NORTH POWER CORPORATION
Electric Network Project Management Board

ENVIRONNEMENTAL MANAGEMENT PLAN
(EMP)

PROJECT:
THE RURAL ENERGY - ADDITIONAL FINANCING (PHASE 2) SUBPROJECTS IN NGHE AN, HA TINH, BAC GIANG, THAI BINH AND THAI NGUYEN PROVINCE.
(REII- AF- PHASE 2)

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Hanoi, June 2012
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1. INTRODUCTION
1.1. PROJECT OBJECTIVES:

The Rural Energy Project No. 2 (RE2) aims at facilitating the Vietnamese Government to launch poverty elimination campaign in rural areas by providing key infrastructures such as power, accessibility to public services to improve life and production and business performance.

The RE2- the expansion shall continue supporting the Vietnamese Government to:

- Develop a rural electrification strategy, specially focusing on power supply to mountainous and remote areas.
- Rehabilitate, upgrade and expand the rural power system to satisfy power supply demand for the future socio-economic development.
- Improve power supply reliability, reduce loss on power, and improve performance for production and business activities.
- Re-consolidate the rural power grid system to improve reliability and power quality to be provided, including reduction of power loss due to technical or non-technical failure.
- Expand 35kv and 22kv medium voltage grids to be able to supply additional power to households.

This RE2- phase 2 continues the Rural Electrification Project No. 2 (RE2)- phase 1 which has been launched in 10 provinces namely (Cao Bang, Bac Kan, Dien Bien, Yen Bai, Hoa Binh, Bac Giang, Vinh Phuc, Ha Nam, Hung Yen and Thanh Hoa). The phase 2 is launched in 05 provinces, including Bac Giang, Thai Nguyen, Thai Binh, Nghe An and Ha Tinh with engagement of 155 communes in 38 districts and provinces.
Project provinces:

2. PROJECT DESCRIPTION

2.1. BRIEF DESCRIPTION ON NATURAL AND SOCIAL CONDITIONS OF THE PROVINCES

2.1.1. Brief Description on Natural and Socio-economic Conditions of Ha Tinh Province

Geological position

Ha Tinh belongs to the North of the central: The West borders with Laos whereas the East borders with South China Sea. Ha Tinh is situated in the East of Truong Son Mountain Range with narrow, slope and inclined terrain from West to East. Its West is characterized by 1,500m high mountain ranges, the lower is the low hill area similar to up-side-down bowl; the next is the narrow and small delta range along the sea; the last is coastal beach together with lagoons and bays which the outstanding ones are Vung Ang deep seaport and Thien Cam beach.

Ha Tinh is the home of 12 district-level administrative units including 1 city, 1 town and 10 districts with 259 communes, wards and towns.

Thanks to 137km long beach, Ha Tinh is potential for developing tourism and fishing industry. However, the province is also severely affected by natural disasters, especially storms, tide, slide and salinity intrusion. Almost every year witnesses aftermaths in Ha Tinh due to natural disasters, especially storm, tide, slide, salinity intrusion, flood, draught, etc. Districts of Huong Khe, Huong Son and Vu Quang are often situated in the coverage of flood and mountain slide. Flood is often available in April and August. The recent severe flood happened in 2010 was regarded as the biggest flood in the past 100 years when the province was extremely damaged. Concretely: Approximately 100 people died, over 200 injuries, 452 houses to be collapsed and flown; 6,533 houses to be blown off and damaged; 151,683 houses deeply emerged in water for many days; 21,662 hectares of summer-spring rice emerged, etc, in which the most serious damaged district was Huong Khe.

Coastal districts and seaports such as Nghi Xuan, Loc Ha, Thach Ha, Cam Xuyen and upstream Ky Anh are affected by storms and tide in storms. Communes, except for La Giang dyke, are often flooded for a long time; interior field areas of communes in districts of Duc Tho, Cam Loc and Huong Khe are often waterlogged.

Climate

Situated in the tropical monsoon area, Ha Tinh is also affected by transitional climate of the North and the South with typical tropical climate characteristics of the South and a cold winter of the North, therefore, the climate here is very severe. Ha Tinh has two clear seasons in a year namely rainy season and dry season. In the rainy season: The annual average rainfall is from 2,500 to 2650 mm. The last ten days of August and September and mid-month of November account for 54% of total rainfall in the year.

Dry season: It lasts from December to July of the next year. This is a scorching sun season with Southwest wind (flowing from Laos) which is dry, hot and high vapor.
**Protective area:** Vu Quang National Park, Ke Go Nature Reserve, Giang Man Mountain Nature Reserve.

Vu Quang National Park is situated in districts of Huong Khe and Huong Son, Ha Tinh. This is the last area of the North of Truong Son. The Park's height is from 30m to 2,286 m in Rao Co top towards the North cave of the park along the Vietnam- Laos Border. Vu Quang National Park is the origin of three river basins namely: Nam Truoi River, Rao No River and Khe Tre River. All of such rivers are derived from the South of the National Park with sloppy springs, narrow and fast flow towards the North; it becomes wider and smoother.

The northern border of Ke Go Nature Reserve is the Southern bank of Ke Go Lake. The South of the Nature Reserve stretches towards the border between two provinces of Ha Tinh and Quang Binh. The terrain of the nature reserve is characterized by rough low hills, which are the typical scene of the coastal mountainous area in Vietnam. The terrain altitude of the nature reserve ranges from 50 to 497m, majority of the nature reserve has height of less than 300m against the sea level. There are 3 main water parting areas in Ke Go Nature Reserve. Rao Boi Water Parting Area flows towards Ngan Sau River, meeting Ngan Pho at the end of the source then discharging into Lam River before flowing to the South China Sea. Ke Go Lake Water Parting Area includes a series of springs and rivers, creating large area in the nature reserve, flowing into Ke Go Lake. Chin Xai- Cat Bin Water Parting area flows to Khe Canh towards Quang Binh, merging with Giang River before discharging into the South China Sea.

Nui Giang Man recommended Nature Reserve is a part of the North of Truong Son, the South of Ha Tinh province and the North of Quang Binh province. In Ha Tinh, this area is completely situated in the height range of less than 1,000m, and all water sources flow to Ngan Sau River, then Ca River and finally the South China Sea near Vinh city. In Quang Binh, the highest point is located in the border of Ha Tinh province and Ke Bang limestone mountain in Quang Binh, which is Bai Dinh Mountain top with height of 2,050m. However, borders of recommended Nui Giang Man area are not determined, hence, it is unclear to see whether this mountainous area is situated in the recommended area of Nui Giang Man Nature Reserve or not. All water sources in Nui Giang Man are located in Quang Binh, flowing into Rao Cai River, then Rao Nay River and finally the South China Sea near Quang Trach district.

**The concern communes in the protective area:** None

**Land use situation:** Ha Tinh's natural area is 6,055.7 km², in which:
- Residential land: 6,799 hectares
- Residential land: 98,171 hectares
- Residential land: 240,529 hectares
- Special land: 45,672 hectares
- Unoccupied land: 214,403 hectares

**Air pollution signs:** None

**Population:**
Ha Tinh is the home of 1,227,554 persons (population survey launched on 1st April 2009), reduced against the population survey in 1999 because a part of population removed to other localities to live, mainly the Southern provinces.

**Ethnic Minorities:**
There are over 20 ethnics living in Ha Tinh, mainly Kinh; other ethnics such as Chut, Thai, Muong, and Lao and so on live in districts of Huong Son, Vu Quang and Huong Khe with approximately several thousand of people living in the mountainous area.
GDP (VND/person/year): 3,136,000 VND

Poverty situation:
There are 76,659 poor households in the province, accounting for 25.86%, in which poverty rate in extremely difficult communes under the Program 135 is 39.57%. The main reasons for poverty is the insufficiency of production capital, accounting for 77.94%, labor inadequacy (16.05%), production negligence (28.45%), lack of means of production (29.13%), multiple children (20.19%), social evils (0.44%), illness and diseases (27.32%), accidents and risks (5.5%) (Some households are poor due to one reason; others are due to a series of reasons).

Main income in rural area:
- Cultivation of different types of food trees and crops (soybeans, cassava, peanut), vegetables, etc.
- Farming: Pigs, cows, cattle, fishing and aquaculture and so forth.

Rural hygiene:
- Wastewater self treated by households (penetrated in garden land).
- Solid waste: Solid waste collection system is equipped in the towns. While in rural area, farmers usually burn or bury in their garden campus.
- Local people are allowed to construct and use septic toilet.
- Generally, rural hygiene is relatively good.

Traffic infrastructure:
Road: There are 4 national highways and 27 provincial roads with total length of 387 km. If rural transportation road is accounted, total roadway length in the province is 2,917 km.
Railway: Railway trespassing Ha Tinh is 70km long (through Duc Tho, Vu Quang and Huong Khe). There are many passenger and goods terminals, favorable for goods exchange of neighboring residential areas. However, traffic road from economic centers connecting to the railway is insufficient; hence, railway used to develop economic is limited.

2.1.2. Brief Description on Natural and Socio-economic Conditions of Nghe An Province:

Geological position
Nghe An is situated in the North Central Region. The North borders with Thanh Hoa province, the South borders with Ha Tinh province, the West borders with Laos and the East borders with South China Sea. The Province’s administrative center is Vinh City.

Nghe An is the home of 1 subordinate city, 2 towns and 17 districts, 479 communal administrative units including 462 communes and wards and 17 towns.

Climate
Nghe An is situated in monsoon tropical climate area with 4 distinct seasons namely spring, summer, autumn and winter. The Province is affected by fohn wind, which is dry and hot from April to August in annual calendar. In winter, it is affected by cold and wet northeastern wind.

The annual average rainfall is 1,670 mm whereas the average temperature is 25.2 °C.

Protective area: Vuc Mau proposed cultural and historical site, Pu Mat National Park, Chung Mountain proposed cultural and historical site
Vuc Mau proposed cultural and historical site: It is situated in districts of Quynh Luu and Nghia Dan in the North of Nghe An province. The terrain of such proposed site is characterized by mountain and low hills, some limestone mountain area with relatively small area. The proposed site is located in the water intake area of Vuc Mau Reservoir.
Pu Mat National Park: It is situated in the North of Truong Son mountain range. Its height is from 100 to 1841m, even though 90% of the national park is located in the height of less than 1000m. The highest top is in the South of the National Park in the mountain range between Vietnam- Laos border. Many valleys have sloppy sides, perpendicular to the high range, forming a series of small mountain ranges towards the North- South. Sloppy and difficult terrain in the National Park prevents the large-scale deforestation and illegal wood transportation via rivers. The National Park is situated in the basin of four main rivers, including Khe Thoi, Khe Bu, Khe Choang and Khe Khang. Such four rivers flow into Ca River from the West to the East through a wide valley in the North of the Park.

Nui Chung proposed cultural and historical site: It is a small mountain in Kim Lien commune, Nam Dan district, Nghe An province where is the native place of the President Ho Chi Minh – the World Cultural Celebrity.

The concern communes in the protective area: None

Land use mechanism: Nghe An has the largest area in Vietnam (1649,853 hectares) including:
- 1,170,716 hectares of agricultural land
- 114,221 hectares of non-agricultural land
- 364,916 hectares of unoccupied land

Air pollution signs: None

Population:
Nghe An is the home of 3,113,055 persons (population survey launched on 1st April 2009), reduced against the population survey conducted in 2004 because a part of population removed to other localities to live, mainly the Southern provinces.

Ethnic Minorities:
Approximately 20 ethnic minorities are available in the province. Ethnic minorities of Thai, Tho, Kho Mu, Mong, ethnic and others account for 9.42%, 1.97%, 0.94%, 0.91%, 0.018% and 0.092%, respectively.

GDP (VND/person/year): 7,687,800 VND

Poverty situation:
17.53% poor households are available in the province, in which poverty rate in extremely difficult communes under the Program 135 is 31.95%. The average income in the mountain ethnic minority and remote areas is relatively low, approximately 50,000 VND/month.

Main income in rural area:
- Cultivation of different types of food trees and crops (soybeans, cassava, peanut), vegetables, etc.
- Farming: Pigs, cows, cattle, fishing and aquaculture and so forth.

Rural hygiene:
- Wastewater self treated by households (penetrated in garden land).
- Solid waste: In the towns, solid waste collection system is equipped in the towns. While in rural area, farmers usually burn or bury in their garden campus.
- Local people are allowed to construct and use septic toilet.
- Generally, rural hygiene is relatively good.

Traffic infrastructure:
Nghe An is an important traffic hub of Vietnam. It is recognized with developed and diversified traffic network, with road, railway, riverway, airport and seaports, which are properly established and distributed by residential areas and administrative and economic centers.

- Roadway: In addition to the National Highways No. 7, 48, 46 and 15, there are 132 km of Ho Chi Minh road, trespassing the midland mountainous districts of the province.
- Railway: 124 km, including 94km of North-South route with seven stations which Vinh station is the main terminal.
- Airway: Vinh airport with flights of Vinh – Da Nang, Vinh – Tan Son Nhat (and vice versa)
- Sea ports: Currently, Cua Lo port can receive 1.8 thousand ton vessels favorably, acting as the international exchange center
- International border gate: Nam Can and Thanh Thuy, Thong Thu border gate (Que Phong) which is planned to be available in the future.

However, quality of mountainous rural traffic roads is lower than that in the plain and midland areas. Up to now, 15 communes fail to equip with highway to center of 10 mountainous districts.

2.1.3. Brief Description on Natural and Socio-economic Conditions of Bac Giang Province:

Geological position

This province is located in the Northeast of the North; its East borders with Quang Ninh province, its North borders with Lang Son province, whereas its West borders with Thai Nguyen province and Soc Son district (Hanoi) and its South borders with Bac Ninh and Hai Duong.

Bac Giang has 9 districts and 1 city including 229 communes, wards and towns.

Climate

Bac Giang is situated in the tropical monsoon climate of the Northeastern area. There are 4 seasons in a year. Cold winter, hot and wet summer, temperate climate in spring and autumn. The average temperature is 22 – 23°C. The humidity is remarkably changed from 73% – 87%. The annual rainfall is sufficient to supply water for production and life. Average number of sunlight hours is from 1,500 to 1,700 hours.
Protective area: Tay Yen Tu Natural Reserve

The concern communes in the protective area: None

Land use mechanism: Bac Giang has 382,200 hectares of natural land, including 123,000 hectares of agricultural land, 110,000 hectares of forestry land, 66.5 thousand of urban land, special land and residential land, the remaining is other types of land.

Air pollution signs: None

Population:
According to the population survey released in 1st April 2009, Bac Giang had 1,555,720 persons with population density of 407 persons/km², 1.7 times higher than the average population of the whole nation.

Ethnic Minorities:
There were 26 ethnics living in Bac Giang, in which the most density ethnic was Kinh, accounting for 88.1% of population in the entire province, next was Nung, Tay, San Chay and San Diu, Hoa and Dao making up 4.5%, 2.6%, 1.6%, 1.6%, 1.2% and 0.5%, respectively.

GDP (VND/person/year): 4,850,000 VND

Poverty situation:
Living standards of ethnic groups in the province are remarkably improved. 16.29% poor households are available in the province, in which poverty rate in extremely difficult communes under the Program 135 is 38.81%. Some communes still have poor households with over 30% such as Cam Son (Luc Ngan district), Le Vien commune, Chien Son, Vinh Khuong, Cam Dan (Son Dong district).

Main income in rural area:
- Cultivation of different types of food trees and crops (soybeans, cassava, peanut), vegetables, etc.
- Farming: Pigs, cows, cattle, fishing and aquaculture and so forth.

Rural hygiene:
- Wastewater self treated by households (penetrated in garden land).
- Solid waste: In the towns, solid waste collection system is equipped in the towns. While in rural area, farmers usually burn or bury in their garden campus.
- Local people are allowed to construct and use septic toilet.
- Generally, rural hygiene is relatively good.

Traffic infrastructure:
7,111 km of road is available in the province, in which: Road under the management of the Central, the province, the district and commune is 256km long (accounting for 3.6%), 3,422km long, 559 km long (accounting for 7.9%) and 2,874km long (accounting for 40.5%), respectively. Road quality: Aggregate road, macadam road account for 92% while asphalt road only accounts for 8% the remaining is soil road. Currently, eight communes have no highway to the center.

2.1.4. Brief Description on Natural and Socio-economic Conditions of Thai Binh Province:

Geological position
This is a coastal province under Hong River Delta area, situated in the direct affected area of economic growth triangle of Hanoi, Hai Phong and Quang Ninh. The North borders with
Hung Yen province, Hai Duong province and Hai Phong City. The West and Southwest border with provinces of Nam Dinh and Ha Nam. The East borders with Gulf of Tonkin.

Thai Binh has seven districts and one city including 284 communes, wards and towns.

**Climate**

Thai Binh is situated in the tropical monsoon climate. The annual average temperature is 23-24°C (the lowest is 4°C and the highest is 38°C). The annual average rainfall is 1,400 mm – 1,800 mm. Number of sunny hours in the year are about 1,600 – 1,800 hours. The average humidity is approximately 85-90%.

**Protective area:** Thai Thuy Nature Reserve and Tien Hai Nature Reserve

Thai Thuy Nature Reserve: It has the southern border of Tra Ly River and the northern border of Thai Binh River. The Nature Reserve has rivers such as Diem Ho River, flowing to the sea at the section between Tra Ly River and Thai Binh River. The South of Thai Binh River has large flats formed by sediments. The West of the nature reserve is the hollow sand beach, bordering with Tra Ly River where aquaculture ponds are available.

Tien Hai Nature Reserve: It is situated in seaport of Hong River towards the South of Tien Hai district, Thai Binh province. The South of nature reserve borders with Hong River (so-called Ba Lat gate), the North borders with Lan River and the West borders with the main sea embankment. Two big sand drifts are available in the Nature Reserve, concretely: Con Vanh with area of 2,000 hectares and Con Thu with area of 50 hectares. Con Thu is approximately 40km far from mainland and tidal-submerged sand banks are inserted in the area. Con Vanh is separated from mainland through a strait with deep water level, mangrove is available in its bank where is embanked as aquaculture ponds. In addition, a large area of aquaculture ponds exits in the North of Hong River.

**The concern communes in the protective area:** Thai Do commune, Thai Thuy district and Nam Thinh commune of Tien Hai district

**Land use mechanism:** Total natural land area is 153,596 hectares, in which Area for annual tree is 94.187 Hectares; ponds and reservoirs, which have been put into operation, are 6.018 hectares. Most of land is annually improved to be able to cultivate 3-4 crops; the area eligible for winter crop cultivation is about 40,000 hectares.

**Air pollution signs:** None

**Population:**

Population of Thai Binh are approximately 1,827,000 persons mainly Kinh ethnics, in which rural population accounted for 94.2%, urban area made up 5.8%; population density was 1,183 persons/km2; average person was 3.75 persons/household; current rate of natural population development is 1.02%.

**GDP (VND/person/year):** 10,200,000 VND

**Poverty situation:**

The recent survey findings revealed that there were 44,827 poor households in the province, accounting for 8.87% against total households in the province. Among causes to the poverty, number of households lack of labor and production and business capital accounted for 60.16%, the remaining was due to insufficiency of production land (accounting for 7.01%) or elderly, handicapped, unexpected accidents or failures, negative in production and business or contracted to social evil, etc.

**Main income in rural area:**
- Cultivation of different types of food trees and crops (soybeans, cassava, peanut), vegetables, etc.
- Farming: Pigs, cows, cattle, fishing and aquaculture and so forth.

**Rural hygiene:**
- Wastewater self treated by households (penetrated in garden land).
- Solid waste: Concentrated solid waste collection system is available in towns and many communes. In rural area, farmers usually burn or bury in their garden campus
- Local people are allowed to construct and use septic toilet.
- Generally, rural hygiene is relatively good.

**Traffic infrastructure:**
Roadway: National Highway No. 10 accessing to Nam Dinh, National Highway No. 39 connecting Hung Yen – Diem Dien and Hai Phong; road 217 (National Highway No. 37) accessing to Hai Duong.

Hięp bridge construction was commenced to connect Thai Binh and Hai Duong with length of 542.5 m, width of 12m, and total investment of 245,425 billion VND. It was expected to be completed in 2010.

Hong River overpass construction project and road connecting Thai Binh and Ha Nam with Cau Gie- Ninh Binh highway (commenced on 25th January 2010). (The second phase of the project was to connect the National Highway No. 10 with Tien Hai- Thai Thuy coastal road and the National Highway No. 37)

The coastal highway project is being applied with the feasibility study by the Government launched in Thai Binh through 2 districts of Thai Thuy and Tien Hai.

Road 39B (TL458) connects Thai Binh- Kien Xuong- Tien Hai- Diem Diem Port (Thai Thuy).

Road 39B connects Thanh Ne and Diem Dien town with length of 28.9km.

The district and communal roads are asphalted and equipped with highway to access to the center of communes.

**2.1.5. Brief Description on Natural and Socio-economic Conditions of Thai Nguyen Province:**

**Geological position**

Thai Nguyen province’s North borders with Bac Kan province, the West borders with provinces of Vinh Phuc and Tuyen Quang, the East borders with provinces of Lang Son and Bac Giang and the South borders with Hanoi capital. Thanks to its geological position as one of the political, economical and education centers of Viet Bac region in particular and the Northeastern mountainous midland area in general, Thai Nguyen is the socio-economic exchange gateway between the mountainous midland area and Northern delta area. The exchange is conducted through sector-shaped roadway, railway and riverway systems which Thai Nguyen is the hub. Together with central position of Viet Bac, Thai Nguyen is also convening culture of ethnics in the Northern mountainous area, acting as a center of culture and education activities of the extensive mountainous area in the North.

Thai Nguyen has 07 districts, 01 town and 01 city including 180 communes, wards and towns with 125/180 high and mountainous communes. The remaining are delta and midland communes.

**Climate**
In winter, climate in Thai Nguyen is divided into 3 clear areas:

- Colder area is situated in the North of Vo Nhai district.
- Medium cold area covers districts of Dinh Hoa, Phu Luong and the South of Vo Nhai district.
- Warm area covers districts of Dai Tu, Thai Nguyen city, Dong Hy, Phu Binh, Pho Yen and Song Cong town.

The temperature varying between the hottest month (June: 28.9 °C) with the coldest month (January: 15.2 °C) is 13.7 °C. Total sunny hours in the year fluctuates from 1,300 to 1,750 hours and it is relatively even distributed to months in the year.

Climate in Thai Nguyen is divided into 2 clear seasons. The rainy season lasts from May to October and dry season last from October to May. The annual average rainfall is approximately 2,000 to 2,500 mm; the peak is August and the lowest one is January.

In general, climate in Thai Nguyen province is favorable for agricultural and forestry development.

**Protective area:** Tam Dao National Park Nature Reserve

Tam Dao National Park is a national park of Vietnam, completely situated in Tam Dao mountain range, which is characterized, by over 80km length and 10-15km width along the Northwest- Southeast. The park covers three provinces namely Vinh Phuc (Tam Dao district), Thai Nguyen (Dai Tu district) and Tuyen Quang (Son Duong district), 75km far from Hanoi towards the North.

This Park is a high mountainous area in Tam Dao mountain range. This range has over 20 peaks from 1,000m upward against the sea level; the highest peak is Tam Dao Nord 1,592m. Its terrain is characterized by sharp peak, very sloppy side, deep and thick separation by many auxiliary caves, which are relatively perpendicular to the main caves.

**The concern communes in the protective area:** Quan Chu commune and Cat Ne, Dai Tu district.

**Land use mechanism:**

Thai Nguyen has 354,110 hectares of natural land area in which 94,563 hectares, 152,275 hectares and 20,539 hectares of agricultural land area; non-agricultural land area and unused land area, making up 26.70%, 43% and 5.8% of natural land area, respectively; the unused land area and stone springs and rivers are 78,535 hectares, accounting for 22.17%.

**Air pollution signs:** None

**Population:**

Population in Thai Nguyen province was 1,124,786 persons as recorded in the population survey launched on 1st April 2009. Population is unevenly distributed, especially scattered in the high and mountainous areas, meanwhile population in city and delta is dense. The lowest population density is 72 persons/km² in Vo Nhai district, the highest one is 1,260 persons/km² in Thai Nguyen city. According to the general population and housing survey launched on 1st April 2009, in 10 years (1999-2009) the province’s population gained the average increase of 0.7%/year, lower than the average level of whole nation, i.e., 1.2% because many people removed to other provinces. There are 3 districts namely Dinh Hoa, Dai Tu and Phu Binh with negative population growth rate.

**Ethnic Minorities:**
There are 30 ethnic groups, the most crowded group is Kinh with 786,903, accounting for 75.5%; while Tay, Nung, San Diu, San Chay, Dao, Mong and others ethnic has 106,238 persons, 54,628 persons, 37,365 persons, 29,229 persons, 21,818 persons, 4,831 persons, accounting for 75.5%, 10.7%, 5.1%, 2.4%, 2.79%, 2.1% and 1.8%, respectively.

**GDP (VND/person/year):** 2,900,000 VND

**Poverty situation:**
Poverty rate of Thai Nguyen is 12.83 % (in accordance with new standard), in which poverty rate in extremely difficult commune is 29.42%.

**Main income in rural area:**
- Cultivation of different types of food trees and crops (soybeans, cassava, peanut), vegetables, etc.
- Farming: Pigs, cows, cattle and so forth.

**Rural hygiene:**
- Wastewater self treated by households (penetrated in garden land).
- Solid waste: In the towns, solid waste collection system is equipped in the towns. While in rural area, farmers usually burn or bury in their garden campus.
- Local people are allowed to construct and use septic toilet.
- Generally, rural hygiene is relatively good.

**Traffic infrastructure:**
The province has 3,422.7 km. Road under the management of the Central, the province, the district and commune is 80.1km long (accounting for 2.34%), 271 long, (accounting for 7.91%) and 759.6 km long (accounting for 22.19%), 2,312 km long (accounting for 67.54%) respectively.

Aggregate road, macadam road account for 350.5 km, accounting for 10%; the asphalt road is 379.7 km, accounting for 11% whereas the soil road is 2,692.7 km, accounting for 79%. Currently, 100% of communes, wards and towns in the province are equipped with the highway to the center.

### 2.2. PROJECT’S SCOPE

RE2- MV expansion towards the North (Phase II) is launched in 155 communes under 38 districts (cities) of 05 provinces.

#### Table 2.2.1. Primary data table on project

<table>
<thead>
<tr>
<th>1. Project Title</th>
<th>The Rural Energy Project No. 2 supporting the medium voltage for the North in the second phase</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. New construction project</td>
<td>Bypasses and MV stations</td>
</tr>
<tr>
<td>3. Total stations and total length of wireline</td>
<td>Table 2.2.2</td>
</tr>
<tr>
<td>4. Name of communes to be located with stations or wirelines</td>
<td>Section 2.2.3</td>
</tr>
<tr>
<td>5. Width of ROW</td>
<td>Width of MV wirelines: 7m.</td>
</tr>
<tr>
<td>6. Transformer stations or ROW within the radius of 3km to nature reserves or natural forests</td>
<td>None</td>
</tr>
</tbody>
</table>
7. Are transformer stations or ROW available within radius of 300m to historical relics, pagoda, temple or other cultural structures?
   None

8. Are transformer stations or ROW available within radius of 300m to communal center (People's Committee, schools, markets, clinics) or radius of 2km to the residential areas?
   None

Table 2.2.2 Total stations and wireline length

<table>
<thead>
<tr>
<th>No.</th>
<th>Province</th>
<th>Number of communes/districts</th>
<th>New medium voltage (km)</th>
<th>Number of MV pylons</th>
<th>Number of stations</th>
<th>Total capacity (kVA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Nghe An</td>
<td>41/10</td>
<td>56,160</td>
<td>645</td>
<td>85</td>
<td>10,885</td>
</tr>
<tr>
<td>2</td>
<td>Ha Tinh</td>
<td>39/8</td>
<td>70,006</td>
<td>709</td>
<td>81</td>
<td>7,850</td>
</tr>
<tr>
<td>3</td>
<td>Bac Giang</td>
<td>26/7</td>
<td>48,539</td>
<td>471</td>
<td>61</td>
<td>9,475</td>
</tr>
<tr>
<td>4</td>
<td>Thai Binh</td>
<td>32/7</td>
<td>25,643</td>
<td>1,179</td>
<td>66</td>
<td>13,330</td>
</tr>
<tr>
<td>5</td>
<td>Thai Nguyen</td>
<td>17/6</td>
<td>53,880</td>
<td>551</td>
<td>42</td>
<td>5,805</td>
</tr>
<tr>
<td></td>
<td><strong>Total:</strong></td>
<td><strong>155/38</strong></td>
<td><strong>254,288</strong></td>
<td><strong>3,555</strong></td>
<td><strong>335</strong></td>
<td><strong>47,347</strong></td>
</tr>
</tbody>
</table>

2.2.3 Project communes:

Nghe An Province (41 communes - 10 districts):

1. Hung Nguyen District (07 communes): Hung Chau, Hung Xa, Hung Dao, Hung Tan, Hung Tien, Hung Long and Hung Thang
2. Thanh Chuong District (03 communes): Thanh Giang, Dong Van and Thanh Xuan
3. Nam Dan District (01 commune): Nam Anh
4. Dien Chau district (06 communes): Dien Loc, Dien Hong, Dien Nguyen, Dien Tho, Dien Ky and Dien Dong
5. Nghi Loc District (04 communes): Nghi Khanh, Nghi Dien, Nghi Yen and Nghi Long
6. Quy Hop district (04 communes): Dong Hop, Chau Thanh, Chau Quang and Chau Cuong
7. Quynh Luu District (04 communes): Quynh Thach, Quynh Minh, Tien Thuy and Quynh Lap
8. Nghia Dan district (05 communes): Nghia Duc, Nghia Khanh, Nghia Binh, Nghia Hoi and Nghia Yen
10. Anh Son district (04 communes): Cam Son, Cao Son, Hoi Son and Hung Son

**Ha Tinh Province (39 communes – 08 districts):**

1. Cam Xuyen district (08 communes): Cam Thin, Cam Trung, Cam Quang, Cam Binh, Cam Son, Cam Ha, Cam Minh and Cam Linh
2. Ky Anh district (3 communes): Ky Khang, Ky Chau and Ky Tan
3. Huong Khe district (05 communes): Hoa Hai, Huong Thuy, Loc Yen, Huong Lam and Phuong My
4. Thach Ha district (03 communes): Thach Dai, Thach Hoi and Thach Lac
5. Nghi Xuan District (04 communes): Xuan Yen, Xuan Thanh, Xuan Lam and Xuan Hong
6. Duc Tho District (04 communes): Duc Nhan, Duc Dung, Duc Thanh and Duc Lang
7. Huong Son District (11 communes): Son Binh, Son Chau, Son Thuy, Son Giang, Son Ninh, Son Le, Son Truong, Son Diem, Son Kim 1, Son Kim 2 and Son Tay
8. Loc Ha District (1 commune): Thach Chau

**Bac Giang province (26 communes – 07 districts):**

1. Luc Nam District (05 communes): Cam Ly, Chu Dien, Dong Hung, Huyen Son and Tam Di
2. Luc Ngan district (05 communes): Bien Dong, Quy Son, Phong Van, Tan Son and Tan Quang
3. Yen Dung district (02 communes): Lang Son and Tan An
4. Tan Yen district (06 communes): Dai Hoa, Nha Nam, Phuc Hoa, Quang Tien, Song Van and Tan Trung
5. Lang Giang district (02 communes): Nghia Hung and Phi Mo
6. Yen The district (05 communes): Dong Ky, Dong Tam, Huong Vi, Tam Hiep and Tam Tien
7. Viet Yen district (01 commune): Bich Son

**Thai Binh province (32 communes – 07 districts):**

1. Dong Hung district (07 communes): Dong Xa, Dong Vinh, Hop Tien, Dong La, Dong Kinh, Dong Phuong and Dong Huy
2. Hung Ha District (06 communes): Hong An, Canh Tan, Doc Lap, Thai Hung, Tan Tien and Tien Duc
3. Thai Thuy district (05 communes): Thai Thuy, Thai Do, Thuy Quynh, Thai Tho and
communes)  
4. Kien Xuong district (02 communes): Binh Minh and Vu Ninh  
5. Quynh Phu District (05 communes): An Le, Quynh Bao, An Ap, Quynh Hoa and An Ninh  
6. Tien Hai district (06 communes): Nam Hong, Nam Thinh, Nam Thanh, Vu Lang, Dong Co and Nam Ha  
7. Vu Thu district (01 commune): Tan Hoa

Thai Nguyen province (17 communes – 06 districts and towns):

1. Phu Luong district (02 communes): Yen Ninh and On Luong  
2. Pho Yen district (06 communes): Van Thai, Phuc Thuan, Trung Thanh, Minh Duc, Tan Huong and Dong Cao  
3. Dai Tu district (05 communes): Cat Ne, Tien Hoi, Khoi Ky, Quan Chu and Ban Ngoai  
4. Dong Hy district (02 communes): Hoa Thuong and Tan Loi  
5. Vo Nhai district (01 commune): La Hien  
6. Song Cong town (01 commune): Binh Son

2.3. PRE-CONSTRUCTION AND WHILE-CONSTRUCTION ACTIVITIES AS SPECIFIED IN THE IMPLEMENTATION PROCEDURES

- Site clearance method
  Site clearance covers mainly cutting trees off and clearing structures situated in pylon foundations, trees with height of over 4m and buildings available in the route.
  - Buildings in the route not affected should not be cleared.
  - Trees at pylon foundation positions are mainly crops (rice, maize, potato, and cassava). Communal People’s Committees and district People’s Committees in the project area agree to implement compensation and site clearance as stipulated to ensure power construction and erection. If it is fallen in the harvest season of farmers, it is required to calculate to compensate trees on land for farmers in accordance with the average productivity.
  - Trees with height of over 4m available in the route may be cut down before wiring.
  - Compensation is undertaken by power companies. Therefore, PCs of 05 provinces should complete the land recovery procedures and grand land for construction so that site can be handed over to builders.

- Camp construction:
  In order to ensure the storage of materials, plants and equipment and houses for workers, a temporary camp construction project is launched in each commune, including:
+ Indoor storage for cement, equipment, electrical materials and accessories: 30m² x 1 commune = 30m².
+ Outdoor storage with fence to protect transformers, medium voltage conductors, construction tools, beam, bracket and backstays: 10m² x 01 commune = 100m².
+ Temporary buildings for workers during construction: 50m² x 1 commune = 50m².
+ Indoor warehouse and temporary buildings are made from bamboo frame with fiberboard, its roofs are covered with fiberboard and roofing felt.

Transferring materials and equipment to the site

Different types of equipment and materials such as: Conductors and insulators are bought in Hanoi and transported by trucks to the route center of each project component (site storage).

Goods are transported from Hanoi to the site storage as follows:
+ Protection switchgear, insulators and cables with small packing, scattered goods shall be transported to the site by trucks and manually unloaded.
+ Conductors with bulk quantity shall be transported to the site by the less than 5 ton trucks and 5 ton cranes.
+ Centrifugal concrete pylon bought in the area or Hanoi shall be transported to the site by KMAT 7.5 ton truck, each shipment delivers 6 pylon sections, loaded by 5 ton cranes. Pylons are piled at the ending route and scattered transported to the site by combining the manual and mechanical method.
+ Other materials such as beam, backstay, accessories, etc from Hanoi shall be transported to the site by the 5-ton trucks and manually unloaded.
+ Cement bought in districts is transported by the 5-ton trucks and manually unloaded.
+ Sand and stone bought at the project’s district, 20km distance, shall be transported by the 5-ton dump trucks and manually unloaded.

2.4. DIFFERENT TYPES OF CONSTRUCTION PLANTS AND EQUIPMENT

Table 2.4. Different types of main construction plants and equipment for 01 province:

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Quantity</th>
<th>Operation capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>KMAT truck</td>
<td>03</td>
<td>7.5 ton</td>
</tr>
<tr>
<td>2</td>
<td>Punching and Shearing Machine</td>
<td>03</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Electric welding machine</td>
<td>03</td>
<td>21KVA</td>
</tr>
<tr>
<td>4</td>
<td>Generator</td>
<td>03</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Pump</td>
<td>03</td>
<td>30kVA20m³/h</td>
</tr>
<tr>
<td>6</td>
<td>Concrete breaker</td>
<td>03</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Gas welding machine</td>
<td>03</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Vibrator</td>
<td>03</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Concrete mixer</td>
<td>03</td>
<td>2501-5001</td>
</tr>
<tr>
<td>10</td>
<td>Hoists and pulleys</td>
<td>03</td>
<td>5 tons</td>
</tr>
<tr>
<td>11</td>
<td>Bleck truck</td>
<td>03</td>
<td>0.5</td>
</tr>
</tbody>
</table>
2.5. EXPECTED MEASURES TO TRANSPORT MATERIALS AND EQUIPMENT TO THE SITE
- Cement and various types of electrical materials and equipments are scattered transported by trucks and workers to the indoor warehouses at the site along the route with weighted average transportation distance of 250m.
- The centrifugal concrete pylons are transited by trucks and workers (the average distance is equal to the distance of transporting cement).
- Sand and stone are transported by light trucks and workers with the same average distance to the distance of transporting pylon).
- Others materials are transported from indoor warehouse by light trucks and workers with the same average distance to the distance of transporting cement).

2.6. PROJECT SCHEDULE:
The expected construction schedule for the works (for main works) is as follows:

With reference to the power supply demand and capacity of the Project Owner, the construction progress and period to put the works into operation are expected as follows:

**Project schedule**

<table>
<thead>
<tr>
<th>Activity</th>
<th>Schedule</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preparing the investment Project</td>
<td>June 2010-August 2010</td>
</tr>
<tr>
<td>Preparing as-built drawing design</td>
<td>September 2010- October 2010</td>
</tr>
<tr>
<td>Tendering equipment</td>
<td>December 2010</td>
</tr>
<tr>
<td>Tendering construction and installation</td>
<td>December 2010</td>
</tr>
<tr>
<td>Implementation</td>
<td>January 2011- May 2011</td>
</tr>
<tr>
<td>Completion</td>
<td>June 2011</td>
</tr>
</tbody>
</table>

3. LEGAL FRAMEWORK ON THE PROJECT’S ENVIRONMENT IMPACT ASSESSMENT

3.1 LAWS AND REGULATIONS OF VIETNAM
The Vietnamese Government promulgates some laws and regulations on environmental protection. Such documents include:

- Legislation of the Socialist Republic of Vietnam (April 1992) specifies that the State-owned enterprises, governmental agencies, cooperatives and national defense bodies must be responsible for fulfilling policies on environmental protection to ensure the proper use of natural resources and environmental protection.

- Law on Environmental Protection approved by the National Assembly on 29th November 2005 and valid since 1st July 2006, superseding Law on Environmental Protection in 1993 which prescribes responsibilities of the central, locality, individuals and
organizations in environment degrading prevention and protection and implements specific environmental protection functions.

- Law on Forest Protection (1992) specifies on managing, protecting, developing and exploiting forest and preventing cutting trees downs and deforestation.

- Law on Protection of People's Health (11th July 1989): Rights and obligations of residents in health protection, guiding principles on health protection, sanitation education in people; conduct the standby measures; rehabilitate and clean living environment; ensure labor sanitation standards, food and foodstuff hygiene.


- Decree No. 81/2006/ND-CP dated 9th August 2006 of the Government on sanctioning of administrative violations in the field of environmental protection.

- Decree No. 106/2005/ND-CP dated 17th August 2005 of the Government on detailing and guiding the implementation of a number of articles of the electricity Law on Protection of safety of high-voltage power grid works (amending and supplementing Decree No. 54/1999/ND-CP).

- Decree No. 52/1999/ND-CP: Regulations on managing construction investment with amendments on environmental issues in construction management.

- Circular No. 05/2008/TT-BTNMT dated 8th December 2008 of the Ministry of Natural Resources and Environment on guiding environmental assessment, environmental impacts and environmental protection commitment.


3.2 PROTECTION POLICY OF THE WORLD BANK (WB)

- OP 4.01 Environmental Assessment
- OP 4.10 Indigenous people
- OP 4.12 – Obligatory resettlement
- WB’s Policy on Information Access

Detail guidelines on evaluation method and general impacts on transmission wireline projects may be found in

- Framework regulations on environmental protection application for Rural Distribution Grid Project

4. ENVIRONMENT IMPACT ASSESSMENT
4.1. DETERMINATION OF THE PROJECT’S POTENTIAL IMPACTS

The Project shall play an essential role in electrification and poverty elimination program in 155 communes of 38 districts in 05 project province. The Project also facilitates the industrialization and modernization policy promulgated by the Government and offers best opportunities for general socio-economic development to poor areas.

When distribution wirelines are constructed, local persons tend to move to live near such wirelines. Local People’s Committee shall prepare a specific plan to support the regional development. Such plans include road, residential areas, industrial and agricultural development, etc. Such district/commune or province shall divert the development as sketched in these plans.

In addition to noticeable positive impacts, variety of adverse impacts may be posted on environment and local socio-economics. By using the Checklist of Environmental Test Data and Background Environment List as guided in the Guidelines, the environmental protection measures are applied for the Rural Energy Project No. 2. Quick environmental impact assessment of the Project is described in Table 4.1.1.
Table 4.1.1. Quick Environment Impact Assessment of the Project

<table>
<thead>
<tr>
<th>Screening question</th>
<th>Yes</th>
<th>No</th>
<th>Impact description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Project location: Is it near or within the following environmental sensitive areas?</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Cultural sites</td>
<td>No</td>
<td></td>
<td>Quan Chu and Cat Ne communes in Dai Tu district, Thai Nguyen province; Thai Do commune, Thai Thuy district; Nam Thinh commune, Tien Hai district, Thai Binh province. Although the commune has land area situated in the reserve area (Tam Dao national park, Tien Hai nature reserve, Thai Thuy nature reserve), the wireline and power supply station for the commune is far from the reserve area, hence, no impact or effect can be available in the reserve area.</td>
</tr>
<tr>
<td>- Reserve areas</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Wetland</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Forest under the Program 661</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Estuary</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Buffer area of the reserved area</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Nature reserves: Mangrove and bird sanctuary</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Rivers and reservoirs</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Channels and irrigation system</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>2. Potential environmental impacts</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Invasion of cultural/historical sites</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Encroaching the ecosystem</td>
<td>No</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
- Deforming landscape and increasing waste | Yes | - Vegetation area (mainly savanna and brushes) reduces due to ROW clearance and temporary road construction
- Land and construction materials may be left in the site
- Change of surface water or water flow quality | Yes | - Water impurity may be higher due to soil sediment from column digging, discharging on springs, rivers, ponds and reservoirs towards the water flow. Concretely, for communes such as Tan Long in Tan Ky district, Cam Son commune in Anh Son district, Nghe An province; Son Ninh commune, Huong Son; Phuong My commune, Huong Khe district, Ha Tinh province; Quan Chu commune, Dai Tu district, Thai Nguyen province are trespassed by new wirelines near rivers and springs.
- Water impurity due to eroding by surface water flow | Yes | - Water impurity may be higher due to foundation excavation; however, such erosion is negligible. It is only excavated soil flowing in water when it rains. Landslide is impossible to happen because foundation construction is only 2-3m3 of soil at a position where positions are far from each other about 100m on average.
<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Does wastewater from camps directly discharge into water surface area?</td>
<td>Yes</td>
<td>About 10-15 workers operate in each commune; the construction period lasts from 30-40 days (depending on communal scale). All Project communes are fully equipped with general wastewater drainage system. Wastewater is concentrated to discharge into a certain pond in commune or flow into hollow land areas to self-penetrate into soil. Therefore, wastewater from worker camps would flow into the general wastewater drainage system or self-penetrate into soil. A small part may flow into rivers, springs when it rains (for communes with rivers and springs).</td>
</tr>
<tr>
<td>- Does wastewater from construction directly discharge into water surface area?</td>
<td>Yes</td>
<td>Wastewater from construction mainly serves for concreting pile foundation; hence, discharging into the surface water source is negligible. It only exists in rainy condition.</td>
</tr>
<tr>
<td>- Is dust level increased?</td>
<td>Yes</td>
<td>Dust is caused by earthworks, especially in dry season. Dust is caused by means of transportation of materials and equipment during Project’s construction.</td>
</tr>
</tbody>
</table>
### - Is noise and/or vibration increased?

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
</tr>
</thead>
</table>

- Noise during construction must comply with the Noise code QCVN 26:2010/BTNMT. Noise caused by construction vehicles during construction is negligible because of the Project’s small scale and short-term construction period.
- Noise and vibration is caused by equipment, material transportation, means of transportation of the project, erection of column and wiring, generator (if any)

### - Permanent land recovery

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
</tr>
</thead>
</table>

- Permanent land recovery for pile foundation, sleepers and station construction positions. Refer to sections 4.1.2 and 4.1.4

### - Temporary land recovery

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
</tr>
</thead>
</table>

- Some production land would be mobilized to serve for construction in a short time Refer to sections 4.1.2 and 4.1.4

### - Is required to remove households?

<table>
<thead>
<tr>
<th></th>
<th>No</th>
</tr>
</thead>
</table>

- No households are required to remove by the Project.
| - Risk for disease emission from construction workers to local people (and vice versa) | Yes | - Each commune would have about 15 workers. Therefore, initially, due to difference in water source, food and environment, some popular diseases may be available such as flu, digestive disorder and so forth. (Mainly for workers). Moreover, worker collection would lead to development of business, entertainment activities and some social evils such as drugs, prostitution, etc, resulting in risks of contracting some diseases such as HIV….However, because the project covers communes and each commune has small scale, number of involved workers are not too many, therefore, it is possible to release a comprehensive evaluation. Accordingly, such adverse impact on local residential community is negligible, whereas its positive impact is to create high consumption, facilitating other service activities and increased commodity circulation in the locality. Hence, living standards may be partially improved, creating favorable conditions for the local socio-economic development. |
| - Potential conflict between construction workers and local people | Yes | - During construction, some workers from other areas may be available. This may affect the daily living conditions of local people. A number of strangers coming to live may lead to CPI due to consumption of goods and essentials. Moreover, conflicts may happen due to difference in living style and culture of workers from various areas against the local persons. |
| - Explosive substances or hazardous chemicals in the project | No | - Explosive substances and hazardous chemicals are not used in the project. |
| - Previously, unexploded ordinances or explosive materials left from the war | No |
| - Project construction causes the local traffic disorder | Yes |
| - Project construction causes damages to the available traffic road system | Yes |
| - Earthworks during construction cause erosion | Yes |

- The Project is launched in 05 provinces including Nghe An and Ha Tinh where rate of unexploded ordinances left after the war is high. However, land in project communes where wirelines and transformer stations are constructed has been used by local persons and local authority with high density. No risks on unexploded ordinances or explosive materials left from the war are found.

- Activities of transporting materials, equipment, earthworks and column erection affect the normal traffic in the area within a short period of time.

- Heavy-duty means of transportation may make the available roads degraded. Moreover, quality of the rural roads is not so good in nature.

However, damaging the available road system may be reduced when mitigation measures are outperformed (For instance: Dividing materials into many trips to transport in accordance with allowable load of inter-communal road, etc).

- Regarding soil erosion, this impact is regarded as negligible due to small scale of related activities, short-time occurrence and negligible affected area. Moreover, such impacts may be smaller when mitigation measures are conducted.

Refer to Section 4.2.7. Solid waste arisen during earthworks.
- **Is it required to open a new service road?** | **No** | - The Project is constructed in 155 communes of 05 provinces where relatively stable power grid system is available, bypasses of newly built wirelines for communes have short distance, mainly along the available inter-communal road. Therefore, transportation of materials and equipment to the site is relatively favorable without constructing new service road.

- **Does the Project cause living environment break of flora and fauna?** | **Yes** | - Some trees should be cut off. Such trees are general categories such as industrial trees and fruit trees.

  - Some small insects and animals losing its living environment are general species. The area of losing ecology environment is smaller than that of entire affected ecosystem. The main ecosystem affected by the Project is agricultural area, industrial forestation and brush along the road, etc.

  - The Project does not invade any reserves, national forest, and so forth.

  *Refer to section 4.1.4 Impacts on biological resources*

- **Does the project affect aviation traffic?** | **No** | - Project construction position is not near any airports or terminals. Construction height of pylon is less than 50m; hence, airplanes are not affected.
- Is it caused risk on accidents for workers and community during construction? | Yes |
- Risks on labor accidents during construction may happen. However, it may be avoidable if training measures and labor safety compliance are strictly applied by workers and technicians. Risk on often happened accidents are
- Due to construction in sloppy terrain, slide may happen, causing danger to workers and community
- Workers who operate in the top may be risky and may fall if they are not fully equipped with labor safety and protection knowledge.
- Safety for workers when working in environment having many charging objects/ conductors.
- Transportation of bulky materials in slope (such as pylons, steels for beam erection, steel for pile foundation construction, wires) may cause accidents during operation.
- Local persons willingly enter the dangerous area.

- Does the Project cause any risk for people health (electro magnetic field, Electric shock, etc)? | Yes |
- Accidents may be available if specific safety measures are not properly concerned.
- With voltage of up to 35kV, no impacts of electric field are found.
4.1.2. Temporarily and permanently occupied land

The occupied land area of 155 communes, 38 districts in 05 provinces is 121,728 m² and 23,218 m² of temporarily and permanently occupied agricultural and forestry land, respectively. On average, the permanently occupied land area per commune is approximately 150 m² and the temporarily occupied land area is about 785 m². Therefore, it is possible to recognize the negligible impact of land occupancy by both MV wirelines and transformer station.

Table 4.1.2. Summary of land area occupied by the Project (m²)

<table>
<thead>
<tr>
<th>No.</th>
<th>Province</th>
<th>Construction scale</th>
<th>Permanently occupied land area (m²)</th>
<th>Temporarily occupied land area (m²)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Medium voltage wireline (m)</td>
<td>Transformer station (station)</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Nghe An</td>
<td>56,160</td>
<td>85</td>
<td>7,908</td>
</tr>
<tr>
<td>2</td>
<td>Ha Tinh</td>
<td>70,006</td>
<td>81</td>
<td>5,942</td>
</tr>
<tr>
<td>3</td>
<td>Bac Giang</td>
<td>48,539</td>
<td>61</td>
<td>4,023</td>
</tr>
<tr>
<td>4</td>
<td>Thai Binh</td>
<td>25,643</td>
<td>66</td>
<td>1,356</td>
</tr>
<tr>
<td>5</td>
<td>Thai Nguyen</td>
<td>53,880</td>
<td>42</td>
<td>3,989</td>
</tr>
<tr>
<td></td>
<td>Total:</td>
<td>254,228</td>
<td>335</td>
<td>23,218</td>
</tr>
</tbody>
</table>

Affected land area is mainly agricultural land (rice and crop cultivation) and forestland (planted forest, secondary forest with main trees of eucalyptus, acacia and pine). Refer to Section 4.1.4 for details of quantity of affected trees, garden and forest area.

Environmental impact due to route corridor clearance shall be minimized through compensation plan and recovery measures as specified in the Report on Compensation and Resettlement.

Land occupied by the Project (including medium voltage wirelines and transformer station) does not affect great and important works (such as buildings and outlets) or auxiliary works (such as cattle sheds, fence walls, garden and playground).

Trees which are higher than 4m shall be cut down, this impact is short term and negligible. ROW shall be planted with trees for general vegetation with height of less than 4m.

The Project’s Compensation and Resettlement Plan also specifies that contractors must return plane of temporarily occupied agricultural land lots to its origin status, which can cultivate for the land owners. The wirelines passing the agricultural land lots would cause no impact on lower cultivation.

4.1.3. Impacts on affected households

The survey unveiled that the Project would affect three main groups of people, including farmers (majority, accounting for over 90% of total affected groups of people), trading and service groups and public servant groups in management agencies, companies and factories. Among these three groups, subsistence and income of farmer and business groups would be affected because a part of production land is recovered or business is
suspended during construction. Whereas, the public servant group is free from this impact. Among households affected in terms of land, no household is required to resettle.

The Project also affects households of ethnic minorities such as Muong, Tay, Nung, Cao Lan, San Riu and Thai. However, such impact is evaluated as negligible and temporary due to strict requirements on selecting route direction and technical solutions of the Project to minimize recovery of land, property, trees and crops of local persons.

Table 4.1.3: Number of affected households

<table>
<thead>
<tr>
<th>No.</th>
<th>Province</th>
<th>Number of communes</th>
<th>Total affected households</th>
<th>Number of affected ethnic minorities households</th>
<th>Affected ethnic minorities</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Number of households</td>
<td>Number of people</td>
<td>Number of households</td>
</tr>
<tr>
<td>1</td>
<td>Nghe An</td>
<td>41</td>
<td>278</td>
<td>1177</td>
<td>19</td>
</tr>
<tr>
<td>2</td>
<td>Ha Tinh</td>
<td>39</td>
<td>180</td>
<td>706</td>
<td>16</td>
</tr>
<tr>
<td>3</td>
<td>Bac Giang</td>
<td>26</td>
<td>136</td>
<td>462</td>
<td>17</td>
</tr>
<tr>
<td>4</td>
<td>Thai Binh</td>
<td>32</td>
<td>141</td>
<td>701</td>
<td>0</td>
</tr>
<tr>
<td>5</td>
<td>Thai Nguyen</td>
<td>17</td>
<td>253</td>
<td>921</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Total:</td>
<td>155</td>
<td>988</td>
<td>3,952</td>
<td>56</td>
</tr>
</tbody>
</table>

4.1.4. Impacts on biological resources

a) Impacts on vegetation:

The Project's impact on vegetation covers temporary and permanent impacts. No part of power grid passes the well-developed forests and virgin forests. It mainly trespasses the scattered secondary forest and planted forest of households and forestation farms (Nghe An province: Nghe An Fruit Tree Company, Song Con Forestation Farm, etc). An area of garden and planted forest area of about 4.54 hectares shall be cut down; expected number of trees to be cut down is up to 14,191 trees. These trees are planted trees in family’s garden.

Cleared garden and forest area mainly include acacia, eucalyptus and some fruit trees such as longan, litchi, mango, and orange. A 7m wide forest exists along the wirelines trespassing the area. The cleared area is not concentrated into one area. On average, number of trees to be cut down in one commune are approximately 115 trees and 0.0369 hectares of garden and forest to be cleared (only 04 provinces of Nghe An, Ha Tinh, Bac Giang and Thai Nguyen have cleared garden and forest area). Generally, impacts on biological resources are relatively negligible. Like mitigation measures for land occupancy and compensation, such environmental impacts may be minimized by limiting the trespassing through forest areas.

Following are areas and quantity of affected trees in project provinces, concretely:
Nghe An Province:

During site clearance, an area of trees available in the route corridor shall be cut down. Trees to be cut down are mainly eucalyptus, acacia and some fruit trees such as longan and mango. Number of trees to be cut down are mainly industrial planted forest (eucalyptus and acacia), the less is garden land of local persons.
<table>
<thead>
<tr>
<th>No.</th>
<th>District</th>
<th>Affected garden and forest land area</th>
<th>Types of affected trees</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Permanent (m²)</td>
<td>Temporarily (m²)</td>
</tr>
<tr>
<td>1</td>
<td>Hung Nguyen District</td>
<td>228.69</td>
<td>721.00</td>
</tr>
<tr>
<td>2</td>
<td>Thanh Chuong District</td>
<td>114.67</td>
<td>364.00</td>
</tr>
<tr>
<td>3</td>
<td>Nam Dan District</td>
<td>41.64</td>
<td>112.00</td>
</tr>
<tr>
<td>4</td>
<td>Dien Chau district</td>
<td>203.88</td>
<td>490.00</td>
</tr>
<tr>
<td>5</td>
<td>Nghi Loc District</td>
<td>267.33</td>
<td>420.00</td>
</tr>
<tr>
<td>6</td>
<td>Quy Hop district</td>
<td>97.25</td>
<td>430.00</td>
</tr>
<tr>
<td>7</td>
<td>Quynh Luu District</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>8</td>
<td>Nghi Xuan District</td>
<td>111.90</td>
<td>579.40</td>
</tr>
<tr>
<td>9</td>
<td>Tan Ky district</td>
<td>554.44</td>
<td>3934.00</td>
</tr>
<tr>
<td>10</td>
<td>Anh Son district</td>
<td>801.82</td>
<td>4335.00</td>
</tr>
<tr>
<td></td>
<td>Total:</td>
<td>2422.00</td>
<td>11385.00</td>
</tr>
</tbody>
</table>

**Ha Tinh Province:**

During Project performance, it is required to clear an area of forestry tree area (acacia, eucalyptus and pine), fruit trees (mango and orange) in the route corridor. Area of trees to be cut down are mainly available in four districts of Cam Xuyen, Nghi Xuan, Duc Tho and Huong Son in Ha Tinh province.

<table>
<thead>
<tr>
<th>No.</th>
<th>District</th>
<th>Affected garden and forest land area</th>
<th>Types of trees</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Permanent (m²)</td>
<td>Temporarily (m²)</td>
</tr>
<tr>
<td>1</td>
<td>Cam Xuyen district</td>
<td>216.90</td>
<td>828.00</td>
</tr>
<tr>
<td>2</td>
<td>Ky Anh district</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>3</td>
<td>Huong Khe district</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>4</td>
<td>Thach Ha district</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>5</td>
<td>Nghi Xuan District</td>
<td>104.08</td>
<td>456.00</td>
</tr>
<tr>
<td>6</td>
<td>Duc Tho District</td>
<td>63.94</td>
<td>320.00</td>
</tr>
<tr>
<td>7</td>
<td>Huong Son District</td>
<td>276.59</td>
<td>1276.00</td>
</tr>
<tr>
<td>8</td>
<td>Loc Ha District</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td></td>
<td>Total:</td>
<td>662</td>
<td>2880</td>
</tr>
</tbody>
</table>

**Thai Nguyen Province:**

The component in Thai Nguyen is launched in six districts (towns); however, only three districts namely Pho Yen, Dai Tu and Dong Hy have affected tree areas. The affected trees to be cut down are mainly industrial trees (acacia and eucalyptus); some
route sections trespass gardens of local persons, affecting some fruit trees (litchi and mango). However, such impact is regarded as negligible and able to be minimized.

A part of the component is conducted in 02 communes, namely Quan Chu and Cat Ne, Dai Tu district, Thai Nguyen Province. Such communes have a partial area located in the protective area of Tam Dao National Park. However, the power supply route for such two communes is not located in the protective area or protective buffer of Tam Dao National Park (because people mainly concentrate on the East of the communes, whereas Tam Dao National Park is situated in the West of the communes). Therefore, it is possible to recognize that no impact on vegetation in this Park is found.

### Bac Giang Province:
During site clearance for the route, it is required to cut down trees with height of over 4m available in the route. Like the above provinces, number of affected trees are mainly industrial trees (acacia and eucalyptus) and fruit-trees (litchi).

<table>
<thead>
<tr>
<th>No.</th>
<th>District</th>
<th>Affected garden and forest land area</th>
<th>Types of trees</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Permanent (m²)</td>
<td>Temporary (m²)</td>
</tr>
<tr>
<td>1</td>
<td>Phu Luong district</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>2</td>
<td>Pho Yen district</td>
<td>849.3</td>
<td>4394.5</td>
</tr>
<tr>
<td>3</td>
<td>Dai Tu district</td>
<td>444.6</td>
<td>2519.0</td>
</tr>
<tr>
<td>4</td>
<td>Dong Hy district</td>
<td>165.7</td>
<td>880.0</td>
</tr>
<tr>
<td>5</td>
<td>Vo Nhai district</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>6</td>
<td>Song Cong town</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td></td>
<td>Total:</td>
<td>1460.0</td>
<td>7794.0</td>
</tr>
</tbody>
</table>

### Thai Binh Province:
No affected trees are found. Regarding Thai Thuy Nature Reserve and Tien Hai Nature Reserve: These two nature reserves stretch from Thai Binh estuary to Hong River estuary through two districts of Thai Thuy and Tien Hai. These nature reserves are mangrove, sand drifts and aquaculture ponds. These areas are 5-10km far from mainland,
hence, power supply wireline construction for 02 communes of Thai Do (Thai Thuy district) and Nam Thinh commune (Tien Hai district) shall completely cause no impact on such nature reserves.

b) Impacts on animal:

Because the Project only passes some planted forests, secondary forests and forestation garden, some small insects and animals losing its living environment are general species. It causes no impacts on rare animals to be protected because it does not harm to any virgin forest, preserved forest and national forest.

Main impacts on ecology may be briefed as follows:

- No new wireline is constructed in Tam Dao National Park campus (in 02 communes of Quan Chu and Cat Ne, Dai Tu district) as well as Thai Thuy and Tien Hai Nature Reserves, Thai Binh province;
- In case areas with planted forests and gardens are trespassed by the Project, trees in the ROW shall be cut down.
- However, land area with trees to be cut down is generally small and negligible against the project scale (approximate 0.0369 hectares of garden and forest per commune, averagely)
- Route plane clearance shall not increase animal hunting. No evidence unveiled that route corridor clearance shall increase the hunting. Hunting remarkably relates to habits, custom or profits brought from forest instead of route corridor clearance.
- Impacts on ecological environment are negligible. The Project is designed to adhere along inter-communal and inter-district road axis. Available pathways are abundant in the area. Wireline construction, creating ROW shall not separate residence areas or cause adverse impacts on wild animals;
- Bird hunting is not remarkably found in the project area. During survey, birds found are not abundant.

4.1.6. Risks during construction

During the project performance, transporting materials and equipment to the site not only increases traffic density in the area but also dangers road users, increasing traffic accident risk.

In addition, during operation of construction plants and equipment, labor accidents may be available in construction site if users and field workers are not correctly guided about safety without proper labor protection equipment.

4.1.7. Solid waste arisen during earthworks

Volume of excavated stone and soil closely relates to number of pylons to be constructed within the project frame.

Table 4.1.7. Number of pylons to be constructed:

<table>
<thead>
<tr>
<th>District</th>
<th>Number of communes</th>
<th>New medium voltage (m)</th>
<th>Number of MV pylons</th>
<th>Number of stations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nghe An</td>
<td>41</td>
<td>56,160</td>
<td>645</td>
<td>85</td>
</tr>
<tr>
<td>Ha Tinh</td>
<td>39</td>
<td>70,006</td>
<td>709</td>
<td>81</td>
</tr>
</tbody>
</table>
Data given in the above table helps us to imagine about soil erosion and surface water impurity risk due to erosion. Regarding the project scale, number of project communes, number of pylons to be constructed are 3,555 pylons and 335 transformer stations in 155 communes of 05 provinces. Accordingly, the Project’s impacts are negligible, 104m far from each other on average. In each position, volume of excavated soil to concrete pile foundation is about 2-2.5m³. Regarding pile positions in garden hills, aggrandizement can be conducted at site; regarding positions in the field for crop cultivation, aggrandizement can be realized in the field, the remaining is used to bank the foundation protection cover. Hence, it is possible to minimize if mitigation measures are strictly adhered.

4.1.8. Impacts on air environment

Excavation of pile foundation and sleepers can generate dust. Dust pollution potentially affects air quality. This impact shall be resonant if it meets wind or it occurs at dry moment, dust shall be abundant and far dispersed, affecting the neighboring residential area as well as local ecology, especially dust in leaf canopy, affecting photosynthesis of trees.

Operation of construction plants and equipment also affects air quality because these vehicles use petroleum or DO fuel as fuel, generating different emission from burning such as dust, CO and SO2. Such substances have higher toxicity against dust in the soil surface and adverse impacts on health of field workers and residential areas near the construction site. Loading and unloading construction materials (stone, sand, cement and so forth) in the material storage field shall cause dust pollution, especially in heavy wind.

Subjects suffered from dust, emission and noise arisen from construction are field workers, road users and some households living near the construction site. Areas with high air pollution are those near the site (impact covers radius of 50m).

However, such impacts may be minimized if mitigation measures are strictly adhered.
5. COMMUNITY CONSULTATION AND INFORMATION DISCLOSURE

During preparing the Project (2010), following works were conducted:

**Activity 1:** Understand and discuss with the local authority about wiring position

**Activity 2:** Make a survey and statistics about impacts

**Activity 3:** Organize meetings with affected households

After finishing survey, the Consultant must notify the local persons and affected communes about the project’s activities. Public notice form should be applied. Such notices must be provided to the local persons with following contents, especially in the project communes:

- General information about Project title, the Project Owner, project scale, names of project districts and communes;
- Possible impacts on environment due to project’s activities;
- Applied mitigation measures to minimize impacts on environment;
- Project implementation plan
- Place to receive the community’s feedback on project-related environmental issues

This activity was launched in June, 2010 in all project districts and communes. Following representatives of organizations were invited and involved in the community consultation meeting, concretely:

- Affected households;
- Fatherland Front Committee
- Women Association;
- Youth union;
- Farmer association
- People’s Committee;
- Other concerned agencies and mass organizations.

Feedback received from the community consultation meetings was briefed as follows:

- Rural power grid quality in this area is very poor, not eligible to satisfy power consumption of local persons; hence, they were very happy if the project was launched. Local persons would completely support the Project Owner and construction Contractors to fulfill the Project;
- The Project may cause some environmental impacts such as noise and dust but its scale and level were negligible and acceptable;
- Local persons were available to cooperate with the Project Owner and construction Contractors to manage the Project’s environmental issues;
- The construction Contractors must commit to clear and return the plane for temporarily employed land lots for Project performance;
- Recommended mitigation measures for noise and dust should be strictly adhered during construction and transportation of raw materials.
Some people also concerned about impacts on water source and soil erosion due to earthworks such as foundation construction. They proposed to construct in the dry season after crops were successfully harvested. The respondents also agreed that this impact was negligible for each separated project. Their feedback would be introduced in Report on EMP.

Some representatives expressed their concern about impacts of construction workers on local persons. However, they were contented with the reply of the Project Group that the Contractors must submit the site organization chart, declare temporary residence for workers, and closely cooperate with the local authority to manage these workers.

Some representatives suggested that the local authority should be notified about the Project Schedule as soon as possible to be able to adjust land use plans without conflict with the project areas.

Details of feedback received from the consultation are described in Appendix 3.

Activity 4: Continue receiving feedback from affected households.

Activity 5: Announce results and determine responsibility in DTM

The Project is only issued with the investment license after a proper adjustment on design, position of wirelines, capacity and technology applied in the project is made in accordance with requirements on immigration and environmental protection. In order to settle requirements of WB’s OP 4.01, the Consultant and NPC must:

- Provide copies of Report on Environmental Impact Assessment, Compensation and Site Clearance Plan, Executive Report in Vietnamese to Communal People’s Committees to Provincial People’s Committees in the project area.

- Advertise on project in some series of main newspapers issued by the locality in 2 months. Notify in public about community opinion collection regarding the project’s main activities, preliminary emigration plan, Report on Environmental Impact Assessment in working hours in 2 months at following locations: 1) Provincial People’s Committees; and 2) Communal People’s Committees.

- Copies of EMP report in English and Vietnamese shall be submitted to Vietnam Development Information Center at 63 Ly Thai To, Hanoi for public announcement.
## 6. ENVIRONMENTAL MANAGEMENT PLAN

### 6.1. MITIGATION MEASURES

Table 6.1. Mitigation Measures applied for the project

<table>
<thead>
<tr>
<th>No.</th>
<th>Impacts</th>
<th>Impact assessment</th>
<th>Mitigation measures</th>
<th>Expenses</th>
<th>Implemented by</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>Pre-construction phase</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Temporary or permanent occupancy of land</td>
<td>Able to minimize</td>
<td>- To thoroughly investigate construction site, consult the local persons to find out the best wiring solution.</td>
<td></td>
<td>The Consultant</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- To avoid areas with ecological value (forest, natural reserve area, wetlands, etc)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- To apply proper compensation level.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Households affected by the Project</td>
<td>Able to minimize</td>
<td>- To require to select wiring solution to minimize housing removal of local persons</td>
<td></td>
<td>The Consultant</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- To increase distance between stations, increase height of the station, using suspended stations and so forth to minimize impacts on households.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- To apply proper compensation for impacts.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>Construction phase</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Impact on surface water environment</td>
<td>Negligible impact</td>
<td>- The Contractor is responsible to implement regulations of Vietnam on waste water discharging into environment.</td>
<td></td>
<td>Construction unit</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- It is recommended to provide mobile toilets or construct a qualified toilet for construction workers at the site. Wastewater from toilets, kitchen, bathroom and washing bath in the worker camps, etc should be pumped into the preliminary treatment system before discharging into the environment.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- When construction is finished, toilets in the camps should safely handle or dispose of waste water</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No.</td>
<td>Impacts</td>
<td>Impact assessment</td>
<td>Mitigation measures</td>
<td>Expenses</td>
<td>Implemented by</td>
</tr>
<tr>
<td>-----</td>
<td>---------</td>
<td>-------------------</td>
<td>---------------------</td>
<td>----------</td>
<td>---------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>sealed effectively.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- It is required to arrange camps and storage fields for construction materials, waste collection areas which are far from the surface water sources of the locality.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Impacts due to slide and erosion</td>
<td>Negligible impact</td>
<td>- Soil excavation and transportation activities in often eroded and slide areas or areas near rivers and lakes should be conducted in dry season, after harvesting during the shortest time.</td>
<td></td>
<td>Contractor</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Guide ways should be provided to drain water for construction areas in the high erosive area.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- It is required to bank dykes and choke dikes to prevent erosion and landslide.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Local persons are encouraged to use redundant soil from pile foundation excavation to bank garden and road and transport at the required place.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Plane should be restored after erecting piles.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Noise and vibration</td>
<td>Negligible impact</td>
<td>- Only construction machines with noise in the allowance limit can be used.</td>
<td>Available in bidding unit price</td>
<td>Contractor</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Drivers should be reminded and encouraged not to use truck’s horn.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Local community should be consulted when it is expected to construct at nighttime. Only construction at nighttime is conducted when approval is released by the community and the community must be notified before constructing at nighttime.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Air pollution due to dust and emission</td>
<td>Negligible impact</td>
<td>- Watering should be often conducted at areas with dust dispersing possibility. It is supposed to wash dirty piles and trucks used to transport raw materials. Construction waste must be removed before leaving the site.</td>
<td>Available in bidding unit price</td>
<td>Contractor</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Fence should be available in case of strong wind and construction site should be daily cleaned.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No.</td>
<td>Impacts</td>
<td>Impact assessment</td>
<td>Mitigation measures</td>
<td>Expenses</td>
<td>Implemented by</td>
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</tr>
</tbody>
</table>
| 7   | Impacts on agricultural production due to temporary occupancy of production land | Negligible impact | - Construction should be conducted after harvesting crops if possible.  
- Proper compensation for damages of agriculture should be applied.  
- Intact status of agricultural land should be recovered for construction sites after construction. | Available in bidding unit price | Contractor |
| 8   | Impacts on traffic                                                                 | Negligible impact | - Construction activities should be minimized (excavation, cabling) in areas with high traffic density.  
- Warning signs should be used for construction sites and workers should be arranged to guide traffic when vehicles temporarily stop on road to load materials and equipment.  
- Local authority should be closely cooperated to arrange material transportation.  
- Regulations on traffic safety should be strictly adhered. | Available in bidding unit price | Contractor |
| 9   | Damages on local road system                                           | Able to minimize  | - The contractor should commit not to use over-heavy duty trucks, which can damage the local road system.  
- It is prohibited over- heavy-duty trucks transporting construction materials or equipment into roads. Vehicle loads should be divided and reduced so that road is not damaged.  
- It is required to repair roads damaged and degraded due to project’s activities. | Available in bidding unit price | Contractor |
<table>
<thead>
<tr>
<th>No.</th>
<th>Impacts</th>
<th>Impact assessment</th>
<th>Mitigation measures</th>
<th>Expenses</th>
<th>Implemented by</th>
</tr>
</thead>
</table>
| 10  | Solid waste from excavation and construction                           | Negligible impact         | - The Contractor must commit to clean the sites and transport solid waste to the required places.  
    |                                                                           |                            | - Re-use process should be applied right at the Site, the remaining shall be transported to the waste collection storage to continue the recycle process to produce organic fertilizer and bury as specified in the technological process on environmental safety assurance. | Available in bidding unit price       | Contractor              |
| 12  | Encroach the living environment of fauna and flora                      | Negligible impact         | - Clearance area should be minimized by planning and constructing wirelines in the available vegetation.  
    |                                                                           |                            | - It is supposed to apply manual clearance and keeping vegetation within the allowable maximum scope.  
    |                                                                           |                            | - Plant should not be burnt right at clearance place. Plants should be collected in an accepted place. Local persons are encouraged to use the cut plants for useful purposes such as composting green manure or fertilizing. |                                        | Contractor and Operator  |
| 13  | Conflict between construction workers and local people                   | Negligible impact         | - Local persons should be employed for simple construction works at most to avoid emigration phenomenon.  
    |                                                                           |                            | - In case worker camps are situated near the communal center, the Employer should require the Contractor to provide fully and timely information about such construction worker groups to the Communal People's Committee of that area. By exchanging in an opened-hearted and bidirectional manner, the CPC and the Contractor can arrange proper accommodation for this worker group.  
    |                                                                           |                            | - Workers should be educated to conduct polite behaviors with local persons and vice versa.  
<pre><code>|                                                                           |                            | - Clearance: In the general provisions of the Contract, it is required to specify that: After finishing the Project, camps must be clearly removed and |                                        | Contractor              |
</code></pre>
<table>
<thead>
<tr>
<th>No.</th>
<th>Impacts</th>
<th>Impact assessment</th>
<th>Mitigation measures</th>
<th>Expenses</th>
<th>Implemented by</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>Labor health and safety</td>
<td>Able to minimize</td>
<td>- Healthcare service should be offered to worker teams.</td>
<td>Available in bidding unit price</td>
<td>Contractor</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Workers should be disseminated with regulations and procedures on labor safety.</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>- Safety equipment should be provided to workers during construction.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- It is prohibited to employ labors without knowledge about labor safety and labor protection equipment.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Unauthorized persons are not allowed to enter the construction site. Dangerous areas should be fenced and provided with warning signs in accordance with regulations on traffic safety.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Supervisor of labor and construction safety must be available at site during construction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Development and poverty elimination</td>
<td>Positive impacts</td>
<td>- Mitigation Measures are not required for the project</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Land subdivision and increase of possibility to penetrate into wild regions</td>
<td>Negligible impact</td>
<td>- Unused roads should be restored to its intact status.</td>
<td>Operation expenses</td>
<td>The Project Owner</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- The local Department of Forest Natural Resources should be closely worked with to check use of forest path of local persons at areas with forests or remote areas.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Local persons and technicians should be trained about animal protection measures during clearing the ROW.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No.</td>
<td>Impacts</td>
<td>Impact assessment</td>
<td>Mitigation measures</td>
<td>Expenses</td>
<td>Implemented by</td>
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</tr>
<tr>
<td>17</td>
<td>Labor health and safety</td>
<td>Able to minimize</td>
<td>- Power safety regulation should be popularized to the local persons.</td>
<td>Operation expenses</td>
<td>The Project Owner</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- It is supposed to adhere to Decree No. 106 of the Government on power</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>grid protection.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Local persons and technicians should be regularly trained about labor</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>safety issues.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- It is not allowed to burn leaves recovered during ROW clearance.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Reduction of air pollution caused by diesel generators</td>
<td>Positive impacts</td>
<td>- Mitigation Measures are not required for the project</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>EMF</td>
<td>No impact</td>
<td>- Wirelines are designed as standard, the minimum distance of phase-ground is</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>more than 8m, and hence, impacts on local persons cannot be available.</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>- However, when the operation and maintenance requires minimum distance,</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>specific training on safety measures and safety equipment for individual and other</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>preventative measures should be determined in the health and safety assurance plan.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(Recommendation on minimum safety distance applicable to worker is as follows:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>+ 2-15 kV: 0.6 m</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>+ 15.1-35kV: 0.71 m</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Impacts on birds and airplanes</td>
<td>No impact</td>
<td>- Mitigation Measures are not required for the project</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>Hazardous pollution due to oil</td>
<td>Negligible impact</td>
<td>- Change of transformer oil should be conducted in workshop.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Oil with PCB is not used.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No.</td>
<td>Impacts</td>
<td>Impact assessment</td>
<td>Mitigation measures</td>
<td>Expenses</td>
<td>Implemented by</td>
</tr>
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</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Oil recovery methods should be applied during maintenance to avoid impacts on environment.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

No.: ReII – Additional Financing – Phase 2 – Subprojects in Nghe An, Ha Tinh, Bac Giang, Thái Bình and Thái Nguyên Province.
Report: Environmental Management Plan (EMP)
6.2 DISCOVERY PROCESS
During construction and operation of the project, archaeology, injuries and electric shock, etc are detected; it is possible to handle as follows:

### Table 6.2: Cultural detecting process template during earthworks

<table>
<thead>
<tr>
<th>No.</th>
<th>Discovery</th>
<th>Solution</th>
<th>Implemented by</th>
</tr>
</thead>
</table>
| 1   | Find kinds suspected to be archaeology during excavation                  | Protect the site and notify the local authority and cultural and museum management agencies or Department of Culture & Information. Hand in the kinds to the competent authority. Determine construction continuity possibility of the works or suspend to continue investigation. | - Communal People's Committee  
- Department of Culture and Information  
- Construction unit  
- Project Management Unit |
| 2   | Find tombs and remains during earthworks                                  | Protect the site and notify the local authority. Determine person/method and time to retrieve and recommend the next steps. Launch retrieval works.                                                           | - Construction unit  
- Project Management Unit  
- Local authority                                                                                                      |
| 3   | Have claims of local persons on environmental pollution                   | Settle problems as soon as possible. Note it in the work log. Discuss with the Project Owner/ Local authority about claim settlement measures.                                                             | - Project Management Unit  
- Construction unit                                                                                                         |
| 4   | Accidents due to unexploded ordinances or explosive materials left from the war | Conduct emergency treatment and promptly move the victims to the nearest clinical stations and hospital. Protect site and erect warning signs. Prepare the site minutes.                                      | - Construction unit  
- Project Management Unit  
- Local authority (commune and province)                                                                                   |
| 5   | Detect explosive materials                                                | Protect the site. Report the competent authority.                                                                                                                                                    | - Construction unit  
- Military headquarters of                                                                                                  |
<table>
<thead>
<tr>
<th>6</th>
<th>Other emergencies (specify)</th>
<th>Contact with the nearest military unit to receive necessary support</th>
<th>commune, district and province</th>
</tr>
</thead>
</table>

### 6.3 MONITORING PROGRAM

**Table 6.3. Environmental Monitoring Plan**

<table>
<thead>
<tr>
<th>Environmental impacts</th>
<th>Objects to be monitors</th>
<th>Monitoring location</th>
<th>Monitoring methods</th>
<th>Monitoring date/frequency</th>
<th>Expenses</th>
<th>Monitoring responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>
| 1. Clearing vegetation / cut down trees | Clearance techniques and scope | Along the corridor road | Observe | Once per week in the first month, then monthly | Recorded in the Contractor’s expenses | - Consult the construction supervisor of the Project Owner  
- Consult the community  
- District People’s Committees of the component (if necessary) |
<table>
<thead>
<tr>
<th>Environmental impacts</th>
<th>Objects to be monitors</th>
<th>Monitoring location</th>
<th>Monitoring methods</th>
<th>Monitoring date/frequency</th>
<th>Expenses</th>
<th>Monitoring responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Rural traffic</td>
<td>Traffic road surface situation, traffic density Quantity, load and frequency of vehicles and construction machines available in road</td>
<td>Along the road</td>
<td>Observe</td>
<td>Weekly when many machineries and materials are transported to the area</td>
<td>- Available in bidding unit price</td>
<td>- Consult the construction supervisor of the Project Owner - Consult the community - District People’s Committees of the component (if necessary)</td>
</tr>
</tbody>
</table>
### Environmental Impacts

<table>
<thead>
<tr>
<th>Environmental Impacts</th>
<th>Objects to be Monitors</th>
<th>Monitoring Location</th>
<th>Monitoring Methods</th>
<th>Monitoring Date/Frequency</th>
<th>Expenses</th>
<th>Monitoring Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>3. Surface water quality, sediment and erosion</td>
<td>Water drainage system from construction area and silt pits</td>
<td>Within the station campus of route corridor, surface water source near the construction site, stations and pylons in sloppy places</td>
<td>Observe</td>
<td>While and after heavy rain</td>
<td>None</td>
<td>- Consult the construction supervisor of the Project Owner</td>
</tr>
<tr>
<td></td>
<td>Weather when excavating</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- Consult the community</td>
</tr>
<tr>
<td></td>
<td>Clearance level of vegetation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- District People’s Committees of the component (if necessary)</td>
</tr>
<tr>
<td>Environmental impacts</td>
<td>Objects to be monitors</td>
<td>Monitoring location</td>
<td>Monitoring methods</td>
<td>Monitoring date/frequency</td>
<td>Expenses</td>
<td>Monitoring responsibility</td>
</tr>
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</tr>
<tr>
<td>4. Dust and air pollution</td>
<td>Tightness of tank bottom and canvas in trucks transporting soil and sand; Check dust dispersing possibility from soil and sand piles</td>
<td>Along the transportation road; Houses of local persons or works nearest to the site</td>
<td>Observe</td>
<td>Before/While transporting, dry, hot and windy days</td>
<td>- Consult the construction supervisor of the Project Owner; - Consult the community; - District People’s Committees of the component (if necessary)</td>
<td></td>
</tr>
<tr>
<td>5. Noise</td>
<td>Noise from construction vehicles and machines and preparation/construction activities; Hours to conduct construction activities as well as raw material loading</td>
<td>House of local persons along the route</td>
<td>By special equipment, using noise measuring equipment, interviewing local persons</td>
<td>While construction, high noise is available; when claims about noise is available.</td>
<td>Available in bidding unit price</td>
<td>- Consult the construction supervisor of the Project Owner; - Consult the community; - District People’s Committees of the component (if necessary)</td>
</tr>
<tr>
<td>Environmental impacts</td>
<td>Objects to be monitors</td>
<td>Monitoring location</td>
<td>Monitoring methods</td>
<td>Monitoring date/frequency</td>
<td>Expenses</td>
<td>Monitoring responsibility</td>
</tr>
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<td>---------------------------------------------</td>
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</tr>
<tr>
<td>6. Sanitation at the site</td>
<td>Domestic waste,; construction waste and waste water at the site</td>
<td>Water drainage path, camp, station and waste treatment places</td>
<td>Observe</td>
<td>Weekly and before acceptance</td>
<td>Available in bidding unit price</td>
<td>- Consult the construction supervisor of the Project Owner</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- Consult the community</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- District People’s Committees of the component (if necessary)</td>
</tr>
<tr>
<td>7. Discharging waste from pile foundation activities</td>
<td>Surplus waste, stone and soil from pile foundation activities</td>
<td>Along the wireline</td>
<td>Observe</td>
<td>While pile foundation excavation</td>
<td>Available in bidding unit price</td>
<td>- Consult the construction supervisor of the Project Owner</td>
</tr>
<tr>
<td></td>
<td>Vehicles and instruments used to transport surplus waste with assurance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- Consult the community</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- District People’s Committees of the component (if necessary)</td>
</tr>
<tr>
<td>Environmental impacts</td>
<td>Objects to be monitors</td>
<td>Monitoring location</td>
<td>Monitoring methods</td>
<td>Monitoring date/frequency</td>
<td>Expenses</td>
<td>Monitoring responsibility</td>
</tr>
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</tr>
</tbody>
</table>
| 8. Safety of worker and local persons | Meet to popularize labor safety and labor safety equipment  
First aid boxes, storage place of dangerous materials  
Warning objects at dangerous place | At station and camps  
Pile foundation to be constructed and place where wiring is conducted on road | Observe, interview, read site diary | Daily | Available in bidding unit price | Safety supervisor of the Contractor and the Project Owner  
Community supervisor  
District People’s Committees of the component (if necessary) |

**Operation**

<p>| Electric field and magnetic field | Electric field intensity and magnetic field intensity | House of local persons along the route | Electrometer/magnetometer | When local persons have claims | - Recorded in the operation expenses of wirelines | NPC |
| Noise | Noise and distance from station to the nearest house of local person | At the nearest house of local person | Use measurement device | In case of claims | Recorded in the operation expenses of wirelines | NPC |</p>
<table>
<thead>
<tr>
<th>Environmental impacts</th>
<th>Objects to be monitors</th>
<th>Monitoring location</th>
<th>Monitoring methods</th>
<th>Monitoring date/frequency</th>
<th>Expenses</th>
<th>Monitoring responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety</td>
<td>Inspection and maintenance works of the management team in charge of transformer station</td>
<td>Office of station management team</td>
<td>Check diary/plan Observe</td>
<td>6 months or annually</td>
<td>Recorded in the operation expenses of wirelines</td>
<td>NPC</td>
</tr>
<tr>
<td></td>
<td>Fire protection equipment</td>
<td>At office of station management team</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

THANG LONG POWER DEVELOPMENT JOINT STOCK COMPANY
### 6.4. IMPLEMENTATION OF ENVIRONMENTAL MONITORY PLAN

#### Table 6.4. Implementation of Environmental Monitory Plan

<table>
<thead>
<tr>
<th>Unit</th>
<th>Duties</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Network Project Management Board (under Northern Power Corporation).</td>
<td>• Assist and provide contacts in case of environmental problems.</td>
</tr>
<tr>
<td>Power Network Project Management Board (under Northern Power Corporation) and the Consultant: Thang Long Power Development Joint Stock Company:</td>
<td>• Be in charge of project performance on daily basis.</td>
</tr>
<tr>
<td></td>
<td>Including activities as follows:</td>
</tr>
<tr>
<td></td>
<td>i. Preparing plans and implementing environmental management activities during construction.</td>
</tr>
<tr>
<td></td>
<td>ii. Cooperating with other stakeholders relating to the environmental management activities.</td>
</tr>
<tr>
<td></td>
<td>iii. Conducting internal supervision and independent control.</td>
</tr>
<tr>
<td></td>
<td>iv. Supervising and funding the supervision activities.</td>
</tr>
<tr>
<td></td>
<td>v. Reporting environmental information to the relevant stakeholders.</td>
</tr>
<tr>
<td>Power companies of provinces (Thai Nguyen, Bac Giang, Thai Binh, Nghe An and Ha Tinh)</td>
<td>• Be responsible for operating the project including environmental management and monitoring activities during operation.</td>
</tr>
<tr>
<td>Power Network Project Management Board (under Northern Power Corporation) and Power companies of provinces (Thai Nguyen, Bac Giang, Thai Binh, Nghe An and Ha Tinh)</td>
<td>• Be in charge of supervising the Contractor during construction including implementation of environmental management activities in EMP</td>
</tr>
<tr>
<td>Contractor</td>
<td>• Be responsible for complying with the technical requirement of the Environmental Management Plan Including:</td>
</tr>
<tr>
<td></td>
<td>i. Preparing the detail EMP of the bid package based on this EMP as guided by the environmental safety official of the Project Owner and submit the Project Owner for review and approval</td>
</tr>
<tr>
<td></td>
<td>ii. Apply the mitigation measures in the EMP during construction</td>
</tr>
<tr>
<td></td>
<td>iii. Ensure safety for construction workers and local person during construction.</td>
</tr>
</tbody>
</table>
### Unit | Duties
--- | ---
iv. Adhere policies of Vietnam and WB about environmental protection during construction.

**Representatives of local community**
- Involve in environmental monitoring and management

**Department of Environmental Management under the Department of Natural Resources and Environment of the District People’s Committee**
- Supervise the implementation of EMP under the Environmental License
6.5. REPORTING PROCESS

Table 6.5.1. Concerned stakeholders in environmental observation issues

<table>
<thead>
<tr>
<th>No.</th>
<th>Unit</th>
<th>Main responsibility</th>
<th>Reporting contents and forms</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Contractor</td>
<td>- Apply the Mitigation Measures as recommended</td>
<td>- Refer to Appendix 1.2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Report the Project Management Unit on applied Mitigation Measures</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Technical supervisor of the Project</td>
<td>- Observe (by observing) and evaluate environmental parameters in the Report on</td>
<td>- Refer to Appendix 1.3</td>
</tr>
<tr>
<td></td>
<td>Management Unit</td>
<td>Environmental Impact Assessment.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Report the Project Management Unit</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Communal and community staffs at the</td>
<td>- Observe (by observing) and evaluate environmental parameters in the Report on</td>
<td>- Refer to Appendix 1.1</td>
</tr>
<tr>
<td></td>
<td>project performance place</td>
<td>Environmental Impact Assessment.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Report the Project Management Unit</td>
<td></td>
</tr>
</tbody>
</table>

**Construction Contractor**

The Construction Contractor shall submit a monthly report on progress of implementing the Site Environmental Management Plan to the Power Company in project provinces. This Site Environment Management Plan Report must contain contents as follows:

- **Cover page**
- **Table of Contents**
- **Introduction**
  - A paragraph introduces about purposes of the Report
- **Updates of changes in preferences against the Final Report**
  - List preference issues of the Final Report
  - List progress of settling each issue implemented by the Contractor
  - List all unsolved issues and give out recommendations for such issues. If such issues are not solved, reasons should be specified.
- **Results of environmental management activities in reporting phase**
  - Report mitigation measures in Site Environmental Management Plan (SEMP).
- Are set objectives satisfied by these mitigation measures? If not, why? Explanations should be clear and complete.

### 6.6. COST ESTIMATES FOR IMPLEMENTING SEMP

Table 6.6.1. Cost estimates for capacity building training courses

<table>
<thead>
<tr>
<th>No.</th>
<th>Training</th>
<th>Expense (VND)</th>
<th>Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Train about safety and mitigation measures for workers and contractor</td>
<td>15 persons x 2 days x 5 provinces x 200,000 VND/person = 30,000,000 VND</td>
<td>Included in expenses of bid package</td>
</tr>
<tr>
<td>2</td>
<td>Train about EMP management and supervision for PMU/PC officials</td>
<td>3 persons x 2 days x 5 provinces x 200,000 VND/person = 6,000,000 VND</td>
<td>Included in operating cost of the Agency (Power Network Project Management Board and provincial power companies)</td>
</tr>
<tr>
<td>3</td>
<td>Train about community monitoring for representatives of local persons</td>
<td>1 person x 155 communes of the locality to be attended</td>
<td>Included in project management operating cost of the Agency (Power Network Project Management Board and provincial power companies)</td>
</tr>
<tr>
<td>4</td>
<td>Train about implementation of environmental management plan</td>
<td>2 persons x 2 days x 5 provinces x 200,000 VND/person = 4,000,000 VND</td>
<td>Included in operating cost of the Agency (Power Network Project Management Board and provincial power companies)</td>
</tr>
<tr>
<td>5</td>
<td>NPC’s training on safety (regularly conducted by the provincial power companies)</td>
<td>8 persons x 5 provinces x 1 day x 200,000 VND/person = 8,000,000 VND</td>
<td>Included in operating costs of provincial power company.</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>110,000,000 VND</strong></td>
<td></td>
</tr>
</tbody>
</table>
**Table 6.6.2 Cost estimates of EMP performance (VND)**

<table>
<thead>
<tr>
<th>No.</th>
<th>Items</th>
<th>Construction</th>
<th>Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Mitigation measures</td>
<td>This expense is included in the Contract signed with the construction Contractor</td>
<td>This expense is included in operating costs of provincial power company.</td>
</tr>
<tr>
<td>2</td>
<td>Capacity building supervision and improvement training expenses</td>
<td>5 persons x 10,000,000 x 5 = 25,000,000</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Additional provision</td>
<td>50,000,000</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td><strong>TOTAL</strong></td>
<td><strong>300,000,000</strong></td>
<td>This expense is included in operating costs of provincial power company.</td>
</tr>
<tr>
<td></td>
<td><strong>TOTAL EXPENSE FOR ENTIRE PROJECT</strong></td>
<td></td>
<td><strong>410,000,000 VND</strong></td>
</tr>
</tbody>
</table>
REFERENCES

1. Report on Environmental Situation of 05 provinces in 2009 - DoNRE
2. WB’s Source Materials on Environment Impact Assessment
4. Source materials on protective areas in Vietnam – Bird Life International
5. Policy Framework on Environment for Rural Energy Project No. 2- Additional Sponsor
## Appendix 1: Sample Reports

### Appendix 1.1. Sample data collected from communal authority

### SAMPLE DATA COLLECTED FROM COMMUNAL REPORT

**Name of Project Commune:**

**Evaluation phase:**

**Environmental impacts:**

<table>
<thead>
<tr>
<th>Impacts/ Mitigation Measures</th>
<th>Acknowledgement of the local authority</th>
<th>Acknowledgement of the community</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vehicles and project activities cause dust in the area</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vehicles and project activities cause noise in the area</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Project activities cause river and lake water pollution in the area</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cutting trees of the project affects environment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Project activities cause impacts on agricultural and residential land</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Project activities cause impacts on cultural and historical relics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The Project’s construction site affects local traffic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solid or liquid waste is discharged into environment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The Project’s workers lay impacts on socio-economic and health aspect in the area</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accidents</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dust mitigation measures</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Erosion and sediment mitigation measures</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Construction material collection place, etc, to avoid consequences due to waterlog or chemical pollution, etc</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waste management measures</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Project activities affect birds, animals or rare plants</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Impacts/ Mitigation Measures | Acknowledgement of the local authority | Acknowledgement of the community
--- | --- | ---
Trucks transporting raw materials damage road system | | |
Others | | |

**Recommendations**

- Construction activities near the hospital must be limited with working hours from 07:00 to 11:00 in the morning and from 14:00- 17:00 in the afternoon. The period from 11:00 to 14:00 is the tea break of officials and patients to be kept quiet.
- More attention should be made when clearing construction camps
- The Contractor must ensure to store columns and construction waste at required places
- It is required to fully provide the safety equipment and training programs to workers to minimize labor accidents, etc, especially for local workers because they neglect about labor safety.

**Signature of representatives of community supervision board:**
**Title:**
**Date:**

------------------------------------------------------------------------------------------------------------------------------------
### Appendix 1.2. Sample Report on Site Environmental Management Observation

(Applied for Contractor)

**Project Title:**

**Project site:**

**Contractor's name:**

**Project commencement report or monthly report:**

**Date of Report:**

<table>
<thead>
<tr>
<th>No.</th>
<th>Impacts</th>
<th>Implemented mitigation measures</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Construction phase</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Water surface pollution</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Noise and vibration</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Soil erosion</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Air pollution</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Impacts on agricultural production due to temporary occupancy of production land</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Impacts on traffic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Damages on local road system</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Solid waste from excavation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Impacts on environment caused by construction workers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Conflict between construction workers and local people</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Labor health and safety</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Prepared by:**

**Title:**

**Address:**

**Telephone:**
Appendix 1.3. Sample Report on Site Environmental Observation Parameters
(This Form is applied for Environmental Observation Report of the Construction Supervision Consultant)

<table>
<thead>
<tr>
<th>No.</th>
<th>Parameters</th>
<th>Evaluation on feedback of supervisor and community</th>
<th>Remarks/Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>During construction:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Water impurity and erosion phenomenon</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Noise surrounding site and neighboring residential areas</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Dust</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Management and control of cutting trees down and temporary road for construction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Solid waste and sanitation clearance after construction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Sanitation and labor safety equipment for workers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Impacts on traffic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Road damages</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Situation of implementing labor safety protection measures</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Construction materials management</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Impacts on wild animas and natural resources</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Bio-diversification loosing signs (if any)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Signs of encroaching cultural and historical relics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Others environmental issues (if any)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Parameters** | **Evaluation on feedback of supervisor and community** | **Remarks/Recommendations**
--- | --- | ---
**During operation:**
15 | ROW protection |  
16 | Impacts on wild animas and natural resources |  

**Implemented by:**

**Title:**

**Appendix 1.4. Procedures on supervision report submission**

<table>
<thead>
<tr>
<th>No.</th>
<th>Issues to be reported</th>
<th>The first reporting level</th>
<th>The second reporting level</th>
<th>The third reporting level (Some copies submitted to Department of Natural Resources and Environment)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>By: Contractor</td>
<td>By: PMU</td>
<td>By: Provincial People’s Committees</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Frequency: Monthly</td>
<td>Frequency: Semi-annual</td>
<td>Frequency: Semi-annual</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Submitted to: PMUs</td>
<td>Submitted to: PMU</td>
<td>Submitted to: WB</td>
</tr>
<tr>
<td></td>
<td>Construction phase</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Implementing mitigation measures and site environment management plan</td>
<td>By: Technical supervisor of PMU</td>
<td>By: PMU</td>
<td>By: Provincial People’s Committees</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Frequency: Monthly</td>
<td>Frequency: Semi-annual</td>
<td>Frequency: Semi-annual</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Submitted to: PMU</td>
<td>Submitted to: PMU</td>
<td>Submitted to: WB</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Environmental monitoring</td>
<td>By: Technical supervisor of PMU</td>
<td>By: PMU</td>
<td>By: Provincial People’s Committees</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Frequency: Monthly</td>
<td>Frequency: Semi-annual</td>
<td>Frequency: Semi-annual</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Submitted to: PMU</td>
<td>Submitted to: PMU</td>
<td>Submitted to: WB</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Frequency: Twice during project performance. One during construction, one after finishing construction*  
*Submitted to: WB*
<table>
<thead>
<tr>
<th>Operation phase</th>
<th>and PMUs of the Project Owner</th>
<th>By: District power companies</th>
<th>By: PMU PMUs of the Project Owner</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Environmental monitoring including safety issues</td>
<td>By: District power companies</td>
<td>Frequency: Semi-annual</td>
<td>Frequency: Semi-annual</td>
</tr>
<tr>
<td></td>
<td>Submitted to: Local PC (province)</td>
<td>Submitted to: Local PC (province)</td>
<td>Submitted to: Provincial People’s Committees</td>
</tr>
<tr>
<td></td>
<td>By: Provincial People’s Committees</td>
<td>Frequency: Annual</td>
<td>Frequency: Annual</td>
</tr>
<tr>
<td></td>
<td>Submitted to: WB</td>
<td>Submitted to: WB</td>
<td>Submitted to: WB</td>
</tr>
</tbody>
</table>
APPENDIX 2: ENVIRONMENTAL LICENSE OF THE PROJECT

------------------

UỶ BAN NHÂN ĐAN
HUYỆN LƯC NGÂN
CỘNG HOÀ XÃ HỘI CHỦ NGHĨA VIỆT NAM
Độc lập - Tự do - Hạnh phúc
Số:\/GKN-UBND
Lục Ngạn, ngày 01 tháng 04 năm 2010

GIÁY XÁC NHẬN ĐÁN ĐÁY
BẢN CAM KẾT BẢO VỆ MÔI TRƯỜNG

Cần cừ Luật Bảo vệ môi trường năm 2005;
Cần cừ Nghị định số 80/2006/ND-CP ngày 09 tháng 8 năm 2006 của Chính phủ về việc quy định chỉ tiêu và hướng dẫn thi hành một số điều của Luật Bảo vệ môi trường năm 2005; Nghị định số 21/2008/ND-CP ngày 28 tháng 02 năm 2008 của Chính phủ về sửa đổi, bổ sung một số điều của Nghị định số 80/2006/ND-CP;
Cần cừ Thông tư số 05/2008/TTL-BTNMT ngày 08 tháng 12 năm 2008 của Bộ Tài nguyên & Môi trường hướng dẫn về đánh giá môi trường chi tiết, đánh giá tác động môi trường và cam kết bảo vệ môi trường;
Xét Công văn đề nghị số 893/BDALD-KH ngày 10 tháng 9 năm 2010 của Ban quản lý Dự án lưới điện - Tổng công ty Điện lực miền Bắc về việc đề nghị xác nhận Bản cam kết bảo vệ môi trường của Dự án Năng lượng nổ trọng 2 (RE2) tại truy bổ sung phân trung áp tính Bắc Giang; Tờ trình số 7/20 /TT-TNMT ngày 2 tháng 10 năm 2010 của Phòng Tài nguyên và Môi trường.

CHỦ TỊCH UBND HUYỆN LƯC NGÂN

1. Xác nhận Bản cam kết bảo vệ môi trường của Ban quản lý Dự án lưới điện - Tổng công ty Điện lực miền Bắc - chủ Dự án Năng lượng nổ trọng 2 (RE2) tại truy bổ sung phân trung áp tính Bắc Giang; dự kiến thực hiện dự án: Trên địa bàn các xã Biên Đông, Quý Sơn, Phong Văn, Tân Sơn, Tân Quang-huyện Lục Ngạn.

2. Chủ Dự án có trách nhiệm thực hiện đúng và đầy đủ những nội dung về bảo vệ môi trường nêu trong Bản cam kết bảo vệ môi trường, không được làm ảnh hưởng đến các hồ xung quanh và phải thực hiện nghiêm yêu cầu bất buộc sau đây:


TCVN 5938:2005- Chất lượng khí thải- Nồng độ tối đa cho phép của một số chất độc hại trong không khí xung quanh.

TCVN 5939:2005 - Chất lượng khí thải- Tiêu chuẩn khí thải công nghiệp đối với bụi và các chất vô cơ.


2.3 Tiếng ồn đạt TCVN 5949 : 1998 - Tiếng ồn ngoài khu vực công cộng và dân cư. Mức ồn tối đa cho phép.
2.4 Chất thảo nhân: Thực hiện theo đúng nội dung neu trong cam kết BVMT.

2.5 Chủ đầu tư có trách nhiệm đăng ký Bàn cam kết bảo vệ môi trường bổ sung khi có những thay đổi cơ bản về công nghệ hoặc quy mô, công suất hoặc địa điểm thực hiện.

3. Giấy xác nhận này có hiệu lực kể từ ngày ký.

Bàn cam kết bảo vệ môi trường của dự án là cơ sở để các cơ quan quản lý nhà nước về bảo vệ môi trường giám sát, kiểm tra, thanh tra việc thực hiện bảo vệ môi trường của dự án.

Nơi nhận:
- Chủ đầu tư (thực hiện);
- B/Nam: PCT UBND huyện;
- Phòng TN&MT Lạc Nguyên;
- Lưu VT.

CHỦ TỊCH

PHÓ CHỦ TỊCH

LÁ VĂN NAM
GIẤY XÁC NHẬN ĐÀNG KÝ BẢN CAM KẾT BẢO VỆ MÔI TRƯỜNG
Của dự án: Năng lượng nông thôn 2 (RE2) phân mở rộng trên địa bàn huyện Phố Yên, Đại Tú, Đông Hy, Võ Nhai, Phú Lương, Thị xã Sông Công, tỉnh Thái Nguyên

UỶ BAN NHÂN Đ런 HUYỆN PHỐ YEN
XÁC NHẬN


Điều 2. Chủ dự án có trách nhiệm thực hiện đúng và đầy đủ những nội dung về bảo vệ môi trường nêu trong bản cam kết bảo vệ môi trường.

Điều 3. Bản cam kết bảo vệ môi trường của dự án là cơ sở để các cơ quan quản lý nhà nước về bảo vệ môi trường giám sát, kiểm tra, thanh tra việc thực hiện bảo vệ môi trường của dự án.


Nơi nhận:
- Chủ dự án;
- Phòng TNMT;
- Lưu.

TM. ỦY BAN NHÂN Đ런 HUYỆN

[Signature]

KT. CHỦ TỊCH
PHÓ CHỦ TỊCH
Lê Thanh Tuyết
<table>
<thead>
<tr>
<th>Project</th>
<th>ReII – Additional Financing – Phase 2 – Subprojects in Nghe An, Ha Tinh, Bac Giang, Thái Bình and Thái Nguyên Province.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Report</td>
<td>Environnemental Management Plan (EMP)</td>
</tr>
</tbody>
</table>
GIÁY XÁC NHẬN ĐĂNG KÝ BẢN CAM KẾT BẢO VỆ MÔI TRƯỜNG

Của Dự án: Năng lượng nông thôn II (RE2) Phân mô rộng tỉnh Thái Bình
THƯỞNG ĐỊA PHÂN HUYỆN ĐỒNG HƯNG

XÁC NHẬN


Điều 2. Chủ dự án có trách nhiệm thực hiện đúng và đầy đủ những nội dung về bảo vệ môi trường nêu trong Bản cam kết bảo vệ môi trường.

Điều 3. Bản cam kết bảo vệ môi trường của Dự án là cơ sở để các cơ quan quản lý nhà nước về bảo vệ môi trường giám sát, kiểm tra, thu tra viế thực hiện bảo vệ môi trường của Dự án.

Điều 4. Giấy xác nhận này có giá trị kể từ ngày ký./.

Nơi nhận:
- Chủ dự án;
- Lưu VT; TNMT.
Điều 1. Chủ đầu tư Ban quản lý Dự án Lưới điện- Tổng công ty điện lực miền Bắc đã có công văn số 891/BDALD-KH ngày 10 tháng 9 năm 2010 về việc xác nhận đăng ký bản cam kết bảo vệ môi trường của Dự án NLNT 2 mở rộng tỉnh Nghệ An (Phần trung áp)
Điều 3. Bán cam kết bảo vệ môi trường của Dự án là cơ sở để các cơ quan quản lý nhà nước về bảo vệ môi trường giám sát, kiểm tra, thanh tra việc thực hiện bảo vệ môi trường trong suốt quá trình thi công xây dựng và vận hành Dự án.


Nơi nhan:
- Phòng TN-MT
- Chủ trách
- Lưu VT-UB

TM-UX, BAN NHÂN DÀN
CHỦ TỊCH

Vũ Văn Đỉnh
GIÁY XÁC NHẬN ĐẲNG KÝ BẢN CAM KẾT BẢO VỆ MÔI TRƯỜNG

Của dự án: “Nâng lương nông thôn II mở rộng phân trung áp khu vực phía Bắc tỉnh Hà Tĩnh” của Ban quản lý dự án lưu diệt

Căn cứ Luật Bảo vệ môi trường ngày 29 tháng 11 năm 2005;
Căn cứ Nghị định số 80/2006/ND-CP ngày 09 tháng 8 năm 2006 của Chính phủ về việc quy định chi tiết và hướng dẫn thi hành một số điều của Luật Bảo vệ môi trường;
Căn cứ Nghị định số 21/2008/NĐ-CP ngày 28 tháng 02 năm 2008 của Chính phủ về sự đối, bổ sung một số điều của Nghị định số 80/2006/ND-CP ngày 09 tháng 8 năm 2006 của Chính phủ về việc quy định chi tiết và hướng dẫn thi hành một số điều của Luật Bảo vệ môi trường;
Căn cứ Thông tư số 05 /2008/TT-BTNMT ngày 08 tháng 12 năm 2008 của Bộ Tài nguyên và Môi trường hướng dẫn về đánh giá môi trường chiến lược, đánh giá tác động môi trường và cam kết bảo vệ môi trường.

Theo đề nghị của Trưởng phòng Tài nguyên và Môi trường.

CHỦ TỊCH ỦY BAN NHÂN DÂN HUYỆN THẠCH HÀ XÁC NHẬN:

Điều 1. Ngày 10 tháng 9 năm 2010 chủ dự án là Ban quản lý dự án lưu diệt thuộc Tổng công ty Điện lực Miền Bắc đã có công văn kêm theo hồ sơ hợp lé đăng ký xác nhận bản cam kết bảo vệ môi trường của dự án “Nâng lương nông thôn II mở rộng phân trung áp khu vực phía Bắc tỉnh Hà Tĩnh”;

Điều 2. Chủ dự án có trách nhiệm thực hiện đầy đủ và đồng bộ những nội dung về bảo vệ môi trường neu trong bản cam kết bảo vệ môi trường và những yếu cầu bắt buộc sau đây:
- Hoàn trả lại mặt bằng sau khi thi công;
- Tuân thủ thiết kế, đảm bảo không gian an toàn về diện theo đúng quy phạm;
- Trong suốt giai đoạn vận hành phải tự bảo đảm hành lang an toàn tuyến điện.
- Chủ đầu tư phải chịu hoàn toàn trách nhiệm, bởi thương thiết hại và chi phí khắc phục môi trường khi xảy ra sự cố;

Điều 3. Bán cam kết bảo vệ môi trường của dự án là cơ sở để các cơ quan quản lý nhà nước về bảo vệ môi trường giám sát, kiểm tra, thanh tra việc thực hiện bảo vệ môi trường của dự án.

Điều 4. Giấy xác nhận này có giá trị kể từ ngày ký./.

Nơi nhận:
- Chủ dự án;
- Phòng Tài nguyên và Môi trường huyện Thạch Hà;
- Lưu V1/UB.

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

Ngo Văn Tân
APPENDIX 3: SAMPLE MINUTES OF THE PROJECT’S COMMUNITY CONSULTATION

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APPENDIX 4: REGIONAL MAP AND PROPOSED PROTECTED AREA

Existing and proposed protected areas in Thai Nguyen province
Các khu bảo vệ hiện có và đề xuất ở tỉnh Thái Nguyên

Legend / Chú giải

- Protected area / Khu bảo vệ
- Provincial border / Ranh giới tỉnh
- District border / Ranh giới huyện
- Village border / Ranh giới xã
- Major roads / Quốc lộ
- Secondary roads / Quốc lộ
- Airports / Sân bay
- Railways / Đường sắt
- Oil refineries / Nhà máy lọc dầu
- Water bodies / Mặt nước
- Major rivers / Sông chính
- Major lakes / Hồ chính
- Reservoirs / Hồ điều hòa
- Dam / Tràn
- Nuclear power plant / Nhà máy điện hạt nhân
- Power plants / Nhà máy điện
- Industrial parks / Khu công nghiệp
- Cities / Thành phố
- Towns / Thành phố
- Villages / Xã
- Townships / Huyện
- National parks / Vườn quốc gia
- Protected areas / Khu bảo vệ
- National reserves / Vườn quốc gia
- Forests / Rừng
- Land use / Sử dụng đất
- Settlements / Xã
- Streams / Suối
- Ponds / Hố
- Wastewater treatment plants / Nhà máy xử lý nước thải
- Sewage / Nước thải
- Landfills / Chùm rác
- garbage / Rác thải
- Municipal area / Thành phố
- Industrial area / Khu công nghiệp
- Commercial area / Khu thương mại
- Residential area / Khu dân cư
- Agricultural land / Đất nông nghiệp
- Forest land / Đất rừng
- Water bodies / Mặt nước
- Protected areas / Khu bảo vệ

Vegetation type / Kiểu rừng

- Evergreen forest / Rừng thường xanh
- Coniferous forest / Rừng lá kim
- Deciduous forest / Rừng lá quay
- Semi-deciduous forest / Rừng nửa lá quay
- Limestone forest / Rừng n-chief
- Bamboo / Rừng le măng
- Plantation forest / Rừng trồng
- Grassland and scrub / Đất mục
- Agricultural land / Đất nông nghiệp
- Water bodies / Mặt nước
- Protected areas / Khu bảo vệ
- Natural habitats / Environments tự nhiên
- Protected areas / Khu bảo vệ

THANG LONG POWER DEVELOPMENT JOINT STOCK COMPANY
Existing and proposed protected areas in Bac Giang province

Các khu bảo vệ hiện có và đề xuất ở tỉnh Bắc Giang

**Vegetation type / Kiểu rừng**
- Evergreen forest / Rừng thường xanh
- Coniferous forest / Rừng lá kim
- Deciduous forest / Rừng rừng già (kiếng)
- Semi-deciduous forest / Rừng nửa rừng là
- Limestone forest / Rừng núi đá
- Bamboo / Rừng tre nứa
- Plantation forest / Rừng trồng
- Grassland and scrub / Đất trồng
- Agricultural land / Đất nông nghiệp
- Water bodies / Mặt nước
- Mangrove / Rừng ngập mặn
- Melaleuca / Rừng làm

**Legend / Chú giải**
- Protected area / Khu bảo vệ
- Provincial border / Ranh giới tỉnh
- District border / Ranh giới huyện
- Xiatham gia duyệt dự án (Project commune)
Existing and proposed protected areas in Thai Binh province
Các khu bảo vệ hiện có và đề xuất ở tỉnh Thái Bình

Vegetation type / Kiểu rừng
- Evergreen forest / Rừng thường xanh
- Coniferous forest / Rừng lâm kín
- Deciduous forest / Rừng rừng la (khô)
- Semi-deciduous forest / Rừng nửa rừng la
- Limestone forest / Rừng nai đa
- Bamboo / Rừng tre nứa
- Plantation forest / Rừng trồng
- Grassland and scrub / Rừng trồng
- Agricultural land / Rừng nông nghiệp
- Water bodies / Môi nước
- Mangrove / Rừng ngập mặn
- Mekleuca / Rừng trâm

Legend / Chú giải
- Protected area / Khu bảo vệ
- Provincial border / Ranh giới tỉnh
- District border / Ranh giới huyện
- Xã thanh giã xóm (Projectcomm)
Existing and proposed protected areas in Nghe An province

Vegetation type / Kiểu rừng
- Evergreen forest / Rừng thường xanh
- Coniferous forest / Rừng la kim
- Deciduous forest / Rừng rừng la (kiểp)
- Semi-deciduous forest / Rừng nửa rừng la
- Limestone forest / Rừng nui đa
- Bamboo / Rừng tre nứa
- Plantation forest / Rừng trồng
- Grassland and scrub / Điềng
- Agricultural land / Điềng nông nghiệp
- Water bodies / Môi nước
- Mangrove / Rừng ngập mặn
- Melaleuca / Rừng trầm

Legend / Chú giải
- Protected area / Khu bảo vệ
- Provincial border / Ranh giới tỉnh
- District border / Ranh giới huyện
- Village / Xã
Existing and proposed protected areas in Ha Tinh province
Các khu bảo vệ hiện có và đề xuất ở tỉnh Hà Tinh

Vegetation type / Kí hiệu rừng
- Evergreen forest / Rừng thường xanh
- Coniferous forest / Rừng lá kim
- Deciduous forest / Rừng rụng lá (khô)
- Semi-deciduous forest / Rừng nửa rụng lá
- Limestone forest / Rừng nui đá
- Bamboo / Rừng tre nứa
- Plantation forest / Rừng xanh
- Grassland and scrub / Đất rẫy
- Agricultural land / Đất nông nghiệp
- Water bodies / Mặt nước
- Mangrove / Rừng ngập mặn
- Melaleuca / Rừng tần