will be higher in case of right bank households (33.0 percent) as compared to that of the left bank households (11.5 percent) post acquisition of land.

Overall the figures clearly reveal that magnitude of impact will be relatively less among the landowners residing in the right bank as opposed to those in the left bank. Contrarily, the status of landholding upon acquisition of land will make a large section of households from the right bank marginal landowners. Further, small landowners share will become relatively more prominent in case of left bank households.

The above analysis is however based on the total holdings of the landowner in the blocks. The Study team could not access the data on consolidated land-holdings of the landowners in the district which would have made the analysis more meaningful. For the additional entitlements for vulnerable households rendered landless/marginal after acquisition, the details of magnitude of impact across affected landowners were shared with the district administration for verification and authentication.

Table 5.7 Magnitude of Loss to Landowners from Acquisition of Land

		All Households	Barfok Lingdong	Hee Gyathang	Gor Taryang	Mangshila Tibuk	Namok Swayam	Ramthang Tangyek	Singhik Sentham	Tingchim Chadey	Passingdang Safo	Ringhim Nampatam
100% Loss	Nos.	56	03	02	05	25	01	01	07	07	–	05
	%	23.7	17.6	9.5	21.7	43.1	14.3	25.0	30.4	11.7	–	22.7
51–99%	Nos.	23	03	02	–	06	–	–	01	05	–	06
	%	9.7	17.6	9.5	–	10.3	–	–	4.3	8.3	–	27.3
25–50%	Nos.	34	02	02	04	08	01	–	01	10	01	05
	%	14.4	11.8	9.5	17.4	13.8	14.3	–	4.3	16.7	100	22.7
5%	Nos.	123	09	15	14	19	05	03	14	38	–	06
	%	52.1	52.9	71.4	60.9	32.8	71.4	75.0	60.9	63.3	–	27.3
Total	Nos.	236	17	21	23	58	07	04	23	60	01	22
	%	100	100	100	100	100	100	100	100	100	100	100

Source: Primary Survey

Table 5.8 Status of Landowners after Acquisition of Land

		All Households	Barfok Lingdong	Hee Gyathang	Gor Taryang	Mangshila Tibuk	Namok Swayam	Ramthang Tangyek	Singhik Sentham	Tingchim Chadey	Passingdang Safo	Ringhim Nampatam
Landless	Nos	56	03	02	05	25	01	01	07	07	–	05
	%	23.7	17.6	9.5	21.7	43.1	14.3	25.0	30.4	11.7	–	22.7
Marginal	Nos	45	06	02	02	17	01	–	02	05	01	09
	%	19.1	35.3	9.5	8.7	29.3	14.3	–	8.7	8.3	100	40.9
Small	Nos	42	04	01	01	08	01	–	01	23	–	03
	%	17.8	23.5	4.8	4.3	13.8	14.3	–	4.3	38.3	–	13.6
Medium	Nos	55	02	05	07	05	03	03	09	18	–	03
	%	23.3	11.8	23.8	30.4	8.6	42.9	75.0	39.1	30.0	–	13.6
Large	Nos	38	02	11	08	03	01	–	04	07	–	02
	%	16.1	11.8	52.4	34.8	5.2	14.3	–	17.4	11.7	–	9.1
Total	Nos	236	17	21	23	58	07	04	23	60	01	22
	%	100	100	100	100	100	100	100	100	100	100	100

*Marginal (Less than 1 hectares); **Small (1 – 2 hectares); †Medium (2 – 5 hectares); †† Large (5 hectares and above)

Source: Primary Survey

Distribution of Residential Structures

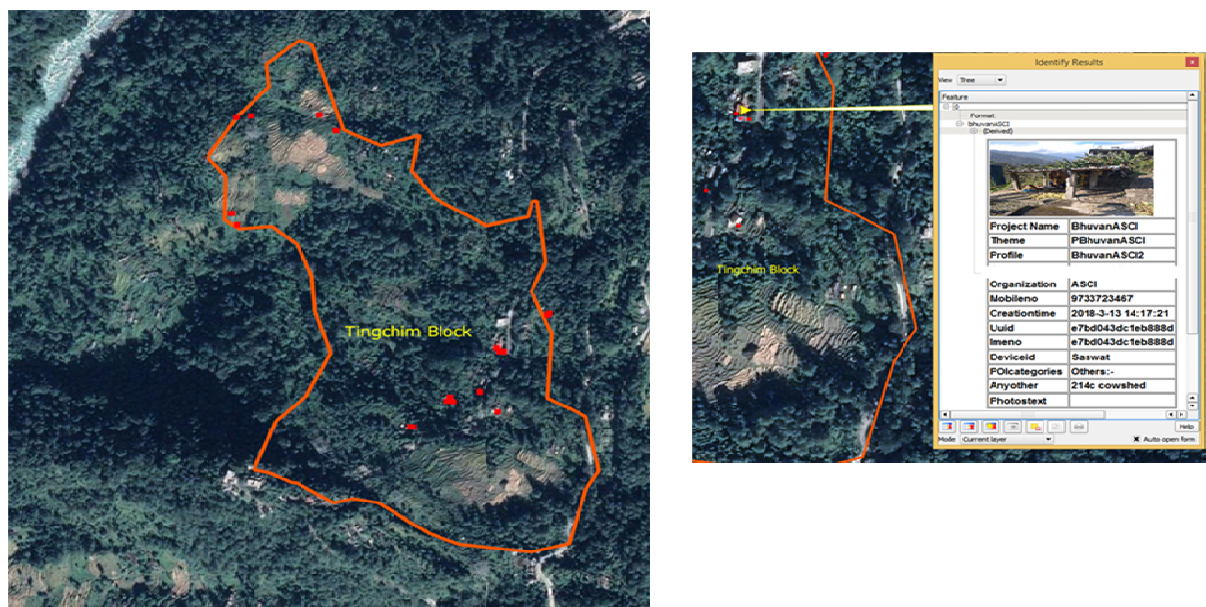
The distribution of residential structures of both title holders / non-titleholders is presented in Table 5.9. A total of 94 residential structures were identified in the affected area (to be acquired from the left bank) during the survey. Out of the 94 structures, there were seven structures owned by the landowners and in which they themselves resided. Out of the 94 structures, 11 structures were vacant (three still under construction stage). The number of structures is maximum Tingchim Chandey (35), followed Singhik Sentham (16.), Ringhim Nampatam and Namok Swayam (10 each), Mangshila Tibuk (9) and Ramthamg Tangyek (7).

All seven residential structures in Ramthamg Tangyek are built on land owned by Forest Department. Out of the 76 tenant households surveyed, it is revealed that 17 structures are constructed by the landowners while 55 structures are built by the tenants themselves. Further, 4 structures seem to be jointly constructed by the tenants and their respective owners. However, according to the information shared by the landowners during census survey, at least 63 landowners reported having residential structures in the area. The physical verification of the area and the census of the tenants (on the left bank) revealed significant differences in the nature of ownership of the residential structures. Importantly, eight (8.) out of 35 Indian tenants residing in the affected area have bonafide Certificate of Identification (COI), attesting their claim to Sikkim citizenship.

All the structures were geo tagged and laid on the Bhuvan satellite image of the project boundaries of the blocks. The location of these geo-tagged structures can be verified on Bhuvan India Earth Observation Geo Portal. Samples of geo-tagged structures are shown in Figures 5.6 and 5.7.

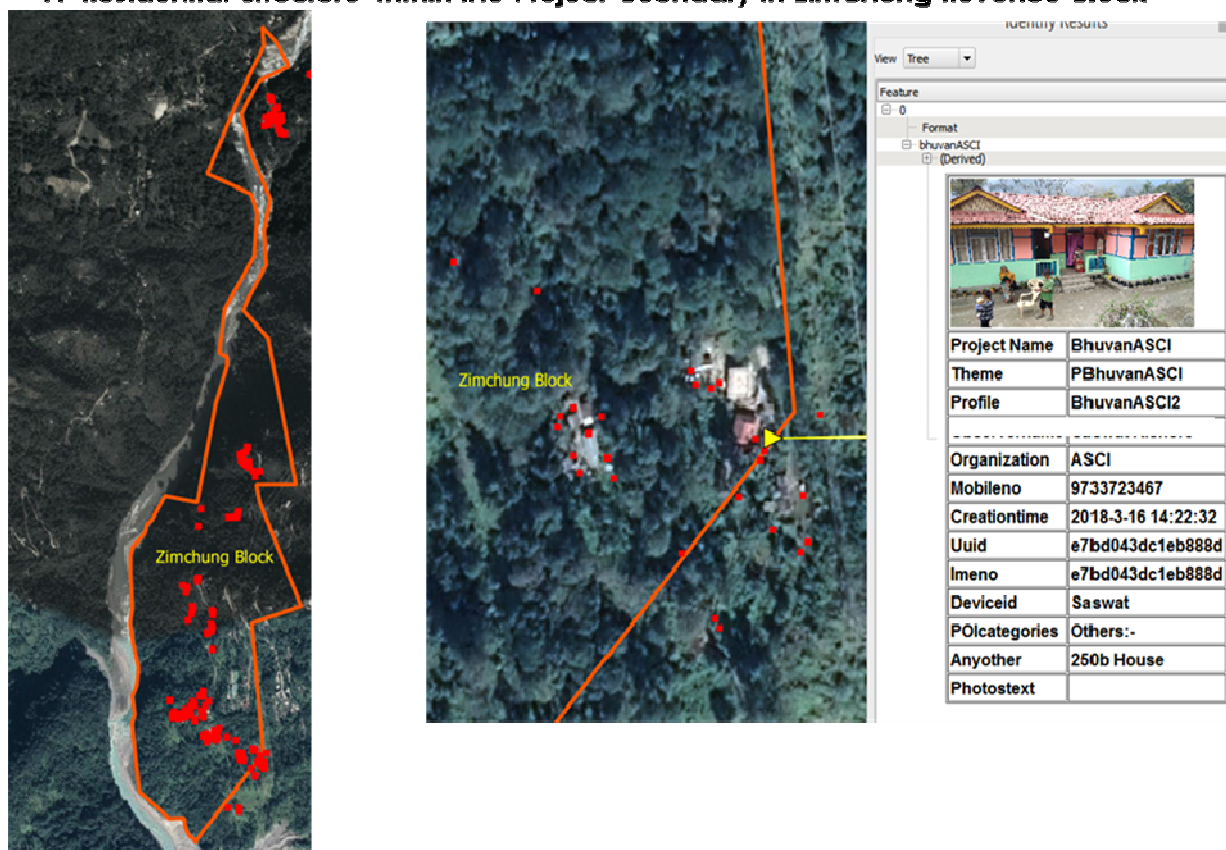
Figure 5.6 Sample Geo tagged structure in Tingchim Block

A Residential Structure within the Project Boundary in Tingchim Revenue Block



Source: National Remote Sensing Agency (NRSA), Hyderabad

Figure 5.7: Sample Geo tagged structure in Zimchung Block

A Residential Structure within the Project Boundary in Zimchung Revenue Block

Source: National Remote Sensing Agency (NRSA), Hyderabad

Table 5.9 Number of Residential Structures in the Affected Area

Sl. No	GPU	No of Residential Structures		Ownership of Structure Where Non-titleholder is Residing		
		Title holder	Non-titleholder	Tenant	Owner	Both
1	Mangshila Tibuk	4	09			
2	Namok Swayam		10	07	01	—
3	Ramthamg Tangyek		07	07	—	—
4	Singhik Sentham		16	03	12	—
5	Tingchim Chandey	3	35	30	01	01
6	Ringhim Nampatam		10	06	01	02
	Total Structures	7	87*	55	17	04

Note: *Includes six (06) structures that are under construction/ lying vacant and five (05) tenant households who were absent during the (verification) survey and thus could not be surveyed. A total of 76 tenant households were interviewed in all.

Source: Primary Survey

5.8 Land Prices

There is negligible/nil sale and purchase of land in all the blocks of Dzongu region. The State of Sikkim has some state specific laws in the sale and purchase of land. The following merits attention:

1. Land cannot be owned by non-Sikkimese in the State.
2. The sale of land belonging to Bhutia/Lepcha to non-Bhutia/Lepcha is not permitted.
3. In North Sikkim, the sale and purchase of land is restricted to the residents of the district.
4. In Dzongu region of North Sikkim, the sale and purchase of land is restricted to the residents of Dzongu and even residents of other areas of North Sikkim cannot own land in the region.

The above restrictions essentially result in extremely limited land transactions in the State. In half of the affected revenue blocks, there were less than five transactions in the last three years. There are no transactions of agricultural land which is inherited from one generation to another in the affected area/vicinity. Adding to the lack of functioning land market, the estimation of the real market value is further rendered difficult by the fact that there is no minimum stamp value prescribed under Indian Stamp Act, 1899 for registry of land in Sikkim. For sale of land in Sikkim, the following rates apply:

- 4% on the consideration value of land (in case of Sikkimese origin) & 1% stamp duty on the consideration value of land
- 9% on the consideration value of land for others & 1% stamp duty

However, there is no mandatory floor rate for registration of land and on which the above duty/tax is to be paid to the government. It is thus open for the parties involved in a land transaction to register the land at any rate, irrespective of the actual of the transaction. The absence of floor rate coupled with the limited transactions of land may render it disadvantageous to the landowner (whose land is to be acquired for any development project in the State) if the above criteria is the sole factor for determination of land compensation.

While the above goes against the interest of the landowner, the conversion of market value of plots transacted in per square feet to hectare (given non existence of purchase and sale of agricultural land) is advantageous to the landowner. The land rate estimate by the district administration follows this method.

II Social Impacts

5.9 Framework and approach to Identifying/Assessing Impacts

The key objective of the SIA Study is to understand, assess, plan and manage the social issues associated with projects. The impoverishment of impacted communities should not be seen as an acceptable 'collateral damage' in order to develop projects deemed to be in the national interest. There are many conceptual frameworks used by SIA practioners to identify the social impacts and mitigation measures. Some of these include Michael Cernea's Impoverishment Risks and Reconstruction (IRR) framework,

the Sustainable Livelihood Approach, Amartya Sen's Capability Approach, The IRR model is based on the evidence that resettlement has caused the impoverishment of impacted communities in the majority of cases, therefore the focus of social management should be on identifying the risks up-front and developing measures to minimize those impacts. The SLA Approach comprises the capabilities, assets (including both material and social resources) and activities required for a means of living. A livelihood is sustainable when it can cope with and recover from stresses and shocks, maintain or enhance its capabilities and assets, while not undermining the natural resource base. The Capability Approach evaluates policies according to their likely impact on people's capabilities, and covers all dimensions of human well-being.

The framework made use of to analyse the social impacts in the present Study is multiprong, taking significant learnings from the conceptual frameworks outlined above (each with its own strengths and weaknesses). At the core, the framework understands the well being of families impacted by the project. This includes their core concerns, their expectations from the project, the likely project impacts and the potential mitigation measures. The framework to assess the Social Impacts includes:

1. Identifying Stakeholders who suffer adverse impacts, including the primary and secondary.
2. Examining the channels through which the adverse impacts manifest – employment/livelihood, access to goods, threat to natural environment, cultural beliefs and practices etc.
3. Assessing the capacity of the existing institutions to effectively implement mitigation measures.
4. Identifying strategies to maximise benefits and minimise disturbance that are aligned with the needs and aspirations of affected stakeholders.
5. Developing a plan to engage affected individuals and communities in managing the impacts.

5.10 Impacts at various Stages of the Project Cycle

The Project life-cycle can be divided into four phases namely, the Pre-construction phase, Construction phase; Operation phase; and Decommissioning phase. The nature of impacts by the project varies in the various stages of project cycle. It is important that these impacts (direct and indirect) are identified early on so as to develop appropriate mitigation and monitoring plans. The impacts during each of these phases would be both direct and indirect. The direct impacts will include all the impacts that are likely to be experienced by the project affected families (i.e. landowners and livelihood losers). The indirect impacts will include all impacts that may be experienced by those not directly affected by the acquisition of land but those living in the project area. The magnitude of impacts will vary between persons, groups and community as a whole. The potential adverse impacts of the projects in each phase of the project cycle along with the segment of community that would bear a disproportionate brunt of these are discussed below.

The Pre-construction Phase: The pre-construction phase is essentially a planning phase, which includes the identification of land area proposed for the project and its subsequent acquisition, besides obtaining all necessary approvals/clearances mandated under different statutes.

Table 5.10 reflects the important potential impacts in the pre construction phase.

Table 5.10 Potential Social Impacts (Adverse) during Pre Construction Phase

S. No.	Adverse Impacts	Direct / Indirect / Differential
1	Psychological stress created by the uncertain environment	Both direct and indirect
2	Drop in productive investment on land that is proposed under acquisition	Direct
3	Social disharmony and inter/intra community conflicts (Right Bank and Left Bank; Within Right Bank between landowners and others)	Direct and Indirect Elderly-Greater stress levels.
4	Loss of land/structure by titleholders	Direct
5	Loss of livelihood (primary source of livelihood dependent on land proposed for acquisition) for the past three years	Women:Economic (loss of livelihood sources) Elderly-Social Security
6	Loss of residence by those residing in the proposed area of acquisition	Direct Women: Greater stress levels due to shift from settled life
7	Loss of access to land (landlocked)	Indirect
8	Loss of access to forest resources	Indirect
9	Physical Displacement and ensuing insecurity (landowners and non-titleholders)	Direct Women: Greater stress levels due to shift from settled life
10	Potential for misutilisation of monetary compensation-lack of investment opportunities.	Direct Women: unequal intra-family distribution and feeling of disempowerment

As the project authorities and district administration focuses on the project planning requirements, the first visible and serious social impacts emerge - fear and insecurity among the people living in the affected area. Lack of transparency/ information flow adds on to the fear and insecurity faced by the landowners whose lands are proposed to be acquired as well as other people of the affected area. Teesta Stage IV is a much delayed project and lack of information regarding the progress of the project is a potent concern among all the stakeholders. Productive investment is understandably not considered rational by the landowners on the lands that are proposed to be acquired, imposing serious concerns of economic loss by the affected families. One of the most significant adverse impacts of the project is the division that has emerged within the community, particularly on the right bank, between the landowners (supportive of the project) and others.

The pre-construction phase will also witness the core direct impacts caused by acquisition of land. The impacts would be different for different sections-those who would be rendered displaced; those who will lose economic livelihood; those who may not be project affected families as per the legal mandate but who had been residing in the area with tacit approval of the landowner and who will now have to resettle from their settled life. As per the RFCTLARR Act, 2013, the possession of land can be taken only after the payment of compensation and R & R entitlements. For certain sections of the community in the proposed area of acquisition, the loss of access to land and forest resources is another critical impact during the phase. After the disbursement of monetary compensation and R & R entitlements, the risk of its misutilisation is high. Unless wisely invested, this can result in not only economic impoverishment but various other social evils in the society.

The Construction Phase: The preparations for the construction activities get underway during the pre-construction phase. This would include engagement of contractors and planning of labour camps. The adverse impacts during construction phase, particularly those imposed by the influx of the labour from outside the area are one of the most serious concerns raised by the community during consultations. Unless suitable preventive mechanisms are designed and adopted; these would have manifold impacts on the health, socio-cultural life and security of the community in the affected area. Table 5.11 summarises the key social impacts that is anticipated during the construction phase of the project. The construction activities impose significant impacts on the living environment of the people in the project affected area. The adverse effects on the environment during construction phase impacts the health condition of people living in the vicinity area. The aesthetic impacts caused by changes in landscape and often ignored affects the people and their attachment to the place.

One of the important impacts during the phase will be the impact on lands where transmission towers and lines would come up (not covered in the present Study). The change in land-use (restrictions in farming/construction activities), adverse impact on agriculture etc. would require a standalone study/assessment along with appropriate mitigation mechanisms. Another common community concern in hydro power project is relating to damage to houses (due to blasting) and potential disruption to groundwater flows and springs (due to tunnelling during the construction phase).

The Operation Phase: This is the phase where the hydropower plant would start operating and producing electricity. During the operation phase of the project, there would be reduction in the employment opportunities as compared to the production phase. However, the local area development fund would start becoming functional in the phase. An issue of concern to the community is the risk to aesthetics of the area by improper rehabilitation of the mucking dumping area and removal of labour camps (Table 5.12).

Table 5.11 Potential Social Impacts (Adverse) during Construction Phase

S. No.	Adverse Impacts	Direct / Indirect / Differential
1.	<ul style="list-style-type: none"> Influx of migrant construction workforce ✓ Compete with local residents for jobs ✓ Threat to Protected area status ✓ Risk of adverse impact on social cohesion, culture - norms, beliefs, values and cultural life ✓ Risks due due to water, vector borne and communicable and non-communicable diseases including risk of increase in sexually transmitted diseases ✓ Potential increase in infectious diseases due to poor sanitation and increased risk of transmission of new diseases and spread of existing ones ✓ Risk of decrease in local availability of food ✓ Felling of trees and harm to natural environment ✓ Degradation of water quality due to waste discharge 	Indirect Women: Threat to women's safety and security
2	Environmental pollution and adverse impacts on health	Indirect
3	Damages to houses in vicinity of blasting	Indirect
4	Potential disruption to drinking water due to tunnelling	Indirect
5	Impacts to physical environment (loss of aesthetics) and quality of living environment due to construction activities, lack of proper implementation of Muck Disposal Plan	Indirect
6	Strain on existing health infrastructure due to increased demand.	Indirect
7	Potential temporary adverse impact on agriculture (dust impacts on crops) and allied activities (movement of livestock) in the vicinity during construction.	Indirect
8	Potential road safety risks to road users and affected communities	Indirect
9	Impacts on lands for erection of transmission lines	Indirect

Table 5.12 Potential Social Impacts (Adverse) during Operation Phase

S. No.	Adverse Impacts	Direct / Indirect / Differential
1	Reduction in employment opportunities compared to the construction phase.	Direct/ Indirect
2	Environmental risks and risk to aesthetics of the area by improper rehabilitation of the mucking dumping area and removal of labour camps	Indirect
3	Diversion of water for hydro power generation and reduced flow in stretches between diversion structure and tail race	Indirect
4	Potential risk to health and agricultural crops due to improper management of wastewater/sewage	Indirect
5	Health impacts due to water storage and breeding grounds for vector and water borne diseases	Indirect

The Decommissioning Phase: Hydropower stations typically have a very long life. Though the electro mechanical components have a life of 35 years, the civil works have much longer life span. After renovation and modernisation of the electro mechanical components, the hydro power stations are operational for much longer. Sidrapong, located near Darjeeling, the oldest hydro power project in India has celebrated its centenary in 1997. Hence, the impacts of this phase are not separately included here.

III Estimation of Affected Families and Impacts

5.11 Directly Affected Families (Landowners)

There are 296 landholdings in the notification issued for SIA. After the census survey, it was recognized that some landowners owned multiple plots. There are ten such additional landholdings. To arrive at the actual number of landowners, these duplications were eliminated. Further, there are some landowners who have fragmented their landholdings and hence four such landowners have emerged (requires further verification by the district administration). The actual number of landowners has thus been arrived at by eliminating the duplications and adding the additional landholdings considered. The total number of landowners whose lands are proposed for acquisition is 290.

Table 5.13 Estimated Landowners and Families in Project Affected Area

S. No.	Revenue Block	Land Holdings (Ha)	Total Land-Owners	Land Owner Families	Surveyed Landowner Families	Expired Landowners (% to Total)	R & R Family Units
1	Tanyek	6	6	6	4	0 (0)	27
2	Swayem	14	14	14	14	1 (7.7)	51
3	Lower Mangshila	4	4	4	3	1 (33.3)	5
4	Upper Mangshila	55	54	50	47	5 (10.9)	140
5	Tingchim	52	50	46	41	8 (19.5)	145
6	Zimchung	40	40	38	35	7 (19.4)	130
7	Malling Singhik	14	13	13	12	4 (30.8)	28
8	Kazor	20	18	16	16	5 (31.3)	59
	Left Bank Total	205	199	187	172	31 (18.0)	585
1	Gor Taryang	31	31	29	22	12 (54.5)	93
2	Gnon Sangdong	7	7	7	2	1 (50.0)	12
3	Hee Gyathang	29	29	28	17	8 (50.0)	63
4	Barfok	1	0	0	0	0 (0.0)	0
5	Lingdong	21	22	22	17	3 (18.8)	44
6	Passingdang	2	2	2	1	1 (100)	5
	Right Bank Total	91	91	88	59	25 (43.1)	217
	Grand Total	296	290	275	231	56 (24.3)	802

Further, the census survey revealed that there are ten such cases where landowners whose landholdings are notified belong to the same family and are residing together. In such cases, a single respondent has provided details of the other land owners in the same family. There are also four such cases where surviving members (son/grandson/husband) whose lands are also notified have provided the details of the landholdings of the expired landowner, claiming that all legal heirs are staying together (requires further verification by the district administration). From the 290 landowners, these fourteen landowners are reduced to arrive at the total landowner families. The details of land owners surveyed along with members of family are given in Annexure-III. Out of 275 landowner families, 231 families have been surveyed. Table 5.13 provides the details of landowners/land owner families and R & R units.

To provide clarity, the details of all such families added/eliminated to arrive at the final number is given below.

- **Landowners with multiple landholdings proposed for acquisition:** 1. Nima Tenzing (Zimchung, Mallang Singhik & Hee Gaythang); 2. Chewang Topgay (Upper Mangshila, Tingchim & Zimchung); 3. Rapden Bhutia (Two holdings in Tingchim); 4. Dubo Lepcha (Lingdong and Barfok); 5. Sonam Tshering Bhutia (Mallang Singhik and Kazor); 6. Topden Lepcha (Two holdings in Zimchung); 7. Burzhang Lepcha (Zimchung and Mallang Singhik) 8. Chewang Lepcha and Passang Lepcha (have separate individual holdings and a joint holding in Kazor).
- **Additional Landowners Considered:** 1. Jacob Tamang (from Asung Dorjee Tamang; Mallang Singhik); 2. Jorden Lepcha/Nimthi Lepcha (from Late Ronglokchen Lepcha); 3. Dal Bahadur (Claims to have purchased land from Shoma Tamang; requires further verification); 4. Pratab Singh (Joint holder of a landholding with Tashi Ongyal; Zimchung);
- **Land owners who are members of the same family:** Sanchahang Limboo and Nar Bahadur Limboo (father and son; Upper Mangshila); Dhan Mahadur Limboo, Jai Kumar Limboo and Mandu Limboo (father and sons; Upper Mangshila); Sonam Gyatso, Thomtuk and Phuchung (sons of Acho Bhutia; Tingchim); Dawa Tshering and Tsering Lepcha (father and son; Zimchung); Lakpa Lepcha and Nem Lepcha (husband and wife, Kazor); Chundi Lepcha and Phurba Lepcha (mother and son; Kazor); Thendup Lepcha and Dorjee Lepcha (father and son; Gor Taryang); TENGHAY Bhutia and Tashi Lamu (husband and late wife; Zimchung).
- **Sons/Gransdons (of expired landowners with their own individual landholdings and other legal heirs living together):** Dhan Bahadur Limboo (grandson of Dhan Singh Limboo, Upper Mangshila); Eurung Bhutia (son of Thengay Bhutia, Tingchim); Dadup Lecha (son of Daching Lepcha; Hee Gaythang); Leda Lepcha (son of Lt. Palap Lepcha) and Chamu Lepcha (husband and wife; Gor Taryang);

The land and census survey revealed some issues relating to land records. Some of the important ones that merit attention are given below:

1. About 25 percent of landholdings are in the name of expired landowners. The number of expired land owners is much higher as a proportion in the right bank (43 percent) than in the left bank. The proportion of expired landowners is the highest in Gor Taryang (55 percent). As a part of the land record updation process, the

names of legal heirs would have to be entered. The number of landowners would therefore see a change after the updation process.

2. In many cases, the total landholdings mentioned by the landowner do not match with the information shared by the district administration. In few cases, the landowner claims lesser amount of land to be affected (as per the *parcha* shared) than the extent notified/information shared by the district. For instance, in case of *Tashi Bhutia/Tingchim* block, land notified is more than the land extent in the plot.
3. In some cases, the plot mentioned in the notification (430/725 for 0.0320 ha) does not exist in the document submitted by the landowner (*Karma Tempo Lepcha*, Tanyek Block; *Dubo Tshering Lepcha*, Lingdong; *Tshering Wongdi Bhutia*, Tingchim). In case of *Norkit Lepcha/Zimchung* Block, land extent in the notification and document (*parcha*) submitted do not match. Such issues are explained in the remarks column of Annexure-III and would require further verification.
4. Land records are not updated in some cases. The specific instances that came to the attention of the Study team are given below:
 - Land in the name of *Rongdokchen Lepcha/Lingdong* Block, land has been divided among his sons - *Chungchung* and *Jorden*.
 - Land in the name of *Asung Dorjee Tamang/Malling Singhik* block has been divided between him and his son, *Jacob Tamang*.
 - Land in the name of *Chingching Bhutia/Tingchim* block seems to have been divided among five daughters and a son (though document has not been submitted).
 - *Nima Tshering Lepcha/Kazor* Block: Khatian No. is not appearing in the notification. Land transfer is said to be under process.
5. Land plot that exists in the son's name in the records availed from the district administration's office is in the name of the father in the document submitted (*Thendup Dorjee Lepcha*, *Gor Taryang*).
6. In some cases, landowners have claimed different land. While these may be cases of lack of awareness, it still requires further verification.

R & R Family Units: The term "family" is defined under the RFCTLARR Act, 2013 as including a person, his or her spouse, minor children, minor brothers and minor sisters dependent on him. The widows, divorcees and abandoned women are considered as separate families. An adult of either gender with or without spouse or children or dependents is to be considered as a separate family.

Accordingly, the R & R family units in the surveyed households come to about 802. This also includes the 15 R & R units of displaced families which is explained in the next section. Since the land records are yet to be updated, particularly accounting for the expired landowners, who form a quarter of the total landowners, the present figures are still tentative. As the Administrator undertakes a census, the number of units can be expected to change. Also, there are minors who will turn into adults by the time of preliminary notification. The following assumptions have been made to arrive at the total family units for R & R entitlements:

- Only adults (18 plus) staying with the family are considered as separate R & R units.

- For the expired landowners, effort was made to capture the details of all adult sons/daughters, even though they are staying as separate individual households. However, these would require further verification. It is possible that the respondents have not provided the names of all the members.
- Adults mentioned as part of the family but who are not linear dependents have not been considered as separate R and R units. It requires to be further verified if their primary source of livelihood is affected.
- Unmarried sisters have been included as separate R & R units.
- In few cases where sons and daughters do not stay with the landowner but included as members of the family by the landowner have not been included as separate R & R units.
- Married daughters are not included as separate R & R Units. However, if the landowner is expired/ missing and had no sons, they are included as separate units.
- Husband and wife(s) are taken as one R & R unit. The second wife is not treated as a separate unit.

5.12 Displaced Families

Contrary to the earlier reports and the information shared with the Study team, there are close to 100 residential structures in the area (including some vacant/under construction). The families who will be displaced can be divided into landowner families (families with legal titles to land) and non-titleholder families (with varying tenurial arrangements with the landowners). The details of both the categories are briefly explained below:

(1) Displaced Project Affected (Land owner families) and Structures: From the surveyed households, seven land owners were seen to be residing in the affected area proposed for acquisition (Table 5.14). The details of the families are given in Annexure-IV. Out of the seven, one is a tenant who claims to have purchased land from the landowner². There are seven residential structures and four cattle-sheds owned by the displaced landowner families.

Table 5.14 Landowners Residing in the Affected Area Proposed to be Acquired

S. No	GPU	Displaced Families		Residential Structures	Cattle sheds
		Number	Separate Adult Units		
1	Mangshila Tibuk	4	8	4	3
2	Tingchim Chandey	3	7	3	1
	Total	7	15	7	4

² (Dal Bahadur Tamang/Tingchim Chandey) claims to have purchased the land from the landowner² (Shoma Tamang). This requires further verification.

Project Displaced Landowners Residing in the Affected Area



**Sri. Guman Dhoj Limboo
Mangshila-Tibuk GPU**



**Sri. Mon Prasad Limboo
Mangshila-Tibuk GPU**



**Sri. Dal Bahadur Tamang
Tingchim Chandey GPU**



**Smt. Pavitra Limboo
Mangshila-Tibuk GPU**



**Smt. Passangkit Lepcha
Tingchim Chandey GPU**



**Sri. Lok Bahadur Limboo
Tingchim Chandey GPU**



Sri. Tek Bahadur Tamang



**Residential Structure of
Sri. Tek Bahadur Tamang, Tingchim Chandey**

(2) Displaced Non-title-holder Families: In generic terms, a tenant is defined as a person or organization who uses a building or land and pays rent to its owner. Though there 76 'non-title-holders' families (categorized as tenant families here) residing in the affected area. They have been staying in the area with the tacit approval of the landowner, with varying informal rent arrangements (in cash or kind). The majority of such landowners are Nepali citizens. These families are further divided based on their citizenship (country of origin) and nature of ownership over structure:

(i) Country of Origin: In Sikkim, land rights are confined to the Sikkim Subjects. The strict domicile rules do not permit outsiders to buy property in the State. The displaced non-titleholder families are divided into three categories.

- Sikkim Subjects (possessing Sikkim Domicile Certificate, called the *Certificate of Identification or COI*). This Certificate is also required as proof of residence to avail Domicile/Resident Quotas in educational institutions and in the Government Service, as also in case of jobs where local residents are preferred. COI is also a mandatory document for availing permanent government job opportunity, land transaction and any kind of service from the state government.
- Indian Origin but Not Sikkim Subjects: Displaced families who are of Indian origin but hailing from states other than Sikkim.
- Citizens of Nepal: Third, the displaced families who are citizens of Nepal and have migrated to India for livelihood at different points of time. Most of these households possess Aadhar card, ration card, etc. Some of them have been residing in the area for about two to four decades.

Table 5.15 provides the details of the three categories of non-titleholder families along with the number of structures in the affected area. Out of the 76 families surveyed, 8 families are of Sikkimese origin and 27 families belong to other parts of India. Among the 27 families, there are ten families who are claiming to be Sikkim subjects (though they could not provide documentary evidence at the time of survey). Majority of the tenants i.e. 41 families are Nepali immigrants. About 87 structures exist in the affected area, out of which seven were vacant and a few were extremely difficult to access. Annexure-V and Annexure VI provide the nature of the structures along with their measurement for the non-titleholders and the project-displaced landowners respectively.

Table 5.15 Distribution of Non-Titleholder Families and Structures across Affected GPUs

Sl. No	GPU	No of Residential Structures	Number of Non-Titleholder Families		
			Indian Citizens		Nepali Citizens
			COI Holders	Other States	
1	Mangshila Tibuk	9	2	1	2
2	Namok Swayam	10	0	1	7
3	R. Tangyek	7	4	2	1
4	Singhik Senthram	16	0	6	9
5	T. Chadey	35	2	12	19
6	R. Nampatam	10	0	5	3
	Total	87*	8	27	41

Note: *Includes seven (07) structures that are either lying vacant or no tenants were present during the verification survey and three (03) structures that could not be surveyed due to difficulty in accessibility.

(ii) Ownership of Structure: The non-titleholder families are further divided into two Table 5.16 shows the nature of ownership of houses across the three categories-COI Holders, Other Indian Citizens and Nepali Citizens.

Table 5.16 Nature of Ownership of Houses in the Project Area

Sl. No.	GPU Name	COI Holders		Other Indian Citizens		Nepali Citizens	
		Number	Self Constructed Houses	Number	Self Constructed Houses	Number	Self Constructed Houses
1	Mangshila Tibuk	02	02	1	0	02	0
2	Namok Swayam	0	0	1	1	07	6
3	R. Tangyek	04	04	2	2	01	1
4	Singhik Sentham	0	0	6	1	09	2
5	T. Chadey	02	02	12	9	19	16
6	R. Nampatam	0	0	5	4	03	2*
	Total	8	8	27	17	41	27

Note: *Includes one tenant of Topden Lepcha/Zimchung Block (Plot Nos. 264, 269) who built the house himself but has not been living there for many years.

About 68 percent of the houses are constructed by the tenants themselves. The surveys also captured the period for which these families are staying in the affected area. Though many of these families are claiming to be living for several years and appeared to be so given the nature of their settled life with domesticated animals, there were limited documentary evidences. However, most of them, including the Nepali citizens possess Aadhar and ration cards.

Residential Structures on Land Proposed to be Aquired (Randomly Selected)***Dilapidated Residential Structures***

Ringhim Nampatam GPU



Ringhim Nampatam GPU



Namok Swayem GPU



Tingchim Chandey GPU



Tingchim Chandey GPU



Ringhim Nampatam GPU

Liveable

Tingchim Chandey GPU



Tingchim Chandey GPU



Mangshila-Tibuk GPU

Good

Ringhim Nampatam GPU



Tingchim Chandey GPU



Singhik Sentham GPU

Vacant Structures on Land Proposed to be Aquired



Vacant Structures belonging jointly to Sri. Pensum, S. Thendup & Sri. Sonam Topgay Tamang, Tingchim Chandey, GPU



Owned by Sri. Bal Bahadur, Namok Swayem GPU



Owned by Sri. Tej Raj Limboo, Namok Swayem GPU



Owned by Sri. Raj Bahadur, Namok Swayem GPU



Owned by Sri. Taj Hang, Namok Swayem GPU



Owned by Sri. Dukpey Limboo, Mangshila-Tibuk GPU

Annexure-VII provides details of Indian Non-titleholders who are residing in the affected area. This includes the name of the landowner on whose land the house is constructed, the tenant along with family details, the owner of the structure (landowner/tenant), the period of stay in the affected area, the nationality of the tenant (Sikkim subjects mentioned separately), livelihood dependency and the occupation of the tenant.

5.13 Dependents on the Land (Primary Source of Livelihood Affected)

There are no existing State guidelines for determination of the livelihood dependent families. The Study, therefore, made use of a combination of survey, FGDs and key informant interviews to arrive at the precise estimate of livelihood losers. The following conditions were made use of to segregate those non-titleholder families whose livelihood could be impacted by the proposed acquisition.

1. Whether the landless families were normal residents of the affected area for more than three years?
2. Whether the livelihood activity is carried out on the land that is proposed for acquisition)?
3. Whether the livelihood activity carried out in the project area form their primary source (> 50 percent of the family income)?

The Study found that barring three tenant households, there were no households who were primarily dependent on livelihood activities in the affected area. The non-titleholder families staying in the affected area are engaged in different occupations as labourers with Border Roads Organisation/Quarry, carpenters, drivers, mistry, with contractors, shop keepers, tailors, etc. The above households will not have a direct impact on their livelihood. However, many such families have been staying in the affected area for more than a decade and are living a settled life with domesticated animals. Hence, for their livelihood source to remain intact, it may be important for them to find alternative land in the vicinity that can also accommodate their livestock. The two tenant families whose livelihood is dependent on farming in the affected area (Table 5.17) are COI holders from Mangshila Tibuk GPU. They have been staying in the affected area for more than three years and their primary source of livelihood is dependent on farming in the affected area.

Table 5.17 Livelihood Dependent (Non-titleholder) Households

	GPU	Tenants	R & R Units
1	M. Tibuk	02	10
	Total	02	10

Livelihood Dependent Non-titleholders Residing in the Affected Area

Smt. Mandravati Limboo (W/o Sri. Chandra Bir Limboo), residing on land owned by Sri. Ringzing Tongden, Mangshila-Tibuk GPU



Smt. Aita Rani Limboo, residing on land owned by Sri. Nor Bahadur Limboo, Mangshila-Tibuk GPU

5.14 Forest Right Title-holders

Those forest dwellers whose rights are recognized under the Scheduled Tribes and other Traditional Forest Dwellers Recognition of Forest Rights Act, 2006 are recognized as landowners as per the 2013 Act. Since the process of rights recognition has not been completed, the estimation of such families cannot be included in the Report.

5.15 Vulnerable Households

The objective of the SIA and SIMP is to ensure that the standard of affected families post-acquisition of land is enhanced, or at the bare minimum, maintained at the existing level. Any land acquisition project causes differential impacts and some households/individuals are more prone to the risks of poverty. Vulnerability may not be project-induced, but that which exists because of their socio-economic conditions. Such pre-existing conditions may get accentuated by the project-induced impacts. The project may cause temporary or permanent impoverishment impacts. Given the nature of the project, the following categories are identified for prioritization as vulnerable households:

- (i) Land owners who become landless/marginal after acquisition
- (ii) Vulnerable Women-headed households
- (iii) Families with Disabled Members (Mental/Physical)
- (iv) Elderly population (with high support needs)
- (v) Indigenous people of Dzongu region

Landless and Marginal Landowners (Post Acquisition)

Those households who become landless and marginal after acquisition of land constitute a distinct category of the most vulnerable group. The total land holding of the family is considered as the consolidated extent owned by them in North Sikkim district. The census survey results were shared with the district administration for verification. The details of the number of such landowners as per the SIA team findings and the verified figures received from the district office are given in Annexure-VIII. The GPU-wise gist of such landowners is given in Table 5.18.

Table 5.18: Landholding Status of Landowners Post Acquisition (Study Estimate & District Records)

S. No.	GPU	Status of Landowners Post Acquisition			
		Landless		Marginal	
		Study Estimate	District Office	Study Estimate	District Office
1	Mangshila Tibuk	25	0	17	33
2	Ramthang Tangyek	1	1	0	0
3	Namok Swayam	1	0	1	0
4	Ringhim Nampatam	5	0	9	3
5	Singhik Sentham	7	0	2	5
6	Tingchim Chandey	7	0	5	9
	Total	46	1	34	50
7	Lingdong Barfok	3	1	6	2
8	Gor Taryang	5	5	2	0
9	Passingdang Safo	0	0	1	0
10	Hee Gyathang	2	2	2	1
	Total	10	8	11	3
	Grand Total	56	9	45	55

Note: *Does not include two other land owners (whose status is yet to be confirmed. Both these land owners belong to Ringhim Nampatam GPU under Zimchung Revenue Block.

Women-headed Households: Women-headed families tend to be the most marginalized and poverty prone in any given community. They generally score lower than other households on economic parameters, educational attainment, etc. The Study adopted the definition of the International Labour Organization (ILO) for identifying women-headed households. The ILO defines them as households where either no adult man is present; or where men, although present, do not contribute to the household income.

The Study however recognizes that all the women-headed households may not be a disadvantaged group on economic criterion. The survey revealed that there are many households who are economically worse-off than some of the women-headed households in terms of monthly income. And not all of the women-headed households were poor when assessed by consumption or income. It was seen that those households headed by women who had professional/salaried jobs or are receiving pensions were comparable or better placed than other families. The Study made use of two criteria to identify the genuinely vulnerable among the women-headed households.

1. Those female headed households which did not meet the poverty line income criterion³

³ The poverty line, according to the Planning Commission constituted Expert Committee headed by C. Rangarajan, is monthly per capita consumption expenditure of Rs.972 in rural areas and Rs.1,407 in urban areas in 2011-12. For a family of five, this translates into a monthly consumption expenditure of Rs.4,860 in rural areas and Rs.7,035 in urban areas

2. Those female headed households who did not have any member engaged in professional service/with an assured income even if their self declared monthly income exceeded the per the norms

There are 10 women-headed households (one each from Gor Taryang, Ramthang Tanyek and Singhik Sentham, three from Mangshila Tibuk and four from Tingchim Chandey). However, after assessing these households on the economic criteria, four households were found genuinely vulnerable. Similarly three households among the non-titleholder households qualified under the criterion. All the three non-titleholder households were Nepali citizens. Table 5.19 provides the findings of the exercise. The details of such families are provided in Annexure-IX.

Table 5.19 Vulnerable Women-headed Households

S.No.	GPU	Land owner Families	Non-Titleholder Families
1	Mangshila Tibuk	2	0
2	Ramthang Tanyek	1	0
3	Singhik Sentham	0	0
4	Tingchim Chandey	1	3
	Total	4	3

Families with Disabled Family Members with high Support Needs: There are 15 families surveyed in which at least a member(s) is reported to be suffering from a chronic disease. Among those reporting such diseases during census survey (to be further verified), some of the diseases require high support needs. For instance, among the surveyed landowner families, four suffer from Tuberculosis, one from throat cancer, two from paralysis, and one from chronic liver disease.

Elderly Persons among Project Affected Families: There are 144 elderly persons among the surveyed landowner families. The elder members of the affected families have been divided into three groups those between 61 -70 years; between 71-80 years and those exceeding 80 years, with the last two categories occupying the 'middle old' category and 'oldest old' category. The middle old category has 24 people and the oldest old category has 15 elderly people.

All the three above groups are not homogeneous categories. The oldest old are the most vulnerable among the three categories and goes through multiple deprivations. They are sick, frail, suffer from many health problems and often excluded from social and economic spheres of everyday life. They are also not covered under health insurance and most of them depend on a private doctor/clinic, primary health centre in the area for treatment.

Indigenous people of Dzongu region: The SIA Study made an earnest attempt to understand the conflicts brought by the forces of modernity within a traditional society. The study felt the need to provide for a comprehensive plan to protect the interests of the indigenous primitive tribe of Lepchas living in Dzongu⁴. Dzongu, as explained earlier

⁴ Multilateral lending institutions like World Bank and Asian Development Bank have provisions of developing an Indigenous People Development Plan where the affected families are

is a Lepcha reserve. The very need to create a Lepcha Reserve arose out of the fear that the Lepchas were fast vanishing after the arrival of the Bhutias and the Nepalese from the neighbouring countries. The following factors merit attention in the above regard:

1. Dzongu is a reserve for the Lepchas, widely acknowledged as the "original indigenous inhabitants" of Sikkim and declared as a PTG by the State Government in 2006. Outsiders, even from within Sikkim requires a special permit to enter Dzongu. It is perhaps the only place which contains the last relics of the Lepcha identity.
2. Dzongu is considered as a Lepcha holy land and closely intertwines the cultural identity of the Lepcha tribe and hence requires utmost sensitive handling.
3. Unlike other Scheduled tribes including the Lepchas in the other areas, the life and livelihood of the Lepchas in Dzongu regions are still intricately woven into their natural environment; and the natural resources (the mountains, rivers, lakes and forests) on which they depend are inextricably linked to their identities and cultures. The Lepchas of Dzongu seem to be retaining the physical and cultural characteristics of the indigenous tribe in the most pure form i.e. largely undisturbed by external influence.
4. Lepchas in Dzongu region have been more vociferous about the threat to their ethnicity and culture and also appears more vulnerable because of their inward-looking nature and separation from the mainstream economic activities.

Project Related Risks to the Lepchas of Dzongu region: The risk factors for negative impact on the indigenous people of Dzongu have been identified through the social assessment and the consultations.

1. Threat to Protected Area Status: Dzongu may become vulnerable to influx of outsiders unless strong monitoring system to check entry and exit of outsiders is provided for.
2. Environmental Risks: These pertain to concerns from ineffective implementation of the EMP. While the tardy implementation of the EMP is an issue with most projects, the effect of the tardy implementation on the life of indigenous people of Dzongu area is more severe considering that they worship their natural environment. It is extremely important that the EMP is implemented and monitored effectively with the effective participation of local people.
3. Threat to Indigenous Culture and Tradition: There is a fear that greater contact and interactions with outsiders brought in by the project may cause a serious threat to the indigenous culture and tradition of the Lepchas of Dzongu. The traditional stories, rituals and wisdom greatly influence the worldview of the indigenous

indigenous. The term "Indigenous Peoples" is used in a generic sense to refer to a distinct, vulnerable, social and cultural group possessing the following characteristics in varying degrees: (a) Self-identification as members of a distinct indigenous cultural group and recognition of this identity by others; (b) collective attachment to geographically distinct habitats or ancestral territories in the project area and to the natural resources in these habitats and territories (c) customary cultural, economic, social, or political institutions that are separate from those of the dominant society and culture; and (d) an indigenous language, often different from the official language of the country or region.

Lepchas. There is a great need to institutionalise ways of preserving the knowledge and culture of their ancestry, elders, and history.

4. **Economic Risks:** There is limited transaction of land not only in Dzongu area but also in its vicinity. Hence the floor rates finalised on this parameter would not provide fair outcomes to the affected landowners of this area.
5. **Health/Security Risks:** It is estimated that about three thousand people would be working during the construction phase of the project. There is a potent risk to the local inhabitants from the diseases that could be brought in by the migrant workers. Though the labour camps are planned on the left bank, the labour would be entering the right bank area for construction.
6. **Communication Gap:** The Lepchas of Dzongu region have remained relatively secluded. Further, there is considerable level of mistrust among different sections of people in the region. Anxiety over the course of the project and lack of regular communication and information adds to the existing situation.
7. **Educational Risks:** Every project brings opportunities for development. However, lack of education and good educational facilities for upward mobility is one of the major reasons for the project affected people not being able to garner the benefits. This risk is equally valid for the Dzongu region.

5.16 Impacts on Government Land

At Gor Taryang, 0.23 ha of land is proposed for the project that houses a veterinary hospital of the animal husbandry department. A nursery is being planned by the forest department at Barfok where 1.594 ha of departmental land is proposed for the project. At Tanyek, a nursery of forest department exists on 1.432 ha of land. There is a lot of encroachment on this land by families and houses are constructed and rented out by the encroachers.

Encroacher/Squatters on Government Land: There are seven families residing on this land. Out of these, three families are staying on rented houses constructed by the one of the encroachers (Table 5.20).

Table 5.20 Encroacher/Squatter Families on Encroached Government Land

S.No	GPU	Total Families	Indians		Nepalis
			COI Holders	Others	
1	Ramthang Tanyek	7	4	2	1
	Total	7	4	2	1

Residential Structures on Encroached Land of Forest Department

Ramthang-Tangyek



Sri. Sonam Rinchen Lepcha



Smt. Bagirath Devi Chettri



Smt. Chandramaya Thapa



Sri. Karma Gyaltzen Lepcha



Sri. Jagat Bahadur



Smt. Devi Maya Rai



Sri. Phumden Lepcha/ Sri. Shendup Lepcha



**Nursery and Other Structures on Encroached Land of Forest Department
Ramthang-Tangyek****Forest Quarter****Structures on Encroached Land****Nursery on Forest Department Land****Fish Pond**

Quarry Owners (Forest land): Among the quarries in the area proposed for acquisition, one of them is situated on forest land and the owners of the quarry have been taking it on lease year after year. The diversion of forest land will affect the livelihood of the quarry owner(s). The quarry owners have also constructed roads to the quarry which would have to be suitably compensated.

Quarrying Activities on Progress at Kazor GPU, North Sikkim.

5.17 Impacts on Common Property Resources (Khasmal Land)

In the early part of the 19th century, the then Maharajah of Sikkim had initiated the demarcation of the forest areas in the Sikkim Kingdom. Forests that were vital to the life support system and required full protection were set apart as Reserve Forests. These forests were to be left in their natural state and heavy penalties were imposed for illegal activities in these areas. Other forest areas that could be worked on a small scale, in order to meet the timber and fuel-wood requirements of the local populace, were carved out in the vicinity of villages. Those forests were called *Khasmal* Forests and those that were set apart as grazing grounds for village cattle were called *Goucharan* Forests.

For the Teesta project, 92.1032 ha of khasmal land is proposed for diversion. The proportion of Khasmal land that will be diverted from each GPU is given in Table 5.19.

Table 5.21 shows that 2.35 percent of total khasmal land is proposed to be diverted for the project. This however has high inter GPU variations. The largest proportion of khasmal land is proposed to be diverted from Zimchung (22.39%), Upper Mangshila (7.46%) and Lingdong (5.38%). The primary census survey revealed that most households have domesticated dairy animals. While for majority, this is for self consumption, for others it supplements their primary source of income. According to the 2011 census, the percentage of people using wood for fuel needs is as high as 76.5 % in Mangan (Rural) Block. The riverine area also serves as provisioning food products to local communities and hence acquisition of forest land will adversely impact nutrient rich food availability and increase pressure on forest resources.

Table 5.21: Block-wise Proportion of Khasmal Land Proposed for Teesta IV Project

S.No	GPU	Blocks	Total Area (Ha)	Area Involved (Ha)	% age
1	Ramthang –Tanyek	Tanyek	229.5190	1.4100	0.61%
2	Mangshila-Tibuk	Upper Mangshila	56.0260	4.1798	7.46%
3	Mangshila-Tibuk	Lower Mangshila	0.0000	0.0000	0.00%
4	Namok-Swayem	Swayem	0.0000	0.0000	0.00%
5	Tingchim Chadey	Tingchim	306.0130	0.8680	0.28%
6	Tingchim Chadey	Zimchung	104.8760	23.4830	22.39%
7	Singhik-Sentam	Kazor	145.8900	5.8490	4.01%
8	R. Nampatam	Malling Singhik	428.1630	1.8920	0.44%
9	Passingdang-Safo	Lingthem	343.7510	0.9288	0.27%
10	Lingdong-Barfok	Lingdong	206.3760	11.1076	5.38%
11	Lingdong-Barfok	Barfok	543.8830	6.8660	1.26%
12	Hee Gyathang	Hee Gyathang	637.7830	14.3160	2.24%
13	Hee Gyathang	Gnon-Sangdong	431.4800	9.1210	2.11%
14	Lum- Gor-Sangtok	Gor Taryang	482.1430	12.0820	2.51%
Total			3915.9030	92.1032	2.35%

The recognition of individual and community claims is a process still in progress. The implementation of Forest Rights Act and recognition of individual and community

claims will take care of the rights of households who have been dependent on the forest since a long period of time. The impact on households will be varied depending on the steps take to ensure access to the remaining Khasmal land that will be available for the community. There will be need to develop alternate fuel and fodder in areas where the proportion of khasmal land that will be diverted for the project is high.

5.18 Impact on Cultural/Religious Sites

A burial site on the left bank of the river will be impacted by the project. The project components that are proposed in Upper Mangshila include Adit-II, Dumping and Quarry. The cultural site is central to the religious beliefs of the community and, therefore, has to be taken into consideration in a culturally sensitive and appropriate way.

5.19 Other Social Impacts

Downstream Impacts: A major indirect impact of the hydro projects with dam/pondage is the downstream impact. In run-off-the-river hydro projects, the area located between the dam site to the power house site (through HRT) and back to the river (through TRT) is the potential area of influence. This impact is a major one when the river eco-system is a source of livelihood for the villages located along these stretches. However, in the present project area, commercial fishing is not practised and other livelihood related impacts may also be minimal.

Impact on Access/Landlocked Issues: A prominent issue that was put forward by the community during the consultation phase was the issue of landlocked lands. The issue was particularly raised in Tingchim block. The Study team conducted a physical verification of the site. To understand the issue and restrictions of access that may be imposed on the community, the following was probed:

1. Existence of village roads or any concrete pathway to the site.
2. Nature and quality of access that exists at present.
3. Alternative access routes that may be existing
4. If acquisition of land will block the present access routes
5. The hardship that may be caused by the loss of access

Figure 5.8: Land-locked Issue in Tingchim

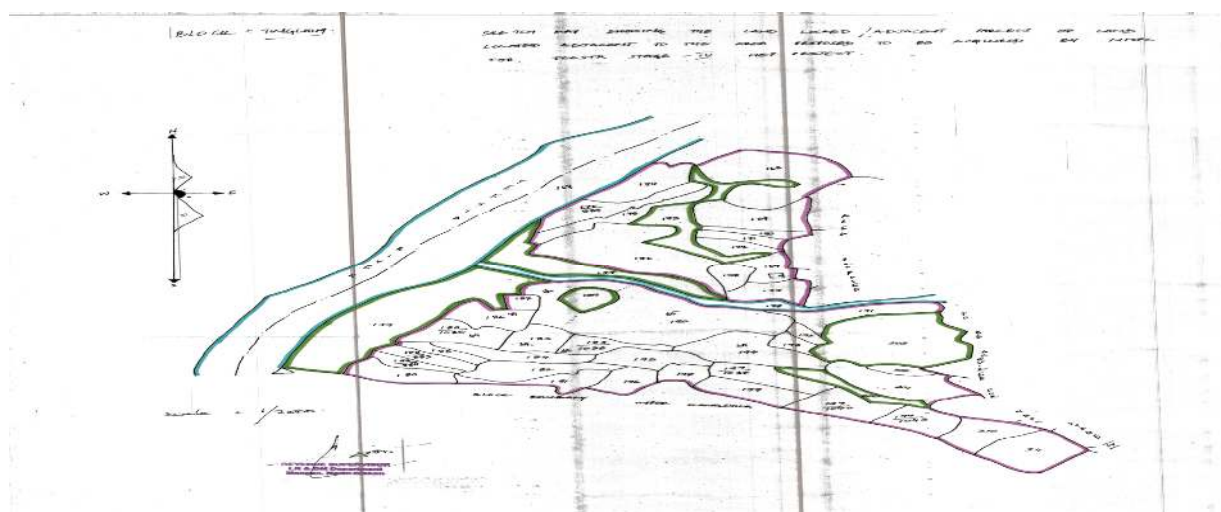


Figure 5.8 shows all the plots in the immediate vicinity of the land that is proposed for the project in Tingchim block. About 27 hectares of land is proposed for Colony area of Teesta IV project and the lands are located just below the highway. The land plots lying in between the proposed acquisition area and the river are the ones that are claiming to be in a landlocked situation.

The physical verification of the entire area was carried out along with Revenue Surveyor, NHPC Officials and some local landowners. The following are the important observations:

- Most of the plots shown in the area are not cultivated except the low lying areas left to the *nala* where the tenants (koots) are engaged in some cultivation. The plots lying on the right side of the *nala* viz., plot Nos. 157, 158, 159 etc till plot No. 168 which forms the boundary are barren with forest vegetation, trees and shrubs.
- Presently, there is no village road or concrete path to the plots. However, the usual paths through which the villagers traverse comes under the proposed acquisition.
- Plot Numbers 210 and 211, lying on the border of Tingchim block will be excluded from the Notification as transmission lines have come up in these plots. It was also observed that there is another transmission tower in the area that has been proposed for acquisition.
- With a view to understand the access points, Tingchim block can be seen into two parts separated by a small *nala*. Plots lying to the south of the *Nala* (plot Nos. 191, 192, 201, etc) have Mangshila block boundary on the north, proposed acquisition area on the east and the Teesta river on the west. However, these lands may not lose the access to the highway as plot Nos. 210 and 211 will be excluded from acquisition. Also, access paths exist through Mangshila that are made use of by the children of the tenants for going to school.
- For plots above the *nala* (Plot Nos. 157, 158, 159 ...168, 177, 175 etc.), the proposed acquisition land will lie on the east (just below the highway), the Teesta river on the west, *nala* in the south and *khasmal* lands with limited access paths on the north. Though some access paths can be created through the *Khasmal* lands, these will be at a great deal of inconvenience to the landowners.

Impacts from Transmission Lines: The indirect impacts of the project would also include the impacts from the transmission lines. These impacts are often serious and would have to be studied exclusively and comprehensively.

Buffer Zone beyond Full Reservoir Level: The proposed acquisition of land for the reservoir area is taken at FRL of 755m. There seems to be no uniform buffer zone proposed for land beyond the FRL. Essentially, the buffer zone forms a uniform width riparian strip around the reservoir, except in the upper edges. In the Teesta Project, there are cases where plots that are lying geographically lower level than the proposed acquisition area are excluded. Lack of uniformity has created uncertainty and sense of anxiety among the landowners whose lands are lying lower than some of the plots proposed for acquisition.

Construction related impacts: Damage to houses in the vicinity of blasting and disruption of drinking water (natural) sources are two issues of concern to the

community. The preservation of hot water springs during the construction phase is another consistent demand. The landslides in the nearby dam areas and improper rim treatment is also a pertinent concern.

Environmental Concerns Affecting Communities in the Affected Area: Among the issues mentioned below are the indirect impacts of the project, beyond land acquisition impacts. While most of these are part of the EMP, these are core concerns of the community and, hence, are produced here. The mitigation plans proposed in the EMP is evaluated and additional measures that may be required is suggested to address the issue comprehensively.

Damage to Physical Environment

The erosion in the catchment due to landslips which is most predominant during the monsoon season; erosion along the river banks and reservoir rim due to water level fluctuations;



Soil erosion above reservoir at Dikchu

Labour Influx and related Issues: The following impacts are expected from the influx of labour.

- Compete with local residents for jobs
- Rise of social conflict owing to religious/cultural/linguistic differences.
- Change in the demography of the area, given that many of them stay back.
- Security issues for local community
- Potential increase in communicable diseases/burdening of health infrastructure
- Potential for increase in gender-based violence.
- Felling of trees and harm to natural environment if not properly managed
- Generation of vast amounts of solid/liquid wastes, improper handling of which can cause health hazards for the community.
- Degradation of water quality due to sedimentation/waste discharge

Muck Disposal: Though run-of the river projects involve less displacement and submergence, they generate huge amounts of muck and debris. Disposing off the muck and debris has been an issue of serious concern. A major concern of the community in all consultations was the ineffective implementation of the EMP. Of particular concern among the environment issues is the disposal of muck. Careless and faulty implementation of EMP can add on to the woe of the community in the vicinity.

(i) **Road and Traffic Issues:** The transport of heavy equipment, delivery of construction materials and movements of workers and employees will create significant disturbance in a currently slow traffic area. The project envisages usage of 6 Kms of road at the Phidang Sankalang stretch. A significant increase in traffic may pose road safety hazards and inconvenience to the community.

Claims for Project Delay: During the period of the Study, one of the demands made by the community was for compensation for the period that the project is delayed,

stating that they have stopped cultivation and kept land fallow for the project (based on instructions from the district administration). The claims demanded were for the period since the signing of the MoU between NHPC and the Government of Sikkim in 2006. Legally, no administrative order can be passed by the district administration for stoppage of construction or cultivation before issuance of notification of preliminary notification. It was confirmed by the district administration that no such order was issued.

To understand the nature of claims and impact of the project, the Study evaluated the land cropped area statistics and made use of the satellite imagery to map the landcover over the period. Consultations with community and analysis of the land cropped area data revealed a vast decline of the primary crop i.e. cardamom in terms of area, productivity and total production. The satellite imagery mapping exercise was carried out at two levels; First, an assessment of the nature of landcover in the proposed acquisition area (in different revenue blocks) at two different time periods, 2006 and 2017 and second, an assessment of the nature of land use beyond the project boundary in the North district; The results are shown in Figures 5.9 to 5.

Figure 5.9: Land cover in the Project Area of Tingchim, 2006 & 2017



Figure 5.10: Land cover in Project Area of Gnon Sandong & Upper Mangshila, 2006 & 2017



Figure 5.11: Land cover in Project Area of Gor Taryang, Swayem and Tanyek Blocks, 2006 & 2017

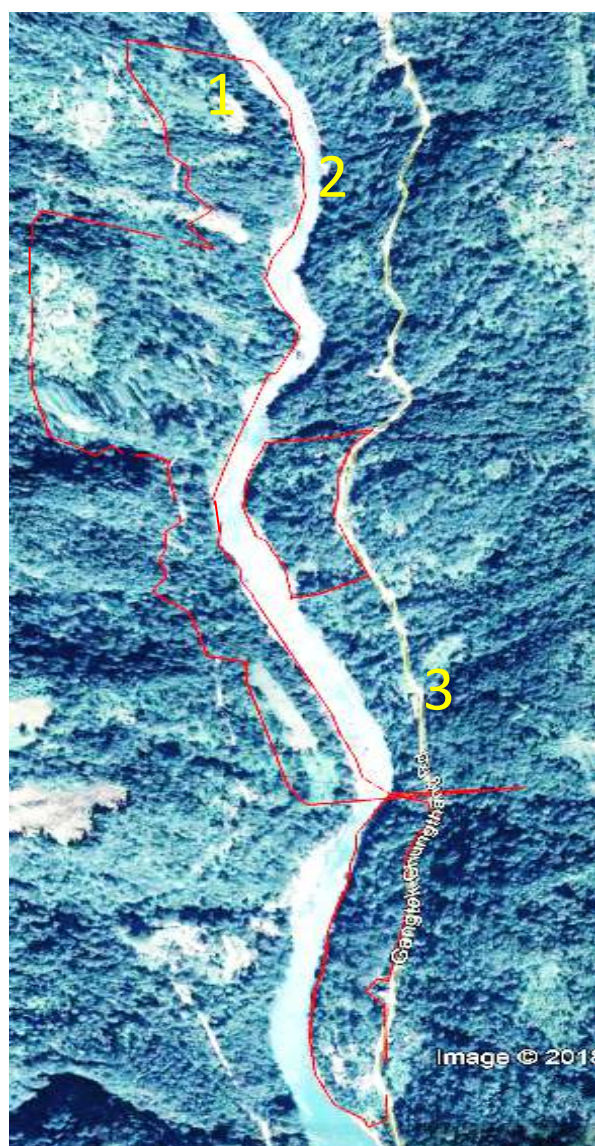


Figure 5.12: Land cover in Project Area of Hee Gaythang, 2006 & 2017

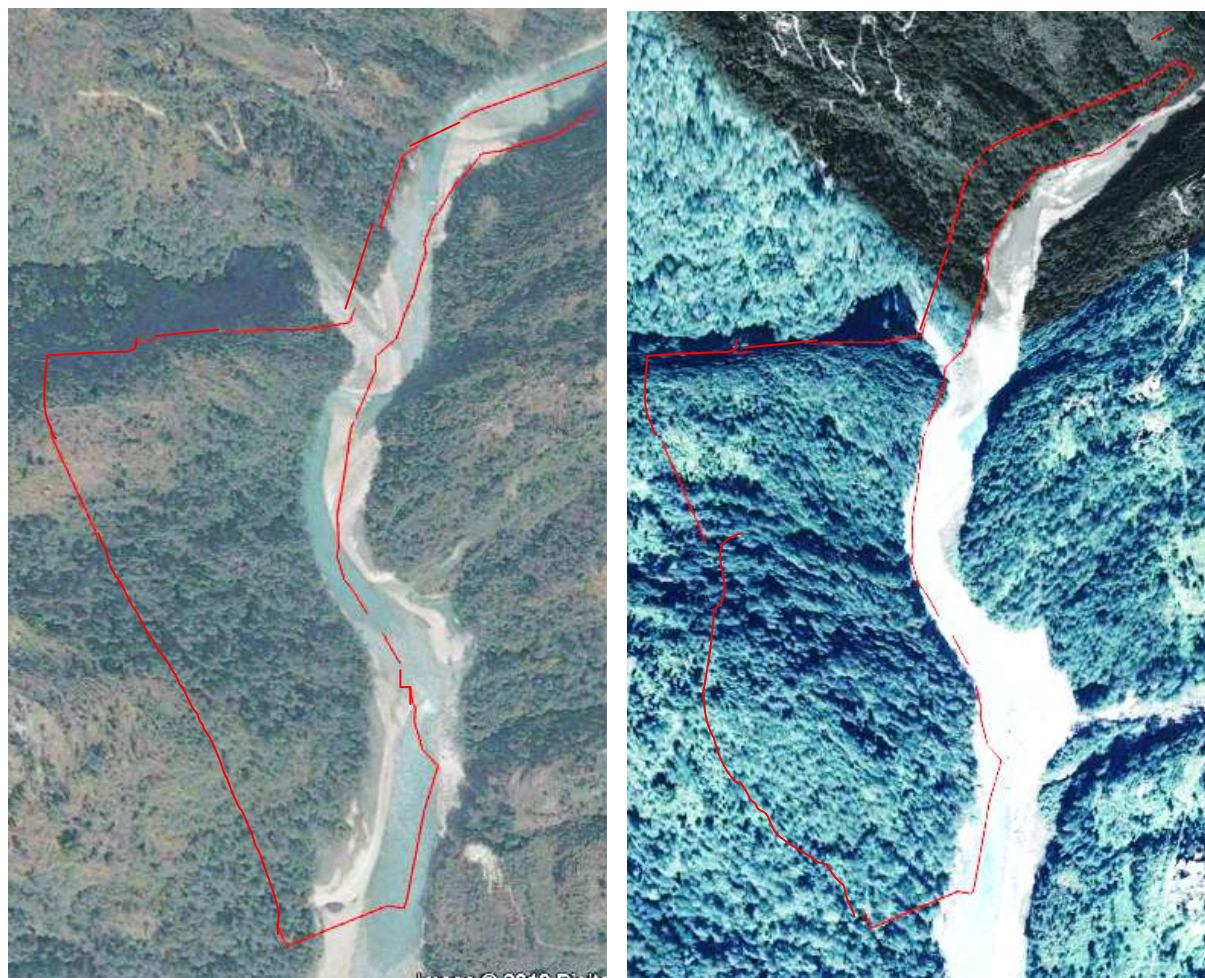


Figure 5.14: Land cover outside Project Area, 2017

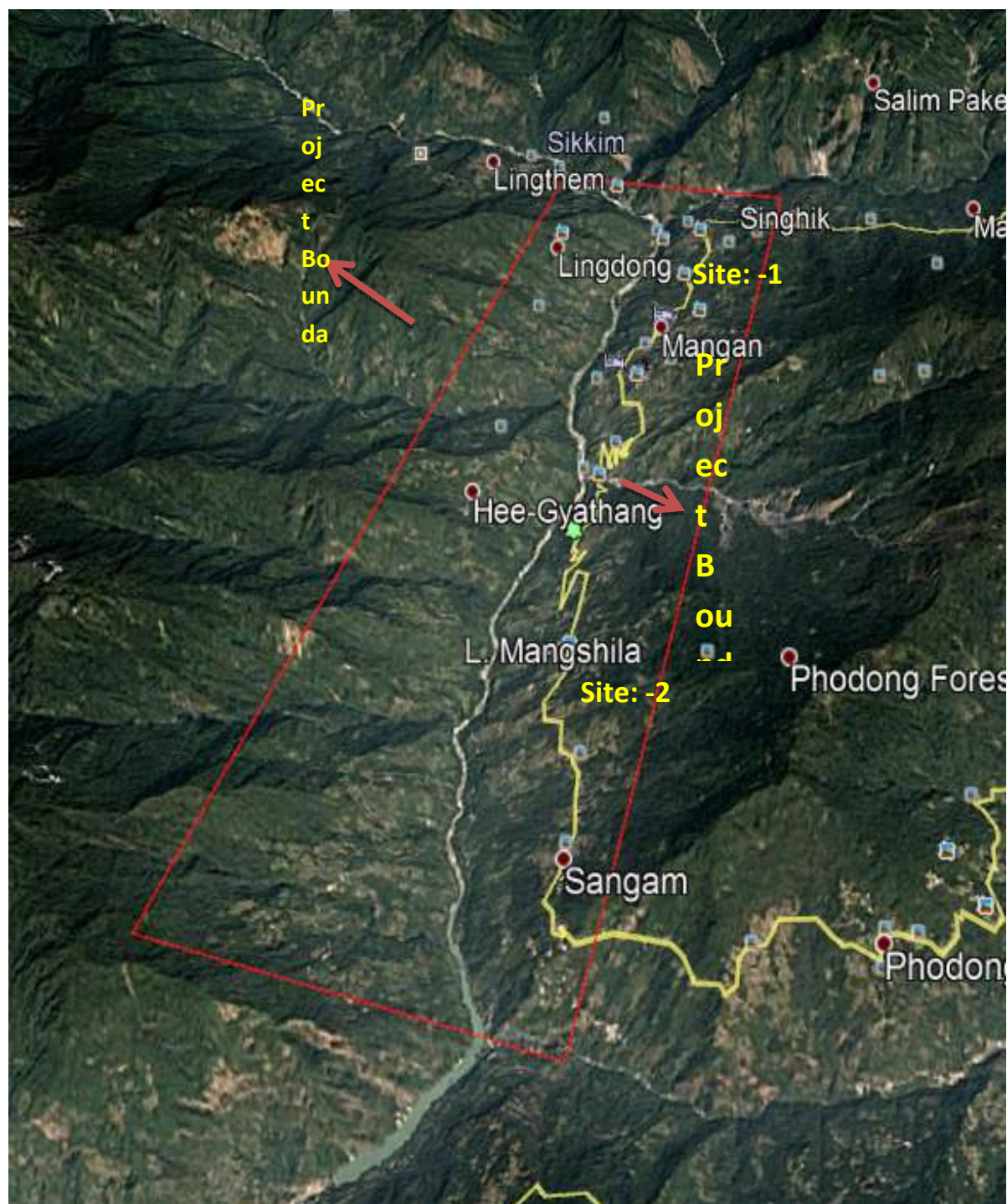


Figure 5.15: Land cover outside Project Area in 2006 (Site 1)**Figure 5.16: Land cover outside Project Area in 2017 (Site 1)**

The satellite imagery maps were considered available for the two selected periods 2006 and 2017 from the Google earth. The images revealed that the cultivation area had indeed declined in the area proposed for acquisition in all the blocks. The land cover in the area which had substantial area under cultivation now has mostly trees and dense forest vegetation. However, an analysis of the land cover area beyond the project boundary (sample images of site beyond project boundary shown in figures 5.14 to 5.16 also revealed similar results. There is no discernible difference between the project area and areas beyond the project boundaries in terms of the changing land cover. In other words, the trend of declining area under cultivation is not just confined to the project area but also in the entire area.

CHAPTER VI**SOCIAL IMPACT MANAGEMENT PLAN****Chapter Outline**

Introduction

Components of Social Impact Management Plan (SIMP)**I Plan for Pre-Construction and Construction Phases**

- ❖ Community Engagement Plan
- ❖ Resettlement and Rehabilitation Plan
- ❖ Plan for Vulnerable Households
- ❖ Labour Influx Management Plan
- ❖ Muck Disposal Plan
- ❖ Mitigation Plan for Other Impacts during Pre-construction/Construction Phases

II Plan for Implementation during Operation Phase/throughout Project Cycle

- ❖ Community and Social Development Plan (EMP)
- ❖ Additional Measures for Livelihood Enhancement
 - Employment
 - Development of Tourism
 - Local Area Development Fund
 - Corporate Social Responsibility
- ❖ Entitlement Matrix
- ❖ Grievance Redressal Mechanism
- ❖ Monitoring and Evaluation
- ❖ Institutional Arrangements for Implementation of SIMP
- ❖ Implementation Schedule
- ❖ SIMP Matrix
- ❖ Budget

Introduction: The SIMP includes measures to avoid, mitigate and compensate impacts. These measures come under four categories; first, measures that are included in terms of compensation and R & R as outlined in the RFCTLARR Act, 2013; second, measures that the Requiring Body has already committed in its EMP and additional measures proposed for strengthening implementation; third, measures proposed by the SIA Study and those which the requiring body has agreed to implement and fourth, measures included after the public hearing.

The SIMP proposes mitigation measures for various phases of project construction. The plan also proposes grievance redressal mechanism, monitoring and evaluation arrangements and institutional mechanism for ensuring that the measures identified and designed to mitigate potentially adverse impacts, are implemented. Some of the measures during the construction stage are already suggested in the project EMP. Since these impacts have been raised as serious concerns by the community, additional measures are proposed to ensure an effective implementation of the plan. The mitigation plans proposed for the major impacts during various phases of the project cycle is broadly grouped in Table 6.1.

Table 6.1 Proposed Mitigation Measures at Different Stages of Project Cycle

Pre Construction Phase	Construction Phase	Operation Phase
Community Engagement Plan Resettlement and Rehabilitation Plan Plan for Vulnerable PAPs	Labour Influx Management Plan Muck Disposal Plan Mitigation Measures for Other Impacts	Local Area Development Plan (LADF)
Implementation throughout the Project life cycle Community Development Plan Livelihood Promotion Plan Local Area Development Plan(CSR)		

I Plan for Pre-Construction and Construction Phases

6.1 Community Engagement Plan

The project has undergone considerable delay and a major factor contributing to the stress and fear of the affected communities is the lack of information about the developments relating to the project. It is extremely important to share the information with the community on a continuous basis. The Study has recommended measures that should be in place to facilitate the same. This includes:

- The community from the ten affected GPUs should be consulted on a continuous basis and involved in planning, implementation and monitoring of the SIMP as provided in the Report. The engagement with the community should be initiated during the pre construction phase itself and carried forward throughout the various phases of the project cycle. The slew of infrastructure development and economic development initiatives provided in the EMP/SIMP should be initiated after sharing with the community (of respective GPUs where works are to be initiated) and taking their suggestions for modifications, if any.
- There should be monthly meetings to share the progress of the project with representatives of the community. All information should be shared with the community in their local language. There are more than 100 functioning Self Help Groups (SHGs) in the ten affected GPUs. NHPC may consider supporting these SHGs meaningfully through CSR (discussed later). These functioning and vibrant groups could be fruitfully engaged for improving information flow, reducing communication gaps and strengthening the community engagement.
- Besides the Project level R & R Committee mandated by the 2013 Act to monitor implementation of the R & R plan, the Study has recommended monitoring committees with participation of panchayats and landowners at the right bank and left bank to address grievances and effectively implement the Labour Influx Management Plan, Muck disposal Plan, Community and Social Development Plan and Livelihood Promotion Plan
- The Study has recommended strengthening of the institutional system in NHPC and recruitment of public relation officers for building and maintaining rapport with the affected communities. Open and transparent interactions should be

encouraged by the Specialised Project Cell to reduce the social conflicts that has emerged in the society and ensure a smooth pre construction phase.

- The Study has recommended measures to strengthen community participation for selection/implementation of works to be carried out under Corporate Social Responsibility (pre construction phase onwards) and Local Area Development Fund (Operation Phase). This should be effectively operationalised.
- There should be a humane involvement with the community and the genuine socio-economic issues faced by them from time to time should be proactively addressed. The mitigation measures planned should also always have the required flexibility to adapt to changing circumstances.
- The 2013 Act itself has a slew of transparency measures at every stage of the land acquisition process. All these measures should be implemented in letter and spirit.
- The SIMP provides for additional budget so that the proposed institutional arrangements can be effectively implemented.

6.2 Resettlement and Rehabilitation Plan

It is estimated that approximately 275 landowner families will be impacted through land acquisition (excluding the rights that are recognized under the FRA, 2006). There are 7 landowner families and 76 non-titleholders residing in the area, who will be displaced by the project. Among the non-title-holders, 35 are Indian nationals. Among the Indian nationals, 8 have Sikkim COI (and 10 others who claim to be Sikkim subjects though they could not produce documentary evidence). Out of the displaced non-titleholder families, three families of Indian origin were seen to be losing their primary source of livelihood. The land compensation and R & R Benefits applicable for the affected families are provided in the Entitlement Matrix along with the additional benefits committed by NHPC in EMP and those that they have agreed as per the recommendations of the SIMP.

- (1) **Land Compensation:** The 2013 Act provides a specific formula for calculation of land compensation under Sections 26-30 and Schedule I. There are two factors that merit attention in case of Sikkim (explained in Chapter V). First, the transaction of agricultural land which is inherited from one generation to another is either negligible or non-existent, particularly in North Sikkim. The transaction of other type of land is also negligible/nills in half of the total revenue blocks proposed for acquisition. The situation is particularly grave in Dzongu region where there have been no transactions of land in the last three years in four out of five revenue blocks namely Barfok, Hee-Gyathang, Gnon Sangdong and Gor Taryang. The Sikkim Land laws prohibit the sale and purchase of land involving those who are not residents of the region/district/State. Second, the estimation of the real market value is further rendered difficult by the fact that there is no minimum stamp value prescribed under the Indian Stamp Act, 1899 for registry of land in Sikkim. It is thus, open for the parties involved in a land transaction to register the land at any rate, irrespective of the actual value of transaction.

Section 26(3) of the RFTLARR Act, 2013 states that the State Government has to specify the floor price where the market value of land cannot be determined for the following reasons:

- Land is situated in such areas where transactions land are restricted by law
- Registered sale deeds/agreements to sell are not available for preceding three years
- Market value of land has not been specified under the Indian Stamp Act

The above conditions are applicable to Sikkim. The critical importance of land for the inhabitants of Dzongu region requires no further explanation. Dzongu is the last bastion of the nature worshipping Lepchas whose influence used to extend right up to Darjeeling and its foothills earlier in history. While cash compensation can never be a replacement of land for the indigenous people, the minimum that should be ensured at all costs is its fair price.

A mere consideration of the transaction price of the adjacent area may not only provide unfair results but also would go against the legal mandate of the floor price, to be arrived at by the State Government in the prevailing situation. The Study, therefore, recommends that the floor price for land compensation may be fixed by the State Government, as mandated by the 2013 Act. Once the floor price is determined by the State Government, the land compensation may be determined, as provided in the 2013 Act (given below):

- Floor price/Value determined under Section 26 multiplied by 1.5
- Value of trees and assets on land (Section 27)
- Solatium @ 100 percent on the total market value of land, trees and structures
- Additional Value @ 12 percent on the market value of land

A demand raised by the landowners of both the left and the right bank (also raised during the SIA Public Hearing) is to have 'One Project One Rate'. The State Government, while arriving at the floor price may also take an appropriate decision in this regard.

R & R Entitlements for Affected/Displaced families: The entitlements for different categories are spelt out below. It is recommended that each affected family may be provided with an entitlement card, clearly specifying their entitlements.

(i) Entitlements for Displaced Landowner Families (Losing land and residential structure). The displaced land owner families are those losing both land and residential structure in the affected area. There are 7 such families in the affected area, comprising a total of 15 family units. These families are entitled to all the benefits provided for displaced families under second schedule of the 2013 Act. They would also have to be provided the option of housing under Indira Awas Yojana (IAY) or cash equivalent of Rs. 1.3 lakhs. Besides the entitlements provided under the 2013 Act, the Project EMP also provides for land development assistance and seed fertilizer subsidy of Rs.35,000 to each landowner family.

For those households choosing resettlement by company as an option, NHPC should provide for access to all the benefits outlined in the third schedule of the 2013 Act. Given the small number of displaced families, NHPC may accommodate them within the area proposed for construction of colony in Tingchim. A progressive measure to speed up the construction process may include leasing out the land for construction of entitlement houses from the landowners for the

period till the award is made (under 2013 Act, compensation and R & R should be provided mandatorily before taking possession of land).

(ii) Entitlements for Affected Land owner Families (Land Owners Not losing structure):

The affected landowners that are only losing private land (and not their place of residence) comprise the majority of the affected families in the proposed project. Among the 231 families surveyed, 224 families belong to this category (787 family Units). These affected families will be entitled to R & R benefits (as provided under schedule II for affected families. This includes an option of Rs. 5 lakhs as lumpsum or Rs. 2000 per family for a period of 20 years (with appropriate indexation for inflation index for a period of twenty years). Besides the benefits under the 2013 Act, the Project EMP also provides for land development assistance and seed fertilizer subsidy of Rs.35,000 to each landowner family.

(iii) Entitlements for Displaced Non-titleholders Losing Livelihood (Indian citizens):

According to the 2013 Act, each family whose primary source of livelihood is affected by acquisition is entitled to R & R benefits as provided under Schedule II of the Act. These benefits will be extended to all Indian citizens whose livelihood is dependent in the proposed area of acquisition. There are three such families and 10 R & R family units. The benefit will also be extended to the owner of the quarry on forest land which comes under acquisition. The land of the quarry owner is not acquired by the project and hence will not be benefited though compensation/R & R as provided for other quarry owners on private land. NHPC may also consider possible involvement of the quarry owner in the construction activities. The workers in the quarry are people of Nepali origin.

(iv) Entitlements for Displaced Non-titleholder families living in Self/Owner Constructed Houses (Indian Citizens):

There are 8 tenants with valid COI documents and 10 others who are claiming to be Sikkim subjects. Besides, there are 17 families of Indian origin. There are 35 such families who are residing in the affected area. They cannot strictly be termed as affected families as defined in the 2013 Act as they are neither titleholders (landowners) nor losing livelihood. Further, it is only through informal agreements with the landowner that they reside and use the land. However, many of these households have been living in the affected area for several decades.

These families are divided into two categories; those living in self constructed houses and those residing in rented/leased accommodation constructed by the landowner. There are 22 families living in self constructed houses and 10 families living in owner constructed houses. The nontitle-holder families of Indian origin living in self constructed houses are recommended for an entitlement of compensation for affected structure, Rs. 1.3 lakhs as cash equivalent of IAY Scheme along with transportation grant of Rs. 50,000. The second category comprising families living in houses constructed by the landowner is recommended for an entitlement comprising rental allowance of Rs. 3000 per month for six months.

(V) Entitlements for Displaced Non-titleholder families living in Self/Owner Constructed Houses (Nepali Citizens):

There are 41 Nepali families residing in the area; out of which 27 live in self constructed houses and 14 live in houses constructed by the

landowner. For both the categories, a transition allowance of Rs. 50,000 is recommended. In addition, for the 27 families belonging to the first category, compensation for the structure is also recommended.

(VI) CPR Dependents: There are three GPUs where more than five percent Khasmal land is proposed for diversion for the Teesta Stage IV Project. Alternate development of fuel and fodder in these areas along with distribution of gas connection/stoves to all affected families are the proposed mitigation measures. Additionally, provision of access to nearby khasmal lands is also proposed.

(VII) Encroacher/Squatters on Government Land: The forest department land has been encroached upon by families, some of whom are also leasing the constructed house on rent. The compensation for the structure along with transportation grant of Rs 50,000 is recommendedproposed for this category.

6.3 Plan for Vulnerable Households

(i) Entitlements for Land for Land for Landless/Marginal Landowners: Each landowner/khatedar, who becomes a landless or marginal farmer after land acquisition shall be allotted agricultural land or cultivable wasteland to the extent of actual land loss by the *Khatedar(s)* in the affected family, subject to – (i) a maximum of one hectare irrigated land or a maximum of two hectares of un-irrigated land/cultivable waste land; and (ii) availability of Government land in the resettlement zone or command area. According to the above policy provision in the project EMP, if government land is not available or the PAFs opt not to accept land, monetary compensation for the land given up shall be paid to them on replacement cost basis so that they can purchase suitable land elsewhere.

Table 6.2 provides the incidence of landless and marginal landowner farmers post-acquisition and related land requirement. As reflected from the table, the number of landless and marginal landowner families post acquisition of land will be 9 and 55 respectively. The quantum of land for which NHPC may be required to pay additional compensation would approximately be 12 ha for the landless category and 13.5 ha for the marginal category.

Table 6.2: Incidence of Landless and Marginal Landowner Farmers Post-Acquisition and Additional Land Requirement for R&R

S.No	GPU	Total Land Requirement for Landless/Marginal @ Actual Land Lost subject to 1 ha		Status of Landowners Post Acquisition			
				Landless		Marginal	
		Landless	Marginal	Study Estimate	District Office	Study Estimate	District Office
1	Mangshila Tibuk	0.0000	10.0466	25	0	17	33
2	Ramthang Tangyek	0.2140	0.0000	1	1	0	0
3	Namok Swayam	0.0000	0.0000	1	0	1	0
4	Ringhim Nampatam	1.0090	0.0000	5	0	9	3

S.No	GPU	Total Land Requirement for Landless/Marginal @ Actual Land Lost subject to 1 ha		Status of Landowners Post Acquisition			
				Landless		Marginal	
		Landless	Marginal	Study Estimate	District Office	Study Estimate	District Office
5	Singhik Senthram	2.249	0.0000	7	0	2	5
6	Tingchim Chandey	2.5465	0.0000	7	0	5	9
	Total	6.0185	10.0466	46	1	34	50
7	Lingdong Barfok	0.3940	2.000	3	1	6	2
8	Gor Taryang	3.9140	0.000	5	5	2	0
9	Passingdang Safo	0.000	0.000	0	0	1	0
10	Hee Gyathang	1.7580	1.3040	2	2	2	1
	Total	6.0660	3.3040	10	8	11	3
	Grand Total	12.0845	13.3506	56	9	45	55

The landless families will be entitled for a Rehabilitation Assistance of Rs. 1 lakh (Project EMP). Similarly, the marginal landowners along with the others will receive a rehabilitation assistance of Rs. 75,000.

For the landless families, NHPC should assist the land purchase through a Land Purchase Committee (as provided in the EMP). This was a significant demand raised by the community during consultations. The issue is more serious wherever a non-Bhutia/Lepcha (B/L) is becoming landless as it is not legally permissible for him/her to purchase land from B/L who are the majority community. Such cases need special attention of NHPC and the Land Purchase Committee. The stamp duty and registration charges for the land purchased (as provided in the EMP) by the landowner shall be borne by NHPC. It is recommended that the Land Purchase Committee may also help with assisting and supporting landowners to utilize their compensation money wisely by purchasing land elsewhere. The post project economic condition of landowners in projects where they were provided such support is seen vastly better compared to others which just dispensed monetary compensation. It is also recommended that they are accorded as 'priority households' for various economic development/skill building initiatives.

(ii) Women headed Households: The women-headed households are more vulnerable to livelihood shocks particularly when women lack sufficient work opportunities and remain excluded from the mainstream economy. There are seven vulnerable women-headed households among the affected landowners and tenants (non-titleholders). The Study recommends providing them an additional rehabilitation assistance of Rs. 75,000. Besides, it is recommended that they are accorded as 'priority households' for various economic development/skill building initiatives.

(iii) Elderly Households: Middle Old and Oldest Old: The middle old category has 24 people and the oldest old category has 15 elderly people. These are households with high support needs. The Study recommends provision of a one-time medical allowance of Rs. 1 lakh for the 70 plus and Rs. 2 lakhs for the 80 plus category

besides their R & R entitlements. The list of such persons identified during census survey is attached as Annexure-X

(iv) Households with Chronically ill non-insured members among the landowner families: Chronic illness is the greatest cause for families falling below poverty line in the country. Members of landowner families who may be suffering from chronic diseases may be facilitated with free treatment not only in project hospitals but also in hospitals empanelled by NHPC. The list of such persons identified during census survey is attached as Annexure-XI

(v) Indigenous People of Dzongu region: The specific risks posed to the indigenous people of Dzongu region has been explained in the earlier Chapter. Given the high risks associated with the project for the protected area of Dzongu, the Study proposes a specific Dzongu Indigenous Tribal People Development Plan (DITPDP).

The Dzongu Indigenous Peoples Development Plan (DIPDP)

Prepared in line with the national/international good practices, the special plan proposed for the community in Dzongu region aims at ensuring the following:

- The potential negative impacts on this indigenous close knit community are minimized and residual impacts are mitigated.
- The project authorities engage in informed consultation with the people and involve them in the entire process of preparation, implementation and monitoring of the project.
- To ensure that project benefits are accessible to the community and promote their socio-economic development.
- Last, but not the least, to ensure that the specific risks outlined above are appropriately mitigated.

The Plan is structured with the following key components, each of which is then comprehensively discussed below:

1. Mitigation measures for the specific risks
2. Modalities to ensure regular and meaningful consultation with the community
3. Grievance Redressal Mechanism
4. Institutional arrangement for effective monitoring and implementation
5. Budget

1. Mitigation Measures for Specific Risks to Community in Dzongu Region

(i) Addressing Threat to Protected Area Status: There are no settlements of labour colonies envisaged on the right bank. However movement of contractors, construction labourers and project officials will be inevitable during the construction phase of the project. The following measures are suggested for minimizing the impact on the indigenous community.

(a) Introduction of Modern Computerized Check posts at Phidang, Bringbong and Sanklang: At present, the process of verification of documents at all the three traditional check post is manual. With the commencement of the project, strict guidelines need to be put in place to ensure that the permit system that regulates the entry of outsiders into Dzongu area is strictly regulated.

- Computerised check posts with modern amenities at all the three checkpoints integrated with the central location. Prompt and accurate information regarding permits issued will ensure a transparent and efficient permit verification system.
- In the computerized process, all the check posts should be monitored from a central location. The central location may be called the Central Monitoring Centre (CMC).
- The CMC should have two databases; First, the database of employees whose identity cards have been issued by NHPC along with the details; Second, the database of permits issued by the DC Office.
- Video cameras may be required to be installed at each of these three checkpoints, which will capture and transmit the details of the license plate number of the vehicle to the central location.
- Entry of vehicles/personnel whose details do not figure in the database of the CMC may be restricted to Dzongu.
- Concrete building for police personnel at the check posts.

(b) Issuance of Identity Cards to Contractors/Construction Workers:

- Issue of Identity cards by NHPC to all personnel including the contractors and the construction labourers with employment category and date of issue.
- The Identity cards should be endorsed by the DC Office.
- The identity cards should also confirm whether the individual has passed the health screening test.
- The details of all Identity cards issued should be promptly shared with the CMC for database updation

(c) Issuance of Permits

- Permits may only be issued upon submission of Identity cards
- Representatives of the affected GPUs of Dzongu area may be temporarily posted at the DCs Office to deal with the due diligence for the issuance of permits.
- Qualified personnel from Dzongu area may be suggested by the affected Panchayats of Hee-Gyathang, Lingdong-Barfok, Passingdang-Safo and Gor-Taryang to operationalise the plan.

(d) Other Due Diligences

- Stringent clauses regarding entry/exist along with penalty clause may be inserted in the contractual agreement with contractors. This may be shared with the representatives of the community and finally vetted by DCs office.
- Contractors violating the norms may be penalized
- No individual, except the persons on duty, may be allowed to stay on the right bank in Dzongu area during night.
- The contractors may be advised to impose stringent conditions against allowing labourers to keep livestock and to prevent the labourers and outsiders to enter the local villages.

- Culturally appropriate names, in consultation with the local community of Dzongu, may be chosen for any man-made structures constructed for the project in the area.

(ii) Addressing Economic Risks

- (a) **Market rates for land:** There is limited transaction of land not only in the Dzongu area but also in its vicinity. Hence, the floor rates finalised on this parameter would not provide fair outcomes to the affected landowners of this area. A State level Committee for price fixation should arrive at the fair market value of land in the affected areas of Dzongu
- (b) **Improving Accessibility:** At present, the check post from Bringbong to Dzongu is not a motorable road. The economically vulnerable sections either have to traverse long distances via the existing Sanklang/Phidang check posts or walk through the Rangrang check post to reach Mangan. A motorable road through the check post is proposed to improve the infrastructure in the area.
- (c) **Livelihood Concerns:** Lack of adequate skills and capabilities among the people of the region presents the risk of being excluded from getting the benefits of employment generated in the project. The following are the specific measures spelt out in the SIMP
- Employment opportunities in the project
 - Skill training for High School Drop-outs: Selected school drop-outs belonging to the affected GPUs and willing to move out of the State may be trained at professional institutions having good placements in Delhi/ Hyderabad etc., with assured employment.
 - Skill training based on the requirements for temporary/permanent posts for all affected GPUs: The SIA has shared the tentative vacancies along with the skills required as also prepared a database of landowner families, their family members along with their educational background. The details of the non-landowner families and members aspiring for skill-based training in the affected GPUs may be undertaken as a special drive with the help of Panchayats of the affected area.
 - Land for land option for those who are rendered marginal/landless after acquisition. The Project Land purchase committee should assist such families to purchase land with the compensation.
 - Promotion of Eco-tourism: This is seen as a viable livelihood alternative in Dzongu region. Specific initiatives to promote eco-tourism may include:
 - ✓ Sponsorship of workshop for promoting awareness of steps to promote eco-tourism.
 - ✓ Improvement of road connectivity from entry points to the tourist sites. Presently, most of the roads are not pucca all weather roads.
 - ✓ Development of parks, fencing, compound walls etc., in the affected GPUs of Dzongu area.
 - ✓ Construction of Wayside Public Conveniences in all the affected GPUs of Dzongu area.
 - ✓ Refurbishment of the Gumpas situated in the affected GPUs.
 - ✓ Development of the natural lake at Gyathang as a tourist spot.

- ✓ Development of signages and display boards showing Tourist Area Maps and documentation on places of interest at the location.
- ✓ Development of Landscape and Viewpoints.
- ✓ Special workshops for e-tendering of petty contracts may be organised in Dzongu area for the local contractors so that maximum benefits can flow to the community.

(iii) Addressing Cultural Risks/Promotion of Indigenous Culture: The following are some of the measures for promoting the culture and indigenous tradition of the area NHPC shall support the following:

- Sponsoring traditional events/festivals of Lepcha community in Dzongu area.
- Support to institutions promoting tradition and culture of the indigenous Lepchas of Dzongu area on a continuing basis.
- Support for promotion of Lepcha language in local schools.
- Renovation of Nampridang ground by constructing welcome gate, organized seating arrangements and sanitation facilities.
- Construction of a Museum at Hee-Gyathang for preservation of tradition and culture of the Lepcha community.
- Construction of Monastic school at Phidang.
- Construction of Statue of the Lepchas guardian deity Thung Munsolong.
- Construction of Welcome traditional gates at the entry points of Dzongu.

(iv) Addressing Health/Security Risks: A Community Health Plan to prevent the outbreak of communicable diseases is presented in the EMP. In addition, there is also a special plan for prevention of diseases such as HIV/AIDS. The following holds special significance for Dzongu region:

- Initial health checkups/periodic checkups for all construction workers and work permits to be given only after a full health screening and treatment for diseases
- For the indigenous communities of Dzongu, all health awareness programmes specified in the SIMP should be discussed and approved.

(v) Addressing Environmental Risks: These pertain to concerns from ineffective implementation of the EMP. The tardy implementation of the EMP is an issue with most projects. The Lepchas worship the natural environment and so it is extremely important that the EMP is implemented and monitored effectively.

- Insertion of penalty clause in the agreement with the contractor
- Monitoring of the EMP implementation, particularly with regard to the construction labour management plan and muck disposal plan, to be closely monitored by Special Committees including the Dzongu Area Monitoring Committee (DAMC, explained below).

(vi) Addressing Educational Risks: Every project brings opportunities for development. However, lack of education and good educational facilities for upward mobility is one of the major reasons for the project-affected people not being able to garner the benefits. This risk may be high in Dzongu region because of comparatively

lower business acumen, non-competitive spirit and lower affinity to acquire marketable skills. The following are proposed:

- NHPC may sponsor meritorious students from the affected GPUs who successfully clear tenth standard with distinction for coaching facilities outside the district/State to be able to get admissions into good institutes across the country.
- NHPC may sponsor the entire educational expenses of children from the BPL families of the affected GPUs who qualify for good institutions to pursue their graduation/post-graduation study.
- The details of such children will be provided by the DAMC

(vii) Modalities for Consultation: The community should be consulted regarding the mitigation measures proposed in the DIPDP and their views will be taken into account in finalizing the plan. The plan should be translated in the local language and made available to the affected people before implementation.

(a) Fortnightly meetings in small ethnic communities for information sharing and consultation during the planning stages.

(b) Monthly meetings during the implementation stages of the project;

(viii) Institutional Arrangement for Effective Implementation and Monitoring: The DIPDP will be sponsored by NHPC. NHPC will also be the executing agency of the implementation of the DIPDP. For the liaisoning with the community and effective implementation of the DIPDP, an appointment of a Public Relations Officer (PRO) from Dzongu area is recommended to be recruited on an outsourced basis from the Dzongu affected area during the pre-construction and construction phases of the project. The PRO should be a part of the Social Management Cell in NHPC proposed for the Teesta Stage IV Project.

While an R & R Committee has to be established at the project level to monitor the implementation of the resettlement plan (as provided in the 2013 Act), an appointment of **Dzongu Area Monitoring Committee (DAMC)** is strongly recommended consisting of the following members for effective implementation of the DIPDP:

Chairperson -SDM, Dzongu

Proposed Members:

- Chairpersons of the Panchayats of the affected GPUs or their nominees including one Women Representative.
- Representatives of Affected Landowners
- HOP/Representative of NHPC
- Representatives of a NGO actively working in Dzongu area

In addition to the above, it is also recommended that an external independent monitoring agency is engaged by NHPC for overall implementation of the SIMP. Separate budget is provided for Monitoring and Evaluation in the Budget.

(ix) Grievance Redressal Mechanism (GRM): The DAMC headed by the DC is also proposed as the Stage II Grievance Redressal Committee (discussed later). The Specialised Project Cell of NHPC shall ensure that the contact information of the GRC officials and grievance redressal process are shared with the community.

(x) Additional Demands during Public Hearing: The landowners from Dzongu who participated in the public hearing suggested few more demands, particularly relating to infrastructural development, promotion of tourism and specific steps to be taken by NHPC to ensure that local people benefit from the contractual works that come up during construction phase.

- Promotion of eco-tourism at a larger further activities relating to sponsorship for establishment of homestays.
- Contracts below Rs. 10 lakhs should be give to locals without any tendering.
- Development of Skywalk facility at Namprikdang
- Statue of Zeor-Bongthing at Taryang along with a monastery
- Auditorium hall in Gor Taryang

(xi) Cost estimate for Implementation: The itemized cost for implementation of the DIPDP is provided in the total estimate for SIMP (few initiatives relating to educational measures For the additional demads of the community during public hearing, a lumpsum amount of Rs. 5 crores is proposed.

The DIPDP is the outcome of the social impact assessment process and was further discussed at the public hearing held on 30th January 2018. The landowners from Dzongu region have added few more requirements, as given above. However, the plan may be translated in the local language and made available to the affected people in Dzongu before finalization and implementation.

Plan for Implementation during Operation Phase/throughout Project Cycle

6.4 Labour Influx Management Plan

Addressing Labour Influx Issues: The mitigation measures proposed in the EMP to address labour influx include a Public Health Management Plan, Fuel and Energy Conservation Plan and Solid Waste Management Plan. The major mitigation measures conceptualized under these plans are reproduced below:

(i) Health Management: This includes specific measures to minimize/prevent the incidence of vector-borne diseases, development of medical infrastructure in the project affected area/surrounding villages etc.

Prevention of Vector Borne Diseases

- The sites to be selected for labour camps should not be located in the path of any natural drainage.
- A semi-permanent/pre-fabricated structures should be created for the labourers so that they do not live in a slum-like setup.
- Community toilets with septic tanks should be established in the labour camps.
- Community kitchen facilities should be provided for the labourers to avoid multi source domestic waste creation.
- Potable water supply should be ensured for the labour camps.

- Adequate arrangement has to be made to dispose storm water from the labour colonies.
- Adequate medical facilities shall be developed by the project authority for the contractors and labourers at the construction sites. Besides, aid boxes shall be installed at proper locations at each construction site.
- Adequate vaccination and immunization facilities to be provided for workers at the construction site.
- The labour camps and resettlement sites to be sited sufficiently away from any water body or quarry areas.

Development of medical infrastructure in the project-affected area

- A hospital is proposed in project colony area (with all the basic necessary facilities including pathological laboratory, ECG facility, physiotherapy facility, dentistry equipments, eye check up equipments, occupational health section, etc.).
- A primary health centre to a village lacking facilities in the surrounding area.
- The medical facilities suggested in the plan should be available free of cost to the workers of the project as well as locals (both during construction and operation of the project).
- Extension of facilities to all surrounding villages in impact and influence zone.
- Free medical cum health awareness camps in these villages on a regular basis throughout the year by a team of doctors. These camps would provide free consultancy, medicines and increase awareness about various diseases like HIV/AIDS, Malaria, T.B., etc.
- If sufficient medical facilities are not available in the project hospital for a particular disease, the patients can be referred to the Central Referral Hospital, Gangtok.
- Mobile medical van facility for the purpose of regular visits of doctors in affected villages and project sites. The van should be managed by qualified doctors who will visit the pre-determined sites on a regular basis.
- The Project hospital will coordinate with the State Health Department to provide immunization and vaccination facilities as per Government vaccination schedule including vaccination programme of Hepatitis 'B' or other such vaccines which are, though part of Govt. regular vaccination schedule, but not supplied free of cost by the Govt.
- Two ambulances to be provided to the project area with a dedicated helpline telephone number.

Fuel Management

- Necessary arrangement for kerosene and LPG (Liquid Petroleum Gas) in the project area so that migrant workers are discouraged from indulging in illicit felling and removal of valuable trees (including fuel wood and timber) from the adjoining forests. This includes opening up of one LPG depot and three kerosene depots in the area.
- Obligation for all major contractors to have a community kitchen at their each working site so that their labourers do not venture out in adjoining forest areas for

fuel wood collection. The labourers of small contractors may buy the kerosene and LPG from the nearby depots.

Waste Management, Water and Sanitation Facilities

- All major contractors must ensure the provision of safe drinking water facility for their labour force including those working with their petty contractors.
- Strict prohibition of open defecation and mandatory construction of community toilets, public toilet seats and, if required, facilities (temporary) may also be provided at the working sites (5 sets) with proper water facility and septic tanks.
- Construction of proper washing/bathing place at a distance from the source of water (e.g., wells, ponds, etc.) and preferably at a lower level than the source so to prevent any stagnation of water.
- While in case of temporary labour camps and colonies, waste water from kitchens, bathrooms and washing places should be routed into soak pit, the permanent colony and office building will have small sewage treatment.
- Landfill Site for solid waste that cannot be segregated properly, with fencing to prevent stray of wild animals and proper closure/restoration later.
- Staff for the maintenance, cleaning and upkeep of various facilities at various places like colony areas, construction sites, etc., is proposed in the plan.

Additional Measures Proposed in SIMP to address Labour Influx Issues: One of the most significant impacts during the construction phase is the issues created by labour influx. This was also one of the most important concerns raised by the community at all consultation meetings held at both the banks. It is important to understand that while the general impacts are forecasted, the nature and magnitude can only be figured after the appointment of the contractor, conditions in the contractual agreements and the quantum of skilled/unskilled workforce that would be sourced from outside the area. Given the importance of the issue, the SIMP puts forth the following additional measures to address the labour influx issue.

1. Planning for Maximizing the Engagement of the Local Workforce: While this is easier for the unskilled workers, concerted efforts can increase the scope of utilizing/absorbing the local capacity wherever it exists even for the specialized staff. If planned well, it may be possible to train local workers within a reasonable time frame to meet the project requirements. This would also help for the operation and maintenance of the new infrastructure later. On the other hand, it can help reduce the contractors' costs of getting labour from outside. The following is recommended in this regard:

- Share information about the upcoming opportunities through local language in all the ten affected GPUs.
- Prepare a roster of interested workers and their skills.
- Plan training programs to enhance the existing skills of eligible candidates
- Provide the list of such potential candidates to contractors for consideration for possible recruitment.
- Wherever appropriate, it can be emphasized that work permits can be provided only for workers with skills that are unavailable locally.

2. Enhance Community Participation in Monitoring the Implementation of the Plan:

The labour camps are proposed in Zimchung, Upper Mangshila, Tanyek and Swayem blocks in the left Bank. A Left Bank Monitoring Committee (LBMC) is proposed for the overall monitoring of the SIMP (discussed later). To monitor the implementation of Labour Influx Management Plan, the LBMC will have members of the wards where labour camps are proposed:

- SDM, Mangan as the Chairperson
- Ward Members of the respective wards where the labour camps are proposed
- Representatives of Landowners from the Area (to be appointed by the Chairperson)
- Women Representative of affected GPUs
- Representative of NHPC
- SDM, Dzongu as a Permanent Invitee to reflect ground level issues in Dzongu, if any.

The Chairperson of LBMC may assign the task of preparing a monthly report of the plan implementation. An external agency for M & E of the various mitigation plans is also proposed in the SIMP.

3. Inclusion in Contractual Agreements: Generally, a major reason for the poor implementation of the mitigation plan is their exclusion/inadequate inclusion in the contractual agreements. The role of the contractors is extremely important as most adverse impacts from labor influx can only be mitigated by the contractor commissioned to carry out the works. The responsibilities for managing these adverse impacts should be clearly reflected as a contractual obligation, with appropriate conditions/penalty for addressing non-compliance. Innovative suggestions to address these issues may also be invited for bid submission. These conditions may also be given due prominence during the bid evaluation and awarding of contracts. Penalties for non-adherence may provide for suitable disincentive framework.

- The Terms of Reference should include responsibilities regarding issues relating to labour influx, health related issues, etc., and key staffs qualifications for appropriate implementation and supervision.
- The bidding document may among others also provide for the following:
 - ✓ Mitigation measures for addressing labour influx issues provided for in the EMP and SIMP in the contract.
 - ✓ Commitment for planning and implementing additional mitigation measures that may become relevant according to the prevailing circumstances.
 - ✓ Traffic Management Plan that includes speed control measures, driver safety training etc, safety signs near project sites.
 - ✓ Compulsory health screening of labourers before issuance of identity cards.
 - ✓ Implementation of Malaria and HIV/AIDS awareness programs.
 - ✓ Information campaign and capacity building on communicable diseases, HIV/AIDS and STDs among the workers and the local community.
 - ✓ Responsibility of the contractor along with monitoring and supervision arrangements to be undertaken.

4. Reduce Scope for Labour-Community Interface: The straying of workforce from outside the area into the villages was said to be a major concern of the community. Such issues can be reduced by the following indicative measures:

- Developing workers Code of Conduct⁵ along with penalty and conditions for termination of contract.
- Induction training for workers including compliance of strict code of conduct and on job trainings to develop capacity and penalty for non-adherence,.
- Capacity building of labour on community related issues, social conflicts and 'Dos and Don'ts
- Supply of kerosene, coal/fuel wood by the contractors for their labour to prevent deforestation.
- Strict clause in the contractual agreement denying the labourers to domesticate animals/poultry so as to prevent their entry into habituated areas
- Provide some entertainment services for workers in the camp.
- Prohibit usage of wood for fuel
- Specific conditions for entry into Dzongu region as provided in the DIPDP

5. Special Focus on Women's Security:

- To address concerns of women, physical security to be arranged in the village where labour camps are situated.
- Rigid permit and security measures in Dzongu area as provided in the DIPDP.
- Contractual provisions on compliance with local security requirements and penalty/cancellation of contracts.
- Provision of toilets and bathing facilities duly segregated for male and female labour;

6. Ensure Effective Grievance Redressal Mechanism, Strict Internal/External Supervision and Monitoring Arrangements: The GRM should be established at the outset to address all issues relating to labour influx. North Sikkim is a protected area and inhabited by ST population and there should be no laxity in the implementation of any of the mitigation measures proposed in the EMP and SIMP. The Environment and Social Management Cell of NHPC should review the compliance by contractors and hold consultation meetings with the local community on a regular basis to understand grievances, if any. During the construction phase, NHPC must make regular field surveys and take necessary actions to curb diseases, if any, thriving in the area with additional budget. The

⁵ Key aspects of the Workers Code of Conduct will include:

- Respectful and courteous behaviour towards local communities and do no harm to their property and local environment;
- Abide by the local norms of behaviour in deference to the traditional customs of the Indigenous Peoples;
- Gathering of natural produce and, fishing and hunting and wild life are prohibited
- Domestication of animals is prohibited;
- Respect towards sacred sites and any other objects and features of cultural heritage, particularly those worshipped by the locals;

project should also engage Independent Experts/Third Party Monitors to provide a transparent perspective of implementation progress and deficiencies, if any.

6.5 Muck Disposal Plan

Another issue of immense concern to the local community and flagged in all the consultation meeting is the tardy implementation of the plans for muck disposal. The engineering and biological measures suggested in the EMP to rehabilitate the muck are reproduced below:

- The engineering measures include retaining walls filled with plum concrete at the base of the dumping yards. The design of the retaining walls is of stone masonry filled with plum concrete with 3 to 6 m height depending on the site requirement. These retention walls will be located at least 10 m away from the highest flood level where the dumping sites are near the river. The muck is required to be disposed at an angle of repose of 25°. However, with the adoption of appropriate design the angle may be increased. One layer of single wire crate and two layers of double wire crates have been proposed for each muck disposal site in order to protect the sliding of unconsolidated muck.
- Different biological measures are proposed to stabilize the muck and restore the disposal sites. The establishment of biological measures requires several associated steps. Fencing of the muck deposit areas with barbed wire strands bearing two diagonal support system (either concrete or iron) and placed 3 m apart.
- The dumping sites located in Teesta-IV HE project are located in the altitudinal range of 610 to 910 m. The plan provides information about the species in and around different dumping sites and recommends planting of appropriate species (that can grow rapidly and sustain on this substrate) after examining the physical and the chemical nature of the substrate muck.
- Grasses to be planted in a line across a slope will provide a continuous chain of support in retaining debris, reinforcing soil and increasing the infiltration capacity.
- A separate nursery is proposed to meet the requirement of saplings for restoration of dumping sites and green belt development.
- In addition to large-scale afforestation activities, it is also necessary that slopes of the muck dumping sites are stabilized suitably and permanently. Engineering measures will help in preventing them from going down into river or surrounding areas but if proper soil conservation measures through biological/ vegetative measures are not taken up, the slope might give in to heavy rains. Therefore, it is proposed that soil conservation measures through vegetative measures are taken up for slopes of the dumping sites

Additional Measures Proposed in SIMP

1. **Enhance Community Participation in Monitoring of Muck Disposal Plan:** The muck disposal sites are proposed at Lower Mangshila, Upper Mangshila, Zimchung and Gor Taryang. To monitor the implementation of Muck Disposal Plan, the LBMC will have members of the wards where muck disposal sites are proposed:
 - SDM, Mangan/SDM Dzongu as the Chairperson
 - Ward Members of wards where the disposal sites are proposed

- Representatives of Landowners from the Area (to be appointed by the Chairperson)
- Representative of NHPC

An external agency for M & E of the various mitigation plans is also proposed in the SIMP. The Chairperson of LBMC may assign the task of preparing a monthly/bi-monthly report of the plan implementation. An external agency for M & E of the various mitigation plans is also proposed in the SIMP.

6.6 Plan for Other Impacts during Pre-Construction/Construction Phases

Landlocked Issue: The verification exercise conducted at Tingchim probed issues of access to the plots lying between the reservoir area and Tingchim colony area. For some of the plots (as explained in Chapter V), there are genuine concerns of hardship that the community may have to endure. NHPC may choose one of the following two options in this regard,

- For such lands that have access issues, NHPC may provide access to the community through their colony without any inconvenience to the community and to their satisfaction.
- If the above cannot be provided, additional plots of land may have to be purchased from the landowners.

Impact on Burial Site at Mangshila: A burial site will be impacted on land proposed to be acquired on the left bank of the river. The issue was brought to the notice of NHPC. It has been agreed that either the area will be excluded from the proposed acquisition or unhindered access will be provided to the community.

Buffer Zone beyond Full Reservoir Level: All issues relating to uniformity of buffer zone beyond the reservoir level should be transparently communicated with the community. And where a certain plot falls above the buffer zone area (with due regard to the terrain and upper ridges) should be removed from the proposed acquisition.

Damage to houses during Construction: There is possibility of cracks/damages to houses that lie in the vicinity of the blasting area during construction phase. To address the issue, property insurance was a demand of the community during consultation. The demand for property insurance was further made during public hearing.

Given the experiences of insurance in some projects, the SIMP recommends the formation of a District Level Committee headed by Collector, Representatives of Concerned State Department, Representative of the Community, Representative of NHPC and an External Expert to decide on the compensation on a case to case basis. The Committee may be constituted during the pre construction phase (before blasting begins). To prevent future disputes on the issue, a videography of houses in the vicinity before blasting begins is recommended.

Impact on Agriculture and Allied Activities: There is potential of adverse impact on crops and movement of livestock during the construction phase. The SIMP recommends that premium for crop insurance (Pradhan Mantri Fasal Bima Yojana) in the affected areas may be paid by NHPC during the construction phase. If the

affected crops cannot be notified under the PMFBY for technical reasons, the average yield of the surrounding fields to be assessed by a DC led Committee with Officials from Agricultural Department and nominated Agricultural Experts, prior to the initiation of construction activities. All such claims and the quantum may be decided by the DC led Committee in such cases.

To ensure payment without delay in the above cases, a lump sum amount of Rs. 5 crores may be kept at the disposal of the District Administration in a specially designated account maintained for the purpose. The amount may be released by NHPC before the initiation of construction activities (before blasting begins). The money unutilized (after completion of construction phase) may be transferred equally to all GPUs for meeting their infrastructural needs.

Disruption of Drinking Water during Construction Phase: While NHPC will make use of best engineering techniques to avoid disturbance to local springs (water sources), it will promptly ensure drinking water to the community in case of any disruption.

Downstream Impacts: The proposed dam site of the Teesta Stage-IV project is located downstream of the power house of Teesta Stage III Project. The power house (up to TRT) of Teesta Stage-IV is located about 3.25 km upstream of Teesta Stage-V dam site. Both Teesta Stage III and IV projects are in operation now and the mitigation measures will itself be dependent on the measures implemented in Teesta V project. There is no perceivable impact on livelihood per se in the downstream area. The mitigation measures for the adverse impact of aquatic flora and fauna have already been proposed in the project EMP. The SIMP strongly reiterates the need for effectively monitoring the implementation of e-flow requirements.

Damage to Environment Due to Proper Implementation of Rim Treatment: The reservoir and its surrounding areas in these fragile Himalayan geologic formations is susceptible to occurrences like bench settlement slides, slips and damage to settlement, especially during the operation of the reservoir. Ineffective implementation of the "Reservoir Rim Treatment Plan" is a concern for the community in the project affected area. Effective monitoring arrangements (technical) should be put in place to avoid the damage to environment.

II Plan for Implementation in Operation Phase/throughout the Project life cycle

6.7 Community and Social Development Plan (EMP)

The EMP for Teesta project has proposed for a Community and Social Development plan comprising initiatives for infrastructure development, economic development, development of a Model Village and activities to promote economic development in the area. There are two initiatives under health and education provided in the R & R plan of the project EMP. This is also included here. All such measures which is finalized for implementation as per EMP is given below:

I Infrastructure Development

1. **Construction of Footpaths:** Construction of approximately 30 km long *pucca* footpath is proposed for the affected villages/revenue blocks and the influence zone along with repairing of existing ones wherever required.
2. **Bus Stops/ Rain Shelters:** For the convenience of the residents, rain shelters-cum-bus stops are suggested at appropriate locations alongside footpaths and roads. A total of 10 nos. *pucca* rain shelter-cum-bus stop is proposed to be constructed in the project-affected area and influence zones as per requirement.
3. **Water supply facilities for the villages:** It is proposed that project authorities would support in laying down water supply pipelines along with construction of a common accessible washing place in each affected village or on actual requirement basis in the project-affected area or influence zone. Project authorities would also make water supply connection available in each house in the project-affected area based on their requirement under this plan. Special emphasis will be given in the project area near dam, powerhouse and adit locations where the demand of water will increase due to influx of labourers.
4. **Upgradation of existing educational & medical facilities:** The project authority would construct a hospital and extend its facilities to the locals. The project authorities shall in consultation with the State Govt. repair/ renovate/ upgrade the existing schools and hospital buildings in the project area. Wherever required, some additional facilities like approach road/ footpath construction, water supply and toilet facilities, playground construction, etc., may be created. Donation of books, computers, laboratory apparatus, other educational aids, etc., to the existing schools is also envisaged in the project area.
5. **Community Welfare Centres:** Project authorities will develop community welfare centres in those villages where this facility is not available.
6. **Preservation of Cultural Heritage and Old Monuments:** The project authorities will fund the construction of a Monastic School in Dzongu area besides repairing of existing Gompas, extension of existing structure, and construction of water supply and toilet facilities, wherever required, etc.
7. **Improvement of Namprikdang Mela Ground:** The project authority would develop the mela ground by leveling, constructing welcome gate and sitting arrangements, construction of water and sanitation facilities, etc.
8. **Adoption of a Village for Its Development as Model Village:** The developmental activities in the model village would include construction of link road, footpaths, development of sanitation system, street lighting, water supply system, play ground, etc.
9. **Distribution of LPG Connections:** It is proposed to distribute LPG connections along with gas stoves to all the affected families.

II Health and Education

10. **Scholarship to PAF's children:** The EMP provides for scholarships to the meritorious children (securing more than 60% marks) of all the PAFs; the monthly scholarship being Rs. 500 for Classes VI to VIII, Rs. 700 for Classes IX to X, Rs. 1000 to Classes XI to XII and Rs. 1500 to those undertaking technical education or graduation programme. In addition to above, full expenses including tuition fees shall be

borne by NHPC if a ward of a project affected family (PAF) is selected on merit in a Govt. engineering/medical college. The maximum scholarship shall be limited to two students every year for five years.

11. **Medical Help:** All PAFs shall be provided free OPD medical help through the Dispensary/Hospital being run by NHPC at its project sites during the construction phase of the project. To ensure medical benefits reaches the rural poor, NHPC will facilitate to tie up with the insurance companies for various micro-health insurance schemes. Full premium of such scheme in the first year and 75 percent premium in the subsequent years of R&R implementation will be borne by the NHPC and the balance premium shall be borne by the eligible PAFs coming forward to enroll them under the scheme.

Livelihood Promotion Measures

12. Vocational training for the literate section of the PAFs through accredited institutions. It is proposed to impart training to about 50 PAFs in popular streams like computers, hotel management, cutting & welding, mobile repairing, etc., through some accredited institution in Sikkim. The project authority would bear the course fee for the same and a monthly stipend of Rs.1000/- would be given to each candidate for the duration of the course to a maximum period of 24 months.
13. For the remaining PAFs, whether literate, semi-literate or illiterate, it is proposed to impart training in poultry farming, animal husbandry, dairy farming, etc. It is proposed to cover as many PAFs as possible for this kind of training. Efforts would be taken to conduct these programmes at village/panchayat level so as to ensure maximum participation.
14. With the help of an experienced NGO and financial assistance from banks, PAFs shall be helped to form SHGs of 10-20 members each. Formation of appropriate type of cottage industries can also be encouraged through such groups. This may include manufacturing of herbal products, vegetable gardening, paper bags, etc. NHPC shall provide one time grant of Rs. 2 lacs as seed money to each SHG for such activities.
15. The project authority would contribute towards upgradation of the existing nearest ITI in the state or opening of a new ITI in the project area so that local students including the wards of PAFs can avail the benefit.

6.8 Additional Measures Proposed for Livelihood Enhancement

I Employment

In addition to the initiatives for skill development in the EMP, the SIMP recommends putting in appropriate measures to ensure that the maximum proportion of all employment openings in the project is received by the locals from the ten affected GPUs. The most important demand of the community in all consultations was the provision for employment. In the context of employment, the following merits attention:

1. **MoU between NHPC and Govt. of Sikkim:** The MoU between NHPC and Govt. of Sikkim (signed on 1st March 2006) does not provide exclusive reservation of employment to the locals of the affected GPUs of the Teesta Stage IV project,

neither for Executive Cadre posts nor the Class III and IV posts. As per the MoU, the Executive cadre posts during construction phase are to be filled on deputation basis from the Govt. of Sikkim. Even the 50 percent of the Class III and IV posts are to be recruited through the local employment exchange and through the concerned department of Govt. of Sikkim.

2. **RFCTLARR Act, 2013:** The 2013 Act provides three options to the affected families - Choice of Annuity or lump sum of Rs. 5 lakhs or employment. The employment option becomes applicable/mandatory where jobs are created through the project (at a rate not lower than the minimum wages) to at least one member per affected family in the project or arrange for a suitable job in such other project as may be required.
3. **Direct Employment:** The estimated strength of employees in Class-III & IV positions during construction stage of the project is 103. According to the data received from NHPC, a maximum of 52 persons can be recruited from the local area. The vacancies, posts, eligibility, mode of recruitment, remuneration (Gross and Net), Skills/Certification and Age limit for the posts are given in Annexure-XIII.
4. **Jobs during construction phase:** During the construction phase, a peak manpower demand of 2500-3000 persons is expected. Contractors will be hired for various civil works, hydro-mechanical and electro-mechanical works. These contractors shall require workforce for executing the works related to excavation, drilling, blasting, reinforcement, concreting, welding, erection, installation, etc. Large number of highly skilled/semi-skilled/unskilled manpower shall be required for completing these works in a time bound manner. The categories of workforce requirement, though not limited to, but in general comprise of the following:
 - Operators for various plants and machineries.
 - Drivers for equipments and vehicles
 - Helpers for such Operators and drivers
 - Fitters, Mechanics with helpers for proper maintenance of such fleet
 - Storekeepers, store helpers, Data operators for Stores
 - Record management and record keepers
 - Security Staff and security helpers for security and safety
 - Mason, Carpenters, Plumbers, Electricians, welders, etc
 - Foreman, Riggers, Helpers for erection works
 - Stenos, typists, data entry staff, surveyors etc
5. **Jobs during the Operation and Maintenance (O & M) Phase:** The work-wise distribution of O & M works in Teesta V Project along with the approximate number of skilled/semiskilled and unskilled category is given below in Table 6.3. This is indicative of the opportunities that may be expected in the proposed Teesta Stage IV project too

Table 6.3: Distribution of O & M works and Approximate Workforce Engaged in Skilled / Semiskilled and Unskilled Categories in Teesta V Project

S. No.	Work	Numbers (Approx)
1	R&M of electrical installation/power supply network of dam area	37
2	R&M of Main Administrative Office and some divisions	10
3	R&M of left bank road of power house	7
4	Operation & Maintenance of Sewage Treatment Plant (STP)	7
5	R&M of nursery, herbal park etc	27
6	R&M works of hydro-mechanical components of dam	14
7	R&M of Executive/Non-executive Field Hostel	8
8	R&M of water supply system of Samdong Colony	8
9	Collection/Analysis-Hydro-meteorological/instrumentation data	13
10	R&M of dam office dam structure and road at dam complex	18
11	Maintenance of left bank power house colony	5
12	Maintenance of right bank power house colony	12
13	Maintenance power house road	8
14	Maintenance of Administrative Office Building	5
15	R&M of Officers' Club Staff Canteen & Transit Camp	15
16	R&M of VIP Guest House/Transit Camps & Executive Field Hostel	22
17	R&M of mechanical workshop	13
18	Operation of Power House and Switch Gear	35
19	R&M of Hospital	18
20	R&M of Samdong Dispensary	8
21	R&M of switchyard, DG sets and power supply network	17
22	Upkeeping of power house, Switch Gear building area	18
23	Routine mechanical maintenance work	19
24	Routine electrical maintenance work	13
25	R&M works of Finance Division	6
26	R&M works of Central Store	8
27	R&M of water supply system at power house colony	24
28	IT&C related works at Power House and Dam	15
29	R&M of solid waste treatment plant Collection of waste	12
30	R&M of VIP Guest House at Gangtok	18
	Total	440

6. Nature of Petty Contracts Expected during Construction Stage: The petty contracts that can be expected to come up during the construction stage include:

- Construction of roads, footpaths, culverts, bridges, drains, retaining walls, slope protection measures
- Building works
- Terrace development works
- Nallah training works
- Infrastructure works for setting up of colonies
- Dispensaries
- Parks
- Horticulture
- Shopping centres

- Taxi services
- Hiring of vehicles and other small tools and plants
- Services contract for outsourcing of manpower etc.

Recommendations regarding employment of Locals from the Affected GPUs: The landowner families are entitled to employment under the 2013 Act in all cases where jobs are created by the project. Besides 52 direct recruitments, the data provided by NHPC indicates that there will be about 500 openings in the O & M stage for the local population. The construction phase will have a job opening of about 2,500-3,000, a significant proportion of which can be extended to the local people of affected GPUs. Presently the project employs 41 people from nine affected GPUs⁶ and 27 people from the adjoining GPUs. The Study recommends the following with regard to maximizing the benefit of employment opportunities to the population of 10 affected GPUs.

1. The 52 jobs for direct recruitment should be extended to the 275 landowner families from 10 GPUs (plus landowner families, if any under FRA, 2006). The experience clause provided for some of the skilled category may be relaxed to just meeting the educational criteria.
2. Considering the vacancies available and the qualifications, each land owner family may nominate one representative to the post.
3. The final 52 direct posts may be strictly based on merit. NHPC may conduct an examination to select the candidate on merit (with due weightage for performance in the exam and qualification).
4. After selection of direct recruits based on merit, those land owner families who could not get direct employment for any of their members may be provided employment option with the contracting agencies of the project during the construction/operation phase (not lower than the minimum wages provided for any other law). However, after the commissioning of the project, if he/she (one representative of landowner family) could not be provided any other contractual jobs during O&M stage, or if they desire to leave the job at any point of time, they may be offered annuity option of Rs. 2,000/-per month for 20 years per landowner family or one time lump sum payment of Rs. 5 lakhs. This additional benefit may be extended to one nominated member of each landowner family.
5. All efforts must be made to recruit maximum number of people from the ten affected GPUs in both the construction phase and operation phase. Rigid clause should be inserted in the contract mentioning that employment in the skilled/unskilled category may be provided to outsiders only if eligible qualified people do not exist in the 10 affected GPUs of Teesta Project.
6. The nature of jobs during construction phase and O & M phase of the project is given above. This information may be shared with all the affected families and households in the affected GPUs so that they have an understanding of the likely openings and the skill sets that they may have to acquire for being eligible for the posts.

⁶This includes Hee Gyathang(1), Barfok Lingdong (3), Gor-Taryang (14), Namok Sawyem (5), Passingdang Safo (6), Ramthang Tanyek (3), Ringhim Nampatam (4), Singhik Sentam (1), Tingchim-Chandey (4)

7. NHPC may promptly start a special drive for need based skill training in the affected GPUs. All affected landowner families may be allowed to nominate two members for the skill building training of their choice. Further, each of the household in the 10 affected GPUs of the affected area (other than landowner families) may also be provided an opportunity to nominate a member for the skill building initiatives.
8. Based on the performance of the trainees, NHPC may also consider appointing few of the locals who are really competent in the regular cadre every year, through the recruitment process.
9. Efforts would also be taken to give preference to locals of affected GPUs while allotting Petty Contracts during construction stage. Special workshops for e-tendering of petty contracts may be organized in all affected GPUs. The other areas where households from the 10 GPUs may be provided job opportunities include running of project canteens, supply of dairy products, opening stores in shopping complexes, hiring of vehicles, etc.
10. Given that more than 100 locals have been engaged in the Indian Reserve Battalion for project security and as Home guards, such opportunities may be extended to Teesta Stage IV project too.
11. There are specific recommendations of the Study regarding strengthening NHPC's existing Environmental Cell by recruiting staff from the affected GPUs on outsourced basis (not lower than the minimum wages provided for any other law). These include one Social Development Officer, two PR Officers, two officers for the Public Information Centre, 10 Community Liaison Officers, etc.

II Development of Tourism

A major demand raised by the affected communities during the consultation phase was additional compensation for keeping the land vacant in anticipation of the project. An assessment of the claim revealed that it was not only the proposed area for acquisition but the entire area which has witnessed a vast decline in cultivated area/production during the last decade. For a project to be called favourable, it must provide avenues for sustainable development and growth. The Study recognizes that there is a need to address this issue more holistically. An important initiative in this regard would be the promotion of tourism in the area. The Study proposes the following in this regard.

(1) Reservoir Based Tourism Activities

Lying between Gangtok/Siliguri and Lachen/Lachung, Mangan (the district Head Quarters of North Sikkim District) holds tremendous potential as a tourism axis of the region. The road from Mangan goes to Chungthang and then bifurcates leading to the Lachen valley on the left and the Lachung valley on the right. The tourists move to Thangu/Gurudongmar Lake from Lachen valley and to Yumthang Valley from Lachung.

Owing to paucity of local attractions, Mangan and the vicinity areas are unable to exploit its strategic location. The reservoir of the Teesta IV project, once built, could serve as a major tourist spot and attract tourists to the area. Reservoir created by the project can also provide facilities for water sports, and can by itself become a

standalone tourist attraction, besides attracting the tourists travelling to Lachung/Lachen Valleys for a stopover. The following facilities are proposed for infrastructure development at Zimchung Block (reservoir area).

- Boat jetty with leisure activities such as cruise ride, water scooter, boating, etc.
- Dam Complex Building which could exhibit hydro power generation models, culture and tradition, flora and fauna in the area, historical importance of Dzongu, details of home-stay facilities in the left and right Bank.
- Canteen serving local Sikkimese food
- View Points in nearby areas with panoramic view of entire area.

Alternatively, NHPC may finance another artificial area near the reservoir with the above facilities water sports activities near to the reservoir. The above initiative, if successfully implemented has the potential of attracting tourists and generating secondary employment opportunities in the area. While the funding can be provided by NHPC, the activities can be undertaken by the Sikkim Tourism Development Corporation. The following is suggested for operationalisation of the initiative.

Institutional Arrangements

1. A District level Committee headed by the District Collector may be set up with the following Members:
 - Superintendent of Police (or Representative)
 - Representative of Sikkim Tourism Development Corporation (STDC)
 - Representative of NHPC (Head of the Project or Deputed by him)
 - Other Experts
2. The STDC may be authorized to operate the facilities.
3. Private operators may also be allowed through a transparent selection process; the STDC may provide a standard bid document along with other terms and conditions.
4. NHPC may issue the Do's and Don'ts including all safety measures that should be taken with display of sign boards at appropriate places. This list is to be rigorously followed by the operators. This would also include precautionary measures on reservoir water fluctuations, timings, measures to prevent pollution and quality of the reservoir through boating/tourism related activities etc. Punitive action can be proposed against violators.
5. The officials of NHPC should have the right to ensure that the operators are not violating the standard operating procedures.
6. In case of any damage or mishap, the operators will be held responsible.

Financing the Initiative:

NHPC may finance the initial infrastructure development concerning the proposed initiatives. A Tourism Fund will be set up with contributions from the operators and through revenues flowing from the tourism initiatives. The fund would be utilized in meeting the requirements of maintenance and infrastructure development.

(2) Boosting Tourism Potential on the Right Bank - Branding Historical Legacies

Dzongu is a historically renowned region. This can be easily used as a basis to develop branding strategies for promoting tourism in the area. The specific initiatives that will provide a boost to the tourism sector in Dzongu area are already provided in the DIPDP. Some of the initiatives include construction of – (i) A museum at Hee-Gyathang for preservation of tradition and culture of Lepcha community; (ii) A Statue of the Lepchas' guardian deity *Thung Munsolong*; (iii) Welcome traditional gates at the entry points of Dzongu; and (iv) Development of the natural lake at Gyathang as a tourist spot; (v) Refurbishment of the Gompas and development of signages and display boards showing Tourist Area Maps and documentation on places of interest at the location. The cost for financing the plan will be met by NHPC and provided in the budget. The additional demand put forth by the landowners during public hearing is discussed under the DIPDP. The SIMP recommends a lump sum amount of 4 crores for the purpose.

III Local Area Development Fund (LADF)

According to the Government of India's Hydro Policy, 2008, one percent free power after commissioning of the hydro power projects shall be earmarked for the Local Area Development Fund (LADF). The objective of this progressive provision is to provide a regular stream of revenue for income generation, welfare schemes and infrastructural development in the area on a sustained basis over the life of the project.

Hydro projects have several social and environmental impacts as discussed in the Study. Beyond the Environment Management Plan and R&R Plan, there should be continuing funding support from the project to accrue visible benefits to the local communities in the project area. These benefits should accrue not just to the landowners but also to the entire community in the affected area. Such a benefit sharing mechanism would make the communities in the entire project-affected area partners in the development process. The Study suggests the following for institutionalization and implementation of the LADF. The necessary steps have to be taken by the State Government.

Institutionalization of LADF

1. NHPC shall contribute one percent free power for LADF to the Govt. of Sikkim.
2. The additional free power above 12 percent will be a pass through in tariff.
3. The amount equivalent to average net realization per unit will be multiplied by the number of units for which one percent is to be paid.
4. The average price per unit may be worked on the basis of net proceeds of free power sale (by the Government of Sikkim) divided by the total number of units.
5. It would be progressive if the Govt. of Sikkim can also contribute an additional one percent free power to the LADF from its share of free power.
6. The revenue collected from the sale of such free power may be transferred to the LADF, maintained separately for each of the ten GPUs.

Proposed Parameters for Allocation of Funds

1. The proposed mode of distribution of LADF among the ten GPUs is given below:
 - (i) 80 percent equally among all GPUs
 - (ii) 20 percent to the project affected wards in each GPU. This amount will be in addition to the amount received by the affected wards under (i)
2. The project affected wards may include the area where the actual project components lie including submergence area, muck dumping area, quarry area, all other project infrastructure including roads, project township and also land above underground components.

Administration of LADF

1. A State Level Monitoring Committee headed by the Principal Secretary (Power) may be constituted to monitor the implementation of LADF as well as the progress of works in the affected GPUs.
2. The LADF may be administered by a Local Area Development Committee under the supervision and control of the District Collector
3. The proposed composition of the LADC is given below:
 - District Collector – Chairman of the Committee
 - Members
 - ✓ SDM of Mangan and Dzongu Sub Divisions
 - ✓ Presidents of GPUs-Members
 - ✓ Panchayat Members of Affected Wards–Members
 - ✓ Representative of Project Developer
 - ✓ Representative(s) of Affected Landowners
4. The Members may invite any other Expert/Community Representative to be a temporary/permanent Member of the LADC

Utilization of LADF

The following is proposed for utilization of funds from the LADF.

1. The LADF shall be made use of for (economic/social) infrastructure development in the ten affected GPUs.
2. Two or more GPUs may be allowed to come together by pooling their respective funds for a comprehensive scheme benefiting all the GPUs. Two or more Panchayats can pool their funds and plan bigger sustainable projects.
3. Each of the concerned Panchayats may be informed about the tentative amount that will be available for each project-affected Panchayats.
4. A comprehensive annual shelf of projects for the entire amount may be prepared by the concerned Panchayats and approved by the Gram Sabha.
5. GPUs may compulsorily constitute Gram Sabhas for approval of the schemes proposed.
6. The Annual plan thus approved by each Gram Panchayat may be sent to the District Collector for his approval.
7. At the outset, the Chairman of the State Monitoring Committee may inform the District Collector about the amount that would be transferred to LADF.

8. The District Collector will hold a meeting of the LADC to prepare the shelf of schemes as per the allocation expected by each of the GPU and Project-Affected Wards within the GPU.

IV Corporate Social Responsibility (CSR)

The SIMP reflects the nature of impacts on the community and environment. The community and social development plan along with the special plan developed for the Dzongu region have proposed several measures for holistic development of the whole area. Some of these interventions, particularly relating to education and health have to be provided from the CSR budget. Integrating CSR for the affected communities and those in the periphery area of the project is extremely important.

The stakeholder consultation analysis involving women groups of landowner families revealed that Women SHGs have been functioning in the affected GPUs with a major purpose of providing loans to women. A large section of productive loans are allocated for vegetable farming, piggery and poultry activities. But when it comes to selling their products, they suffer due to inefficient markets. Moreover, since the vegetables are grown on a small scale, women SHGs find it more difficult in finding established markets. The development of agricultural marketing infrastructure is, thus, a prerequisite for improving agricultural marketing efficiency in the area. This can be realised by utilizing CSR funds of NHPC towards setting up modern terminal markets, agri-business centres, renovation of rural hats and on farm primary processing centres, market shed, storage facility, etc.

In addition, the consultation meetings held with the medical officers and other personnels unveiled a number of issues in various PHCs and HCs which require immediate remedial measures. Some of them include provision of adequate infrastructure for dental care, deployment/recruitment of additional nursing staff, supplying adequate stock of medicines, improving hygiene, etc. Wherever the State Govt. has financial constraints in meeting the immediate remedial measures, CSR fund can be spend independently or in convergence with the public departments.

It is recommended that NHPC commits at least 4 crores annually towards the CSR expenditure in the ten affected GPUs of Teesta Stage IV Project. The Study recommends that the LADC proposed for implementation of the LADF may be constituted at the outset and be provided with the additional mandate of approving the shelf of projects to be implemented through CSR funds in each GPU.

6.9 Entitlement Matrix**Table: 6.4 Entitlement Matrix**

S. No.	Type of Loss	Applicability	Entitlements	Total Units
Project Affected Family (Title-holders)				
1	Loss of private land (Title holder Families)	Landowner family	Compensation for land (as per RFCTLARR Act, 2013)	290*
		R & R family units	Choice of annuity of Rs 2000 per month per family for 20 years (with indexation to consumer price index for agricultural labour from January 2014) or one-time payment of Rupees 5 lakhs per affected family to all affected families.	787
		Same as above	Rehabilitation allowance @ Rs 50,000/	787**
		Land Owner families	Land development assistance @ Rs. 20,000/- (EMP)	275***
		Land Owner families	Seeds, Pesticides & Fertilizer subsidy @ Rs 15,000/- (EMP)	275
		Land Owner families –Small/medium/largefarmers after acquisition	Additional Rehabilitation assistance @ Rs. 75,000/- (EMP)	TBV
Project Displaced Family (Title-holders)				
2	Loss of Land and Private Residential Structure (Titleholders)	Landowner families	Compensation for land/structure as provided above	7
		R & R family units	House (IAY norms) or Rs. 1.3 Lakhs. For those choosing for the resettlement option, access to the mandatory facilities prescribed in the Third Schedule of 2013 Act	15
		Same as above	Employment/Annuity of Rs 2000 per month per family for 20 years/One-time payment of Rs.5 lakhs	15
		Same as above	Transportation Cost for PDF's: Rs 50,000/-	15
		Same as above	Resettlement allowance of Rs 50,000/-	15
		Same as above	Subsistence grant of Rs. 36000 for each affected family.	15
		Same as above	Assistance of Rs. 25,000 for cattle shed	4
		Same as above	Assistance of Rs. 25,000 for petty shop	2
		Land Owner families	Land development assistance (EMP)- Rs. 20,000/-	7
		Same as above	Seeds, pesticides & fertilizer subsidy (EMP) – Rs 15,000/-	7

S. No.	Type of Loss	Applicability	Entitlements	Total Units
Non-Titleholder Families Residing in Affected Area				
3	Project Affected Non-Titleholder Family (Indian origin)- Losing livelihood	Non-titleholder families staying cultivating in the affected area	Compensation for Structure/Crops	3****
		R & R family unit (2013 Act)	IAY House/Rs. 1.3 lakhs as housing grant	10
		Same as above	Choice of annuity of Rs 2000 per month per family for 20 years (with indexation to consumer price index for agricultural labour from January 2014)/One-time payment of Rs. 5 lakhs.	10
		Same as above	Assistance of Rs. 25,000 for each affected family having cattle shed or petty shop in the affected area.	2
		Same as above	Transportation Cost for PDF's: Rs 50,000/-	10
		Same as above	Resettlement allowance of Rs 50,000/-	10
		Same as above	Subsistence grant of Rs. 36000 for each affected family.	10
		Tenant families (EMP)	Marriage grant of Rs. 10,000-dependent daughter/sister	TBV
4	Non-titleholders (Indian origin) losing self constructed house	Resident families staying under one roof in affected area	Compensation for Structure (if constructed by tenants)	22
		Same as above	Monetary equivalent of IAY i.e.1.3 lakhs	22
		Same as above	Transportation Grant of Rs, 50,000/-.	22
5	Non-titleholders (Indian citizens) Residing in owner-constructed houses	Resident families staying under one roof in the affected area	Rental allowance at Rs.3,000/- per month for six months @ 18000/-.	10
		Same as above	Transportation Grant of Rs, 50,000/-	10
6	Non titleholders of Nepali Origin losing self constructed house	Resident families staying under one roof in the affected area	Compensation for structure	27
		Same as above	Transportation Grant of Rs, 50,000/-	27

S. No.	Type of Loss	Applicability	Entitlements	Total Units
7	Non titleholders of Nepali Origin staying in owner constructed house	Resident families staying under one roof in affected area	Transportation Grant of Rs, 50,000/-	14
8	Encroachers /Squatters on Govt. Land	Resident families staying under one roof in affected area	Compensation to owners for structure Transportation Grant of Rs, 50,000/-	7
9	Landless after Acquisition	Landowner Families (EMP)	Land for land if government land is available (Actuals subject to one ha of irrigated land/2 ha of unirrigated land) OR Additional Compensation (actuals subject to maximum of 1 ha) @ 12 lakhs per ha (EMP)	9/ 12.08 ha
		Same as above	Additional Rehabilitation @ 100,000 (EMP)	9
		Same as above	Stamp duty and registration charges if landowners purchase land elsewhere (EMP)	9
		As applicable	Marriage grant of Rs. 10,000-dependent daughter/sister (EMP)	TBV
10	Marginal Landowner after Acquisition	Landowner Families (EMP)	Land for land if government land is available (Actuals subject to one ha of irrigated land/2 ha of unirrigated land) OR Additional Compensation (actuals subject to maximum of 1 ha) 12 lakhs per ha	55/ 13.35 ha
		Same as above	Additional Rehabilitation@75,000 (EMP)	55
		Same as above	Stamp duty and registration charges if landowners purchase land	55
		Same as above	Marriage grant of Rs. 10,000-dependent daughter/sister (EMP)	
11	Asset less Members of landowner families	Landowner Families (EMP)	Subsistence Grant of Rs. 30,000 to the following: i. Widowed daughters/Sisters ii. Unmarried daughter >30 yrs iii. Sons more than 25 not owning land / house and not employed	TBV

S. No.	Type of Loss	Applicability	Entitlements	Total Units
12	Women-Headed Affected Families	Landowner families / Tenant Families Including Nepali Citizens	<ul style="list-style-type: none"> • Additional rehabilitation assistance of Rs. 75,000 • Priority in skill-building, self employment opportunities 	7
13	Senior Citizens (Above 70 and 80)	Landowner families	<ul style="list-style-type: none"> • Assistance to include in government pension schemes, if eligible and if not included. • Medical treatment allowance of one lakh to 70 plus senior citizens and 2 lakhs for 80 plus 	70 plus-24 80 plus-14
14	Chronically ill uninsured patients	Affected landowner families	<ul style="list-style-type: none"> • Free healthcare in project Hospital • Reference to specialist hospitals and Sponsorship. 	
15	CPR Dependents	Residents of Affected area	Development of alternate fuel and fodder in affected villages @ Rs 1 lakh per ha for planting of fuel/fodder Provide access (if hindered) to nearby khasmal lands Distribution of LPG connections along with gas stoves to all the affected families (including those in areas without access to khasmal land).	92
16	Irrigation Support	Affected landowner families	Rs Two Lakhs for a group of 5 PAFs for Irrigation Support to 50 Groups	
17	Medical help with Micro-Health Insurance			
18	Scholarship for PAF's Children			

*Expired landowners (25% of total): Land records have to be updated (legal heirs)

**Cut-off date: Date of Preliminary Notification

*** Considering NHPC's commitment in the EMP

**** The citizen ship status of one of the households require further verification

TBV: To be verified

6.10 Grievance Redressal Mechanism (GRM)

Grievance Redressal Mechanism (GRM) is an important component of any developmental project, considering the diversity of the stakeholders involved and the likelihood of conflict of interest. The 2013 Act does not include the provision of a GRM apart from the LARR Authority as the Dispute Resolution body. The LARR Authority is also not mandated to address procedural/general issues in land acquisition. The reference under Section 64 is confined to objections relating to the measurement of land, the amount of compensation, the person to whom it is payable, the rights of R & R or the apportionment of the compensation among the person interested. Thus, an effective and functioning GRM can go a long way in addressing their issues relating to the SIMP implementation in a hassle free manner and without the need to take legal recourse. The GRM should be so designed so as to provide provide a time-bound and transparent mechanism to voice and resolve social and environmental concerns related to the project. The proposed institutional framework and functioning of the Grievance Redressal Mechanism is presented in Figure 6.1.

The following steps may be taken to promote bring about transparency and address grievances effectively in the project:

1. Public Information Centres (PIC)

Two PICs, one each on the left bank and on the right bank may be established at the time of preliminary notification. The PICs may continue to function till the implementation of the R & R plan/community and social development plan. The PICs should be equipped with a staff each to clarify doubts/register their grievances. The PICs should also have all project relevant documents including R & R plan and entitlements of the affected families and information leaflets on the grievance procedures. The R&R staff of the project will be available at the PICs for interacting with PAFs.

2. Two-Stage Grievance Redressal Mechanism

A two-stage GRM is proposed for Teesta Stage IV project. There are two Monitoring Committees proposed on each bank with community participation to deal with implementation of the DIPDP/Community and Social Development Plan. These are the DAMC and LBMC. These Committees, each having additional members representing the Wards in which the labour camps/muck disposal sites are planned is also proposed to function as Stage II GRC, with the District Collector as the Chairperson. Besides the issue based GRCs, there is also a general GRC proposed for grievances relating to all other mitigation measures proposed in the SIMP. The constitution of Stage I and Stage II GRCs are given below in Table 6.5.

The Committees headed by the DC may meet twice every month (if there are pending, registered grievances), determine the merit of each grievance, and resolve grievances within specified time. The GRCs may continue to function throughout the project duration.

Table 6.5: Proposed Stage I & II Grievance Redressal Committees

Phase / Category	Stage I (Project GRC)	Stage II GRC (Project Monitoring Committees)
Labour Influx	<ul style="list-style-type: none"> Chairperson-Head of the Project(HOP), NHPC Members, Project Specialised Cell 	Chairperson: District Collector Members: LBMC (Labour Influx)
Muck Disposal		Chairperson: District Collector Members: LBMC (Muck Disposal)
Dzongu Indigenous Plan		Chairperson: District Collector Members: DAMC
Compensation/R & R All Other Mitigation Measures Proposed in SIMP		Chairperson: District Collector Members: <ul style="list-style-type: none"> SDM, Mangan/SDM Dzongu Eminent Citizen/Experts nominated by Chairperson Chairpersons of the Panchayats of affected GPUs or their nominees including one Women Representative. Representatives of Affected Landowners HOP/Representative of NHPC

Timeline: To enhance the communication between the community and the authorities, timely responsiveness to their grievances should be accorded primary importance.

Stage I GRC: The grievances should be resolved in a week's time. If unresolved within the period, the grievance will be scaled up to the Stage II GRC.

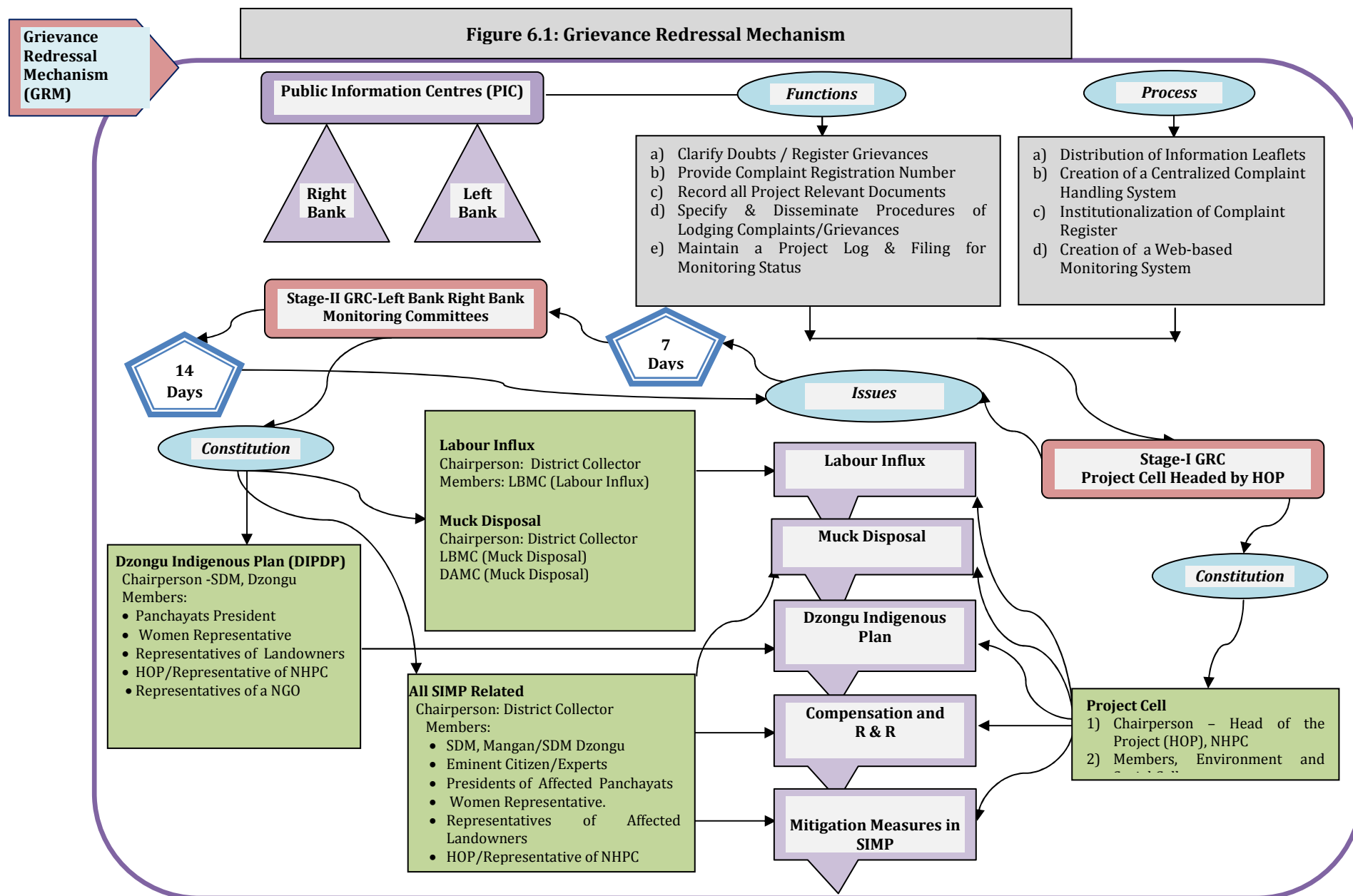
Stage II GRC: The grievances should be resolved within a fortnight.

Process:

- The procedures to lodge complaints/grievances should be clearly specified and disseminated among the affected people. This should also be done through distribution of information leaflets with all the relevant details (also including the dedicated email/telephone number of the Stage I and Stage II GRCs), displays at prominent places in the affected areas, online information through company/district administration website and communications through Project Cell.
- The community may be provided with multiple avenues to air their grievances.
 - PICs
 - Complaints/suggestion boxes at PICs/Project Office
 - Complaints to the Project Cell of NHPC
 - Complaints to the GRCs for respective nature of grievances
- A centralized complaint handling system and a well established Management Information System should be developed by NHPC. This should include developing a database and maintaining a project log and filing to monitor status of the follow up of each received complaints. The documentation of the nature of grievance, name of the complainant, date of receipt of the complaint, location of the

problem area etc., and how the problem was resolved will be the responsibility of the designated Officer at the Project.

4. The PIC is the first point of contact for the community and the complaints received should be forwarded to the Project Cell to collate information.
5. The complaint registers must be institutionalized at the Project Office. All complaints received by the concerned office may be entered into this register.
6. The affected persons should be given a complaint registration number.
7. A web based monitoring system may also be developed by NHPC that can enable the online tracking of complaints by the complainants.
8. The Project Head shall monitor the disposal of complaints received and ensure that the incoming grievances or complaints are responded within a week.



6.11 Monitoring and Evaluation

Monitoring of the implementation of the measures proposed in the EMP/SIMP aims at verifying if the project activities have been effectively completed in respect of the quantity, quality and timeliness. It also helps us to understand whether and how well these activities are achieving the stated goal and purpose of the plan. In other words, the process involves a systematic and continuous collection and analysis of information about progress of project/implementation of SIMP/R & R Plan to enable timely decisions for corrections.

According to the 2013 Act, where land proposed to be acquired is equal to or more than one hundred acres, the appropriate Government has to constitute a Committee under the chairmanship of the Collector to be called the Rehabilitation and Resettlement Committee, to monitor and review the progress of implementation of the Rehabilitation and Resettlement scheme and to carry out post-implementation social audits in consultation with the Gram Sabha in rural areas and municipality in urban areas.

As discussed in the respective sections, the Study has proposed additional institutional arrangements for monitoring of specific issues relating to EMP implementation that were flagged as extremely critical by the community. The issue based Monitoring Committees (Labour Influx and Muck Disposal) are proposed with community participation and may be constituted before the construction phase. The R & R Committee may be constituted at the time of issuance of preliminary notification. Table 6.6 shows the proposed monitoring arrangements and time for the Constitution of the Committees including the mandated mechanism laid out in the 2013 Act.

Table 6.6: Proposed Monitoring Arrangements

Cause	Monitoring Arrangements Proposed
Implementation of Mitigation Measures Proposed in the SIMP (Excluding Compensation/R & R) Timing: Issuance of Preliminary Notification/Declaration	Left Bank: LBMC Chairperson: SDM, Mangan <ul style="list-style-type: none"> Chairpersons of the Panchayats of the affected GPUs/Nominees. Expert(s) nominated by Chairperson Representatives of Landowners from the Area (to be appointed by the Chairperson) Women Representative from affected GPUs HOP/Representative of NHPC Right Bank: DAMC Chairperson -SDM, Dzongu <ul style="list-style-type: none"> Chairpersons of the Panchayats of the affected GPUs/Nominees Expert(s) nominated by Chairperson Representatives of Affected Landowners Women Representative from affected GPUs HOP/Representative of NHPC Representatives of a NGO actively working in Dzongu

Cause	Monitoring Arrangements Proposed
<p>Issues relating to Labour Influx</p> <p>Timing: Before Construction Phase</p>	<p>LBMC with Representation of Ward Members Chairperson – SDM, Mangan Members:</p> <ul style="list-style-type: none"> • SDM, Mangan as the Chairperson • Ward Members of the respective wards where the labour camps are proposed • Representatives of Landowners from the Area (to be appointed by the Chairperson) • Women Representative of affected GPUs • Representative of NHPC • SDM, Dzongu as a Permanent Invitee to reflect ground level issues in Dzongu, if any.
<p>Issues relating to Muck Disposal</p> <p>Timing: Before Construction Phase</p>	<p>LBMC/DAMC with Representation of Ward Members Chairperson – SDM, Mangan/SDM Dzongu Members:</p> <ul style="list-style-type: none"> • Ward Members of wards where the disposal sites are proposed • Representatives of Landowners from the Area (to be appointed by the Chairperson) • Representative of NHPC
<p>Issues relating to Compensation/R & R</p> <p>Timing: Issuance of Preliminary Notification/Declaration</p> <p>Mandatory under RFCTLARR Act, 2013</p>	<p>R & R Committee (As provided under RFCTLARR Act, 2013)</p> <ol style="list-style-type: none"> Representative of women residing in the affected area; Representative each of the Scheduled Castes and the Scheduled Tribe residing in the affected area Representative of a voluntary organisation working in the area; Representative of a scheduled bank; Land Acquisition Officer of the project; Chairpersons of the Panchayats or municipalities located in the affected area or their nominees; Chairperson of the District Planning Committee or his nominee Member of Parliament and Member of the Legislative Assembly of the concerned area or their nominees; Representative of the Requiring Body; and Administrator for Rehabilitation and Resettlement as the Member-Convener.

The concurrent monitoring will be focused on adherence to norms by the contractor, the progress in compensation and R & R payments, implementation of community and social development schemes, grievances handled, timelines prescribed etc. It is important to have a list of objectively verifiable indicators for monitoring the progress of the project. The indicators are set of targets prepared at project design against which project progress or otherwise can be measured. The broad indicators for monitoring the project can be summarized as follows:

- List of mandatory requirements specified with regard to social/community issues in the contractual agreement and adherence/divergences, if any.

- List of mandatory requirements for disclosure and publication norms of Compensation/R & R plan as per 2013 Act and R & R Scheme.
- Number of affected families provided compensation/R & R in accordance with the R & R plan approved by Commissioner R & R.
- Number of people/households physically resettled (including those opting self settlement) and resettlement assistance provided
- Number of Vulnerable PAPs benefited and issues if any in implementation.
- Number of additional beneficiaries and proportion of benefits disbursed.
- Timing of implemented activities in comparison to the finalized schedule.
- Implementation progress (financial) and number of beneficiaries for livelihood restoration measures-skill building, capacity building and other initiatives proposed under the SIMP.
- Performance of the GRC in terms of nature and quantum of grievances received, cases settled and pending, adherence to timelines for settlement of Stage I and Stage II GRCs, number of GRC meetings, and number of court cases.

External Monitoring/Evaluation: Given the nature of the project and complexity, the Study also recommends engaging of an independent agency to undertake external monitoring of the project implementation. This may begin with the approval of the R & R plan to the implementation of the R & R plan/Community and Social development plan. The External Monitor will assess if the mitigation measures proposed in the SIMP/R & R plan are being implemented as provided for and also suggest recommendations for improvement. Besides periodic monitoring, it is also important to conduct impact evaluation on a sample basis during mid-term and project completion. The impact evaluation will provide an assessment of the status of affected community and the affected area after the implementation of the mitigation measures and community development initiatives proposed in the SIMP.

6.12 Institutional Arrangements for Implementation of SIMP

The RFCTLARR Act provides for several new institutions. For the implementation of R & R, this includes the Administrator for the formulation, execution & monitoring of R & R; the Commissioner (R & R) for approving the R & R Scheme and ensuring their proper implementation through conduct of the post implementation social audit; R&R committee to monitor and review progress of R & R scheme for projects involving acquisition of more than 100 acres of land; National Monitoring Committee/State Monitoring Committees for reviewing and monitoring the implementation of R & R schemes at state and central level. The legislation also provides for the establishment of the LARR Authority for disposal of disputes relating to LARR within six months, barring the jurisdiction of civil courts (other than High Courts under article 226 or 227 of the constitution).

A web-based monitoring tool may be developed for effective monitoring and implementation of R & R. A separate budget is provided for the same.

Figure 6.2: Institutional Set up for Monitoring

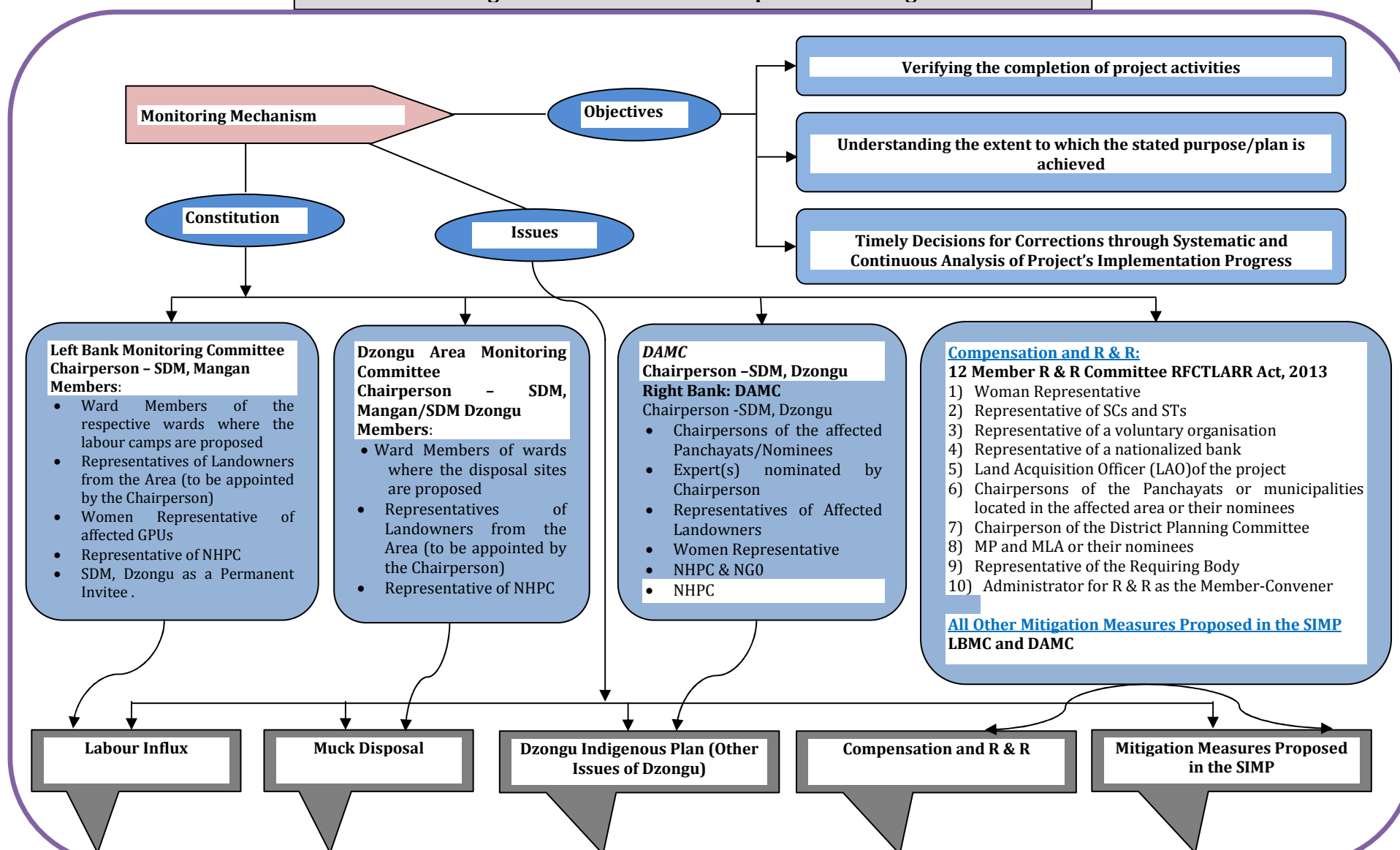
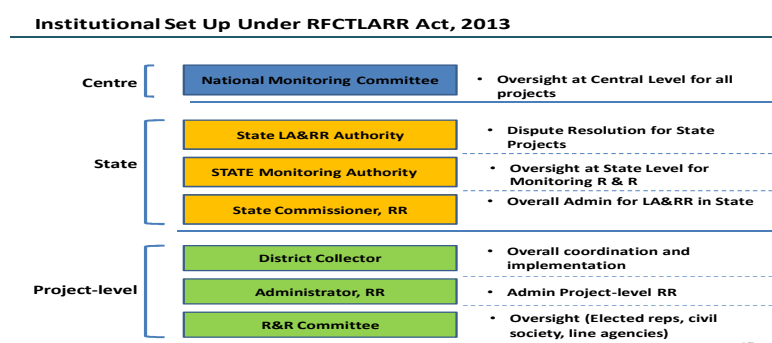


Figure 6.3: Institutional set up under the RFCTLARR Act, 2013

Unlike earlier where the implementation of the R & R plan was managed by the requiring bodies themselves, the new legislation does not specify the role to be played by the requiring bodies except for the timely deposit of the required funds. Though the role is not explicitly mentioned, the effective and timely implementation of the R & R and the post-acquisition livelihood promotion activities will require deep commitment and involvement of the project authorities. Table 6.7 reflects the important initiatives planned under the project EMP/SIMP that would require sustained handholding.

Table 6.7: Initiatives Planned Under the Project EMP/SIMP and Proposed Responsibilities of Environment and Social Management Cell (ESMC)

Nature of Work	Responsibility of ESMC
Stakeholder Consultation, and Engagement:	Continuous engagement with the affected communities and stakeholder groups and disclose progress with regard to implementation of the SIMP.
Handling Grievances	<p>Administer NHPCs project GRC effectively (preparing appropriate disclosure mechanisms recording grievances, providing acknowledgements consulting persons/departments within the organization, consistent follow up, tracking progress, organizing meetings of GRCs, providing feedback to the complainants etc).</p> <p>The representative of NHPC is also Member of Monitoring/Grievance Committees for addressing environment issues besides Stage II GRC and R & R Committee of the project. These would require regular field inspections, apprising the Head of the Project, issuing directions to the Contractor, etc.</p>
Support for R & R Implementation	Support to District administration in planning and implementation of land acquisition and R & R activities in the Project. R & R has to be completed before taking possession of land. The Administrator appointed for conducting a census, formulating the R & R plan, and organizing public hearing would also require appropriate support at every stage. There are about 83 families in the affected area. This would require handling grievances and providing support for peaceful relocation.

Nature of Work	Responsibility of ESMC
Timely Implementation of Development Works	Ensuring availability of budget, development of implementation plan including awarding of works for R & R and Community & Social Development Plan.
Monitoring Infrastructure Development Initiatives in the EMP/SIMP	Liasioning with various agencies for developing the infrastructure as laid in the EMP and included in the SIMP above. This includes construction of footpaths, bus stops, water supply facilities for the villages, development of community welfare centres, etc.
Successful Implementation of Economic Development Initiatives in the EMP/SIMP	The important initiatives envisaged under the EMP/SIMP that require astute planning and handholding include: Strengthening internal capacity and external support (implementation support) for the following: <ul style="list-style-type: none"> • Capacity building program of PAFs/SHGs for self employment • Vocational training through ITIs • Provision of seed money to SHG and continuous handholding and support for success of the initiatives • Conducting awareness programs on???
CSR	Integrate CSR with other mitigation measures for holistic development of Study Area.

Most projects see poor implementation of the mitigation plans because of inadequate understanding of the enormity of the tasks/activities that require to be undertaken to achieve success in the planned initiatives. For instance, provision of seed money to the SHGs (envisaged under the project EMP) without sustained handholding support cannot be expected to make any impact.

Where government capacity and resources are limited, the project may be required to assume and/or support three key roles: advocacy, facilitation, and capacity building. These activities may need to be coordinated at various levels. The response of public agencies in implementation of project specific rehabilitation plans has generally not delivered the desired results due to lack of a holistic approach as well as inadequate capacity in administrative structures. Strengthening the internal capacity is vital, particularly given the infrastructural constraints faced by the district administration. This is critical under the 2013 Act, where the completion of R & R is mandatory before communities can be displaced. The following is proposed with regard to the institutional arrangements for implementation of the mitigation plans proposed in the SIMP.

1. **Environment and Social Management Cell (ESMC):** The Study recommends strengthening of the Project Environment Cell in NHPC and naming it as 'Environment and Social Management Cell (ESMC)'. There are a plethora of initiatives planned under the SIMP.
2. **Strengthening ESMC and Implementation Arrangements:** The existing team at NHPC are entrusted multiple responsibilities. The capacity of the ESMC has to be appropriately strengthened and each officer would have to be entrusted focused responsibilities for successful implementation of the mitigation plans. The following is proposed in this regard:

- **Social Development Officer (SDO):** There is an urgent need to recruit a full time SDO on outsourced basis with background of social science (Social Work or Sociology) to supervise and monitor overall activities of R & R/Community and Social Management Plan. The SDO will report to the Head of the Project on all aspects of implementation of SIMP. He will supervise and provide direction/instruction to the officers and support staff in ESMC.
- **Grievance Officer:** Handling grievances effectively requires tremendous focused effort. If a staff/team is not fully devoted to handling grievances, it may create conflicting priorities and work load issues. NHPC may deploy an Officer dedicated for the purpose
- **Staffing at PICs and Public Relations Officer:** At least two Officers from each of the Bank may be recruited on outsourced basis as Public Relation Officers (at a wage not less than minimum wage applicable) during the implementation phase of SIMP.
- **Dedicated NGO:** NGOs are increasingly being involved in planning and implementing resettlement programs in infrastructure projects as facilitators and liaison between the affected communities and project proponents. It is, however, important that the selected NGO should be taken on predetermined criteria. Some of the parameters that could be suitably used (additional parameters relevant to the project could be identified and included in assigning scores) as shown in Table 6.8.

Table 6.8: Criteria for Selection of NGO for Implementation of R & R / Community and Social Development Plan

1. Expertise and experience in
(a) Works relating to R&R
(b) Works related to rural development & poverty reduction
(c) Mobilizing communities
(d) undertaking awareness programs and IEC campaigns
2. Experience of working with
(a) government agencies
(b) international agencies
3. Staff of the organization
(a) Female/Male staff ratio
(b) Permanent/Temporary staff ratio
I Technical staff to guide planning & executing civil works
4. Other skills
(a) exposure to the local situation and projects engaged/completed
(b) Expertise in resource planning techniques

NHPC will do well to appoint a good NGO meeting the above requirements. However, there are not many qualified and experienced local NGOs working in the area. Alternatively, NHPC may consider the following:

1. The formation of Stage IV HEP Affected Area Development Committee by the landowners of both left and right banks is a good initiative. Their services both as an entity/qualified individuals can be utilized in a more productive manner in the implementation of SIMP.
2. Livelihood Expert/Community Liaison Officers: In case the services of a good NGO with extensive experience in livelihood promotion issues cannot be recruited, NHPC may consider recruitment of a Livelihood Expert. Also, EMP has proposed entrusting the responsibility of implementation of capacity building of PAFs for self employment opportunities to a representative among the PAFs from each affected village (though a separate budget is not proposed for the same). At least 10 officers called Community Liaison officers may be recruited at minimum wages among qualified people from the project affected area. The members of PAFs with adequate qualifications may be given preference.

6.13 Implementation Schedule

The implementation of SIMP is generally planned as per overall implementation schedule of the project. However, there is an unfinished task relating to implementation of the Scheduled Tribes and Other Forest Dwellers Recognition of Forest Rights Act (FRA), 2006 and other mandatory requirements prescribed for the diversion of forest land. The forest rights holders (whose individual rights are recognized) are to be treated at par with other landowners. The details of forest rights holders whose rights are recognized under the FRA, 2006 were also to be provided in the SIA Report. The implementation schedule is, hence, tentative and subject to modifications depending upon the progress of the pre-project activities mentioned above.

After the above processes are successfully completed, the following important pre-project activities have to be taken up by NHPC.

- Strengthening the Project ESMC and recruiting additional staff
- Establishing Monitoring Mechanisms and GRCs

The formulation of the R & R plan after a door to door census (authenticating the survey particulars provided by the SIA Study) by the Administrator is the next most important step. As mandated by the RFCTLARR Act, 2013, the payment of compensation and R & R has to be completed before the commencement of civil works i.e., during pre-construction phase. The three activities that will, however, be carried throughout the life cycle of the project include consultation/disclosure, monitoring & evaluation and redressal of grievances.

The Implementation Schedule is given in Table 6.8. The SIMP Matrix with impacts at various stages of project cycle, implementation and monitoring arrangements is presented in Table 6.9

Table: 6.9 Implementation Schedule

PROCESS	Months																							
	SIA-PREPARATION TO APPRAISAL							PRILIMINARY NOTIFICATION TO AWARD								COMPENSATION/ R & R PAYMENT					PROJECT CONSTRUCTION			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
SIA Notification-All Mandatory Forms																								
Census/Consultation																								
Preparation of SIA Report																								
Submission of Draft Report																								
Public Hearing																								
Submission of Final Report																								
Appraisal of SIA																								
Strengthening Project Cell																								
Setting up of Monitoring Committees																								
Establishment of GRC																								
Publication of Preliminary Notification																								
Updating of records																								
Joint Measurement Survey																								
Objections																								
Census and Formulation of R & R Plan																								
Public Hearing																								
Publication of Declaration/R & R Scheme																								
Claims to Compensation & R & R																								
Award																								
Compensation Payment																								
R & R Payment																								
Relocation of Families																								
Internal Monitoring																								
External Monitoring																								

6.14 SIMP Matrix

Table 6.10: Social Impacts and Management Measures

S. No	Adverse Impacts	Phase	Action Plan	Responsibility	Monitoring
1	Psychological stress created by the uncertain environment	Pre Construction	<ul style="list-style-type: none"> Monthly meetings to share the progress of the project with representatives of the community. Information about the progress of the project through PIC Transparency measures under RFCTLARR Act, 2013 to be implemented in letter and spirit. Humane involvement with the community and the genuine socio-economic to be proactively addressed on a regular basis. 	ESMC, NHPC PIC Implementation Partner (NGO) District Administration	External Monitor District Administration
2	Drop in productive investment on land that is proposed under acquisition	Pre Construction	Landowners to be considered Livelihood Losers in designing the R & R Plan. Other Livelihood Promotion Activities	Administrator (District Administration)	R & R Committee LBMC, DAMC
3	Social disharmony and inter/intra community conflicts (Right Bank and Left Bank; Within Right Bank between landowners and others)	All Phases	Community from the ten affected GPUs to be consulted on a continuous basis and involved in planning, implementation and monitoring of the SIMP as provided in the Report.	ESMC, NHPC	LBMC, DAMC External Monitor
		Pre Construction	Community Development Plan, Income Restoration Plan and Local Area Development Plan to be transparently communicated to all the members of the community in the ten affected GPUs.	ESMC, NHPC PIC	LBMC, DAMC External Monitor
		Operation Phase	Benefit sharing arrangements (LADF) to be approved and implemented in letter and spirit	State Government District Administration	LADC External Monitor

S. No	Adverse Impacts	Phase	Action Plan	Responsibility	Monitoring
4	Loss of land/structure by titleholders	Pre Construction	Compensation and R & R Benefits as provided in Entitlement Matrix (Table 6.4)	LAO District Collector Administrator	R & R Committee
5	Loss of livelihood (primary source of livelihood dependent on land proposed for acquisition) for the past three years.	Pre Construction	R & R Benefits as provided in Entitlement Matrix (Table 6.4)	Administrator ESMC, NHPC	R & R Committee
6	Loss of residence by those residing in the proposed area of acquisition	Pre Construction	R & R Benefits as provided in Entitlement Matrix (Table 6.4)	Administrator ESMC, NHPC	R & R Committee
7	Loss of access to land (landlocked)	Pre Construction	Provide access to the community through their colony without any inconvenience OR Facilitate purchase of additional plots with access issues (Parameters to be considered provided in the Study Report)	LAO	LBMC, DAMC External Monitor
8	Loss of access to forest resources	Pre Construction	Provide access (if hindered) to nearby khasmal lands Development of alternate fuel and fodder in affected villages Distribution of LPG connections along with gas stoves to all the affected families.	District Collector/Land Acquisition Officer Forest Department Project Authority	LBMC, DAMC R & R Committee
9	Impact on Vulnerable Households including Indigenous people of Dzongu region	Pre Construction All phases	Special provisions for each category as provided in the Entitlement Matrix (Table 6.4)	Administrator ESMC, NHPC	R & R Committee External Monitor

S. No	Adverse Impacts	Phase	Action Plan	Responsibility	Monitoring
10	Physical Displacement and ensuing insecurity (landowners and non-titleholders)	Pre Construction	R & R Benefits as provided in Entitlement Matrix (Table 6.4)	Administrator ESMC, NHPC	R & R Committee
11	Potential for mis-utilisation of monetary compensation-lack of investment opportunities.	Pre Construction	Provision of Investment Advisory Services to the PAFs receiving compensation/Benefits	ESMC, NHPC SHGs	LBMC, DAMC
12	Issues relating to labour influx	Pre Construction Construction	Measures provided in EMP/Additional Measures in SIMP (Details in Report) 1. Planning for maximising engagement of local workforce • Share information about the upcoming opportunities in all the ten affected GPUs. • Prepare a roster of local workers and their skills • Plan training programs for eligible candidates • Provide the list of local candidates to contractors. • Contractors to provide work permits for workers with skills that are unavailable locally. 2. Inclusion of Mitigation Measures relating to Labour Influx in Contractual Agreements (ToR, Bidding Document etc) 3. Reduce Scope for Labour-Community Interface (Develop Code of Conduct, capacity Building, Fuel arrangements to be made by Contractor, Prohibit domestication of animals by labour). 4. Penalty for Non adherence 5. Ensure Effective Grievance Redressal	Contractor ESMC, NHPC	LBMC (Labour Influx) External Monitor

S. No	Adverse Impacts	Phase	Action Plan	Responsibility	Monitoring
			Mechanism, Strict Internal/External Supervision and Monitoring Arrangements		
13	Issues relating to Women Security during construction phase	Construction	<ul style="list-style-type: none"> Physical security to be arranged in the village where labour camps are situated. Rigid permit and security measures in Dzongu area as provided in the DITDP. Contractual provisions on compliance with local security requirements and penalty/cancellation of contracts. 	Contractor ESMC, NHPC	LBMC (Labour Influx) ESMC, NHPC External Monitor
14	Potential disruption to drinking water due to tunnelling	Construction	<ul style="list-style-type: none"> Avoid disturbance to local springs (water sources) Ensure drinking water in case of any disruption 	Construction Engineer Contractor NHPC	LBMC/DAMC External Monitor
15	Damage to houses during Construction	Construction	<ul style="list-style-type: none"> To be decided on a case to case basis by District Level Committee headed by District Collector, Representatives of Community and External Expert. The Committee may be constituted during the pre construction phase. A Lump Sum Fund may be provided by NHPC to be kept at the disposal of the DC. 	District Administration	District Committee headed by DC External Monitor
16	Damage to natural environment due to improper implementation of Muck Disposal Plan	Construction	<ul style="list-style-type: none"> In addition to measures in EMP, enhance community participation in implementation of Muck Disposal Plan 	Construction Engineer Contractor ESMC, NHPC	LBMC/DAMC (Muck Disposal) External Monitor
17	Strain on existing health infrastructure due to increased demand	Construction	<ul style="list-style-type: none"> Develop ancillary health facilities provided in the EMP Strengthen existing PHCs 	NHPC	LBMC DAMC External Monitor
18	Impact on agriculture (dust impacts on crops) and allied activities (movement of livestock) in	Construction	<ul style="list-style-type: none"> NHPC will provide premium for crop insurance in fields in the vicinity of construction sites. Area to be decided by the District Collector led Committee. 	DC led Committee	District Committee headed by DC External Monitor

S. No	Adverse Impacts	Phase	Action Plan	Responsibility	Monitoring
	the vicinity during construction.		<ul style="list-style-type: none"> If crop insurance cannot be implemented, average yield of the surrounding fields to be assessed by DC led Committee and all claims of impacts on crop compensation to be verified and 		
19	Impacts on lands for erection of transmission lines	Construction	<ul style="list-style-type: none"> Appropriate Compensation and R & R as mandated by law 	District Administration	LBMC DAMC External Monitor
20	Reduction in employment opportunities	Operation	<p>Plan Skill Building Plan in line with vacancy requirements for maximum employment to local people of ten affected GPUs</p> <ul style="list-style-type: none"> Nature of jobs during O & M phase of the project may be shared in ten GPUs. All affected landowner families/other households in the 10 affected GPUs may nominate two/one member for the skill training of their choice. NHPC may promptly start a special drive for need based skill training in the affected GPUs. Based on their performance, NHPC may also consider appointing competent locals in the regular cadre every year. Households from the 10 GPUs may be provided job opportunities including running of project canteens, supply of dairy products, opening stores in shopping complexes, hiring of vehicles, etc. Employment opportunity for locals in Indian Reserve Battalion for project security and as Home guards. 	ESMC, NHPC Implementing Partners	LBMC DAMC External Monitor

S. No	Adverse Impacts	Phase	Action Plan	Responsibility	Monitoring
21	Diversion of water for hydro power generation and reduced flow in stretches between diversion structure and tail race.	Operation phase	<ul style="list-style-type: none"> Provision of maintaining minimum recommended flows downstream Installation of flow measuring gauges both electronic and manual measurement basis. 	ESMC, NHPC	District Administration Concerned State Department/ External Expert
22	Health impacts due to water storage and breeding grounds for vector and water borne diseases	Operation phase	<ul style="list-style-type: none"> Regular Health Monitoring for control of water borne diseases vectors and taking up mitigations in EMP Regular Cleaning and maintenance of the area 	ESMC, NHPC	State Health Department

6.15 Budget**Table 6.11: Expenditure Estimate for Implementation of SIMP Including R&R Plan Community/Social Development Works in EMP**

S.No	Particulars	Amount (Rs. lakhs)
I R & R Plan (Surveyed Families) – RFCTLARR Act, 2013 & Additional Measures		
1	PAFs (Titleholders)	4328.50
2	PDFs (Title-holders)	116.40
3	Non Titleholders of Indian Origin (Livelihood Dependents)	77.10
4	Non-Titleholders of Indian Origin (Self Constructed Houses)	39.60
5	Non-Titleholders of Indian Origin (Rented Houses)	6.80
6	Non Titleholders of Nepali Origin	20.50
7	Encroachers/Squatters on Government Land	3.50
8	Vulnerable-Women Headed Households	5.25
9	Vulnerable Households –Old category PAPs	52.00
10	Replacement of CPRs	92.00
	Total	4741.65
R & R Plan Estimate for Non-Surveyed Families		900.00
Contingency		400.00
Total		6041.65
II R & R Plan (EMP)		1412.30
III Community & Social Development Plan in EMP and Additional Measures Proposed		
I	Infrastructure Development	
1	Construction of Footpaths	75.00
2	Bus Stops/ Rain Shelters	50.00
3	Water supply facilities for the villages	100.00
4	Upgradation of infrastructure	125.00
5	Community Welfare Centres	50.00
6	Protection of Cultural Heritage and Old Monuments	50.00
7	Improvement of Namprikdang Mela Ground	200.00

S.No	Particulars	Amount (Rs. lakhs)
8	Motorable road to Dzongu from Ranrang Checkpost	500.00
9	Development of Gyathang Lakes as a Tourist Spot	20.00
10	Modern Computerised Checkposts at Sankalang, Phidang and Rangrang (computers) and Concrete check post building for police personnel at the check posts.	60.00
11	Construction of a Museum at Hee Gyathang	100.00
12	Construction of Statue of the Lepchas guardian deity Thung Munsolong	200.00
13	Construction of Welcome traditional gates at the entry points of Dzongu	21.00
14	Construction of one Public Information Centre Building in each Bank	10.00
14	TOTAL	1561.00
II	Model Village (Link road, footpaths, sanitation system, street light, primary health centre, play ground, community centre/panchayat ghar, afforestation, water pipeline, garbage pits and maintenance during two years)	154.00
III	Economic Development	
1	Capacity Building Programmes	47.00
2	Formation of Self Help Groups (SHGs)	50.00
3	Awareness & LPG Distribution Programme	10.00
Additional Measures Proposed		
4	Tourism Development in Mangan (Zimchung Area)-Reservoir Based Water Sports and related Infrastructure	500.00
5	Dam Complex Cum Exhibition Building	200.00
6	Canteen building	40.00
7	Development of parks, fencing, compound wall etc. in 10 GPUs @10 Lakhs	100.00
8	Development of Signages, Tourist Area Maps, Viewpoints in 10 GPUs	50.00
	Total	997.00
IV	Contribution to ITI in the Project Area	500.00

S.No	Particulars	Amount (Rs. lakhs)
V	Institutional Strengthening for Implementation of SIMP	
1	Additional Staff Proposed in SIMP.	100.00
2	Appointment of NGO	30.00
3	External Agency for Concurrent Monitoring	30.00
4	External Agency for Post Project Evaluation	30.00
5	Software Development for Monitoring R & R and Grievance Database Management	15.00
	Total	205.00
VI	Additional Measures Proposed After Public Hearing	
1	Right Bank (Infrastructure/Tourism Promotion)	400
2	Left Bank (Provision of Crop Insurance, Support to existing SHGs, Concrete Barricades)etc.	400
3	Additional Expenditure for Monitoring (Proposed Committees)	100
4	Construction related Impacts – Damage to Houses in Designated Account with District Administration	500
	Total	1400
	GRAND TOTAL	12270.95

CHAPTER VII**PUBLIC HEARING ON DRAFT SIA STUDY****Chapter Outline****Report on Public Hearing on Draft SIA Study**Date & Venue: 30th June, 2018, Zilla Bhavan, Mangan, North District

Issues raised and Actions Taken

As mandated by Section 5 of the RFCTLARR Act, 2013, a Public hearing was held on 30th June, 2018 at the Zilla Bhavan, Mangan, North district to discuss the draft SIA report and ascertain the views of the affected families.

A comprehensive presentation on the draft SIA Report was made by the Study team from Administrative Staff College of India, Hyderabad. The public hearing that was chaired by Mr. P. W. Lepcha, SDM (HQ), Mangan, saw participation of 210 people consisting of landowners/other affected people. Among them, 60 landowners belonged to the affected Panchayats of Dzongu region. The attendance sheet is attached as Annexure-XIV. The views expressed by the community have not only been recorded but also duly incorporated in the Final SIA Report. The budget has also been accordingly revised. The concerns and suggestions put forth by the affected landowners and other stakeholders along with the action taken are given below.

Issues raised and Actions Taken**1. Involvement of the affected people in the decision making process:**

Mr. Tashi Tongden Lepcha, Affected Landowner, Mangshila: Highlighting the various proposed committees as recommended in the draft SIA report, he suggested that such institutional mechanisms must ensure active involvement of the affected landowners of the ten affected GPUs in the decision making process right from the pre-construction phase of the proposed project.

Action Taken: The suggestion for inclusion of landowners has been duly incorporated in all the Monitoring Committees (Dzongu Area Monitoring Committee and Left Bank Monitoring Committee) as well as LADC (administration of projects under CSR and LADF). The Report has now recommended expanding the role of the LADC to finalise the projects to be implemented through CSR. Additional expenditure for monitoring has also been incorporated.

2. Involvement of women SHGs in planning and execution of CSR activities

Mr. Tashi Tongden Lepcha, Affected Landowner, Mangshila: The absence of local community in the planning and execution process has restricted the benefits of CSR activities undertaken by Teesta Stage-IV. Given that there is over 150 SHGs (most of which are run by women) in the affected GPUs, CSR activities need to aim at providing financial and institutional support to them while also having them directly participate in the process.

Action Taken: The EMP provides for one time grant of Rs. two lakhs as seed money to each Self Help Group formed by PAFs. There is a provision for 25 such PAFs. The Study

had already recommended supporting specific demands raised by the SHGs during the consultation process through CSR funds. The following are the additions made in the report after the public hearing.

- Involvement of the SHGs in Community Engagement Plan has been incorporated in the Report.
- Support to existing SHGs (additional budget recommended).

3. Skill based training to the local youth:

Mr. Tashi Tongden Lepcha, Affected Landowner, Mangshila: There is a need of providing skill based training to the local youth of the affected GPUs as per specific requirements of NHPC.

Action Taken: Yes. The Report has already included this.

4. Up-gradation of existing social infrastructure:

Mr. Dilli Ram Limboo (Vice-President, Mangshila-Tibuk GPU): There is a need for modernising the existing social infrastructure (especially health and educational institutions) instead of establishing newer ones.

Action Taken: The issues faced by PHCs and support measures required were already part of the Report along with the recommendation of utilisation of CSR fund for the purpose. Additional lump sum budget has also been proposed under SIMP for meeting such urgent requirements.

5. Provision of wide-range Insurance coverage:

Mr. Dilli Ram Limboo: Adequate insurance coverage should be provided to the affected land owners towards damage of property, loss of crop, deterioration of health and environment on account of the HE project.

Action Taken: The provision of crop insurance (during the construction phase) of the project has been incorporated in the SIMP. Instead of property insurance, the SIMP has recommended that the damage to houses may be decided on a case to case basis by District Level Committee headed by Collector. Regarding health insurance, the same is extended to all BPL families by the State Government.

6. Stamp duty on registration of land

Mr. Dilli Ram Limboo: Non-imposition of stamp duty on registration of land proposed to be acquired.

Action Taken: It does not apply in case of land acquisition

7. Local Area Development Fund

Mr. Dilli Ram Limboo: There should be an alteration in the existing utilization/expenditure procedure concerning the local area development fund (LADF). He suggested that the fund may directly be transferred to the account of the Gram Panchayat so that it becomes a part of the Panchayat's own source of revenue (OSR).

Action Taken: The Report has already recommended that the revenue collected from the sale of such free power may be transferred to the LADF of each GPU.

8. One project, one rate policy for valuation of land

Mr. Guman Doj Limboo (a project displaced landowner, Mangshila-Tibuk GPU): Equity in compensation rate for all the land proposed to be acquired. He critiqued the idea of making block-rate the basis for determining land value as this would lead to differentiated land valuation.

Action Taken: The Study has recommended that the floor price may be decided by the State Government. The decision regarding 'One Project One Rate' may be decided by the government.

9. Employment and Compensation Benefits

Mr. Dilli Ram Limboo: Employment opportunities generated by NHPC in class-III and class-IV categories should be made available to family members of the affected landowner families on priority followed by other affected persons in the GPU.

Action Taken: The Report has already recommended the same.

Mr. Dawa Tamang, Affected landowner from Tingchim-Chandey: Provide one employment to one member of the affected landowner family. The joint owned landholdings should be considered separately for providing employment. There should be Compensation/R&R provisions to the non-titleholders residing in the affected region irrespective of their place of domicile.

Action Taken:

- It is already mentioned in the Report that all efforts will be made to provide one employment per land owner family at not less than the minimum wage at construction and O and M stages of the project and a lump sum of 5 lakhs in case
- The Study has also recommended a lump sum 5.5 lakhs (R & R Package & Rehabilitation Allowance) or monthly Annuity to every separate family unit.
- Joint holdings where both landowners are alive and members of different families have been considered separately as a family unit.
- The study recommends compensation to whoever has constructed the structure, irrespective of domicile. The R&R provisions recommended, however, vary for families based on their citizenship status or country of origin.

10. Adequate release of water to the downstream of the reservoir

Mr. Nimzang Bhutia (Affected landowner, Swayem GPU): Low levels of water increases heat intensity besides affecting farming and livelihood, adversely affecting the households residing along the bank. Dried up Teesta also makes the adjacent regions more vulnerable to illegal influx.

Action Taken: Though this is a part of the EMP, stress is again given in the SIMP for maintaining minimum recommended flows downstream and installation of flow measuring gauges both electronic and manual measurement basis.

11. Development of tourism and hospitality

Mr. Tashi Ongdup Lepcha (affected landowner, Hee-Gyathang GPU): Several initiatives need to be undertaken to provide further boost to the tourism sector either through launch of new schemes/revamping the existing ones and establishing home stays.

Action Taken: Promotion of Tourism has already been proposed under the Livelihood Promotion Plan in the SIMP. The initiatives proposed are with an objective of promoting cultural tourism through promotion of the rich tradition/legacy of the region. It was felt that support for establishment of home stays will mean benefit to individual households, which may result in further conflicts within the region for disproportionate benefits. However, additional lump sum budget has been proposed for Dzongu after the public hearing. The expenditure from the proposed budget may be made after due consultations with the landowners and community of Dzongu.

12. Scholarship for meritorious students

Mr. Nima Tshering Lepcha (Affected landowner, Lum-Gor-Sangtok GPU). NHPC may introduce a merit scholarship scheme with an objective to provide financial assistance to the meritorious students of the affected region.

Mr. Dilli Ram of Mangshila-Tibuk GPU added that such a scheme is a necessity given that the beneficiaries under the Union Government's Pre-Matric Scholarship are restricted to those belonging to the minority community. Given that Hinduism is the second largest religion followed/practiced in the affected area, a substantive share of the local population is excluded from reaping the benefits of the scheme.

Mr. Dilli Ram also suggested that NHPC may come up with a scholarship scheme in line with the Chief Minister's scholarship programme. He argued that the CM's scholarship is restricted to only 200 students per year (Standard V) of which 40 students are provided with free education in various reputed private schools outside the state of Sikkim whereas the remaining 160 receive same benefits within the state. Those students (belonging to poor families in the affected area) who could not get into the list of the 200 meritorious students may be provided the same benefits under the proposed scheme.

Action Taken: Scholarships have been recommended under DIPDP as well as the EMP. NHPC may fund the scheme under CSR in all the affected GPUs.

13. Electricity

Mr. Dilli Ram Limboo: Explore the possibility of providing free electricity in the affected GPUs or otherwise subsidizing the tariff below the present level for every unit of electricity consumed beyond 100 units.

14. Concrete barricades along the route connecting Dikchu and Mangan:

Mr. Dilli Ram Limboo: The number of accidents due to the absence of barricades along the route connecting Dikchu and Mangan is on the increase. There is a need to urgently construct high concrete barricades on the steeper side of the mountains at the accident-prone areas.

Action Taken: This requirement may be considered by NHPC. An estimate for the same is not available presently though some provisioning has been made in the additional budget.

15. Infrastructure Development

Mr Mikmar Tshring Lepcha, Affected Landowner Gor Taryang: There is a need for urgent promotion of livelihood initiatives in Dzongu region. It is recommended that NHPC may fund the promotion of tourism in the area in a big way. The recommended measures are development of Skywalk facility at Namprikdang. There should be promotion of eco-tourism initiatives especially in Gor Taryang. It is often seen that local community does not benefit from tender contracts for work during construction period. Towards this endeavour, it is recommended that contracts below Rs. 10 lakhs should be given to locals without any tendering. A long standing demand of the people of Taryang is to have the statue of Zeor-Bongthing at Taryang along with a monastery. People of Gor Taryang would also like to have a auditorium hall in the area.

Action Taken: The demands for tourism development are appreciated and several measures have already been proposed in the EMP/SIMP. For all the additional demands, a lump sum budget of Rs. 4 crores is proposed for Dzongu region.

Issues relating to Dzongu

Mr. Phuchung, Affected landowner, Lum-Gor-Sangtok GPU

The cancellation of public hearing in Lum-Gor-Sangtok GPU is an arbitrary unilateral step taken by the Panchayat. He questioned the intent and legality of the same.

The affected landowners / other affected persons participating in the Public Hearing



The draft SIA Report being presented by the Study Team of ASCI, Hyderabad



Mr. P.W.Lepcha, SDM (HQ), Mangan presiding over the Public Hearing Meeting



Mr. Ramesh Mukhia, Chief Engineer (NHPC, Teesta Stage-IV) responding to the queries raised by the affected landowners



CHAPTER VIII

CONCLUSIONS AND RECOMMENDATIONS

8.1 The RFCTLARR Act, 2013 and Critical Requirements for Land Acquisition

The Social Impact Assessment Study Report for the proposed acquisition of land for Teesta Stage IV Hydro-Electric Project is prepared in line with the requirements of Section (4) to Section (6) of the RFCTLARR Act, 2013 and the RFCTLARR (Sikkim) Rules, 2015. The Act mandates that a recommendation for/against the proposed acquisition should be made in light of the nature of purpose (if the project is for a public purpose); if alternatives that were less displacing were not feasible; if the land proposed for acquisition is bare minimum required for the project and if social costs outweighs the social benefits of the project. The Report also duly takes into account the suggestions put forth by the affected families during the Public Hearing held at Zilla Bhavan on 30th June, 2018.

The four central questions that require to be answered are:

1. Whether the proposed acquisition serves public purpose;
2. Whether the extent of land proposed for acquisition is the absolute bare minimum extent needed for the project?
3. Whether land acquisition at an alternate rate place was considered and found not feasible;
4. Whether social benefits from the project outweigh the social costs

The findings of the Study Report to each of the above questions are outlined below. However, at the outset, it is important to briefly examine the rationale of these provisions outlined in the 2013 Act. This is owing to two reasons; first, these conditions together constitute the basis for justifying the final recommendation for/against the proposed acquisition. Second, this would help better appreciate the peculiar situation prevalent in the project area.

Land Acquisition is based on the doctrine of *eminent domain*, the legal theory of government taking power; the power of the sovereign to take or destroy private property without the consent of the owner. In justification of the power of the State, the two most cited maxims are *salus pauli est suprema lex* (regard for the public welfare is the highest law) and *necessita publica major est quam* (public necessity is greater than the private necessity). In 2013, the RFCTLARR Act replaced the century old Land Acquisition Act (LAA), 1894. The four justifications for recommending the project (mandated by the 2013 Act) viz. ensuring that the acquisition is for a public purpose, minimizing land requirement, selecting the least displacement alternative and a favorable social benefit-social cost ratio are owing to the disparaging experience of implementation of the now repealed LAA, 1894. The ease with which all acquisitions were justified as public purpose, payment of meager compensation for land acquired, acquisition of land vastly in excess of actual requirement and often in areas that entailed significant population displacement began to be severely contested and increasingly resisted by the landowners across the country. This paved way to many land conflicts and subsequent time and cost overruns in the projects. The 2013 Act, enacted in the above background is a more community-centric law that incorporates provisions for a vastly improved compensation and R & R package for the community

along with other due diligences for minimizing land requirement and choosing a site that causes minimum adverse impact on the community.

1. Whether the proposed acquisition serves public purpose?

Yes. Teesta Stage IV Project, a run-of-the-river hydro-electric project with a Public Sector Undertaking (NHPC) as the project developer, is a public purpose project as defined in the RFCTLARR Act, 2013.

Section 2. (f) of the Act states that all the provisions of the Act relating to land acquisition, compensation, rehabilitation and resettlement shall apply, when the appropriate Government acquires land for its own use, hold and control, including for Public Sector Undertakings and for public purpose. Section 3 (za) of the 2013 Act defines "public purpose" as the activities specified under Section 2 (1). Section 2 (1) (b) provides for specific infrastructure projects to be classified under public purpose. Among these infrastructure projects, Section 2(1) (b) (ii) includes all activities listed in the notification of the Government of India in the Department of Economic Affairs (Infrastructure Section) number I3/6/2009-INF, dated the 27th March, 2012, excluding private hospitals, private educational institutions and private hotels as public purpose. Electricity projects are included among the infrastructure projects in the above notification by Department of Economic Affairs.

2. Whether the extent of land proposed for acquisition is the absolute bare minimum?

The total land requirement for the project is 272.84, out of which 177.43 is private land, 3.31ha is government departmental land and 92.10 ha is Khassmal land. This excludes the water course and underground structures. The project components for which land is proposed includes the reservoir (submergence) area, power house complex, dam complex, adits, quarries, dumping areas and project colony. There is no unutilized land available in the vicinity that could be used as an alternative (according to the district administration). The land required for the project components has a technical basis and varies from project to project based on the geographical terrain of the area. Efforts to compare projects of similar installed capacity hence did not yield significant results. However, the Study received inadequate justification from the project developer for the land requirement for the colony area (26 ha in Tingchim) and dumping sites (that seemed to be higher than the technical requirements). Hence, there remains a scope for minimizing land for these two requirements of the project.

Despite the above findings, the Study would not recommend minimizing the land area for the project. This is because an overwhelming demand of the landowners (both in the left and the right bank) have been to acquire their land and speed up the much delayed acquisition process. In Tingchim area, the landowners beyond the project boundary (and hence excluded from the notification) too sought acquisition of their land for the project. Plagued by multiple issues, the project has been delayed for more than a decade since the signing of MOU between Government of Sikkim and the Project Developer in 2006. There is growing impatience among the landowners who have been waiting for the project to be initiated. Thus, the rationale for minimizing land acquisition (explained above) does not exist in the present project. On the contrary, removing land holdings from the proposed area is likely to be resisted/contested.

3. Whether land acquisition at an alternate place was considered and not found feasible?

Yes. The location of dam of Teesta Stage IV project has been selected after rejecting four other alternatives. Out of the four alternative locations, two (one originally proposed by CWC and the other considered during the reconnaissance survey) were rejected to save the Namprikdang Mela Ground, the venue of the Namprikdang Namsoong festival held every year for 15 days during December-January. The festival that marks the new year of the Lepcha Tribe holds immense cultural importance for the community. The other two alternatives were not technically feasible and hence rejected. To reduce the impacts, the project structures on the right bank have been largely kept underground and access to the various project components is planned through access tunnels. One among the technically non-feasible alternative for the dam location (Down Stream of Rang Rang Nala) had also examined the possibility of locating the underground project components on the left Bank of Teesta river. Among the alternatives considered by the Project authority, no other technically feasible alternative exists for the project other than the ones that damages the culturally important site.

The present project alignment will have minimum displacement of landowners (there are seven project displaced families), besides 76 non-titleholder families (including 41 Nepali families) residing in the areas on the left bank proposed for acquisition.

4. Whether social benefits from the project will outweigh the social costs

Infrastructure is a critical requirement for economic development and growth. Despite its significance, the costs imposed by infrastructure projects on the community/environment require an unbiased assessment; going beyond a mere aggregation of costs and benefits. The total costs imposed by the acquisition of land for an infrastructure project always have two components—tangible and intangible. The approach for examining the benefit-cost of infrastructure projects is still in the nascent stages. A major challenge is owing to the existence of unquantifiable costs and benefits and the difficulty in attaching economic values to the outcomes of the project. Given the challenges in precisely quantifying the outcomes, the entire process cannot be free of value judgements. The same holds true for Teesta Stage IV project.

However, before proceeding for an assessment of the social costs and benefits, it is considered pertinent to reflect the ground realities regarding the public perception for/against the project. There is overwhelming support for the early commencement of the project in all the affected area on the left bank (comprising six GPUs/eight revenue blocks). However, the project area on the right bank (Dzongu region, which involves 42 percent of private land and 59 percent of khasmal land, besides the underground structures) is a deeply divided society with some supporting the project and some opposing the project. Those vociferously supporting the project are the landowners whose land is proposed for acquisition. The Study is conducted in the background of boycott/lack of support by the four gram panchayats on the right bank of the river. The informal and formal requests for survey/consultation meetings were repeatedly turned down. It is extremely unfortunate that the SIA forum, which is ostensibly meant for consultation, raising objections, submitting grievances or even opposing the project was not effectively made use of despite repeated requests/persuasion of the Study team. It would have helped the Study team understand the reason for change in the stance of the panchayats who had in the past, supported the project. However, the

situation is clearly not the same anymore. The notice issued by the District Collector for public hearing on 2nd and 3rd June, 2018 met with the same fate as the letters sent by the district administration requesting support for the conduct of the SIA and facilitating consultation meetings. Despite the stand taken by the panchayats at every stage of the conduct of the Study, the land owners (whose lands are proposed for acquisition), calling themselves as the primary stakeholders, found ways of volunteering for each of the primary activities in SIA- Consultation, Survey and Public Hearing. At each stage of the Study, the boycott by the panchayats was followed by the meetings by landowners with the District Administration to facilitate their participation in the process. The landowners from Dzongu region (about 60 in number), after seeking written permission from the District Collector, also participated in the public hearing held at Zilla Bhavan on 30th June, 2018. The representation by the Panchayats, calling for postponement of public hearing along with the representations of landowners of Dzongu region during the course of the SIA Study, is provided in Annexure-XV.

The following sections provide summary and conclusions of the SIA Study with regard to the following:

- Nature and Intensity of Social Impacts
- Mitigation measures and Viability
- Recommendations of the SIA Study (Considering the the extent to which mitigation measures described in the SIMP will address the full range of social impacts and adverse social costs)

8.2 Nature and Intensity of Social Impacts

The SIA Study made use of multiple tools to understand the impacts of the project at every stage of project cycle- Pre construction, Construction and Operation. Not all the impacts are quantifiable. The major quantifiable impacts are the loss of land by titleholders (290 landowners/275 land owner families). The impact of acquisition will be very high on 64 landowner families, nine of them becoming landless and fifty five of them marginal after acquisition of land. The impact of acquisition will be also be disproportionately high on seven landowner families who would be displaced by the project. The project would also entail severe hardships for the 76 non-titleholder families (population of about 400 people) who would have to shift their residence from the project area. The magnitude of impact would be more on vulnerable households, identified by the Study (include families with chronically ill members, economically poor women headed households and elderly population with high support needs). The impact of diversion of khasmal land is expected to be significant in some areas. Though on the whole, only 2.3 percent of khasmal land is proposed to be diverted for the project, the loss is significant in Zimchung (22 percent), Upper Mangshila (7.5 percent) and Lingdong (5 percent). The issues of loss of access (landlocked) would also merit attention and appropriate action is recommended in this Report.

Vastly declining agricultural productivity, lack of motivation to productively invest in lands proposed for acquisition and the crisis faced by the cardamom cultivators point out the need for proactive measures to support livelihood needs of the community in the project affected areas.

Among the significant impacts during the construction phase of the project would be multiple impacts (adverse) of labour influx; economic (competing with locals for job); environmental (harm to natural environment); socio cultural (threat to culture, social cohesion etc.); health (risk of communicable and non-communicable diseases; threat to protected area status of Dzongu region etc. The risk of harm to the natural environment, particularly due to tardy implementation of proposed mitigation measures in the Project EMP, is an important concern during the construction phase. The impact on crops (due to dust); drinking water (during tunnelling); damages to housing (in the vicinity of blasting) are potent threats in hydro projects and so will be the case of Teesta Stage IV Project. Another indirect but significant impact will be on the landowners on/above whose land the transmission lines would come up. This would require a separate study. During the operation phase, the diversion of water for hydro power generation and reduced flow in stretches between diversion structure and tail race would pose serious impacts on the environment unless the mandatory norms are met and monitored effectively.

The allegations and counter allegations of the rival factions in Dzongu region do not find a place in this objective study. Though the landowners have vociferously justified their support for the project, there is a critical need to recognise the real issue of resistance among the indigenous Lepchas of the region. The Study team recognises the serious social conflicts, both inter and intra community, brought in by the proposed project as the most serious negative impact of the project. As discussed elaborately in the Report, Dzongu region is considered as the spiritual homeland of the Lepchas. Indigenous communities rely on a unique relationship with the land and resources. The natural environment is often central to sustain their cultural, economical, and spiritual aspects of their lives. This is extremely true of the Lepchas of Dzongu region. Informal consultations with a wide number of stakeholders reflect the fear of the community that hydro projects will have a drastic effect on the social, cultural and religious well-being of Lepchas, besides the fragile environment of Dzongu and their ancestral lands in north Sikkim. Central to Dzongu, both physically and spiritually, is the Teesta River. The Lepchas regard the river's source in the north as holy and believe it to be the cradle of their civilization. The implementation of earlier projects in many parts of the country, inhabited by tribal indigenous community, do not inspire confidence. The concerns of the community, therefore merit serious attention. The Study team has made an earnest attempt to address these issues in the best possible manner.

8.3 Proposed Mitigation Measures

As a part of the SIMP, the Study proposes mitigation measures for each of the identified adverse impacts, with institutional arrangements for implementation and monitoring. A Community Engagement Plan for promoting transparency and consultation with the community; Comprehensive R & R plan of about Rs. 61 crore (over and above EMP recommendations) for holistically mitigating the adverse impacts; Plan for the vulnerable PAFs; are proposed for the pre-construction phase. A Community Development Plan to promote the infrastructural development and tourism in the areas; Livelihood Promotion plan to address issues of employment and livelihood promotion and a Local Area Development Plan for holistic development of the ten affected GPUs forms the critical components of the proposed mitigation measures. To address the concern of the community relating to construction related impacts viz.damage to housing/agricultural crops, the Study not only recommends the constitution of the DC

led Committee to investigate/award the claims but provides for a dedicated budget of 5 crores so that all eligible claims can be settled without delay. To take into account the additional demands of the community during public hearing and to meet the commitment of NHPC in various consultative meetings, an additional budget of ₹. 4 crores each for each Bank is further recommended and included in the SIMP budget.

A land rate that is fair and reflective of the replacement value of land is vital to meet the valid expectations of the land owners of this much delayed project. Given the lack of benchmark value of land in Sikkim and the extremely limited transactions of land in majority of the affected revenue blocks, the Study recommends the floor price to be determined by the State Government. The R & R Plan, recommended by the Study, has included liberal interpretation of the 2013 Act, providing for mandatory entitlement of R & R benefits separately to every R & R unit in a family (adult linear ascendants/descendants besides widowed, deserted women and unmarried sisters). Similarly, all the benefits provided under the 2013 Act are also recommended for displaced families and livelihood losers. Separate packages for non-title-holder families residing in the affected area (who are neither losing land/livelihood) and vulnerable households are measures that are in addition to the 2013 Act.

Two very important recommendations in this Study for all round development of the ten GPUs of the project are the institutionalisation of the LADF and a committed CSR expenditure. Specific measures to ensure maximum employment to affected landowners and the population in the affected areas have been recommended in the SIMP. The Study has also recommended enhanced livelihood promotion activities in the form of promoting tourism on both the left and right bank. While reservoir-based tourism initiatives (water sports and related infrastructure) are proposed for the left bank (Zimchung), the historical legacy of Dzongu may be used for branding strategies on the right bank. Besides the EMP that provides for improvement of Namprikdang Mela ground and other measures, some of the specific recommendations with respect to Dzongu include construction of a museum at Hee Gaythang, development of Gathang Lake as a tourist spot, construction of Statue of Lepcha Guardian deity Thung Munsolong, construction of traditional welcome gates etc.

Recognising the specific risks posed to the people of the region, the Study recommends a Comprehensive Dzongu Indigenous People Development Plan (DIPDP) that duly covers issues relating to security (threat to protected area status), accessibility, promotion of culture, education, health issues etc. The recruitment of a Public Relations Officer (PRO) from Dzongu, along with Dzongu Area Monitoring Committee (DAMC), is recommended to ensure effective implementation of the Plan. Comprehensive measures are suggested to address issues of labour influx, going far beyond the provisions made in the project EMP. Specific monitoring arrangements for addressing the environmental issues (relating to labour influx and muck disposal) are strongly recommended in the Study.

8.4 Viability of Mitigation Measures

The Study recognises that the viability of the mitigation measures proposed is critically dependent on budget, institutional arrangements, an effective GRM and monitoring arrangements. All these aspects have been meticulously included in the SIMP and briefly discussed below.

- **Budget:** The Study provides for a committed budget, provision for contingency, lump sum budget to provide the additional demands during public hearing and supplementary provisions if the expenditure exceeds the requirements: Each of the mitigation measures is appropriately budgeted with provisions for un-surveyed households and contingency. The total budget for SIMP is 122.70 crores (including 28.23 crores for R & R/Community and Social Development Plan provided under the project EMP). This also includes the additional recommendations after the public hearing; Rs. 5 crores for payment of claims for construction related impacts and lump sum 4 crores for each Bank for additional infrastructural demands/fulfillment of NHPCs commitment to the community from time to time. The supplementary financial resources for development of the ten affected GPUs should come from two sources; the CSR expenditure (recommended as a committed expenditure of Rs. 4 crores annually) and the LADF.
- **Institutional Arrangements:** The proposed measures are strengthening of NHPCs ESMC; appointment of a Social Development Officer, Grievance Officer, two Public Relation Officers (one from each bank) and NGO/Livelihood Expert/Community Liaison Officers/SHGs etc. has also been made for the additional staff.
- **Effective Grievance Redressal Mechanism:** A two-stage time-bound GRM, one at the Project level and second one (issue based-labor influx, muck disposal and DIPDP) at the district level is proposed. Two PICs are also proposed at each bank. All the Committees will have community participation.
- **Monitoring Arrangements:** A Special Monitoring Committee, chaired by SDM, is recommended for effective and timely implementation of all the initiatives proposed in the SIMP. For issues relating to environment, the second-Stage GRC will also function as a monitoring committee. These Monitoring Committees will have members from the affected landowners and community from the affected areas. Besides, a 12-Member R & R Committee at the Project level will be set up for monitoring of timely implementation of the R & R Plan as mandated by the 2013 Act. To lend more transparency, the Study proposes engaging of an independent agency to undertake external monitoring and evaluation of the project implementation. The Study also recommends NHPC's support to the district administration for development of an e-monitoring tool which would help in the effective implementation of R & R. The SIMP has provided for a budget of 3.05 crores for institutional strengthening and monitoring.

8.5 Recommendations of the SIA Study

Teesta Stage IV project is expected to generate 2373 MU of clean and green power besides acting as a peaking power station for stabilizing the eastern grid. The State of Sikkim will receive 12 percent of free power. The benefits for the Project Affected Families include the mandatory entitlements as provided in the 2013 Act, the approved EMP and the additional measures proposed by the SIMP. For the local community of the ten GPUs, the benefits recommended by the SIA include increased employment opportunities (direct and indirect) during project construction and Operation & Maintenance (O & M) phases, externalities from the increased tourism potential in the area and its associated income-generating opportunities and vastly improved infrastructure (economic and social infrastructure) through committed expenditure in the EMP, SIMP, CSR and LADF. The effective implementation of the mitigation measures is not only expected to address the social costs imposed by the project, but also to

bring about overall development to the entire community/area. The revenue contribution to the State Government will be an indirect contribution of the project for the development and prosperity of the State. From a purely economic perspective, the benefits would vastly exceed the costs.

The Study recognizes that indigenous communities directly affected by project development, require special consideration, over and above those provided to other affected families within the social assessment framework. This is applicable for the Lepchas of Dzongu who consider themselves most vulnerable sections of the community and have been resisting the project (except the affected landowners of Dzongu area) during the SIA Study process. The projects, located within or near indigenous communities, will need to proactively consult the communities impacted by the project. The prevailing conflict-ridden environment, high level of mistrust owing to poor legacy of project implementation etc. may be possible reasons for skepticism of the community. This may also have been propelled by the misunderstanding that the benefits of the project will only flow to the affected landowners (who are supporting the project). While landowners are the primary stakeholders, the objective of the SIA/SIMP was to ensure the well being of the entire community and holistic development of the ten affected GPUs. The recommendations for a benefit sharing mechanism, through committed expenditure under CSR, LADF and SIMP, have been solely made with this objective.

Community participation in implementation and monitoring of the project will ensure that the mitigation measures are implemented effectively. The SIMP provides participation of the community in various Committees for monitoring and grievance handling. The recommendation for imposition of penalty on the contractor for non-adherence to contractual obligations has also been recommended by the SIA. All efforts may be made by the district administration in carrying the community together, particularly the community of the Dzongu region. This may also involve developing agreements such as Memorandums of Understanding (MOUs) or Impact Benefit Agreement, duly taking into account their concerns.

The SIMP was elaborately discussed in the public hearing held on 30th June at Zila Bhavan, Mangan. The public hearing saw participation of 210 affected landowners/stakeholders including 60 landowners from affected areas of Dzongu. It is important that the recommendations of the Study as shared with the community, which received their wholehearted acceptance, is implemented effectively. The SIA Study, therefore recommends the proposed acquisition of land for Teesta Stage IV Project subject to the following:

1. Commitment by the State Government to institutionalize the LADF and constitute the LADC for its effective implementation in the ten affected panchayats.
2. Commitment by the District Administration to constitute various committees with the participation of affected communities as recommended by the Study (with suitable modifications as deemed appropriate).
3. Commitment by NHPC to strengthen the project ESMC and implement other institutional arrangements proposed by the Study.
4. Commitment by NHPC to finance and support implementation of the recommended mitigation measures in the SIMP in letter and spirit.