

Environmental Monitoring Report

Semi-Annual Report
Jan – June 2015

Loan 2517-VIE: Renewable Energy Development
and Network Expansion and Rehabilitation for
Remote Communes Sector Project

Subproject: Nam Nghe Mini Hydropower

CURRENCY EQUIVALENTS

(as of 30 June 2014)

Currency unit	–	Vietnamese Dong (VND)
VND1.00	=	\$0.0000473
\$1.00	=	VND21,125

ABBREVIATIONS

ADB	-	Asian Development Bank
NPC	-	Northern Power Corporation
PDPMB	-	Power Development Project Management Board
DONRE	-	Department of Natural Resources and Environment
EMS	-	Environmental Monitoring System
ESDC	-	Environment and Social Development Cell
EVN	-	Electricity Vietnam
IEE	-	Initial Environmental Examination
SONRE	-	Section on Natural Resources and Environment
VIE	-	Viet Nam

{WEIGHTS AND MEASURES}

MW	–	Megawatt
Km	–	Kilometer
km ²	–	Square kilometers
l/s	–	Litres per second
m	–	Metre
m ³	–	Cubic metre
m ²	–	Square metre
mm	–	Millimeter
s	–	Seconds
mg/l	–	Milligram/litre
dBA	–	{Definition 3}

NOTE

In this report, "\$" refers to US dollars unless otherwise stated.

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I. INTRODUCTION

1. PROJECT INFORMATION

1. The Nam Nghe hydropower project is a sub-project of Loan 2517-VIE: Renewable Energy Development and Network Expansion and Rehabilitation for Remote Communes Sector Project which is funded by the Asian Development Bank (ADB). The implementing agency of this sub-project is Northern Power Corporation (NPC). Nam Nghe hydropower plant is constructed for rural electric system in Hua Bum Commune, Nam Nhun District, Lai Chau Province.

2. The sub-project is part of the small hydropower plant development plan in Lai Chau up to 2020, which was approved through Decision No 986/QĐ-UBND on July 17, 2008 by the PPC. Supplemented Decision No. 888/ QĐ-UBND 27 August, 2012 of the PPC.

3. The sub-project is located in Nam Nghe stream in Hua Bum commune of Nam Nhun district, Lai Chau province (Figure 1) and will not affect the villages within the project implementation of Nam Nghe) and Nam Nghe (immediately downstream of the hydropower plant). It is planned to be constructed on the Nam Nghe River which is the influent level I of Nam Bum river. The rivers originate from a mountainous region with the height of more than 1,000 m at coordinates of 103°56'55.5" East and 22°24'30.7" North. The rivers flow from the North toward the South, then merge into Nam Bum river. The Nam Nghe hydropower project is positioned at 103°56'44.4" East and 22°23'43.5" North. The reservoir of the Nam Nghe hydropower project has a small catchment area of 32,1 km².

4. The reservoir, headwork route, and energy route are in Nam Nghe, Pa Mu village, Hua Bum Commune, Nam Nhun District, Lai Chau Province.



Figure 1: Project location in the region

Main work items

5. The Nam Nghe hydropower sub-project will have 7.5 MW generating capacity and an annual average electricity production of 36,53 million KWh. The main elements are shown in Figure 2 and 3 and described as follows:

- a. A dam with maximum height of 20,5 m and reservoir with volume of 44.500m³;
- b. A canals long of 3.110m;
- c. A penstock of 780m in length, pipe section of 1.2 m and pipe-thickness from 1.2 to 2.0 cm;
- d. A powerhouse with three Francis - horizontal turbines;
- e. Outdoor electricity distribution station;
- f. A 35-KV transmission line to transfer electricity to the national grid through Muong Te-Nam Nhun; and
- g. Administration and management building

6. Below the dam, all the project components are on the right bank of the Nam Nghe river. The power from the Nam Nghe hydropower plant will provide electricity to the Hua Bum, Bum Nua, Pa Ve Su Commune with a population of 6,880 persons, mostly ethnic Thai, Mong, Ha Nhi, Mảng.

7. To connect the Nam Nghe hydropower plant to the national electricity system, a new 35- kV line connection line is required, including one circuits: about 0.3 km in length, wire AC-70 35kV lines connected to Hua Bum – Muong Te.

8. The water delivery system of the dam has a calculated head of 330,56m, which is designed to deliver a maximum of 2,74m³/s to two turbines and generate 7.5 MW of power. As a result of the project, in the dry season, the Nam Nghe River will experience loss of water flow for approximately eight to nine months over the 5 km of the river between dam and powerhouse.

9. During low flow months with a flowrate of less than 0.5 m³/s, the plant will operate for only a few hours per day to provide for peak hour power requirements. The water regime will change immediately downstream of the dam.

10. Various access roads are required by the project:

- a. At the dam, 1.2 km of road with the upgrading of existing track road and about 800m temporary road on right and left bank for temporary construction access;
- b. In the surge tank, 420-m investment to serve the construction and subsequent operation;
- c. For powerhouse, upgrading of the existing 200-m track road to provide permanent access to the plant; and
- d. A 640-m track road along the penstock route for construction purposes.

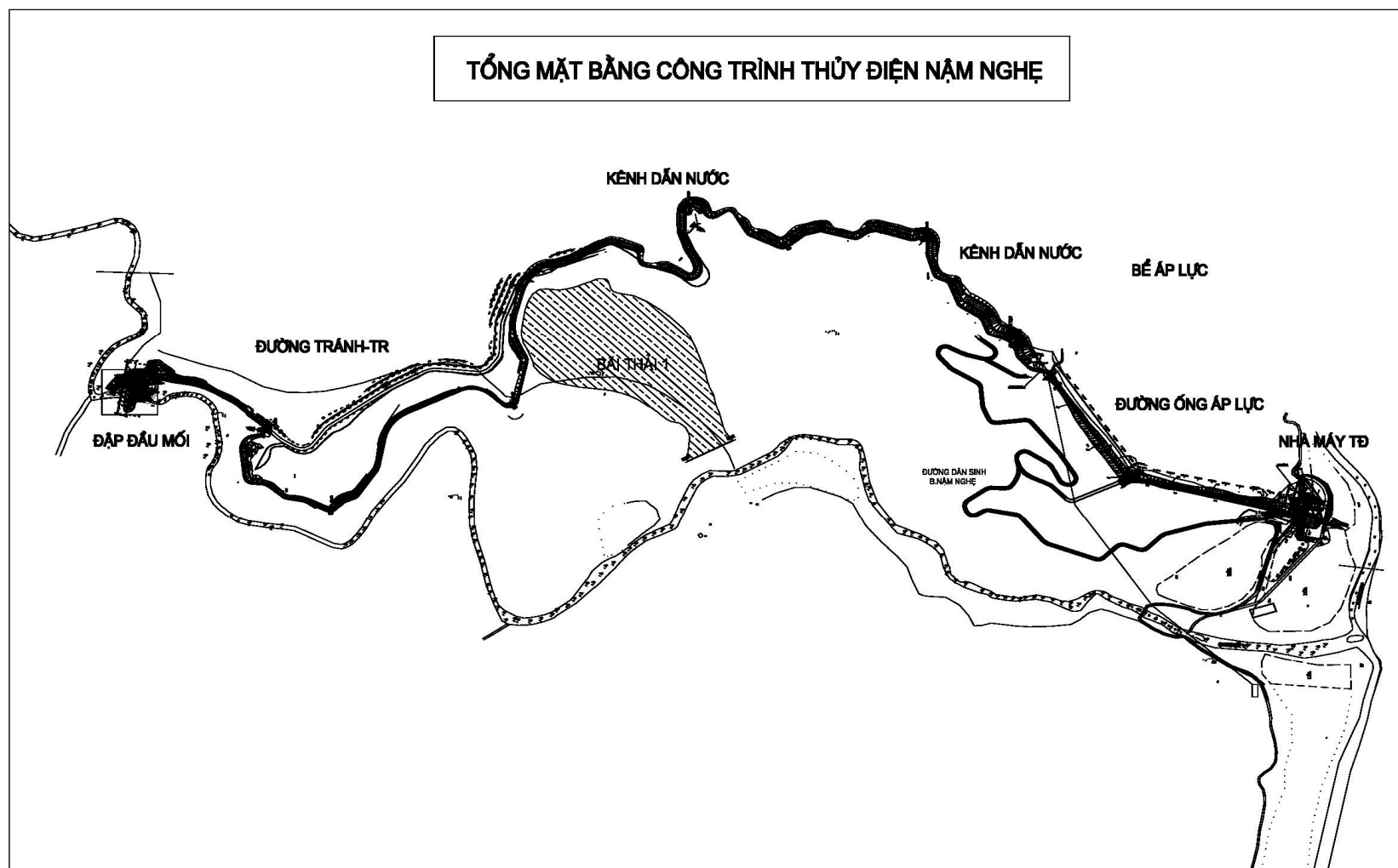


Figure 2: Master Plan of Nam Nghe Hydropower Project

11. In addition to the main components, there are also auxiliary components for the Nam Nghe Hydropower project which are described in the table below:

Auxiliary components

Components	Area (ha)
Accommodation of workers	1.15
Concrete batching plant	0.4
Base crushing and screening material storage yard	0.75
Steel formwork base	0.4
Blasting materials warehouse	0.04
Park management and operation	0.6
Inventory	0.15
Base of underground components	0.5
Maintenance base and parking area	0.2
Oil storage	0.1
Installed machine base	0.03
Reserve land	0.4

12. The proposed campsite is along the highway. The campsite is close to local communities in Pa Mu village.

2. PURPOSE OF ENVIRONMENTAL MONITORING

13. The Power Development Project Management Board (PDPMB) of the Northern Power Corporation has been appointed as the department to undertake the management of the implementation of sub-projects of Loan 2517-VIE. The PDPMB consists of the Hydropower Section, directly monitoring the implementation of Nam Nghe Hydropower project. The PDPMB is also tasked to establish and assess the environmental performance of the sub-project and its contractors with a view of improving the environmental performance of the overall project.

14. Environmental Monitoring report presents the results of monitoring the construction of hydropower projects Nam Nghe period from January to June 2015. The document reports the implementation of the project, in accordance with accounting environmental management plan (EMP), and it is consistent with the requirements of the environmental regulations of the Government of Vietnam. This report also aims to present the corrective measures or remedial environmental impact was observed during monitoring.

15. The PDPMB reviewed and monitored the implementation of the EMP based on the Initial Environmental Examination (IEE) report which was submitted to ADB. The Environmental Compliance and Monitoring Form and Environmental Monitoring Checklist provided by ADB was used to assess the compliance of the contractors with the EMP and with ADB's Environment Safeguards. Site visits were carried out to validate implementation of the mitigation measures.

16. The objectives of the monitoring are:

- ✓ Monitor the sub-project's compliance with Vietnam Technical Regulations and Law on Environment

- ✓ Monitor the sub-project's compliance with ADB's Environment Safeguards requirements
- ✓ Monitor compliance of the contractors with mitigation measures to address construction impacts on the environment as per Contract Conditions and the EMP
- ✓ Determine corrective actions to minimize negative impacts on the environment during the construction phase.

II. STATUS OF LEGAL & POLICY COMPLIANCE

17. The Commitment on Environmental Protection (CEP) of Nam Nghe Hydropower project was approved by the People's Committee of Lai Chau District on 14 October, 2012. The IEE was also endorsed by ADB. The EMP as contained in the approved IEE was included in the bid document with the contractors. The responsibility of EMP implementation during the construction phase of the project was entrusted to the contractors of the project. The implementation of the EMP by the contractors is being monitored by the field officers of the PDPMB of NPC.

18. The Nam Nghe Hydropower Project has secured the following licenses and clearances for its implementation:

Table 1: Environmental Permits and Licenses Secured

License/Clearance	License/Clearance No.	Issued by	Date Issued
Approval of EIA	1417/QĐ UBND	People's Committee of Lai Chau District	14 October, 2012
Reforestation reimbursement	1020/QĐ-UBND	People's Committee of Lai Chau District	28 August, 2014

19. Other issues is awaiting approval:

License/Clearance	License/Clearance No.	Issued by	Date Issued
Extraction surface water license	unfulfilled		
UXO license	pending		

III. ENVIRONMENTAL MANAGEMENT SYSTEM

20. The Environment and Social Development Cell has not been created by NPC. Instead, a focal person on environmental matters has been appointed within PDPMB to audit the implementation of the EMP by the contractor and to coordinate activities related to the EMP implementation and monitoring. A monitoring system will be developed and implemented on a regular basis. Documentation of monitoring activities will be retained at the project site by the PDPMB.

21. Parties in the EMS and respective responsibilities during construction & operation phases are presented in the table below.

Table 2: Parties and respective responsibilities in the EMS

Parties	Responsibilities
NPC/PMU	Manage for ensuring the implementation of the IEE and EMP
Construction Contractor	Implement contents of EMP following to the signed contract
Construction Supervision Consultant	Monitor the implementation of the EMP of the contractor and report to NPC/PMU
Provincial Department of Natural Resources and Environment (DONRE)	General management of natural resources and environment
District People's Committee	General management of natural resources and environment
Commune People's Committee	General management of natural resources and environment

22. The following are the personnel assigned by NPC and the contractor to monitor compliance with environmental mitigation measures:

Table 3: List of contacts/members in EMS

Name of Personnel	Organization	Responsibilities
1/ Nguyen Duc Hieu 2/ Bui Xuan Quyen 3/ Dao Quoc Duong	1/ Lai Chau Power Company 2/ Song Da commercial investment JSC. 3/ Toan Phat construction industry JSC.	Monitoring of dam
1/ Nguyen Thanh Tan 2/ Nguyen Viet Dam 3/ Nguyen Ngoc Tuat	1/ Lai Chau Power Company 2/ Song Da commercial investment JSC. 3/ Lung Lo Corporations build JSC.	Monitoring of canals
1/ Leu Ha Tuyen 2/ Nguyen Van Cuong 3/ Le Van Mach	1/ Lai Chau Power Company 2/ Song Da commercial investment JSC. 3/ Binh Minh Investment Joint Stock Company Construction and VVV development and investment company shares.	Monitoring of factory

IV. WORK PROGRESS

23. Packages and construction contractors are listed in the table below.

Table 4: Information on packages and construction contractors

Construction Package	Description of work item in the package	Name of construction contractor	Contact
NPC-ADB - NN/W01	Construction of 35 kV line, 35/0.4 kV, 0.4kV substation	Duyen Ha Company Limited	0436621909
NPC-ADB - NN/ W02	Construction of 0.4 kV line	Duyen Ha Company Limited	0436621909
NPC-ADB -NN/W03	Construction of the headworks	Toan Phat construction industry JSC.	0435 379 424
NPC-ADB -NN/W04	Construction of headrace (sand trap, canal)	Lung Lo Corporations build JSC.	0435633582
NPC-ADB -NN/W05	Construction of penstock, powerhouse, tailrace, OPY substation, O&M house	Binh Minh Investment Joint Stock Company Construction and VVV development and investment company shares.	0435543180

24. Table below outlines the progress of the project construction:

Table 5 : Work progress until 30th June, 2015

Project Component	Started date	Completion	Remarks
Construction of 35 kV line, 35/0.4 kV substation for unelectrified households	22/5/2015	90%	
Construction of 0.4kV line for unelectrified households	22/5/2015	52%	The work progress is quite slow due to the rainy season and changes of design.
Construction of the headworks	1/7/2015	0%	
Construction of headrace (sand trap, canal)	30/6/2015	10%	The work progress is quite slow due to the changes of design.
Construction of penstock, powerhouse, tailrace, OPY substation, O&M house	30/6/2015	10%	The work progress is quite slow due to the changes of design.

V. ENVIRONMENTAL COMPLIANCE MONITORING

25. Environmental compliance monitoring is implemented by Construction Supervision Consultant and PDPMB to check if all construction activities implemented by Construction Contractors follow EMP, IEE and environmental impacts to local areas/local residents during construction.

26. Table below describes implemented mitigation measures for anticipated impacts from IEE as well as current environmental impacts. Compliance level and Effectiveness of the implemented mitigation measures from Construction Contractors are also assessed.

Note:

- *Compliance level and effectiveness level could be ranged from 1 to 5 (1: very good; 2: Good; 3: Fair; 4: Poor; 5: very poor);*
- *“**Compliance level**” refers the actions which had been implemented to see if the actions follow proposed IEE or not. In “**Compliance level**” column, the consultant should decide marks ranged from 1-5; other than that, short passage is necessary to explain why ranking that mark.*
- *Could the impacts be reduced by mitigation measures which had been implemented? How is the impact reduced by that actions/mitigation measures? “**Effectiveness level**” reflects these two question. Short passage is also necessary for explanation in this column.*

Table 6: Assessment of environmental compliance

Impacts & location	Mitigation measures from IEE	Mitigation measures implemented	Compliance level	Effectiveness	Impact observed/ location	More action required & responsibilities	Contractor response
Construction Phase							
Earthworks for new access roads and construction of penstock on steep slopes leading to erosion & encroachment	Slopes along access roads & penstock will be provided with: ✓ Catchments/ cut-off drains, silt traps & chutes to minimize soil erosion. ✓ Masonry retaining structures. ✓ Formation of sediment basins & slope drains.	Contractor built masonry, cut-off drains	2	2	. There are rocks and soil along the canals	Require contractor to regularly maintenance, clean the catchments, chutes, masonry retaining structures, sediment basins & slope drains	Contractor agreed
	Maximum usage of material in fill areas.	Yes	1	1		Continue this measure	Contractor agreed
	Spoils planning particularly on steep slopes with bench terracing for high cut areas & avoidance of any erosion and runoff of material on down slopes.	Yes	2	2		Continue this measure	Contractor agreed
	Planting grass and revegetation on disturbed areas and maintaining of landscaping.	not conducting grass planting	3	3		that will be implemented at next period	Contractor agreed to implement when building
Use of Borrow Materials with potential for loss and degradation of land	No earth will be borrowed from cultivable and arable lands. Borrowing to take place from barren, wastelands, & riverbeds. For new borrow areas, all measures will be taken to avoid loss of any productive soil. Any borrow areas will be refilled, re-vegetated & landscaped.	Earth materials were taken only from the site. There were no materials taken from agricultural land.	1	1			
Taking of Quarry Materials with loss and degradation of land	Quarry materials will be obtained from existing operating sites with proper licenses & environmental clearances.	Existing quarries were used by the contractor.	1	1			

Impacts & location	Mitigation measures from IEE	Mitigation measures implemented	Compliance level	Effectiveness	Impact observed/ location	More action required & responsibilities	Contractor response
	New quarries to be opened only with permission of respective authorities.						
Operation of construction equipment and construction activities and contamination of soils, loss of water quality & water pollution	Fuel storage & refuelling will have adequate containment, away from water bodies/channel.	yes	1	1		Require contractor to collect waste oil to storage	Contractor agreed
	Equipment will be properly maintained.	The clouts used to clean equipment are collected	1	1	Equipment has been maintained regularly.	Contractor has to collect clouts used to clean equipment	
	Precautions to be taken to prevent water pollution due to increased siltation & turbidity for weir site & road construction particularly in dry month when flows are low.	yes	2	2			
	Approved sites defined for storage & disposal of wastes materials	yes	3	3		Require contractor to implement	Contractor provided site for waste material in 29 May-2015
	Any waste petroleum products will be collected, stored, & disposed of at approved sites.	Waste petroleum has been collected, stored in containments	3	3	The storages of waste petroleum scaratter everywhere	Require contractor to collect the storage at approved sites	Contractor agreed
Construction activities causing disruption of existing surface drains.	Appropriate rain-storm-water channels will be constructed.	Rain-storm water channels were provided at the access road, construction area, clue dam	1	1			
	Provision for cross drainage structures will be made.	yes	2	2			
Construction Camp & Residential colony. Social impacts & pollution from wastewater & solid waste	Construction camps will be located adjoining the dam and powerhouse sites & away from any settlement.	Construction camps are located far from residential communities.	1	1		Continue this measure	Contractor agreed
	Manual labour will be employed locally.	The contractor hired 30-40 workers from the community, however, this number is not fixed and	1	1			

Impacts & location	Mitigation measures from IEE	Mitigation measures implemented	Compliance level	Effectiveness	Impact observed/ location	More action required & responsibilities	Contractor response
		rotating.					
	Camps & residential colony will have properly designed sewage treatment system for wastewater effluent. Likewise, solid waste collection system will be employed.	Septic tanks are not provided at the camps; Rain-storm water channels front of camps are blocked	4	4		Septic tanks at the camps will construct at next period.	Contractor agreed
Emission from Construction Vehicles & Equipment causing air pollution	Emission levels of all construction vehicles & equipment will conform to Vietnamese emission standards.	Contractors were required to maintain construction vehicles & equipment regularly.	2	2		Require contractor to pay attention to emission	Contractor agreed
	Pollutant parameters will be monitored during construction.	unfulfilled	-	-	physical environment monitoring will be in the quarter I / 2016		
	Crushing, & concrete plants will be away from population centres at dam and powerhouse sites.	Concrete plants are located away from population centers.	1	1		Continue this measure	Contractor agreed
Dust particulates causing health impacts for workers and villagers	All precautions to be taken to reduce dust level emissions from batching plants & portable crushers at dam and powerhouse sites.	The construction site itself is located away from residential community.	1	1			
	Regular water spraying at all mixing sites & temporary service roads will be undertaken.	Water spraying on roads and dusty areas were undertaken by the contractor regularly	1	1			Contractor agreed
	All delivery vehicles will be covered with tarpaulin.	There were delivery vehicles not covered with tarpaulins.	2	2	Some vehicles were not covered	Require contractor to cover all of delivery vehicles	Contractor agreed
Construction activity Noise from Vehicles, Plant & Equipment causing noise pollution	All construction equipment & plants will conform to Vietnamese noise standards.	Noise sampling was not conducted	-	-		physical environment monitoring will be in the quarter I / 2016	
	All vehicles & equipment to be fitted with noise abatement devices.	yes	1	1			

Impacts & location	Mitigation measures from IEE	Mitigation measures implemented	Compliance level	Effectiveness	Impact observed/ location	More action required & responsibilities	Contractor response
	Construction workers will be provided with personal protection.	yes.	1	1			Contractor agreed
Noise pollution from any blasting activities at dam and power tunnel and penstock,	Any blasting works will be in accordance with Vietnamese Explosives Act.	No	This period has not conducted blasting (From January to June 2015)				
	No blasting between dusk & dawn.	No					
	Residents close by will be informed well in advance of blasting times.	No					
	Workers associated with blasting sites will be provided with earplugs, helmets & other personal safety devices.	No					
Construction of dam, reservoir, tunnel, penstock with loss of vegetation & tree cover.	No trees to be removed without prior approval.	yes	1	1			
	Compensation for lost trees on private land.	Trees that were removed were compensated.	1	1	Compensated for lost trees on private land		
	Planting grass and maintaining temporary construction areas, roads and other elements of the project.	tree planting be implemented after construction				tree planting be implemented after construction	
	Indigenous tree species being accorded priority over exotic species such as: Acacia Aurculiformis A.Cunn.ex Benth	There are no indigenous tree species in the project area					
Work force during construction causing impacts to wildlife	Construction workers to be educated for wildlife conservation with no hunting & poaching to be allowed for workers.	Construction workers are directed not to hunt or poach for wildlife in the area.	1	1	Workers have not hunted or poached	Require workers to continue	Workers agreed to conserve wildlife
Construction Activities & Accident Risks	All blasting sites will have warning & clearance signals. Site will be inspected prior/after blasting.	All blasting sites had warning & clearance signals. Site were inspected prior/after blasting.	1	1		Continue this measure	
	Workers will be provided with helmets, masks, safety goggles, etc.	Some workers were wearing helmets, masks, safety goggles, etc	1	1		Require workers to continue	

Impacts & location	Mitigation measures from IEE	Mitigation measures implemented	Compliance level	Effectiveness	Impact observed/ location	More action required & responsibilities	Contractor response
	A readily available first aid unit will be available with dressing materials etc.	First-aid kit is available at the administration office.	1	1	There were not first-aid kit at the camps of tunnel contractor	Require to provide the first-aid kit at the camps	Tunnel contractor provided the first-aid kit at the camp on 25 Mar 2015
	Road safety education will be given to construction vehicle drivers.	yes	1	1	All of drivers have license for driving	Require drivers to go slowly and carefully	Contractor agreed
	Traffic management will be ensured during road construction periods.	yes	1	1		Require contractor to manage traffic during road	Contractor agreed to implement
	Information dissemination will take place through the Commune's People Committee regarding activities causing disruption.	yes	1	1			
Construction Activities causing disruption to Public Utilities	Any public utilities likely to be impacted, such as water supply pipe system, power/phone lines etc. must be relocated to suitable places, in consultation with local beneficiaries.	Pay attention to mind the power/ phone line of the powerhouse	1	1		Continue this measure	
Any discovery of artifacts or articles of historical interest and importance	For all finds of an historical or cultural value, work will be stopped and the find reported to the nearest office of the Department Culture, Sport and Tourism or the Department of Culture and Information	There were no historical or cultural sites affected by the project.	1	1			
Generated impacts							
None							

VI. PHYSICAL ENVIRONMENT MONITORING

27. The ambient environmental monitoring plan had been included in the disclosed IEE of Nam Nghe hydropower plan subproject. The detail environmental monitoring plan included: i) Noise (dBA) which follow national technical standard QCVN 26:2016/BTNMT; ii) Air quality: dust which compared with national technical standard QCVN 05:2009/BTNMT and iii) Surface water quality: fecal coliform, dissolved oxygen, pH, TSP, oil and grease, BOD5 which listed in QCVN08: 2008:BTNMT. Moreover, the monitoring requirements had also been proposed for any additional locations or parameters which need to validate complaints and pollution event(s) due to project activities.

28. However, during this report period (from January to June 2015), the construction works on the sites mostly focused on site clearance, establishment of sites and worker camps, obtaining relevant agreement letters from local authorities in disposal areas, utilization of public facilities and mobilization of equipment and workers on the site.

29. Construction activities mostly is Construction of 35kV line, 35/0.4 kV substation for unelectrified households and Construction of 0.4kV line for unelectrified households. work progress is 90%. This is a category of medium and low voltage, Constructed in small scope and does not affect the environment; the line pole foundations has small earthwork volumes, therefore the discharge of waste into the environment is negligible.

30. Therefore, physical environmental monitoring also had not implemented during this period. The physical environment monitoring program of subproject will be implemented in the quarter I/ 2016.

VII. KEY ENVIRONMENTAL ISSUES & ACTIONS

31. According to the Environmental Assessment and Review Framework (EARF) of this loan, the sub-project should also not involve activities located in the core zone, or as much as possible, in or near the buffer zone of designated special use forests consisting of national parks, protected landscapes and nature reserves or nature conservation areas and other protected areas where the proposed development is prohibited. The sub-project should as much as possible not involve activities located in or near ecologically sensitive and significant areas as recognized by the Government or any area that is internationally significant. In addition, the sub-project should, as much as possible, not involve activities located in or near any cultural heritage and historical sites designated by the Government or by international agencies such as UNESCO.

32. The Nam Nghe hydropower subproject and its components were designed after detailed surveys to ensure strict compliance with the above conditions. The Nam Nghe hydropower project and components are not passing through any wildlife sanctuary or national park. There are no sensitive areas or monuments of cultural and historical importance that is affected by the project activities.

VII. 1. Key environmental issues

33. The following are the key issues and follow-up actions that were identified.

- Soil around construction of 35kV line, 35/0.4 kV substation for unelectrified households and construction of 0.4kV line for unelectrified households

Although, soil generated from construction activities of 35kV line, 35/0.4 kV, 0.4kV lines and substation for unelectrified households was not much. Each column foundation having a length of 80cm ~ 1m, a width of 1m; amount of excavated soil for each of column foundation is: 5.04 m³, larger amount of excavated will be backfill foundation and column base. However, a very small negligible amounts of the soil and rock was not reused which spreading around the pole foundation. These type of soil need to be collected, and removed to approved storage or disposal areas to control impacts on surrounding agricultural land and sanitation issues.

- The waste around camp site of contractor: This period, worker camps have been established. The contractor hired 20-30 workers from the community. Temporary camps was also established and there are about 10 workers often stay in camps. The solid waste management was not appropriate practice, workers often throw out the waste around the camps or brush even garbage bins were provided in the camp site. Therefore, the solid waste management need to improve through raising awareness for workers. The site supervisors reminded the contractors to collect the waste many times, thus the issues need to be addressed.

Addition to, there are not Septic tanks at the campsite. Require contractor have Septic tanks at the campsite immediately.

January – May 2015: Approval letter for a disposal area was on 29 May-2015, however, there are big volume of excavation which need to be disposal, thus additional disposal sites will need to complete in next period.

- Dust emission from movement of trucks: At some locations, hauling trucks do not provide tarpaulin cover causing spill of materials.
- Monitoring Pollutant parameters during construction: Pollutant parameters were not monitored during construction because The project started under construction in a short time; Lai Chau power company is conducting selection of contractors for physical environmental monitoring in the next stage.

VII.2. Follow-up actions required

34. Table below summarizes the key issues, follow-up actions and the timeframe for implementation:

Table 7: Environmental issues and follow-up actions required

Follow-up Actions Required	Timeframe	Responsible Parties	Reporting to
Approval sites defined for storage & disposal of wastes materials	Immediately	Lai Chau Power Company	✓ Construction Supervision Officer ✓ NPC/PMU
Collecting solid waste around the camps	Immediately	1. Toan Phat construction industry JSC. 2. Lung Lo Corporations build JSC. 3. joint-venture Binh Minh investment and development Joint Stock Company with VVV investment Joint Stock Company.	✓ Construction Supervision Officer ✓ NPC/PMU
Septic tanks at the campsite	Immediately	joint-venture Binh Minh investment and development Joint Stock Company with VVV investment Joint Stock Company.	✓ Construction Supervision Office ✓ NPC/PMU
Monitoring Pollutant parameters	1 th quarter /2016	Lai Chau power company is conducting selection of contractors for physical environmental monitoring	✓ Construction Supervision Office ✓ NPC/PMU

VIII. CONCLUSIONS & RECOMMENDATION

35. During this report period (from January to June 2015), the construction works on the sites mostly focused on site clearance, establishment of sites and worker camps, obtaining relevant agreement letters from local authorities in disposal areas, utilization of public facilities and mobilization of equipment and workers on the site.

36. Proper implementation of the EMP and monitoring mechanism throughout the project life cycle, supported by strong institutional arrangement has considerably minimized the adverse impacts of the project activities. Some of the anticipated environmental impacts during the construction period have been mitigated by implementing the EMP. PDPMB, Lai Chau Power Company will continue to monitor the contractor's performance in terms of sustaining the implementation of the EMP.

37. In terms of implementation of the environmental management plan, As of June 30, 2015, Lai Chau Power Company implemented the following measures:

- ✓ Lai Chau Power Company was advance payment for compensation, support and resettlement categories road to the surge tank; road to the dam, road to the factory for local authorities and households are affected
- ✓ Provided approval site for waste material in 29 May-2015
- ✓ Water spraying on roads and dusty areas were undertaken by the contractor regularly
- ✓ All delivery vehicles will be covered with tarpaulin.
- ✓ Workers wear personal protection.

PDPMB will continue to monitor the contractor's performance in terms of sustaining the implementation of the EMP and recommendation: ADB will organize courses for Service of the Building the EMP implementation capacity:

1. Training on environmental management in which there are the EMP implementation part and other training contents for NPC officials, if required
2. Environmental and EMP training for construction staffs of the contractor (done by the contractors or by the construction monitoring consultant, or done by PMU).

APPENDICES

- a) Appendix 1: Photos of the Nam Nghe project site
- b) Appendix 2: Approval of EIA from Lai Chau Province under Decision No. 1417/QĐ-UBND on 14/11/2012.
- c) Appendix 4: Environmental Compliance and Monitoring Since the beginning of construction

ANNEX1 : Photos of the Nam Nghe project site

	
TC 1 Road under construction	Road to the dam Nam Nghe.
	
Road construction on the dam	disposal area close to dam
	
TR Road under construction	Construction of roads and canals



Substation 35/0.4kV Nam Nghe



Appendix 2:

ỦY BAN NHÂN DÂN
TỈNH LAI CHÂU

CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM
Độc lập - Tự do - Hạnh phúc

Số: 1417 /QĐ-UBND

Lai Châu, ngày 14 tháng 11 năm 2012

QUYẾT ĐỊNH

**Phê duyệt Báo cáo đánh giá tác động môi trường dự án:
Thủy điện Nậm Nghệ huyện Mường Tè, tỉnh Lai Châu**

CHỦ TỊCH ỦY BAN NHÂN DÂN TỈNH LAI CHÂU

Căn cứ Luật Tổ chức HĐND và UBND ngày 26 tháng 11 năm 2003;
Căn cứ Luật Bảo vệ môi trường ngày 29 tháng 11 năm 2005;
Căn cứ Nghị định số 29/2011/NĐ-CP ngày 18 tháng 4 năm 2011 của Chính phủ Quy định về đánh giá môi trường chiến lược, đánh giá tác động môi trường, cam kết bảo vệ môi trường;

Căn cứ Thông tư số 26/2011/TT-BTNMT ngày 18 tháng 7 năm 2011 của Bộ Tài nguyên và Môi trường quy định chi tiết một số điều của Nghị định số 29/2011/NĐ-CP ngày 18 tháng 4 năm 2011 của Chính phủ quy định về đánh giá môi trường chiến lược, đánh giá tác động môi trường, cam kết bảo vệ môi trường;

Theo đề nghị của Giám đốc Sở Tài nguyên và Môi trường tại Tờ trình số 570/TTr-STNMT ngày 12/11/2012,

QUYẾT ĐỊNH:

Điều 1. Phê duyệt Báo cáo đánh giá tác động môi trường dự án: Thủy điện Nậm Nghệ huyện Mường Tè, tỉnh Lai Châu được lập bởi Ban quản lý dự án phát triển điện lực với các nội dung chủ yếu sau đây:

1. Phạm vi, quy mô, công suất của dự án
 - Tên dự án: Thủy điện Nậm Nghệ huyện Mường Tè, tỉnh Lai Châu
 - Chủ dự án: Ban quản lý dự án phát triển điện lực
 - Địa điểm xây dựng: Xã Hua Bum, huyện Mường Tè, tỉnh Lai Châu.

Báo cáo này không bao gồm nội dung đánh giá tác động môi trường đối với các hoạt động xây dựng đường dây tải điện; đường giao thông tránh ngập; khai thác và chế biến vật liệu xây dựng phục vụ Dự án nằm ngoài khu vực dự án; khai thác, tận thu lâm sản và khoáng sản trong lòng hồ; di dân tái định cư; di dời các di tích lịch sử và bảo tồn trong lòng hồ...

2. Ban quản lý dự án phát triển điện lực có trách nhiệm thực hiện đúng những nội dung trong Báo cáo đánh giá tác động môi trường đã được phê duyệt và những yêu cầu bắt buộc sau đây:

- Tổ chức thu dọn vệ sinh lòng hồ, đảm bảo nguồn nước hồ sau khi tích nước có chất lượng đáp ứng tiêu chuẩn phục vụ mục đích cấp nước sinh hoạt;
- Thu gom, xử lý rác thải sinh hoạt và các loại chất thải khác trong quá trình thi công xây dựng công trình bảo đảm các yêu cầu về vệ sinh môi trường hiện hành;

- Thực hiện việc tích nước vào hồ theo nguyên tắc bảo đảm các loại khoáng sản, tài nguyên rừng trong khu vực lòng hồ đã được khai thác tận thu một cách tối đa và các di tích lịch sử, văn hóa trong lòng hồ đã được di dời khỏi lòng hồ;

- Phối hợp với cơ quan chức năng thực hiện việc khai thác tài nguyên rừng và các lâm sản trong lòng hồ và các địa bàn thi công được cơ quan có thẩm quyền giao đất theo quy trình và các quy định hiện hành;

- Có biện pháp và quy định cụ thể nhằm ngăn chặn các hành vi chặt phá cây rừng và săn bắn động vật hoang dã trái phép của cán bộ, lực lượng lao động của dự án; thực hiện các biện pháp bảo vệ các loài thủy sinh, đặc biệt là các loài cá vùng thượng và hạ lưu của đập;

- Quy hoạch, bố trí, thiết kế vận hành các lán trại công nhân, kho tàng chứa nguyên vật liệu, bãi chứa và chôn lấp rác thải ở những nơi phù hợp, bảo đảm các yêu cầu về an toàn bảo vệ môi trường trong quá trình thi công và vận hành công trình;

- Phối hợp với chính quyền địa phương thực hiện công tác giải phóng mặt bằng, đền bù, tái định cư theo đúng quy định hiện hành; phổ biến thông tin, tuyên truyền, giáo dục để nâng cao nhận thức của cộng đồng về bảo vệ môi trường trong quá trình thi công và vận hành các công trình.

- Thực hiện việc hoàn thổ và phục hồi môi trường tại các khu đất được giao mặt bằng thi công; phối hợp với các địa phương và cơ quan liên quan triển khai việc trồng rừng bù hoàn diện tích rừng bị mất;

- Thực hiện các quy định về an toàn trong thi công và phòng chống cháy nổ; lập kế hoạch ứng cứu sự cố trong thi công, vận hành công trình và bảo đảm ứng phó kịp thời các sự cố xảy ra;

- Thực hiện các biện pháp gia cố kĩ thuật đối với các địa bàn có điều kiện địa chất xung yếu ở khu vực lòng hồ, bờ hồ và hạ du đập nhằm đảm bảo an toàn lao động và hạn chế tối đa khả năng trượt, sụt lở đất đá;

- Đo đạc, thiết lập và lưu giữ các mặt cắt địa hình đặc trưng liên quan đến các trình ngập để thuận lợi cho quá trình theo dõi, quản lý hồ chứa nói chung và quản lý môi trường hồ chứa nói riêng;

- Giám sát quá trình xói lở bờ hồ phía hạ lưu đập trong quá trình vận hành công trình và các giải pháp phù hợp, kịp thời để khắc phục các tác động tiêu cực do xói lở gây ra;

- Phối hợp với các cơ quan chức năng và địa phương có liên quan thiết lập chế độ vận hành hồ chứa với chế độ điều tiết dòng chảy, đảm bảo các nhu cầu sử dụng nước và bảo vệ môi trường sinh thái phía hạ lưu của đập;

- Phối hợp với các cơ quan liên quan thực hiện các nội dung quan trắc và giám sát môi trường như trong Báo cáo đánh giá tác động môi trường được phê duyệt và lưu giữ số liệu để các cơ quan quản lý nhà nước về bảo vệ môi trường tiến hành kiểm tra khi cần thiết, trong đó cần tăng cường giám sát diễn biến chất lượng nước vùng thượng và hạ lưu đập trong giai đoạn xây dựng và những năm đầu vận hành công trình, thông báo kịp thời với các cơ quan chức năng và chính

20/10/2020

10/10/2011

quyền địa phương liên quan khi phát hiện dấu hiệu có ảnh hưởng xấu đến chất lượng nước cấp cho sinh hoạt;

- Tuân thủ nghiêm túc chế độ thông tin, báo cáo về việc thực hiện các nội dung của Báo cáo đánh giá tác động môi trường được phê duyệt và các yêu cầu được nêu tại Quyết định này theo quy định của Nghị định số 80/2006/NĐ-CP ngày 09/8/2006 của Chính phủ về việc quy định chi tiết và hướng dẫn thi hành một số điều của Luật Bảo vệ môi trường và Thông tư số 26/2011/TT-BTNMT ngày 18/7/2011 của Bộ Tài nguyên và Môi trường quy định chi tiết một số điều của Nghị định số 29/2011/NĐ-CP ngày 18/04/2011 của Chính phủ quy định về đánh giá môi trường chiến lược, đánh giá tác động môi trường, cam kết bảo vệ môi trường.

Điều 2. Chủ dự án có trách nhiệm sau đây:

1. Lập, phê duyệt và niêm yết công khai kế hoạch quản lý môi trường của Dự án trước khi triển khai thực hiện dự án;

2. Thực hiện nghiêm túc các yêu cầu về bảo vệ môi trường quy định tại Khoản 2 Điều 1 Quyết định này và các trách nhiệm khác theo quy định của pháp luật về bảo vệ môi trường.

Điều 3. Trong quá trình thực hiện nếu Dự án có những thay đổi so với các Khoản 1 và 2 Điều 1 của Quyết định này, Chủ dự án phải có văn bản Báo cáo và chỉ được thực hiện những thay đổi sau khi có văn bản chấp thuận của UBND tỉnh Lai Châu.

Điều 4. Quyết định phê duyệt Báo cáo đánh giá tác động môi trường của Dự án là căn cứ để quyết định việc đầu tư Dự án; là cơ sở để các cơ quan quản lý nhà nước có thẩm quyền kiểm tra, thanh tra việc thực hiện công tác bảo vệ môi trường của Dự án.

Điều 5. Sở Tài nguyên và Môi trường có trách nhiệm kiểm tra, giám sát việc thực hiện các nội dung bảo vệ môi trường trong Báo cáo đánh giá tác động môi trường đã được phê duyệt tại Quyết định này.

Điều 6. Quyết định này có hiệu lực thi hành từ ngày ký. Các ông: Chánh Văn phòng UBND tỉnh, Giám đốc các Sở: Tài nguyên và Môi trường, Khoa học và Công nghệ, Xây dựng, Công thương, Nông nghiệp và Phát triển nông thôn, Kế hoạch và Đầu tư; Giám đốc Kho bạc Nhà nước tỉnh Lai Châu; Chủ tịch UBND huyện Mường Tè; Chủ dự án và Thủ trưởng các đơn vị liên quan chịu trách nhiệm thi hành Quyết định này.

Nơi nhận:

- Như Điều 6;
- Lưu: VT, CN.

KT. CHỦ TỊCH
PHÓ CHỦ TỊCH



Nguyễn Chương

Annpendix 3: Proposal Reforestation reimbursement

ỦY BAN NHÂN DÂN
 TỈNH LAI CHÂU
 Số: 1020/QĐ-UBND
 CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM
 Độc lập - Tự do - Hạnh phúc
 Lai Châu, ngày 29 tháng 8 năm 2014

QUYẾT ĐỊNH

Về việc phê duyệt mức tiền nộp để trồng rừng thay thế đối với Dự án: Thủy điện Nậm Nghẹ, xã Hua Bum huyện Nậm Nhùn, tỉnh Lai Châu

CHỦ TỊCH ỦY BAN NHÂN DÂN TỈNH LAI CHÂU
 Căn cứ Luật Tổ chức HĐND và UBND năm 2003;
 Căn cứ Luật Bảo vệ và phát triển rừng năm 2004;
 Căn cứ Nghị định số 23/2006/NĐ-CP, ngày 03/3/2006 của Chính phủ về thi hành Luật Bảo vệ và phát triển rừng;
 Căn cứ Thông tư số 24/2013/TT-BNNPTNT ngày 06/5/2013 của Bộ Nông nghiệp và PTNT quy định về trồng rừng thay thế khi chuyển mục đích sử dụng rừng sang sử dụng cho mục đích khác;
 Căn cứ Quyết định số 14/2014/QĐ-UBND, ngày 12/6/2014 của UBND tỉnh Lai Châu về việc ban hành Quy chế về trồng rừng thay thế khi chuyển mục đích sử dụng rừng sang mục đích khác trên địa bàn tỉnh Lai Châu;
 Xét đề nghị của Giám đốc Sở Tài chính và Sở Nông nghiệp & Phát triển nông thôn tại Báo cáo thẩm định số 511/BCTĐ-STC-SNN, ngày 26/8/2014,

QUYẾT ĐỊNH:

Điều 1. Phê duyệt mức tiền nộp để trồng rừng thay thế đối với Dự án: Thủy điện Nậm Nghẹ, xã Hua Bum, huyện Nậm Nhùn, tỉnh Lai Châu, với các nội dung sau:

- Diện tích, địa điểm rừng chuyển mục đích sử dụng phải nộp tiền để trồng rừng thay thế:
 - Diện tích: 12,76 ha.
 - Địa điểm: Tại xã Hua Bum, huyện Nậm Nhùn, tỉnh Lai Châu
- Tổng mức tiền nộp trồng rừng thay thế: **615,9** triệu đồng (Sáu trăm mười lăm phẩy chín triệu đồng), trong đó:
 - Chi phí trồng, chăm sóc rừng trồng: 585,1 triệu đồng; đơn giá nộp tiền 01 héc ta (ha) trồng rừng thay thế: 45,85 triệu đồng, gồm:
 - Chi phí trực tiếp: 39,98 triệu đồng.
 - Chi phí quản lý: 3,72 triệu đồng.

+ Chi phí tư vấn thiết kế: 0,15 triệu đồng.

+ Chi phí dự phòng: 2,0 triệu đồng.

- Chi phí xây dựng công trình đường băng cân lửa: 30,8 triệu đồng.

3. Phương thức nộp: Nộp 01 lần vào Quý III năm 2014.

Điều 2. Tổ chức thực hiện

Công ty Điện lực Lai Châu có trách nhiệm nộp tiền vào Quỹ Bảo vệ & Phát triển rừng tỉnh Lai Châu theo tổng mức và phương thức đã được phê duyệt tại Điều 1 Quyết định này.

Giao Sở Nông nghiệp và PTNT chỉ đạo Quỹ Bảo vệ và Phát triển rừng phối hợp với các cơ quan có liên quan, hướng dẫn Công ty Điện lực Lai Châu hoàn thiện các thủ tục nộp tiền vào Quỹ theo quy định; chủ trì phối hợp cùng các sở, ngành và UBND các huyện, thành phố xây dựng kế hoạch trồng rừng thay thế trình UBND tỉnh phê duyệt.

Điều 3. Quyết định này có hiệu lực thi hành kể từ ngày ký. Chánh Văn phòng UBND tỉnh, Giám đốc các Sở: Nông nghiệp và PTNT, Kế hoạch và Đầu tư, Tài chính, Tài nguyên & Môi trường, Công thương; Giám đốc Kho bạc Nhà nước tỉnh; Chủ tịch UBND huyện Nậm Nhùn; Công ty Điện lực Lai Châu và Thủ trưởng các đơn vị có liên quan chịu trách nhiệm thi hành Quyết định này./.

Nơi nhận:

- Như Điều 3;
- Chủ tịch, PCT UBND tỉnh (PTK);
- Lưu: VT, NLN.

**KT. CHỦ TỊCH
PHÓ CHỦ TỊCH**



Lê Trọng Quảng

Appendix 4: Environmental Compliance and Monitoring Since the beginning of construction

ENVIRONMENT SUPERVISION SCHEME DURING CONSTRUCTION

Sub-project: Nam Nghe Hydropower

Employer: Northern Power Corporation

Reported by: Nguyen Duc Hieu – Construction Management Department – Lai Chau Power Company

Supervision Period: Since the beginning of construction

Package name: NPC-ADB-NP/W01: Construction and installation of line 35kV and substation 35/0,4kV generating power for areas of interests

Bidder's name: Duyen Hà Company TNHH .

Effects and timeline	Remedial measure stated in IEE	Remedial measures implemented	Level of adherence	Effectiveness	Areas implementing the remedial measures	Next proposal action and responsibility for implementation	Bidder's feedback
Investment project							
Project construction & potential loss of agricultural, forestry & farm land	-Design for maximum use of waste cut and fill materials.	Not applicable					
	- Compensation at market rates, prior to work commencement.	- Compensation at market rates and in accordance with ADB's regulations before the start of construction	1	1	At the positions that cause damage to land and crops of the package	Already completed before construction started.	
Construction stage							
Construction works of access road and penstock on steep hill resulting in invasion and	The dip along access road and penstock will conduct the following works:						
	- Irrigation/making drainage, installing drain to avoid soil erosion.	Make drainages and mount drains	2	2	At access roads and pole foundation positions	To be implemented before and during	Good performance during construction

soil erosion.						construction	
	- Making sedimentation tank and mount channels at steep positions.	Construction in line with the design document	2	2	At steep positions	To be completed prior to the rain season	complete May/2015
	- Construct structures to protect from erosion.	Construction in line with the design document	2	2	At positions of erosion	To be completed prior to the rain season	Complete May 5/2015
Implement excavation with potential for loss and degradation of land	- No excavation from cultivable and arable lands.	- Have already avoided to the maximum level during exploration and design stage of the package			At pole foundation positions		
	- Excavation to take place from barren, wastelands, & riverbeds	- Have already been prioritized to the maximum level during exploration and design stage of the package			At pole foundation positions		
	- For new excavation, all measures will be taken to avoid loss of any productive soil.	- For new excavation, some measures have been taken to avoid loss of any productive soil	3	3	Service road during construction	during construction	Good performance during construction
	- Any excavated areas will be refilled, re-vegetated & landscaped.	- Excavated areas must be refilled, re-vegetated & landscaped.	2	2	At access road and service road during construction	Soil to be improved after the construction is complete.	To be implemented right after construction completes.
Implement rock cutter with potential for loss and degradation of surrounding land	- Rock cutter works must be implemented from existing operating sites with proper licenses & environmental clearances	- Rock cutter is not applicable in the package construction					
	- Newly cuttered positions must be only with permission of respective authorities.	- Rock cutter is not applicable in the package construction					

Operation of construction equipment and construction activities resulting in degradation of soils, loss of water quality & water pollution	- Fuel storage & refuelling will be located away from water bodies/channel..	- Fuel storage & refuelling are located away from water bodies/channel..	1	1	At storage areas of fuel oil and refuelling of the package	Already constructed separate storage sites.	Construct separate storage sites meeting requirements.
	- Precautions to be taken to prevent water pollution due to increased siltation & turbidity for weir site & road construction particularly in dry month when flows are low.	Construct holes/ sewer, mud trap and drains and	2	2	At access road and pole foundation positions	during construction	Good performance during construction
	- Approve sites defined for storage & disposal of wastes materials from the sites	Already constructed sites for storage of wastes in accordance with rules and regulations.	1	1	At regulated sites	during construction	Good performance during construction
	- Any waste petroleum products will be collected, stored, & disposed of at approved sites.	- Any waste petroleum products have been collected, stored, & disposed of at approved sites.	1	1	At regulated sites	during construction	Good performance during construction
Construction activities causing disruption of existing surface drains.	- Appropriate drainage channels will be constructed.						
	- Provision for cross drainage structures will be made.						
Construction Camp, social impacts & pollution from	- Construction camps will be located adjoining the dam and powerhouse sites & away from any settlement.						

wastewater & solid waste	- Camps & residential colony will have properly designed sewage treatment system for wastewater effluent. Likewise, solid waste collection system will be employed.	- Camps and residential colony are constructed as approved planning and meeting the requirements as regulated.	2	2	- Camps and residential colony are constructed as per approved planning	Already implemented before package construction	In accordance with design and planning
Emission from Construction Vehicles & Equipment causing air pollution	- Emission levels of all construction vehicles & equipment will conform to Vietnamese emission standards.	- Construction machine and equipment have been tested by authorised agencies to ensure conformation to the regulations.	2	2	- Already implemented before construction	during construction	Good performance during construction
	- Pollutant parameters will be monitored during construction.	- Signing contract with authorised agencies.					
	- Concrete works will be conducted away from population centres at dam and powerhouse sites.	- Locations designated to mount concrete mixer, construction material storage as planned.	2	2	- Already implemented before construction	during construction	Good performance during construction
Dust particulates causing health impacts for workers and villagers	- All precautions to be taken to reduce dust level emissions from construction works at dam and powerhouse sites.						
	- Regular water spraying at sites & temporary service roads will be undertaken.						
	- All delivery vehicles will be covered with tarpaulin.	- All delivery vehicles will be covered with tarpaulin.	3	3	All delivery vehicles transport materials, rocks and soil to the waste site.	during construction	Good performance during construction

Activity Noise from construction, vehicles, & Equipment causing noise pollution	- All construction equipment & plants will conform to Vietnamese noise standards.	- Construction machine and equipment have been tested by authorised agencies to ensure conformation to the regulations.	2	2	- Already implemented before construction	during construction	Good performance during construction
	- All vehicles & equipment to be fitted with noise abatement devices	All vehicles & equipment are fitted with noise abatement devices	2	2	- Already implemented before construction	during construction	Good performance during construction
	- Construction workers will be provided with personal protection	Construction workers are provided with personal protection as regulated.	1	1	- Already implemented before construction	during construction	Good performance during construction
Noise pollution from any blasting activities at dam, drainage and penstock	- Any blasting works will be in accordance with Vietnamese Explosives Act.	Blasting works are not applicable					
	- No blasting early morning or dawn	Blasting works are not applicable					
	- Residents close by will be informed well in advance of blasting times.	Blasting works are not applicable					
	- Workers associated with blasting sites will be provided with earplugs, helmets & other personal safety devices.	Blasting works are not applicable					
Construction of plant, penstock, reservoir bed	No trees to be removed without prior approval,	Implemented as per approved compensation scheme	1	1	At pole foundation position and corridor for 35kV line.	Implemented as per approved compensation scheme	Good performance during construction

and out-take canal with loss of vegetation & tree cover.	- Compensation for lost trees on private land	Implemented as per approved compensation scheme	1	1	At pole foundation position and corridor for 35kV line.	Implemented as per approved compensation scheme	Good performance during construction
	- Planting grass and maintaining	Not applicable					
	- Tree plantation implemented at dam area, tunnel, penstock, temporary construction areas, roads and other elements of the project.	Not applicable					
Construction causing impacts to wildlife	- Construction workers to be educated for wildlife conservation with no hunting & poaching to be allowed for workers.	Official documents sent to bidders for performance.	2	2	Package W 01		
Construction Activities & Accident Risks	- All blasting sites will have warning & clearance signals. Site will be affected prior/after blasting.	Blasting work is not applicable					
	- Workers will be provided with helmets, masks, safety goggles, etc.	Provision of labour protection equipments equivalent to each job description as regulated.	1	1	Package W 01	during construction	Good performance during construction
	- A readily first aid unit will be available with materials etc.	Medical staff is available at site.	2	2	Before construction	during construction	Good performance during construction
	- Road safety education will be given to construction vehicle drivers.	Safety cards must be available as regulated.	2	2	Before construction	during construction	Good performance during construction
	- Traffic management will be ensured during road construction periods	Already have had official documents by authorities, employer about traffic management must be	2	2	Before construction	during construction	Good performance during construction

		available for the bidder.					
	- Information dissemination will take place through the Commune's People Committee regarding activities causing disruption.						
Construction Activities causing disruption to Public Utilities	- Any public utilities likely to be impacted, such as water supply pipe system, power/phone lines etc. must be relocated to suitable places for local benefits.	Already have had commitment with local authority.	2	2	Before construction	during construction	Good performance during construction
Any discovery of artifacts or articles of historical interest and importance	- For all findings of an historical or cultural value, work will be stopped and the findings must be reported to the nearest office of the Department Culture, Sport and Tourism or the Department of Culture and Information	Official documents by authorities, employer sent to the bidder.	2	2	Before construction	during construction	Good performance during construction
Operational Stage							
Reduced water flow in river affecting aquatic life	- Provide measures to decrease flow of water in the dry season						
	- Regular monitoring of the quantity of daily water flows at dam intake level.						
	- Conduct further studies and monitoring of downstream ecology						
Possible loss of water	- Support aquatic production program.						

resources							
Erosion in river bed from discharge gate	- Provide stilling basin at the tailrace to prevent erosion						
Soil erosion, land degradation & vegetation loss particularly on steep slopes	- Maintenance of vegetative cover over initial five year of project around the dam, tunnel, penstock, access road and at other project infrastructure.						
Waste materials at the powerhouse	- Collection of waste oil	Collect back to the regulated site.	2	2	Waste storage site of package	during construction	Good performance during construction
	- Categorizing of unused or old equipments.	Categorize and collect back to the regulated sites.	2	2	Waste storage site of package	during construction	Good performance during construction
	- Area will be kept clean and sanitary at all times.	Perform as per approved construction plan					