

Environmental Monitoring Report

Semestral Report
July 2017

Nepal: Tanahu Hydropower Project

Prepared by Tanahu Hydropower Limited, the Government of Nepal for the Asian Development Bank.

This environmental monitoring report is a document of the borrower. The views expressed herein do not necessarily represent those of ADB's Board of Directors, Management, or staff, and may be preliminary in nature.

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Environmental Safeguard Monitoring Report

From January to June, 2017



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CURRENCY EQUIVALENTS

As of 07-07-2016

Currency unit	=	Nepalese Rupees (NPR)
NPR 1.00	=	\$ 0.0094
\$1.00	=	NPR 106.84

Abbreviations

ADB	–	Asian Development Bank
CC	–	Construction Contractor
CDO	–	Chief District Officer
DBST	–	Double Bituminous Surface Treatment
DFO	–	District Forest Office
EIB	–	European Investment Bank
EIA	–	environmental impact assessment
EMP	–	Environmental Management Plan
ESMU	–	Environmental and Social Management Unit
ESMSP	–	Environmental and Social Management Service Provider
ESU	–	Environmental Sub-Unit
GRM	–	grievance redress mechanism
Ha	–	Hector
IEE	–	initial environmental examination
JICA	–	Japan International Cooperation Agency
KM	–	Kilometer
kV	–	Kilovolt
M	–	Meter
masl	–	meter above sea level
MOE	–	Ministry of Energy
MOFSC	–	Ministry of Forest and Soil Conservation
MoPE	–	Ministry of Population and Environment
MW	–	Mega Watt
NEA	–	Nepal Electricity Authority
PTL	–	Power Transmission Line
PMO	–	Project Management Office
PSC	–	Project Supervision Consultant
RCC	–	Reinforced cement concrete
REP	–	Rural Electrification Program
RFP	–	Request For Proposal
SEIA	–	Supplementary Environmental Impact Assessment
SEP	–	Site Environmental Plan
sq. m	–	square meter
THL	–	Tanahu Hydropower Limited
ToR	–	Terms of Reference
VDC	–	Village Development Committee

Executive Summary

Tanahu Hydropower Limited (THL) is a subsidiary company of Nepal Electricity Authority (NEA) established in 2012 to develop 140 MW Tanahu Hydropower Project ("the Project") (formerly, Upper Seti Hydropower Project). The Project site is situated 150 km west of Kathmandu on Seti River near Damauli of Tanahu District in Gandaki Zone. Tanahu Hydropower Project is located in Damauli in Tanahu District of the Province 4 of Nepal.

The government approved an Environmental Impact Assessment (EIA) for hydropower generation system in August 2009 and Initial Environmental Examination (IEE) for the 220 kV transmission line along Seti (Damauli)-Bharatpur in June, 2010. Since some technical details and environmental considerations were unclear in 2010, more detailed survey and technical assessments were undertaken in 2011/2012 and the supplementary EIA had been approved on 14 October, 2017 and supplementary IEE had been approved on 8 October, 2017.

The project is still in pre-construction phase (e.g. evaluation of bids submitted by the prequalified contractors). Most of the environmental safeguards related activities have not been undertaken yet. However, environmental impacts as identified during EIA study and statuses of compliance are presented in the report.

Progress on Access Road: At present, the physical progress of 3.3 km access road from RCC Bridge to powerhouse and 3.2 km access road from Chapaghat to dam site area has achieved about 70%.

Camp Facilities: As of June 2017, about 35 % physical progresses have been achieved. THL has established an Environment and Social Management Unit (ESMU) to coordinate overall environmental and social safeguards activities in the project including implementation of environmental and social safeguards plans and compliance monitoring in the project.

THL has been following-up with the concerned government agencies to provide clearance for major construction work. During the present reporting period, achieved on:

Forest area clearance: Tree cutting plan prepared with numbering has been sent to Ministry of Forest and Soil Conservation for approval through District Forest Office, Tanahu.

Land compensation: Out of 758 affected households (HHs), 360 HHs have been compensated. Similarly, out of 86 physically displaced HHs, 64 HHs have been compensated. The total compensation paid till date is NRs 834,487,579.

Monitoring the construction of access roads and camp site: ESMU has been monitoring and progressed on:

Spoil disposal: For spoil management, the contractor has used along the Seti river bank. Access spoil materials damage existing vegetation. Bio-engineering work (grass and shrub plantation) to be carried out to recover the vegetation loss. Grass plantation was done at valley side at Chainage 2+800 and 3+200 of RCC Bridge to camp and powerhouse site road to cover the vegetation.

Contractor's labor camp: About 20% local labours are employed. Drinking water facilities and sanitation are satisfactory for sanitation waste water is managed by soak pit, solid waste is collected and place in the bucket, toilet facilities are provided to the construction labours. For cooking the labor are using gas stove.

During field visit, the contractor has been suggested to improve occupational health and safety of construction workers, and other issues.

Speed limit notice: THL has recommended the local contractors to fix the sign board regarding speed limit of 20km/hr. in the Access Road for the safety purpose, especially in the school areas, landslide areas and other required areas.

The Project will establish the Public Information Centre (PIC) at the Municipality/Rural Municipality level will be the first intervention to address the grievance. Local Consultative Forum (LCF) was formed at Vas Municipality on 21 July, 2017, Bhimad Municipality on 23 July 2017, Myagde Rural Municipality on August 07, 2017 and Rising Rural Municipality on August 09, 2017. LCF will also supports to resolve the most of issues concerned with the affected people.

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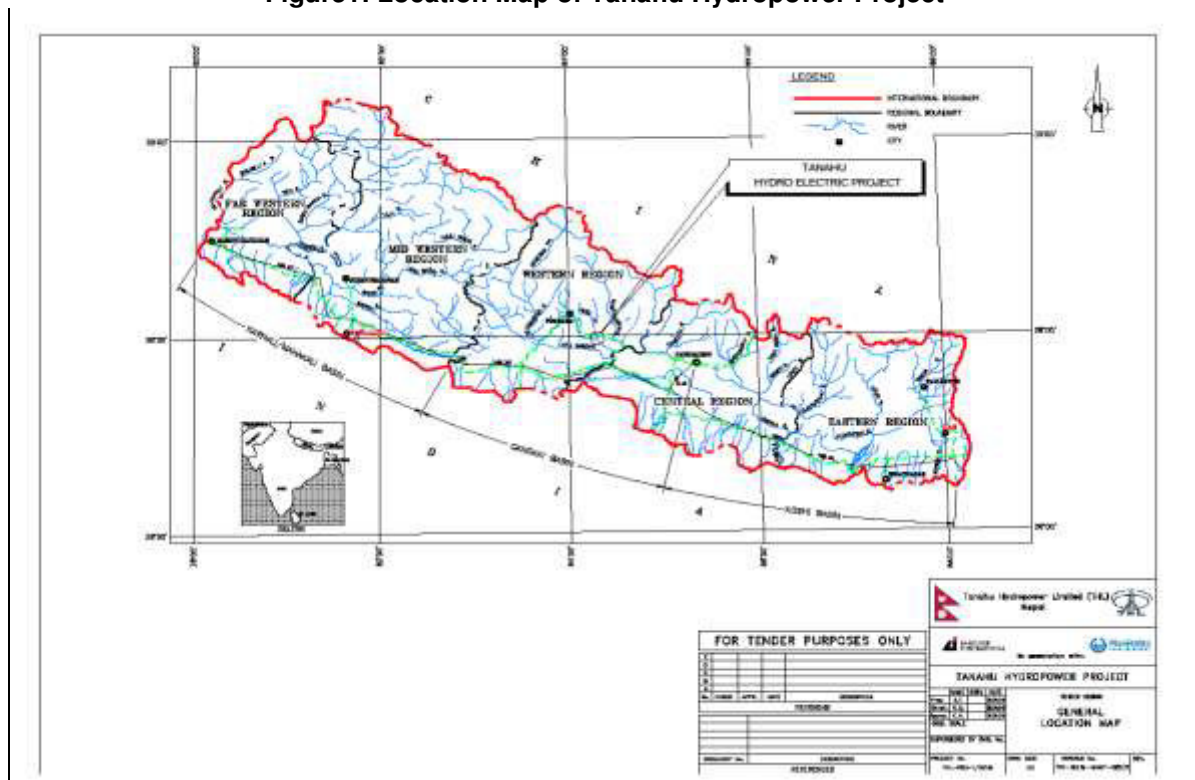
1. INTRODUCTION

1. Tanahu Hydropower Limited (THL) is a subsidiary company of Nepal Electricity Authority (NEA) established in 2012 to develop 140 MW Tanahu Hydropower Project ("the Project") (formerly, Upper Seti Hydropower Project). The Project site is situated 150 km west of Kathmandu on Seti River near Damauli of Tanahu District in Gandaki Zone. The Project is the storage type hydropower project with the capacity of 140MW with an estimated average annual energy generation of 587.7 GWh (Years 1-10) and 489.9 GWh (Year 11 onwards).

1.1 Brief Project Description

2 Tanahu Hydropower Project is located in Damauli in Tanahu District of the Province 4 of Nepal. The reservoir area is 18 km long and covers Vyas and Bhimad Municipality and Rising and Myagde Rural Municipality of the district.

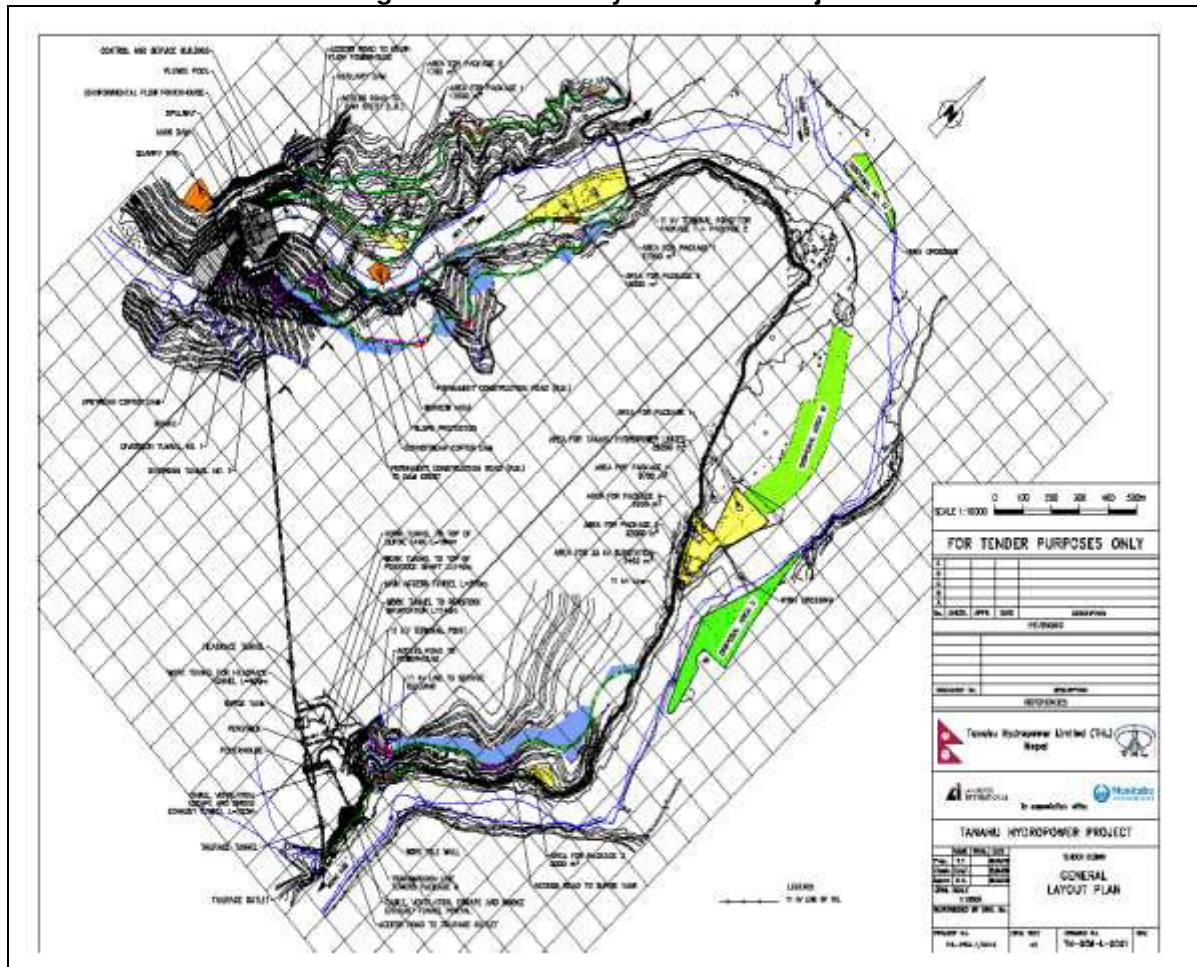
Figure1: Location Map of Tanahu Hydropower Project



3. The main features of the Project are as follows:
Reservoir area: 7.26 sq.km, reservoir length 18 km;
Full supply level: 415 m, Minimum operating level 378m;
Diversion tunnel: No.1 -556.m, No.2 -622 m;
Dam: concrete gravity, height 140 m;
Spillway chute type: gated spillway with roller bucket type energy dissipater;
Intake: single tower type intake, invert elevation 362 masl;
Headrace is tunnel: 1162m, Tailrace tunnel: 117m;
Powerhouse: underground;
Installed capacity (2 units):140MW;

Transmission line: 36.9 km;

Figure 2: General Layout Plan of Project



4. Two permanent and primary access roads and several temporary and secondary access roads will provide access to the Project area. Temporary facilities include contractor's camps, equipment and maintenance yard, office areas, project staff's camp area, Construction Power Sub-station etc. The Project will also include Rural Electrification (RE) and Transmission Lines (TL) component. A new 220 kV double circuits TL will evacuate the generated power to the new Bharatpur Substation. The length of the transmission line corridor is 37 km. Additionally, The Project will electrify 18 VDCs through its Rural Electrification (RE) Program.

1.2 Project Progress Status and Implementation Schedule

5. THP is in the pre-construction phase, as several upfront construction activities like construction of access road; camp facilities and substation for construction power supply are ongoing. Most of the VDCs affected by the project are partially electrified. Tanahu hydropower project intends to electrify all affected VDCs. THL has engaged Pace Consultancy Pvt. Ltd. for updating the electrification status of these affected VDCs.

6. **Access Road:** At present, the physical progress of 3.3 km access road from RCC Bridge to powerhouse and 3.2 KM access road from Chapaghat to dam site area has achieved about 70%.

7. **Camp Facilities:** As of June 2017, about 35% physical progresses have been achieved. All together total 33 nos. of buildings (2 nos. of office buildings for employer and consultants, 2 nos. of residential building of type A, 12 nos. of residential building of type B, 10 nos. of residential building of type C, 2 Dormitories, 1 Guest house, 1 health post, 2 restaurants and 1 guard house) are to be constructed for camp facilities.



Progress of access
Road from Chapaghat to Dam Site

8. **Construction Power Sub-Station:** 33/11 kV Sub-station for construction power is under construction near the camp site. 6/8 MVA power transformer and its accessories were delivered at site and are in the phase of installation. 33 kV and 11 kV panel boards were fitted on control room. Around 90 per-cent conductor stringing work of 11 kV line is completed. Gantry tower and 33 kV bay extensions work at Damauli substation are ongoing. About 87% of physical works have been completed.



Construction Power sub-station at Damauli

9. Project Implementation Schedule has been revised and included in Appendix-4.

2. COMPLIANCE TO NATIONAL REGULATIONS

2.1 Environmental Protection Rules 1997

10. As per Environmental Protection Act and Rules 1997 of Nepal, Environmental Impact Assessment (EIA) is required for Tanahu Hydropower Project and Initial Environmental Examination (IEE) is required for Transmission Line.

11. According the ADB Safeguard Policy Statement, the project is classified as category A with respect to environment. As per prevailing legislation of Nepal, Environmental Impact Assessment (EIA) is required for hydropower development whereas Initial Environmental Examination (IEE) is sufficient for transmission line.

12. The government approved an Environmental Impact Assessment (EIA) for hydropower generation system in August 2009 and Initial Environmental Examination (IEE) for the 220 kV transmission line along Seti (Damauli)-Bharatpur in June, 2010. Since some technical details and environmental considerations were unclear in 2010, more detailed survey and technical assessments were undertaken in 2011/2012 and an EIA Addendum was prepared in 2012/2013. The environmental management plan was also updated. The

Addendum basically addressed some important issues such as reservoir operation and impact on downstream river hydrology, river safety and flood warning system.

13. The supplementary EIA and IEE have been prepared and submitted to concerned ministry for approval. The status is given in the following table.

Table 1: Status of Supplementary EIA and IEE

No.	Description	EIA/IEE Status	Remarks
1	Supplementary EIA of Tanahu Hydropower	EIA report was submitted to MoPE through MoE for approval.	Approved on 14 October, 2017 (Ashwin 27, 2074)
2	Supplementary IEE of Transmission Line	Supplementary IEE was submitted to Department of Electricity Development (DoED) on March, 2017. DoED has made comments on the report on June 25, 2017.	Approved on 8 October, 2017 (22 Ashwin 2074)

3. COMPLIANCE TO ENVIRONMENTAL COVENANTS FROM THE ADB LOAN AGREEMENT

14. The following covenants to the financing agreement with ADB will be complied with during implementation of the project.

3.1 Schedule 5 Environment

Table 2: Compliance Status with Environmental Loan Covenants

P. No	Covenant	Status of Compliance	Actions
Para1. Schedule 3	1. The table attached to this Schedule sets forth the Categories of items of expenditure to be financed out of the proceeds of the Loan and the allocation of the Loan proceeds to each such Category ("Table"). (Reference to "Category" in this Schedule is to a Category or Subcategory of the Table.) [Table] 4D Safeguard Monitoring and Implementation Support; 2,537,000; 100% of total expenditure claimed* 5 Land Acquisition and Resettlement Costs of THL***; 17,111,000; 100% of total expenditure claimed* * Exclusive of taxes and duties imposed within the territory of the Borrower.	Complied with /Being complied with.	

	*** Subject to reimbursement in accordance with procedures described in the PA		
Para 9. Schedule 4	9. NEA and THL shall recruit the individual consultants for safeguards implementation and monitoring and for the panel of experts referred to in Schedule 5 to this Loan Agreement in accordance with procedures acceptable to ADB for recruiting individual consultants.	Complied with /Being complied with. THL hired individual and bridging consultants on safeguard	
Para 2. Schedule 5	5. NEA and THL shall employ sufficient staff for the duration of the Project with adequate and relevant expertise in the field of project management, financial management, engineering, procurement, environmental and social safeguards implementation. Without limiting the generality of the foregoing, no later than 30 April 2013, THL shall have recruited and employed at least two additional staff members for the project information centers established for the Project, and three additional staff members for social safeguards implementation, environmental safeguards implementation and communication respectively. NEA and THL shall ensure that all staff employed for the Project are equipped with adequate office space, facilities, equipment, support staff and telecommunications and management information systems for the entire duration of the Project.	Complied with /Being complied with.	
Para 7. Schedule 5	7. The Borrower shall ensure, or cause NEA and THL to ensure, that the preparation, design, construction, implementation, operation and decommissioning of the Project and all Project facilities comply with (a) all applicable laws and regulations of the Borrower relating to environment, health and safety; (b) the Environmental Safeguards; and (c) all measures and requirements set forth in the EIA, the IEEs, the EMPs, and any corrective or preventative actions set forth in a Safeguards Monitoring Report.	Complied with /Being complied with. These will be the part of subproject appraisal report.	
Para 8. Schedule 5	8. No later than 31 December 2017, the Borrower, THL and NEA shall establish a fish habitat as a biodiversity offset for endangered migratory fish species identified in the EIA at the Madi River and/or other areas that are suitable as a conservation area for the species. No later than 31 December 2015, the Borrower, THL and NEA shall have constructed a fish hatchery for those migratory species and henceforth operate the hatchery in a manner that safeguards the preservation of the species concerned in project areas affected by Component A of the Project.	Complied/being complied with.	
Para 9. Schedule 5	9. The Borrower shall ensure, or cause NEA and THL to ensure, that all land and all rights-of-way required for the Project are made available to the Works contractor in accordance with the schedule agreed under the related Works contract and all land acquisition and resettlement activities are implemented in compliance with (a) all applicable laws and regulations of the Borrower relating to land acquisition and involuntary resettlement; (b) the Involuntary Resettlement Safeguards; (c) the RF; and (d) all measures and requirements set forth in the RIPP, and any corrective or preventative actions set forth in a Safeguards Monitoring Report.	Complied/being complied with. Will be followed.	

Para 10. Schedule 5	10. Without limiting the application of the Involuntary Resettlement Safeguards or the RIPP, the Borrower shall ensure, or cause NEA and THL to ensure, that no physical or economic displacement takes place in connection with the Project until: (a) compensation and other entitlements have been provided to affected people in accordance with the RIPP; and (b) a comprehensive income and livelihood restoration program has been established in accordance with the RIPP.	Complied/being complied with. Will be followed.	
Para 11. Schedule 5	11. The Borrower shall ensure, or cause NEA and THL to ensure, that the preparation, design, construction, implementation and operation of the Project and all Project facilities comply with (a) all applicable laws and regulations of the Borrower relating to indigenous peoples; (b) the Indigenous Peoples Safeguards; (c) the IPPF; and (d) all measures and requirements set forth in the RIPP, and any corrective or preventative actions set forth in a Safeguards Monitoring Report.	Complied/being complied with. Will be followed.	
Para 12. Schedule 5	12. The Borrower shall make available or cause NEA and THL to make available necessary budgetary and human resources to fully implement the EMPs and the RIPP.	Complied/being complied with. Necessary budget has been allocated.	
Para 13. Schedule 5	13. The Borrower shall ensure or cause NEA and THL to ensure that all bidding documents and contracts for Works contain provisions that require contractors to: (a) comply with the measures relevant to the contractor set forth in the EIA, the IEE, the EMPs and the RIPP (to the extent they concern impacts on affected people during construction), and any corrective or preventative actions set forth in a Safeguards Monitoring Report; (b) make available a budget for all such environmental and social measures; (c) provide NEA or THL (as applicable) with a written notice of any unanticipated environmental, resettlement or indigenous peoples risks or impacts that arise during construction, implementation or operation of the Project that were not considered in the EIA, the IEEs, the EMPs and the RIPP; (d) adequately record the condition of roads, agricultural land and other infrastructure prior to starting to transport materials and construction; and (e) reinstate pathways, other local infrastructure, and agricultural land to at least their pre-project condition upon the completion of construction.	Complied/being complied with. Provision will be made in bidding documents and contracts for works.	
Para 14. Schedule 5	14. The Borrower shall do the following, or cause NEA and THL to do the following: (a) submit semiannual Safeguards Monitoring Reports to ADB and disclose relevant information from such reports to affected persons promptly upon submission; (b) if any unanticipated environmental and/or social risks and impacts arise during construction, implementation or operation of the Project that were not considered in the EIA, the IEEs, the EMPs and the RIPP, promptly inform ADB of the occurrence of such risks or impacts, with detailed description of the event and proposed corrective action plan;	Complied with /being complied with.	

	(c) no later than 30 June 2013, engage qualified and experienced external experts or qualified NGOs under a selection process and terms of reference acceptable to ADB, to verify information produced through the Project monitoring process, and facilitate the carrying out of any verification activities by such external experts; and (d) report any actual or potential breach of compliance with the measures and requirements set forth in the EMPs or the RIPP promptly after becoming aware of the breach.		
Para 15. Schedule 5	15. No later than 30 June 2013, THL shall have engaged an independent advisory panel of experts to undertake monitoring and evaluation of dam safety as well as the environmental and social safeguards activities planned and undertaken by THL under Component A of the Project. The Borrower and THL shall facilitate the carrying out of any additional monitoring activities required by such panel. THL shall ensure that the advisory panel (i) includes, at least, one social safeguard specialist, one environmental safeguard specialist and one dam safety expert; and (ii) reports on its activities and findings at least once a year during construction and initial operation of the Tanahu Hydropower Plant.	Being complied with. Will be followed.	
Para 17. Schedule 5	17. The Borrower, NEA and THL shall ensure that all bidding documents and contracts for Works under the Project contain provisions that require contractors: (a) to comply with applicable core labor standards and the Borrower's labor laws, and to incorporate applicable workplace occupational and health and safety principles; (b) to eliminate discrimination in respect of employment and to not differentiate payment between men and women for work of equal value; (c) not to employ child labor; to eliminate forced or compulsory labor; to allow for freedom of association; (d) to maximize employment of local, poor and disadvantaged persons for construction purposes to the extent possible, provided that the requirements for efficiency are adequately met; and (e) to disseminate, or engage appropriate service providers to disseminate, information on the risks of sexually transmittable infections, including HIV/AIDS, to their employees and to members of the local communities surrounding the Project facilities, particularly to women.	Being complied with. Will be followed.	
Para 18. & 19. Schedule 5	18. THL shall develop and implement a community development program in the area of influence of Component A of the Project in accordance with the terms of the CDS, allocate adequate resources for the implementation of the program, and shall monitor and report to ADB on key outcome and output targets of the CDS in accordance with the project performance and monitoring system developed for the Project, including with respect to (i) access to and quality of education; (ii) improvement of health awareness; (iii) social, economic and political empowerment of women; (iv) socio-economic development of vulnerable groups such as dalit, janjati and other socially excluded groups; and (v) promotion of local livelihood opportunities and economic development.	Being complied with. Will be followed.	

	19. THL shall make every effort to safeguard the continuity of successful programs established under the CDS, particularly in the transitional period between expiry of the CDS and the commencement of funding of local development programs through royalties from the Tanahu Hydropower Plant.		
Para 20. Schedule 5	20. The Borrower, NEA and THL shall comply with and implement the GESI in accordance with its terms, allocate adequate resources for such implementation, and shall monitor and report to ADB on key outcome and output targets of the GESI in accordance with the project performance and monitoring system developed for the Project.	Being complied with. Will be followed.	
Para 25. Schedule 5	25. No later than 31 December 2014, THL shall develop and adopt a corporate business plan setting out the company's policies and practices in such areas as human resources, procurement, financial management, accounting, auditing, environmental and social safeguards in accordance with sound business and utility practices. The human resources strategy under the THL business plan shall mainstream recruitment through transparent and competitive procedures and link promotions and salary increases to market benchmarks and individual performance for all staff in THL. The business plan shall also establish procedures for mainstreaming compliance with environmental and social safeguards standards and gender aspects in the preparation, implementation and operation of projects.	Being complied with.	
Para 36. Schedule 5	36. NEA shall introduce a scheme where poor rural households will be permitted to pay connection fees in installments in accordance with the criteria to be set for NEA's corporate social safeguard policy by 31 December 2015.	Being complied with.	

4. COMPLIANCE TO ENVIRONMENTAL MANAGEMENT PLAN

15. The project is still in pre-construction phase (e.g. evaluation of bids submitted by the prequalified contractors). Most of the environmental safeguards related activities have not been undertaken yet. However, environmental impacts as identified during EIA study and statuses of compliance are presented in the Appendix-I.

4.1 Institutional Arrangement for Safeguards Implementation

16. The key stakeholders to be involved in the implementation of environmental safeguard.

Table 3: Safeguard implementation indicating the institutional framework and reporting requirement

Organization	Role and responsibility	Reporting Timeline
MoPE	<ul style="list-style-type: none"> • Ensure that the environmental measures and cost are included in the project documents and tender clauses • Monitoring of the overall project • Auditing of project performance 	<p>Prior to final project approval</p> <p>At least once a year during construction</p>

		After two years of project completion.
MoE/DoED	<ul style="list-style-type: none"> Ensure that the environmental measures and cost are included in the project documents and tender clauses Monitoring of the overall project 	Prior to final project approval At least twice a year during construction And during operation
NEA/NEA-ESSD	NEA will be directly responsible for the implementation, management and supervision of the transmission line environmental management plan, through the ESSD. NEA will hire a number of consultants to design and oversee, and contractors to implement, the environmental management measures, as well as an independent Panel of Experts to provide periodic review and advice	During construction, operation phase
Project Supervision Consultant	The Project Supervision Consultant (PSC) will be hired by and shall directly assist the ESSD with its duties. The PSC will include the Environmental Management Consultant (PSC-EMC) and Social Management Consultant (PSC-SMC).	Pre-construction, construction and operation phase
ESMU	Monitoring of natural environmental, RP and SAP, mitigation measures as per EMP/RP/SPAF <ul style="list-style-type: none"> Environmental compliance monitoring 	Pre-construction, construction phase
Construction Contractor (CC)	The Construction Contractor (CC) shall be primarily responsible for the implementation and internal monitoring of all environmental management measures associated with Project design, pre-construction and construction. The CC shall have sole responsibility for all activities on sites under its control for the duration of construction. This includes the activities of all subcontractors, whether employed or contracted directly or indirectly by the CC. Accordingly, it shall be the responsibility of the CC to ensure that all activities are compliant with Project plans, permit and approval conditions, and any other statutory requirements	Construction phase
Local Stakeholders (NGOs, CBOs, Municipality, DDC DFO etc.)	Monitor that the environmental and social mitigation measures are implemented in all stages of the project as per EMP, RAP, SPAF. Ensure public participation and involvement in the project implementation	Project period

17. THL has established an Environment and Social Management Unit (ESMU) to coordinate overall environmental and social safeguards activities in the project including

implementation of environmental and social safeguards plans and compliance monitoring in the project. THL plans to recruit permanent staff in ESMU to operate the unit during implementation and operation stages. However overall environmental and social safeguards performance of the project will be monitored by the Environmental and Social Management Service Provider (ESMSP), who will provide support to ESMU in implementing safeguard activities.

4.2 Recruitment of Safeguard Staffs

18. During the reporting period, the following support staffs for ESMU were appointed by THL.

- Mr. Sachen Gautam, Communication Specialist on February 12, 2017
- Mr. Pravakar Pandit, Social Safeguard Specialist on March 19, 2017

19. In order to fill the gap of till the ESMSP is in place, following individual specialists as bridging consultants have been appointed by THL.

- Mr. Puspa Raj Wagle, Social Safeguard Specialist on June 1, 2017
- Mr. Rajan Kumar Shrestha, Environmental Monitoring Specialist, July 1, 2017
- Mr. Deep Bahadur Sunwar, Fisheries Specialist, July 1, 2017

4.3 Environmental Clearance from Authorized Government Agencies

20. THL has been following-up with the concerned government agencies to provide clearance for major construction work. During the present reporting period, the following activities have been achieved:

21. **Forest area clearance:** Tree cutting plan prepared with numbering has been sent to Ministry of Forest and Soil Conservation for approval through District Forest Office, Tanahu.

22. **Land compensation:** Out of 758 affected households (HHs), 360 HHs have been compensated. Similarly, out of 86 physically displaced HHs, 64 HHs have been compensated. The total compensation paid till date is NRs 834,487,579.

5. SAFEGUARD MONITORING RESULTS AND UNANTICIPATED IMPACTS

23. The ESMSP, which is expected to be engaged by the end of 2017, will design and implement the routine and periodic environmental safeguards compliance monitoring during the construction phase and support THL for implementing all safeguards requirements- both social and environmental plan.

24. In EIA, following is an environmental monitoring plan indicating the all parameters.

Table 4 : Environmental Monitoring Plan

Project phase	Parameter	Method and scope	Location	Frequency	Responsibility	Cost(NR)
1. Baseline Monitoring						
A. Physical Environment						
Watershed	Erosion, slope stability	Observation	Upstream of dam, around the project area		THL	
River Hydrology	Flow rate of Seti and its tributary Madi	Gauging Station and measurements	Upstream of Dam , powerhouse area, Madi Khola		THL	
River water quality	Ph, DO, BOD, COD, Acidity, Alkalinity	Water sampling and testing and comparison to ambient standards	Upstream of reservoir, powerhouse, Madi river		THL	
Air Quality	TSP, PM, Co2, No2, etc	Sampling, measurements and tests	Project area		THL	
B Biological Environment						
Fish population, spawning and migration	Identification of aquatic species, spawning area, migratory habitats	Aquatic life and ecology survey (fish, phytoplankton, zooplankton and aquatic insects)	7 baseline stations	Every six months(dry season and wet season)for 5 years	Contractor/ EMSU- PMO- THL	NRs 1 million
Wildlife	Wildlife number, foot marks	Discussions with local people, footprint observation	In and around the project area			
Forest cover and management	Forest cover density	Discussions with users group, observation, local people and District forest office	In and the project area			
C. Social-economic and Cultural Environment						
Settlements	Growth of Settlements	Observation	In and around the project area	Once a year		
Health and sanitation	Diseases prevailing in the area, outbreak of diseases	Discussions with local people, information from the local health posts and District Health office	Project area and adjacent VDCs	Once a year		
2. Impact Monitoring						
A. Physical Environment						

<ul style="list-style-type: none"> Land Acquation Vegetation clearing/tree cutting Excavation works Foundation works 	Dust (TSP/PM 10)	<ul style="list-style-type: none"> Measurement of ambient air quality 	<ul style="list-style-type: none"> Jhaputar and Damauli (close to the District Public Health office) 	<ul style="list-style-type: none"> Three times a year in dry season (Nov, Feb, and May). Baseline data shall be taken before construction in dry season (April/May) 	Contractor	NRs 5.3million (Lump sum including air, water, noise, spoil management, land erosion, etc.)
	<ul style="list-style-type: none"> a) Graveling of road and its maintenance b) control on vehicle speed c) watering of roads d) Careful handling the contaminant or dumping of dusty materials e) Covering of exposed areas and site restoration f) provision of dust mask to drivers and workers 	Compliance of mitigation measures for air pollution	<ul style="list-style-type: none"> a) Along the construction road b) Along the construction road c) Along the construction road d) Temporary waste stock facility and disposal site e) Excavated area f) Construction sites 	<ul style="list-style-type: none"> a) once a three months b) once a day c) once a day d) once a week e) once a week f) once a week 	Contractor	Parts of contractor's contract
	Flow velocity, discharge, water temperature, pH, conductivity, total suspended solids (TSS), total phosphorus (T-P), total Kjeldahl Nitrogen (TKN), ammonia (NH3), Nitrate, Nitrite, dissolved oxygen (DO), and BOD5	Water sampling and analysis	<ul style="list-style-type: none"> 1. upstream of reservoir 2. Reservoir area (close to dam) 3. confluence with the Madi river 4. immediate downstream of the tailrace outlet 	4 times a year in 4 seasons	Contractor/ EMSU-PMO-THL	Included in the lump sum cost
	<ul style="list-style-type: none"> a) Adequacy and operation of water supply and sanitation facilities at engineering camps, construction camps and construction sites 	Compliance of mitigation measures for water pollution	<ul style="list-style-type: none"> a) Engineering camps, construction camps and construction sites b) Engineering camps, construction 	<ul style="list-style-type: none"> a) Before project and every 3 months b) once a week 	Contractor/ EMSU	Part of contractor's contract

	<ul style="list-style-type: none"> b) collection of solid waste and safe disposal practices at engineers camps, construction camps and construction sites c) awareness program on health and sanitation d) prohibition on open defecation and solid waste disposal e) Storage facilities for fuel, lubricants, spent oils , and toxic chemicals f) Treatment facilities for waste water of batching plant, aggregate washing and tunnel seepages and its effective operation g) water quality test for discharge of treated waste water of batching plant, aggregate washing and tunnel discharges h) Disposal of construction spoils only designated areas. 		<ul style="list-style-type: none"> camps and construction sites c) all over the construction sites d) all over the construction sites e) Storage facilities f) Treatment facilities g) Batching plant aggregate washing plant, and tunnel discharges h) all over the construction sites 	<ul style="list-style-type: none"> c) every six months d) once a week e) Before project and every 3 months f) Before project and every 3 months g) once a three months h) once a day 		
	Noise level	Measurement of noise level	Jhaputar and Damauli (close to District Public Health Office), and Beltar (nearby the school)	Twice a year Baseline data shall be taken before the construction	Contractor/ EMSU- PMO-THL	Included in the lump sum cost mentioned in air quality (dust) measurement.
	<ul style="list-style-type: none"> a) Placement of noise arresting equipment b) Correct fitting of silencers, mufflers and acoustic shields 	Compliance of mitigation measures for noise	<ul style="list-style-type: none"> a) Construction site THL's residential area b) Construction vehicles and machineries c) All over the construction sites 	<ul style="list-style-type: none"> a) Once before construction b) once a 3 months 	Contractor, MO-THL	Part of constructor's contract

	<p>c) Maintenance of plant and equipment</p> <p>d) blasting restriction provisions as negotiated</p> <p>e) Blasting design and follow ups.</p>		d) Blasting site	<p>c) once a three months</p> <p>d) once a day</p> <p>e) once a three months</p> <p>f) Once a week</p>		
	<p>a) Vegetation clearance only to required limits</p> <p>b) Excavation works only to required limit by the design</p> <p>c) Side casting of excavated earth</p> <p>d) Management of soil in the designated area</p> <p>e) Maintenance of toe protection structure, and drainage structure at spoil disposal, and sedimentation tank at batching yard, spoil disposal area and tunnel discharge areas</p> <p>f) civil and bio-engineering protection works and there maintenance (including side drains)at access roads</p>	Compliance of mitigation measures for land instability and erosion	<p>a) Along the project boundary such as FSL 415m area for the reservoir, dam site, and project facility sites</p> <p>b) All over the construction site</p> <p>c) All over the construction site</p> <p>d) All over the construction site</p> <p>e) Batching yard, spoil disposal area and tunnel discharge areas</p> <p>f) Along the access roads</p>	<p>a) Once a month</p> <p>b) once a week</p> <p>c) once a day</p> <p>d) once a day</p> <p>e) Once a month</p> <p>f) Once a month</p>	Contractor, PMO-THL	Part of constructor's contract
B. Biological Environment						
<ul style="list-style-type: none"> • Land Acquisition • Vegetation clearing/tree cutting • Excavation works • Foundation works 	Identification of illegal tree cutting and poaching	Compliance of mitigation measures for illegal tree cutting and poaching through frequent patrol activity	All over the construction site and adjacent area	Frequent and at random patrol	Contractor	Part of contractor's contract

	Number of habitat loss identified Before construction	Habitat loss around the project sites	All over the construction site and adjacent area	Every four months	Contractor/ EMSU- PMO-THL	NRs 1 Million
	Number of wildlife species	Species occurrence around project sites	All over the construction site and adjacent area	Every four months	Contractor/ EMSU- PMO-THL	
	Damage of habitat and/or death of wildlife due to construction activity	Construction disturbance around project sites	All over the construction site and adjacent area	Once a week	Contractor/ EMSU- PMO-THL	
	Implementation of the proposed measures based on designated schedule	Mitigation measures compliance for wildlife conservation	All over the construction site and adjacent area	Every four months	Contractor/ EMSU- PMO-THL	
	Adequate implementation of the mitigation measures	Observation of compliance of contractual mitigation clauses	At the designated location of the measures	Every three months	PMO-THL	
C. Socio-economic and cultural Environment						
	Monitoring compensation	Housing assets, living conditions, income etc.	Project affected and resettled area	Three times a year in dry season	EMSU/THL Contractor	
	Health Issues/sanitation	Record of diseases, inspection of camps	Project area and particularly camps	Twice in a year, whenever there is outbreak diseases	Contractor	
	Occupational and safety hazards	Records of accidents	Project area	Once a day	EMSU/THL Contractor	
	Tourism	Records of tourist entering the area	Project area	Once a year	EMSU/THL Contractor	
	Employment	Records kept by management	Project area	Once a month	EMSU/THL Contractor	
	Law and Order	Records, inspection	Project area	Once a week	EMSU/THL Contractor	
	Impact on women/Children	Records of women employment; children education; Inspection on Child Labour	Project area	Once a week	EMSU/THL Contractor	

	Changes in social values, cultural heritage, religious practices etc.	Observation, record of new behavior; cultural festivals etc.	Project area	Before project and after project	EMSU/THL Contractor	
	Indirect economic benefits	Trade and business revenues	Project area	Before project during the project and after project	EMSU/THL	
2. Operation and Maintenance Period						
A. Physical Environment						
• Operation and maintenance of dam	• Flow velocity, discharge, water temperature, pH, conductivity, total suspended solids (TSS), total phosphorous (T-P), Total Kjeldahl Nitrogen (TKN), ammonia (NH3), nitrate, dissolved oxygen (DO), and BOD5	Water sampling and analysis (except reservoir area)	1) Upstream of the reservoir, 2) Confluence with the Madi River, 3) Immediate downstream of the tailrace outlet	5 times a year in 4 seasons (November, March, Beginning of June before the sediment flushing operation, end of July after the sediment flushing operation, and September)	EMSU-PMO-THL	NRs 3 million for 20 years
	a) Water temperature, turbidity, DO b) pH, BOD/COD, SS, coliform counts, chlorophyll, Pheophytin, inorganic phosphorus (I-P) c) Ingredient of bottom sediment d) Phytoplankton e) Heavy metals, Hazardous substances, carcinogenic substance	Water sampling and analysis (Reservoir area: close to the dam site)	a) 0.1 m from the water surface, 0.5 m from the water surface, 1 m interval from the water surface to the bottom b) Surface layer (0.5 m from the water surface) Middle layer (half of the water depth)	Once a month once a month Twice a year (End of May just before the sediment flushing operation, and November after stabilizing the	EMSU-PMO-THL	Included in the above

			Bottom layer (1 m above from the bottom) c) First surface layer of the sediment d) Surface layer of water e) Surface layer of water	bottom condition) Once a month Twice a year in dry season and rainy season)		
	Riverbed sedimentation and erosion	Monitoring of Riverbed sedimentation and erosion	Several designated locations in the downstream riverbed	Once a year in dry season	EMSU-PMO-THL	NRs 2 million for 20 years
B. Biological Environment						
Operation and maintenance of dam	Wild life species and population, habitat condition	Transect survey for wildlife	All over the construction site and adjacent area	Every 3 years for 20 years	EMSU-PMO-THL	NRs 1.2 million
	Species composition	Aquatic ecology survey for impact analysis	7 baseline stations	Every six months after 2 years of project operation, Once a year for 10 years	EMSU-PMO-THL	NRs 3 million
	a) Compliance to release of environmental flows at Seti b) Compliance to restriction of fishing activities below tailrace c) Compliance to fish stocking ,fish realize in the reservoir and downstream area	Compliance of mitigation measures for aquatic lives	a)Dam site b)Downstream of the tailrace c)Reservoir and downstream area	a)Daily b)Daily c)Once a year for project life	EMSU-PMO-THL	Part of project operation cost
1. Compliance Monitoring/Construction/Operation						
	a) Compliance to release of environmental flows at Seti b) Compliance to restriction of fishing activities below tailrace	Compliance of mitigation measures for aquatic lives	d)Dam site e)Downstream of the tailrace f) Reservoir and downstream area	d)Daily e)Daily f) Once a year for project life	EMSU-PMO-THL	Part of project operation cost

	c) Compliance to fish stocking, fish realize in the reservoir and downstream area					
Incorporation of EIA recommendations into project documents		Review of detailed design, project specifications and tender documents				
Incorporation of Environmental constructions mentioned in the tender documents in the contractor proposed work plans		Review of proposed work plan				
Integration of mitigation measures in the detail design and contract documents		Review process				
Filling gullies with construction wastes	Land stability	Site observation				
Compensatory release downstream of the dam	Flow rate (m3/s)	Site observation				

5.1 On-going Environmental Monitoring

25. During the present reporting period, the following activities have progressed:

26. **Construction of Access Road from Chapaghat to Betini (towards the Dam Site) and from RCC Bridge to Camp and Powerhouse Site:** The contractor has placed information sign board, speed breaker, delineator post at different location of access road for the safety purpose, especially in the school areas, landslide areas and settlement areas. The PPE was not supplied adequate for the workforce. Spoil disposal: For spoil management, the contractor has used along the Seti river bank. Access spoil materials damage existing vegetation. Bioengineering: Grass plantation was done at valley side at Chainage 2+800 and 3+200 of RCC bridge to camp and powerhouse site road to cover the vegetation.

27. **Construction of Camp Facilities:** Construction work is ongoing. All types of construction materials are purchased from market. Quarry, borrow pit are not used. Contractor's labor camp: About 20% local labours are employed. Drinking water facilities and sanitation are satisfactory for sanitation waste water is managed by soak pit, solid waste is collected and place in the bucket, toilet facilities are provided to the construction labours. For cooking the labor are using gas stove. Occupational, Health and Safety: The construction site to be barricaded. The workers have been provided with helmets, gloves, and boots; however, these safety gears are not adequate for all the workers. No accident and incident were registered. First aid box is available in the camp. Construction waste management: The construction waste is leave haphazardly; it needs to manage in designated location.

28. During field visit, the contractor has been suggested to improve above mentioned issues.

29. **Speed limit notice:** THL has recommended the local contractors to fix the sign board regarding speed limit of 20km/hr. in the Access Road for the safety purpose, especially in the school areas, landslide areas and other required areas.

30. **Monitoring the construction of access roads and camp site:** ESMU has been monitoring on:

- Excess spoil disposal to prevent pollution of local water course.
- Dust suppression to prevent pollution of local air.
- Noise suppression to prevent disturbance to local Population. Construction of safety tank for the waste water management in the camp site.

31. The ESMU require further supporting staffs to carry out effective monitoring.

6 IMPLEMENTATION OF GRIEVANCE REDRESS MECHANISM AND COMPLAINTS RECEIVED FROM STAKEHOLDERS

32. The EIA (2009) did not include a process to handle complaints/grievances from project stakeholders. Hence, a grievance redress mechanism is included in Supplementary EIA, as part of the required procedures during Project implementation.

33. A grievance redress mechanism (GRM) will be established to receive and facilitate the resolution of affected people (GRM) will be established to receive and facilitate the 17 environmental issues. The GRM aims to be proactive and accessible to APs as an effective way to address their concerns. The GRM will have three levels, with time-bound schedules to function.

34. **First level of GRM.** The Public Information Centre (PIC) at the Municipality/Rural Municipality level will be the first intervention to address the grievance. Many grievances can be resolved by providing correct and complete information. The PIC will have full-time staff representing the EA and IA, with full authority to listen and provide information to APs and resolve their issues. The PIC officer may seek the assistance of the supervision consultant safeguards specialists to help resolve the issue. The PIC will fully document the complaint, including: (i) name of the person; (ii) date the complaint was received; (iii) nature of the complaint; (iv) location; and, (v) how the complaint was resolved. These reports will be submitted to the Project Director (PD) and to the Safeguards Unit of THL each month.

35. **Second level of GRM.** Should the grievance remain unresolved, the PIC officer will forward the complaint to the Safeguards Unit at THL. The person filing the grievance will be notified by the officer that his/her grievance was forwarded to the safeguards unit. Grievances will be resolved through ongoing interaction with the affected persons, with THL answering queries and resolving grievances regarding various issues such as social and livelihood impacts and environmental issues. NGOs and the Safeguards Unit of THL will undertake corrective measures at the field level for social and livelihood issues within seven days, and environmental safeguards staff will do likewise as required. The Safeguards Unit staff of THL will fully document the following information: (i) name of the person; (ii) date the complaint was received; (iii) nature of the complaint;(iv) location; and, (v) how the complaint was resolved.

36. **Third level of GRM.** Should the grievance remain unresolved, the issue will be referred to the Grievance Redressal Committee (GRC). The GRC will be headed by PD and shall consist of members of the concerned VDC, affected persons, NGOs and local area committee. The affected person can present his or her concerns/issues to the GRC. All costs will be borne by the project. The GRC will meet as necessary when there are grievances to be addressed. The GRC will suggest corrective measures at the field level and assign clear responsibilities for implementing its decision within 15 days. The Safeguards Unit of THL will be responsible for processing and placing all papers before the GRC, recording decisions, issuing minutes of the meetings, and taking follow-up action to ensure that formal orders are issued and decisions are carried out.

37. If each of the above measures fails, the affected person can seek legal redress of the grievance in the appropriate courts, which is the formal legal court system.

38. **Progress:** District Officer of Tanahu District has been formed for the rate fixation of compensation of land to be acquired. The Project will establish the Public Information Centre (PIC) at the municipality/Rural Municipality level which will be the first intervention to address the grievance. Local Consultative Forum (LCF) was formed at Vas Municipality on 21 July, 2017, Bhimad Municipality on 23 July 2017, Myagde Rural Municipality on August 07, 2017 and Rising Rural Municipality on August 09, 2017. .LCF will also supports to resolve the most of issues concerned with the affected people.

39. At present, the Project site office has been registering the grievance raised by affected as well as local people. Project team has taken initiations to address them as far as possible. Further, the project team regularly consulted the district line agencies (District Administrative Office, District Forest Office, District Education Office, District Land Revenue Office, District Land Measurement Office, Office of Vyas Municipality etc.) in order to address the grievances. The registered grievances so far focus on following issues:

- Acquisition of remaining land less than one ropani
- Possible impacts of reservoir to remaining land
- Disturbance on school and water logging problem

- Protection of land affected during access road and bridge approach road construction
- The field survey has been carried out to count the missing trees

7 PUBLIC CONSULTATION, MEETING AND DISCLOSURE

Table 5: List of Public Consultations

Date	Issues	Participant in Meeting/consultation	Summary of Action	Progress
January 5 and 6, 2017	Land acquisition of access road from Chapaghat to Dam Site	THL team held a meeting with affected people	A local sub-committee was formed to resolve the issues of access road from Chapaghat to Dam Site <ul style="list-style-type: none"> • Of Municipality Representative -1 • Representative of local political parties -2 • Representative from local people-1 • Representative from THL-1 	Yet to be decided plan to completed upto November 2017
April 10 and 12, 2017	Access road will disturb the school, demand for relocation of School	School management committee/Municipality and District Education Office	A decision was made to relocate the school situated on the access road, at Patan. THL will rebuild the school provided the required land for construction is made available to THL	Land is yet to be finalized.
May 26, 2017	Compensation of land	THL/ESMU, team of affected people	THL and ESMU team held a meeting with two concern groups of affected people in the reservoir area in order to address their concern on the compensation payment for land acquisition within the reservoir area	Dialogue ongoing progress design not made.

40. ESMU team of THL is regularly conducting the consultation, discussion and meeting with affected people, district line agencies, representative of local level and concern committees. The information is disseminating through the Information Centre of THL, local media (newspaper and FM radio) as well as national media for their entitlements, project impact, compensation payment schedule and process.

8. CONCLUSION AND RECOMMENDATIONS

41. Tanahu Hydropower Project is expected to enter into the construction phase of the project cycle in the beginning of the year 2018. In the meantime, the pre-construction activities such as access road construction to camp site and dam site, construction of camp facilities, substation for construction power near the project campsite and installation of distribution line are ongoing. Preparatory works for rocks mechanical testing is being carried out by Soil, Rock and Concrete Laboratory (SRCL).

42. Future course of action

- Strengthening of f ESMU in the project site;
- Forest Clearance within this Fiscal Year;
- Approval of SEIA from MOPE soon and accordingly upgrading of generation license of project from 127 MW to 140 MW.
- Approval of Supplementary IEE for Transmission line;
- The ESMU require further supporting staffs to carry out effective monitoring
- Preparation of EoI and RFP documents for the engagement of ESMSP to support ESMU in safeguards monitoring, community development program, and procurement of Panel of Expert.

43. The environmental safeguard monitoring are being carried out by ESMU, which need to be enhanced once the major construction works commence.

Appendix 1: Overall EMP Compliance

Potential Environmental Impacts	Mitigation measures	Status of Compliance
Physical Environment		
Watershed Condition		
Possibility of Soil erosion and landslides	Proper disposal of muck, construction of retaining structures, minimization of land clearance maintenance of trees and “vege cover” as one mitigation measure	Construction of access road on-going with some slope excavation and protection work, Gabion wall has been proposed.
Change in existing drainage system	Minimize natural slope disturbance	Not yet due. Complied in design
Land use change		
1075 ha land change in land use. Forest 422.89, ha, Cultivated 123.64 ha, Barren land 300.37 ha, River and Flood Plain 226.59 ha, Built Up/Residential 1.5 ha.	Acquisition of land 1075 ha, minimize as far as possible	Road has just started to be constructed. No other land use change
Microclimate: Increase in humidity in the vicinity of the headwork site, possibility of fog in the morning		Not yet due
Air quality		
Air pollution due to construction activities	Construction activities to be done during the day time, spraying of construction area with water etc.	No major construction work started. But construction of campsite, access road is ongoing so there is provision of water spraying and dust minimization.
Noise and Vibration		
Disturbances to the local people	Construction activities to be done during the day time, fencing of construction site, etc.	No major construction work started. Provision of noise minimization measures in construction plan.
Impact on the existing houses and structures due to vibration	Compensation to the people in case of development of cracks etc., blasting to be done using detonator in small quantities phases	Not yet due. Proper monitoring of impact due to vibration will be in place once construction work begins.
Hydrology and Morphology		
Change in flow downstream	Compensation release of 2.4m ³ /sec, control of boulder collection from riverbed.	Not yet due.
Fluctuation of discharge downstream	Warning systems and sign boards informing the local people about the danger	Not yet due.
Change in water table	Regular monitoring	Not yet due.
Water Quality		
Increase in turbidity and sediment content	Preventing dumping of muck into the river etc.	Small work like camp construction and access road has taken care of preventing disposal of soil in river.
Deterioration of water quality due to spillage of oils, paints, cement slurry, fecal coliform	Regular water quality check, Proper handling of oils, paints, cement, and restriction of open defecation.	Will be taken care of by ESMU, the Contractors of camp facilities and access road have used safe location for storage of oils, cement and toilets are used to control open defecation.
Impact due to muck Disposal, stockpiling and quarrying activities		

Increase in turbidity and sediment content in the river due to erroneous dumping	Disposal at appropriate places with proper slopes; bioengineering works; slopes stabilization works at quarry areas, bio-engineering works.	Disposal places identified. Proper slope stabilization will be ensured Five disposal locations are identified: at Madi River L/B, Bhateni(area 115000 sq.m), Madi River R/B, Chapaghat (110000sq.m), Seti-Madi L/B, Byas (80000 sq.m), Seti-Madi R/B, Jaruwa (Camp Site)(24000 sq.m) and Seti-Madi L/B, Bel Baas (60000sqm)
Possibility of land erosion and landslides	Proper planning of dumping areas, provision of retaining structure for slope stabilization	Disposal places identified. Proper slope stabilization will be ensured
Change in river course in case of excessive quarrying from river banks	Avoid excessive quarrying especially from river beds and banks	Quarry operation plan will be approved by Engineer and closely monitored.
Biological Environment		
Loss of forest resources Loss of 422.89 ha forest land and 22,453 nos trees and 67735 pole size tree to be felled down from 25 community forests from the reservoir area and project facilities sites trees to be cleared from 25 CF. (Sapling was 91383 in CFs in the reservoir area and project facilities sites, total no. with sapling is 181571)	Compensatory plantation and improved forest management	Tree cutting plan prepared with numbering, and it has been sent to Ministry of Forest and Soil Conservation for approval through District Forest Office, Tanahu.
Loss of habitat	Afforestation programs	Afforestation plan will be prepared with coordination of DFO
Loss of rare and endangered species	Protection of rare and endangered species	Awareness conservation program will be done
Pressure on existing forest resources due to the influx of workforce		
Felling of trees for fuel wood	Supply of alternative energy source like LPG and kerosene	Will be restricted and fossil fuel shall be promoted for cooking and heating, The contractor of access road and the camp facilities has using LPG.
Disturbances to wildlife and wildlife habitat		
Illegal poaching of wildlife	Control of illegal hunting and poaching	Will be restricted
Habitat loss	Compensatory plantation	Awareness and enhancement program will be done
Aquatic flora		
Reduction in fish number	Riparian release of 2.4m ³ /s; Releasing of fish fingerlings at the upstream	Awareness and enhancement program will be done
Loss in fish habitat	Fish farming will be done	Various measures will be prepared by ESMU and implemented
Socio-economic and Cultural Environment		
Project affected households		
86 families to be relocated	Adequate compensation, Resettlement plan to be made prior to relocation	Out of 86 families, 64 HHs have been compensated

758 families affected due to land acquire	Adequate compensation, and according to the agreed procedures/rates	Out of 758 affected households which have been identified 360 of them has been compensated. From total affected households 86 households will be physically displaced, and out of 86 physically displaced households, 64 households have been compensated. The total compensation paid till date is NRs. 834,487,57.9
Loss of arable land (agricultural production) 660 metric tons/year		
Loss of yield, impact on the economic status of the local people	Yield and production support activities; loan support and income generation activities, training	Livelihood and skill development training planned under community development component
Impact on the cultural environment		
Disruption of cremation sites (9 nos)	Rehabilitation and construction of affected cremation sites	Will be relocated to suitable place in consultation with local people
Disruption of the traditional way of living	Awareness programs	Community development plan will be prepared
Disruption on community structures (access road-2, suspension bridges-7, Thati (Resting Place)-6, Foot trail-20, Irrigation Canals -1, Electricity distribution line -2, Ropeway(Tuine)-1.	Relocation of Affected Infrastructures (Motorable road, suspension bridge, ropeway, foot trail, electricity distribution line and irrigation canals) with consultation of local people.	Not yet due.
Impact on Disadvantaged groups of people		
Work burden on women, child labor	Ensure no children employed by project, ensure suitable works for the women	Will be ensured
Impact on Community Services and Institution		
Pressure on existing infrastructures due to influx of workers	Development of adequate infrastructure; establishment of subsidized work	Proper OHS, adequate infrastructure in camps, and public health facility will be planned
Social instability and conflicts	Increase in police security	Management strategy and plan will be prepared
Impact on health and sanitation		
Increase in HIV and other diseases	Public awareness programme, free distribution of condoms, providing health facilities, water supply	Awareness to workforce
Impact on safety		
Possibility in work related injuries, Vehicle accidents etc.	Insurance, warning systems, Sign Boards, firefighting gears, safety training for workers, safety awareness programs	Included in the design and will be implemented
Construction Labor Force Impact		
Increase in incidence of diseases, increase in prostitution, in gambling, law and order	Provision of social infrastructure and, facilities, clean sanitation program, awareness training, Prohibition of gambling and alcoholism	Will be monitored and discouraged through awareness program,
Impact on tourism		

Disturbances to tourist visiting the Vyas Caves	Inform the tourist about the construction activities using sign boards and notice in critical areas	Awareness program
Impact on the white-water rafting	Warning systems to inform the tourist about the construction activities	Awareness program
Impact on Local Economy and People's behavior due to increase in Economic Activities	Job opportunities for local people, training program, provision for market	Livelihood training will be provided
Impact on religious historical and archeological Sites	Protection of the religious sites, Co-ordination with local bodies for protection works	Awareness program
Existing water use rights and downstream release	Compensation release of 2.4m ³ /s	Will be assured

Appendix 2: Sample Environmental Site Inspection Report

Sample Environmental Site Inspection Report

Project Name _____
 Contract Number _____

NAME: _____ DATE: _____
 TITLE: _____ DMA: _____
 LOCATION: _____ GROUP: _____

WEATHER CONDITION:

INITIAL _____ **SITE** _____ **CONDITION:** _____

CONCLUDING SITE CONDITION:

Satisfactory _____ Unsatisfactory _____ Incident _____ Resolved _____ Unresolved _____

INCIDENT:

Nature of incident: _____

Intervention Steps:

Incident Issues

Resolution

Project Activity Stage	Survey	
	Design	
	Implementation	
	Pre-Commissioning	
	Guarantee Period	

Inspection

Emissions	Waste Minimization
Air Quality	Reuse and Recycling
Noise pollution	Dust and Litter Control
Hazardous Substances	Trees and Vegetation

Site Restored to Original Condition Yes No

Signature _____

Sign off

Name _____
 Position _____

Name _____
 Position _____

Attachments: No Yes

Appendix 3: Photographs



Figure 1: Community Consultation at Benipatan for Access Road Construction



Figure 2: Community Consultation with Local People of Reservoir Area



Figure 3: Construction of Camp Facilities



Figure 4: Construction of Sub-station



Figure 5: Access Road Construction



Figure 6: Field Visit by High Officials of NEA and THL team



Figure 7: Field Visit from ADB and THL team



Figure 8: Field Visit from ADB and THL team

Appendix: 4 Project Implementation Schedule (Revised)

