

**VIETNAM ELECTRICITY
TRUNG SON HYDROPOWER MANAGEMENT BOARD**

**E2248
V8**

**Power Evacuation and Supply Lines for Trung Son Hydropower Project
Environmental Guidelines**

Hanoi, 19 May 2010

Error! Unknown switch argument.

Table of Content

ABBREVIATIONS	3
INTRODUCTION	4
1 OVERVIEW	5
2 PROJECT SITTING	6
3. ENVIRONMENTAL SCREENING	6
4. ENVIRONMENT MANAGEMENT PLAN	6
5. INSTITUTIONAL ARRANGEMENTS	7
5.1 RESPONSIBILITIES	7
5.2 STAFFING REQUIREMENTS	8
5.3 CLEARANCES	8
6 SPECIFIC GUIDANCE ON KEY RISKS	9
6.1 PCB MANAGEMENT	9
6.2 SPECIFIC GUIDANCE FOR PUBLIC CONSULTATION AND DISCLOSURE	9
6.3 GUIDANCE ON MAPPING	9

List of Annex

ANNEX 1 - PROJECT SCOPE AND SITE SUMMARY	10
ANNEX 2: RAPID ENVIRONMENTAL ASSESSMENT CHECKLIST	12
ANNEX 3: EXAMPLE OF MITIGATION MEASURES	14
ANNEX 4: CHANCE FINDING PROCEDURES AND EMERGENCY ACTION PLAN	16
ANNEX 5 - ENVIRONMENTAL CONSULTATIONS SUMMARY	17
ANNEX 6: EXAMPLE OF MONITORING PLAN	18
ANNEX 7: EXAMPLE OF REPORTING PROCEDURES	19
ANNEX 8: EXAMPLE OF INSTITUTIONAL ARRANGEMENTS FOR EMP IMPLEMENTATION.....	20
ANNEX 9: SAMPLE OF COST ESTIMATION FOR EMP IMPLEMENTATION	21
ANNEX 10: EXAMPLE OF TORS FOR SAFEGUARD INDEPENDENT MONITORING CONSULTANT.....	22
ANNEX 11 – EMP OUTLINES	23

Abbreviations

CPC	Commune People's Committee
DPC	District People's Committee
EMP	Environment Management Plan
EA	Environment Assessment
EIA	Environment Impacts Assessment
EPC	Draft EIA
EVN	Vietnam Electricity
kV	Kilovolt
NPPMB	Northern Power Projects Management Board
NPT	National Power Transmission Corporation
OP 4.01	World Bank Operational Policy on Environmental Assessment
PAP	Project Affected people
PMU	Project Management Unit
PPC	Province People's Committee
ROW	Right of Way
TSHPMB	Trung Son Hydropower Project Management Board
WB	World Bank

Environmental Guidelines

Power Evacuation and Supply Lines for Trung Son Hydropower Project

Introduction

Trung Son hydropower plant will be constructed on the Ma River, in the territory of Trung Son commune, Quan Hoa district, Thanh Hoa province. The proposed project aims to provide least-cost electric power to support Vietnam's further economic development and improvement of living standards through the development of hydropower resources in an environmentally sustainable and socially responsible manner.

Trung Son Hydropower project with its installed capacity of 260 MW and mean annual energy of 1018,6 GWh is a multipurpose project, providing both power generation and flood control benefits. The proposed dam is about 40km downstream from Lao PDR, with the reservoir tail about 9.5 km from the border. The roller compacted concrete dam will be 84.5m high and have a crest length of 513 meters. Full supply level is 160 meters. The total reservoir volume will be about 348.50 million m³ including a flood control volume of about 112 million m³. It will cover an area of about 13,13 km², inundating mixed forest and agricultural land.

The construction work consists of the main dam, including the spillway, intakes, penstock, power house and discharge channel. A switchyard at the dam site and a 220kV transmission line about 65 km long will evacuate power from the plant and connect it to an existing 220kV line in Tan Lac district in Hoa Binh province. An access road about 20.4 km long connecting the all weather road at Co Luong with the dam site will be constructed, as will about 13km of road within the construction area. Four hydropower turbines and generators, control and other equipment will be installed, as will mechanical equipment including the spillway gates.

The project will consist of the following components:

Dam construction: This will include the construction of the main dam, including the spillway, intake gate, penstock, power house and discharge channel, supply and installation of the electromechanical and hydro-mechanical equipment. Auxiliary investments including the access road and bridges, internal roads and construction camp will be included in this component, as will consulting services for supervision of construction.

Construction of electricity lines and sub-stations: One 220kV transmission line from the switchyard to the connection point into the existing Hoa Binh – Nho Quan 220kV system and a system to supply electricity for construction period including one 110/35kV sub-station, other sub-stations, electricity lines from the area of Mai Chau to the construction site and lines within construction site.

Impact mitigation and compensation, which will include the implementation of resettlement, livelihoods restoration, ethnic minorities, environment management and public health management plans.

Technical assistance to support preparation of further hydropower projects and improvement of capacity to meet best international practice for hydropower development.

THE ELECTRICITY EVACUATION AND SUPPLY COMPONENT

Power supply to the site during construction period will be by 35kV line. A 35kV line from Ba Thuoc to Co Me via Co Luong village is now under construction, financed by a separate project

(Second Rural Energy Project, Cr. 4000 VN). The line will be extended from its currently-planned termination at Co Me village by a further 1.5km to the project site. In later stages of construction, from about 2012, when loads at the project site grows, the supply for the 35kV line will be switched from Ba Thuoc to the planned Mai Chau 110/35kV substation, via a 35kV link from Mai Chau to Co Luong. The Mai Chau 110/35kV substation will be fed by a branch, also to be constructed, from the existing Hoa Binh – Moc Chau 110kV line. To provide electricity to specific using points within construction site, it is necessary to build up other smaller capacity sub-stations and electricity lines.

The transmission line will connect the hydro plant's switchyard to a connection point of Hoa Binh – Nho Quan 220kV power line using a voltage of 220kV an estimated 65 kilometers away in the vicinity of Tan Lac in Hoa Binh Province. Feasibility studies are expected to be finished in 2011. The line is expected to run along the Access Road to the dam site, turning north to the vicinity of Mai Chau before heading east to Tan Lac District. The present expectation is that construction of substations or other ancillary facilities will not be necessary. The implementing agency for this component will be the National Power Transmission Corporation and Northern Vietnam Power Projects Management Board (NPPMB) for the 220kV line and Trung Son Hydropower Project Management Board (TSHPMB) for the 110/35kV sub-station, other sub-stations and lines. Construction of the lines will almost certainly cause land acquisition for placement of towers and for the site of the Mai Chau 110/35kV substation. Ten households/55 people are identified to be relocated as of March 2010. Permanent land acquisition will likely involve footing areas for towers and the site of the substation. Temporary land acquisition will be required for erection of towers and stringing of conductors. These generally will be relatively minor in terms of impacts on household land areas and livelihoods.

The Power Evacuation and Supply Lines for the Trung Son Hydropower Project (hereafter: Project) will aim to supply electricity during construction period and evacuation of electricity which will be generated at the Trung Son hydropower plant during operation to the national grid.

1 Overview

The Project is classified by World Bank as Category B for environmental assessment.¹ The Project may bring both negative and positive impacts to the Project area.

In order to present a more detailed evaluation of the Project's negative and positive impacts, an environmental screening should be conducted early in the Project cycle, i.e. soon after the information discussed in Section 2 below become available. If the screening reveals that negative impacts are minor, then the focus of work should turn to developing an Environmental Management Plan (EMP).² Guidance on conducting an environmental screening for Category B transmission and sub-station projects is found in Section 3 Guidance on developing an environmental management plan for Category B transmission and sub-station projects is found in Section 4. Further guidance on assessment methodologies and common impacts associated with transmission projects are found in:

- ③ World Bank, 1991. *Environmental Assessment Sourcebook*, Volume 3; and
- ③ IFC, 2007. *Environmental, Health, and Safety Guidelines on Electric Power Transmission and Distribution*.

The Bank will review each EMP, which includes mitigation measures which are technically justified and acceptable to the Bank. The Bank will also take into account the Client's ability to

¹ For details on the classification of projects, see OP 4.01: *Environmental Assessment*.

² If significant negative impacts are identified in the screening process, then an EIA report will be required, following guidance of OP 4.01.

implement and monitor appropriate conservation and mitigation measures, the results from public consultation with NGOs and local communities and the involvement of local people in monitoring projects.

2 Project Siting

Siting for transmission and rights of way, access roads, lines, towers, and sub-stations shall avoid the following:

- Physical cultural/historical structures;
- Forest and reserved land, natural habitats such as natural reserves, forests, and national parks; and
- Other reserved areas recognized by traditional local communities (e.g. sacred groves), etc.

In cases where it is impossible to do so, no construction of transmission lines or stations will be financed unless:

- There are feasible alternatives for the project and its siting, and
- Comprehensive analysis demonstrates that overall benefits of the project would outweigh the environmental costs.

Annex 1 specifies basic parameters should be included when describing the scope of work and siting for each sub-project.

If the subproject is located near sensitive areas and at a safe distance from those areas, specific descriptions including maps shall be provided in the report for clarification. If further clarification is required, the World Bank may require a field trip and if necessary, an additional assessment on the impact of project is to be prepared and submitted.

3. Environmental Screening

Trung Son Hydropower Management Board (TSHPMB) or National Power Transmission Corporation (NPT) or consultant hired by them carries out environmental screening which referring the Rapid Environmental Assessment Checklist shown in Annex 2. For most of sub-projects, screening should show no significant environmental problems and the sites are eligible for inclusion in the Project. An EMP can be prepared and this is sufficient for the purpose of environmental assessment (EA) of the projects (see Section 4). The screening checklist can be used for the summary of environmental impacts described in the EMP. However there may be other options:

- If screening shows serious negative environmental impact (e.g. intrusion into a core zone of protected areas, significant conversion or degradation of natural habitats, long-term change in land and water use etc.), the sites are not eligible.
- In some cases there may be significant potential environmental impacts (e.g. buffer zones of protected areas, change in land or water use, small-scale land clearing, dredging or filling) a more detailed EIA is required to determine whether mitigation measures can be applied to minimize these impacts.

4. Environment Management Plan

During EA preparation, close cooperation with the Engineering Consultant will be required. As the Engineering Consultant will carry out an extensive survey in the project areas, information will be obtained among others on socioeconomic conditions, public health, water resources, and sanitary conditions. These data should be incorporated in the EA.

Considering the likely nature of subprojects, perhaps the most important stage in the EA process will be developing and implementing an appropriate EMP. The EMP should be prepared

after taking into account comments both from authorized local environmental management agencies and the WB as well as any conditions upon which clearance of the feasibility study or other documents was based.

The integration of mitigation and environmental monitoring measures into project implementation and operation is supported by clearly defining the environmental requirements within an EMP. The EMP provides an essential link between the impacts predicted, mitigation measures specified and implementation and operation activities. EMP outlines the summary of anticipated environmental impacts, the mitigation measures to minimize these impacts, the environmental monitoring program, responsibilities for mitigation and monitoring, timescales, plan for building capacity for environmental management, costs of the implementation of EMP and sources of funding.

The EMP will address the following topics:

- Summary of impacts.
- Description of mitigation measures.
- Description of monitoring programs (during construction and operation).
- Institutional arrangements.
- Implementation schedule and reporting procedures.
- Cost estimates which should include a sum of costs for mitigation (if not yet included in construction cost), monitoring, and capacity building and sources of funds.

Sound environmental practices are to be incorporated into the technical standards and specifications and into contract documentation. The engineers responsible for the detailed design will use and complete the findings of the EA as part of the final design, to ensure that environmental considerations are fully taken into account.

The TSHPMB, NPT will submit the EMP for selected sites proposed to EVN and WB for review and approval.

The annexes in this document provide detailed guidelines for preparing some key sections of a typical EMP:

- Annex 1: Project scope and Site Summary
- Annex 2: Rapid environmental assessment checklists
- Annex 3: Examples of mitigation measures
- Annex 4: Chance findings procedures and Emergency action plan
- Annex 5: Environmental Consultation Summary
- Annex 6: Examples of monitoring programs (during construction and operation)
- Annex 7: Examples of Reporting procedures
- Annex 8: Examples of Institutional arrangements for EMP Implementation
- Annex 9: Examples of Cost estimates for EMP Implementation
- Annex 10: Sample of TOR for Safeguard independent monitoring consultant
- Annex 11: EMP Outlines

5. Institutional Arrangements

5.1 Responsibilities

The responsibility for carrying out the EA process and documenting it rests with the Borrower, which exercises its responsibility through its implementing agencies EVN and the PMUs (TSHPMB and NPPMB) responsible for each subproject. PMUs may need to hire consultants for EA and preparation of EMPs or other related documents, for example an EIA, if they are required. PMUs will

supervise the work and preparation of reports. The PMUs will ensure the active and effective participation and support of community in the preparation and implementation of EIA.

Once the EMP and, if needed, other documents have been prepared, EVN as the case may be reviews the document to ensure compliance with National Environmental Guidelines and the World Bank’s relevant Safeguard Policies. Thereafter, the EMP is forwarded to World Bank for review and clearance. TSHPMB and NPPMB are responsible for ensuring close coordination with DONRE during project preparation and implementation.

Responsibility for implementing the EMPs or other management documents also rests with EVN, once again exercised through the PMUs responsible for the subproject. EMPs are included in construction contracts and contractors are required to follow them. Performance of contractors is monitored by the PMUs, by independent monitoring consultants and by community monitors. Funds for implementing EMP will be included in subproject costs.

EVN are also responsible for training TSHPMB and NPPMB staff on environment management.

5.2 Staffing Requirements

EVN will appoint a project environmentalist and each PMUs will assign one person to be responsible for environmental matters. Together with consultants, EVN’s project environmental staff will provide training to the PMU’s environmental staff in the environmental planning and programming process. Environmental staff will carry out spot-checks during the course of project implementation to ensure that the procedures set out in these guidelines are being applied.

5.3 Clearances

The clearance process is set out in Table 5.3.1.

Table 5.3.1: Environmental Clearance Process

Steps	Environmental Clearance Procedure
1	Investment Project Report submitted to EVN, NPT.
2	EIA preparation (EPC or other documents) are prepared in accordance with MONRE circular No.05/2008/TT-BTNMT dated 8 th December, 2008 guiding the preparation of EIA /Environmental Protection Commitments.
3	Public consultation on main findings of EIA or EPC
4	Draft EIA (EPC) are submitted to relevant Vietnamese authority for approval
5	Draft EMP (and where necessary EIA or other documents) are submitted to WB for comments
6	EMP (EIA or other documents) are revised taking into the Bank’s comments
7	WB provides EA clearance and No Objection letter to EMP.
8	Disclosure of EMP at Info Shop in Hanoi or in Washington

6 Specific Guidance on Key Risks

6.1 PCB Management

Polychlorinated Biphenyls (PCB) were widely used as a dielectric fluid to provide electrical insulation, although their use has been largely discontinued due to potential harmful effects on human health and the environment.

6.2 Specific Guidance for Public Consultation and Disclosure

The Bank's safeguard policies require the client/PMUs to facilitate public consultation and disclosure. Accordingly, consultation with project affected people (PAPs) and local NGOs is recommended for Category B projects.

During environmental screening or preparation of the EA, public consultation must be carried out in a form convenient to the local people (e.g. survey, meeting, leaflet, signboard etc.) and information on the main findings of environmental impact and proposed mitigation measures must be provided in the local language. Records of feedback from public consultation should be attached to the final draft EMP. These documents should clearly state that environmental concerns and suggestions for environmental improvement made by the public have been incorporated. It is advisable that EMPs include a summary table to show the number of meetings, the place, the number of PAPs attended meetings. Some minutes of the meetings need to be attached

The Client should confirm with the Bank that copies of draft EMPs (in Vietnamese) are displayed at the project place accessible to the public and the time for such disclosure. The Client should also confirm the release of the EMP for disclosure at the Vietnam Development Information Center (VDIC), and at the Info Shop in Washington DC, the latter being disclosed in English. The EA documents must be disclosed before site work starts.

6.3 Guidance on Mapping

A map of the project location should be prepared, including delineation and mapping of project site. If existing, the location of Environmental and Cultural/Historical Critical Areas and National Integrated Protected Areas should be indicated.

ANNEX 1 - PROJECT SCOPE AND SITE SUMMARY

Each Sub-Project should be described, as minimal, with the following parameters:

- ③ Project name and province
- ③ Scope of work and site:
 - + For 110kV sub-stations and transmission lines: Fill in Table 1A below
 - + For <110kV sub-stations and transmission lines: Fill in Table 1B below
 - + For 220 kV Transmission line: Fill in Table 1C below

Note: Also clearly state which Volume within the Feasibility Document presents the details description of the Project area and the notes taken during field survey

- ③ Descriptions of major pre-construction and construction activities by sequence of implementation where possible (Land acquisition, set up temporary tent, mobilize workers, construction plants and materials to the site, leveling, construction of administration building, poles foundation construction and installation, install power lines, install gates, fences etc...)
- ③ List major construction plants shall be used such as trucks, cranes etc.... State quantity, size/capacity or any relevant parameter where possible.
- ③ Estimate how construction materials and transformers, power lines etc are transported to the site
- ③ Construction will last in ___ months, the maximum number of workers present at a site will be ___ people

Table 1A – Project Scope and Site Summary – New 110/35KV sub-station and Transmission lines

1. Name of 110kV sub-station, other sub-stations and length of ROW:	<i>Location of each sub-station (specify name of commune and district)</i>	<i>ROW width and length</i>	<i>List communes where transmission lines come through, by district</i>
	A	Width___km, length___km	
	B		
	C		
2. Total land area acquired for sub-stations construction and existing land use		<i>List by sub-station, total land area include access road Attach a simplified layout showing existing land use within 50 m from the boundaries of each sub-station</i>	
3. Is there any sub-station or ROW located within 3 km from natural reserves or forests... ?		Yes_____ No_____ If yes, declare in (6)	
4. Is there any sub-station or ROW located within 300m from historical sites, temples, pagodas or other cultural structure?		Yes_____ No_____ If yes, declare in (6)	
5. Is there any sub-station or ROW located within 300m from to a commune centre rung (CPC, school, market, clinic etc) or within 2 km from a residential cluster?		Yes_____ No_____ If yes, declare in (6)	
6. List of environmental sensitive structures claimed in (3) – (5)			
No.	Name of sub-station/ROW location	Environmental sensitive objects (name and brief description)	Distance

**Table 1B – Project Scope and Site Summary –
New substations and Transmission lines**

1. Total number of stations & length of power lines			
2. Name of communes where the stations are located or the powerlines come through	<i>List by district</i>		
3. Width of ROW			
4. Is there any sub-station or ROW located within 3 km from natural reserves or forests... ?	Yes _____ No _____ <i>If yes, declare in (7)</i>		
5. Is there any sub-station or ROW located within 300m from historical sites, temples, pagodas or other cultural structure?	Yes _____ No _____ <i>If yes, declare in (7)</i>		
6. Is there any sub-station or ROW located within 300m from to a commune centre (CPC, school, market, clinic etc) or within 2 km from a residential cluster?	Yes _____ No _____ <i>If yes, declare in (7)</i>		
7. List of environmental sensitive structures claimed in (4) – (6)			
No.	Name of sub-station/ROW location	Environmental sensitive objects (name and brief description)	Distance

**Table 1C – Project Scope and Site Summary –
New 220 kV Transmission Line**

8. Total length of power lines			
9. Name of communes where powerlines come through	<i>List by district</i>		
10. Width of ROW			
11. Is there any ROW located within 3 km from natural reserves or forests... ?	Yes _____ No _____ <i>If yes, declare in (7)</i>		
12. Is there any ROW located within 300m from historical sites, temples, pagodas or other cultural structure?	Yes _____ No _____ <i>If yes, declare in (7)</i>		
13. Is there any ROW located within 300m from to a commune centre (CPC, school, market, clinic etc) or within 2 km from a residential cluster?	Yes _____ No _____ <i>If yes, declare in (7)</i>		
14. List of environmental sensitive structures claimed in (4) – (6)			
No.	Name of ROW location	Environmental sensitive objects (name and brief description)	Distance

Annex 2: RAPID ENVIRONMENTAL ASSESSMENT CHECKLIST
(Applied for rapid environmental assessment in the Project site)

Project's name: Power Evacuation and Supply Lines for Trung Son Hydropower Project

Province:

District

Commune

Screening Question	Yes	No	Remarks
1. Project's sitting: Is the Project site adjacent to or within any of the following environmental sensitive areas?			<i>- In the case select "yes", describe detailed information such as: name of historical property, nature resource, nearest distance from the sensitive area to the Project site etc...</i>
• Cultural heritage site			
• Protected areas			
• Wetland			
• Forest			
• Estuary			
• Buffer zone of Protected areas			
• Nature reserves like bird yard, mangrove forest etc.			
• Rivers and reservoirs			<i>- Name of main water bodies (rivers), lakes, reservoirs and nearest distance to the Project site</i>
• Canals and irrigation system			<i>- Assess the density of the canal system in the Project's area</i>
• Agricultural land			
2. Potential environmental impacts Will the Project cause:			<i>If select " yes", please describe and briefly assess impact's level</i>
Encroachment on historical/cultural areas			
Encroachment on critical ecosystem (e.g. sensitive or protected area, national park, nature reserve etc....)			
Disfiguration of landscape and increase waste generation			

Screening Question	Yes	No	Remarks
Change of surface water quality or water flows			<i>If select "yes", please list of main reasons</i>
<ul style="list-style-type: none"> • Increase water turbidity due to run-off and erosion 			
<ul style="list-style-type: none"> • Waste water from camping sites is directly discharged to the surface water resources or not? 			
<ul style="list-style-type: none"> • Construction waste is directly discharged to the surface water or not? 			
Increase the dust level?			<i>If select "yes", please list of main reasons</i>
Increase noise and/or vibration?			<i>If select "yes", please list of main reasons</i>
Permanent land acquisition			<i>If select "yes", please list of land area for permanent acquisition, type of soils, and purpose of acquisition</i>
Temporary land acquisition			<i>If select "yes", please list of land area for permanent acquisition, type of soils, and purpose of acquisition, duration of acquisition</i>
Is there any household need to be relocated? If yes, how many households?			
Would the resettlement site is environmentally and/or culturally sensitive			<i>If select "yes" briefly describe the potential impacts</i>
Is there any risk of disease dissemination from construction workers to the local peoples (and vice versa)?			<i>- Estimated number of groups of workers to be hired for project construction in the commune/district</i>
Is there any potential for conflict between construction workers and local peoples (and vice versa)?			
Are explosive and hazardous chemicals used within the Project?			<i>- If select "yes", please list of these materials</i>
In the past, there was any accident incurred due to landmines or explosive materials remaining from the war?			
Will Project's construction cause disturbance to the transportation in the Project's site?			<i>- If select "yes", please assess the impact level: + Significant impact + Medium impact + Minor</i>
Project's construction will cause any damage to the existing local roads system?			
Will soil excavation during Project's construction cause soil erosion?			<i>- If select "yes", please assess the impact level: + Significant impact + Medium impact + Minor</i>
Will Project need to open new access roads?			<i>- If select "yes", please briefly estimate number of temporary access roads and their locations</i>
Will Project cause fragmentation of habitat of			<i>- If select "yes", please describe</i>

Error! Unknown switch argument.

Screening Question	Yes	No	Remarks
flora and fauna?			
Will Project cause impact on air transportation?			
Will Project cause risk to safety and human health (EMF, electric shock etc.)?			<i>If select "yes" ", please describe</i>

Annex 3: Example of Mitigation Measures

No.	Potential impacts	Mitigation Measure	Cost	Responsibility
	List the Impacts screened in Annex 2	Select appropriate mitigation listed in the table below or propose other measures relevant to and feasible in Vietnam		
	Construction Phase			
	Operation Phase			

* Only mitigating measures of significant cost should be included. If costs are negligible or minor, indicate "Minor" in the Table.

** Items indicated to be the responsibility of the Contractor shall be specified in the bid documents

Examples of Mitigation Measures applicable within the Project

- Minimize land clearing by planning for installation of distribution lines above existing vegetation
- Utilize hand clearing of vegetation if possible. Save as much vegetation as possible
- Avoid burning removed vegetation. Dispose removed vegetation to designated site. Encourage local people to make use of removed vegetation such as composting in gardens.
- Avoid sitting sub-station and/or poles on slopes.
- The bidding/contract document specification requires the Contractor to conduct briefings about Environment, Workplace safety and Occupational health regulations to workers soon after construction commencement. Install remaining boards and monitor the compliance to such requirements
- No excavation works is allowed in rainy season in areas having high risk of erosion
- Install drainage path surrounding construction sites located in areas having high risks of erosions
- Install dykes for erosion protection
- Install sedimentation traps within the sub-station
- Encourage the use stockpiles for leveling houses, low areas in gardens or rural roads
- Cover or isolate stockpiles, create drainage paths surrounding the stockpiles to prevent granular materials from entering runoff and finally coming into nearby surface water sources
- Store hazardous materials in covered and safe places

Error! Unknown switch argument.

- Try to make use of existing pathway. Where temporary access is unavoidable, limit the land area to be acquired
- Minimize the duration of traffic disruption. Arrange worker to instruct traffic when materials/equipment are being unloaded at roadside and/or lines are being installed along the road.
- Repair, rehabilitate roads, bridge or any rural infrastructure degraded/damaged by project construction activities
- Ensure that trucks carrying soil, sand or any other granular materials are properly covered when traveling. Check the tightness before departure to make sure that materials do not drop along the way.
- Watering the road where dust level is too high or in hot, dry and windy conditions
- Encourage drivers not to abuse horns in vehicle
- Conduct consultations to local community when planning to carry out construction at night time. Only precede construction at night time when being approved by community and inform community prior to implementation.
- Install warning signs where needed (unfinished pole foundations, high risk of electrical shocks etc)
- Equip temporary camps with first-aid kits
- The Contract is required to clean up the area within and surround their camps/sub-station
- Ensure that wastewater and municipal wastes do not lead to unhygienic conditions at the site. For example, by install drainage channel suitable to practical conditions at the site, bury the wastes where waste collection service is not available.
- Encourage local people to make use of non-toxic wastes, for example use stockpiles for leveling, use the timber core from line rolls to make simple domestic tools, collect recyclable materials and sell to junk shops etc.
- The contractor are required to ensure that the sites are free of wastes before acceptance certificate is issued
- Inform Commune People's Committee (CPC) prior to the commencement of construction phase. Request CPC to coordinate with the Employer and contractor in encouraging community to participate in environmental monitoring activities and to timely report/address environmental concerns
- Hire local labors to carry out manual works
- Cooling transformers with liquid containing PCB is forbidden
- Carry out regular check and maintenance the transformers so as any leakage and/or failure risks can be detected timely
- Replace or repair transformer as soon as possible after leakage from transformers is detected. Isolate the leakage and fix the problem to ensure that the leakage does not cause pollution in water sources nearby.
- Use of signs, barriers etc... to prevent public contact with potentially dangerous equipment;
- Grounding conducting objects (e.g. fences or other metallic structures) installed near power lines, to prevent shock.
- Avoiding the sitting of transmission lines requiring poles higher than 50 m and towers close to airports and outside of known flight path envelopes;
- Consultation with regulatory air traffic authorities during design phase and prior to installation;

Error! Unknown switch argument.

Annex 4: Chance finding procedures and Emergency action plan

No.	Risk	Action	Responsibility
1	Artifacts found during excavation works	<p>Contractor shall protect the site and report to the Construction Supervisor/PMUs and local museum/ cultural management authority</p> <p>Deliver the object found to local museum/ cultural management authority. Determine whether construction can be continued or halted for further investigation</p> <p>The Directors of the provincial Department of Cultural and Information and local Museum shall be responsible for the subsequent handling of the objects found in accordance with Article 21 of the Decree no. 92/2002 guiding the Implementation of the Law on Cultural Heritage</p>	<p>Contractor, construction supervisor to coordinate</p> <p>Contractor</p> <p>Contractor</p> <p>All relevant authorities</p>
2	Remains found during excavation works	<p>Protect the site and report to local authority</p> <p>Determine who/where/how to address and propose next actions</p> <p>Implement the proposed actions</p>	<p>Contractor</p> <p>All relevant authorities</p> <p>Those who are assigned to</p>
3	There are complaints from community about environmental problems related to construction activities	<p>Fix the problem immediately if possible</p> <p>Take note in log book</p> <p>Discuss with the Employer/local authority where conflicts occur</p>	<p>Contractor</p> <p>Contractor, PMUs and local authority</p>
5	Worker accidents	<p>Carry out first aid where possible and transfer the victim the nearest hospital as soon as possible and if necessary</p> <p>Protect the site and place warning site</p> <p>Prepare incident notes</p>	<p>Worker/people at the site</p> <p>Contractor</p> <p>Contractor and local authority</p>
6	Unexploded ordinances is found	<p>Protect the site</p> <p>Report to local authority</p> <p>Contact the most relevant local army base and ask for help</p>	<p>Contractor</p> <p>Contractor/local authority</p>

Error! Unknown switch **argument**.

ANNEX 5 - ENVIRONMENTAL CONSULTATIONS SUMMARY

No.	Sub-Project	Location where Consultation took place	Date and Time	Number of Participants	List of Local authority and household representatives attended	Summary of Issues discussed/raised

Annex 6: Example of monitoring plan

No.	Environmental Issues	Parameter <i>is to be monitored</i>	Location <i>Where is the parameter to be monitored?</i>	Method How <i>Are the parameter to be monitored/ type of monitoring equipment?</i>	Frequency	Responsibility
<i>THE PRE-CONSTRUCTION AND CONSTRUCTION PHASES</i>						
1	Effects on vegetation	Amount of cut down tree Clearing technique Disposal of cut vegetation	Along ROW of the line At disposal site	Observation	Once a month when clearance for construction	Contractors Supervisor of PMUs SIMC
2	Temporary permanent acquisition and land	Amount of acquired land and economic activities on it Compensation for PAPs	Along ROW of the line. PAPs	Survey PAPs	When implement compensation and resettlement	Supervisor of PMUs SIMC
3	Erosion or sediment due to earthworks.	Construction activities near canal, ditch. Restore the land after construction activities	Construction site	Observation	When construction near the river After construction of tower and substation	Contractors Supervisor of PMUs SIMC
4	Effects on air quality due to transportation	Proper covering of trucks Check unpaved surfaces for wetting	Construction site and along transportation road passes crowded population area.	Observation	Once a month, in dry season, wind condition	Contractors Supervisor of PMUs SIMC
5	Noise	Noise level	At position of households having	Noise meter measuring	If there are complaints	Contractors

Error! Unknown switch argument.

Annex 7: Example of reporting procedures

Report type	Primary reporting level			Secondary reporting level			Tertiary reporting level		
	By	To	Frequency	By	To	Frequency	By	To	Frequency
Site environmental management	Contractors	PMUs	Once before construction commences & monthly thereafter	-	-	-	-	-	-
Environmental performance monitoring: construction	Environmental supervision of PMUs	PMUs	Monthly	PMUs	EVN NPT	Six-monthly	EVN	World Bank	Six-monthly
	SIMC	PMUs	Six-monthly	PMUs	EVN NPT	Six-monthly	EVN	World Bank	Six-monthly
	Local authority	PMUs	If any complains						
Environmental performance monitoring: operation	Project operation unit	NPT	Six-monthly	PMUs	EVN NPT	Annually	EVN	World Bank	Annually
	Local authority	NPT	If any complains						

Error! Unknown switch argument.

Annex 8: Example of Institutional Arrangements for EMP implementation

Role	Responsibilities	Organization
Project Owner	- Ultimately responsible for overall project management, including environmental management.	EVN, NPT
Environmental Officer	- Specific responsibility and point of contact for environmental issues.	PMUs
Project Implementation and management Agency	<ul style="list-style-type: none"> - Responsible for coordination and management of overall project implementation, including guiding and supervising implementation of the EMP. - Planning and implementation of environmental management activities during construction - Coordinating with other parties in relation to environmental management activities. - Carrying out internal monitoring and supervising independent monitoring - Supervising and providing budget for monitoring activities. - Reporting on environmental information to concerned parties 	PMUs
Project Operator	- Responsible for operation of the project including operation stage environmental management and monitoring activities.	NPT, TSHPMB Plant
Consultant	- Responsible for preparation of EMP documentation.	
Contractor Supervision	- Responsible for supervision of civil works contractors during construction, including implementation of environmental management activities under the EMP	PMUs
Civil Works Contractor	<ul style="list-style-type: none"> - Responsible for construction works and following contractor specifications outlined in the EMP. This includes: <ul style="list-style-type: none"> i. Applying construction-phase mitigation measures. ii. Ensuring safety of construction workers and local people during construction. iii. Following Vietnam and World Bank policies on environmental protection during construction. 	Contractor chosen by PMUs
Safeguard Independent Monitor Consultant (SIMC)	- Responsible for independent monitoring of EMP implementation	Chosen and guaranteed by PMUs EVN or NPT

Annex 9: Sample of Cost Estimation for EMP Implementation

Capacity Building Budget

No	Training	Cost (VND)
1	Training on safety and mitigation measure for contractor worker	
2	Training on EMP management and monitoring for PMBs staff	
3	Training on operation of community based monitoring for local people ' representatives	
4	Other (if necessary)	
	TOTAL	

Total Cost Summary for EMP Implementation

No	Item	Construction	Operation
1	Mitigation measures	The costs are covered in Contract with Construction Contractors	The cost is covered in production cost of the provincial power service
2	Monitoring costs		
3	Capacity building		
	TOTAL		

Annex 10: Example of TORs for Safeguard Independent Monitoring Consultant

1. Objectives: The Independent safeguard monitoring consultant (hereafter referred as the Consultant) is required to provide assessment of the EMP (environmental management plan) implementation.

The Consultant will carry out monitoring of the mitigation measure by the contractors and the impacts of the project on the environment and project affected people, verify the effectiveness of the reporting procedures, and suggest corrective actions and/or measures for improvement to environmental performance compliance

2. Tasks:

A. Visually look at the construction sites and make notes related to the following environmental issues, but not limited to:

- General clean up after construction works,
- Excessive clear cutting of trees beyond ROWs in communal or forest land,
- Measures taken by the contractor for cleaning up woody residues after tree cutting
- Status of access roads (have they been closed if in a protected area, are they still being used and to what extent, how are they being controlled/managed and by whom), Application of mitigation measures for or sign of soil erosion along T/L due to tree cutting and/or around tower foundation
- Status of re-vegetation in the ROWs and tower foundation
- Impacts of construction works (level of noise, dust) on surrounding residential areas, and damage to roads due to earthworks and transportation of building materials)
- Status of construction worker camps and sanitation facilities for them
- Proper distance between the houses and T/L,
- Status of implementation of safety measures (signboards, restricted zone, fences, isolation etc.)

B. Conduct public consultation to:

- Assess the level of involvement by the local authorities in dealing with environmental issues (dust, noise, and damage to roads due to the transport of construction materials, tree cutting on public lands and protected areas).
- Identify any other environmental issues and record environmental complaints from the PAHs.
- Report on responses (if any) from appropriate local authorities on environmental complaints or non-compliance

C. Assessment:

- Assess the effectiveness of the reporting procedure as specified in the EMP
- State the reasons of the non-compliance or improvement as to provide suggestions to PMU and NPT on how to improve the EMP implementation in the next reporting period

3. Schedule:

The Consultant is required to provide semiannual monitoring reports (every 6 months) for the projects that last more than one year

For the project which can be completed within one year, the Consultant is to carry out mid-term and post-commissioning monitoring and provide reports within 2 weeks after each mission.

ANNEX 11 – EMP OUTLINES

I. Project Descriptions and Scope of Work

Provide the information described in Annex 1

II. Legislations

List all relevant Vietnamese and World Bank legislations, policy applicable to this Project

III Environmental Screening

Screen the potential negative environmental impacts can be carried out by answering the screening the questions provided in the following table in annex 2:

IV Environmental Mitigation Measures

Propose measures to mitigate the negative impacts screened by Section III. Use the form and information provided in Annex 3 to prepare this section

V Emergency and Action Plan

Carry assessment on the risks relating to accidents, discovery of artifacts etc that may occur during the construction or operation phase and propose the actions to be taken to respond. Use Annex 4 for reference.

VI Community Consultation and Information Disclosure

The consultants should read the guidance given in section 6.2 of the Framework document carefully before conducting consultations to ensure that he understand fully and clearly all requirements regarding consultation and information disclosure. It is noticeable that community consultations should be carried out after environmental impacts have been screened and the mitigation measures have been proposed, ideally in the draft form of sections I-V of the EMP.

Use Annex 5 as reference for summarizing issues to be discussed and be included in section VI of the EMP.

VII. Environmental Monitoring Plan

Specify which issues and parameters to be monitored, where and when and who to carry out the monitoring, frequency of monitoring and related costs.

In this Project, the Contractor, construction supervisors and independent environmental monitoring consultants will be the key people who directly carry out environmental monitoring in construction phase. Community and local authorities are encouraged to involve in monitoring activities.

Use Annex 6 as reference for preparing the Environmental Monitoring Plan

VIII EMP Implementation Responsibilities

Specify the responsibilities of

Contractor / Construction Supervisors / Local community and authorities / Safeguard Independent Monitor Consultants

Power Companies / DONRE and other relevant authorities at provincial and district levels / EVN, NPT,

In performing the tasks within the EMP, such as:

Implementing mitigation measures

Monitoring the implementation of mitigation measures in construction phase

Carrying out environmental inspections

Coordinating activities during the implementation of EMP and ensure the cash flow for operations

Organizing/attending training courses, seminar etc

Use Annex 7 as reference for presenting the information in the EMP

IX Reporting Procedures

Specify the types of reports to be prepared, who responsible for preparing and submitting the report, whom to submit to and frequency of reporting. Use Annex 8 as reference for presenting the information in the EMP.

X Capacity Building for EMP Implementation

Propose training course, seminars, topics to be covered, timeframe, trainees and Costs. Use Annex 9 as reference for presenting the information in the EMP.

XI. Cost Estimates

Estimate the costs for (i) Implementing major mitigation measures (ii) independent environmental monitoring; (iii) training activities ... Use Annex 10 as reference for presenting the information in the EMP.

Note:

- Cost estimate for training activities should also cover venue renting, hiring trainers, training document and handouts preparation, handouts, travel costs and per diems for participants etc
- Total estimated costs for EMP implementation (mitigations, training, monitoring etc) must be included in the Project Total Estimated Cost prepared by the Investment Project consultant.

Attachments

- Maps - drawings:
- A copy of environmental certificated issued by local environmental authority
- Copies of some consultation meeting minutes
- Relevant Pictures and sketches

Error! Unknown switch **argument**.