Initial Environmental Examination

November 2013

Viet Nam: Renewable Energy Development and Network Expansion and Rehabilitation for Remote Communes Sector Project

Chieng Pan Hydropower Project

Prepared by Institute of Energy Science for the Asian Development Bank.

CHIENG PAN HYDROPOWER PROJECT

INITIAL ENVIRONMENTAL EXAMINATION

Loan 2517-VIE: RENEWABLE ENERGY DEVELOPMENT AND NETWORK EXPANSION AND REHABILITATION FOR REMOTE COMMUNES SECTOR PROJECT

Prepared by

INSTITUTE OF ENERGY SCIENCE

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CURRENCY EQUIVALENTS

Currency Unit Vietnamese Dong (VND)
US$1.00 = 19.500 VND
1 VND = US$0.00005

ABBREVIATIONS

ADB	Asian Development Bank
CEP	Commitment to Environmental Protection
NPC	Northern Power Company
EA	Executing Agency
ESDC	Environmental and Social Development Cell
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
DONRE	Department of Natural Resources and Environment
HH	House Hold
IEE	Initial Environmental Examination
MARD	Ministry of Rural Development
DARD	Department of Rural Development
NO_X	Oxides of Nitrogen
O&M	Operation and Maintenance
RP	Resettlement Plan
RoW	Right of Way
NREB	Northern Rural Electricity Project Management Board
SEA	Strategic Environmental Assessment Environmental
SC	Supervision Consultant
SONRE	Section on Natural Resources and Environment
SO_X	Oxides of Sulphur
TA	Technical Assistance

WEIGHTS AND MEASURES

ha	hectare
km	kilometre
km^2	square kilometres
litres/s	litres per second
m	metre
m^3	cubic metre
m^2	square metre
mm	millimetre
s	seconds

EXECUTIVE SUMMARY

Objectives and Approach

1. Son La Power Company which is belongs to the Northern Power Company (NPC) of Vietnam Electricity (EVN) commissioned studies in the past for the Chieng Pan Hydropower Project and in 2010 an environmental assessment was undertaken. NPC has been trying to obtain funding for the project as part of a programme to increase power supply to the rural areas.

2. As part of the Loan 2517 – VIE: Renewable Energy Development and Network Expansion and Rehabilitation for Remote Communes Sector Project, ADB will provide funding for specific Mini Hydropower projects for rural electrification in mountainous provinces of Vietnam. The planning for individual hydropower projects is carried out in two stages. The first of these stages consists of identification of projects and development of feasibility studies and the second involves the construction of these projects. Chieng Pan Project has been identified for consideration under the programme and further feasibility studies are underway and this environmental assessment study is part of this process.

3. The project is a small (6.8 MW) dam hydropower scheme on the Sap river designed to provide electricity to the rural electricity system. Under ADB guidelines Chieng Pan is a Category B project, and, as such, an Initial Environmental Examination (IEE) is required. A resettlement plan has also been undertaken as part of the loan. Vietnamese regulations only require hydropower projects with reservoirs larger than 300,000 m^3 to have a full Environmental Impact Assessment (EIA). Projects of the size of Chieng Pan require only that a Commitment of Environmental Protection (CEP) be made when the plans for the project are submitted to the relevant People's Committee (GOV's Circular No. 21/2008/ND-CP dated 28 February 2008 and Article 24 of the CEP). The Chieng Pan Hydropower project obtained the necessary approval of the EIA on 30th June 2011 from the People's Committee of Son La province.

4. The project consists of a concrete dam in the left and right bank of the Sap stream; controlled and free spill way dam with the maximum high of 18m, water intake, water channel, penstock, powerhouse and tail race. Water is taken from the Sap stream and delivered to the powerhouse through water channel via the penstock and then returned to the river some 3 km downstream. The water delivery system is designed to provide a maximum of 20.2 m^3 to two turbines. For about 10 months of the year, there is less natural flow in the river. In the dry season the powerhouse will operate for just a few hours to supply the evening peak requirement. As a result of the project, in the 10 dry season months, the Sap stream will experience water loss in the 3 km section of the stream between the dam and power house The river immediately below the powerhouse will experience changed conditions in the dry season as all the retained water is used over a short time span of a few hours to generate power.

Environmental Concerns and Impacts

5. No removal of houses is required but there is a loss of agricultural land at the upstream end of the reservoir and some forest land is also lost at the dam site and for other facilities. The main potential environmental impacts of the project relate to:

- Some households (HHs) will be affected temporarily. The loss of land is for agriculture, forest production and fallow land.

- Construction along some steep and hilly slopes with landscape scarring and loss of trees; the penstock, the last part of the water channel, and some of the project construction and access roads are on steep land. There is potential for scarring,

encroachment on existing land on downhill slopes and resulting siltation of the downstream Sap Stream bed. The first section of the water channel is also through some village houses on the left bank.

- Impacts on local infrastructure – There is a need to ensure access to the left bank as the current bridge access will be destroyed; access needs to be retained for local villagers at the dam site. There is need also to maintain existing fresh water supply to the village across the river from the left bank. Also irrigation channels on the left and right bank of the river may be disrupted and impacted during the project construction and operations phases.

- The project has been designed to maximise water use with no environmental flow being retained in the river system below the dam site. As a result, a 3 km section of river between dam and powerhouse will be denied water flow for approximately ten months of the year. Reducing water flow in the river has implications for fish and aquatic life and for human and animal use by villagers along the river.

Environmental Mitigation

6. The main environmental mitigation measured included in the EMP are as indicated below:

Table 1. Summary of Mitigation

	Potential Impact	Mitigation
1	Construction impacts with destruction and scarring of land in steep mountain terrain	Implementation of mitigation measures as outlined in the detailed EMP attached to the IEE which includes provision of sedimentation pits/ponds and slope protection measures. Revegetation and planting of fast-growing species of vegetation in disturbed areas.
2	Loss of agricultural and forest land	Resettlement plan to be implemented and compensation package for loss of land & trees.
3	Reduced water flows in the 3 km section of the Sap stream.	500 litres/s[(1)] will be retained in the river system downstream of the dam to benefit fish and other aquatic life in the dry season.
4	Use of borrow materials	Borrow materials will not be derived from cultivable and arable lands but only from permitted and existing quarry areas.
4	Erosion and loss of vegetation cover	A tree planting programme will be instituted and costing of 15 ha of plantation is included in mitigation at dong 40,000,000 million per ha.

[(1)] Environmental flow is calculated equal to 20% of Q85%

7. In addition to the compensation for a small loss of land and for the temporary use of land during the one year construction period, funding is also incorporated in the budget for an environmental cell to strengthen the capacity the Northern Rural Energy Project Management Board NREB which is the body which will implement the project on behalf of NPC.

Conclusions

8. This project will have some impacts on human activities. There are no protected areas or nature reserves in the project area. There is no usage of water below the dam. A loss of agricultural and forest production land will be compensated for in the resettlement plan prepared for the project. The main impacts identified in this environmental examination are the result of construction activities and the potential long term removal of water flow

from the 3 km stretch of the Sap stream for more than half of the year and the potential impacts on aquatic species and on local people who use the river for bathing and for their livestock (buffaloes).

9. There is a need to ensure mitigation for construction activities and particularly for the upgrading of 0.3km of the road to the dam site and building new 1.5km access road to the powerhouse. The proposed environmental management plan (EMP) attached to this IEE will mitigate the impacts of construction activities. The proposed retention of 500 litres/s environmental flow in the river system will also help reduce impacts.

10. It is important, also, that NPC as the EA, develops its internal capacity to implement and monitor the measures in the EMP. This has been designed into the project by requiring the setting up of an Environmental Monitoring Unit in NPC and the appointment of environmental & resettlement specialists.

11. It is recommended that with the measures included in the IEE and EMP, no further environmental assessment is necessary.

I. INTRODUCTION

A. Purpose and Scope of Environmental Report

12. Chieng Pan Hydropower Project is a sub-project which has been identified under Loan 2517-VIE: Renewable Energy Development and Network Expansion and Rehabilitation for Remote Communes Sector Project. The overall project will finance the development of between 5 and 10 mini-hydropower plants, each with a capacity of less than 7.5 MW in northern and central provinces of Vietnam. The Loan will finance the connection of these mini-hydropower plants to the national grid and the expansion of the low voltage network to supply nearby villages which are currently not electrified. The Project is expected to contribute over 30 MW of combined generation capacity to the national power system, and extend the medium voltage power network in remote areas of Viet Nam by 75 –100 kilometers (km).

13. This Initial Environment Examination (IEE) is undertaken as part of the overall feasibility study for the Chieng Pan Hydropower Project and is designed to meet the requirements for environmental assessment under the guidelines of ADB. The Executing Agency (EA) for the project is Northern Power Company (NPC) and this report and the Environment Management Plan (EMP) should be submitted to the District Offices: Moc Chau and Yen Chau District Office for Natural Resource and Environment (DONRE) to assist in monitoring the project for environmental management and permitting purposes.

14. The project will change water flow characteristics in the Sap stream and has the potential to cause environmental impacts to the watershed of this river system, particularly in the section where water will be diverted away from the natural river to feed the proposed powerhouse. This study looks at the potential impacts of construction and operation of the project on the Sap stream and its watershed.

15. The construction of the lines, which will link Chieng Pan Project to the national grid, are part of the project.

16. An IEE along with a resettlement plan was prepared in 2011 by the Institute of Energy Science and the information contained therein has been updated and incorporated in this report. Public consultation meetings were organised by NPC on February 21, 2011 at Tu Nang commune and on February 25, 2011 at Chieng Hac to disclose information to the public. The results of these meetings are described in Chapter VI. The minutes of the Public Consultations and list of participants are included in the Annex of this document.

Figure 1. General Location Map of Chieng Pan Hydropower Project

Figure 2. Project Location Map

Scale 1/2000

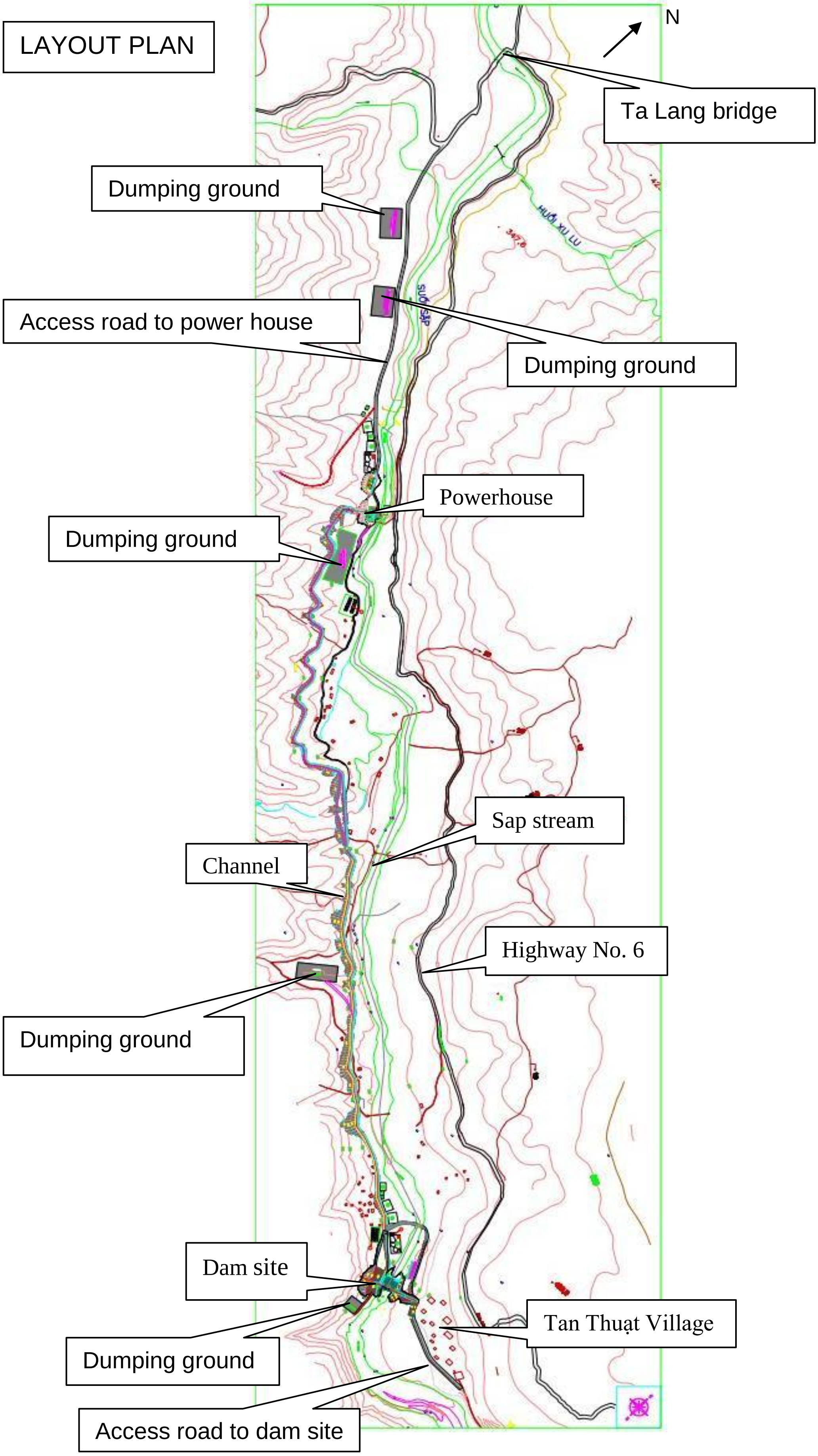
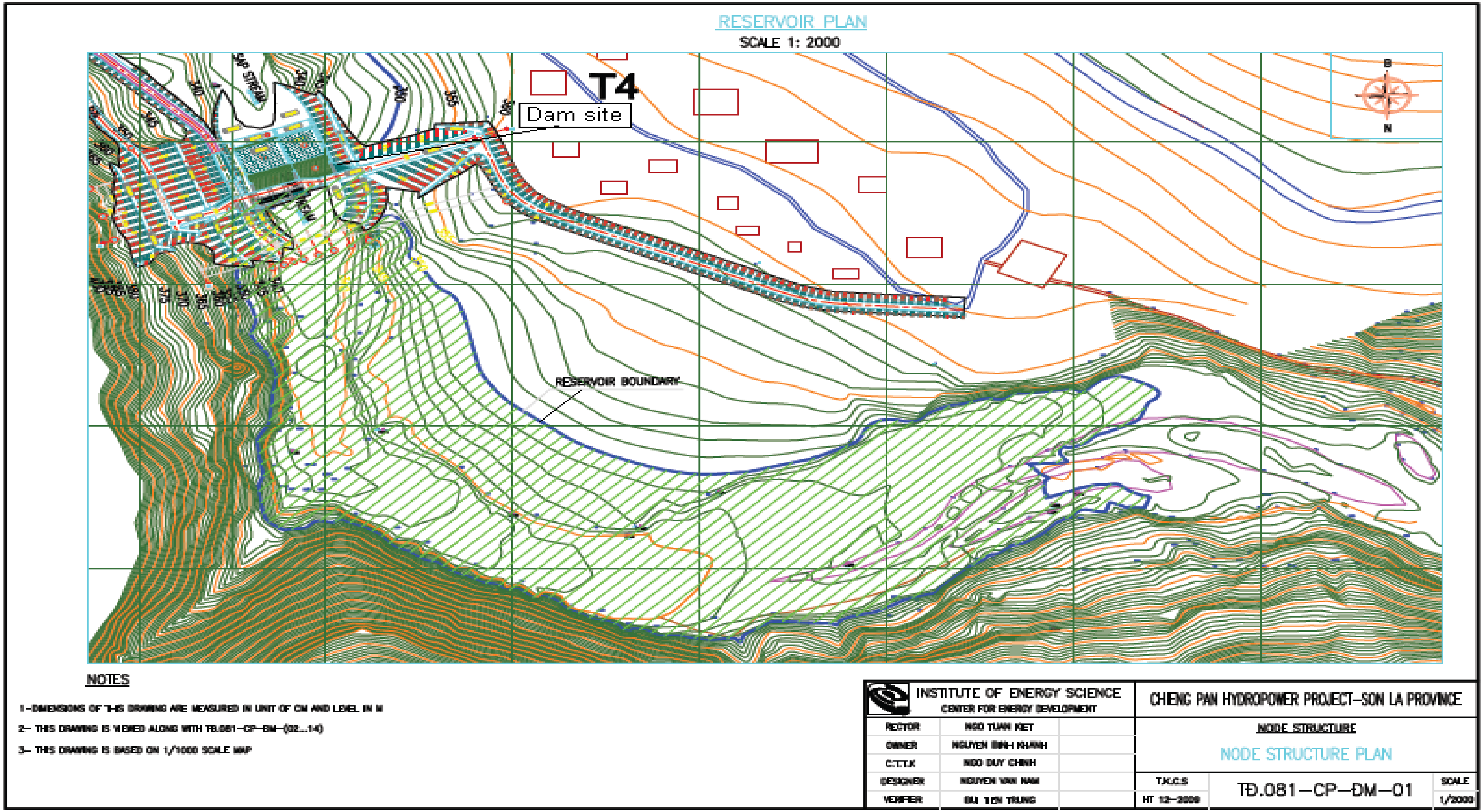


Figure 3. Chieng Pan Reservoir Plan

Scale 1/2000



II. DESCRIPTION OF THE PROJECT

A. Type and Category of the Project

1. ADB Categorisation

17. The 6.8MW Chieng Pan hydropower plant is a relatively small project. Using ADB's Rapid Environmental Assessment Checklist for hydropower (Annex 1), the project is classified as Category "B", in accordance with ADB *Guidelines for Environmental Assessment, 2003*. An IEE is required to determine if there are significant impacts and if a more detailed impact assessment is necessary.

2. Vietnamese Approval Requirements and Regulations

18. Requirements for environmental assessment in Vietnam are laid down in Article 18 of the Law on Environmental Protection, which states when an Environmental Impact Assessment must be prepared. Projects that are likely to impose risks or have adverse impact to national reserves, national parks, historical-cultural relics, natural heritage and on water resources of river basins, coastal areas and protected ecosystems areas are subject to environmental assessment. A Circular issued by the Ministry of Natural Resources and Environment (MONRE) entitled Guiding Strategic Environmental Assessment, Environmental Impact Assessment and Environmental Protection Commitment[1] gives detailed guidelines for Strategic Environmental Assessment (SEA), Environmental Impact Assessment (EIA) and Commitment to Environmental Protection (CEP) including SEA, EIA and CEP report preparations, review and appraisal, monitoring, and confirmation of implementation of the mitigation measures.

19. Regulations[2] published in 2008 categorize which type of projects is required to undertake EIA. With respect to the requirements for environmental assessment of hydropower projects, an "environmental impact assessment" report is only required for hydropower plants having reservoir areas of 300,000 m^3 or above and for high voltage transmission lines with a length of over 100 km.

20. The Chieng Pan hydropower project has a reservoir volume of 298,000 m^3 and 1.2 km of 35 kV transmission lines, which connect to the national electricity grid system. As such, there is no requirement under Vietnamese regulations to undertake the type of IEE or EIA required under ADB guidelines and regulations. Power generation projects such as mini-hydropower plants and low and medium voltage transmission and distribution lines need only to submit a written CEP. Since 2008, therefore, detailed environmental assessments have not been undertaken for small hydropower projects. The Chieng Pan Hydropower project obtained the necessary EIA approval on 30th June 2011 from the People's Committee of Son La province.

21. The Section on Natural Resources and Environment (SONRE) at District level is responsible for environmental management in the district/town territory. District People's Committees (DPCs) are responsible for approving CEPs[3] and Provincial level environment protection agencies are responsible for certification of registration[4]. SONRE is also responsible for conducting environmental monitoring during project implementation.

22. **Utilization of Water Resources.** For the use of water, there is also a requirement to obtain a permit under the Water Resources legislation. Article 24 of The Law on Water

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[1] GOV's Circular No.05/2008/TT-BTNMT dated 08 December 2008
[2] GOV's Circular No. 21/2008/ND-CP dated 28 February 2008 and Article 24 of the LEP
[3] Article 26 of the LEP
[4] Article 17c of Decree 21-2008

Resources[5] entitled "Issuing permits for exploitation and use of water resources" requires organizations and individuals that exploit and use water resources to obtain permission from the competent State agencies.

23. Article 64 of the Act entitled "the Management of the river basin planning" specifies that the agency managing the planning of river basins is a non-business agency of the Ministry of Agriculture and Rural Development (MARD)

24. Decree No. 149/2004[6], Article 4 defines permit issuance principles. Permits are granted initially for 20 years (Article 7). Permits for smaller projects are usually granted at Provincial People's Committee level (Article 14). The permitting authority will also manage the permit and the dossiers of required information for the project.

25. Permit owners, among other requirements, are obliged to pay fees, take measures for safety prevention, keep data and information on water resources and make reports to the People's Committee (Article 18).

26. Article 21 "Order and procedures for issuance of surface water exploitation and use permits" defines what is required for a permit application i.e. what should be in the dossier accompanying the permit application. Among other things, information is required on the analysis of quality of water according to State's regulations. Also papers must be attached to the permit application regarding existing land use rights. There must be a written agreement on land use between the organization exploiting the water and the organization or individual having the land use right. This agreement must be certified by the competent People's Committee.

27. **Environmental Flow.** Decree No. 112/2008[7] prescribes the scope of environmental management protection requirements for integrated exploitation of hydropower and irrigation reservoirs (Article 1). The need for a minimum flow is established as "the lowest level of flow required for maintaining a river or a river section to ensure the aquatic eco-system's normal development and the minimum level for the exploitation and use of water resources by water users according to the priority level set in the river basin planning."

28. Reservoir construction must conform with the river basin planning approved by a competent state agency (Article 4) and exploitation and use of natural resources and environment in reservoir protection corridors and reservoir zones must be based on approved master plans (Article 8).

29. Dam owners shall annually formulate a water regulation plan for reservoirs and notify the People's Committee at all levels of the relevant localities in order to reduce adverse impacts on people's production and life and the environment (Article 9.3). Water regulation plans for reservoirs shall be formulated on the basis of minimum flow requirements among other things (Article 9.4).

30. Ministry of Natural Resources and Environment (MONRE), according to Article 12.2, are to assume responsibility for and coordinate with the concerned ministries, branches and localities in specifying minimum flow requirements for reservoirs.

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[5] Law on Water Resources No. 8/1998/QH10 May 20, 1998

[6] Decree no 149/2004/ND-CP of Jul 27 2004 on the Issuance of Permits for Water Resource Exploration, Exploitation and use, or for discharge of Wastewater into Water Sources.

[7] Decree No 112/2008/ND-CP of Oct 20, 2008 on Management, Protection and Integrated Exploitation of Resources and Environment of Hydropower and Irrigation Reservoirs.

31. Despite attempts by MONRE to establish standards for determination of "Minimum Flow" for reservoirs through a Danida project[8], no standards have up to this time been agreed for adoption by MONRE.

32. Land use permit for the project will be applied for to the District People's Committee and water use permit will be applied for to Son La Department of Natural Resource and Environment later when financing is approved for the project.

33. **Cultural and Archaeological Resources:** On cultural and archaeological resources, the relevant laws and regulations are as follows:

1. Cultural Heritage Law June 2001,
2. Decree No. 92/2002/ND-CP November 11, 2002 relating to the implementation of some articles of the Law on Cultural Heritage,
3. Regulation on Exploration of archaeological excavations Decision No. 86/2008/QD-BVHTTDL December 30, 2008 of the Ministry of Culture, Sports and Tourism.

4. Chapter II of the 2008 Regulations (Responsibilities of Organizations and Individuals when detecting archaeological sites) states that if organizations and individuals find archaeological sites and/or artifacts, they have the responsibility to protect, maintain the status quo at the location and promptly notify and hand in the archaeological relics to the closest office of the Department Culture, Sports and Tourism or the Department of Culture and Information.

B. Location and General Description

34. Chieng Pan Hydropower Project will be implemented in the Sap Spring in Chieng Hac Commune, Moc Chau District and Tu Nang Commune, Yen Chau District – Son La Province. The project site is located in the southeast of Yen Chau small town and west of Moc Chau. It is 29 km far from the centre of Moc Chau District.

35. The project is designed to take the water from the Sap stream which has a catchment area of only 495 km^2. The Sap stream is an upstream branch of the Da river.

36. Head works of Chieng Pan Hydropower Plant is located in Chieng Hac Commune, Moc Chau District, Son La Province (Figure 1) with geographical coordinates:

20°54'53.0" northern latitude.
104°28'59.8" east longitude.

37. The location of the power plant is in Tu Nang Commune, Yen Chau District, Son La Province has the following geographical coordinates:

20°55'53.5" northern latitude.
104°28'10.5" east longitude.

38. The main elements of the project area are as follows (Figure 2):

- A dam is to be constructed 0.3 km from the provincial road. It is on a rock platform and will be 18 m high with a length at the top of 161m;
- A reservoir with a volume of 298,000 m^3 and surface area of 65,919m^2;
- A water intake on the left bank of Sap stream;
- A sluicing outlet on the left bank of Sap stream;
- An open, reinforced concrete channel with total length of 3,052.8m and dimension BxH=3.4x3.5m;
- A reinforced concrete pressure tank with dimension of BxHxL=7x8.5x45;
- A 2.4 m diameter 54.5 m long penstock on the left bank of the river;

- A powerhouse with two turbines and transmission yard on the left bank of the Sap stream; and
- Tail race, 15.5 metres long, with outfall to return the water flow to the Sap stream.

39. The main work volumes of the project are divided into three main components: (1) head works, (2) energy route and (3) hydropower plant area.

40. Head works shall comprise of the weir in the left and right bank, spillway, water intake, sand discharge culvert, and traffic bridge which will also provide access for local villagers across the river. Main work volume of head works is described in Table 2.

Table 2. Volume of Earthworks and Materials for Headworks

No.	Works	Unit	Volume
1	Soil excavation	m^3	14,223.80
2	Rock excavation	m^3	3,696.47
3	Concrete M100	m^3	367.01
4	Concrete M150	m^3	4,169.43
5	Concrete M200	m^3	7,334.56
6	Steel	Ton	224.26
7	Drilling and spraying cement for waterproof	100m	3.66

Source: Volume 5: Total investment of Chieng Pan design report of IES

41. Energy route comprises overflow at the head of the channel, water channel, pressure tank and penstock. Main work volume of energy route is described in Table 3.

Table 3. Volume of Earthworks and Materials in the Energy Route

No.	Works	Unit	Volume
1	Soil excavation	m^3	156,156.23
2	Rock excavation	m^3	74,036.14
3	Concrete M100	m^3	864.49
4	Concrete M150	m^3	9,730.09
5	Concrete M200	m^3	1,428.50
6	Steel	Ton	469.51
7	Built mortar rock M100	m^3	1,802.60

Source: Volume 5: Total investment of Chieng Pan design report of IES

43. The hydropower plant area shall comprise of the plant, distribution station and operation control room. Main work volume of hydropower plant area is described in Table 4.

Table 4. Volume of Earthworks and Materials for the Hydropower Plant Area

No.	Works	Unit	Volume
1	Soil excavation	m3	22,247.98
2	Rock excavation	m3	8,855.17
3	Concrete M100	m3	12.00
4	Concrete M200	m3	1,136.90
5	Concrete M250	m3	2,849.17
6	Steel	Ton	269.55

No.	Works	Unit	Volume
7	Formworks	m^2	3,428.41

Source: Volume 5: Total investment of Chieng Pan design report of IES

44. The reservoir formed by the dam is in the narrow valley bottom. When the reservoir is full, the water will back up more than 550 m and water level will increase 5 m compared with the normal water level at upstream of the dam site where some forest land is affected.

45. Apart from the right abutment of the dam, all the project construction and operation activities are on the left bank of the river. The water delivery system has a calculated head of 39.54 m, which is designed to deliver a maximum of $20.2m^3/s$ to two turbines and generate 6.8 MW of power. As a result of the project, in the dry season, the Sap stream will experience loss of water flow for approximately ten months over the 3 kilometres length of the river between the dam and powerhouse.

46. The 0.3km road which runs through Tan Thuat village to the dam site needs to be upgraded and there is also need to build a new 1.5km access road for the construction and operation of powerhouse and for construction of the water channel.

47. In addition, the hydropower infrastructure will have permanent office facilities (0.3 ha) close to the dam location. An area of 2.1 ha is needed for both temporary use of construction activities and the camps at the dam site and powerhouse close to Tan Thuat village.

C. Construction Schedule

48. Main construction activities:

a. **Preparation time** (from August to November of the first construction year.
   - Clear the plan, construct the access road inside and outside of the project site; excavate water channel at phase 1, build communication system, water and electricity supply system; construct camps, tents and other facilities.

b. **Phase 1:** From December of the first construction year to the May of the second construction year.

✓ **Dam site area:**
   - Construct the cofferdam phase 1
   - Excavate the ground for dam, water intake, sluicing outlet to the design elevation.
   - Implement concreting for water intake, sluicing outlet and spillway dam to the elevation of 345.
   - Install mechanical and hydraulic equipment for sluicing outlet and water intake.

✓ **Power line area:**
- Construct pressure tank to the design elevation.
- Excavate the ground for the power plant.

c. **Phase 2: From June to October of the second construction year**

✓ **Dam site area:**
- Continue construction of the dam site area to the design elevation.

✓ **Power line area:**
- Continue excavate ground for water channel and power plant.
- Excavate ground for penstock and concreting for support system of penstock.
- Install penstock

d. **Phase 3**: From November of the second construction year to July of third construction year.

✓ **Dam site area:**

- Construct upstream and downstream coffer dam.
- Excavate ground for overflowed dam
- Implement concreting for overflowed dam
- Finish construction activities for the dam site area

✓ **Power line area**

- Excavate ground for water channel phase 2
- Implement concreting for power plant, water channel
- Install mechanical and hydraulic equipment for power plant.

Table 5. Chieng Pan Hydropower Project Diversion Schedule

Period	Discharge building	Discharge flow (m^3/s)	Upstream water level (m)	Downstream water level (m)
August-November of first year	Narrowed river	392	339,01	338.73
December of first year to May of second year (dry season)	Natural river	6.95	337.42	336.83
June to October of second year (rainy season)	Diversion intake	392	339.01	338.73
November of second year to July of third year (dry season)	Diversion intake	8.6	338.8	336.86

Source: Volume 1: General description of Chieng Pan design report of IES

49. From the beginning of construction to the commissioning of the project will take 24 months.

- Commencement: August of the first year
- Power generation of the machine assembly No. 1: June of the second year.
- Power generation of the machine assembly No. 2: July of the second year.

III. DESCRIPTION OF THE ENVIRONMENT

A. Provincial and District Context

50. Son La Province has an area of 14,125 km^2 with population of 1,080,641 people. Son La Province comprises Son La City, Moc Chau, Yen Chau, Mai Son, Song Ma and Thuan Chau Districts. The proposed hydropower dam will be located in Chieng Hac commune in Moc Chau district while the powerhouse will be located in Tu Nang commune in Yen Chau district. The general information of Yen Chau and Moc Chau districts are presented in Table 6.

Table 6. General Information of Yen Chau and Moc Chau Districts

District	Population (People)	Household	Rate of poverty (%)	Land area (ha)	Agricultural land (ha)	Forest land (ha)	Uncultivated hill and mountain land (ha)
Moc Chau	150750	33669	41%	194000	29100	84390	80510
Chieng Hac Commune	3352	732	35%	10400	6271	240	3889
Yen Chau	67208	14873	27%	85775	9521	33967	42287
Tu Nang	5611	1260	27%	9684	7725	339	1620

District	Population (People)	Household	Rate of poverty (%)	Land area (ha)	Agricultural land (ha)	Forest land (ha)	Uncultivated hill and mountain land (ha)
Comm une							

Figures for Province 2009 Census. District figures from 2009 District Statistics Book

51. Of the 194,000 ha of Moc Chau District area, only 1.5 % (29,100 ha) is classified as agricultural land, 43.5% is regarded as forest land and the rest as uncultivated hill and mountain land. In Yen Chau district, 11.1% is agricultural land, 39.6% is forest land and 49.3% is fallow land.

52. There are four natural reserves in Son La Province as follows:

Table 7. Nature Reserves in Son La Province

No	Name	District	Area (ha)	Forest land	Buffer zone(ha)	Distance(km) From the dam site
1	Copia	Thuan Chau	11.996	6.655	10.755	87
2	Sop Cop	Song Ma	17.369	13.654	26.578	65
3	Ta Xua	Bac Yen	13.412	12.257	24.672	51
4	Xuan Nha	Moc Chau	16.317	14.644	5840.8	43

53. Xuan Nha is the closest reserve to Chieng Pan and is located in three communes: Chieng Son, Xuan Nha and Long Sap of Moc Chau district. The reserve is located 40km away from the proposed site.

54. The Chieng Pan project site is not located in any protected area or the buffer zone of a protected area.

Figure 4. Land use map of Chieng Hac commune

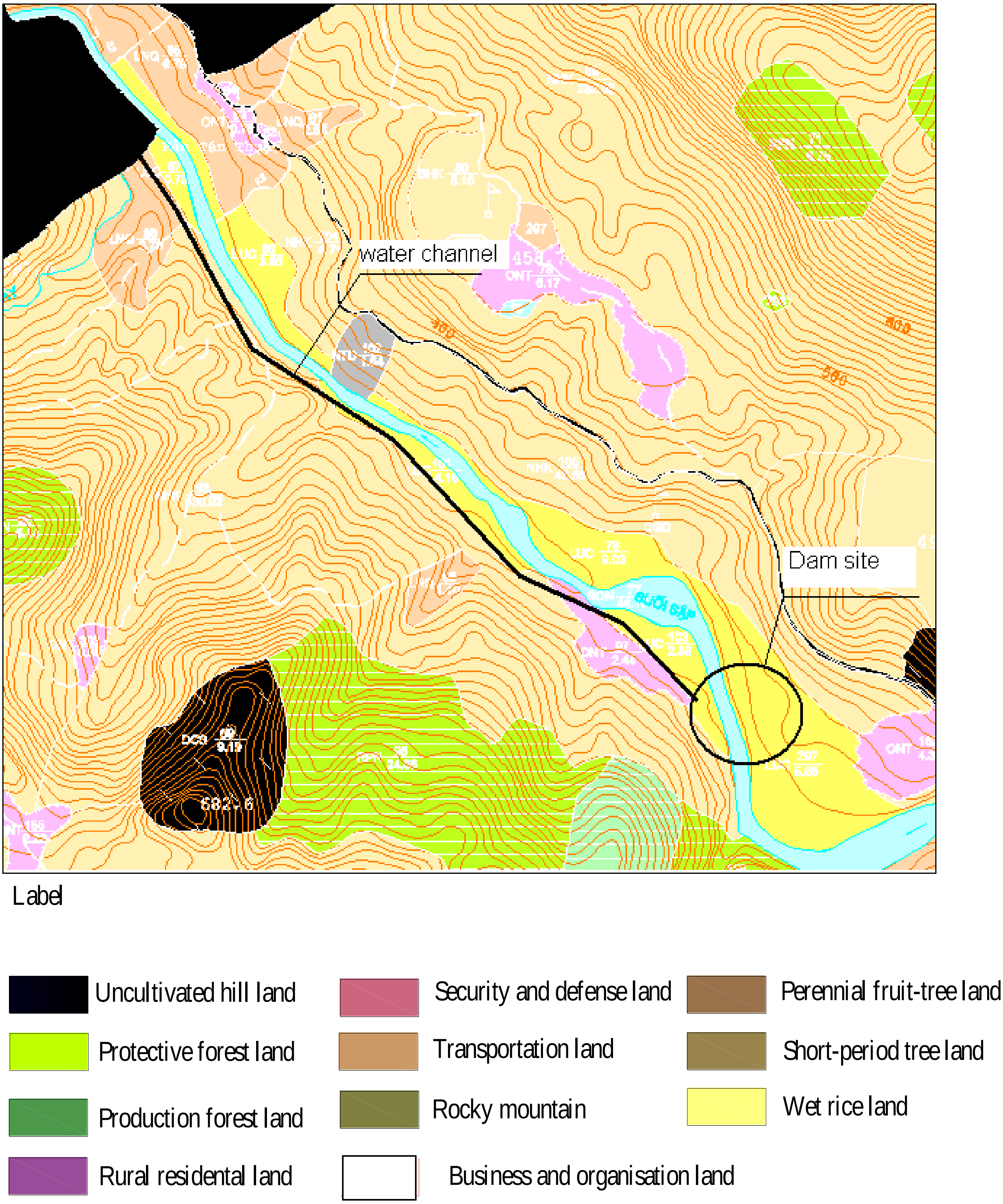


Figure 5. Land use map of Tu Nang commune

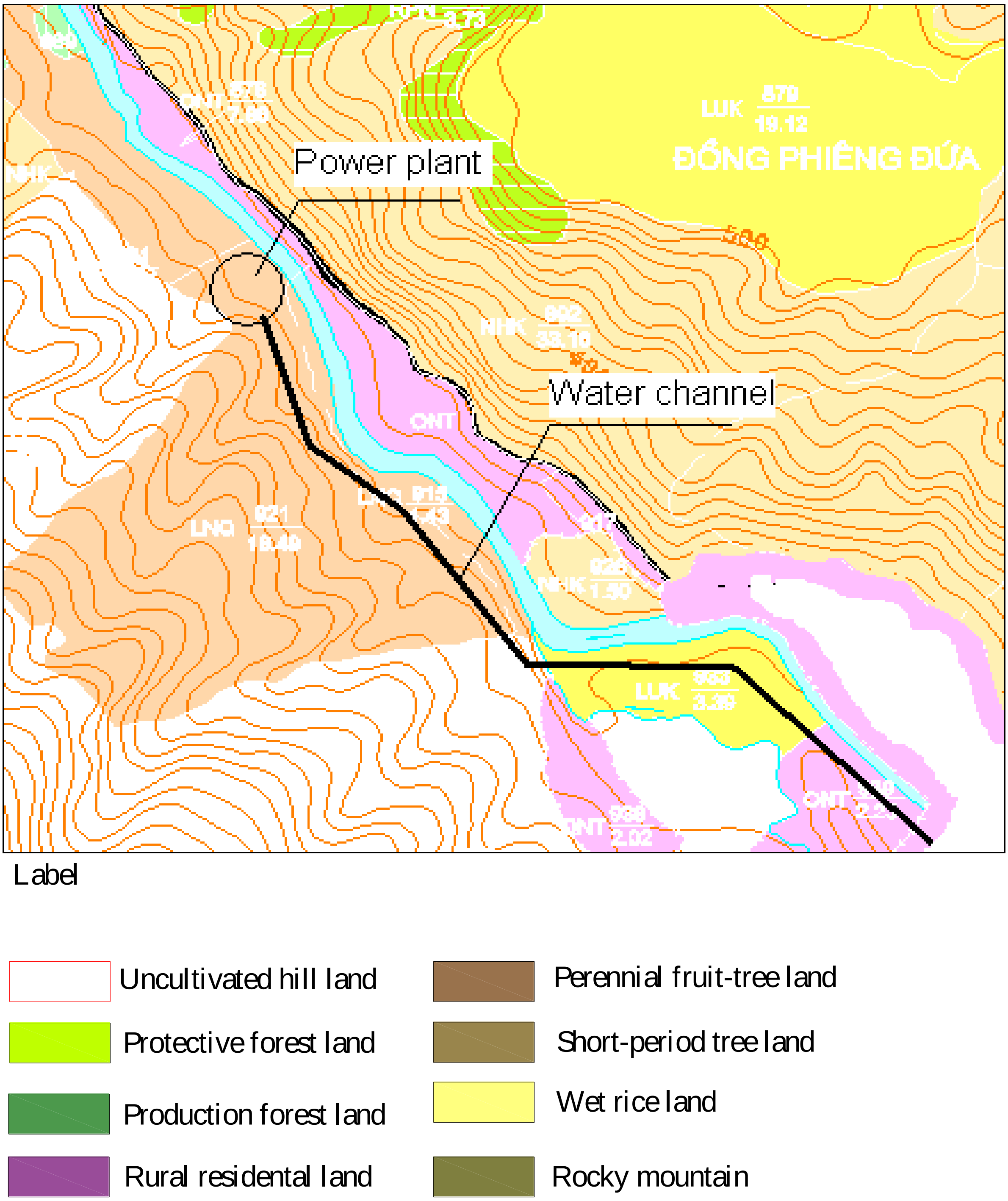


Figure 6. Location map of nature reserves in Son La province

B. Physical Environment

55. The proposed project is located between altitudes 336m and 380m about 29km from Moc Chau centre.

56. The project area is in a small valley on the north. Topography of the district is strongly split with many high mountains, waterfalls in the spring and narrow valleys with average height of 750 - 950 m. This area consists of many mountains. There are no waterfalls in the downstream area.

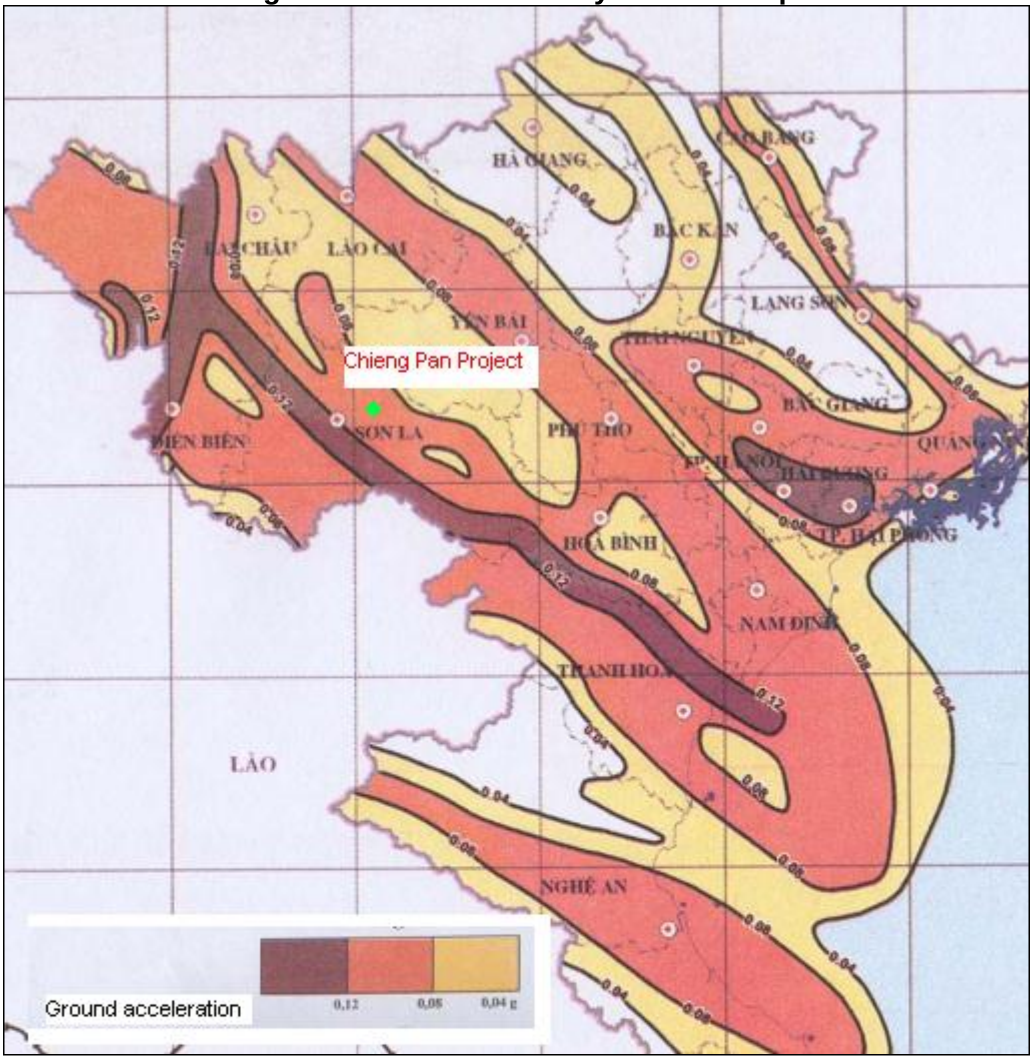
57. The surveyed zone has quite a small area and belongs to Da River rift composition. In Chieng Pan hydropower project area, Moc Chau district has four layers: Ban Nguon (D_1 *bn*), Ban Dap ($D_{1\text{-}2}$ *bp*) and sedimentary rock.

- The main layers are soft soil and separated soil: clay, clay with sand.
- Original rocks mainly are carbonate stone with brown-black colour.

58. According to the Vietnam territory seismic map in Vietnam construction standard TCXDVN-2006, Moc Chau district belongs to an area which has ground acceleration of

0.1197, equivalent to VII earthquake level in MSK – 64. There will have very small effects of earthquake at this level.

Figure 7. Vietnam Territory Seismic Map



Source: Institute of Physics of the Earth – Vietnam Academy of Science and Technology

59. Sap stream is a tributary of Da river, derived from the mountain area near the Vietnam-Lao PDR boundary where elevation is approximately 2000 m. It is located in Moc Chau district, Son La province then its flow follows southeast-northwest direction and emerges in Da river at Ta Khoa commune, Bac Yen district, Son La province. Sap stream basin is contiguous to Pan Stream basin to the north that are small basins of Ma river to the south, Da river basin to the East and Viet-Lao boundary to the West. Sap stream basin belongs to mountain area with elevation above 1000m, high slope. The river grid in this area is at medium size and the width of riverbed is about 30 to 40m.

60. Head works and the study area is located in the northwest of the northern area with distinctive monsoon climate. Climate and the weather in the year are divided into two distinct seasons. Rainy season starts from May to September of the calendar year; dry season starts from December to February of the next year. October and November are transitional months from rainy season to dry season while March and April are transitional months from dry season to rainy season.

Table 8. Average monthly rainfall at Moc Chau meteorology station

Year	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	Mean
1961						222.2	156.8	437	298.3	232.8	37.5	33.7	202.6
1962	18.4	12.3	25.6	149.9	112.9	397.9	305.1	233.9	498	13.6	8.4	1.6	148.1
1963	2	10.2	79.8	100.3	201.7	149.6	269.4	370.3	391.9	131.4	80.4	17.1	150.3
1964	3.1	0.6	22	85.2	161.6	296.8	420.8	217	422.4	312.4	29.5	20.9	166.0
1965	2	29.6	6.7	92.9	149.8	461.1	242.2	260.7	286.9	73.9	73.1	14.7	141.1
1966	22	15.2	25.2	63.1	111.7	238	211.6	519.8	140.2	98.4	61.2	3.7	125.8
1967	15.2	30.6	17.1	112.2	146.8	241.5	336.2	223.6	308	23.7	37.8	11.7	125.4
1968	13.3	73.4	44.8	89.3	131.9	157.4	148.4	346.6	266.3	94.9	37.1	1.7	117.1
1969	28.4	5.9	20.5	120.6	153.7	323.8	368.4	168.4	195.8	83.5	62.8	2.9	127.9
1970	4.8	15.5	32.2	79.3	250.4	219.6	261.2	351.6	330.7	119.2	26.9	37.6	144.1
1971	20.6	16.4	9.1	95.1	268.6	121	445.5	360.7	137.1	184.1	2.6	15.1	139.7
1972	10	23	51.8	68.8	225.9	93.1	166.3	556	318.8	146.6	44.8	9.5	142.9
1973	7.4	5.2	80.8	207.5	377	117.3	325.8	530.9	532.2	56.1	12	1.7	187.8
1974	34.5	5	51.8	146.2	239.3	334.9	154.7	293.7	169.6	324	77.8	7.7	153.3
1975	69.3	9.2	50.2	130.2	207.1	194.7	117.2	498.8	348.2	41.5	29.4	31.6	144.0
1976	18.6	61.3	27.6	104.5	230.7	162.1	133.8	252.1	230.4	148.3	41.4	5.9	118.1
1977	55.4	14.6	24.7	126.4	268	166.8	544.1	299.6	157.2	93.4	42.2	38.8	152.6
1978	19	16.9	13.3	33	244.8	320.4	322.3	403.1	442.5	249.3	36.9	8.5	175.8
1979	30.1	52.6	13.4	50	191.3	359.6	93.8	339.8	304.1	9.5	2.2	2.1	120.7
1980	8.5	22.6	27.9	114.7	160.7	236.7	284.3	435.6	484.7	88.7	2.1	30.6	158.1
1981	8.4	5	52.3	233.8	123.7	185.6	352.3	212.4	148.7	197.6	48.2	4	131.0
1982	29.8	11.9	28.7	98.6	154.2	158.2	170.4	298.9	433.5	103.1	83.2	9	131.6
1983	53.5	26.3	57.8	103.3	134.9	165.6	239.8	348.4	227.8	441.3	46.6	26.3	156.0
1984	6.7	12.9	13.3	153.8	121.2	401.8	234.1	278.4	144.3	165.7	38.2	6.5	131.4
1985	28.8	47.5	55.5	68.9	166.7	238.2	151.7	433.7	281.1	224	58	4.9	146.6
1986	9.5	11.3	15.6	191.6	266.6	375.1	250.2	140.6	167.3	108.6	22	17.4	131.3
1987	7.6	11	45.2	76.8	127.5	115.4	213.9	457.1	171.6	119.9	47.1	2.8	116.3
1988	13.3	20.2	8.9	90.9	196.9	130.2	128	202.9	51.6	347.7	21	2.3	101.2
1989	30.1	8.5	63.4	26.6	139.1	302.4	290.1	233.3	0	328.4	4.6	5.2	119.3
1990	10.5	55.8	108	70.9	233.1	221.6	434.7	206.9	246.4	103.7	70.3	12.2	147.8
1991	8	5.5	51.9	41.6	132.9	259.3	269.1	144.3	61.8	53.1	15	23	88.8
1992	53.5	81.8	3.5	53.2	164.8	476.9	225	118.1	172.4	13.9	21.3	51.1	119.6
1993	6.8	22.2	52.7	77.9	174.2	174.6	264.6	461.7	221.8	16.1	11.1	8.5	124.4
1994	6	32.4	97	61	193.9	166.6	394.6	306.7	301	140.6	23.4	39.2	146.9
1995	13.3	7.5	16	69.2	105.9	301	267.5	492.4	142.4	8.7	32.6	2.7	121.6
1996	5.7	18.1	177	60.5	179.1	261	468.6	506.7	296.9	71.9	142.8	8.4	183.0
1997	16.8	13.6	132	186.6	57.9	236.2	303.4	271.6	152.5	103.5	0.2	3.5	123.2
1998	3.1	6.4	18.8	76.8	179.9	207.2	95.7	124.1	254.5	75.1	17.6	9.2	89.0
1999	18.9	7.3	26.2	109.6	137.8	321.4	145.5	273.3	115.8	170.8	69	76.7	122.7
2000	8.9	46.6	5.8	88.7	156.7	162.2	262.5	149.8	256	136	2.1	5.4	106.7
2001	11.9	7.3	142	62.7	221.3	231.1	335.9	384.3	239.5	113.9	42.5	8.1	150.0
2002	42.8	17.3	23.7	123.2	277.3	288.6	304.5	311.3	319.8	86.4	79.5	44.1	159.9
2003	30.7	44.3	18.3	95.6	118.8	139	265.9	254	238	65.1	0.3	0.3	105.9
2004	9.9	16.9	17.8	315.4	348.6	230.3	358.7	332.9	145.5	14.5	58.9	24.8	156.2
2005	9.5	22.1	27.5	30	110	185.6	372.7	466.9	592.1	24.2	41	28.2	159.2
2006	5.7	17.7	15.5	130	154.6	157.5	362.9	460.9	255	85.6	0.2	5.3	137.6
2007	13.2	101.9	47.7	97.2	232.8	216.7	139.6	185.3	252.9	471.7	13	2.6	147.9
2008	19.4	32.2	65.9	131	306.9	314.3	207.1	192.2	304.8	243.5	124.9	22.1	163.7
Mean	18.4	24.1	42.8	104.1	186.2	238.3	267.0	319.8	259.5	136.7	39.2	15.6	137.6

61. In rainy season, the weather is like the summer climate which is hot and rains a lot. Average temperature ranges from 25 to 30^oC while humidity of 80% to 85%, with much of rain or 70-85% of annual rainfall. In the dry season, the weather is like winter with little rain, low humidity, with average temperature ranging from 10 to 20^0 C and humidity of 75% to 80%.

62. Monsoon regime has little impact on the project site. The prevailing direction of wind is the North. Frequency of northern wind is 80.4% with average speed of 2.1 m/s, Northwest wind is 16.7% with average speed of 1.9 m/s.

63. Compared with the North-Northwest, the South-Northwest area experiences small amount of rainfall. The average rainfall a year ranges from 1,400 to 1,600 mm. However, the annual rainfall changes significantly according to the characteristics of local terrain.

64. The rainy season in south-northwest always begins in May and ends in October, sooner than the other areas in the North by about one month. The maximum rainfall occurs from May to September. The remaining seven months of the year from October to April belongs to dry season. December and January are the driest months of the year.

65. The maximum daily rainfall according to the design frequencies on the basin is calculated based on the data from Moc Chau gauging station. At the Thac Moc gauging station, there are sufficient data and is located in the climatic consistency area with the study area to act as the similar basin for the calculation of the runoff. There is data for the basin over 23 years at Thac Moc Station.

Table 9. Monthly and annual flow at Chieng Pan Dam Unit: m^3/s

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Mean
1959	2,15	1,97	1,87	2,00	4,67	7,23	13,08	18,69	18,18	10,03	4,39	3,14	7,28
1960	3,59	3,30	3,13	3,34	7,81	12,09	21,88	31,26	30,41	16,77	7,35	5,26	12,18
1961	2,62	2,41	2,28	2,44	5,71	8,83	15,98	22,82	22,20	12,24	5,36	3,84	8,89
1962	3,00	2,75	2,61	2,79	6,52	10,09	18,25	26,08	25,37	13,99	6,13	4,39	10,16
1963	2,63	2,42	2,29	2,45	5,73	8,86	16,03	22,90	22,28	12,29	5,38	3,85	8,93
1964	3,53	3,24	3,07	3,28	7,68	11,88	21,49	30,70	29,86	16,47	7,21	5,16	11,96
1965	2,94	2,69	2,55	2,73	6,39	9,88	17,88	25,54	24,84	13,70	6,00	4,30	9,95
1966	2,50	2,30	2,18	2,33	5,44	8,42	15,24	21,77	21,18	11,68	5,12	3,66	8,49
1967	2,18	2,00	1,89	2,02	4,73	7,32	13,24	18,92	18,40	10,15	4,45	3,18	7,37
1968	2,26	2,07	1,96	2,10	4,91	7,59	13,74	19,63	19,10	10,53	4,61	3,30	7,65
1969	1,93	1,77	1,67	1,79	4,19	6,48	11,72	16,75	16,29	8,98	3,94	2,82	6,53
1970	3,04	2,78	2,64	2,82	6,60	10,21	18,48	26,40	25,68	14,16	6,20	4,44	10,29
1971	2,95	2,71	2,57	2,74	6,42	9,94	17,99	25,69	24,99	13,78	6,04	4,32	10,01
1972	3,27	3,00	2,85	3,04	7,11	11,01	19,92	28,46	27,68	15,26	6,69	4,79	11,09
1973	4,56	4,18	3,97	4,24	9,92	15,35	27,78	39,68	38,60	21,28	9,32	6,67	15,46
1974	2,81	2,57	2,44	2,61	6,10	9,44	17,09	24,41	23,75	13,09	5,74	4,11	9,51
1975	3,48	3,19	3,03	3,23	7,56	11,70	21,18	30,25	29,43	16,23	7,11	5,09	11,79
1976	1,74	1,60	1,52	1,62	3,79	5,86	10,61	15,15	14,74	8,13	3,56	2,55	5,91
1977	2,70	2,47	2,34	2,50	5,86	9,07	16,41	23,44	22,80	12,57	5,51	3,94	9,14
1978	4,13	3,79	3,59	3,83	8,97	13,89	25,13	35,90	34,92	19,26	8,44	6,04	13,99

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Mean
1979	2,68	2,46	2,33	2,49	5,83	9,03	16,33	23,33	22,70	12,52	5,48	3,92	9,09
1980	3,34	3,06	2,91	3,10	7,26	11,24	20,34	29,05	28,26	15,58	6,83	4,89	11,32
1981	2,49	2,28	2,16	2,31	5,40	8,36	15,13	21,62	21,03	11,60	5,08	3,64	8,43
Mean	**2,89**	**2,65**	**2,52**	**2,69**	**6,29**	**9,73**	**17,61**	**25,15**	**24,46**	**13,49**	**5,91**	**4,23**	**9,80**

Source: Volume 1: General description of Chieng Pan design report of IES

66. While December is the month of least rainfall, the lowest flows in the river are experienced later in March as it takes time for ground water tables to be recharged. The power station water delivery system is designed to provide 20.2 m^3. For 10 months (October to July) of the year there is less natural flow in the river than this and all the flow in the river will be taken to generate power.

67. At 2 km upstream of the Chieng Pan project site is the Ta Niet hydropower plant. The project is nearly completed but is not in operation and work stopped 3 years ago due to the shortage of capital. Power plant is accessible by a road approximately 200 m from the main sealed highway to Moc Chau and Ha Noi. The power house site has three installed generators with total capacity of 3.6 MW. The project consists of a dam, a right bank channel (mainly open but in parts covered following closely to the main road), penstock and power house. The project will affect about 8 households. In addition, there is another power plant which is 20km downstream from the Chieng Pan project site.

68. The water quality of Sap stream was also tested on March 10, 2011. Two water samples were captured after a rain event and taken to the laboratory for analysis. The results complied with National technical regulation on surface water quality: QCVN:08-2008/BTNMT. All the substances are within the permitted limits. The results of the test are as follows:

Table 10. Results surface of water quality in Sap stream

No	Parameters	Unit	CP1	CP2	QCVN:08-2008/BTNMT
1	PH	-	8.23	7.99	5.5 - 9
2	O_2	mg/l	4.5	4.7	> 4
3	Sediment content	NTU	357	352	-
4	COD	mg/l	28	29	30
5	BOD_5	mg/l	14	13	15
6	Nacl	%	0.00	0,00	-
7	TSS	mg/l	41	45	50
8	NO_2-N	mg/l	0,02	0,03	0,04
9	NO_3-N	mg/l	3,03	2,87	10
10	Fe	mg/l	0,14	0,13	1,5
11	Mn	mg/l	0,02	0,01	-
12	Cd	mg/l	undetected	undetected	0,01
13	Pb	mg/l	< 0,001	< 0,001	0,05
14	Hg	mg/l	undetected	undetected	0,001
15	As	mg/l	< 0,002	< 0,04	0,05

Note:
TCVN: 08-2008/BTNMT: National criteria of surface water quality
CP1: Surface water sample at the dam site area
CP2: Surface water sample at the powerhouse area.

C. Ecological Resources

1. Forest Resources

69. The surface of the basin has thick soil layer which is formed of strongly alternated rock and soil including granite biotic and loam combined with gravel. Regime of a tropical monsoon climate and a temperate climate at the level of more than 1,000 m has created diverse vegetation, tropical forests mixed with temperate trees such as poplar, pine, sa mu and many valuable herbs in the lower layer in the basin. Vegetation blanket cover in the basin is relatively good.

70. Vegetation blanket can be divided into five main forms: closed broadleaf forest, mixed forest, coniferous forest, low tree forest and grassland. Coniferous forests are usually at the level of more than 2500m and from 1700 ÷ 2500m is the mixed forest with coniferous trees; from 800÷1700 m is the mixed forest consisting of broadleaf trees. At the level of less than 800 m is the broad-leaf forest, low tree forest and grassland. Low tree forest and grassland also grow in the top of Rocky Mountains or replanted forest area.

71. The vegetation in the area are plenty with more than 950 species of 500 generas and 100 families under the five lines including tropical plants, subtropical plants and temperate plants.

72. Forests in the basin are mainly poor forest with average wood reserve of less than 120m^3/hectare. There is only a few of rich primeval forest, but it is still the source of gene of rare plant species including wood trees in the group 1 such as Po Mu, Hoang Dan; rare wood trees in the group 2 like Nghien wood, three leaf pine, Dinh wood. In addition, there are many types of other valuable wood such as fir, De, Sam Sao, Doi, Bach, Vau, small bamboo, and acacia. There are many kinds of herbs such as Dang ginseng, Ha Thu O, Tuc Doan, Bach Hop, Thach Boi, Ich Mau, Kim Ngan, and Duong Quy. Reduction in vegetation cover and other natural factors have affected the runoff oscillation in a year. This causes the reduction in flood peaks and increase in runoff in dry season. Deforestation has increased such that the percentage of forest and the regulation ability of the basin also decreased.

73. Much of the forest in the area has been destroyed in the recent past. In the last ten years, there has been focus by local government on the management of forest land. In 2007, Son La Province has planted over 3,800,000 trees of all kinds in the area of 1,700 ha and mainly on irrigation channel area, transportation area and protected area near the Da and Ma River, more than 61,000 ha is replanted and 7,000 ha is protected . A campaign of 1,200 posters and notice boards is made in important areas to raise people’s awareness of forest protection and prevention of hunting.

2. Wildlife

74. Based on interviews and observations of local people, there are no threatened species detected in the general area of the project. There are a relatively small quantity of birds like bulbul and spotted dove.

3. Fish and Aquatic Resources

75. The freshwater river environments of Vietnam are credited with a rich flora and fauna biodiversity including species of fish, shrimp, crab, snail, mussels, amphibians, insects and plants. Countrywide, there are 20 species of freshwater weeds, 1402 species of algae, 782 invertebrates, 544 fish species and 52 species of crabs[9].

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[9] Water Environment Partnership in Asia (WEPA)

76. Commercial fisheries make an important contribution to exports and are worth more than US$ Billion 2.25 annually to Vietnam. The major part of this figure is from marine fisheries, but aquaculture has become increasingly important. Freshwater aquaculture production environment include ponds, ditches, cages, net enclosures and pens in reservoirs, rivers channels and paddy fields. In the north, pond poly culture is the most important farming system using carp and bighead. The main area for aquaculture, however, is in the south of Vietnam and especially with the use of cage culture in the Mekong and Bassac rivers and catfish, carp and snakehead are the main species. In the Mekong Delta, prawn monoculture is practiced extensively in rice fields. Tilapia in cultured ponds has also become popular. Pond culture has been encouraged nationwide as part of the drive against poverty alleviation, diet improvement and the prevention of malnutrition. The Government supplies extension free to farmers.

77. While aquaculture has spread with the use of introduced species, native aquatic species numbers in natural rivers and lakes are down. Only scarce quantitative data is available for inland aquatic ecosystems, and the extent of the deterioration of freshwater biodiversity is still poorly known. However, decline has been documented in various reservoirs and lakes. For instance, from 1998 to 2001, in the Ba Be Lake, 20 species disappeared.

78. There are approximately 3600 reservoirs of various sizes in Vietnam. Most dams and reservoirs have multi purposes for flood control, irrigation, hydropower, and water supply and most are more than 20 years old and only 15 percent are classified as large or medium (capacity of over 1 million m^3 or a height of more than 10 meters)[1]. These structures have been constructed without provisions to allow migratory fish movement up and down river and with little consideration for environmental flows to protect aquatic life.

79. Sap stream is a major tributary of Da River. The water quality is quite low with high sediment loads. Moreover, the water flow changes significantly between rainy season and dry season. On the other hand, due to the construction of other upstream hydropower plants like Ta Niet, the movement of fish has also stopped. There are no large fish in the stream.

D. Socio-Economical and Cultural Environment

1. Socio-economic features

Population

80. The population of Moc Chau district (2009) is 150,750 people with 33,669 households and divided in 12 different ethnic groups. The Thai ethnic minority holds the highest rank with 33%, followed by H'Mong (18%) and Kinh (15%). In addition, there are Dao, Kho Mu, and Tay people. The poverty rate of the district is 22.1% and in which 33.8% is ethnic minority (December 2009). Number of workers in the economic sector of Moc Chau District in 2005 is 12,789 people, including workers in agriculture and forestry accounting for 90.2%. Number of workers in other sectors such as industry, construction, healthcare only account for 9.8% of the total number of workers of the District.

81. The population of Yen Chau district (2009) is 68,800 people; 14,873 households and divided in 12 different ethnic groups, in which Kinh ethnic group holds the highest percentage, followed by Thai and H'Mong.

82. The project will impact directly on 2 communes: Tu Nang in Yen Chau district and Chieng Hac in Moc Chau district.

83. Tu Nang commune has 15 hamlets with 1,260 HHs. The commune is 30 km away from Yen Chau district centre toward the National Road No. 6.

84. Chieng Hac commune in Moc Chau District has 12 hamlets with 732 HHs and population of 3,362 people.

Table 11. Hamlets affected by the project's components

<table>
<tr><th>Component</th><th colspan="3">Location</th></tr>
<tr><th></th><th>Hamlet</th><th>Commune</th><th>District</th></tr>
<tr><td>Reservoir</td><td>Tan Thuat</td><td>Chieng Hac</td><td>Moc Chau</td></tr>
<tr><td>Dam site</td><td>Tan Thuat</td><td>Chieng Hac</td><td>Moc Chau</td></tr>
<tr><td rowspan="2">Water channel</td><td>Tan Thuat</td><td>Chieng Hac</td><td>Moc Chau</td></tr>
<tr><td>Phay</td><td>Tu Nang</td><td>Yen Chau</td></tr>
<tr><td>Power plant+OPY station</td><td>Ta Lang Thap</td><td>Tu Nang</td><td>Yen Chau</td></tr>
</table>

85. There are four communes which will directly benefit from the project by receiving more electricity. These are Chieng Khua, Chieng Hac, Chieng On and Tu Nang communes. The population and ethnic groups of communes above are as follows:

Table 12. Population and ethnic groups around the project site

Commune	HHs	Population	Ethnic
Chieng Khua	605	3,020	Thai, H'Mong
Chieng Hac	732	3,362	Thai, H'Mong
Chieng On	896	4,562	H'Mong, Sinh Mun
Tu Nang	1,260	5,611	H'Mong, Sinh Mun, Thai

Source: District Statistics Books 2009

86. Of the four communes immediately benefited by the project, 22% of the HHs in Tu Nang commune, 40% of Chieng Hac, 35% of Chieng On and 53% of Chieng Khua are poor households whose income per month is under US$10.

Agriculture

87. In recent years, the area, productivity and yield of crop plants of Moc Chau and Yen Chau district have increased. Crop plants are mainly wet rice, dry rice and a variety of vegetable. Food plants here are mainly rice, and local corn. The main fruit trees and vegetable of Moc Chau and Yen Chau district are very abundant like bullage, a plum which is a very popular and is a special kind of fruit in Northwest mountain area in general and in Son La in particular. The production of fruits and vegetables of Moc Chau and Yen Chau can supply Hanoi and other provinces.

Production and breeding

88. Cattle, pigs, buffaloes, goats and poultry are all kept by individual families in the district. Number of buffaloes has increased to meet the extra need to work in agricultural fields and for soil excavation. Cattle are highly valued and are bred by many families, as this can bring a significant increased family income. The number has increased significantly with the total of 51,000, in which there are 5,500 milking cows. Fresh milk yield is 12,000 tons per year. At the Chieng Pan Project area, animal breeding is also one of the main income earning activities of the people.

Aqua-product

89. In Moc Chau and Yen Chau, the area of fish ponds is insignificant. Fish mainly is captured in reservoir of Hoa Binh hydropower project and only enough for local people in Moc Chau district. Hoa Binh is a large reservoir which runs through Moc Chau district and

its aquatic product is the main source for people around it. It is the reservoir of Hoa Binh hydropower project which is erected in Hoa Binh province and 6km far from the project site downstream.

Industry and small industry and handicraft

90. The industry and small industry and handicraft of the project area are not developed. Most of the HHs depends on small-scale agriculture and raising animal. The area for cultivation is insignificant and cannot be done by machine due to the fact that they do their crops on hills.

2. Rural infrastructure

Transportation system

91. The transportation system of Moc Chau and Yen Chau District has received heavy investment recently, and all towns and communes in the District are connected by good roads to the District centre.

There is a National Highway Road No. 6 which connects Ha Noi with the northwest provinces and which also go through the project area. This is a favourable condition for the construction of the project.

Irrigation system

92. The irrigation system at Chieng Hac commune is poorly developed. The source of water for agricultural production is mainly from side streams. However, at the proposed reservoir area, there are irrigation off takes for both left bank and right bank serving fields of local villages. The left bank channel is immediately above the dam and water discharge will be incorporated in the design of the dam. Water supply to these channels will need to be guaranteed in the design of the project.

Telecommunication system

93. As of 2007, all communes in the District are provided with telephone.

Electrical power system

94. The electrical power system in Tu Nang and Chieng Hac communes is well-established. Nearly all of the households in the commune have access to the national grid but is always cut more than 2/3 per week. The people only have enough electricity for lighting, TV and rice milling, while for cooking and for heating they still use wood. The weather is extremely cold in winter.

Health care

95. By 2005, Moc Chau District has two hospitals, 27 healthcare centre of Ward with 30 doctors, 101 medical doctors and medical officers, and 13 nurses. There are 10 midwives with 200 beds for patients. However, due to the complexity of the topography, difficulty in travelling, insufficiency of medical equipment, medical care and healthcare for local people are still limited.

Education

96. In terms of education, up to the year 2004-2005, Moc Chau District has 1,557 classes in which there are 1,076 primary classes, 415 secondary classes and 66 high school classes. The number of teachers is 1,122 while the total number of students is 15,737. In recent years, education at the local level has been paid attention to. Classes have been constructed in remote villages, so the proportion of school-age children increases.

Clean water and solid waste disposal

97. There is no central water supply system in the area and people generally use supplies from the steep side streams which are piped down to individual houses using plastic pipes or bamboo. However, the river below the reservoir is used by local villagers on either side of the river for recreation and for their buffaloes. In particular there is a large pool area upstream of the hydropower plant site that will be deprived of water if the plant takes all the water from the section of the stream.

98. There is no official solid waste collected and waste is scattered or dumped in informal areas where it pollutes ground water and water sources in the area.

3. Site of Archaeological and Historic Importance

99. Various archaeological locations and remains are to be found in Vietnam and the SE Asian mainland in general including prehistoric (Neolithic, Bronze-Iron age), pre-Ankorian and Ankorian sites.

100. No archaeological or cultural sites have been determined in the project area but there are procedures set down relating to chance discoveries of an archaeological nature.

IV. SCREENING OF ENVIRONMENTAL IMPACTS & MITIGATION

101. The ADB checklist for hydropower projects was used to screen for any potential impact and all impacts identified are addressed in the EMP. The checklist is attached in the Annex 1 of this document. Impacts, which were determined as having environmental implications, are considered further and where significant impacts occur mitigation has been provided for where possible.

A. Project Impacts

Positive Impacts

102. As a result of the overall Loan 2517-VIE, an additional 25–50 villages and about 3,000–5,000 households will be provided with electricity in Vietnam. Specifically the Chieng Pan project aims to supplement power to the electricity grid system to supply about 4 communes: Chieng Khua, Chieng Hac, Chieng On and Tu Nang. With the further development of the national electricity distribution system, the people of four communes above and Moc Chau and Yen Chau district as a whole will have the convenience of reliable power form the main line twenty fours a day for domestic and business activities. Power from the main line will provide for cooking and domestic heating for those who can afford it and will reduce the pressure on the use of timber for heating and cooking purposes.

103. The project will also provide unskilled jobs during the construction phase and a limited number of jobs in operations. This will be a bonus for the workforce in this predominantly agricultural community.

104. The existing track into the village will be widened slightly and improved during the construction of access road to the dam. The road improvement will be a benefit to the local community.

105. The project water channel is on the left bank of the river. To allow construction of the water channel in the downstream area, an existing track on the left bank will be improved and extended from the downstream below the powerhouse to connect to the main road. This access road along the channel, although intended as temporary road, can be retained

and maintained by the Commune after construction for the use of existing villagers on the left bank who currently have no road link.

106. Hydropower is a clean and renewable source of energy and avoids contributions to pollution loads, which would result from the alternative use of thermal electricity generation. Hence, it is environment friendly. Currently, gas is the main source of energy in the country (43.7%) with coal also responsible for 14.6%. Hydropower only constitutes 35.3% and Vietnam imports significant amounts of its energy from China. Increased hydropower generation will reduce dependence on importation.

107. Thermal power generation plants are also known for a large variety of toxic emissions i.e. carbon dioxide (CO_2), particulate matter (PM), sulphur dioxide (SO_2), carbon monoxide (CO) and oxides of nitrogen (NO_x). The following Table provides a comparative analysis of estimated emissions of CO_2 from a power station generating the same amount of energy over a 30-year period using oil, gas & coal as a fuel source. Discharges of between 0.14 and 0.25 million tonnes of carbon dioxide are saved over a 30 year project life by using hydro power rather than fossil fuels. The Chieng Pan Project will, therefore contribute to reduction in carbon emissions by avoiding the alternative burning of fossil fuels.

Table 13. Comparative Analysis of CO_2 Emission using Oil, Gas & Coal Generation over 30 Years

	Fuel Source		
	Oil	**Gas**	**Coal**
Grams CO_2/Gwh discharge	297	232	410
ToTal Discharge (million tonnes CO_2) generating 682.8 Gwh	0.18	0.14	0.25

Note: Assumes generation of 22.76GWh per year (22.76×10^6) kWh/year over a 30 year project life = 682.8 Gwh

Adverse Impacts

Loss of Land

108. No houses will be lost as a result of the project. There also has no loss of residential land for people and HHs which will be affected temporarily. The number of HHs and people who will suffer loss of land are as follows:

Table 14. Number of HHs and people with affected land

Type of soil	HHs	People	Percentage
Hill land	10	49	33%
Forest land	8	39	27%
Agricultural land	12	58	40%
Residential land	0	0	0%
Total	30	146	100%

Source: Project Due Diligence Report February 2010

Table 15. Area permanently occupied by Chieng Pan Hydropower plant

No.	Type of occupied land	Unit	Chieng Pan
1	**River bed**	**ha**	**8.98**
	Forestry land	ha	0.00
	Agricultural land	ha	2.02
	Stream and unused land	ha	6.96
2	**Main works items (dam, plant and energy route)**	**ha**	**11.22**
	Field land	ha	0.6
	Forestry land	ha	3.2
	Stream land	ha	0.0
	Fallow land	ha	7.42

Source: General description of Chieng Pan design report

Table 16. Area temporarily occupied by Chieng Pan Hydropower plant

No.	Type of occupied land	Unit	Chieng Pan
1	**River bed**	**ha**	**. 0**
	Forestry land	ha	0
	Stream and unused land	ha	0
2	**Main works items (dam, plant and energy route)**	ha	**2.93**
	Field land	ha	0.1
	Forestry land	ha	0.35
	Stream land	ha	
	Fallow land	ha	2.48

Table 17. Land Requirement during Construction and Operation

Type of Impact	Area (ha)	Number of Affected Persons
AREA OF TEMPORARY IMPACT		
Work area, camps and area for construction materials and equipment	2.93	25 (5 household)
AREA OF PERMANENT IMPACT		
Reservoir	8.98	25 (5 household)
Head works (include land for powerhouse, dam, channel, roads and transmission lines).	11.22	96 (20 household)
Service zone	0	0 (0 household))
Total	23.13	146

Source: Project Due Diligence Report
Note: Some HHs and affected persons are impacted by more than one component.

109. Around 15.84 percent (3.2 ha) of permanently affected land area is forest land, 12.97% (2.62 ha) is agricultural land and 71.19% (14.38 ha) is fallow land (unused agricultural land). The agricultural land which is lost is mainly land for planting rice and corn. Most of the reservoir land is composed of rice and corn paddies.

B. Construction Impacts and Mitigation

1. Materials

110. The volume of backfill soil is quite small. Therefore, excavated soil in water channel foundation will make use of Macadam and sand bought at quarry that is near the construction site and are licensed to exploit. Cement and steel are bought at Moc Chau and Yen Chau district.

2. Construction Activities

111. There is potential for water contamination from construction activities and erosion of materials into the river at the dam and hydropower sites. The main construction activities for work in or close to the river will be scheduled in the dry season and bunds will be created to channel the river away from dam abutment construction and power house construction activity.

112. There is also potential for the penstock and water channel to be constructed with scarring of the landscape and for the road material to erode down the slopes and not transferred to waste disposal areas and not consolidated properly. The penstock will be constructed on steep slopes and raised slightly above the ground. Here there is also potential for erosion.

113. There is wooden suspension footbridge over the river giving access to fields on the left bank side of the river which are owned by Tan Thuat Village. With construction of the

dam, this bridge will be removed, the dam alignment is just a few metres above the bridge. The new dam alignment will be provided with a bridge access so that villagers will continue to be able to get access to the left bank.

114. There is a left bank side stream immediately above the dam site and villagers on the right bank have multiple aerial plastic drinking water pipes from the same side stream. These pipes pass many meters above the height of the dam and should not be affected by the dam but any breakages or destruction of these links will be repaired.

115. There are off-take irrigation channels on both sides of the river above the dam site. The right bank channel is well above the dam site and will not be affected by the project. The left bank irrigation channel is immediately above the dam site and has been incorporated into the design to ensure that the flow is retained. There are no other irrigation channels directly below the dam on either side of the river along the length of river which is denied water by the project.

116. To avoid slippage of stone and earth material, stone gabion retaining structures will be used to prevent slippage of soil adjacent to the penstock and on certain road sections. Maximum use will be made of material in fill areas and there will be proper spoils planning particularly on steep slopes with bench terracing for high cut areas and avoidance of any erosion of material down slope. Trees should be planted to consolidate and re-vegetate in penstock, roads and construction areas upon completion of work.

3. Road Access and Traffic

117. Road access to the site is quite good and the project site is close to the Tan Thuat village. The access road to the dam site has a length of 0.3km and passes through the village and needs to be upgraded. There is no existing road to the power plant so a new 1.5km access road to the power house also needs to be built.

4. Construction Site and Camp Impacts

118. The construction of the project will be manpower intensive and where possible local labour force will be used. The contractor will require temporary labour camps at the dam and powerhouse sites. The main temporary camp for up to 50 people will be downstream of the dam on the left bank in the paddy land and there will be accommodation for 15 technical staff. The Contractors will employ manual labour from the District. The camps for workers from outside will be away from the Tan Thuat village.

119. The construction camp has the potential for environmental impacts in terms of solid and wastewater emissions. The concrete production batching plant area is also at the low part of left bank. Clauses will be placed in construction sub-contracts requiring dedicated water supply, solid waste and sewage disposal arrangements.

120. For the construction sites, there is a potential for dust hazards at batching plant and material storage areas. Conditions requiring the contractor to suppress any dust hazards by the use of water spraying of roads and the covering of material haulage vehicles will be included in contracts with the contractors.

121. The construction sites and any temporary camp areas will be cleaned of all debris and properly restored on completion of construction when building contractors abandon the site.

C. Impacts of Loss of Water to the River System

1. Human Impacts

122. The quality of the river water is visually very poor with high sediment loads and cannot be used for drinking purpose. The indigenous inhabitants only use water in the main stream for washing and for their buffaloes. Local villagers on the right bank at Than Thuat village have multiple plastic drinking water pipes from the left bank side stream.

2. Fish Impacts

123. If all the water is taken from the Sap stream during the dry season, there is likely to be impacts on fish and aquatic life. With construction of the dam, any movement of fish upstream will be impossible. However, as a consequence of low quality of water and the electric catching of fish, the number of fish in the stream reduced significantly and hardly can we see the large fish now. There is a hydropower scheme immediately upstream of Chieng Pan and dams downstream. The construction of project will have negative impacts to the fish but trivial.

D. Specific Mitigation Measures

1. Compensation and Resettlement

124. 5 billion dong has been allocated to cover the various elements of compensation and resettlement as covered in the RP.

Table 18. Area Permanently Affected by Type of Use and Mitigation

No.	Land Use	**Area (ha)**	%	Mitigation
1	Residential area	0.00	0.0	None
2	Agriculture	2.62	12.97	Compensation as per RP
3	Aquaculture	0.00	0.0	None
4	Production Forest	3.20	15.84	Compensation as per RP
5	Irrigation facilities	0.00	0.0	None
6	Rivers and springs and fallow land	14.38	71.19	None

From Project Due Diligence Report, May 2011

2. River Water Flow

125. If the project is implemented and all the water in the river is used for power generation, from October to July, there will be no water in the 3km section of the river system between dam and power house. Water is not used from the river for drinking, but is used for washing and for animals particularly by villagers on the left bank of the river.

126. With lack of data, it is impossible to accurately define the quantitative impacts with respect to the ecology and habitat loss. The impacts may be significant in the no water scenario, where a section of the river is totally deprived of flow for a large part of the year. The section of the river used by local people and their animals will become stagnant and unhealthy and it is important that some flow is maintained in the river.

127. Various methods have been used to assess minimum environmental flows in river situations where flows have been or will be regulated and water is denied to downstream uses. Simple hydrological and hydraulic methods have been employed where the level is set as a percentage of natural flow and takes into account river morphology and water levels. More sophisticated methods rely on habitat simulation and the incorporation of the

needs of river ecosystem components and the flow needs of other water users. Where data is available it is possible to develop hybrid models to estimate environmental impacts and determine an acceptable minimum flow, which should be retained in the river system.

128. In the absence of any specific Vietnamese guideline for the amount of water to be retained in a watercourse when water is extracted for hydropower purposes, it is recommended that some flow be retained i.e. 20% of the 85% and a guaranteed flow of 500 litres/s is retained in the river.

129. Metal grills or screens will be provided to the weir intake. These screens have 2cm gaps and will prevent larger fish from passing downstream into the power water delivery system to the powerhouse.

3. Local infrastructure

130. There are off-take irrigation channels on both sides of the river above the dam site. The right bank channel is well above the dam site and will not be affected by the project. The left bank irrigation channel is immediately above the dam site and has been incorporated into the design to ensure the flow to the fields is continued.

131. There is wooden suspension footbridge over the river giving access to fields on the left bank side of the river which are owned by Tan Thuat Village. With construction of the dam this bridge will be removed; the dam alignment is just a few metres above the bridge. The new dam alignment will be provided with a bridge access so that villagers will continue to be able to get access to the left bank.

132. There is a left bank side stream immediately above the dam site and villagers on the right bank have multiple aerial (far above the ground) plastic drinking water pipes of from the same side stream. These pipes pass many meters above the height of the dam and should not be affected by the dam. Any breakages or destruction of these links will be repaired.

4. Compensation for Loss of Trees and forest Land

133. Forest land lost is production forest and mainly tree lost by the project are bush and low value wood; So that these trees were compensated by NPC with estimated cost of about 1,510,000,000 VND.

Table 19. Cost for compensation of tree and forest land

No	Item	Cost (vnd)
1	Compensation and Support for forest land	550,000,000
2	Compensation and Support for plants and fruit trees	960,000,000
Total		**1,510,000,000**

Source: Compensation and resettlement plan, Chieng Pan HPP

5. Compensation and re-planting programme

134. Some trees will be re-planted at some locations such as dam site, road, along the channel and the powerhouse site, to ensure landscape and environment. The re-planting programme will be planned and approved by the competent local authority. Trees re-planted will be given priority for local available ones and limited for trees. There should be allowance of 15 ha plantation. Cost of tree planting per ha basis is about 40 mil dong per ha.

V. ENVIRONMENTAL MANAGEMENT AND MONITORING PLAN AND INSTITUTIONAL REQUIREMENTS

135. NPC will be responsible for ensuring that conditions are included in project construction contract documents. It will also ensure that during the construction phase, environmental mitigation measures, as per the EMP, are effective and are implemented. The EMP implementation will be coordinated with relevant Government Agencies such as Water Resources and Environment Departments at District level, for such activities as implementation environmental monitoring programmes.

136. The NPC uses its Son La power company to manage Chieng Pan Project. This company will be responsible for implementation of ADB projects. NPC will be responsible for 3 more hydro schemes under the C1 component of the ADB TA 7262 sector project and needs to expand capacity. To handle its general environmental responsibilities NPC and Son La Power Company will develop the necessary capacity and allocate manpower to specifically implement the Chieng Pan environmental management plan and monitoring programme.

137. NPC will create an Environmental and Social Development Cell (ESDC). The cell will consist of two members to cover environment, social and resettlement issues. The ESDC will work in close cooperation with the respective field-based office on the day-to-day activities of EMP implementation and the Resettlement Plan implementation. ToR for the environmental specialist is attached in Annex 2.

138. As NPC does not yet have the expertise and full capacity required for implementing the IEE and Resettlement Plan, it will have to depend on additional external technical assistance and will, therefore, hire a part time Environmental Implementation Consultant, to provide technical assistance in implementation of the environment program and the EMP.

139. The Implementation Consultant will carry out internal on-the-job training and institutional capacity building for the Environmental and Resettlement Development Cell, thus, supporting NPC expertise to implement the EMPs and resettlement plans by itself in future. The cost for the Implementation Consultant is indicated below along with monitoring costs.

Table 20. Estimated Budget for Environment Specialist and Monitoring

Item No.	Description	Unit	Estimated Amount	
			VND	US $
1	Environment Specialist	Year	195,000,000	10,000
2	Environmental Monitoring & Evaluation	Year	250,000,000	12,820
3	Environment Implementation Consultant part time	Year	195,000,000	10,000
4	Training, Information Capacity building for NPC/ESDC	Once	58,500,000	3,000
	Total		**698,500,000**	**35,820**

Source: Compensation and resettlement plan, Chieng Pan HPP

VI. PUBLIC CONSULTATION MEETING

140. NPC organized 2 public consultation meetings which were held in February 21, 2011 at Tu Nang commune and February 25, 2011 at Chieng Hac commune to inform the general clearance plan of Chieng Pan Hydropower project and to disclose information about the social, environmental and resettlement issues.

A. Objectives of the Workshop

- To inform the general clearance plan of the project facilities
- To receive comments from beneficiaries and affected peoples, local officials, community leaders, societies, and other stakeholders
- To inform the stakeholders about the Project
- Ensure community consensus for project implementation & precise information disclosure to local people.

B. Disclosed information

- Subproject's locations, designs & cost estimates
- GOV & ADB policies & procedures about: Resettlement & Compensation, Environment and Social issues
- Potential impacts caused by subproject
- Subproject's objectives
- Proposed mitigation measures
- Environmental Management Plan & Environmental Monitoring Program

C. Meeting Participants

The participants who attended the meeting are:

- NPC, Son La power company's representatives, NPC's Consultation
- Board of compensation and resettlement assistance
- Provincial Agencies: representatives DARD, DONRE
- Local authorities: representatives of district and commune PCs, representatives of District/Commune Women's Union, Public Health, Environment Division at District & Commune level and representatives of local communities.
- Representatives of project affected people (PAP) to ensure they are meaningfully involved in the public consultation. PAPs representatives included **those** affected by environmental impacts both direct and indirect negative impacts

141. Total number of participants for one subproject : 40-50 people (including PAPs and Representatives of NPC, Provincial Agencies, Local Authorities people PAPs making up about 20-35% of total PAPs).

D. General Comments from Participants of subproject's Public Consultation Meeting

142. The comments from the participants can be summarised as follows:

- There is agreement on the construction of Chieng Pan Hydropower subproject because this project will connect to the national power network and improve the quality of power supply to the local people of Moc Chau and Yen Chau District.
- Hoping the resettlement rate is higher than in previous projects.
- Agreement on the general clearance plan of Chieng Pan project.
- Need the mitigation measures for negative impacts of environment caused by this subproject.
- Construction time should be widely informed beforehand to affected household so that they can plan agricultural production & cultivation prior to acquisition of agricultural land.
- Welcome to Chieng Pan Hydropower project as it will bring high economic benefit, and not affect significantly to environment and not cause environmental pollution during operation period.
- Agreement on the result of positive and negative impacts caused by this subproject, and mitigation measures.

E. Meeting Agenda

143. The following is the agenda of the public consultation meeting:

Time Duration for presentation (minutes)	Content	Presented by
5	Welcome	PAP
10	Introduction of ADB's Project & Chieng Pan subproject	
30	Brief presentations on the subprojects/ADB safeguard policy	Social Consultation
120	Discussion on potential impacts & mitigation measures & monitoring of mitigation measure implementation, Resettlement & Compensation, Environment and Social issues.	All participants
5	Wrap-up & Closing	NPC

F. Conclusion

144. There is agreement on the construction of the Chieng Pan subproject and desired early construction. Consensus is achieved on socio-environmental impacts and mitigation measures recommended by the Project

145. The memoranda of the public consultation meeting at People's Committee of Chieng Hac and Tu Nang commune and public consultation meetings in the villages can be found in the Annex.

G. Grievance Redress Mechanism

146. A grievance redress mechanism (GRM) will be established soon after project commencement. The first level and most accessible and immediate avenue for the fastest resolve of grievances is through the senior site person of the Power Company. Grievances will be resolved through continuous interactions with affected persons and the ESDC will answer queries and resolve grievances regarding various issues which are the Company's responsibility. Corrective measures will be undertaken at the field-level within seven days. All grievances will be documented with full information of the aggrieved person and the issue and its resolution.

147. Complainants not satisfied with the response of the Company have the option of using the procedure available under the Civil Law and the Land Law 2003 (Article 138) and Decree 197/2004/ND-CP (Art. 63, 64) which specifies:

1. Complaints will be sent to the commune Peoples Committee (PC), which must respond to a complainant within 15 days.
2. If the complainant is not satisfied with resolution of the commune PC, the next level of appeal is to the District PC which has the responsibility to respond and resolve complaints within 15 days.
3. If not satisfied with the resolution of the district PC, the complainant can bring the complaint to the provincial PPC.
4. As a final resort, if not satisfied with resolution of PPC, the complainant can take the case to the District Court.

VII. CONCLUSION, FINDINGS AND RECOMMENDATIONS

148. The IEE was conducted using the ADB screening matrix. There are no impacts on sites of historic or archaeological importance. The project is located immediately adjoining the Tan Thuat village and near the provincial road. There is a loss of corn growing land, paddy crop and forest plantation trees at the head of the reservoir. The quality of water upstream of the project is quite poor. Local villagers just use water in the stream for washing and for their livestock.

149. Apart from the loss of land in Tan Thuat villages, the main impact identified in this environmental examination is the impact of the construction phase of the project and of the changed water conditions below the dam. Water will be removed or experience very much reduced flows along the 3 km stretch of the Sap Stream for half of the year. Immediately downstream of the hydropower plant water will be discharged for a few hours daily during the dry season. The Chieng Pan area has no wildlife or threatened species. If the scheme is implemented with full use of the river water flow in the dry season, there would be significant impact on aquatic life and use by villagers for washing and livestock. It is proposed to retain a minimum environmental flow in the river of 500 l/sec.

150. The other environmental consideration is to mitigate the impacts of construction activities particularly with the need to upgrade 0.3km of road and build a new 1.5km access road to the powerhouse through the local village. With the mitigation and environmental management plan proposed, environmental impacts will be limited.

151. This IEE proposed and the EMP and monitoring program attached to the IEE will ensure that the project environmental impacts will be successfully mitigated and no further environmental assessment is required

It is important, also, that NPC as the EA develops its internal capacity to implement and monitor the measures in the EMP. This has been designed into the project by requiring the setting up of an Environmental monitoring Unit in NPC and the appointment of environmental & resettlement specialists.

Table 21. Environmental Management Plan

Environmental Impacts	Remedial Measure	Means of Implementation	Responsibility	
			Implementation	Supervision
Design /Pre-construction Components				
Agricultural, forestry land impacts	- Design for maximizing ratio of waste cut and fill materials. - Design for reservoir, channel, penstock, power house and hydropower plant to avoid existing land uses wherever possible - Compensation in accordance with the State's regulations and Due Diligence Report prior to commencement of work.	Proper planning Measures to be added in relevant parts of the project . Preparation of proper resettlement plan.	Design consultants & NPC.	NPC
Excavation of materials and development disposal site causing loss of alternative land use	- Maximum use of existing licensed quarry & borrow areas already in operation. - Degraded, barren, riverbeds & waste lands to be used for borrow materials with license from authorities. - Only permitted quarry and borrow areas will be utilized.	Proper planning and measures to be added in the relevant parts of contract documents.	Design consultants & NPC.	NPC
Reduced water flow during operations and reduction in water quality in the existing river during the construction process.	- Ensure that dam construction is phased to ensure diversion of the river - Ensure construction activities will prevent soil & construction materials from entering river flow. - Ensure a minimum flow is retained in the river.	Plan & add measures to be added in the relevant parts of the contract.	Design consultants & design engineers.	NPC
Aquatic life and human impacts	- Design to discharge water flow in the downstream after building the dam to meet aquatic needs herein.	Design flow discharge outlet to allow residual flow to the dam downstream	Design consultants	NPC
Construction stage				
Earth Works for new access roads and construction of penstock on steep	- Slopes along access roads & penstock will be provided with catchments, cut-off drains & chutes to minimize soil erosion. - Tree planting programme at the temporary construction	Regular monitoring.	Contractor's Environment Engineer	SC and NPC prepare reports to DONRE

Environmental Impacts	Remedial Measure	Means of Implementation	Responsibility	
			Implementation	Supervision
slopes leading to erosion & encroachment	areas to rehabilitate the landscapes and minimize soil erosion.			
Material exploitation with potential for loss and degradation of cultivate land	- No earth will be borrowed from cultivable lands. - Exploiting materials from quarry sites with environmental exploitation license. - For new stone quarries, exploitation will only be implemented with the permission of the competent authorities.	Careful monitoring.	Contractor’s Environment Engineer	SC and NPC prepare reports to DONRE
Operation of construction equipment and construction activities and contamination of soils, reduction of water quality & water pollution	- Oil storage & refuelling areas will have adequate containment away from rivers and streams. - Fuel and refuelling methods for machines will be properly implemented. Equipment will be properly and regularly maintained. - Precautions to be taken to prevent water pollution due to dam construction by constructing alternatives to ensure no influence on river water resources. - Approving sites defined for storage & disposal of wastes materials - Any waste petroleum products will be collected, stored, & disposed in compliance with the regulations.	Careful monitoring of conditions included in contracts herein.	Contractor’s Environment Engineer and NPC	SC and NPC prepare reports to DONRE
Construction activities causing disruption of existing surface drains.	- Appropriate rain-storm-water channels will be constructed. - Provision for cross drainage structures will be made.	Proper planning and measures to be added in the relevant parts of contract documents. Careful monitoring of site conditions.	Design consultants & NPC. Contractor’s Environment Engineer	NPC
Impacts due to waste from construction	- Construction camps with safe water and sanitation facilities will be properly arranged.	Careful monitoring of site conditions and	Contractor’s Environment	SC and NPC prepare

Environmental Impacts	Remedial Measure	Means of Implementation	Responsibility	
			Implementation	Supervision
camps	- Local labours will be employed. - Design treatment systems for sewage and solid waste management at construction camps.	implementation of contract conditions.	Engineer	reports to DONRE
Air pollution due to emissions from construction vehicles and equipment	- Emission levels of all construction vehicles & equipment shall conform to Vietnamese emission standards. - Pollution parameters will be monitored during construction. - Crushing & concrete mixing plants will be away from population centres to minimize dust and noise.	Regular monitoring of site conditions and implementation of contract conditions.	Contractor's Environment Engineer	SC and NPC prepare reports to DONRE
Dust particulate causing health impacts for workers and villagers	- All precautions to be taken to reduce dust level emission from concrete mixing plants and mobile grinders at dams and powerhouse. - Regular water spraying at service roads and other areas will be undertaken. - All delivery vehicles will be covered with tarpaulin.	Regular monitoring of site conditions and implementation of contract conditions.	Contractor's Environment Engineer	SC and NPC prepare reports to DONRE
Construction activity noise from vehicles, plant & equipment causing noise pollution	- All construction equipment & plants will conform to Vietnamese standards. - All vehicles & equipment to be fitted with noise abatement devices. - Construction workers will be provided with personal protection devices.	Regular monitoring of site conditions and implementation of contract conditions.	Contractor's Environment Engineer	SC and NPC prepare reports to DONRE
Noise, vibration and dust pollution from any blasting activities Safety of workers at blasting sites	- Any blasting works will be in accordance with the applicable Vietnamese Regulations. - No blasting at dusk & dawn. - Residents by will be informed well in advance of blasting schedule. - Workers associated with blasting sites will be provided with labour protection devices (such as earplugs, helmets) & other personal safety devices.	Regular monitoring of site conditions and implementation of contract conditions.	Contractor's Environment Engineer	SC and NPC prepare reports to DONRE
Construction of the works causing loss of	- No trees to be removed without prior approval, - Compensation for lost trees.	Regular monitoring of site conditions and	Contractor's Environment	SC and NPC prepare

Environmental Impacts	Remedial Measure	Means of Implementation	Responsibility	
			Implementation	Supervision
vegetation & tree cover.	- Plantation programme implemented at dam area, channel, penstock, temporary construction areas, roads and other elements of the project including quarries. Indigenous tree species being accorded priority over exotic species.	implementation of contract conditions.	Engineer District People's Committee Sub-contractors	reports to DONRE
Construction activities causing impacts to wildlife	- Construction workers to be educated for wildlife conservation with no hunting & poaching to be allowed for workers.	Contractors to orient workers including signed commitment.	Environment Engineer	SC and NPC prepare reports to DONRE
Construction activities causing accident and risks to workers and community	- All blasting works shall be implemented in compliance with the regulations. - Workers will be provided with helmets, masks and safety goggles and other personal protective equipment. - Workers working at site shall be educated about labour safety. - Build medical stations at site to give first aid in case of accidents.	Measures included in the contract and monitor measures during the construction	Environment Engineer	SC, NPC, EPA
Impacts on public utilities and infrastructure	- Any public utilities likely to be impacted, such as water supply pipeline system at dam site, electrical/telephone lines, etc. must be relocated to suitable places. - Require consultations with local beneficiaries and competent authorities. - Ensure access is retained during construction and operation for villagers to fields on the left bank - Ensure that villager's irrigation channels have adequate water flows both during construction & operation of the project	To be added in the relevant parts in the contract documents.	Design consultants & NPC.	NPC
Historical relics and cultural values	- During discovery of any historic or cultural values, work will be suspended and such discovery shall be informed to the nearest office of the Department of Culture, Sport and Tourism; the Department of Culture and Information	To be added in the relevant parts of contract documents.	Contractor's Environment Engineer	NPC

Environmental Impacts	Remedial Measure	Means of Implementation	Responsibility	
			Implementation	Supervision
Operational Stage				
Reduced water flow in river affecting aquatic life	- Provide guaranteed flow in the dry season and ensure environmental flow of 500 l/s to the river between the dam and power plant. Maintain flow for the local irrigation channels at the left and right bank of the project. - Continuous monitoring of daily water flow below the weir intake, sluice outlet and tailrace outlet to determine environmental flows to the river and to the irrigation channels. - Monitor activities in the stretch of river with reduced flows to determine impacts on villagers & their livestock. - Ensure villagers are fully informed of operation procedures and the changes in water regime. - Implement a flood warning and evacuation system for villagers in case of dam break or other related occurrences.	Measurements undertaken by CPC hydrology engineers. Notices and coordination with villagers.	NPC Environment Engineer	NPC
Scouring of river bed	- Monitor and redesign channels below of the plant to minimize scouring of river bed. - Provide stilling basin to reduce sedimentation and scouring impacts for the river bed.	During construction phase, implementation of contract conditions.	Design consultants	SC and NPC prepare reports to DONRE
Soil erosion, land degradation & vegeTation loss particularly on steep slopes	- Maintenance of trees and vegetative cover over initial five year of project around the dam, channel, penstock, access road and at other project's infrastructure.	Tree planting in coordination with competent Government agency	NPC's Environment Engineer	NPC
Impacts on formation of sediment deposits at reservoir entrance and discharge of anoxic water from the dam	- Implement bank stabilization measures and a watershed management program that includes tree planting, and maintenance of trees and vegetation cover around the watershed. - Design a sediment control system to avoid sediment runoff into downstream areas.	Provision of bank stabiization measures, conduct tree planting and watershed monitoring		

Table 22. Environmental Monitoring Measures

Aspects/Parameters to be Monitored and Applicable STandard	Location	Means of Monitoring	Schedule/Frequency	Responsibilities for supervision and implementation.	Estimated Cost (VND)
Construction stage					
In construction phase: environmental mitigation measures specified in EMP Table	Locations and mitigation measures indicated in the EMP Table	Site visit, interviews with local residents, coordination with concerned agencies	Quarterly random checks and to confirm complaints	Environment and Social Development Cell (ESDC)/ Environmental monitoring Consultant (EMC)	Included in Construction Contracts
Removal and disturbance of vegetation at construction sites	Construction sites and quarry sites	Tree planting and rehabilitation of landscapes of temporary construction areas	Quarterly	Environment and Social Development Cell (ESDC)/ Environmental monitoring Consultant (EMC)	
Material exploitation	Quarry sites	Monitor compliance with permits and licenses of quarry sites	Prior to contract signing	Environment and Social Development Cell (ESDC)/ Environmental	Included in Contracts

Aspects/Parameters to be Monitored and Applicable STandard	Location	Means of Monitoring	Schedule/Frequency	Responsibilities for supervision and implementation.	Estimated Cost (VND)
				monitoring Consultant (EMC)	
Health and safety of workers and community	Construction sites, quarry sites	Monitor/record health status of workers – lost time, accidents, etc., provision of PPEs for workers, community complaints	Daily	Contractor/EMC	Included in Contracts
Noise dB(A) compared to standards specified in TCVN5949-1998 ♣ Dust (mg/l) compared to Standards specified in Standard QCVN 05: 2009/BTNMT	Communal Residential area	Noise measurement	Quarterly random checks and to confirm complaints	Contractor/EMC	40,000,000
Surface water quality in accordance with Standard QCVN08: 2008: BTNMT Parameters to be sampled according to Vietnam Standards	Upstream, downstream of dam, Downstream of Hydro-power plant	Sampled fields	Quarterly random checks and to confirm complaints	Contractor/EMC	22,800,000
Operation Stage					
Reduced water flow/Minimum flow (m^3	Downstream of dam	Flow measurement; retain environmental flow of about 550l/s.	Constant flow measurement	Son La Power Company and	35,358,000

Aspects/Parameters to be Monitored and Applicable STandard	Location	Means of Monitoring	Schedule/Frequency	Responsibilities for supervision and implementation.	Estimated Cost (VND)
/s)		Check conditions in the river between dam and plant and its effect on local people and livestock to ensure sufficient flows At the irrigation channels, check the flow regularly, evaluate the impacts, upgrade the current channel according to the new flow regime and compensate for local villagers who will be affected.	Regular checks in dry season and to confirm complaints	NPC	
Local Infrastructure	At dam and downstream	Ensure local irrigation channels left and right bank and other local infrastructure affected by the project is maintained.	Quarterly checks and to confirm any complaints	Son La Power Company and NPC	Part of management cost

HYDROPOWER

Annex 1. Rapid Environmental Assessment (REA) Checklist

Instructions:

(i) The project team completes this checklist to support the environmental classification of a project. It is to be attached to the environmental categorization form and submitted to the Environment and Safeguards Division (RSES) for endorsement by Director, RSES and for approval by the Chief Compliance Officer.

(ii) This checklist focuses on environmental issues and concerns. To ensure that social dimensions are adequately considered, refer also to ADB's (a) checklists on involuntary resettlement and Indigenous Peoples; (b) poverty reduction handbook; (c) staff guide to consultation and participation; and (d) gender checklists.

(iii) Answer the questions assuming the "without mitigation" case. The purpose is to identify potential impacts. Use the "remarks" section to discuss any anticipated mitigation measures.

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

Sector Division: Energy

A. Basic Project Design Data

1. Dam height, m =______18__________________________

2. Surface area of reservoir, (ha) =______6.59__________________________

3. Estimated number of people to be displaced =_______0________________________

4. Rated power output, (MW) =__________6.8__________________________

Other Considerations:

1. Water storage type: [ ] reservoir [X] run of river [ ] pumped storage

2. River diversion scheme: [ ] trans-basin diversion [ ] in-stream flow regulation [ ] in-stream diversion

3. Type of power demand to address: [X] peak load [ ] base load

SCREENING QUESTIONS	Yes	No	REMARKS
B. Project Location Is the dam and/or project facility adjacent to or within any of the following areas?			

SCREENING QUESTIONS	Yes	No	REMARKS
• Unregulated river		x	There is a dam immediately upstream of the project
• Unique or aesthetically valuable land or water form		x	
• Special area for protecting biodiversity		x	
• Protected Area		x	No protected areas are within the project area of environmental influence.
• Buffer zone of protected area		x	
• Primary forest		x	All the forest land in the area is secondary growth or plantation forestry
• Range of endangered or threatened animals		x	
• Area used by indigenous peoples	x		There are 12 ethnic groups in Moc Chau and Yen Chau district. In the subproject area, most of the HHs is ethnic groups; they make up over 90% of the population. A small amount of population is Kinh people who are teaching or doing business in this area.
• Cultural heritage site		x	There are no known of archaeological, cultural or religious heritage site located within proximity of the project.
• Wetland		x	Not applicable
• Mangrove		x	Not applicable
• Estuary		x	Not applicable
C. Potential Environmental Impacts Will the Project causes.			
• Short-term construction impacts such as soil erosion, deterioration of water and air quality, noise and vibration from construction equipment?	x		Temporary Impacts are expected to water quality during construction and for soil erosion in steep terrain,
• Disturbance of large areas due to material quarrying?		x	Existing quarries are used and there is only a small quantity of borrow materials required for construction.
• Disposal of large quantities of construction spoils?		x	Some disposal of construction spoil is required at designated sites close to the dam and powerhouse.
• Clearing of large forested area for ancillary facilities and access road?		x	Some forest will be destroyed but it is not primary forest, being either secondary growth or plantation
• Impounding of a long river stretch?		x	Only a 550m of the river is impounded by the reservoir.
• Dryness (less than 50% of dry season mean flow) over a long downstream river stretch?	x		There will be reduced flow in the river over 3 km
• Construction of permanent access road near or through forests?		x	
• Creation of barriers for migratory land animals		x	
• Loss of precious ecological values due to flooding of agricultural/forest areas, and wild lands and wildlife habitat; destruction of fish spawning/breeding and nursery grounds?		x	The project is on the small Sap stream which has a length of less than 6 km above the dam site

SCREENING QUESTIONS	Yes	No	REMARKS
• Deterioration of downstream water quality due to anoxic water from the reservoir and sediments due to soil erosion?		x	The reservoir is small & there will be only temporary loss of water quality during the construction stage.
• Significant diversion of water from one basin to another?		x	
• Alternating dry and wet downstream conditions due to peaking operation of powerhouse?	x		There will be peak operation use during the dry season months. Water release is relatively small - maximum of 20.2m^3/s. There will be minimum flow retained in the river and immediately below the dam there are numerous side streams which augment flows.
• Significant modification of annual flood cycle affecting downstream ecosystem, people's sustenance and livelihoods?		x	Small water retention
• Loss or destruction of unique or aesthetically valuable land or water forms?		x	Small dam in steep valley
• Proliferation of aquatic weeds in reservoir and downstream impairing dam discharge, irrigation systems, navigation & fisheries, & increasing water loss through transpiration?		x	Small retention area only
• Scouring of riverbed below dam?		x	The volume of reservoir is very small. Moreover, the spillway is free-overflowed dam and a stilling basin was designed to reduce the scouring impacts for riverbed.
• Downstream erosion of recipient river in trans-basin diversion?		x	Not applicable
• Increased flooding risk of recipient river in trans-basin diversion?		x	Not applicable
• Decreased groundwater recharge of downstream areas?		x	Project is small
• Draining of downstream wetlands and riparian areas?		x	Not applicable
• Decline or change in fisheries below the dam due to reduced peak flows and floods, submersion of river stretches and resultant destruction of fish breeding and nursery grounds, and water quality changes?		x	Not applicable
• Loss of migratory fish species due to barrier imposed by the dam?	x		This impact is minimal - the Sap river upstream is only short and there is already a dam constructed immediately upstream of the project.
• Formation of sediment deposits at reservoir entrance, creating backwater effect and flooding and water logging upstream?		x	
• Significant disruption of river sediment transport downstream due to trapping in reservoir?		x	The project was designed with a sluicing outlet to transfer sediment deposits through the dam to the downstream area and a stilling basin to reduce the impacts of sediment deposits.
• Environmental risk due to potential toxicity of sediments trapped behind the dams?		x	
• Increased saltwater intrusion in estuary and low lands due to reduced river flows?		x	Not applicable
• Significant induced seismicity due to large reservoir size and potential environmental hazard from catastrophic failure of the dam?		x	Not applicable – small dam
• Cumulative effects due to its role as part of a cascade of dams/ reservoirs?		x	Not applicable

SCREENING QUESTIONS	Yes	No	REMARKS
• depletion of dissolved oxygen by large quantities of decaying plant material, fish mortality due to reduced dissolved oxygen content in water, algal blooms causing successive and temporary eutrophication, growth and proliferation of aquatic weeds?		x	Not applicable – small reservoir and no retention of water for more than 24 hours.
• Risks and vulnerabilities related to occupational health & safety due to physical, chemical, biological, & radiological hazards during project construction & operation?		x	
• Large population influx during project construction and operation that causes increased burden on social infrastructure and services (such as water supply and sanitation systems)?		x	Small dam and project with relatively small labour force
• Creation of community slums following construction of the hydropower plant and its facilities?		x	Not applicable
• Social conflicts if workers from other regions or countries are hired?		x	Small camp during construction 108 workers – camps away from village
• Uncontrolled human migration into the area, made possible by access roads and transmission lines?		x	Not applicable – small scheme only
• Disproportionate impacts on the poor, women, children or other vulnerable groups?		x	
• Community health and safety risks due to the transport, storage, and use and/or disposal of materials likely to create physical, chemical and biological hazards?		x	
• Risks to community safety due to both accidental and natural hazards, especially where the structural elements or components of the project (e.g dams) are accessible to members of the affected community or where their failure could result in injury to the community throughout project construction, operation and decommissioning?		x	Small risk to safety – top of dam wall will be used to replace an existing bridge and give access to villagers fields on the left bank at Tan Thuat Village

Annex 2. Terms of Reference for ESDC Staff

Terms of Reference for NPC/ ESDC Environment Engineer

Specific Job Description

- Responsible on behalf of NPC for ensuring the implementation of the IEE and EMP.
- Coordinate with NPC and the design/supervision consultants relative to the site-specific environmental issues to ensure the least damage and disturbance to the natural environment and social values of the local residents.
- Examine, evaluate and advise persons in adopting suitable, cost-effective, socio-cultural, socially sensitive, and sound engineering project design, where the local residents receive the least disturbance.
- Conduct cross checking and examination of design/specification, tender, and contract documents, to meet environmental and sound engineering needs during site selection, construction, and post-completion operation and maintenance of the project.
- Recommend revision of Environmental Management and Monitoring Plans to PMU so that the proposed mitigation measures are properly implemented in a cost effective manner.
- Ensure flow measurements and water testing on regular basis, noting any changes and suitable measures, accordingly and analyse results and make recommendations to NPC if there is deterioration in water quality.
- Supervise implementation of water quality testing and fish monitoring programmes.
- Provide information as necessary to external consultants.
- Ensure environmental conditions included in contracts are fulfilled by contractors.
- Establish regular contacts and on-going liaison with Peoples Committees and Government Departments, local/regional NGOs, local officials, and all other concerned stakeholders related to environmental issues.
- Collect environment related ecological/social data/information, make computer data entries, carry out the analysis and apply the results.
- Liaison between NPC and the Government Agencies, particularly the Environmental Water Resources Department who must receive 6 monthly reports on compliance with the EMP.

Qualifications

The ESDC Environmental Engineer is required to at least, hold a Bachelor’s degree and five years work experience in road engineering or as an environmental engineer on construction projects

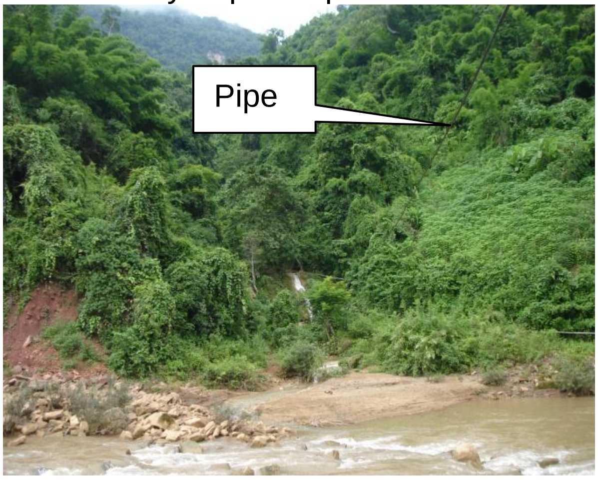
Annex 3. Photos of Chieng Pan Project Site

The main reservoir area

Dam site construction area

Hydropower plant area

Current traffic bridge



Water drinking pipe of local people

Ta Niet dam site (upstream of Chieng Pan)

Annex 4. Memorandum of the public meeting in February 21, 2011

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

Tú Nang, ngày 21 tháng 2 năm 2011

BIÊN BẢN HỌP THAM VẤN CỘNG ĐỒNG VỀ ĐÁNH GIÁ TÁC ĐỘNG MÔI TRƯỜNG, TÁI ĐỊNH CƯ VÀ PHÁT TRIỂN DÂN TỘC THIỂU SỐ

Dự án: Nhà máy thủy điện Chiềng Pằn
Xã Tú Nang, huyện Yên Châu, tỉnh Sơn La.

I. Thành phần tham dự:

1. Ông/Bà: Lò Văn Nhu Chức vụ: Chủ tịch
2. Ông/Bà: Hoàng Văn Yên Chức vụ: Phó chủ tịch
3. Ông/Bà: Lò Văn Kiêm Chức vụ: Chủ tịch Hội nông dân
4. Ông/Bà: Hà Thị Ý Chức vụ: Chủ tịch Hội phụ nữ
5. Ông/Bà: Vì Văn Lo Chức vụ: Chủ tịch UBMTTQ
6. Ông/Bà: Bùi Viết Hải Chức vụ: CB tư vấn Môi trường
7. Ông/Bà: Nguyễn Anh Nhị Chức vụ: CB Ban QLDA
8. Ông/Bà: .... Chức vụ: ....
9. Ông/Bà: .... Chức vụ: ....
10. Ông/Bà: .... Chức vụ: ....

II. Nội dung tham vấn:

Chuyên gia môi trường trình bày những tác động môi trường bao gồm tác động lên môi trường tự nhiên và xã hội của khu vực dự án và những biện pháp giảm thiểu các tác động tiêu cực.

Chuyên gia tái định cư trình bày những tác động khi thu hồi đất và các tài sản trên đất, những chính sách của Chính phủ nước Cộng hòa xã hội chủ nghĩa Việt Nam và địa phương, chính sách của dự án trong vấn đề bồi thường thiệt hại khi Nhà nước thu hồi đất đai và các tài sản trên đất.

Chuyên gia về cộng đồng, dân tộc thiểu số trình bày về khung chính sách dân tộc thiểu số của dự án. Các tác động xã hội trong quá trình thực hiện dự án. Giới thiệu với cộng đồng về những chính sách của Chính phủ nước Cộng hòa xã hội chủ nghĩa Việt Nam và địa phương về dân tộc thiểu số.

III. Ý kiến thảo luận

III.1 Tác động môi trường tiêu cực và biện pháp giảm thiểu:

- Chú ý phòng tránh sạt lở đất khi thi công, xe vận chuyển vật liệu xây dựng cần đảm bảo an toàn giao thông.
- Có biện pháp bảo vệ tài sản, vật tư thiết bị tránh công trường để xảy ra mâu thuẫn giữa công nhân xây dựng và người dân địa phương.

III.2. Các vấn đề về thu hồi đất và tài sản trên đất, các chính sách:

Dự án có ảnh hưởng đến một số diện tích đất nông nghiệp người dân và chính quyền địa phương mong muốn chủ đầu tư sẽ khẩn trương tiến hành thỏa thuận và đền bù đầy đủ cho phần diện tích sẽ thu hồi.

III.3. Các vấn đề về dân tộc thiểu số:

- Tạo điều kiện cho người dân địa phương tham gia vào quá trình xây dựng và vận hành nhà máy.

IV. Kết luận:

Cán bộ ban QLDA và tư vấn đã phổ biến những thông tin liên quan tới chính sách về môi trường, tái định cư và phát triển dân tộc thiểu số của dự án.

- Chính quyền và nhân dân địa phương nhất trí với chủ trương triển khai thực hiện dự án. Người dân địa phương mong muốn con em mình được tham gia làm việc khi triển khai dự án.

Cuộc họp kết thúc vào hồi ..16.. giờ .... ngày ..21.... tháng ..2..... năm 2011...

Biên bản cuộc họp được lập và được tất cả các đại biểu tham dự nhất trí thông qua.

ĐẠI DIỆN CHỦ ĐẦU TƯ	ĐẠI DIỆN CỘNG ĐỒNG	ĐẠI DIỆN TƯ VẤN	ĐẠI DIỆN CHÍNH QUYỀN ĐỊA PHƯƠNG
	CHỦ TỊCH		CHỦ TỊCH
	Vi Văn Lo	Bùi Việt Hà	Lò Văn Nhé

CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM

Độc lập- Tự do- Hạnh phúc

Tú Nang......, ngày 21 tháng 2. năm 2011

DANH SÁCH THAM DỰ CUỘC HỌP

THAM VẤN CỘNG ĐỒNG VỀ ĐÁNH GIÁ TÁC ĐỘNG MÔI TRƯỜNG

DỰ ÁN THUỶ ĐIỆN CHIỀNG PẰN

STT	Họ và tên	Địa chỉ	Chữ ký
1	Lường văn Tiến	Bản Phay, xã Tú Nang, Yên Châu	[illegible]
2	Vì văn Cuốc	Bản Phay, xã Tú Nang, Yên Châu	[illegible]
3	Vì văn Khánh	Bản Phay, xã Tú Nang, Yên Châu	[illegible]
4	Vì văn Nga	" nt "	[illegible]
5	Vì văn Đại	" nt "	[illegible]
6	Lò văn Tò	" nt "	[illegible]
7	Lò văn Bảy	" nt "	[illegible]
8	Lường văn Tiến	" nt "	Tiến
9	Hoàng văn Tiến	" nt "	[illegible]
10	Mè văn Tương	" nt "	[illegible]
11	Nguyễn văn Tiến	Bản Tà Lăng Thấp, xã Tú Nang, Yên Châu	[illegible]
12	Lường văn Tước	Bản Tà Lăng Thấp, xã Tú Nang, Yên Châu	[illegible]
13	Lường văn Dua	" nt "	[illegible]
14	Hoàng văn Lợi	" nt "	[illegible]
15	Lường văn Phong	" nt "	[illegible]
16	Vì văn Kỷ	" nt "	[illegible]
17	Mè văn Thoi	" nt "	[illegible]
18			
19			
20			

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

..Tú Nang......., ngày 21... tháng ..2... năm 2011..

DANH SÁCH ĐẠI BIỂU THAM DỰ CUỘC HỌP
THAM VẤN CỘNG ĐỒNG VỀ ĐÁNH GIÁ TÁC ĐỘNG MÔI TRƯỜNG, TÁI ĐỊNH CƯ VÀ PHÁT TRIỂN DÂN TỘC THIỂU SỐ

Dự án: Thủy điện Chiềng Pằn

Stt	Họ và tên	Địa chỉ	Chữ ký	Ghi chú
1	Lò Văn Kiên	Chủ tịch hội nông dân		
2	Hồ Thị Y	Chủ tịch hội phụ nữ		
3	Hoàng Văn Yên	Phó Chủ tịch UBNX xã.		
4	Thào A Nhà	Bí thư đoàn thanh niên		
5	Lò Văn Nhé	Chủ tịch UBND xã		
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XÁC NHẬN CỦA CHÍNH QUYỀN ĐỊA PHƯƠNG
CHỦ TỊCH

UBND XÃ TÚ NANG

Lò Văn Nhé

Socialist Republic of Vietnam

Independence- Liberty – Happiness

Tu Nang, February 21, 2011

Public meeting report about initial environmental examination, resettlement and ethnic minority development plan

Project: Chieng Pan hydropower plant

Location: Tu Nang commune, Yen Chau district, Son La province

I. Main participants:

1.	Mr Lo Van Nhe	Head of Tu Nang people's committee
2.	Mr Hoang Van Yen	Vice-head of Tu Nang people's committee
3.	Mr Lo Van Kiem	Head of Tu Nang farmers' association
4.	Mrs Ha Thi Y	Head of Tu Nang women's association
5.	Mr Vi Van Lo	Head of Tu Nang fatherland front
6.	Mr Bui Viet Hai	Environmental consultant staff
7.	Mr Nguyen Anh Minh	Project management unit staff

II. Contents of meeting

Environmental expert presented the environmental impacts which include natural and social influences of the project area and the methods to minimize the negative impacts.

Resettlement expert presented the impacts when the land and properties on land are revoked, policies of local and Vietnamese government about compensation when the State revokes land and properties on land.

Expert of community and ethnic minority presented the policy framework about ethnic minority of the project, social impacts when the project is constructed; introduce local and Vietnamese government policies about ethnic minority issues.

III. Comments

III.1. Negative impacts on environment and mitigation measures:

The construction of the project will create waste from construction materials and soil in construction phase. The investor calculated and arranged dumping grounds at suitable site for collection.

Avoid land disturbance in construction phase; construction trucks need to adopt measures to ensure safety in driving.

Need methods to protect properties, tools, equipment on the construction site, avoid conflicts between workers and locals.

III.2. Compensation of land loss and policies

Some area of agricultural land will be lost due to the project. Local people and authorities want the investor to conduct negotiations to compensate comprehensively for affected people.

III.3. Ethnic minority issues:

- Respect to traditional customs and norms of the local people, well management of the construction workers.

- Local people want to participate in the construction and operational phase of the project.

IV. Conclusion

Consultant and project management unit staff discussed the needed information and policies which relate to environment, resettlement and ethnic minority development of the project.

Authorities and local people agreed for deploying of the Chieng Pan Hydropower project. Locals also want take part in the construction of the project.

Signed and seal

Socialist Republic of Vietnam
Independence- Liberty – Happiness

Tu Nang, February 21, 2011

List of representatives of affected people in the public meeting about environmental impacts of the Chieng Pan hydropower project.

No	Name	Address	Sign	Note
1	Luong Van Tien	Phay hamlet, Tu Nang commune, Yen Chau		
2	Vi Van Quoc	Phay hamlet, Tu Nang commune, Yen Chau		
3	Vi Van Khanh	Phay hamlet, Tu Nang commune, Yen Chau		
4	Vi Van Nga	Phay hamlet, Tu Nang commune, Yen Chau		
5	Vi Van Dai	Phay hamlet, Tu Nang commune, Yen Chau		
6	Lo Van To	Phay hamlet, Tu Nang commune, Yen Chau		
7	Lo Van Bay	Phay hamlet, Tu Nang commune, Yen Chau		
8	Vuong Van Tien	Phay hamlet, Tu Nang commune, Yen Chau		
9	Hoang Van Tien	Phay hamlet, Tu Nang commune, Yen Chau		
10	Me Van Tuong	Phay hamlet, Tu Nang commune, Yen Chau		
11	Nguyen Van Tien	Ta Lang Thap hamlet, Tu Nang commune		
12	Luong Van Tuoc	Ta Lang Thap hamlet, Tu Nang commune		
13	Luong Van Dua	Ta Lang Thap hamlet, Tu Nang commune		
14	Hoang Van Loi	Ta Lang Thap hamlet, Tu Nang commune		
15	Duong Van Phong	Ta Lang Thap hamlet, Tu Nang commune		
16	Vi Van Ky	Ta Lang Thap hamlet, Tu Nang commune		
17	Me Van Thai	Ta Lang Thap hamlet, Tu Nang commune		

Annex 5. Memorandum of the public meeting in February 25, 2011

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

Chiềng Hắc, ngày 25 tháng 2 năm 2011.

BIÊN BẢN HỌP THAM VẤN CỘNG ĐỒNG
VỀ ĐÁNH GIÁ TÁC ĐỘNG MÔI TRƯỜNG,
TÁI ĐỊNH CƯ VÀ PHÁT TRIỂN DÂN TỘC THIỂU SỐ

Dự án: Nhà máy thủy điện Chiềng Pằn
Xã Chiềng Hắc huyện Mộc Châu , tỉnh Sơn La.

I. Thành phần tham dự:

1. Ông/Bà: Phạm Văn Hải ..... Chức vụ: Chủ tịch UBND xã ....
2. Ông/Bà: Lò Văn Liên .... Chức vụ: phó Chủ tịch UBND xã.
3. Ông/Bà: Bùi Minh Ngọc .... Chức vụ: Bí thư Đảng ủy xã .....
4. Ông/Bà: Nguyễn Thị Tú ...... Chức vụ: Chủ tịch hội phụ nữ.
5. Ông/Bà: Vũ Tuấn Vinh .... Chức vụ: phó chủ tịch hội nông dân
6. Ông/Bà: Nguyễn Hải Long .... Chức vụ: chủ tịch UBMTTQ xã
7. Ông/Bà: Bùi Viết Hải .... Chức vụ: Cán bộ tư vấn ....
8. Ông/Bà: Bùi Văn Lương ..... Chức vụ: Cán bộ RALRA ......
9. Ông/Bà: Nguyễn Anh Minh .... Chức vụ: Cán bộ RALRA ....
10. Ông/Bà: .... Chức vụ: ....

II. Nội dung tham vấn:

Chuyên gia môi trường trình bày những tác động môi trường bao gồm tác động lên môi trường tự nhiên và xã hội của khu vực dự án và những biện pháp giảm thiểu các tác động tiêu cực.

Chuyên gia tái định cư trình bày những tác động khi thu hồi đất và các tài sản trên đất, những chính sách của Chính phủ nước Cộng hòa xã hội chủ nghĩa Việt Nam và địa phương, chính sách của dự án trong vấn đề bồi thường thiệt hại khi Nhà nước thu hồi đất đai và các tài sản trên đất.

Chuyên gia về cộng đồng, dân tộc thiểu số trình bày về khung chính sách dân tộc thiểu số của dự án. Các tác động xã hội trong quá trình thực hiện dự án. Giới thiệu với cộng đồng về những chính sách của Chính phủ nước Cộng hòa xã hội chủ nghĩa Việt Nam và địa phương về dân tộc thiểu số.

III. Ý kiến thảo luận

III.1 Tác động môi trường tiêu cực và biện pháp giảm thiểu:

- Giảm thiểu khói bụi, phòng tránh sạt lở đất khi thi công.
- Có biện pháp bảo vệ tài sản, máy móc thiết bị tại công trường.
- Giảm thiểu diện tích đất bị ngập khi thi công xây dựng công trình.

III.2. Các vấn đề về thu hồi đất và tài sản trên đất, các chính sách:

- Thực hiện công tác đền bù, giải phóng mặt bằng khi thu hồi đất theo đúng quy định

III.3. Các vấn đề về dân tộc thiểu số:

- Tôn trọng phong tục, tập quán của bà con nhân dân địa phương. Phối hợp tốt với chính quyền địa phương trong việc quản lý công nhân tham gia xây dựng, tránh để mâu thuẫn giữa công nhân và người dân địa phương xảy ra.
- Người dân địa phương muốn được tham gia làm việc khi xây dựng và vận hành nhà máy.

IV. Kết luận:

- Nhất trí với chủ trương đầu tư xây dựng công trình.
- Chính quyền và nhân dân địa phương mong muốn dự án sớm được triển khai xây dựng để góp phần thúc đẩy phát triển kinh tế - xã hội.

Cuộc họp kết thúc vào hồi 12... giờ .... ngày 25.... tháng ....2... năm 2011....

Biên bản cuộc họp được lập và được tất cả các đại biểu tham dự nhất trí thông qua.

ĐẠI DIỆN CHỦ ĐẦU TƯ	ĐẠI DIỆN CỘNG ĐỒNG	ĐẠI DIỆN TƯ VẤN	ĐẠI DIỆN CHÍNH QUYỀN ĐỊA PHƯƠNG
	CHỦ TỊCH		
	Nguyễn Hải Long	Bùi Việt Hải	Phạm Văn Nghị

CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM

Độc lập- Tự do- Hạnh phúc

Chiềng Hắc...., ngày 25 tháng 2 năm 2011

DANH SÁCH THAM DỰ CUỘC HỌP

THAM VẤN CỘNG ĐỒNG VỀ ĐÁNH GIÁ TÁC ĐỘNG MÔI TRƯỜNG

DỰ ÁN THUỶ ĐIỆN CHIỀNG PẢN

STT	Họ và tên	Địa chỉ	Chữ ký
1	Mã văn Tăng	Bản Tân Thuật, xã Chiềng Hắc, M. Châu	[illegible]
2	Hà Thị Yến	Bản Tân Thuật, xã Chiềng Hắc, M. Châu	[illegible]
3	Hà Thị Hít	Bản Tân Thuật, xã Chiềng Hắc, M. Châu	[illegible]
4	Bùi văn Dương	Bản Tân Thuật, xã Chiềng Hắc, M. Châu	[illegible]
5	Hà Ủi	Bản Tân Thuật, xã Chiềng Hắc, M. Châu	[illegible]
6	Hà văn Tấn	Bản Tân Thuật, xã Chiềng Hắc, M. Châu	[illegible]
7	Hà thị Vui	Bản Tân Thuật, xã Chiềng Hắc, M. Châu	[illegible]
8	Hà văn Quân	Bản Tân Thuật xã Chiềng Hắc, M. Châu	[illegible]
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CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM
Độc lập - Tự do - Hạnh phúc

Chiềng Hắc, ngày 25 tháng 2 năm 2011

DANH SÁCH ĐẠI BIỂU THAM DỰ CUỘC HỌP
THAM VẤN CỘNG ĐỒNG VỀ ĐÁNH GIÁ TÁC ĐỘNG MÔI TRƯỜNG, TÁI ĐỊNH CƯ VÀ PHÁT TRIỂN DÂN TỘC THIỂU SỐ

Dự án: Thủy điện Chiềng Pằn

Stt	Họ và tên	Địa chỉ	Chữ ký	Ghi chú
1	Phạm Văn Hội	Chủ tịch UBND xã		
2		Chiềng Hắc		
3	Nguyễn Hải Long	Chủ tịch MTTQ xã		
4		Chiềng Hắc		
5				
6	Bùi Minh Ngọc	Bí thư Đảng Uỷ xã		
7	Lê Văn Liên	Phó chủ tịch UBND		
8	Vũ Tuấn Vinh	Phó chủ tịch Hội nông dân		
9	Nguyễn Thị Hường	VP HĐND - UBND xã		
10	Nguyễn Thị Trà	CT Hội phụ nữ xã.		
11	Lương Thị Chương	PCT HĐND xã.		
12				
13				
14				
15				
16				

XÁC NHẬN CỦA CHÍNH QUYỀN ĐỊA PHƯƠNG
CHỦ TỊCH

Phạm Văn Hội

Socialist Republic of Vietnam

Independence- Liberty – Happiness

Chieng Hac, February 25, 2011

Public meeting report about initial environmental examination, resettlement and ethnic minority development plan

Project: Chieng Pan hydropower plant

Location: Chieng Hac commune, Yen Chau district, Son La province

I. Main participants:

1.	Mr Pham Van Hoi	Head of Chieng Hac people's committee
2.	Bui Minh Ngoc	Chieng Hac party committee secretary
3.	Mr Lo Van Liem	Vice-head of Chieng Hac people's committee
4.	Mr Vi Tuan Vinh	Vice-head of Chieng Hac farmers' association
5.	Mrs Nguyen Thi Tu	Head of Chieng Hac women's association
6.	Mr Nguyen Hai Long	Head of Chieng Hac fatherland front
7.	Mr Bui Viet Hai	Environmental consultant staff
8.	Mr Nguyen Anh Minh	Project management unit staff
9.	Bui Van Luong	Project management unit staff

II. Contents of meeting

Environmental expert presented the environmental impacts which include natural and social influences of the project area and the methods to minimize the negative impacts.

Resettlement expert presented the impacts when the land and properties on land are revoked, policies of local and Vietnamese government about compensation when the State revokes land and properties on land.

Expert of community and ethnic minority presented the policy framework about ethnic minority of the project, social impacts when the project is constructed; introduced local and Vietnamese government policies about ethnic minority issues.

III. Comments

III.1. Negative impacts on environment and mitigation measures:

The construction of the project will create waste from construction materials and soil in construction phase. The investor calculated and arranged dumping grounds at suitable site for collection.

Avoid land disturbance in construction phase; construction trucks need to adopt measures to ensure safety in driving.

Need methods to protect properties, tools, equipment on the construction site, avoid conflicts between workers and locals.

III.2. Compensation of land loss and policies

Some area of land will be lost due to the project. Local people and authorities want the investor conduct negotiations to compensate comprehensively for affected people.

III.3. Ethnic minority issues:

- Respect to traditional customs and norms of the local people, well management of the construction workers.

- Local people want to participate in the construction and operational phase of the project.

IV. Conclusion

Consultant and project management unit staff discussed the needed information and policies which relate to environment, resettlement and ethnic minority development of the project.

Authorities and local people agreed for deploying of the Chieng Pan Hydropower project. Locals also want take part in the construction of the project.

Signed and seal

Socialist Republic of Vietnam

Independence- Liberty – Happiness

Chieng Hac, February 25, 2011

List of representatives of affected people in the public meeting about environmental impacts of the Chieng Pan hydropower project.

No	Name	Address	Sign
1	Me Van Tieng	Tan Thuat hamlet, Chieng Hac commune, Moc Chau	
2	Ha Thi Yen	Tan Thuat hamlet, Chieng Hac commune, Moc Chau	
3	Ha Thi Hit	Tan Thuat hamlet, Chieng Hac commune, Moc Chau	
4	Bui Van Duong	Tan Thuat hamlet, Chieng Hac commune, Moc Chau	
5	Ha Ui	Tan Thuat hamlet, Chieng Hac commune, Moc Chau	
6	Ha Van Tam	Tan Thuat hamlet, Chieng Hac commune, Moc Chau	
7	Ha Thi Vui	Tan Thuat hamlet, Chieng Hac commune, Moc Chau	
8	Ha Van Quan	Tan Thuat hamlet, Chieng Hac commune, Moc Chau	

Annex 6. Memorandum of Environmental Impact Assessment

UỶ BAN NHÂN DÂN TỈNH SƠN LA	CỘNG HOÀ XÃ HỘI CHỦ NGHĨA VIỆT NAM **Độc lập - Tự do - Hạnh phúc**
Số: **1523**/QĐ-UBND	*Sơn La, ngày 30 tháng 6 năm 2011*

QUYẾT ĐỊNH
Về việc phê duyệt Báo cáo đánh giá tác động môi trường
Dự án Thủy điện Chiềng Pằn, huyện Yên Châu, tỉnh Sơn La

UỶ BAN NHÂN DÂN TỈNH SƠN LA

Căn cứ Luật Tổ chức HĐND và UBND năm 2003;

Căn cứ Luật Bảo vệ môi trường ngày 29/11/2005;

Căn cứ Nghị định 80/2006/NĐ-CP ngày 9/8/2006 của Chính phủ về quy định chi tiết và hướng dẫn một số điều của Luật Bảo vệ môi trường;

Căn cứ Nghị định số 21/2008/NĐ-CP ngày 28/2/2008 của Chính phủ sửa đổi, bổ sung Nghị định số 80/2006/NĐ-CP;

Căn cứ Nghị định số 29/2011/NĐ-CP ngày 18/4/2011 của Chính phủ quy định về đánh giá môi trường chiến lược, đánh giá tác động môi trường và cam kết bảo vệ môi trường;

Căn cứ Thông tư số 05/2008/TT-BTNMT ngày 08/12/2008 của Bộ Tài nguyên và Môi trường hướng dẫn về đánh giá tác động môi trường chiến lược, đánh giá tác động môi trường và cam kết bảo vệ môi trường

Theo đề nghị của Hội đồng thẩm định Báo cáo đánh giá tác động môi trường (sau đây viết tắt là ĐTM) Dự án Thủy điện Chiềng Pằn, huyện Yên Châu, tỉnh Sơn La họp ngày 08/4/2011;

Xét Văn bản đề nghị thẩm định và nội dung của Báo cáo ĐTM Dự án Thủy điện Chiềng Pằn, huyện Yên Châu, tỉnh Sơn La sau khi đã chỉnh sửa, bổ sung kèm theo văn bản giải trình số 576/PCSL-QLXD ngày 31/5/2011 của Công ty Điện lực Sơn La;

Xét đề nghị của Giám đốc Sở Tài nguyên và Môi trường tại Tờ trình số 96/TTr-STNMT ngày 21/6/2011,

QUYẾT ĐỊNH:

Điều 1. Phê duyệt nội dung Báo cáo ĐTM Dự án Thủy điện Chiềng Pằn, huyện Yên Châu, tỉnh Sơn La; địa điểm xây dựng trên suối Sập, xã Chiềng Hặc, huyện Mộc Châu và xã Tú Nang, huyện Yên Châu, tỉnh Sơn La.

Điều 2. Chủ Dự án (Công ty Điện lực Sơn La) có trách nhiệm thực hiện đúng những nội dung đã được nêu trong báo cáo ĐTM sau khi đã được chỉnh sửa bổ sung và những yêu cầu bắt buộc sau đây:

1

2.1. Tổ chức thu dọn vệ sinh lòng hồ, tận thu cát, sỏi trong lòng hồ theo đúng quy định, không để lãng phí tài nguyên. Khai báo kịp thời khi phát hiện có di tích lịch sử, khoáng sản trong quá trình thi công.

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

2.3. Bố trí 06 bãi thải theo đúng vị trí, quy mô và gia cố kỹ thuật như đã nêu trong Báo cáo ĐTM sau khi đã chỉnh sửa, bổ sung.

2.4. Tuân thủ Quy trình vận hành hồ chứa, điều tiết dòng chảy, đảm bảo các nhu cầu sử dụng nước và bảo vệ môi trường sinh thái phía thượng lưu và phía hạ du của đập.

2.5. Phối hợp với Ủy ban nhân dân huyện Yên Châu và các hộ gia đình chịu ảnh hưởng của Dự án để thực hiện đền bù theo đúng các quy định hiện hành của Nhà nước.

2.6. Thực hiện nghiêm túc quy chế về quản lý chất thải nguy hại theo đúng quy định tại Thông tư số 12/2011/TT-BTNMT ngày 14/4/2011 của Bộ Tài nguyên và Môi trường quy định về quản lý chất thải nguy hại

2.7. Phối hợp với các cơ quan liên quan thực hiện các nội dung quan trắc và giám sát môi trường như đã nêu trong Báo cáo ĐTM được phê duyệt, lưu trữ 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, vận hành, đặc biệt là những năm đầu vận hành công trình.

2.8. Tuân thủ nghiêm túc chế độ thông tin, báo cáo về thực hiện nội dung của Báo cáo đánh giá tác động môi trường đã được phê duyệt và các yêu cầu trên theo đúng quy định tại: Nghị định số 29/2011/NĐ-CP ngày 18/4/2011 của Chính phủ; Thông tư 05/2008/TT-BTNMT ngày 08/12/2008 của Bộ Tài nguyên và Môi trường về Hướng dẫn đánh giá môi trường chiến lược, đánh giá tác động môi trường và cam kết bảo vệ môi trường.

Điều 3. Báo cáo ĐTM của Dự án Thủy điện Chiềng Pằn, huyện Yên Châu, tỉnh Sơn La và những yêu cầu bắt buộc tại Điều 2 của Quyết định này 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 chủ dự án.

Điều 4. Trong quá trình triển khai thực hiện nếu có những thay đổi về nội dung Báo cáo ĐTM được phê duyệt, tổ chức, cá nhân phải có văn bản báo cáo cơ quan có thẩm quyền và chỉ được thực hiện những thay đổi đó sau khi có văn bản chấp thuận của Ủy ban nhân dân tỉnh Sơn La.

Điều 5. Uỷ nhiệm cho Sở Tài nguyên và Môi trường phối hợp với các cấp, các ngành tiến hành kiểm tra, giám sát việc thực hiện các nội dung bảo vệ môi trường trong Báo cáo ĐTM và yêu cầu tại Điều 2 của Quyết định này.

Điều 6. Chánh Văn phòng Ủy ban nhân dân tỉnh; Giám đốc các Sở: Tài nguyên và Môi trường, Kế hoạch và Đầu tư, Công Thương; Chủ tịch Ủy ban nhân dân huyện Yên Châu; Giám đốc Công ty Điện lực Sơn La (Chủ dự án); Thủ trưởng các đơn vị và các cá nhân có liên quan chịu trách nhiệm thi hành Quyết định này.

Quyết định này có hiệu lực thi hành kể từ ngày ký./.

Nơi nhận:
- TT HĐND tỉnh (B/c);
- TT UBND tỉnh;
- Như Điều 6;
- Lưu VT - Châu (01), (30b).

TM. UỶ BAN NHÂN DÂN
KT. CHỦ TỊCH
PHÓ CHỦ TỊCH

Cầm Văn Chính

Son La provincial PP's committee	**Socialist Republic of Vietnam**
No: 1523/QD-UBND	**Independence- Liberty – Happiness**

Son La, June 30, 2011

Decision

About: Approval of environmental impact assessment report

Chieng Pan hydropower project, Yen Chau district, Son La province

- Based on people's committee arrangement law 2003
- Based on environment protection law November 29, 2005
- Based on Decree No 80/2006/ND-CP August 09, 2006
- Based on Decree No 21/2008/ND-CP February 28, 2008
- According to the proposal of appraisal council of Chieng Pan environmental impact assessment on April 08, 2011.
- Based on Circular No 05/2008/TT-BTNMT December 08, 2008
- Based on written proposal for appraisal and contents of the environmental impact assessment report of Chieng Pan hydro power project, Yen Chau district, Son La province.
- Based on the proposal of director of Resource and Environment Service on June 21, 2011.

Decision:

Article 1: Approve the contents of environmental impact assessment report of Chieng Pan hydropower Project, Yen Chau district, Son La province; it will be constructed on Sap stream, Chieng Hac commune, Moc Chau district and Tu Nang commune, Yen Chau district, Son La province.

Article 2: Investor (Son La power company) has responsibility to implement correctly the contents in the report with some compulsory requirements as follows:

2.1. Arrange to clear the reservoir bed, collect sand in the reservoir in accordance with the regulations, and avoid wasting resource. Inform to the local authorities if any historical artifacts is detected.

2.2. Perform regulations about safety in construction phase and avoid fire; make plans to deal with problems in construction and operation period.

2.3. Arrange 6 dumping grounds for rejected material according to the locations, scale and technical requirements as in the environmental impact assessment report.

2.4. Obey the process to operate the reservoir, ensure water using needs and project bio-environment upstream and downstream of the dam.

2.5. Cooperate with Yen Chau people's council and affected households of the project to compensate exactly as in current regulations of Vietnamese government.

2.6. Conduct seriously dangerous waste disposal management regime as in the circular number 12/2011/TT-BTNMT on April 14, 2011 of Ministry of Resource and Environment.

2.7. Cooperate with related organizations to implement contents of observation and supervise as in the approved report.

2.8. Obey strictly report regime about the implemented contents of environmental impact assessment report which was accepted and the requirements above.

Article 3: environmental impact assessment report of Chieng Pan Hydropower project, Yen Chau district, Son La province and compulsory requirements in the article 2 are the bases for the management organizations of State to inspect the implementation of environmental protection activities of investor.

Article 4: In the deploying process, if any difference occurs in the accepted report then the organizations and individuals must have the report to the related authorities and apply the changes only when they are accepted by the Son La people's council.

Article 5: Confide with the Son La Resource and Environment Service along with the other levels and sectors to conduct the inspections and supervisions of the contents about environmental protection as in the report and requirements in article 2 above.

Article 6: Other related organizations and individuals have responsibilities to implement this decision.

Signed and seal.