Initial Environmental Examination – Subproject 1

January 2014

Viet Nam: Ha Noi and Ho Chi Minh City Power Grid Development Sector Project

(EVN HANOI: Rehabilitation and Renovation of Son Tay, Phuong Liet, and Tran Hung Dao 110 kV Substations)

Prepared by Ha Noi Power Corporation for the Asian Development Bank.

CURRENCY EQUIVALENTS
(as of 11 December 2013)

Currency Unit	–	Dong D
D1.00	=	$0.000047
$1.00	=	D20,948

ABBREVIATIONS

ADB:	Asian Development Bank
AH:	Affected Household
AP:	Affected people
BOD:	Biochemical Oxygen Demand
COD:	Chemical Oxygen Demand
CTF:	Clean Technology Fund
DARD:	Department of Agriculture and Rural Development
DoNRE:	Department of Natural Resources and Environment
DCST:	Department of Culture, Sport and Tourism
DoLISA:	Department of Labour Invalids and Social Assistance
EA:	Executing Agency
EIA:	Environment Impact Assessment
EMP:	Environment Management Plan
EO:	Environmental Officer
ESU:	Environmental and Social Unit
EVN:	Electricity of Viet Nam
EVN HANOI:	Ha Noi Power Corporation
EVNHCMC:	Ho Chi Minh City Power Corporation
GHG:	Greenhouse gas
GRM:	Grievance Redress Mechanism
HN:	Ha Noi
IA:	Implementation Agency
IEE:	Initial Environmental Examination
MoLISA	Ministry of Labour Invalids and Social Assistance
MoNRE:	Ministry of Natural Resources and Environment
MPI:	Ministry of Planning and Investment
NPA:	National Protected Area
OHL:	Overhead lines

PCB:	Polychlorinated biphenyls
PCR:	Physical Cultural Resources
PIC:	Project Implementation Consultant
PPC:	Provincial Peoples Committee
REA:	Rapid Environment Assessment
ROW:	Right-of-way
PPMB:	Power Project Management Board
TSS:	Total Suspended Solids
UGC:	Underground lines
UXO:	Unexploded Ordnance

WEIGHTS AND MEASURES

GW:	gigawatts
km:	kilometre
kg:	kilogram
kV:	kilovolt
ha:	hectare
mm:	millimetre
MV:	medium voltage

I. EXECUTIVE SUMMARY

1. The Project, financed through Asian Development Bank's (ADB) sector loan modality, will strengthen the capacity and reliability of the power infrastructure in Ha Noi and Ho Chi Minh City through the rehabilitation and development of the 220 kilovolt (kV) and 110 kV transmission system and associated substations to supply their medium voltage (MV) distribution system. The Project will also strengthen the institutional capacities of Hanoi Power Corporation (EVN HANOI) and Ho Chi Minh City Power Corporation (EVNHCMC), which are responsible for the power supply in their respective areas. Additionally, the project includes a smart grid component financed by the Clean Technology Fund (CTF).

2. The Initial Environmental Examination (IEE) presented herein addresses the rehabilitation and upgrading of three 110 kV substations of Son Tay, Phuong Liet, and Tran Hung Dao in Ha Noi which represent three of the eight core subprojects that were identified by Electricity of Viet Nam (EVN) for Ha Noi and Ho Chi Minh City. The original eight core subprojects were defined as Category B for environment. The consolidated IEE addresses the Tran Hung, Phuong Liet, and Son Tay 110 kV substations located in central and western Ha Noi. The IEEs of the other five core subprojects have been prepared separately.

A. Subprojects Summary

Rehabilitation of Son Tay Substation

3. Son Tay substation is located in Xuan Khanh ward, Son Tay town, Ha Noi City. The proposed work within the existing substation property boundary is summarized below:

- *Installation of 2 - 110 kV breakers; 2 dis-connectors operational scheme for five breakers; addition of 6 variable voltage 1- phase 110 kV capacitor;*
- *Additional 1 dis-connector neutral and 1 neutral arrester valve for T1;*
- *Replacement of a) control system including signal cable protection; b) entire busbar; c) entire metal lightning rods; and d) entire string voltage of 110 kV.*
- *Test system earthing and install additional earthing if needed,*
- *Building new resources system using one-way system including battery 12 V-120 and the cabinet AC-DC system.*
- *Improvement of automatic power systems, lighting, electrical activity of the station, construction of new lead capacitor 7.8 MVAR for the C91, 4.8 MVAR bus C92, and*
- *Replacement of old circuit breakers.*

Renovation of Phuong Liet Substation

4. Phuong Liet substation is located in Phuong Mai Ward, Dong Da district, Ha Noi City. The proposed work within the existing substation property boundary is summarized below:

- *Replacement of existing 110 kV distribution system block diagram "line-transformer" to schematic two busbar with coupling with110 kV GIS outdoor type switchgear;*
- *Installation of 22 kV distribution system designed to the diagram single busbar;*

- *Installation 10 kV distribution system to the diagram single busbar; and*
- *Replacement of existing control and protection system.*
- *Updating of information channels SCADA signal from the 110 kV Phuong Liet substation; and*
- *Construction of new two storey distribution control building (25.1 x 8.5 m) with basement.*

Renovation of 110 kV Tran Hung Dao Substation

5. Tran Hung Dao substation is located in Phan Chu Trinh Ward, Hoan Kiem district, Ha Noi City. The proposed work within the existing substation property boundary is summarized below:

- *Replacement of total 171-7; 172-7; 131-1; 132-2; 112-1; 112-2 dis-connectors and two 131, 132 circuit breakers by complete 110 kV gas-insulated switchgear (GIS) for full bridge diagram;*
- *Include 5 modules joined to become single complete 110 kV switchgear;*
- *Replacement of entire 10 kV cabinet system in 10 kV distribution cabinet with eighteen 22 kV new cabinets;*
- *Replacement of existing TD41-100 kVA-10/0.4 kV auxiliary transformer with one new auxiliary transformer 250 kVA-22/0.4 kV;*
- *Installation of one 600 V- 400 A low voltage cabinet to improve control, distribution house.*

B. Potential Impacts and Mitigation

6. Phuong Liet and Tran Hung Dao substations are located in high density urban neighborhoods in central Ha Noi city. Son Tay 110 kV substation is located in the peri-urban environs of Son Tay town in western Ha Noi. All renovation and rehabilitation work will be conducted on substation property.

7. The IEE of the rehabilitation and renovation of the three substations indicates that the potential environmental impacts of the subprojects are restricted to the construction phase of the subproject components. The common construction-related disturbances such as noise, dust, erosion, sedimentation, solid and liquid waste pollution, worker camp issues, reduced access, increased vehicle and boat traffic and traffic disruptions, increased risk of worker and public injury can be managed with standard construction practices and management guidelines (e.g., IFC/World Bank 2007). There are no rare or endangered wildlife, critical habitat, or protected areas in the subproject sites which are situated in high density urban, and peri-urban areas.

8. Short-term construction-related impacts and disturbances will be most significant at Tran Hung Dao and Phuong Liet substations because of the high density urban areas in which the work will be conducted, and because of the little available working space at the two substations. Moreover, worker and public safety must be given special attention during the work at the substations because of the cramped and high-density urban conditions.

9. No land will be required because the work on the individual substations will occur on the existing substation properties inside the existing walled or fenced boundaries. There are no rare or endangered wildlife, critical habitat, or protected areas at the subproject sites.

10. There are no perceived negative, induced, or cumulative environmental impacts of the subprojects. The objective of providing the needed additional electrical power to Ha Noi to support urban development supports the overall goal of urban and socioeconomic development in Ha Noi city-province.

11. The Environmental Management Plan (EMP) prepared for the subprojects provides comprehensive impacts mitigation and environmental monitoring plans to minimize and manage the potential impacts of the subprojects. The EMP also prescribes an Emergency Response Plan for the construction sites and identifies the need for capacity development and training of the IA/ESU in environmental management and assessment as focused on the implementation of the EMP.

C. Conclusions

12. The IEE concludes that the feasibility design of the rehabilitation and upgrading of the three 110 kV substations in Ha Noi combined with available information on affected environments is sufficient to identify the scope of potential environmental impacts of the subprojects. Providing that significant changes to the subproject descriptions do not occur at the detailed design phase, and that new sensitive environmental or cultural resources are not determined, further detailed environmental impact assessment (EIA) of the subprojects is not required.

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II. INTRODUCTION

A. Background to IEE

13. The Ha Noi and Ho Chi Minh City Power Grid Development Sector Project aims to strengthen the capacity and reliability of the power infrastructure in Ha Noi and Ho Chi Minh City, Viet Nam through the rehabilitation and development of the 220 kilovolt (kV) and 110 kV high-voltage power transmission systems and associated substations to supply their medium voltage (MV) distribution system. The Project also aims to strengthen the institutional capacities of Ha Noi Power Corporation (EVN HANOI) and Ho Chi Minh City Power Corporation (EVNHCMC) that are responsible for the power supply of power in their respective areas. Additionally, the project includes a smart grid component financed by the Clean Technology Fund (CTF).

14. The Project will be implemented as a sector loan under ADB's Operation Manual Section D3 – Sector Lending. It consists of eight core subprojects (Table 1) which were selected by EVN HANOI and EVN HCMC being representative of the non-core projects to be further identified and prepared during project implementation.

Table 1. Core Subprojects forming the Sector Project in Ho Chi Minh and Ha Noi[1]

Ha Noi
EVN HANOI
• Upgrading Phuong Liet 110 kV Substation
• Renovation Son Tay 110 kV Substation
• Improving and upgrading Tran Hung Dao 110 kV Substation
• Construction of new Noi Bai Airport 110 kV Substation and associated 110 kV transmission line from existing Van Tri 220/110 kV Substation
Ho Chi Minh City
EVNHCMC
• Construction of new 220 kV District 8 Substation
• Upgrading of existing 110kV to 220 kV transmission line Nam Sai Gon (Binh Chanh) Substation to new District 8 Substation
• Construction of new 110 kV Tham Luong Substation

[1] Adapted from Project Inception Report 10/13

- Construction of 110 kV underground cable connecting to Tham Luong Substation

B. Consolidation of IEEs

15. During the Project Inception Mission the eight core subprojects sites were visited, subproject documentation was reviewed, and meetings were held with EVN HANOI and EVNHCMC. The inception phase identified the need to consolidate the core subprojects in order to maximize the coherence and overall usefulness of the Initial Environmental Examinations (IEE) of the core subprojects. The original 8 core subprojects were consolidated into the following four IEEs:

EVN HANOI:

1) Rehabilitation/renovation of Son Tay, Phuong Liet, and Tran Hung Dao 110 kV Substations
2) New Noi Bai 110 kV Substation with above and below ground 110 kV transmission line

EVNHCMC:

1) New District 8 220 kV Substation and upgraded 110 kV to 220kV transmission line
2) New Tham Luong 110 kV Substation and underground 110 kV transmission line

16. The IEE presented herein addresses the rehabilitation and renovation of the Son Tay, Phuong Liet, and Tran Hung Dao 110 kV Substations in Ha Noi. The three IEEs for the other consolidated core subprojects are found under separate cover.

C. Assessment Context

17. The Project was assigned Environmental Category B pursuant to the ADB's Safeguard Policy[2] and recent good practice sourcebook guidance[3]. A category B project will have potential adverse impacts that are less adverse than the impacts of category A project, are site-specific, largely reversible, and can be mitigated with an environmental management plan[4]. The IEE was prepared for the consolidated Tri-Substation subproject in the feasibility design stage using available data and information on sensitive ecological and cultural receptors that exist for the subproject sites.

18. Unlike the 110 kV Noi Bai substation and transmission line subproject, the Tran Hung Dao, Phuong Liet and Son Tay substations already exist which means that the environmental impact footprints of the three substations already exist. Moreover, all civil works will occur inside the existing substation boundaries which mean that the existing impact footprints of the substations will not be expanded.

[2] ADB, 2009. Safeguard Policy Statement, ADB Policy Paper.
[3] ADB, 2012, Environmental Safeguards, A Good Practice Sourcebook, Draft.
[4] Footnote 2, pg 19.

19. The detailed designs for the tri-substation rehabilitation/renovation subproject will follow subproject approval. The Environmental Management Plan (EMP) that has been prepared for the subproject (Section X) will need to be updated where necessary to meet the final detailed designs for the rehabilitation/renovation of the substations.

III. POLICY, LEGAL, AND ADMINISTRATIVE FRAMEWORK

20. The tri-substation renovation and rehabilitation subproject will be implemented according to the directives set down for use of Official Development Assistance (ODA) by GoV Decree No. 131/2006/ND-CP which was promulgated November 9, 2006, and in accordance with the provisions for the parent Sector Project.

A. Viet Nam Regulatory Framework for Environmental Assessment

21. The Viet Nam Law on Environmental Protection (LEP 2005) prescribes the requirements for environmental assessment (EA) for development and domestic project interventions that affect the natural and social environments. Government Decree 29/2011/ND-CP on strategic environmental assessment (SEA), environmental impact assessment (EIA), and environmental protection commitment (EPC) in conjunction with Circular 26/2011/TT-BTNMT on stipulation of specific articles of Decree 29 both elaborate the EA requirements specified by the LEP (2005). Decree 29 and Circular 26 are implemented in conjunction with Decree 80/2006/ND-CP, and Decree 21/2008/ND-CP (see below).

22. The updated screening criteria of Decree 29 distinguish projects that require an Environmental Impact Assessment (EIA) from projects requiring the simpler Environmental Protection Commitment (EPC). The difference between the two processes reflects the level of assessment, and final review and appraisal that is required. At the time of writing Decree 29 requires that an EIA be prepared for the tri-substation renovation and rehabilitation subproject.

B. Applicable Environmental Laws, Policy, Environmental Standards, and Guidelines

23. The following are key directives for environmental assessment and protection in Viet Nam:

- Law on Environmental Protection No. 52/2005/QH11, in effect on June 12, 2005;
- Law on Water Resources No 08/1998/QH10.
- Biodiversity Law 20/2008/QH12 dated 13th November 2008
- Cultural Heritage Law 28/2001/QH10 dated 29th June 2001
- Land law No.13/2003/QH11 dated 26th November 2003
- Decree No. 29/2011/ND-CP, dated April 18, 2011, on Regulating Strategic Environmental Assessment, Environmental Impact Assessment and Environmental Protection Commitment.

- Circular No. 26/2011/TT-BTNMT dated on 08/12/2011 by the Ministry of Natural Resources and Environment on Guidance for Strategic Environmental Assessment, Environmental Impact Assessment, and Environmental Protection Commitment.

- Decree No.12/2009/ND-CP which replaces Decree No. 16/2005/ND-CP and Decree No. 112/2006/ND-CP on Investment Management on Construction Projects.

- Decree No.21/2008/NĐ-CP dated on 28/02/2008 about Amendment and Addition of Some Articles in Decree No.80/2006/NĐ-CP dated on 09/8/2006 by the Government.

- Decree No.59/2007/NĐ-CP dated on 09/4/2007 by the Government about Solid Waste Management.

- Decree No. 117/2009/ND-CP Regulation on sanctioning administrative violations in environmental protection, issued: 31/12/2009

- Decree No. 04/2009/ND-CP, Incentives and support for environment protection activities, issued: 14/01/2009.

- Decree 110/2002/ND-CP, supplementing some Articles of Decree 06/1995 on Labour Code of Occupational Safety and Health

- Decree 06/1995, Elaborating Provisions of Labour Code on Occupational Safety and Health.

- Decree No.140/2006/NĐ-CP dated on 22/11/2006 by the Government which regulates Environmental Protection, Designing, Approval and Implementation of Development Strategies, Plans, Programs and Projects.

- Decree No.80/2006/NĐ-CP dated on 09/8/2006 about Guiding for the Implementation of Some Articles in the Law on Environmental Protection (2005).

- Decree No.149/2004/NĐ-CP dated on 27/7/2004 about Issuing Permits for Water Resource Exploration, Exploitation and Utilization and Permits for Discharge to Water Bodies.

- Decision No.16/2008/QĐ-BTNMT dated on 31/12/2008 by the Ministry of Natural Resources and Environment about Promulgation of the National Technical Regulations for the Environment.

- Decision No.18/2007/QĐ-BTNMT dated on 05/11/2007 about Promulgation of Statistic Indicator System for the Field of Natural Resources and Environment.

- Decision No.23/2006/QĐ-BTNMT dated on 26/12/2006 about Promulgation of the List of Hazardous Waste.

- Decision No.27/2004/QĐ - BXD dated on 09-11-2004 by the Minister of Ministry of Construction on the promulgation of TCXDVN 320:2004 "Landfill for hazardous waste – Design standards"

- Decision No.22/2006/QĐ-BTNMT dated on 18/12/2006 about Obligations to Apply Vietnamese Standards for the Environment.

- Decision No.233/2006/QĐ-TTg dated on 18/10/2006 about approving the National Program on Labor Protection, Safety and Sanitation up to 2010.

- Decision No.1222/QĐ-BTNMT dated on 20/09/2006 about Organization of Reception and Progressing Recommendations from Individuals, Organizations and Enterprises on Aspects which are managed by Ministry of Natural Resources and Environment.

- Decision No.35/2002/QD-BKHCNMT dated on 25/6/2002 about Promulgation of Series of Vietnamese Standards for the Environment.

- Decision No.60/2002/QĐ-BKHCNMT dated on 07/8/2002 about Promulgation of the Guidance for Disposal of Hazardous Wastes.

- Decision No.3733/2002/QĐ-BYT issued by Ministry of Healthcare dated on 10/10/2002 About the Application of 21 Labour Health and Safety Standards

- Decision No.155/1999/QĐ-TTg dated on 16/7/1999 by the Government on Promulgation of the Management Mechanism for Hazardous Waste.

- Decision No.505 BYT/QĐ, dated on 13/4/1992 by the Ministry of Healthcare on the Regulation for Allowed Concentrations.

- Circular No. 16/2009/BTNMT and No. 25/2009/BTNMT on Promulgation of Vietnamese National Standards.

- Circular No.10/2007/TT-BTNMT dated on 22/10/2007 about Guidance for Assurance and Control of the Quality of Environmental Monitoring.

- Circular No.12/2006/TT-BTNMT dated on 26/12/2006 by the Ministry of Natural Resources and Environment on Guidance for Practice Conditions, Procedures for Application, Registration, Endorsement and Issuing the Code for Hazardous Waste Management.

Environmental Standards and Regulations

Water quality:

- QCVN 01:2008/BYT – National technical regulations on quality of drinking water
- QCVN 08:2008/BTNMT – National technical regulations on quality of surface water
- QCVN 09:2008/BTNMT – National technical regulations on quality of groundwater
- QCVN 10:2008/BTNMT – National technical regulations on quality of about coastal water
- QCVN 14:2008/BTNMT – National technical regulations on quality of domestic wastewater
- QCVN 24:2008/BTNMT– Industrial wastewater discharge standards
- QCVN 02:2009/BYT - National standard of domestic water supply
- TCVN 5502:2003 – Supplied water – Requirements for quality
- TCVN 6773:2000 – Water quality – Water quality for irrigational purposes
- TCVN 6774:2000 – Water quality – Water quality for aquaculture protection
- TCVN 7222:2002 – Water quality for concentrated domestic WWTP
- TCVN / QCVN - Standard methods for analyzing environmental quality

Air Quality:

- QCVN 05:2008 – Standards for ambient air quality
- QCVN 06:2008 – Maximum allowable concentration of hazardous substances in the ambient air
- TCVN 6438:2001 – Maximum permitted emission limits of exhausted gases from vehicles.

Solid Waste Management:

- TCVN 6696:2009 – Solid waste – Sanitary landfill. General requirements for environmental protection.
- QCVN 07:2009– National technical regulations for classification of hazardous wastes
- QCVN 25:2009 – National technical regulations for wastewater of solid waste sites
- QCVN 15:2008/BTNMT: - National regulation on allowable pesticide residues in soil
- QCVN 03:2008/BTNMT: - National regulation heavy metals concentrations in soil

Vibration and Noise:

- QCVN 26:2010/BTNMT: national technical standard for noise
- TCVN 6962: 2001 Allowable vibration level for public and residential areas
- TCVN 6962:2001: - Allowable vibration and shock from construction activities

International Guidelines

- World Bank Group, 2007. Environmental Health and Safety Guidelines, Wash. DC.
- AWWA Standard Methods for Measurement and Analysis Environmental Quality

Specific regulations for resettlement and compensation

- Decree No. 197/2004/ND-CP dated 03/12/2004, on comprensation support,and resettlement
- Circular 14/2009/TT-BTNMT dated 01/10/2009, on detailed regulations on compensation, support and resettlement.

Directives of the Electrical Power Industry in Viet Nam

- Electricity Law, No. 28/2004/QH11, Issued: 03/12/2004
- Government Decree, No. 81/2009/NĐ-CP, on the safety protection of high-voltage power grids, Issued 17/08/2005
- MIT Circular, No. 03/2010/TT-BCT, on safety protection of high-voltage power grid works, Date issued: 22/01/2010

International Environmental Management Conventions

24. Viet Nam is signatory to the following relevant international conventions:

- 2009, Stockholm Convention on Protection of Human Health and the Environment from Persistent Organic Chemicals [including PCBs]
- 1971, Convention on Wetlands of International Importance Especially as Waterfowl Habitat (Ramsar)
- 1982, Protocol to Amend the Convention on Wetlands of International Importance Especially as Waterfowl Habitat, Paris
- 1972 Convention Concerning the Protection of the World Cultural and Natural Heritage October 1987]
- 1973, Convention on International Trade in Endangered Species Wild Fauna and Flora

- 1985 FAO International Code of Conduct on the Distribution and Use of Pesticides
- 1985 Vienna Convention for the Protection of the Ozone Layer
- 1987 Montreal Protocol on Substances that Deplete the Ozone Layer
- 1992, Copenhagen Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer, Copenhagen
- 1989, Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal
- 1992, United Nations Framework Convention on Climate Change
- 1992, Convention on Biological Diversity

C. ADB Safeguard Policy

25. The ADB Safeguard Policy Statement (ADB 2009) along with the recent good safeguard practice sourcebook clarify the rationale, scope and content of an EA and supported by technical guidelines (e.g., Environmental Assessment Guidelines 2003). Projects are initially screened to determine the level of assessment that is required according to the following three environmental categories (A, B, or C).

26. Category A is assigned to projects that normally cause significant or major environmental impacts that are irreversible, diverse or unprecedented such as hydroelectric dams (an Environmental Impact Assessment is required). Category B projects have potential adverse impacts that are less adverse than those of category A, are site-specific, largely reversible, and for which mitigation measures can be designed more readily than for category A projects (an Initial Environmental Examination is required). Category C projects are likely to have minimal or no negative environmental impacts. An environmental assessment for Category C projects is not required but environmental implications need to be reviewed. Appendix A presents the Rapid Environmental Assessment (REA) of the three substations.

IV. DESCRIPTION OF SUBPROJECT

A. Existing situation

27. The three substations[5] in Ha Noi are old and are operating with mostly antiquated equipment. They are now under-capacity for the electricity demand in their areas, and need to be renovated or rehabilitated with new and more efficient technology. Specifically:

28. The Tran Hung Dao substation supplies power to a heavy populated and strategic area of Hanoi city (Figure 1) services some important clients such as famous hospital 108 and hospital Huu Nghi. However, the substation has been operational since 1989, and is now overloaded with out-of-date equipment. Over the years ad hoc upgrades to the substation were conducted resulting in the substation currently using different equipment from different manufacturers.

[5] Adapted from Draft Final Report

29. The Phuong Liet substation was built in 1990, and is located in high-density area (Figure 3). It supplies power to Bach Mai hospital, the international French hospital, and the Ha Noi Medicine University-hospital. The area of the substation is extremely compact and difficult to access. The substation equipment is mostly from the former Soviet Union and no longer reliable.

30. The Son Tay substation was built in 1971 and is equipped with old technology from the former Soviet Union. The substation experiences frequent overload conditions due to the delay in construction of a much needed nearby 220/110 kV substation which is part of the Ha Noi power development plan. As consequence, EVN HANOI installed a temporary third transformer of 25 MVA to secure the power supply for Son Tay town.

B. Features of Subproject

31. The features of the tri-substation subproject are summarized below.

1. Rehabilitation of 110 kV Son Tay Substation

Location: Xuan Khanh ward, Son Tay town, Ha Noi City.

Main features: 110/35/22/10 kV substation with capacity 2x40 MVA

Proposed work:

- Install 2 breakers 110 kV, 02 sets of TI, 02 dis-connectors to complete operational scheme for five breakers
- Added 06 variable voltage 1- phase 110 kV capacitor for 02 stop route line
- Additional 01 dis-connector neutral, 01 neutral arrester valve for T1. Replace the entire control system including signal cable protection. Replace the entire busbar
- Replace the entire metal lightning, lightning rods
- Replace the entire string voltage of 110 kV
- Testing the system earthing and install additional earthing if needed
- Building new own resources system using one-way system includes battery 12 V-120 Ah and the cabinet AC-DC system. Improving automatic power systems, lighting, electrical activity of the station
- Construction of 02 new lead capacitor 7.8 MVAR for the C91, 4.8 MVAR bus C92
- Other work on 35 kV and 22 kV side, including replacement of old circuit breakers.

2. Renovation of 110 kV Phuong Liet Substation

Site location: Phuong Mai ward, Dong Da district, Ha Noi City.

Main features: 110/22/10 kV substation with capacity 2x63 MVA

Proposed work:

- Replace from the existing 110 kV distribution system block diagram "line-transformer" to schematic two busbar with coupling; use 110 kV GIS outdoor type switchgear
- Installation of the 22 kV distribution system, which is designed according to the diagram single busbar
- Installation of 10 kV distribution system are designed according to the diagram single busbar
- Installation of control and protection system to replace existing control and protection system
- Information channels SCADA signal from the 110 kV substations Phuong Liet
- Construction of new distribution control building of 25.1 x 8.5 m: two floors and one basement
- The renovation within the existing fenced boundary of the substation.

3. Renovation of 110 kV Tran Hung Dao Substation

Site location: Phan Chu Trinh ward, Hoan Kiem district, Ha Noi City.

Main features: 110/22/10 kV substation with capacity 2x63 MVA

Proposed work:

- Replace total 171-7; 172-7; 131-1; 132-2; 112-1; 112-2 disconnectors and two 131, 132 circuit breakers by complete 110 kV gas-insulated switchgear (GIS) for full bridge diagram include: five modules and these modules will be joined to become one complete 110 kV switchgear (two line cell modules, two transformer cell modules and one 110 kV bridge cell module)
- Replace total 10 kV cabinet system in 10 kV actual distribution cabinet by eighteen 22 kV new cabinets
- Replace existing TD41-100 kVA-10/0.4 kV auxiliary transformer by one new auxiliary transformer 250 kVA-22/0.4 kV. Install one 600 V- 400 A low voltage cabinet (after new TD41 auxiliary transformer)
- Improve actual control, distribution house.

V. DESCRIPTION OF AFFECTED ENVIRONMENTS

32. The environmental baseline information for the substation areas was obtained primarily from Ha Noi Statistical Yearbooks, state of the environment reports (SoER) prepared by Ha Noi DoNRE, reports from PECC1, and supplemented from the literature including other environmental assessments conducted for the same area. The description of affected environments focuses on natural features and land use.

A. Physical Environment

1. Climate

33. Hanoi experiences the typical climate of northern Vietnam, where summers are hot and humid, and winters are, by national standards, relatively cold and dry. Summers, lasting from May to September, are hot and humid, receiving the majority of the annual 1,680 millimetres (66.1 in) of rainfall. The winters, lasting from November to March, are relatively mild, dry (in the first half) or humid (in the second half), while spring (April) can bring light rains. Autumn (October) is the best time of year in term of weather. Humidity and rainfall are quite large, averaging 114 days/year.

a. Temperature

34. Extreme temperatures have ranged from 2.7 °C (36.9 °F) to 40.4°C (105 °F). The average temperature is about 24°C (Table 2)

Table 2. Average air temperature (^oC) in months in Ha Noi (Lang station)

Month Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	**Average**
2008	15.12	13.8	21.4	24.7	27.5	28.6	29.4	29.0	28.3	26.5	21.4	18.4	**23.7**
2009	16.0	22.5	20.9	24.7	27.1	30.3	29.5	29.9	29.1	26.8	21.9	19.9	**24.9**
2010	18.1	20.9	21.9	23.5	28.7	30.9	30.7	28.6	28.7	25.7	22.1	19.4	**24.9**
2011	12.8	17.7	17.1	23.8	27.2	29.5	29.9	28.9	27.6	24.5	23.8	17.4	**23.4**

(Source:Hanoi Statistical Yearbook 2011)

b. Sunlight hours

35. Average number of sunlight hours in a year is of 1055 - 1300 hours or more. The city is usually cloudy and foggy in the winter time with average monthly sunshine hours for February are only 1.8 h/day. Table 3 shows the average number of sunlight hours observed in Lang meteorological station during years 2008-2011

Table 3. Average annual sunlight hours in Ha Noi (Lang station)

Month Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	**Average**
2008	59.1	26.3	67.6	73.0	137.7	115.2	150.1	123.5	123.0	83.3	145.2	110.0	**1215**
2009	103.9	74.7	50.9	84.5	143.1	160.8	142.5	171.6	132.1	122.1	135.4	77.1	**1398.7**

2010	32.8	93.6	50.7	48.3	130.8	159.2	180.1	120.8	145.0	102.3	103.1	78.6	**1245.3**
2011	37	38.5	15.2	56.0	141.2	126.1	149.9	150.1	102.4	72.6	104.6	95.0	**1055.3**

(Source:Hanoi Statistical Yearbook 2011)

c. Humidity and Rainfall

36. Hanoi features a warm humid subtropical climate with plentiful precipitation**.** The average humidity varies from 77% to 79% from 2008 and 2011 (Table 4). Total annual average rainfall in Hanoi is from 1800 mm to 2000 mm. Table 5 shows the average rainfall observed in Lang meteorological station during years 2008-2011.

Table 4. Average humidity in months in Ha Noi (Lang station)

Month Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	**Average (%)**
2008	80	72	82	84	79	81	79	83	80	80	76	75	**79**
2009	72	84	82	82	81	74	79	78	76	75	66	74	**77**
2010	81	80	78	85	81	74	74	82	79	70	71	77	**78**
2011	71	83	81	80	76	80	78	81	81	79	77	68	**78**

(Source:Hanoi Statistical Yearbook 2011)

Table 5. Rainfall (mm) in months in Ha Noi (Lang station)

Month Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	**Average**
2008	26.6	13.9	20.2	121.6	184.0	234.3	423.5	304.5	199.4	469.0	258.7	11.4	**2267.1**
2009	4.9	8.0	49.1	74.3	229.0	242.4	550.5	215.7	154.6	78.8	1.2	3.6	**1612.1**
2010	80.9	8.1	5.8	55.6	149.7	175.4	280.4	274.4	171.8	24.9	0.6	11.6	**1239.2**
2011	9.3	17.5	105.9	42.0	149.0	388.3	255.3	313.2	247.3	177.6	31.8	51.5	**1788.7**

(Source: Hanoi Statistical Yearbook 2011)

d. Wind velocity

37. In subproject area, prevailing wind direction is north-east wind in winter, prevailing wind direction is southeast wind in summer. The average wind speed in months in Ha Noi is shown in Table 6.

Table 6. Average wind speed in months in Ha Noi

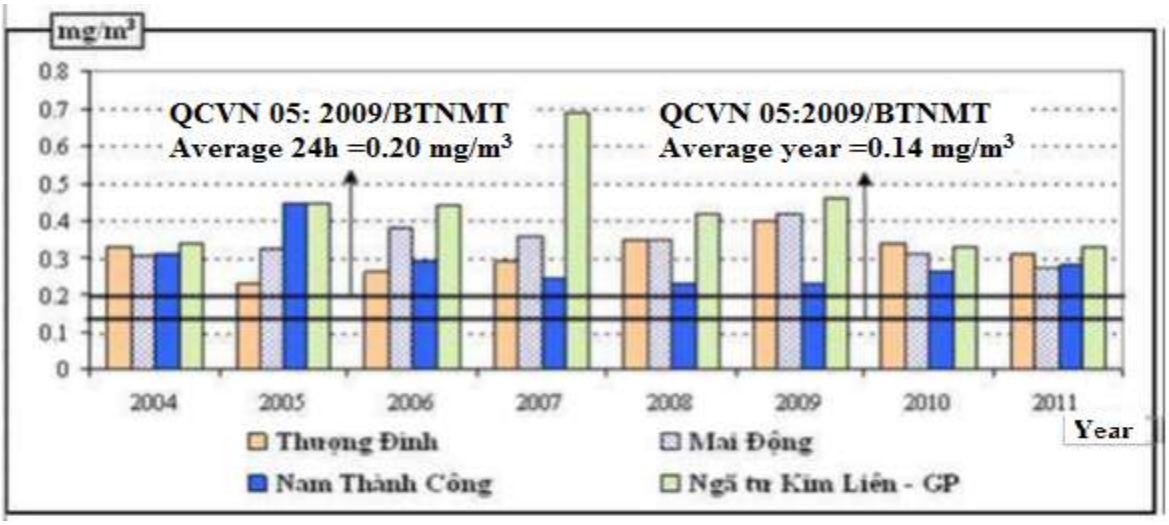
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	**Average**
(m/s)	1.9	2.1	2.0	2.1	2.2	1.8	1.8	1.6	1.6	1.7	1.7	1.7	1.9

(Source:Vietnam building Code 02:2009/BXD)

2. Air quality

38. According to a report on the environmental status of the 2011 Hanoi Department of Natural Resources and Environment in Hanoi, the status of air pollution in Hanoi is at a "red alert". The concentration of dust (TSP) in the urban districts exceeds the standards by 5-6 times, sometimes 10. Toxic emissions negatively affect the human environments. Average in public places in the capital, dust concentrations exceed permitted levels 2-4 times. Environmental monitoring results of the monitoring stations from 2004 - 2011 for the TSP dust values in Hanoi are shown in Table 7.

Table 7. TSP dust values in Hanoi from 2004 – 2011



(Source: VEPA, 2012)

39. The air quality in the subproject areas is good. For example, air quality measured in Long Bien area, near Tran Hung Dao substation is summarized in Table 8. However, in the roads during peak hours, means of transportation eliminate noxious gases such as CO_2, NOx, SO_2polluting the local environment at the traffic intersections. In addition, dust pollution occurs in areas where the construction activities are taking place particularly.

Table 8. Air quality in Long Bien area - Ha Noi in 2012

Concentration	CO (mg/m^3)	SO_2 (mg/m^3)	NO_X (mg/m^3)	Dust (mg/m^3)
K01	1.705	0.055	0.071	**0.110**
K02	1.916	0.062	0.050	**0.055**
QCVN 05: 2009/BTNMT (24h)	**5**	**0.125**	**0.1**	**0.2**

(Source:Centre for Environmental Analysis and Technology Transfer, 2012)

3. Topography geology and soils

40. The majority of the Hanoi area located in the Red River delta with an average elevation of 15m to 20m above sea level. The hilly areas are in the north and northwest of Soc Son district of the southern edge of Tam Dao Mountains with elevations from 20m to over 400m. The highest peak is 462m- Chan Chim peak. The topography of Hanoi is lowering from north to south and from west to east. The main topographic form of Hanoi is a plain enriched by the alluvial river with high alluvial terraces; among them are low lying areas with lakes. Particularly the high terraces are only in Soc Son district in northern and eastern of Dong Anh district. In addition, in Hanoi are mountainous terrains and erosion hill concentrated in Soc Son mountain area.

41. The Hoan Kiem district is in area which has flat topography, slope gently from east to west and from north to south. The highest area is 11m and the lowest area is 6.5m. Dong Da District terrain is relatively flat. There are some large lakes like Ba Mau, Kim Lien, Xa Dan Dong Da, Van Chuong. First of many ponds, but along with the process of urbanization has been filled. County has two small rivers flow through To Lich and Lu rivers. To the east there are a few small mounds, including Dong Da mounds. Based on the results of exploration drilling around the subproject area, the subproject's land is composed of clay.

42. The Son Tay substation is located in Son Tay District, Xuan Khanh Ward, Son Tay town, Hanoi. The area is relatively flat with negligible topographic differences. The substation is surrounded by rice fields and irrigation canals. The results of exploration drilling around the subproject area indicated area to be dominated with clay. Ha Noi has 18 major soil types include 36,769 ha of alluvial soil accounting for 56% of the area, 16,819 ha of degraded land accounting for 26% of the area with other soils occupying 12,019 ha.

4. Surface water sources

43. Surface water resources consist of 19 large and small rivers with water surface area is 32.6 km^2 and 3,600 ha of ponds, lakes, marshes. Surface water reserves are 571.3 m^2/s (49.36 million m^3), with reservoir capacity of 10.66 million m^3

44. Hoan Kiem district borders on the Red river with water surface area accounting for 21.26% natural area of the district equivalent 1.12 km^2. The average water level average water level of the Red river in months during 2008-1011 is presented in Table 9.

Table 9. Average water level of the Red river in months

Month Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	**Average**
2008	193	172	177	180	280	424	743	703	567	410	554	235	**387**
2009	597	587	418	468	696	715	988	858	666	515	402	352	**597**
2010	351	377	318	318	497	560	708	810	724	578	412	435	**507**
2011	168	134	109	143	260	308	390	314	248	191	184	141	**216**

(Source: Hanoi Statistical Yearbook 2011)

5. Ground water resources.

45. As expected with such depositional geology, an adequate rainfall and low lying topography, hydro-geological survey results show that underground water reserves in Hanoi are quite large. Currently the main source of water supply is groundwater, which is extracted from the borehole system. Today groundwater is also being depleted and polluted.

46. According to the Hanoi Environment and Natural Resources Department, the total volume of groundwater extracted in Ha Noi is 700,000 m^3/day from over 170,000 wells. The estimated volume that will be extracted in 2020 is 1.4 million m^3/day.

6. Water quality

47. Surface water quality in Hanoi is severely polluted. The rivers and lakes within the city are very dirty and polluted by the current wastewater drainage of the city. Existing groundwater sources are also degraded in both quantity and quality. Monitoring results of the Water Resources Monitoring and Forecast Center (MONRE) also confirmed that depth of the water table in Ha Noi is increasing meaning that groundwater is being depleted. In many places the groundwater quality does not meet standards. Concentrations of many water quality parameters such as ammonia, arsenic, and organic matter are higher than the allowable limit. If this situation lasts the useable groundwater in Hanoi will be depleted.

B. Biological Environment

1. Vegetation and Land Use

48. Ha Noi has 23,510 ha of forest land (former Hanoi: 6,740 ha and former Ha Tay: 16,770 ha), which makes up 6.9% of its natural area, of which 3,922 ha is natural forest and 19,568ha

is planted forest. Its natural preserves are composed of Ba Vi National Park, Chua Huong Natural Forest (My Duc District). Forest in Ha Noi is a vital resource for keeping the ecological environment balance and preventing hilly land from eroding. In addition, forest creates landscapes for tourist activities and resort build-up.

49. There are two types of ecosystems in the area, including aquatic ecosystem (ponds and lakes) and terrestrial ecosystem. The aquatic ecosystem includes: (i) bottom animals: larvae, shrimps, crabs, snails; (i) Fish - there are many fish species in the area including two types which are natural fish and feed fish; and (ii) aquatic plants: macrophyte, algae, phytoplankton etc.

50. Terrestrial ecosystem includes: (i) Insects - some families are *Veliidae, Mesoveliidae, Gerridae, Trichogrammtidae, Formicidae;* (ii) Vertebrate animal, e.g., rats, domestic animals (dog, cats), birds etc.; (iii) Vegetation – such as fruit-tree: Longan, Orange etc.; (ii) Ornamental tree: Ferm-palm, Pine etc.; (iv) Shade trees - many trees are along the two roadsides; and (v) Natural flora: e.g., grasses, shrubs.

51. Land use in the districts of the three substations is summarized in Table 10.

Table 10. The land use in the subproject area

Land categories	**Area (ha)**		
	Hoan Kiem (Tran Hung Dao SS)	Dong Da (Phuong Liet SS)	Son Tay (Son Tay SS)
Agricultural, forestry and aquaculture land	15.3	24.8	4835.3
Non-agricultural land	512.7	970.5	6306.2
Unused land	0.8	0.5	211.7
Total	**528.8**	**995.8**	**11353.2**

(Source:Hanoi Statistical Yearbook 2010)

52. Because construction activities at the three substations will occur within the substation property, no houses, social structures, as well as vegetation/crops will be affected.

53. Any on-site trees e.g. Tran Hug Dao or San Tay substations can only be cut in compliance with Article 5, (1), (c) of Decree No. 106/2005/ND-CP (17 August 2005) that the vertical distance from the highest point of trees to the lowest height of the TL must not be shorter than 4.0 m.

2. Wildlife

54. The subproject area is urban with dense residential areas. Significant wildlife no longer occurs within the area. There are no climbing animals that could interfere with the transmission line. A check of websites e.g. Birdlife International does not identify any bird migration routes through Vietnam. The Asian Flyway does not pass through Vietnam and instead heads south through the Philippines.

3. Conservation Areas

55. There are no conservation areas near the substations which are located in dense urban and peri-urban environments.

C. Socio-economic condition

1. Population

56. The population in Hanoi city is about 6,870.200 persons and accounts for 7.7% of the population of the country (in 2011). The population within the immediate subproject areas defined by the affected Wards is 20,204 (Table 11). In the subproject area are no ethnic minorities, only Kinh people.

Table 11. Population distribution within the subproject area (person)

Substation	***District***	***District Population (2010)***	***Ward***	***Ward Population (2013)***
Tran Hung Dao	Hoan Kiem	148, 500	Phan Chu Trinh	9,365
Phuong Liet	Dong Da	376 500	Phuong Liet	4,500
Son Tay	Son Tay Town	127, 900	Xuan Khanh	6,339
TOTAL		**654, 900**		**20,204**

(Source:Hanoi Statistical Yearbook 2010)

2. Local Economy

57. Hanoi city is one of cities which led the country on economic growth. In 2011 the GDP growth rate was 10.14%. The total revenue of Hanoi City is 115,466 billion dong (VND) and accounts for 17.1% of total revenue of the state budget.

58. Hoan Kiem district has many advantage conditions for sustainable economic development for its central location in the city. Hoan Kien District is an administrative, politics,

business and service center. Particularly in 2010 year, the value of production per capita increased more than 3 times compared to 2000 year. Commercial sector reached 33,067 billion, accounting for 63.28%; services reached 14,819 billion, accounting for 26.4%; travel 2,468 billion, accounting for 4.72%; industry reached 2,033 billion, accounting for 3.89%, construction reached 868 billion, accounting 1.66%.

59. Đống Đa District keeps economic stability, higher growth year after year. In 2008, the value of non-state industrial production reached 1,541 billion VND. In the first six months of 2009, non-state industrial output value reached 772 billion VND, with a number of key groups such as food processing, electrical equipment manufacturers. Commercial and service activities in the area are stepping up, forming a vibrant trading hub: Kham Thien, Nam Dong, Giang Vo.

60. The economic structure of Son Tay is shifting towards construction with an increase in 47.5% growth. The tourism sector and commercial services accounts for 39% of the growth, while agriculture, forestry and fisheries accounts for 13.5%. The economic development of Son Tay in the future will change the direction of the tourism sector-commercial services, construction industry, agriculture, forestry and fisheries. Son Tay is pro-actively investing in tourist areas, cluster planning for industry.

3. Social Infrastructure

a. Public Health and Sanitation

61. Because the substations are located in Hanoi city all communities have good access to medical services. Local medical facilities include healthcare stations at the Ward level which include first aid and medical assistance for minor illnesses and maternal services. Medical emergencies are referred to district/city hospitals while more complex surgery is carried out in the main hospitals in Hanoi City. Services and trained medical staff are increasing. The number of health establishments, patient beds and health workers Ha Noi are summarized in Table 12.

Table 12. Health Establishments, Patient beds and Health workers of Hanoi in 2010

Health Establishment	Hospitals (incl. central state)	55
	Medical service units in commune	557
	District maternity station	4
Patient beds	Hospitals (incl. central state)	15,509
	Medical service units in commune	2,885
	District maternity station	45
Health workers	Doctor	5,386
	Assistant to doctor	2,584
	Nurse	5,617

(Source:Hanoi Statistical Yearbook 2010)

62. Ha Noi is one of two provinces where the number of people infected with HIV is highest, after Ho Chi Minh City. Information from the Center for HIV / AIDS, Hanoi Department of Health showed that, according Statistics to mid-2013, around Hanoi are there are about 24,342 people infected by HIV (in which 3,800 people died of AIDS). All 29 districts in the city have reported detection of the infection; 536 of the total 577 communes, wards and townships (92.8%) have reported data from HIV infection. The number of people infected with HIV are mainly concentrated in urban districts, such as Dong Da, Hoan Kiem, Hai Ba Trung, Ba Dinh. By contrast, in the outlying districts Ha Noi such as Thach That, Thanh Oai, Quoc Oai, people infected is low. In the area of Hanoi, nearly 2,000 HIV infected persons are not Hanoi citizens. In Hoan Kiem district, there are 1,374 HIV-infected persons until March in 2008. Many new HIV-infected persons are found every year.

63. According to the test results of the Center for HIV / AIDS from 2012 to mid-2013, Dong Da district has a highest prevalence of HIV infected persons with 2,852 people. Dong Da District also has the highest rate of new detected HIV infections with 35 cases in half of 2013.

64. In Son Tay Town, according to the report of the Steering Committee for AIDS and drug abuse, prostitution of town, as of 30/09/2013, the cumulative number of HIV / AIDS in the area is 294, of which 100 people moved to AIDS, and 86 people died.

b. Education

65. Ha Noi has hundreds of leading institutes, more than 50 universities and colleges that are training laborers and supplying some 80,000 graduates to the laborer market. In addition, it supplies skilled and advanced workers for enterprises to scale up their business. **L**iteracy is high due to good access to primary and secondary schools, while technical and tertiary

education is available in numerous colleges within Ha Noi. Hoan Kiem district has a number of universities some of which are Dong Do University, Hanoi university of Pharmacy, and Chemistry Department of Hanoi university of Science

66. In Đống Đa District education and training has grown significantly along with enhancement of the quality of teaching and learning. In recent years, Dong Da education are interested in Information Technology (IT) management and teaching. Currently, in Dong Da District, 100% pre-schools, primary schools, secondary schools are connected to the internet. Dong Da District has 13 universities and colleges such as Foreign Trade University, Institute of Public Administration, Academy Bank, Trade Union University, Hanoi Law University; Hanoi University of Culture, Hanoi Medical University.

67. Son Tay town is home to many universities and colleges, especially in the military field. Son Tay is also known as the "Capital of the troops". The schools in the Town are: Military Medical Academy, 2nd base, Logistics Institute, 2nd base, 1st Army School (formerly School Armed Tran Quoc Tuan), Air Force Academy and Defence, Border Institute, School of Chemical Defense Officers, Artillery School Officers, University of Vietnam-Hungary Industry, Academy Bank, 2nd base, University of Socialist Labour, 2nd base, College of Engineering, Technology and Automotive - Engineering Authority

68. The number of primary and secondary schools in the 3 districts within the subproject area is presented in Table 13.

Table 13. Number of schools in Hoan Kiem, Dong Da and Son Tay district

District	***Education categories***	***Schools***	***Classes***	***Teachers***	***Pupils***
Hoan Kiem	Kindergarten	20	154	365	6,409
	Primary	14	317	480	13,201
	Middle school	7	232	505	10,071
	High school	2	95	196	4,293
Dong Da	Kindergarten	25	190	433	9,240
	Primary	19	584	839	24,527
	Middle school	17	384	873	14,626
	High school	5	206	463	9,496

District	*Education categories*	*Schools*	*Classes*	*Teachers*	*Pupils*
Son Tay	Kindergarten	15	125	239	4,312
	Primary	15	290	487	10,134
	Middle school	15	183	480	6,793
	High school	3	106	254	4,507

c. Communications

69. Ha Noi is the biggest communications centre in the country. Its communications network satisfies swift communication information demand nation-wide and worldwide. Infrastructure for transport, communications and electricity are being constantly improved so that people's standard of living and access to services has improved appreciably. All households in the subproject area have TV and telephone. All wards have their own mass communication facilities. The post office locations are a short distance for all people.

d. Water and electricity and transport

70. Ha Noi has a synchronous and developed transport system. Noi Bai International Airport is 40 km away from its center. The urban population is supplied with 120 liters/person/day of water. Ha Noi currently has 7 electric stations and 200kV and 500kV lines, 23 10-kV electric downloading stations. Levels of 35, 10, and 6kV are gradual shrunk, and levels of 22kV/ 0.4kV are saved. A 22kV line in urban and neighboring areas is designed.

71. The road network of Hoan Kiem District is well developed throughout the subproject area. Dong Da District has many railway transport hubs and roads. These are favorable conditions to help the District be able to communicate and exchange of goods, is a precondition for economic development, culture and tourism. Son Tay town has Highway 32, highway 21 running through, Route Lang - Hoa Lac, Highway 2C to Vinh Phuc; Red River Waterway

4. Cultural and Heritage Sites

72. The old quarter of Hoan Kiem is the smallest district of Hanoi. In the area of Hoan Kiem district, Dong Xuan market is the clue of goods exchange for the whole northern region. Besides, Hoan Kiem district also has large markets such as: Hang Da, Cua Nam, Hang Be market and busy commercial streets such as: Hang Gai, Hang Bong, Hang Ngang, Hang Dao. The most famous cultural site is Hoan Kiem Lake with The Huc Bridge and Ngoc Son Temple.

73. In Dong Da District cultural relics and historic sites are: Van Mieu, -Quoc Tu Giam, Dan Xa Tac monuments, Dai La relics ring, Chua Boc, Dong Da hillock and Quang Trung King monument, Lang temple, Bich Cau temple, Hanoi station, etc.

74. The cultural works of Son Tay's history is Dong Mo Golf Course and Dong Mo Lake, Xuan Khanh lake; Den Va ancient citadel, Duong Lam ancient village. Duong Lam also Ngo Quyen mausoleums, Giang Van Minh's temple, Mong Phu communal house. Especially Mia pagoda, the temple associated with the development of Duong Lam, where the 287 the most rare statues in Vietnam are kept. The list of cultural, heritage sites and Public Infrastructure surrounding the substations are shown Table 14.

Table 14. List of Historic Buildings and Public Infrastructure within 500m of the substations

Substation	Name of infrastructures	Distance and direction from the substation
Tran Hung Dao	Hospital 108	50 m on the East
	Military museum	10 m on the North
Phuong Liet	Collective of the Agriculture Rural Development.	10m on the North-East
	Collective of the Northern Power Corporation.	5m on the South-East
	Dermatology hospital, Vietnam-France hospital, Bach Mai hospital and Nose-Throat hospital	350m on the East
	National Economics University, University of Civil Engineering and Hanoi University of Science and Technology	500m on the East
	Hanoi Medical University and the Air Force Museum	500m on the West
Son Tay	None	

5. UXO Clearance

75. No UXO clearance is needed because the construction activities are taking place inside the existing substation areas. The only potential exposure to UXO is from the excavations for the new building to be built on Son Tay substation property.

6. Subproject affected people

76. No land acquisition will occur in subproject areas because all subproject activities will occur inside substation properties. Thus, there will be no permanent and temporary impacts, and no displaced persons. The subproject will not permanently affect any businesses or shops in the subproject area and will not cause economic displacement to any displaced persons.

77. The construction-related disturbances such as noise, dust, reduced access, and increase traffic will affect about 100 households. The fewest households will be affected by the renovation of the Tran Hung Dao and Son Tay substations.

1. Features of Three Substations

78. Figure 1 shows location of Tran Hung Dao Substation in the dense urban area in central

Figure 1. Location of Tran Hung Dao 110 kV Substation (red)

Ha Noi. The substation is bounded by two streets and a Community Centre and a Border Guard Academy on the eastern side of the substation. Situated along both streets are shops and small cafes, and second floor residences. Directly across Tran Hung Dao Street is a Veteran's Hospital. Figure 2 show the streetscape around Tran Hung Dao substation.

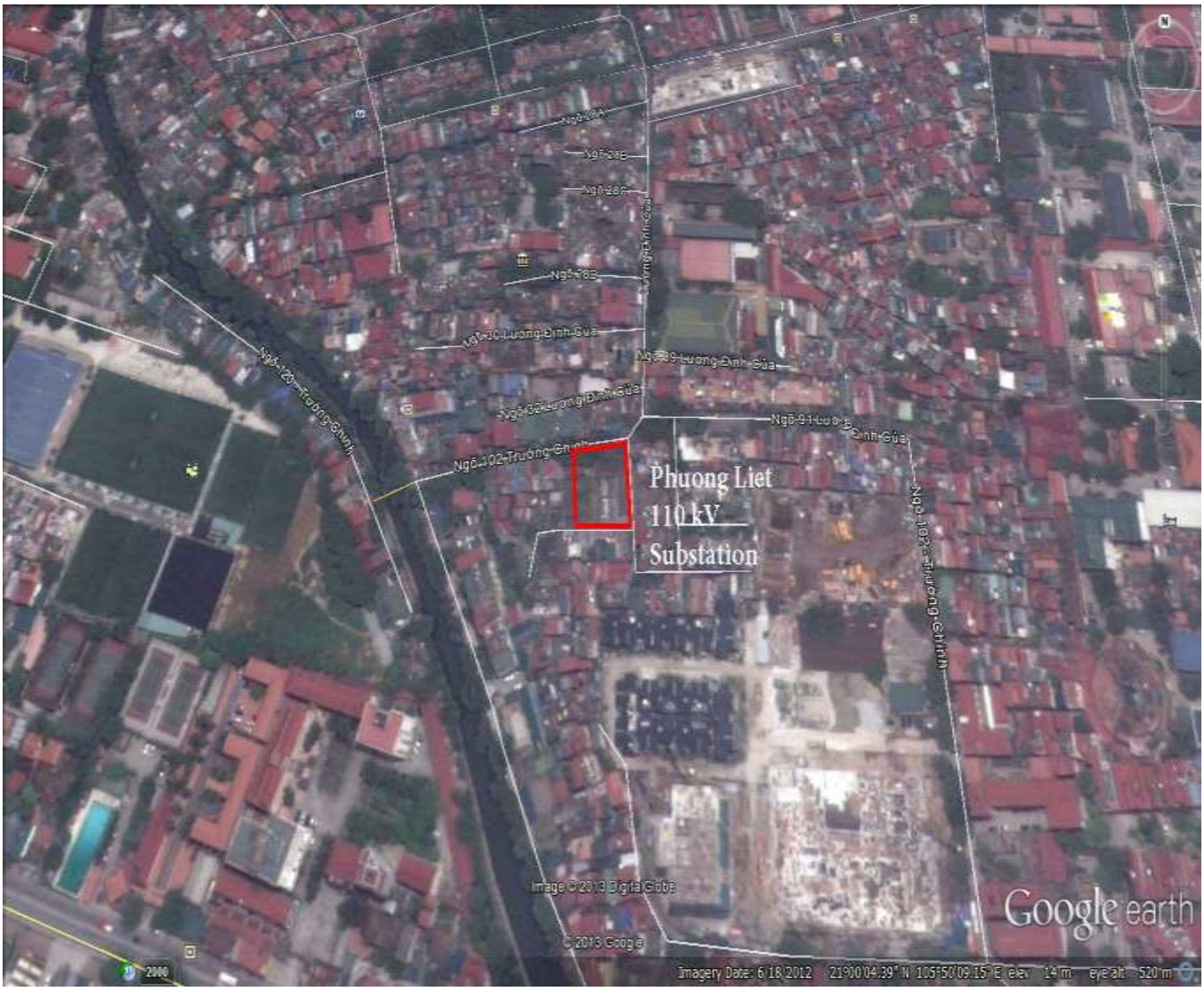
Figure 2. Views of Tran Tung Dao 110 kV Substation

Fig 2a:
Looking east along Tran Hung Dao and smaller street to the north which bound the Substation property. Gate of Border Guard Academy can be seen at end of smaller street

Fig 2b:
Rear view of Substation from smaller street on north side of property

Fig 2c:
Looking north at Substation from Tran Hung Dao Street

Figure 3. Location of Phuong Liet 110 kV Substation in Ha Noi (red)



79. Figure 3 shows the location of the Phuong Liet Substation in another dense urban area in Ha Noi southwest of the Tran Hung Dao Substation. Unlike Tran Hung Dao Street the area immediately surrounding the Phuong Liet Substation is dominated by residences and a few small shops. The Phuong Liet substation is the most cramped Substation with the western, southern and eastern boundary walls shared by residences. Figure 4 shows the Phuong Liet Substation property and adjacent neighbourhood.

Figure 4. Views of Phuong Liet 110 kV Substation Property

Fig 4a:
View east from inside substation property showing multi-storey residences at property boundary

Fig 4b:
View west from inside substation property showing multi-storey residences at property boundary

Fig 4c:
Access road in front of Substation

80. Figure 5 shows views of Son Tay 110 kV Substation. The substation is located in a peri-urban environment in Son Tay town on western edge of Ha Noi province. The property of the substation provides much more area for substation expansion.

Figure 5. Views of Son Tay 100 kV Substation Property

Fig 5a:
Gate of Substation looking down access road

Fig 5b:
Open area west of power house

Fig 5c:
Proposed area for new building on northwest side of property

VI. INFORMATION DISLCOSURE AND PUBLIC CONSULTATION

A. Information Disclosure

81. Formal disclosure of information on the three 110 kV substations that occurred to affected persons and stakeholders during the IEE is meant to form the beginning of continued information disclosure and stakeholder involvement with the subproject as the subproject is implemented. As part of the stakeholder communication strategy regular information exchange meetings with stakeholders are strongly encouraged throughout implementation of the subproject.

82. The IEE must be easily available to the stakeholders contacted during examination in written and verbal forms in local language of Vietnamese. At a minimum the Executive Summary of the IEE should be translated to local language and distributed to all APs. The IEE should be available on the EVN HANOI web site, at the EVN HANOI office in Ha Noi, and at the subproject sites. Similarly, all subproject reporting with specific reference to stakeholder consultation minutes, environmental monitoring, and reports on EMP implementation released by the EA/IA should be available at the same offices and web sites. The IEE will be available on the ADB web site as well as EMP reporting that is prepared by the EA/IA after implementation begins.

B. Public Consultation

83. The stakeholder consultation strategy was developed to meet the requirements of meaningful consultation as stipulated by the SPS (2009). The strategy embodied the principles of meaningful engagement, transparency, participation, and inclusiveness to ensure that affected and marginalized groups such as women, and the poor, were given equal opportunities to participate in the design of the subproject.

1. Identification of Stakeholders

84. Stakeholders were identified and engaged in a participatory manner. Stakeholder communication focused on institutional stakeholders, affected communities, and persons directly affected by proposed subproject interventions. The stakeholders of the subproject include:

- Institutional stakeholders such as: (i) PPC, (ii) DPC; (iii) Project EA, (iv) PECC4, and (v) commune leaders;

- Mass organizations such as Womens Union, and Farmers Union which provided information for the design of the various subproject interventions, and which might participate in implementation of measures and interventions;

- Affected households and businesses living along the transmission line and near the substation site who may be directly and/or adversely affected, and who have an interest

in the identification and implementation of measures to avoid or minimize negative impacts; and

- Other institutions or individuals with a vested interest in the outcomes and/or impacts of the subproject.

2. Public consultation meeting

85. Formal community consultation meetings were held to discuss the location and potential environmental and social impacts of the transmission line and substation. Public consultations were held at: (i) Xuan Khanh Ward on Son Tay town on 15 October, (ii) Phan Chu Trinh Ward, Hoan Kiem District on 13 November, and (iii) Phuong Mai ward, Dong Da District, in Hanoi 23 November, 2013

86. The public meeting consisted of the following three component procedures:

(i) The consulting engineer introduced the details of planned renovation and rehabilitation of the three substations;

(ii) The environmental consultant presented ADB's environmental policy, safety regulations in the Vietnam power sector, anticipated environmental impacts and respective mitigation measures (to be developed in IEE), the grievance redress mechanism for environmental and resettlement problems; and

(iii) The social/resettlement consultants presented: ADB's resettlement plan; impacts due to the acquisition land and properties; policies of GOV and local authorities, the Project's policies in compensation for loss as the state acquired land and properties on land.

87. During the meeting, people raised their questions and comments on environmental issues. The majority of the concerns raised were fire protection system, impact of electromagnetic fields (EMF), road damage and repair, noise and solid waste mitigation. The participants of the public consultation meeting included Commune leaders, representatives of mass organization such as Women Union, Farmer union and affected people. Total consulted people were 61 (Appendix B).

3. Results of Public Consultation

a. Comments from communal authorities

88. The summary of comments/questions from local authorities/people and answers of subproject owners and consultants company PECC4 are summarized in Table 15. The main concerns of subprojects are as follows:

Son Tay substation. The 150-200 m road from the substation to the street needs to be reinforced to cope with the heavy trucks transporting during construction period. The construction wastewater needs to be collected.

Tran Hung Dao substation. The daily construction period must not extend beyond 11 p.m., and identify location to dispose the construction wastewater. The contractor must inform Phan Chu Trinh commune people's committee and local people about daily construction period.

Phuong Liet substation. The proper disposal of construction and domestic solid waste; the effects of construction activities, electromagnetic fields to the people and the commitment of investor/constructor to ensure no fire and explosion occurred.

Table 15. Comments and Issues of Public Stakeholders and Response from PECC4

Location and time	Comments/questions from local authorities	Answers of Project owners and consultants company PECC4	Project response
SƠN TÂY 15 October 2013	The150-200 m road from the substation to the street need to be reinforced.	Construction contractor will consider these items in the construction preparation	Anticipated need for expansion of access road to Substation to accommodate construction truck traffic identified in IEE.
	The lightning protection systems need to be secure and safe. There is a case that buffalo died by lightning strike.	Construction contractor will include these this in the construction preparation	Integral part of detailed design
	Proper drainage should located beside or not in middle of road to not weaken road	Construction contractor will consider these items in the construction preparation.	The access road worthiness is included in IEE, and will be addressed at detailed design.
	The construction wastewater need to be collected.	The scope of construction is small. Only small amount of wastewater generated.	Mitigation Plan of EMP has specific sub-plans for managing worker camp and construction waste.
TRẦN HƯNG ĐẠO 13 October 2013	Why does substation cause noise, and possible explosion?	The accessories in substation are too old and unsafe. The modern accessories will replace these will reduce the noise and the prevent explosion.	Primary objective of subproject that will be addressed at detailed design.
	When does the subproject start and finish?	-Start: July, 2014 (Schedule) -Building time: three months	n/a
	Building actions have to end before 11p.m.	Agree. However, with some sudden events which have to build in the night, we will notify the people in subproject area.	EMP specifies ideal working hours between 07:00 and 18:00
	The Project owner needs to inform local people about construction time.	Agree.	EMP identifies need for contractor(s) to inform community of construction schedule in pre-construction phase

Location and time	Comments/questions from local authorities	Answers of Project owners and consultants company PECC4	Project response
PHUONG MAI WARD, DONG DA DISTRICT, HANOI CITY 23 November 2013	Construction waste will be collected, but domestic waste collection of substation must be managed by sanitation companies and pay sanitation fees.	Investor and Construction contractor will work with sanitation enterprises to pay for garbage collection.	n/a
	Investor is requested to clearly describe how the construction activities affect people.	The subproject to renovate and upgrade the existing fence of Phuong Liet 110kV substation will cause short-term environmental impacts such as dust, noise, potential explosion hazards, obstructing traffic, and road damage. The upgraded electrical capacity will reduce power losses, bringing the social and economic benefits in the area.	As clarified in the IEE/EMP, the public meeting that was held represents the first step in the continued formal disclosure of information on the subproject to local community, education of the community on the subproject, and the ability of the community to identify issues to the project owner and contractor as the subproject is implemented
	Electromagnetic fields affect people or not?	- The new installation of substation equipment is designed according to international standards and in accordance with electricity regulations of Vietnam.	The WHO, and other international medical community have not determined any negative health effects caused by EMF from transmission lines or substations.
	Local people need full commitments of subproject owner and construction contractor in the construction process. What is the level of safety for the people in case of fire? The subproject owner and construction contractor need to ensure no fire and explosion occurs.	- Investor commits to implement fully environmental regulations, fire during subproject implementation.	The EMP prescribes a comprehensive Emergency Response Plan for construction phase
	The 110 kV substation is too close to residential areas. The distance is only about 1m. How can this ensure the	The subproject replace the old equipment has long operated in accordance with the new equipment to international standards. At the same time	Integral to detailed designs of the upgrading of the Substation

Location and time	Comments/questions from local authorities	Answers of Project owners and consultants company PECC4	Project response
	safety of the power grid?	the equipment is installed according to the layout as well as international standards of Vietnam to ensure electrical safety.	
Conclusion	Xuan Khanh, Phan Chu Trinh, Phuong Mai Ward People's Committees and affected households agree and will support the upgrading activities of 110kV Son Tay, Tran Hung Dao and Phuong Liet substations in Hanoi City		Follow-up consultations will occur to monitor community views of subproject

4. Comments from Army Central Hospital 108 and Army Museum

Because Tran Hung Dao substation is located close to Army Central Hospital 108, and Army Museum, the consultation with those organizations was been made by Ha Noi PMB through official letter of Letter no. 1699/HANOI PMB-X09.2 dated 27th September 2013. The comments/opinions from Army Central Hospital 108 and Army Museum are as follows:

- The organizations have agreed that, the impacts of the subproject on the natural environment and socio-economic aspects are evaluated fully.

- The measures are feasible and appropriate with the real situation at the subproject site.

- It is vital that Ha Noi PPMB should design preferential, stable and continuous power supply plan after the complete renovation of the hospital. The strict implementation of measures to minimize environmental pollution and to ensure safety in construction and operating process of the subproject is also suggested. Furthermore, measures to handle power-outages during construction and operation phases of the subproject should be planned.

VII. POTENTIAL ENVIRONMENTAL IMPACTS AND MITIGATIONS

89. The assessment of potential impacts of the rehabilitation and renovation of the three substations is structured by the three development phases of the subproject defined by: *pre-construction*, *construction*, and *post-construction operational phase.* In this way potential impacts of common activities of the three phases can be addressed together thereby minimizing redundant assessments. Potential impacts specific to a substation are discussed separately. This structure is carried forward and is also used to structure the environmental management plan (EMP) for the subproject.

A. Subproject Benefits

90. The targeted comprehensive benefit of the improvements to the substations is provision of the much needed additional and more reliable electrical power to the three districts in Ha Noi. Special reference is noted to the benefit to the numerous hospitals in the areas, and the need of the supply the overall steady increase in residential, commercial, and light industrial demand in the city. The additional electrical power will significantly reduce power outages or brownouts that occur in the area, and the need to shunt electrical power from other parts of the city.

B. Pre-construction Phase

91. At the feasibility design stage no resettlement or loss of land is expected because the renovation and rehabilitation of the three substations will occur on substation property inside the existing substation wall or fence boundaries. The details of any potential land loss or compensation are found in the draft Resettlement Plan (RP) which is under separate cover.

a. Updating Environmental Management Plan

92. The subproject EMP will need to be updated during the pre-construction to ensure the EMP fully addresses the potential impacts of the final detailed designs of the Tri-Substation renovation and rehabilitation in Ha Noi. This will involve finalization of the Mitigation and Monitoring Plans of the EMP that will manage and measure potential impact areas such erosion, noise, dust and air quality, construction waste and spoil disposal, construction traffic, and worker and public safety at the subproject sites. However, given that all renovation/rehabilitation work will occur inside the current boundaries of the three substations updates to the EMP should be minor. The updated EMP will be used by the contractors to prepare their contractor environmental management plans (CEMP).

93. Thus, the key impact management measures to be implemented during the pre-construction phase are:

1) Final review of any compensation issues with affected households and businesses;
2) Completion of detailed designs of the subproject; and
3) Updating and initiation of subproject EMP.

C. Construction Phase

94. The potential environmental impacts of the subproject are associated primarily with the construction phase of the planned renovation and rehabilitation of the three substations. The three substations are not located in protected areas, and there are no documented rare or endangered wildlife, or critical habitat in the area of the three substations.

1. Potential impacts

95. Short-term construction-related impacts common to all three substations are, for example, reduced and/or blocked public access and movement in the area, noise, dust and air pollution from NOx, SOx, and CO caused by construction truck traffic and heavy equipment use, public and worker accidents and injury, increased traffic and traffic accidents on access roads to substations, solid waste and domestic pollution construction sites and from worker camps, social issues associated with migrant worker force. In addition, the decommissioning of old equipment, cables, switches, and other related electrical materials would result to the generation of waste materials that needs appropriate handling, storage, and disposal. A suitable and adequately sized storage area must be identified by each substation prior to any dismantling operation.

a. Mitigation measures

96. Construction management measures to mitigate the potential common impacts associated with the renovation and upgrading of the three substations are exemplified below. The mitigation measures are detailed further in the subproject EMP.

1) The civil works planned at the Son Tay substation should be reviewed with the GoV military to assess the likelihood that UXO could be encountered when digging the footings of the new building. UXO clearance may be required.
2) Open excavations should be fenced, and trenches covered where public walkways or vehicles must cross.
3) A cultural chance find management sub-plan must be in place in the EMP for cultural artifacts and property.
4) Regular use of wetting agents should be employed at construction sites and along construction / access roads to substations to minimize dust.
5) All construction vehicles and gas powered equipment should be maintained in proper working order to minimize emissions, and not operated at night if possible to minimize noise.
6) Speed limits should be posted and adhered to by construction vehicles.
7) Where possible construction vehicles should use different roads or dedicated lanes of roads shared by the public.
8) Trees and other vegetation at all construction sites and along access roads should be protected with minimal removal.
9) Present and past land activities on substation property should be reviewed to assess whether excavated soils will be contaminated spoil. Contaminated spoil should be disposed at a landfill or a location approved by DoNRE.
10) Local workers should be used as much as possible to prevent or minimize influx of migrant workers, and incidence of social disease and community unrest.

11) Worker camps or stations must have adequate domestic waste collection facilities and sufficient pit latrines that are located away from public areas.

12) Dedicated fuel storage areas must be established away from public areas and marked clearly.

13) To minimize the risk of public and worker injury appropriate GoV regulations on Occupational, Safety, and Community Health must be applied[6], or the IFC/World Bank Environment, Health, and Safety Guidelines (2007) that govern the safe and orderly operation of civil works should be followed.

14) Aggregates (e.g., sand, gravel, rock) that are transported by truck should be covered.

15) Prolonged use of temporary storage piles of fill should be avoided, or covered, or wetted regularly to prevent dust and erosion.

16) Sand extraction from any rivers for construction fill should be conducted at licensed areas only.

17) Storage of bulk fuel should be on covered concrete pads away from the public and worker camp. Fuel storage areas and tanks must be clearly marked, protected and lighted. Contractors should be required to have an emergency plan to handle fuel and oil spillage.

18) Handling, storage, or disposal of transformer oils must follow internationally accepted procedures and standards.

19) Develop a plan for the decommissioning of old equipment and materials from each substation that considers the possible repair and reuse of equipment and parts, identification of potential buyer or recycler and adequate storage or warehousing of materials.

2. Substation-specific potential construction impacts, and mitigations

97. The short-term construction-related impacts and required mitigations summarized above could vary among the substations. Highlighted below are potential construction-related impacts specific to individual substations.

a. Son Tay substation

98. Potential construction-related impacts of the substation renovations will stem from the narrow access road to the station in the form of traffic congestion, periodic blocked access and vehicle movement, and increased risk of vehicle accidents. The existing

[6] e.g. Decree 110/2002/ND-CP, supplementing some Articles of Decree 06/1995 on Labour Code of Occupational Safety and Health, MoLISA

access road to substation may become too narrow near the substation for combined construction and local traffic. The road may need to be temporarily widened with dedicated construction lanes, or regular traffic re-routed.

b. Phuong Liet substation

99. Construction traffic will definitely become a problem along the narrow urban streets leading to the substation. Large truck and heavy equipment movements to the site should be scheduled between 23:00 and 06:00 hr. Extra care must be applied to daytime movement of construction vehicles.

100. The notably cramped substation property will require that extra care is taken with construction worker safety. Similarly, extra measures must be undertaken to ensure that the residents of the surrounding properties that share the substation security fence and look over the substation property are protected from injury or disturbance from the activities to renovate the substations.

c. Tran Hung Dao Substation

101. Similar to Phuong Liet, extra care must be taken to ensure that the construction workers are not injured during the rehabilitation of the Tran Hung Dao substation. And, while the substation is mostly separated from adjacent residents and businesses by two busy urban streets (e.g., Tran Hung Dao Street) extra care must be exercised to ensure that the adjacent residents and business activities are not negatively affected. Clearly marked speed limits need to be enforced along with sufficient signage that indicates that rehabilitation of the substation is underway.

D. Operation Phase

102. No marginal impacts with the rehabilitated and renovated substations are anticipated. Normal worker and public safety practices as regulated by M/DoLISA should continue. Existing regulations for the management of spills of hazardous waste such as transformer oils should be followed.

1. Climate Change

103. Regional Global Circulation Modeling project greenhouse-climate change induced changes to the frequency and severity of rainfall events in the subproject area. The rehabilitated and renovated substations will be resilient to climate change such as potential flooding associated from a 100-year storm.

VIII. ANALYSIS OF ALTERNATIVES

104. The subproject alternative of doing nothing and not renovating or rehabilitating the substations would result in the continued situation of power shortages in the three districts.

IX. GRIEVANCE REDRESS MECHANISM

105. A well-defined grievance redress and resolution mechanism will be established to address affected persons (AP) grievances and complaints regarding environmental issues, land acquisition, compensation and resettlement in a timely and satisfactory manner. All APs will be made fully aware of their rights, and the detailed procedures for filing grievances and an appeal process will be published through an effective public information campaign. The grievance redress mechanism and appeal procedures will also be explained in a subproject information booklet (PIB) that will be distributed to all APs.

106. APs are entitled to lodge complaints regarding any aspect of affected environments, land acquisition and resettlement requirements such as, noise, pollution, entitlements, rates and payment and procedures for resettlement and income restoration programs. APs complaints can be made verbally or in written form. In the case of verbal complaints, the committee on grievance will be responsible to make a written record during the first meeting with the APs.

107. A Grievance Committee with appointed environmental and social issues experience will be organized in local communes comprising of local leaders designated for such tasks. The designated commune officials shall exercise all efforts to settle APs issues at the commune level through appropriate community consultation. All meetings shall be recorded by the grievance committee and copies shall be provided to APs. A copy of the minutes of meetings and actions undertaken shall be provided to the EA/IA[7], and ADB upon request.

108. The procedures for grievance redress are defined below and summarized in Figure 6. The procedure described below should apply easily to both social and environmental issues and be consistent with the legal process for resolution of disputes in Viet Nam.

i) Stage 1: Complaints from APs for the first time shall be lodged verbally or in written form with the village head or commune leader. The complaints shall be discussed with the APs and the designated Head of Grievance Committee or members of the committee. Because initial environmental issues will most likely be construction-related, the EO/contractor and then

[7] See Section XB below for institutional responsibilities for EMP

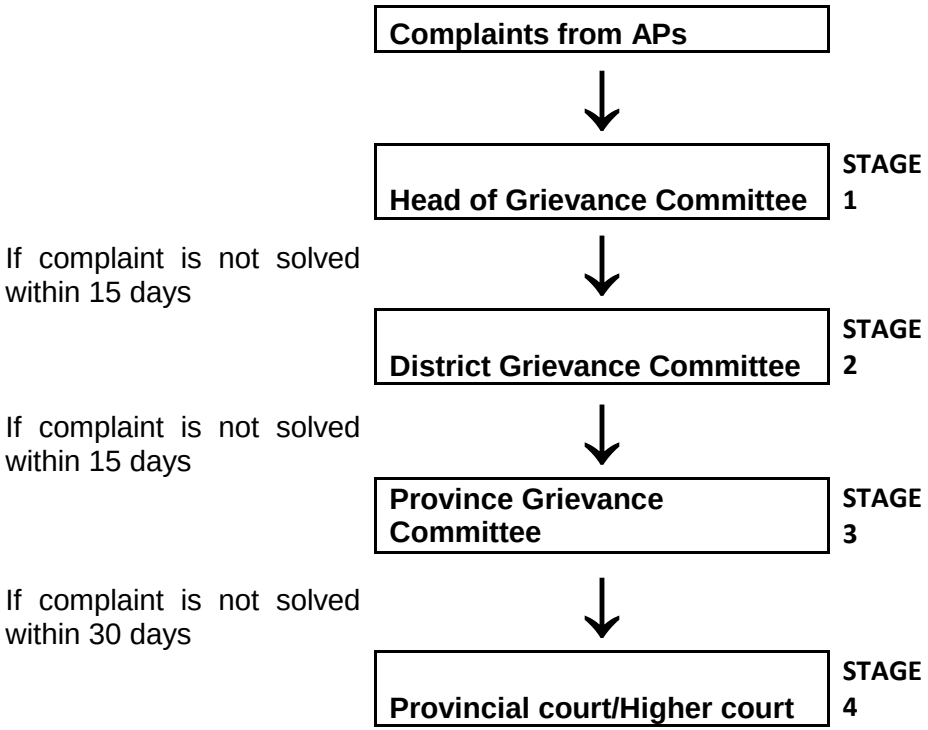
the ESU/IA need to be notified immediately. It will be the responsibility of the Head of Grievance Committee to resolve the issue within 15 days from the date the complaint is received. All meetings shall be recorded and copies of the minutes of meetings will be provided to APs.

ii) Stage 2: If no understanding or amicable solution can be reached or if no response is received from the grievance committee within 15 days from filing the complaint, the APs can elevate the case to the District Grievance Committee. The District Grievance Committee is expected to respond within 15 days upon receiving the APs appeal.

iii) Stage 3: If the AP is not satisfied with the decision of the District Office, or in the absence of any response, the APs can appeal to the Provincial Grievance Committee (PGC). The PGC will review and issue a decision on the appeal within 30 days from the day the complaint is received.

iv) Stage 4: If the AP is still not satisfied with the decision of the PGC or in the absence of any response within the stipulated time, the APs, as a last resort may submit his/her case to the provincial court. The court will address the appeal by written decision and submit copies to the respective entities which include the EA, DGC/PGC and the APs. If however, the AP is still not satisfied the court's decision, the case may be elevated to the provincial court. If however, the decision of the provincial court is still unsatisfactory to the APs, the APs may bring the complaints to the Higher Court.

Figure 6. Summary of Grievance Redress Process



109. The EA and EVN will be responsible for checking the procedures and resolutions of grievances and complaints. The EVN/EA must have expertise and experience in social and environmental issues associated with infrastructure developments. The EVN/EA may recommend further measures to be taken to redress unresolved grievances. The environmental specialists will provide the necessary training to improve grievance procedures and strategy for the grievance committee members when required.

109. In cases where APs do not have the writing skills or are unable to express their grievances verbally, they are encouraged to seek assistance from the recognized local groups, NGOs, or other family members, village heads or community chiefs to have their grievances recorded in writing, and to have access to documentation, and any survey or valuation of assets, to ensure that where

disputes do occur, all the details have been recorded accurately enabling all parties to be treated fairly. Throughout the grievance redress process, the responsible committee will ensure that the concerned APs are provided with copies of complaints and decisions or resolutions reached.

110. If efforts to resolve disputes using the grievance procedures remain unresolved or unsatisfactory, APs have the right to directly discuss their concerns or problems with the ADB Southeast Asia Department through the ADB Viet Nam Resident Mission (VRM). If APs are still not satisfied with the responses of VRM, they can directly contact the ADB Office of the Special Project Facilitator (OSPF).

X. ENVIRONMENTAL MANAGEMENT PLAN

A. Overview of Environmental Management Plan

111. An Environmental Management Plan (EMP) has been developed for the rehabilitation and renovation of the Son Tay, Phuong Liet, and Trans Hung Dao substations. The purpose of the EMP is to integrate the results of the IEE into a formal management plan that is implemented in parallel with the subproject to prevent or minimize the potential environmental impacts and issues that were identified by the IEE. The EMP addresses the results of the public consultations on the subproject that were convened as part of the IEE.

112. The EMP, *inter alia*, consists of an Impacts Mitigation Plan, a Monitoring Plan, and an Emergency response Plan. The EMP also prescribes the institutional responsibilities for the implementation of the EMP. The EMP is a management tool that provides a set of directives and guidelines that the subproject owner follows to prevent or minimize unnecessary environmental impacts of the subproject.

B. Institutional Arrangements and Responsibilities

113. At the feasibility stage the primary management framework[8] responsible for the implementation of the EMP for the renovation and upgrading of the Son Tay, Tran Hung Dao and Phuong Liet substations is summarized as follows. The EVN HANOI is the executing agency (EA). The EA takes overall responsibility for implementing the EMP with executive support from the Power Project Management Board (PPMB); a subsidiary of EVN HANOI and the implementing agency (IA) of the subproject. The IA under the direction of the EA implements the subproject and EMP with an assigned Environmental and Social Unit (ESU) whose sole responsibility is to implement the EMP.

[8] Adapted from kick-off meeting presentation slides, December 10-13

114. The IA/ESU is supported by the [international] Project Implementation Consultant[9] (PIC). The PIC assists with completion of the detailed subproject designs, updates the EMP to address the detailed subproject designs, and assist with the implementation of the EMP. The PIC also delivers required capacity development and training to the IA/ESU. The ESU oversees and assists the work of the Environmental Officer (EO) of the construction contractor who implements the contractors EMP (CEMP)[10].

115. External support of the ESU for the implementation of the EMP is provided by the international and national environment specialists (ES) of the PIC, and an Environmental Monitoring Consultant (EMC) which is required to conduct the field sampling and laboratory analyses of the environmental monitoring plan (e.g., water quality, air quality) of the EMP that cannot be performed by the contractor or IA/ESU. A summary of indicative responsibilities for implementation of the EMP is provided below.

116. The responsibilities of the EA with support from EVN include:

- Overall responsibility for implementation of EMP;
- Provide coordination and supervision for environmental and social safeguards and monitoring for IA/ESU;
- Liaise with EVN and ADB on the implementation of the EMP; and
- Coordinate resolution with IA/ESU with issues arising from the implementation of EMP.

117. The responsibilities of the ESU of IA include:

- Assist PIC with updating the EMP to meet final detailed Subproject design;
- Notify DoNRE to verify GoV approvals of subproject are met;
- Assist PIC with inclusion of CEMP requirements in contractor bid documents including bid evaluations based on updated EMP;
- Undertake day-to-day management of EMP implementation activities;
- Work with EMC on implementation of monitoring plan of EMP;

[9] PIC to be defined
[10] Contractor Environmental Management Plan prepared by contractor as part of bid documents based on EMP

- Ensuring compliance with loan covenants and assurances in respect of entire Subproject, including EMP (as well as IPPs, GAPs, resettlement plans);
- Lead follow-up meetings with all affected stakeholders;
- Prepare and submit quarterly reports on EMP implementation to IA/EA;
- Oversee implementation of CEMP by contractor;
- Coordinate with ES of PIC for EMP implementation;
- Undertake regular construction site inspections to ensure contractor implements CEMP properly; and
- Ensure EO of contractor submits monthly reports on construction mitigations and monitoring.

The responsibilities of the ES (Int'l and Nat'l) of the PIC are:

- Updating the EMP to meet final detailed design of subproject;
- Provide technical direction and support to ESU/IA for implementation of EMP;
- Oversee design and delivery of capacity development and training of ESU/IA and EO of contractor(s);
- Provide advice and support to EMC with their monitoring activities;
- Review all reports prepared ESU/IA and EMC for EA and ADB; and
- Check location of any possible contaminated sites within and near Subproject, recommend appropriate mitigating measures to address this, and evaluate implementation of mitigation plan..

The responsibilities of Environmental Officer (EO) of Contractor include:

- Implement CEMP for construction phase of Subproject; and
- Prepare and submit monthly reports on mitigation and monitoring activities of CEMP any environmental issues at construction sites.

The responsibilities of external Environmental Monitoring Consultant (EMC) include:

- Implement the environmental sampling required for monitoring plan of EMP that cannot be conducted by the contractor and ESU/IA/EO.
- Perform required laboratory analyses for monitoring program detailed in EMP; and;
- Prepare and submit quarterly reports to IA/ESU on monitoring activities.

118. The Department of Natural Resources and Environment (DoNRE) is the provincial agency which oversees environmental management of Ha Noi. The DoNRE with District staff provides direction and support for environmental protection-related matters including application of the Law on Environmental Protection No. 02/99/NA (1999), EIA, and environmental standards.

119. The ADB provides guidance to EA/IA with any issues related to EMP, and reviews biannual reports on EMP activities compiled and submitted by EA.

C. Summary of Potential Impacts of Subproject

The potential impacts of the subproject are summarized in Table 16.

Table 16. Summary of Potential Impacts of the Subproject

Pre-construction Phase
• No loss of land, or any compensation is anticipated
Construction Phase

• Common construction-related civil works disturbances such as dust, noise, reduced and/or blocked public access, disrupted business and recreation, noise, dust and air pollution from NOx, SOx, and CO caused by increased truck traffic and heavy equipment use, soil and surface water pollution caused by equipment operation and maintenance, public and worker accidents, disruption of traffic, increased traffic accidents, land erosion and surface water sedimentation, drainage and flooding problems, solid and domestic waste from worker camps, social issues and community problems caused by migrant workers. • Due to cramped working conditions the risk of worker and public injury is highest with the improvements to the Phuong Liet substation and lowest with the Son Tay substation.
Operational Phase
• Risk of worker and public safety at facilities • Spills of hazardous materials such as transformer oil

D. Mitigation Plan

120. The impact mitigation measures of the EMP are presented in a comprehensive mitigation plan for the subproject in Table 17. Similar to the IEE the mitigation plan is structured by the three development phases defined by the pre-construction; construction; and post construction operational phase. The mitigation plan addresses the environmental issues and concerns raised at the stakeholder meetings.

121. The mitigation plan combines construction phase impacts common to the three substations for which single mitigation measures are prescribed. In this way redundant mitigation measures are not re-stated numerous times. However, impacts and required mitigations specific to substation are also identified when appropriate. Or, common mitigations that are particularly important for a substation are underscored. The mitigation plan identifies potential impacts, required mitigations, responsible parties, location, timing, and indicative costs.

1. Mitigation sub-plans

122. The mitigation plan is comprehensive by design because it will need to be updated to meet the final detailed designs of the subproject. The mitigation plan is organized into a series of mitigation sub-plans that address specific potential impact areas of the subproject. The sub-plans will assist the contractors with the development of their CEMPs as part of their bid documents, and ultimately will allow the ESU/IA, PIC, and contractors to focus more or less on the different potential impact areas as they arise with the implementation of the final designs of the subproject. Mitigation sub-plans of the EMP are drafted for example for: a) Construction drainage; b) Erosion; c) Noise and Dust; d) Contaminated Spoil Disposal; e) Solid and Liquid Waste Disposal; f) Construction and Urban Traffic; g) Utility and Power Disruption; h) Worker and Public Safety; i) Tree and Vegetation Removal and Site Restoration; j) Construction Materials Acquisition, Transport, and Storage, k) Cultural chance finds, and l) disposal and management plan for decommissioned equipment and parts.

Table 17. Environmental Impact Mitigation Plan

Subproject Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Location	Timing	Activity Reporting	Estimated Cost[11] (USD)	Responsibility	
							Supervision	Implementation
Pre-Construction, Detailed Design Phase								
Confirmation of no required resettlement, land loss, or compensation	No negative environmental impacts	1. Affected persons well informed well ahead of Subproject implementation.	All affected persons in subproject areas	Before subproject implemented	See resettlement plans	See resettlement plan	EA/IA/ESU	Resettlement committees
Disclosure, and engagement of community	No negative impacts	2. Initiate Information Disclosure and Grievance process of IEE	For all construction sites.	Beginning of subproject	Quarterly	No marginal cost[12]	IA/ESU	IA/ESU
GoV approvals	No negative impact	3. Notify DoNRE of subproject initiation to complete EA requirements, and obtain required subproject permits and certificates.	Entire subproject	Before construction	As required	No marginal cost	EA/DoNRE	DoNRE

[11] Costs will need to be updated during detailed design phase.
[12] No marginal cost indicates that costs to implement mitigation are to be built into cost estimates of bids of contractors

Subproject Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Location	Timing	Activity Reporting	Estimated Cost[11] (USD)	Responsibility	
							Supervision	Implementation
Detailed designs of Subproject,	Minimize negative environmental impacts	4. Work with PIC[13] to complete detailed designs of the renovations and rehabilitation of the substations. Ensure the following measures are included: a) identification of spill management prevention plans, and emergency response plans for all construction sites; b) no disturbance or damage to culture property and values; c) minimal acquisition of agriculture lands d) locate aggregate borrow pits and rock supply areas away from human settlements with fencing and access barriers; e) no, or minimal disruption to water supplies, access roads, utilities, and electricity with contingency plans for unavoidable disruptions; f) no, or minimal disruption to normal pedestrian and vehicle traffic along all road segments with contingency alternate routes; g) for built-up areas include specific plan to notify and provide residents and merchants of construction activities and schedule to minimize disruption to normal commercial and residential activities. h) develop a plan for the management of decommissioned equipment, cables, and other related electrical materials. i) identify a storage area for decommissioned equipment and parts.	Final siting	Before construction initiated	Once with detailed designs documents	No marginal cost	PIC	EA/IA

[13] PIC is Project Implementation Consultant at detailed design phase to be determined

Subproject Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Location	Timing	Activity Reporting	Estimated Cost[11] (USD)	Responsibility	
							Supervision	Implementation
Update EMP	Positive environmental impacts	5. Identify any new potential impacts of subproject and include in EMP with special attention to residential areas. 6. Update mitigation measures and monitoring requirements of EMP where necessary to meet detailed designs, and to protect affected [social] environments. 7. Submit updated EMP with new potential impacts to ADB to review. 8. Complete individual management subplans of CEMP for: a) Construction drainage; b) Erosion; c) Noise and Dust; d) Contaminated Spoil Disposal; e) Solid and Liquid Waste Disposal; f) Construction and Urban Traffic; g) Utility and Power Disruption; h) Worker and Public Safety; i) Tree and Vegetation Removal and Site Restoration; j) Construction Materials Acquisition, Transport, and Storage, k) Cultural chance finds, and l) disposal and management plan for decommissioned equipment and parts.	All sites	Before construction initiated	Once with detailed designs documents		PIC	IA/ESU
Confirm approved construction waste disposal sites	No negative impact	9. Notify DoNRE to confirm locations of sites for borrow pits and disposal areas for construction and hazardous waste for subproject, and obtain required permits.	All substations	Before construction	As required	No marginal cost	IA/DoNRE	ESU
UXO survey, and removal	Injured worker or public	10. Ensure GoV military is consulted for potential UXO associated with Son Tay substation excavations for new building.	Son Tay substation.	Beginning of subproject	Once	See Monitoring Plan below	EA/IA	ESU/GoV

Subproject Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Location	Timing	Activity Reporting	Estimated Cost[11] (USD)	Responsibility	
							Supervision	Implementation
Develop bid documents	No negative environmental impact	11. Ensure updated EMP is included in contractor tender documents, and that tender documents specify requirements of EMP must be budgeted. 12. Specify in bid documents that contractor must have experience with implementing EMPs, or provide staff with the experience.	For all substations	Before construction begins	Once for all tenders	No marginal cost	PIC	IA/ESU
Create awareness of physical cultural resources in area	No negative environmental impact	13. EA to review potential locations of physical resources, and explain possible PCR to contractors and PIC	At all substations	Before construction begins	Once	No marginal cost	EA/IA	IA/ESU
Obtain and activate permits and licenses	Prevent or minimize impacts	14. Contractors to comply with all statutory requirements set out by GoV for use of construction equipment, and operation construction plants such as concrete batching.	At all substations	Beginning of construction	Once	No marginal cost	EA/PIC	ESU and contractors
Capacity development	No negative environmental impact	15. Develop and schedule training plan for IA/ESU/EO to be able to fully implement CEMP, and to manage implementation of mitigation measures by contractors. 16. Create awareness and training plan for contractors whom will implement mitigation measures.	For all substations	Before construction begins	Initially, refresher later if needed	No marginal cost	PIC	PIC
Recruitment of workers	Spread of sexually transmitted disease	17. Use local workers as much as possible thereby reducing #s of migrant worker	All work forces.	Throughout construction phase	Worker hiring stages	No marginal cost	EA/IA	Contractor's bid documents
Construction Phase of the Rehabilitation and Renovation of the Three 110 kV Substations								

Subproject Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Location	Timing	Activity Reporting	Estimated Cost[11] (USD)	Responsibility	
							Supervision	Implementation
Initiate EMP and sub-plans,	Prevent or minimize impacts	18. Initiate updated EMP and CEMP including individual management sub-plans for different potential impact areas that are completed in pre-construction phase (see sub-plan guidance below).	For all construction sites	Beginning of construction	Once	No marginal cost	IA/PIC	ESU and contractors
Worker camps	Pollution and social problems	19. Locate worker camps away from human settlements. 20. Ensure adequate housing and waste disposal facilities including pit latrines and garbage cans. 21. A solid waste collection program must be established and implemented that maintains a clean worker camps 22. Locate separate pit latrines for male and female workers away from worker living and eating areas. 23. A clean-out or infill schedule for pit latrines must be established and implemented to ensure working latrines are available at all times. 24. Worker camps must have adequate drainage. 25. Local food should be provided to worker camps. Guns and weapons not allowed in camps. 26. Transient workers should not be allowed to interact with the local community. HIV/Aids education should be given to workers. 27. Camp areas must be restored to original condition after construction completed.	All worker camps	Throughout construction phase	Monthly	No marginal cost	PIC/ESU	contractor
Training and capacity	Prevent of impacts through education	28. Implement training and awareness plan for IA/ESU/EO and contractors.	ESU office, construction sites	Beginning of construction	After each event	No marginal cost	PIC	PIC/ESU

Subproject Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Location	Timing	Activity Reporting	Estimated Cost[11] (USD)	Responsibility	
							Supervision	Implementation
Implement Construction materials acquisition, transport, and storage sub-plan	Pollution, injury, increased traffic, disrupted access	29. All borrow pits and quarries should be approved by DoNRE. 30. Select pits and quarries in areas with low gradient and as close as possible to construction sites. 31. Required aggregate volumes must be carefully calculated prior to extraction to prevent wastage. 32. Pits and quarries should not be located near surface waters, forested areas, critical habitat for wildlife, or cultural property or values. 33. If aggregate mining from fluvial environments is required small streams and rivers should not be used, and dry alluvial plains preferred. 34. All topsoil and overburden removed should be stockpiled for later restoration. 35. All borrow pits and quarries should have a fence perimeter with signage to keep public away. 36. After use pits and quarries should be dewatered and permanent fences installed with signage to keep public out, and restored as much as possible using original overburden and topsoil. 37. Unstable slope conditions in/adjacent to the quarry or pit caused by the extractions should be rectified with tree planting. 38. Define and schedule how materials are extracted from borrow pits and rock quarries, transported, and handled and stored at sites. 39. Define and schedule how fabricated materials such as steel, wood structures, and scaffolding will transported and handled. 40. All aggregate loads on trucks should be covered. .	For all construction areas.	Throughout construction phase	Monthly	No marginal cost	PIC/ESU	contractor

Subproject Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Location	Timing	Activity Reporting	Estimated Cost[11] (USD)	Responsibility	
							Supervision	Implementation
DBST (low grade asphalt) production, and application if needed	Air pollution, land and water contamination, and traffic and access problems,	41. Piles of aggregates at sites should be used/or removed promptly, or covered and placed in non-traffic areas 42. Stored paving materials e.g., DBST or asphalt, well away from all human activity and settlements, and cultural (e.g., schools, hospitals), and ecological receptors. Bitumen production and handling areas should be isolated. 43. Contractors must be well trained and experienced with the production, handling, and application of bitumen. 44. All spills should be cleaned immediately and handled as per hazardous waste management plan, and according to GoV regulations. 45. Bitumen should only be spread on top of cable trench not near or in any surface waters, or near any human activities. 46. Bitumen should not be used as a fuel.	For all construction areas.	Throughout construction phase	Monthly	No marginal cost	PIC/ESU	contractor

Subproject Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Location	Timing	Activity Reporting	Estimated Cost[11] (USD)	Responsibility	
							Supervision	Implementation
Implement Spoil management sub-plan	Contamination of land and surface waters from excavated spoil, and construction waste	47. Uncontaminated spoil to be disposed of in GoV-designated sites, which must never be in or adjacent surface waters. Designated sites must be clearly marked and identified. 48. Spoil must not be disposed of on sloped land, near cultural property or values, ecologically important areas, or on/near any other culturally or ecologically sensitive feature. 49. Where possible spoil should be used at other construction sites, or disposed in spent quarries or borrow pits. 50. A record of type, estimated volume, and source of disposed spoil must be recorded. 51. Contaminated spoil disposal must follow GoV regulations including handling, transport, treatment (if necessary), and disposal. 52. Suspected contaminated soil must be tested, and disposed of in designated sites identified as per GoV regulations. 53. Before treatment or disposal contaminated spoil must be covered with plastic and isolated from all human activity.	All excavation areas	Throughout construction phase	Monthly	See Monitoring Plan for contaminated soil analyses	PIC/ESU and DoNRE	contractor

Subproject Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Location	Timing	Activity Reporting	Estimated Cost[11] (USD)	Responsibility	
							Supervision	Implementation
Implement Solid and liquid construction waste sub-plan	Contamination of land and surface waters from construction waste	54. Management of general solid and liquid waste of construction will follow GoV regulations, and will cover, collection, handling, transport, recycling, and disposal of waste created from construction activities and worker force. 55. Areas of disposal of solid and liquid waste to be determined by GoV. 56. Disposed of waste should be catalogued for type, estimated weigh, and source. 57. Construction sites should have large garbage bins. 58. A schedule of solid and liquid waste pickup and disposal must be established and followed that ensures construction sites are as clean as possible. 59. Solid waste should be separated and recyclables sold to buyers in community. <u>Hazardous Waste</u> 60. Collection, storage, transport, and disposal of hazardous waste such as used oils, gasoline, paint, and other toxics must follow GoV regulations. 61. Wastes should be separated (e.g., hydrocarbons, batteries, paints, organic solvents) 62. Wastes must be stored above ground in closed, well labeled, ventilated plastic bins in good condition well away from construction activity areas, all surface water, water supplies, and cultural and ecological sensitive receptors. 63. All spills must be cleaned up completely with all contaminated soil removed and handled with by contaminated spoil sub-plan.	All construction sites and worker camps	Throughout construction phase	Monthly	No marginal cost	PIC/ESU and DoNRE	contractor

Subproject Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Location	Timing	Activity Reporting	Estimated Cost[11] (USD)	Responsibility	
							Supervision	Implementation
Implement Noise and dust sub-plan	Dust Noise	64. Regularly apply wetting agents to exposed soil and construction roads. 65. Cover or keep moist all stockpiles of construction aggregates, and all truck loads of aggregates. 66. Minimize time that excavations and exposed soil are left open/exposed. Backfill immediately after work completed. 67. As much as possible restrict working time at substation site between 07:00 and 17:00. 68. Maintain equipment in proper working order 69. Replace unnecessarily noisy vehicles and machinery. 70. Vehicles and machinery to be turned off when not in use. 71. Construct temporary noise barriers around excessively noisy activity areas where possible.	All construction sites.	Fulltime	Monthly	No marginal cost	PIC/ESU	contractor
Implement Utility and power disruption sub-plan	Loss or disruption of utilities and services such as water supply and electricity	72. Develop carefully a plan of days and locations where outages in utilities and services will occur, or are expected. 73. Contact local utilities and services with schedule, and identify possible contingency back-up plans for outages. 74. Contact affected community to inform them of planned outages. 75. Try to schedule all outages during low use time such between 24:00 and 06:00.	All construction sites.	Fulltime	Monthly	No marginal cost	PIC/ESU and Utility company	contractor

Subproject Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Location	Timing	Activity Reporting	Estimated Cost[11] (USD)	Responsibility	
							Supervision	Implementation
Implement Erosion control sub-plan	Land erosion	76. Berms, and plastic sheet fencing should be placed around all excavations and earthwork areas. 77. Earthworks should be conducted during dry periods. 78. Maintain a stockpile of topsoil for immediate site restoration following backfilling. 79. Protect exposed or cut slopes with planted vegetation, and have a slope stabilization protocol ready. 80. Re-vegetate all soil exposure areas immediately after work completed.	All construction sites	Throughout construction phase	Monthly	No marginal cost	PIC/ESU	contractor

Subproject Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Location	Timing	Activity Reporting	Estimated Cost[11] (USD)	Responsibility	
							Supervision	Implementation
Implement worker and public safety sub-plan	Public and worker injury, and health	81. Proper fencing, protective barriers, and buffer zones should be provided around all construction sites. 82. Sufficient signage and information disclosure, and site supervisors and night guards should be placed at all sites. 83. Worker and public safety guidelines of MoLISA should be followed. 84. Speed limits suitable for the size and type of construction vehicles, and current traffic patterns should be developed, posted, and enforced on all roads used by construction vehicles. 85. Standing water suitable for disease vector breeding should be filled in. 86. Worker education and awareness seminars for construction hazards should be given at beginning of construction phase, and at ideal frequency of monthly. A construction site safety program should be developed and distributed to workers. 87. Appropriate safety clothing and footwear should be mandatory for all construction workers. 88. Adequate medical services must be on site or nearby all construction sites. 89. Drinking water must be provided at all construction sites. 90. Sufficient lighting be used during necessary night work. 91. All construction sites should be examined daily to ensure unsafe conditions are removed.	All construction sites.	Fulltime	Monthly	No marginal cost	PIC/ESU	contractor

Subproject Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Location	Timing	Activity Reporting	Estimated Cost[11] (USD)	Responsibility	
							Supervision	Implementation
Civil works	Degradation of water quality and aquatic resources	92. Protective berms, plastic sheet fencing, or silt curtains should be placed between all earthworks and surface waters. 93. Erosion channels must be built around aggregate stockpile areas to contain rain-induced erosion. 94. Earthworks should be conducted during dry periods. 95. All construction fluids such as oils, and fuels should be stored and handled well away from surface waters. 96. No waste of any kind is to be thrown in surface waters. 97. No washing or repair of machinery near surface waters. 98. Pit latrines to be located well away from surface waters. 99. No unnecessary earthworks in or adjacent to water courses. 100. No aggregate mining from rivers or lakes. 101. All irrigation canals and channels to be protected the same way as rivers, streams, and lakes	All construction sites	Throughout construction phase	Monthly	No marginal cost	PIC/ESU	contractor
Civil works	Degradation of terrestrial resources	102. No unnecessary cutting of trees. 103. All construction fluids such as oils, and fuels should be stored and handled well away from forested and plantation areas. 104. No waste of any kind is to be discarded on land or in forests/plantations.	All construction sites	Throughout construction phase	Monthly	No marginal cost	PIC/ESU	contractor

Subproject Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Location	Timing	Activity Reporting	Estimated Cost[11] (USD)	Responsibility	
							Supervision	Implementation
Implement Construction and urban traffic sub-plan	Traffic disruption, accidents, public injury	105. Schedule construction vehicle activity during light traffic periods. Create adequate traffic detours, and sufficient signage and warning lights. 106. Post speed limits, and create dedicated construction vehicle roads or lanes. 107. Inform community of location of construction traffic areas, and provide them with directions on how to best co-exist with construction vehicles on their roads. 108. Demarcate additional locations where pedestrians can develop road crossings away from construction areas. 109. Increase road and walkway lighting.	All construction sites	Fulltime	Monthly	No marginal cost	PIC/ESU	contractor
Implement Construction Drainage sub-plan	Loss of drainage and flood storage	110. Provide adequate short-term drainage away from construction sites to prevent ponding and flooding. 111. Manage to not allow borrow pits and quarries to fill with water. Pump periodically to land infiltration or nearby water courses. 112. Install temporary storm drains or ditches for construction sites 113. Protect any surface waters from silt and eroded soil.	All areas with surface waters	Design and construction phases	Monthly	No marginal cost	PIC/ESU	contractor
Civil works and Chance finds sub-plan	Damage to cultural property or values, and chance finds	114. As per detailed designs all civil works should be located away from all physical cultural property and values. 115. Chance finds of valued relics and cultural values should be anticipated by contractors. Site supervisors should be on the watch for finds. 116. Upon a chance find all work stops immediately, find left untouched, and EA/IA notified to determine if find is	All construction sites	At the start , and throughout construction phase	Monthly	No marginal cost	PIC/ESU	contractor

Subproject Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Location	Timing	Activity Reporting	Estimated Cost[11] (USD)	Responsibility	
							Supervision	Implementation
		valuable. Culture division of DCST notified by telephone if valuable. 117. Work at find site will remain stopped until DCST allows work to continue.						
Disposal and management sub-plan for decommissioned equipment and parts		118. Identify an adequate area for storage or warehousing of equipment and parts that will be replaced. 119. Check decommissioned equipment or parts for possible repair and reuse 120. Pre-identify a potential buyer or recycler of decommissioned equipment. 121. Properly dispose residual waste materials according to to GoV regulations.						
Construction Phase of the Renovation of Phuong Liet and Tran Hung Dao 110 kV Substations								
Civil works and heavy equipment movement in cramped conditions	Worker or public injury	122. Special guidelines and procedure should be developed based on existing MoLISA occupational, safety and health guidelines to protect workers and the public during construction phase, particularly on safe distance from substation equipment and provision of lightning arresters.	Both substation sites and along access roads	Fulltime	Quarterly	No Marginal cost	PIC/IA	ESU/EO
Operation of the three 110 kV Substations								
Operation improved substations	Worker /public injury, or spills of hazardous materials such as transformer oil	123. Occupational safety and health regulations and guidelines of MoLISA should be applied to operations and maintenance of TL 124. Manage, store, and dispose of hazardous materials such as oils according to international procedures and	At all substations	Fulltime	Biannual	O and M	EVNHCM / PPMB	

Subproject Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Location	Timing	Activity Reporting	Estimated Cost[11] (USD)	Responsibility	
							Supervision	Implementation
		standards.						

E. Monitoring Plan

123. The environmental monitoring plan for the EMP is provided in Table 18. The monitoring plan focuses on all three phases (pre-construction, construction, post-construction operation) of the tri-substation improvements and consists of environmental indicators, the sampling locations and frequency, method of data collection, responsible parties, and estimated costs. The purpose of the monitoring plan is to determine the effectiveness of the impact mitigations, and to document any unexpected positive or negative environmental impacts of the tri-substation improvements.

124. The independent environmental monitoring consultant (EMC) identified above will implement the environmental monitoring program. The EMC will be responsible for the sampling of environmental parameters that must be analyzed in a laboratory. The ESU and EO will coordinate with the EMC. The PIC/IU will provide logistical support to the EMC where necessary for the implementation of environmental monitoring plan.

125. The standards for ambient environmental quality (e.g., water and air quality) for Viet Nam listed in section III will guide the monitoring program. The environmental standards provided by the Environmental, Health and Safety Guidelines of the IFC/World Bank (2007) should be followed to supplement standards that are not provided by the GoV.

126. After construction is completed the potential impacts of the operation of the three improved substations will be monitored by EVN HANOI.

F. Performance Monitoring

127. Performance monitoring is required to assess the overall performance of the EMP. A performance monitoring system is normally developed by the EA for the entire subproject. Select indicators of major components of the environment that will be affected primarily by the construction phase are drawn from the mitigation and monitoring plans and summarized in Table 19.

G. Reporting

128. Regular reporting on the implementation of mitigation measures, and on monitoring activities during construction phase of the subproject is required. Reporting is the responsibility of IA/ESU and should be conducted in conjunction with regular meetings with stakeholders as part of the continuation of stakeholder communications. The mitigation and monitoring plans (Tables 17 and 18) summarize proposed timing of reporting.

129. A report on environmental monitoring and implementation of EMP will be prepared quarterly for the EA by the IA/ESU. The IA report will compile monthly reports provided by the EO of contractor, the reports of the EMC on monitoring, and input from the ES of the PIC. The IA/ESU report will also be sent to the DoNRE and ADB. The reports will table all indicators measured with the monitoring plan of EMP including performance monitoring indicators (Table 19), and will include relevant GoV environmental quality standards. A semi-annual report on the environment monitoring of the subproject must be prepared and submitted to the ADB by the EA.

Table 18. Environmental Monitoring Plan

ENVIRONMENTAL EFFECTS MONITORING							
Environmental Indicators	**Location**	**Means of Monitoring**	**Frequency**	**Reporting**	**Responsibility** Supervision / Implementation		**Estimated Cost (USD)**
					Supervision	**Implementation**	
Pre-construction Phase – Update Baseline Conditions							
Update where necessary baseline on sensitive receptors (e.g., cultural property and values, new schools or hospitals, rare/endangered species, critical habitat in substation areas.	Three substation locations	Original field work, community consultations	Once	Once	PIC/ESU	Environmental Monitoring Consultant	$1,000.
A) Air quality: dust, CO, NOx, SOx, noise B) Affected soil quality: oil and grease, PCBs, heavy metals) As, Cd, Pb	At three substation sites	Using field and analytical methods approved by DoNRE.	A) One day and one night measurement b) One measurement	One baseline supplement report before construction phase starts	PIC/ESU	Environmental Monitoring Consultant	A) $3,000 B) $3,000 .
Inventory of present and past land uses that could cause contaminated soil.	Possible contaminated lands at all excavation sites	Using field and analytical methods approved by DoNRE.	Once	Once	PIC/ESU	Environmental Monitoring Consultant	$500.
Construction Phase of the three 110 kV Substations							
Analysis of soil quality, PCBs, heavy metals (As, Cd, Pb), oil and	Possible contaminated lands at all excavation sites	Using field and analytical methods approved by DoNRE.	Once if	Once	ESU	Environmental Monitoring	$2,500.

<table>
<tr><td>grease.</td><td></td><td></td><td>needed</td><td></td><td></td><td>Consultant</td><td></td></tr>
<tr><td rowspan="4">A) Air quality: dust, CO, NOx, SOx, noise

B)) Affected soil quality: oil and grease, PCBs, heavy metals (As, Cd, Pb)

C) Analysis of contaminated soil quality (heavy metals (As, Cd, Pb)

D) Domestic (worker) and construction solid waste inside and outside construction sites including worker camps.

E) Public comments and complaints

F) Incidence of worker or public accident or injury</td><td rowspan="4">A and B): Baseline sites of pre-construction phase.

C) At sites where contaminated soil is suspected.

D) All construction sites and worker camps

E) Using hotline number placed at construction areas

F) At all construction areas</td><td rowspan="4">A – C : Using field and analytical methods approved by DoNRE.

Include visual observations of dust and noise from contractor and public reports .

D) Visual observation

E) Information transferred by telephone hotline number posted at all construction sites.

F) regular reporting by contractors/ESU</td><td rowspan="4">(A – B): Quarterly during construction periods

Daily visual records

C) Once at start of excavations

D) Monthly

E) Continuous public input

F) Continuous</td><td rowspan="4">Monthly</td><td colspan="2">(A - D):</td><td></td></tr>
<tr><td rowspan="2">ESU</td><td rowspan="2">Monitoring Consultant</td><td>A and B: $3,000./yr

C: $1,500./yr

D: no marginal cost</td></tr>
<tr><td colspan="2">(E and F) and daily observations:</td><td></td></tr>
<tr><td>EA/ESU</td><td>contractor</td><td>E: $1,000./yr

F: no marginal cost</td></tr>
<tr><td colspan="8">Operation of three 110 kV Substations</td></tr>
<tr><td>Incidence of worker accidents, or spills on hazardous materials</td><td>At all substations</td><td>Regular documentation and reporting</td><td>Continuous</td><td></td><td colspan="2">EVNHCM /PPMB</td><td>O and M</td></tr>
</table>

Table 19. Performance Monitoring Indicators for Subproject

Major Environmental Component	Key Indicator	Performance Objective	Data Source
Pre-construction Phase			
Public Consultation and Disclosure	Affected public and stakeholders	Meetings with public stakeholders contacted during IEE and new stakeholders convened for follow-up consultation and to introduce grievance mechanism	Minutes of meeting, and participants list
EMP	Updated EMP	All stakeholders contacted during IEE re-contacted for follow-up consultation	EMP
Bid Documents	Requirements of EMP (CEMP[14])	EMP appended to bidding documents with clear instructions to bidders for CEMP	Bid documents
Training of IA/ESU	Training course(s) and schedule	By end of pre-construction phase, required course(s) that will be delivered are designed and scheduled	Course(s) outline, participants, and schedule
Construction Phase			
Air quality	dust, CO, NOx, SOx, noise	Levels never exceed pre-construction baseline levels	EMC and contractor monitoring reports,
Soil quality	Solid and liquid waste	Rigorous program of procedures and rules to collect and store all waste from construction camps and sites practiced.	Contractor and EMC monitoring reports
Hazardous materials and waste	Oil, gasoline, grease, PCBs	Rigorous program of procedures to manage and store all waste from construction camps and sites practiced.	Contractor and EMC monitoring reports
Public and worker safety	Frequency of injuries	Adherence to GoV occupational health and Safety regulations[15]	Contractor reports
Cultural property	Incidence of damage, or complaints	No valued cultural property, or unearthed valuable relic is harmed in any way	Public input, contractor reports, public input, EMC reports
Traffic	Frequency of disruptions and blocked roadways	Disruptions, stoppages, or detours are managed to absolute minimum.	Public input, contractor reports, EMC reports

[14] Contractor Environmental Management Plan developed from EMP in contractor bidding document
[15] OSH Guidelines provided by MoLISA, *or* IFC World Bank EHS (2007)

Major Environmental Component	Key Indicator	Performance Objective	Data Source
Operation Phase of Improved Substations			
Worker and Public Safety	Frequency of accidents and spills	No increase in pre-construction frequency	EA

XI. ESTIMATED COST OF EMP

130. The marginal costs for implementing the EMP are primarily for environmental monitoring because the costs for implementing impact mitigation measures are included with the construction costs in contractor bid documents. From Table 18 the preliminary cost for the implementation of the EMP for the subproject including an estimated environmental training budget for EVNHCM / PPBM is approximately USD $30,500.00 which is summarized in Table 20.

Table 20. Estimated costs for Environmental Monitoring Plan of EMP

Activity Type	Estimated Cost (USD)
Pre-construction Phase	
Updating Environmental Baseline	
cultural receptors	$1,000.00
environmental quality	$7,500.00
Construction Phase	
environmental quality	$14,000.00
public consultation	$2,000.00
Operation Phase	
environmental quality	no cost
public input	no cost
Training and capacity development of EVNHCM / PPBM / ESU	$6,000.00
Total	**$30,500.00**

131. These costs are for field sampling and laboratory per diem which include technician per diem fees.

132. An estimated budget of USD $6,000.00 is required for training of the EA/IA/ESU on environmental assessment and management, and the implementation of the EMP. The

estimated costs of the EMP and training will need to be updated by the PIC in conjunction with the IA/ESU during the pre-construction phase.

XII. EMERGENCY RESPONSE PLAN

133. The Contractor must develop emergency or incident response procedures during construction and operation phases of the renovated and upgraded Son Tay, Tran Hung Dao, and Phuong Liet substations to protect workers and the public. The emergency response plan (ERP) outlines the roles and responsibilities of persons from first identification of an incident or emergency to the final steps of safe and complete closure of the situation. The detailed requirements for the ERP are described in Appendix D.

XIII. INSTITUTIONAL CAPACITY REVIEW AND NEEDS

134. Currently there is insufficient experience and capacity for environmental assessment and management in EVN HANOI for the implementation of the EMP, and to develop future safeguards for the non-core subprojects. The PIC with assistance from the ESU/IA of the subproject will develop and deliver training courses to the IA staff including the EO of the contractor. The purpose of the course(s) is to strengthen the ability of the project owner including the ESU to oversee implementation of the EMP by construction contractors, and EMC. Costs for training should be included with costs for implementation of the EMP.

135. Training on the implementation of an EMP should address two thematic areas. The first area should be principles environmental assessment and management focused on the potential impacts of subproject activities on the natural and social environments. The second area should be environmental safeguard requirements of the ADB and GoV with specific reference to the EMP.

XIV. CONCLUSIONS AND RECOMMENDATION

136. The initial examination of the renovation and rehabilitation of the Son Tay, Phuong Liet, and Tran Hung Dao substations in Ha Noi indicates that potential environmental impacts are construction-related impacts and disturbances that can be mitigated and managed.

137. The public consultation meetings underscored the need for effective management of construction impacts such as noise, dust, traffic disruptions, and public safety. Follow-up meetings with the consulted stakeholders to address any construction-related issues are required. The civil construction impacts of elevated dust, noise, traffic disruptions, erosion and sedimentation, and public and worker safety can be managed effectively with standard construction practices (e.g., IFC/World Bank 2007).

138. The IEE concludes that the description of the feasibility design of the subproject combined with available information on the affected environment is sufficient to identify the scope of potential environmental impacts of the subproject. Providing that significant changes

do not occur to the design of one or more of the subproject components, and that new sensitive environmental or PCR components are not identified in pre-construction phase, further detailed environmental impact assessment (EIA) of the subproject is not required.

XV. REFERENCES CITED

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APPENDICES

A. Rapid Environmental Assessment (REA) Checklist

B. Minutes of Public Consultation Meetings

- B.1 Xuan Khanh Commune Son Tay District
- B.2 Phan Chu Trinh ward – Hoan Kiem District
- B.3 Phuong Mai ward – Dong Da District
- B.4 Army Hospital 108 and Army Museum

C. EIA Certifications for the Thee Core Projects of EVN Hanoi

- C.1 Tran Hung Dao Substation
- C.2 Phuong Liet Substation
- C.2 Son Tay Substation

D. Emergency Response Plan

CURRENCY EQUIVALENTS
(as of 11 December 2013)

Currency Unit	–	Dong D
D1.00	=	$0.000047
$1.00	=	D20,948

ABBREVIATIONS

ADB:	Asian Development Bank
AH:	Affected Household
AP:	Affected people
BOD:	Biochemical Oxygen Demand
COD:	Chemical Oxygen Demand
CTF:	Clean Technology Fund
DARD:	Department of Agriculture and Rural Development
DoNRE:	Department of Natural Resources and Environment
DCST:	Department of Culture, Sport and Tourism
DoLISA:	Department of Labour Invalids and Social Assistance
EA:	Executing Agency
EIA:	Environment Impact Assessment
EMP:	Environment Management Plan
EO:	Environmental Officer
ESU:	Environmental and Social Unit
EVN:	Electricity of Viet Nam
EVN HANOI:	Ha Noi Power Corporation
EVNHCMC:	Ho Chi Minh City Power Corporation
GHG:	Greenhouse gas
GRM:	Grievance Redress Mechanism
HN:	Ha Noi
IA:	Implementation Agency
IEE:	Initial Environmental Examination
MoLISA	Ministry of Labour Invalids and Social Assistance
MoNRE:	Ministry of Natural Resources and Environment
MPI:	Ministry of Planning and Investment
NPA:	National Protected Area
OHL:	Overhead lines

PCB:	Polychlorinated biphenyls
PCR:	Physical Cultural Resources
PIC:	Project Implementation Consultant
PPC:	Provincial Peoples Committee
REA:	Rapid Environment Assessment
ROW:	Right-of-way
PPMB:	Power Project Management Board
TSS:	Total Suspended Solids
UGC:	Underground lines
UXO:	Unexploded Ordnance

WEIGHTS AND MEASURES

GW:	gigawatts
km:	kilometre
kg:	kilogram
kV:	kilovolt
ha:	hectare
mm:	millimetre
MV:	medium voltage

I. EXECUTIVE SUMMARY

1. The Project, financed through Asian Development Bank's (ADB) sector loan modality, will strengthen the capacity and reliability of the power infrastructure in Ha Noi and Ho Chi Minh City through the rehabilitation and development of the 220 kilovolt (kV) and 110 kV transmission system and associated substations to supply their medium voltage (MV) distribution system. The Project will also strengthen the institutional capacities of Hanoi Power Corporation (EVN HANOI) and Ho Chi Minh City Power Corporation (EVNHCMC), which are responsible for the power supply in their respective areas. Additionally, the project includes a smart grid component financed by the Clean Technology Fund (CTF).

2. The Initial Environmental Examination (IEE) presented herein addresses the rehabilitation and upgrading of three 110 kV substations of Son Tay, Phuong Liet, and Tran Hung Dao in Ha Noi which represent three of the eight core subprojects that were identified by Electricity of Viet Nam (EVN) for Ha Noi and Ho Chi Minh City. The original eight core subprojects were defined as Category B for environment. The consolidated IEE addresses the Tran Hung, Phuong Liet, and Son Tay 110 kV substations located in central and western Ha Noi. The IEEs of the other five core subprojects have been prepared separately.

A. Subprojects Summary

Rehabilitation of Son Tay Substation

3. Son Tay substation is located in Xuan Khanh ward, Son Tay town, Ha Noi City. The proposed work within the existing substation property boundary is summarized below:

- *Installation of 2 - 110 kV breakers; 2 dis-connectors operational scheme for five breakers; addition of 6 variable voltage 1- phase 110 kV capacitor;*
- *Additional 1 dis-connector neutral and 1 neutral arrester valve for T1;*
- *Replacement of a) control system including signal cable protection; b) entire busbar; c) entire metal lightning rods; and d) entire string voltage of 110 kV.*
- *Test system earthing and install additional earthing if needed,*
- *Building new resources system using one-way system including battery 12 V-120 and the cabinet AC-DC system.*
- *Improvement of automatic power systems, lighting, electrical activity of the station, construction of new lead capacitor 7.8 MVAR for the C91, 4.8 MVAR bus C92, and*
- *Replacement of old circuit breakers.*

Renovation of Phuong Liet Substation

4. Phuong Liet substation is located in Phuong Mai Ward, Dong Da district, Ha Noi City. The proposed work within the existing substation property boundary is summarized below:

- *Replacement of existing 110 kV distribution system block diagram "line-transformer" to schematic two busbar with coupling with110 kV GIS outdoor type switchgear;*
- *Installation of 22 kV distribution system designed to the diagram single busbar;*

- *Installation 10 kV distribution system to the diagram single busbar; and*
- *Replacement of existing control and protection system.*
- *Updating of information channels SCADA signal from the 110 kV Phuong Liet substation; and*
- *Construction of new two storey distribution control building (25.1 x 8.5 m) with basement.*

Renovation of 110 kV Tran Hung Dao Substation

5. Tran Hung Dao substation is located in Phan Chu Trinh Ward, Hoan Kiem district, Ha Noi City. The proposed work within the existing substation property boundary is summarized below:

- *Replacement of total 171-7; 172-7; 131-1; 132-2; 112-1; 112-2 dis-connectors and two 131, 132 circuit breakers by complete 110 kV gas-insulated switchgear (GIS) for full bridge diagram;*
- *Include 5 modules joined to become single complete 110 kV switchgear;*
- *Replacement of entire 10 kV cabinet system in 10 kV distribution cabinet with eighteen 22 kV new cabinets;*
- *Replacement of existing TD41-100 kVA-10/0.4 kV auxiliary transformer with one new auxiliary transformer 250 kVA-22/0.4 kV;*
- *Installation of one 600 V- 400 A low voltage cabinet to improve control, distribution house.*

B. Potential Impacts and Mitigation

6. Phuong Liet and Tran Hung Dao substations are located in high density urban neighborhoods in central Ha Noi city. Son Tay 110 kV substation is located in the peri-urban environs of Son Tay town in western Ha Noi. All renovation and rehabilitation work will be conducted on substation property.

7. The IEE of the rehabilitation and renovation of the three substations indicates that the potential environmental impacts of the subprojects are restricted to the construction phase of the subproject components. The common construction-related disturbances such as noise, dust, erosion, sedimentation, solid and liquid waste pollution, worker camp issues, reduced access, increased vehicle and boat traffic and traffic disruptions, increased risk of worker and public injury can be managed with standard construction practices and management guidelines (e.g., IFC/World Bank 2007). There are no rare or endangered wildlife, critical habitat, or protected areas in the subproject sites which are situated in high density urban, and peri-urban areas.

8. Short-term construction-related impacts and disturbances will be most significant at Tran Hung Dao and Phuong Liet substations because of the high density urban areas in which the work will be conducted, and because of the little available working space at the two substations. Moreover, worker and public safety must be given special attention during the work at the substations because of the cramped and high-density urban conditions.

9. No land will be required because the work on the individual substations will occur on the existing substation properties inside the existing walled or fenced boundaries. There are no rare or endangered wildlife, critical habitat, or protected areas at the subproject sites.

10. There are no perceived negative, induced, or cumulative environmental impacts of the subprojects. The objective of providing the needed additional electrical power to Ha Noi to support urban development supports the overall goal of urban and socioeconomic development in Ha Noi city-province.

11. The Environmental Management Plan (EMP) prepared for the subprojects provides comprehensive impacts mitigation and environmental monitoring plans to minimize and manage the potential impacts of the subprojects. The EMP also prescribes an Emergency Response Plan for the construction sites and identifies the need for capacity development and training of the IA/ESU in environmental management and assessment as focused on the implementation of the EMP.

C. Conclusions

12. The IEE concludes that the feasibility design of the rehabilitation and upgrading of the three 110 kV substations in Ha Noi combined with available information on affected environments is sufficient to identify the scope of potential environmental impacts of the subprojects. Providing that significant changes to the subproject descriptions do not occur at the detailed design phase, and that new sensitive environmental or cultural resources are not determined, further detailed environmental impact assessment (EIA) of the subprojects is not required.

Table of Contents

II. INTRODUCTION

A. Background to IEE

13. The Ha Noi and Ho Chi Minh City Power Grid Development Sector Project aims to strengthen the capacity and reliability of the power infrastructure in Ha Noi and Ho Chi Minh City, Viet Nam through the rehabilitation and development of the 220 kilovolt (kV) and 110 kV high-voltage power transmission systems and associated substations to supply their medium voltage (MV) distribution system. The Project also aims to strengthen the institutional capacities of Ha Noi Power Corporation (EVN HANOI) and Ho Chi Minh City Power Corporation (EVNHCMC) that are responsible for the power supply of power in their respective areas. Additionally, the project includes a smart grid component financed by the Clean Technology Fund (CTF).

14. The Project will be implemented as a sector loan under ADB's Operation Manual Section D3 – Sector Lending. It consists of eight core subprojects (Table 1) which were selected by EVN HANOI and EVN HCMC being representative of the non-core projects to be further identified and prepared during project implementation.

Table 1. Core Subprojects forming the Sector Project in Ho Chi Minh and Ha Noi[1]

Ha Noi
EVN HANOI
• Upgrading Phuong Liet 110 kV Substation
• Renovation Son Tay 110 kV Substation
• Improving and upgrading Tran Hung Dao 110 kV Substation
• Construction of new Noi Bai Airport 110 kV Substation and associated 110 kV transmission line from existing Van Tri 220/110 kV Substation
Ho Chi Minh City
EVNHCMC
• Construction of new 220 kV District 8 Substation
• Upgrading of existing 110kV to 220 kV transmission line Nam Sai Gon (Binh Chanh) Substation to new District 8 Substation
• Construction of new 110 kV Tham Luong Substation

[1] Adapted from Project Inception Report 10/13

- Construction of 110 kV underground cable connecting to Tham Luong Substation

B. Consolidation of IEEs

15. During the Project Inception Mission the eight core subprojects sites were visited, subproject documentation was reviewed, and meetings were held with EVN HANOI and EVNHCMC. The inception phase identified the need to consolidate the core subprojects in order to maximize the coherence and overall usefulness of the Initial Environmental Examinations (IEE) of the core subprojects. The original 8 core subprojects were consolidated into the following four IEEs:

EVN HANOI:

1) Rehabilitation/renovation of Son Tay, Phuong Liet, and Tran Hung Dao 110 kV Substations
2) New Noi Bai 110 kV Substation with above and below ground 110 kV transmission line

EVNHCMC:

1) New District 8 220 kV Substation and upgraded 110 kV to 220kV transmission line
2) New Tham Luong 110 kV Substation and underground 110 kV transmission line

16. The IEE presented herein addresses the rehabilitation and renovation of the Son Tay, Phuong Liet, and Tran Hung Dao 110 kV Substations in Ha Noi. The three IEEs for the other consolidated core subprojects are found under separate cover.

C. Assessment Context

17. The Project was assigned Environmental Category B pursuant to the ADB's Safeguard Policy[2] and recent good practice sourcebook guidance[3]. A category B project will have potential adverse impacts that are less adverse than the impacts of category A project, are site-specific, largely reversible, and can be mitigated with an environmental management plan[4]. The IEE was prepared for the consolidated Tri-Substation subproject in the feasibility design stage using available data and information on sensitive ecological and cultural receptors that exist for the subproject sites.

18. Unlike the 110 kV Noi Bai substation and transmission line subproject, the Tran Hung Dao, Phuong Liet and Son Tay substations already exist which means that the environmental impact footprints of the three substations already exist. Moreover, all civil works will occur inside the existing substation boundaries which mean that the existing impact footprints of the substations will not be expanded.

[2] ADB, 2009. Safeguard Policy Statement, ADB Policy Paper.
[3] ADB, 2012, Environmental Safeguards, A Good Practice Sourcebook, Draft.
[4] Footnote 2, pg 19.

19. The detailed designs for the tri-substation rehabilitation/renovation subproject will follow subproject approval. The Environmental Management Plan (EMP) that has been prepared for the subproject (Section X) will need to be updated where necessary to meet the final detailed designs for the rehabilitation/renovation of the substations.

III. POLICY, LEGAL, AND ADMINISTRATIVE FRAMEWORK

20. The tri-substation renovation and rehabilitation subproject will be implemented according to the directives set down for use of Official Development Assistance (ODA) by GoV Decree No. 131/2006/ND-CP which was promulgated November 9, 2006, and in accordance with the provisions for the parent Sector Project.

A. Viet Nam Regulatory Framework for Environmental Assessment

21. The Viet Nam Law on Environmental Protection (LEP 2005) prescribes the requirements for environmental assessment (EA) for development and domestic project interventions that affect the natural and social environments. Government Decree 29/2011/ND-CP on strategic environmental assessment (SEA), environmental impact assessment (EIA), and environmental protection commitment (EPC) in conjunction with Circular 26/2011/TT-BTNMT on stipulation of specific articles of Decree 29 both elaborate the EA requirements specified by the LEP (2005). Decree 29 and Circular 26 are implemented in conjunction with Decree 80/2006/ND-CP, and Decree 21/2008/ND-CP (see below).

22. The updated screening criteria of Decree 29 distinguish projects that require an Environmental Impact Assessment (EIA) from projects requiring the simpler Environmental Protection Commitment (EPC). The difference between the two processes reflects the level of assessment, and final review and appraisal that is required. At the time of writing Decree 29 requires that an EIA be prepared for the tri-substation renovation and rehabilitation subproject.

B. Applicable Environmental Laws, Policy, Environmental Standards, and Guidelines

23. The following are key directives for environmental assessment and protection in Viet Nam:

- Law on Environmental Protection No. 52/2005/QH11, in effect on June 12, 2005;
- Law on Water Resources No 08/1998/QH10.
- Biodiversity Law 20/2008/QH12 dated 13th November 2008
- Cultural Heritage Law 28/2001/QH10 dated 29th June 2001
- Land law No.13/2003/QH11 dated 26th November 2003
- Decree No. 29/2011/ND-CP, dated April 18, 2011, on Regulating Strategic Environmental Assessment, Environmental Impact Assessment and Environmental Protection Commitment.

- Circular No. 26/2011/TT-BTNMT dated on 08/12/2011 by the Ministry of Natural Resources and Environment on Guidance for Strategic Environmental Assessment, Environmental Impact Assessment, and Environmental Protection Commitment.

- Decree No.12/2009/ND-CP which replaces Decree No. 16/2005/ND-CP and Decree No. 112/2006/ND-CP on Investment Management on Construction Projects.

- Decree No.21/2008/NĐ-CP dated on 28/02/2008 about Amendment and Addition of Some Articles in Decree No.80/2006/NĐ-CP dated on 09/8/2006 by the Government.

- Decree No.59/2007/NĐ-CP dated on 09/4/2007 by the Government about Solid Waste Management.

- Decree No. 117/2009/ND-CP Regulation on sanctioning administrative violations in environmental protection, issued: 31/12/2009

- Decree No. 04/2009/ND-CP, Incentives and support for environment protection activities, issued: 14/01/2009.

- Decree 110/2002/ND-CP, supplementing some Articles of Decree 06/1995 on Labour Code of Occupational Safety and Health

- Decree 06/1995, Elaborating Provisions of Labour Code on Occupational Safety and Health.

- Decree No.140/2006/NĐ-CP dated on 22/11/2006 by the Government which regulates Environmental Protection, Designing, Approval and Implementation of Development Strategies, Plans, Programs and Projects.

- Decree No.80/2006/NĐ-CP dated on 09/8/2006 about Guiding for the Implementation of Some Articles in the Law on Environmental Protection (2005).

- Decree No.149/2004/NĐ-CP dated on 27/7/2004 about Issuing Permits for Water Resource Exploration, Exploitation and Utilization and Permits for Discharge to Water Bodies.

- Decision No.16/2008/QĐ-BTNMT dated on 31/12/2008 by the Ministry of Natural Resources and Environment about Promulgation of the National Technical Regulations for the Environment.

- Decision No.18/2007/QĐ-BTNMT dated on 05/11/2007 about Promulgation of Statistic Indicator System for the Field of Natural Resources and Environment.

- Decision No.23/2006/QĐ-BTNMT dated on 26/12/2006 about Promulgation of the List of Hazardous Waste.

- Decision No.27/2004/QĐ - BXD dated on 09-11-2004 by the Minister of Ministry of Construction on the promulgation of TCXDVN 320:2004 "Landfill for hazardous waste – Design standards"

- Decision No.22/2006/QĐ-BTNMT dated on 18/12/2006 about Obligations to Apply Vietnamese Standards for the Environment.

- Decision No.233/2006/QĐ-TTg dated on 18/10/2006 about approving the National Program on Labor Protection, Safety and Sanitation up to 2010.

- Decision No.1222/QĐ-BTNMT dated on 20/09/2006 about Organization of Reception and Progressing Recommendations from Individuals, Organizations and Enterprises on Aspects which are managed by Ministry of Natural Resources and Environment.

- Decision No.35/2002/QD-BKHCNMT dated on 25/6/2002 about Promulgation of Series of Vietnamese Standards for the Environment.

- Decision No.60/2002/QĐ-BKHCNMT dated on 07/8/2002 about Promulgation of the Guidance for Disposal of Hazardous Wastes.

- Decision No.3733/2002/QĐ-BYT issued by Ministry of Healthcare dated on 10/10/2002 About the Application of 21 Labour Health and Safety Standards

- Decision No.155/1999/QĐ-TTg dated on 16/7/1999 by the Government on Promulgation of the Management Mechanism for Hazardous Waste.

- Decision No.505 BYT/QĐ, dated on 13/4/1992 by the Ministry of Healthcare on the Regulation for Allowed Concentrations.

- Circular No. 16/2009/BTNMT and No. 25/2009/BTNMT on Promulgation of Vietnamese National Standards.

- Circular No.10/2007/TT-BTNMT dated on 22/10/2007 about Guidance for Assurance and Control of the Quality of Environmental Monitoring.

- Circular No.12/2006/TT-BTNMT dated on 26/12/2006 by the Ministry of Natural Resources and Environment on Guidance for Practice Conditions, Procedures for Application, Registration, Endorsement and Issuing the Code for Hazardous Waste Management.

Environmental Standards and Regulations

Water quality:

- QCVN 01:2008/BYT – National technical regulations on quality of drinking water
- QCVN 08:2008/BTNMT – National technical regulations on quality of surface water
- QCVN 09:2008/BTNMT – National technical regulations on quality of groundwater
- QCVN 10:2008/BTNMT – National technical regulations on quality of about coastal water
- QCVN 14:2008/BTNMT – National technical regulations on quality of domestic wastewater
- QCVN 24:2008/BTNMT– Industrial wastewater discharge standards
- QCVN 02:2009/BYT - National standard of domestic water supply
- TCVN 5502:2003 – Supplied water – Requirements for quality
- TCVN 6773:2000 – Water quality – Water quality for irrigational purposes
- TCVN 6774:2000 – Water quality – Water quality for aquaculture protection
- TCVN 7222:2002 – Water quality for concentrated domestic WWTP
- TCVN / QCVN - Standard methods for analyzing environmental quality

Air Quality:

- QCVN 05:2008 – Standards for ambient air quality
- QCVN 06:2008 – Maximum allowable concentration of hazardous substances in the ambient air
- TCVN 6438:2001 – Maximum permitted emission limits of exhausted gases from vehicles.

Solid Waste Management:

- TCVN 6696:2009 – Solid waste – Sanitary landfill. General requirements for environmental protection.
- QCVN 07:2009– National technical regulations for classification of hazardous wastes
- QCVN 25:2009 – National technical regulations for wastewater of solid waste sites
- QCVN 15:2008/BTNMT: - National regulation on allowable pesticide residues in soil
- QCVN 03:2008/BTNMT: - National regulation heavy metals concentrations in soil

Vibration and Noise:

- QCVN 26:2010/BTNMT: national technical standard for noise
- TCVN 6962: 2001 Allowable vibration level for public and residential areas
- TCVN 6962:2001: - Allowable vibration and shock from construction activities

International Guidelines

- World Bank Group, 2007. Environmental Health and Safety Guidelines, Wash. DC.
- AWWA Standard Methods for Measurement and Analysis Environmental Quality

Specific regulations for resettlement and compensation

- Decree No. 197/2004/ND-CP dated 03/12/2004, on comprensation support,and resettlement
- Circular 14/2009/TT-BTNMT dated 01/10/2009, on detailed regulations on compensation, support and resettlement.

Directives of the Electrical Power Industry in Viet Nam

- Electricity Law, No. 28/2004/QH11, Issued: 03/12/2004
- Government Decree, No. 81/2009/NĐ-CP, on the safety protection of high-voltage power grids, Issued 17/08/2005
- MIT Circular, No. 03/2010/TT-BCT, on safety protection of high-voltage power grid works, Date issued: 22/01/2010

International Environmental Management Conventions

24. Viet Nam is signatory to the following relevant international conventions:

- 2009, Stockholm Convention on Protection of Human Health and the Environment from Persistent Organic Chemicals [including PCBs]
- 1971, Convention on Wetlands of International Importance Especially as Waterfowl Habitat (Ramsar)
- 1982, Protocol to Amend the Convention on Wetlands of International Importance Especially as Waterfowl Habitat, Paris
- 1972 Convention Concerning the Protection of the World Cultural and Natural Heritage October 1987]
- 1973, Convention on International Trade in Endangered Species Wild Fauna and Flora

- 1985 FAO International Code of Conduct on the Distribution and Use of Pesticides
- 1985 Vienna Convention for the Protection of the Ozone Layer
- 1987 Montreal Protocol on Substances that Deplete the Ozone Layer
- 1992, Copenhagen Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer, Copenhagen
- 1989, Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal
- 1992, United Nations Framework Convention on Climate Change
- 1992, Convention on Biological Diversity

C. ADB Safeguard Policy

25. The ADB Safeguard Policy Statement (ADB 2009) along with the recent good safeguard practice sourcebook clarify the rationale, scope and content of an EA and supported by technical guidelines (e.g., Environmental Assessment Guidelines 2003). Projects are initially screened to determine the level of assessment that is required according to the following three environmental categories (A, B, or C).

26. Category A is assigned to projects that normally cause significant or major environmental impacts that are irreversible, diverse or unprecedented such as hydroelectric dams (an Environmental Impact Assessment is required). Category B projects have potential adverse impacts that are less adverse than those of category A, are site-specific, largely reversible, and for which mitigation measures can be designed more readily than for category A projects (an Initial Environmental Examination is required). Category C projects are likely to have minimal or no negative environmental impacts. An environmental assessment for Category C projects is not required but environmental implications need to be reviewed. Appendix A presents the Rapid Environmental Assessment (REA) of the three substations.

IV. DESCRIPTION OF SUBPROJECT

A. Existing situation

27. The three substations[5] in Ha Noi are old and are operating with mostly antiquated equipment. They are now under-capacity for the electricity demand in their areas, and need to be renovated or rehabilitated with new and more efficient technology. Specifically:

28. The Tran Hung Dao substation supplies power to a heavy populated and strategic area of Hanoi city (Figure 1) services some important clients such as famous hospital 108 and hospital Huu Nghi. However, the substation has been operational since 1989, and is now overloaded with out-of-date equipment. Over the years ad hoc upgrades to the substation were conducted resulting in the substation currently using different equipment from different manufacturers.

[5] Adapted from Draft Final Report

29. The Phuong Liet substation was built in 1990, and is located in high-density area (Figure 3). It supplies power to Bach Mai hospital, the international French hospital, and the Ha Noi Medicine University-hospital. The area of the substation is extremely compact and difficult to access. The substation equipment is mostly from the former Soviet Union and no longer reliable.

30. The Son Tay substation was built in 1971 and is equipped with old technology from the former Soviet Union. The substation experiences frequent overload conditions due to the delay in construction of a much needed nearby 220/110 kV substation which is part of the Ha Noi power development plan. As consequence, EVN HANOI installed a temporary third transformer of 25 MVA to secure the power supply for Son Tay town.

B. Features of Subproject

31. The features of the tri-substation subproject are summarized below.

1. Rehabilitation of 110 kV Son Tay Substation

Location: Xuan Khanh ward, Son Tay town, Ha Noi City.

Main features: 110/35/22/10 kV substation with capacity 2x40 MVA

Proposed work:

- Install 2 breakers 110 kV, 02 sets of TI, 02 dis-connectors to complete operational scheme for five breakers
- Added 06 variable voltage 1- phase 110 kV capacitor for 02 stop route line
- Additional 01 dis-connector neutral, 01 neutral arrester valve for T1. Replace the entire control system including signal cable protection. Replace the entire busbar
- Replace the entire metal lightning, lightning rods
- Replace the entire string voltage of 110 kV
- Testing the system earthing and install additional earthing if needed
- Building new own resources system using one-way system includes battery 12 V-120 Ah and the cabinet AC-DC system. Improving automatic power systems, lighting, electrical activity of the station
- Construction of 02 new lead capacitor 7.8 MVAR for the C91, 4.8 MVAR bus C92
- Other work on 35 kV and 22 kV side, including replacement of old circuit breakers.

2. Renovation of 110 kV Phuong Liet Substation

Site location: Phuong Mai ward, Dong Da district, Ha Noi City.

Main features: 110/22/10 kV substation with capacity 2x63 MVA

Proposed work:

- Replace from the existing 110 kV distribution system block diagram "line-transformer" to schematic two busbar with coupling; use 110 kV GIS outdoor type switchgear
- Installation of the 22 kV distribution system, which is designed according to the diagram single busbar
- Installation of 10 kV distribution system are designed according to the diagram single busbar
- Installation of control and protection system to replace existing control and protection system
- Information channels SCADA signal from the 110 kV substations Phuong Liet
- Construction of new distribution control building of 25.1 x 8.5 m: two floors and one basement
- The renovation within the existing fenced boundary of the substation.

3. Renovation of 110 kV Tran Hung Dao Substation

Site location: Phan Chu Trinh ward, Hoan Kiem district, Ha Noi City.

Main features: 110/22/10 kV substation with capacity 2x63 MVA

Proposed work:

- Replace total 171-7; 172-7; 131-1; 132-2; 112-1; 112-2 disconnectors and two 131, 132 circuit breakers by complete 110 kV gas-insulated switchgear (GIS) for full bridge diagram include: five modules and these modules will be joined to become one complete 110 kV switchgear (two line cell modules, two transformer cell modules and one 110 kV bridge cell module)
- Replace total 10 kV cabinet system in 10 kV actual distribution cabinet by eighteen 22 kV new cabinets
- Replace existing TD41-100 kVA-10/0.4 kV auxiliary transformer by one new auxiliary transformer 250 kVA-22/0.4 kV. Install one 600 V- 400 A low voltage cabinet (after new TD41 auxiliary transformer)
- Improve actual control, distribution house.

V. DESCRIPTION OF AFFECTED ENVIRONMENTS

32. The environmental baseline information for the substation areas was obtained primarily from Ha Noi Statistical Yearbooks, state of the environment reports (SoER) prepared by Ha Noi DoNRE, reports from PECC1, and supplemented from the literature including other environmental assessments conducted for the same area. The description of affected environments focuses on natural features and land use.

A. Physical Environment

1. Climate

33. Hanoi experiences the typical climate of northern Vietnam, where summers are hot and humid, and winters are, by national standards, relatively cold and dry. Summers, lasting from May to September, are hot and humid, receiving the majority of the annual 1,680 millimetres (66.1 in) of rainfall. The winters, lasting from November to March, are relatively mild, dry (in the first half) or humid (in the second half), while spring (April) can bring light rains. Autumn (October) is the best time of year in term of weather. Humidity and rainfall are quite large, averaging 114 days/year.

a. Temperature

34. Extreme temperatures have ranged from 2.7 °C (36.9 °F) to 40.4°C (105 °F). The average temperature is about 24°C (Table 2)

Table 2. Average air temperature (^oC) in months in Ha Noi (Lang station)

Month Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	**Average**
2008	15.12	13.8	21.4	24.7	27.5	28.6	29.4	29.0	28.3	26.5	21.4	18.4	**23.7**
2009	16.0	22.5	20.9	24.7	27.1	30.3	29.5	29.9	29.1	26.8	21.9	19.9	**24.9**
2010	18.1	20.9	21.9	23.5	28.7	30.9	30.7	28.6	28.7	25.7	22.1	19.4	**24.9**
2011	12.8	17.7	17.1	23.8	27.2	29.5	29.9	28.9	27.6	24.5	23.8	17.4	**23.4**

(Source:Hanoi Statistical Yearbook 2011)

b. Sunlight hours

35. Average number of sunlight hours in a year is of 1055 - 1300 hours or more. The city is usually cloudy and foggy in the winter time with average monthly sunshine hours for February are only 1.8 h/day. Table 3 shows the average number of sunlight hours observed in Lang meteorological station during years 2008-2011

Table 3. Average annual sunlight hours in Ha Noi (Lang station)

Month Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	**Average**
2008	59.1	26.3	67.6	73.0	137.7	115.2	150.1	123.5	123.0	83.3	145.2	110.0	**1215**
2009	103.9	74.7	50.9	84.5	143.1	160.8	142.5	171.6	132.1	122.1	135.4	77.1	**1398.7**

2010	32.8	93.6	50.7	48.3	130.8	159.2	180.1	120.8	145.0	102.3	103.1	78.6	**1245.3**
2011	37	38.5	15.2	56.0	141.2	126.1	149.9	150.1	102.4	72.6	104.6	95.0	**1055.3**

(Source:Hanoi Statistical Yearbook 2011)

c. Humidity and Rainfall

36. Hanoi features a warm humid subtropical climate with plentiful precipitation**.** The average humidity varies from 77% to 79% from 2008 and 2011 (Table 4). Total annual average rainfall in Hanoi is from 1800 mm to 2000 mm. Table 5 shows the average rainfall observed in Lang meteorological station during years 2008-2011.

Table 4. Average humidity in months in Ha Noi (Lang station)

Month Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	**Average (%)**
2008	80	72	82	84	79	81	79	83	80	80	76	75	**79**
2009	72	84	82	82	81	74	79	78	76	75	66	74	**77**
2010	81	80	78	85	81	74	74	82	79	70	71	77	**78**
2011	71	83	81	80	76	80	78	81	81	79	77	68	**78**

(Source:Hanoi Statistical Yearbook 2011)

Table 5. Rainfall (mm) in months in Ha Noi (Lang station)

Month Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	**Average**
2008	26.6	13.9	20.2	121.6	184.0	234.3	423.5	304.5	199.4	469.0	258.7	11.4	**2267.1**
2009	4.9	8.0	49.1	74.3	229.0	242.4	550.5	215.7	154.6	78.8	1.2	3.6	**1612.1**
2010	80.9	8.1	5.8	55.6	149.7	175.4	280.4	274.4	171.8	24.9	0.6	11.6	**1239.2**
2011	9.3	17.5	105.9	42.0	149.0	388.3	255.3	313.2	247.3	177.6	31.8	51.5	**1788.7**

(Source: Hanoi Statistical Yearbook 2011)

d. Wind velocity

37. In subproject area, prevailing wind direction is north-east wind in winter, prevailing wind direction is southeast wind in summer. The average wind speed in months in Ha Noi is shown in Table 6.

Table 6. Average wind speed in months in Ha Noi

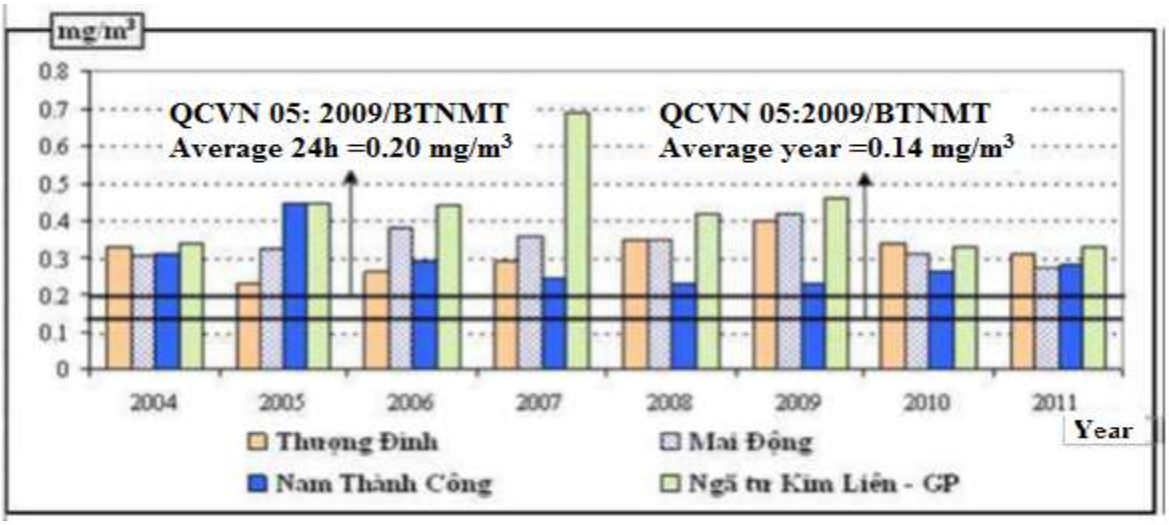
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	**Average**
(m/s)	1.9	2.1	2.0	2.1	2.2	1.8	1.8	1.6	1.6	1.7	1.7	1.7	1.9

(Source:Vietnam building Code 02:2009/BXD)

2. Air quality

38. According to a report on the environmental status of the 2011 Hanoi Department of Natural Resources and Environment in Hanoi, the status of air pollution in Hanoi is at a "red alert". The concentration of dust (TSP) in the urban districts exceeds the standards by 5-6 times, sometimes 10. Toxic emissions negatively affect the human environments. Average in public places in the capital, dust concentrations exceed permitted levels 2-4 times. Environmental monitoring results of the monitoring stations from 2004 - 2011 for the TSP dust values in Hanoi are shown in Table 7.

Table 7. TSP dust values in Hanoi from 2004 – 2011



(Source: VEPA, 2012)

39. The air quality in the subproject areas is good. For example, air quality measured in Long Bien area, near Tran Hung Dao substation is summarized in Table 8. However, in the roads during peak hours, means of transportation eliminate noxious gases such as CO_2, NOx, SO_2polluting the local environment at the traffic intersections. In addition, dust pollution occurs in areas where the construction activities are taking place particularly.

Table 8. Air quality in Long Bien area - Ha Noi in 2012

Concentration	CO (mg/m^3)	SO_2 (mg/m^3)	NO_X (mg/m^3)	Dust (mg/m^3)
K01	1.705	0.055	0.071	**0.110**
K02	1.916	0.062	0.050	**0.055**
QCVN 05: 2009/BTNMT (24h)	**5**	**0.125**	**0.1**	**0.2**

(Source:Centre for Environmental Analysis and Technology Transfer, 2012)

3. Topography geology and soils

40. The majority of the Hanoi area located in the Red River delta with an average elevation of 15m to 20m above sea level. The hilly areas are in the north and northwest of Soc Son district of the southern edge of Tam Dao Mountains with elevations from 20m to over 400m. The highest peak is 462m- Chan Chim peak. The topography of Hanoi is lowering from north to south and from west to east. The main topographic form of Hanoi is a plain enriched by the alluvial river with high alluvial terraces; among them are low lying areas with lakes. Particularly the high terraces are only in Soc Son district in northern and eastern of Dong Anh district. In addition, in Hanoi are mountainous terrains and erosion hill concentrated in Soc Son mountain area.

41. The Hoan Kiem district is in area which has flat topography, slope gently from east to west and from north to south. The highest area is 11m and the lowest area is 6.5m. Dong Da District terrain is relatively flat. There are some large lakes like Ba Mau, Kim Lien, Xa Dan Dong Da, Van Chuong. First of many ponds, but along with the process of urbanization has been filled. County has two small rivers flow through To Lich and Lu rivers. To the east there are a few small mounds, including Dong Da mounds. Based on the results of exploration drilling around the subproject area, the subproject's land is composed of clay.

42. The Son Tay substation is located in Son Tay District, Xuan Khanh Ward, Son Tay town, Hanoi. The area is relatively flat with negligible topographic differences. The substation is surrounded by rice fields and irrigation canals. The results of exploration drilling around the subproject area indicated area to be dominated with clay. Ha Noi has 18 major soil types include 36,769 ha of alluvial soil accounting for 56% of the area, 16,819 ha of degraded land accounting for 26% of the area with other soils occupying 12,019 ha.

4. Surface water sources

43. Surface water resources consist of 19 large and small rivers with water surface area is 32.6 km^2 and 3,600 ha of ponds, lakes, marshes. Surface water reserves are 571.3 m^2/s (49.36 million m^3), with reservoir capacity of 10.66 million m^3

44. Hoan Kiem district borders on the Red river with water surface area accounting for 21.26% natural area of the district equivalent 1.12 km^2. The average water level average water level of the Red river in months during 2008-1011 is presented in Table 9.

Table 9. Average water level of the Red river in months

Month Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	**Average**
2008	193	172	177	180	280	424	743	703	567	410	554	235	**387**
2009	597	587	418	468	696	715	988	858	666	515	402	352	**597**
2010	351	377	318	318	497	560	708	810	724	578	412	435	**507**
2011	168	134	109	143	260	308	390	314	248	191	184	141	**216**

(Source: Hanoi Statistical Yearbook 2011)

5. Ground water resources.

45. As expected with such depositional geology, an adequate rainfall and low lying topography, hydro-geological survey results show that underground water reserves in Hanoi are quite large. Currently the main source of water supply is groundwater, which is extracted from the borehole system. Today groundwater is also being depleted and polluted.

46. According to the Hanoi Environment and Natural Resources Department, the total volume of groundwater extracted in Ha Noi is 700,000 m^3/day from over 170,000 wells. The estimated volume that will be extracted in 2020 is 1.4 million m^3/day.

6. Water quality

47. Surface water quality in Hanoi is severely polluted. The rivers and lakes within the city are very dirty and polluted by the current wastewater drainage of the city. Existing groundwater sources are also degraded in both quantity and quality. Monitoring results of the Water Resources Monitoring and Forecast Center (MONRE) also confirmed that depth of the water table in Ha Noi is increasing meaning that groundwater is being depleted. In many places the groundwater quality does not meet standards. Concentrations of many water quality parameters such as ammonia, arsenic, and organic matter are higher than the allowable limit. If this situation lasts the useable groundwater in Hanoi will be depleted.

B. Biological Environment

1. Vegetation and Land Use

48. Ha Noi has 23,510 ha of forest land (former Hanoi: 6,740 ha and former Ha Tay: 16,770 ha), which makes up 6.9% of its natural area, of which 3,922 ha is natural forest and 19,568ha

is planted forest. Its natural preserves are composed of Ba Vi National Park, Chua Huong Natural Forest (My Duc District). Forest in Ha Noi is a vital resource for keeping the ecological environment balance and preventing hilly land from eroding. In addition, forest creates landscapes for tourist activities and resort build-up.

49. There are two types of ecosystems in the area, including aquatic ecosystem (ponds and lakes) and terrestrial ecosystem. The aquatic ecosystem includes: (i) bottom animals: larvae, shrimps, crabs, snails; (i) Fish - there are many fish species in the area including two types which are natural fish and feed fish; and (ii) aquatic plants: macrophyte, algae, phytoplankton etc.

50. Terrestrial ecosystem includes: (i) Insects - some families are *Veliidae, Mesoveliidae, Gerridae, Trichogrammtidae, Formicidae;* (ii) Vertebrate animal, e.g., rats, domestic animals (dog, cats), birds etc.; (iii) Vegetation – such as fruit-tree: Longan, Orange etc.; (ii) Ornamental tree: Ferm-palm, Pine etc.; (iv) Shade trees - many trees are along the two roadsides; and (v) Natural flora: e.g., grasses, shrubs.

51. Land use in the districts of the three substations is summarized in Table 10.

Table 10. The land use in the subproject area

Land categories	**Area (ha)**		
	Hoan Kiem (Tran Hung Dao SS)	Dong Da (Phuong Liet SS)	Son Tay (Son Tay SS)
Agricultural, forestry and aquaculture land	15.3	24.8	4835.3
Non-agricultural land	512.7	970.5	6306.2
Unused land	0.8	0.5	211.7
Total	**528.8**	**995.8**	**11353.2**

(Source:Hanoi Statistical Yearbook 2010)

52. Because construction activities at the three substations will occur within the substation property, no houses, social structures, as well as vegetation/crops will be affected.

53. Any on-site trees e.g. Tran Hug Dao or San Tay substations can only be cut in compliance with Article 5, (1), (c) of Decree No. 106/2005/ND-CP (17 August 2005) that the vertical distance from the highest point of trees to the lowest height of the TL must not be shorter than 4.0 m.

2. Wildlife

54. The subproject area is urban with dense residential areas. Significant wildlife no longer occurs within the area. There are no climbing animals that could interfere with the transmission line. A check of websites e.g. Birdlife International does not identify any bird migration routes through Vietnam. The Asian Flyway does not pass through Vietnam and instead heads south through the Philippines.

3. Conservation Areas

55. There are no conservation areas near the substations which are located in dense urban and peri-urban environments.

C. Socio-economic condition

1. Population

56. The population in Hanoi city is about 6,870.200 persons and accounts for 7.7% of the population of the country (in 2011). The population within the immediate subproject areas defined by the affected Wards is 20,204 (Table 11). In the subproject area are no ethnic minorities, only Kinh people.

Table 11. Population distribution within the subproject area (person)

Substation	***District***	***District Population (2010)***	***Ward***	***Ward Population (2013)***
Tran Hung Dao	Hoan Kiem	148, 500	Phan Chu Trinh	9,365
Phuong Liet	Dong Da	376 500	Phuong Liet	4,500
Son Tay	Son Tay Town	127, 900	Xuan Khanh	6,339
TOTAL		**654, 900**		**20,204**

(Source:Hanoi Statistical Yearbook 2010)

2. Local Economy

57. Hanoi city is one of cities which led the country on economic growth. In 2011 the GDP growth rate was 10.14%. The total revenue of Hanoi City is 115,466 billion dong (VND) and accounts for 17.1% of total revenue of the state budget.

58. Hoan Kiem district has many advantage conditions for sustainable economic development for its central location in the city. Hoan Kien District is an administrative, politics,

business and service center. Particularly in 2010 year, the value of production per capita increased more than 3 times compared to 2000 year. Commercial sector reached 33,067 billion, accounting for 63.28%; services reached 14,819 billion, accounting for 26.4%; travel 2,468 billion, accounting for 4.72%; industry reached 2,033 billion, accounting for 3.89%, construction reached 868 billion, accounting 1.66%.

59. Đống Đa District keeps economic stability, higher growth year after year. In 2008, the value of non-state industrial production reached 1,541 billion VND. In the first six months of 2009, non-state industrial output value reached 772 billion VND, with a number of key groups such as food processing, electrical equipment manufacturers. Commercial and service activities in the area are stepping up, forming a vibrant trading hub: Kham Thien, Nam Dong, Giang Vo.

60. The economic structure of Son Tay is shifting towards construction with an increase in 47.5% growth. The tourism sector and commercial services accounts for 39% of the growth, while agriculture, forestry and fisheries accounts for 13.5%. The economic development of Son Tay in the future will change the direction of the tourism sector-commercial services, construction industry, agriculture, forestry and fisheries. Son Tay is pro-actively investing in tourist areas, cluster planning for industry.

3. Social Infrastructure

a. Public Health and Sanitation

61. Because the substations are located in Hanoi city all communities have good access to medical services. Local medical facilities include healthcare stations at the Ward level which include first aid and medical assistance for minor illnesses and maternal services. Medical emergencies are referred to district/city hospitals while more complex surgery is carried out in the main hospitals in Hanoi City. Services and trained medical staff are increasing. The number of health establishments, patient beds and health workers Ha Noi are summarized in Table 12.

Table 12. Health Establishments, Patient beds and Health workers of Hanoi in 2010

Health Establishment	Hospitals (incl. central state)	55
	Medical service units in commune	557
	District maternity station	4
Patient beds	Hospitals (incl. central state)	15,509
	Medical service units in commune	2,885
	District maternity station	45
Health workers	Doctor	5,386
	Assistant to doctor	2,584
	Nurse	5,617

(Source:Hanoi Statistical Yearbook 2010)

62. Ha Noi is one of two provinces where the number of people infected with HIV is highest, after Ho Chi Minh City. Information from the Center for HIV / AIDS, Hanoi Department of Health showed that, according Statistics to mid-2013, around Hanoi are there are about 24,342 people infected by HIV (in which 3,800 people died of AIDS). All 29 districts in the city have reported detection of the infection; 536 of the total 577 communes, wards and townships (92.8%) have reported data from HIV infection. The number of people infected with HIV are mainly concentrated in urban districts, such as Dong Da, Hoan Kiem, Hai Ba Trung, Ba Dinh. By contrast, in the outlying districts Ha Noi such as Thach That, Thanh Oai, Quoc Oai, people infected is low. In the area of Hanoi, nearly 2,000 HIV infected persons are not Hanoi citizens. In Hoan Kiem district, there are 1,374 HIV-infected persons until March in 2008. Many new HIV-infected persons are found every year.

63. According to the test results of the Center for HIV / AIDS from 2012 to mid-2013, Dong Da district has a highest prevalence of HIV infected persons with 2,852 people. Dong Da District also has the highest rate of new detected HIV infections with 35 cases in half of 2013.

64. In Son Tay Town, according to the report of the Steering Committee for AIDS and drug abuse, prostitution of town, as of 30/09/2013, the cumulative number of HIV / AIDS in the area is 294, of which 100 people moved to AIDS, and 86 people died.

b. Education

65. Ha Noi has hundreds of leading institutes, more than 50 universities and colleges that are training laborers and supplying some 80,000 graduates to the laborer market. In addition, it supplies skilled and advanced workers for enterprises to scale up their business. **L**iteracy is high due to good access to primary and secondary schools, while technical and tertiary

education is available in numerous colleges within Ha Noi. Hoan Kiem district has a number of universities some of which are Dong Do University, Hanoi university of Pharmacy, and Chemistry Department of Hanoi university of Science

66. In Đống Đa District education and training has grown significantly along with enhancement of the quality of teaching and learning. In recent years, Dong Da education are interested in Information Technology (IT) management and teaching. Currently, in Dong Da District, 100% pre-schools, primary schools, secondary schools are connected to the internet. Dong Da District has 13 universities and colleges such as Foreign Trade University, Institute of Public Administration, Academy Bank, Trade Union University, Hanoi Law University; Hanoi University of Culture, Hanoi Medical University.

67. Son Tay town is home to many universities and colleges, especially in the military field. Son Tay is also known as the "Capital of the troops". The schools in the Town are: Military Medical Academy, 2nd base, Logistics Institute, 2nd base, 1st Army School (formerly School Armed Tran Quoc Tuan), Air Force Academy and Defence, Border Institute, School of Chemical Defense Officers, Artillery School Officers, University of Vietnam-Hungary Industry, Academy Bank, 2nd base, University of Socialist Labour, 2nd base, College of Engineering, Technology and Automotive - Engineering Authority

68. The number of primary and secondary schools in the 3 districts within the subproject area is presented in Table 13.

Table 13. Number of schools in Hoan Kiem, Dong Da and Son Tay district

District	***Education categories***	***Schools***	***Classes***	***Teachers***	***Pupils***
Hoan Kiem	Kindergarten	20	154	365	6,409
	Primary	14	317	480	13,201
	Middle school	7	232	505	10,071
	High school	2	95	196	4,293
Dong Da	Kindergarten	25	190	433	9,240
	Primary	19	584	839	24,527
	Middle school	17	384	873	14,626
	High school	5	206	463	9,496

District	*Education categories*	*Schools*	*Classes*	*Teachers*	*Pupils*
Son Tay	Kindergarten	15	125	239	4,312
	Primary	15	290	487	10,134
	Middle school	15	183	480	6,793
	High school	3	106	254	4,507

c. Communications

69. Ha Noi is the biggest communications centre in the country. Its communications network satisfies swift communication information demand nation-wide and worldwide. Infrastructure for transport, communications and electricity are being constantly improved so that people's standard of living and access to services has improved appreciably. All households in the subproject area have TV and telephone. All wards have their own mass communication facilities. The post office locations are a short distance for all people.

d. Water and electricity and transport

70. Ha Noi has a synchronous and developed transport system. Noi Bai International Airport is 40 km away from its center. The urban population is supplied with 120 liters/person/day of water. Ha Noi currently has 7 electric stations and 200kV and 500kV lines, 23 10-kV electric downloading stations. Levels of 35, 10, and 6kV are gradual shrunk, and levels of 22kV/ 0.4kV are saved. A 22kV line in urban and neighboring areas is designed.

71. The road network of Hoan Kiem District is well developed throughout the subproject area. Dong Da District has many railway transport hubs and roads. These are favorable conditions to help the District be able to communicate and exchange of goods, is a precondition for economic development, culture and tourism. Son Tay town has Highway 32, highway 21 running through, Route Lang - Hoa Lac, Highway 2C to Vinh Phuc; Red River Waterway

4. Cultural and Heritage Sites

72. The old quarter of Hoan Kiem is the smallest district of Hanoi. In the area of Hoan Kiem district, Dong Xuan market is the clue of goods exchange for the whole northern region. Besides, Hoan Kiem district also has large markets such as: Hang Da, Cua Nam, Hang Be market and busy commercial streets such as: Hang Gai, Hang Bong, Hang Ngang, Hang Dao. The most famous cultural site is Hoan Kiem Lake with The Huc Bridge and Ngoc Son Temple.

73. In Dong Da District cultural relics and historic sites are: Van Mieu, -Quoc Tu Giam, Dan Xa Tac monuments, Dai La relics ring, Chua Boc, Dong Da hillock and Quang Trung King monument, Lang temple, Bich Cau temple, Hanoi station, etc.

74. The cultural works of Son Tay's history is Dong Mo Golf Course and Dong Mo Lake, Xuan Khanh lake; Den Va ancient citadel, Duong Lam ancient village. Duong Lam also Ngo Quyen mausoleums, Giang Van Minh's temple, Mong Phu communal house. Especially Mia pagoda, the temple associated with the development of Duong Lam, where the 287 the most rare statues in Vietnam are kept. The list of cultural, heritage sites and Public Infrastructure surrounding the substations are shown Table 14.

Table 14. List of Historic Buildings and Public Infrastructure within 500m of the substations

Substation	Name of infrastructures	Distance and direction from the substation
Tran Hung Dao	Hospital 108	50 m on the East
	Military museum	10 m on the North
Phuong Liet	Collective of the Agriculture Rural Development.	10m on the North-East
	Collective of the Northern Power Corporation.	5m on the South-East
	Dermatology hospital, Vietnam-France hospital, Bach Mai hospital and Nose-Throat hospital	350m on the East
	National Economics University, University of Civil Engineering and Hanoi University of Science and Technology	500m on the East
	Hanoi Medical University and the Air Force Museum	500m on the West
Son Tay	None	

5. UXO Clearance

75. No UXO clearance is needed because the construction activities are taking place inside the existing substation areas. The only potential exposure to UXO is from the excavations for the new building to be built on Son Tay substation property.

6. Subproject affected people

76. No land acquisition will occur in subproject areas because all subproject activities will occur inside substation properties. Thus, there will be no permanent and temporary impacts, and no displaced persons. The subproject will not permanently affect any businesses or shops in the subproject area and will not cause economic displacement to any displaced persons.

77. The construction-related disturbances such as noise, dust, reduced access, and increase traffic will affect about 100 households. The fewest households will be affected by the renovation of the Tran Hung Dao and Son Tay substations.

1. Features of Three Substations

78. Figure 1 shows location of Tran Hung Dao Substation in the dense urban area in central

Figure 1. Location of Tran Hung Dao 110 kV Substation (red)

Ha Noi. The substation is bounded by two streets and a Community Centre and a Border Guard Academy on the eastern side of the substation. Situated along both streets are shops and small cafes, and second floor residences. Directly across Tran Hung Dao Street is a Veteran's Hospital. Figure 2 show the streetscape around Tran Hung Dao substation.

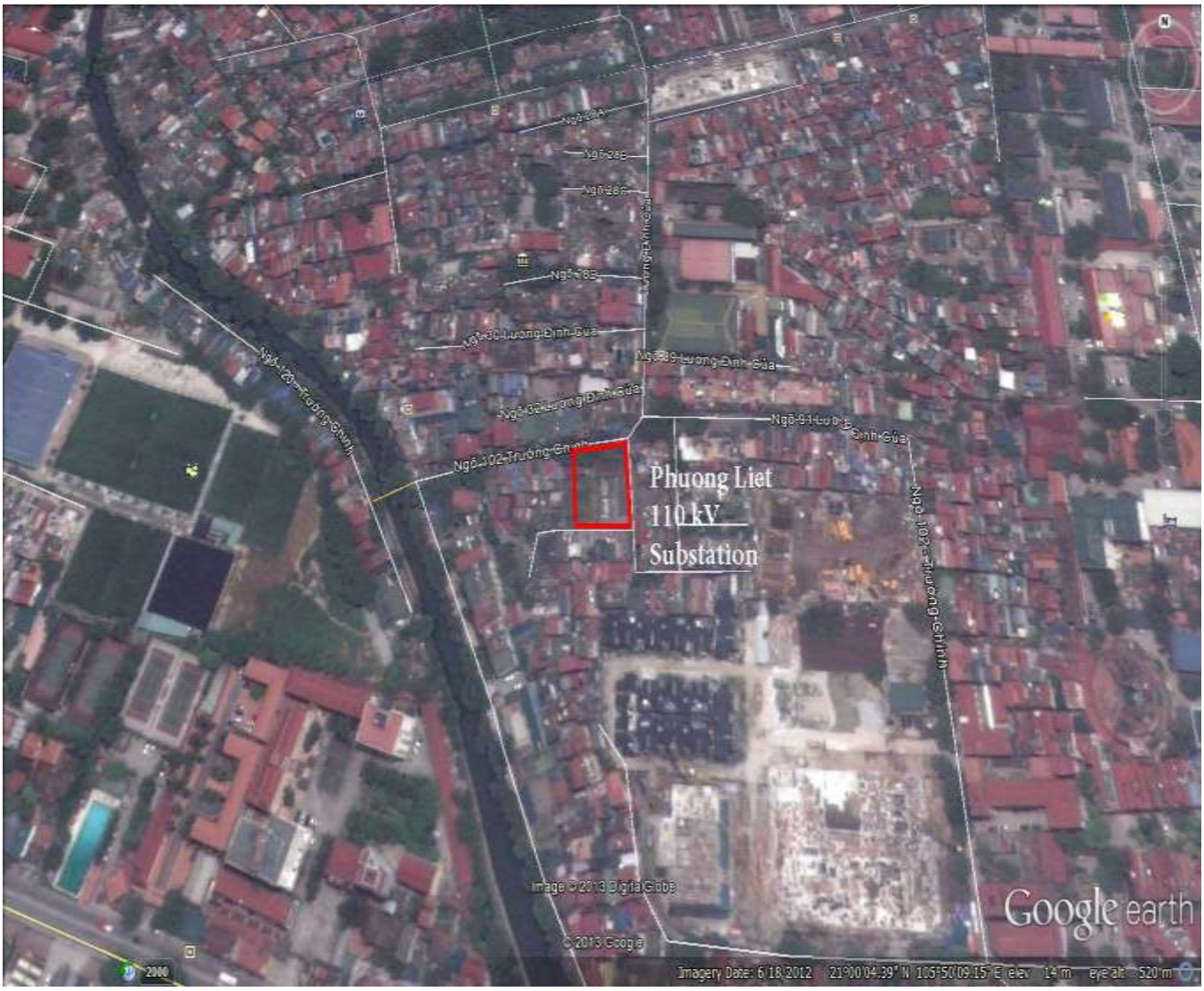
Figure 2. Views of Tran Tung Dao 110 kV Substation

Fig 2a:
Looking east along Tran Hung Dao and smaller street to the north which bound the Substation property. Gate of Border Guard Academy can be seen at end of smaller street

Fig 2b:
Rear view of Substation from smaller street on north side of property

Fig 2c:
Looking north at Substation from Tran Hung Dao Street

Figure 3. Location of Phuong Liet 110 kV Substation in Ha Noi (red)



79. Figure 3 shows the location of the Phuong Liet Substation in another dense urban area in Ha Noi southwest of the Tran Hung Dao Substation. Unlike Tran Hung Dao Street the area immediately surrounding the Phuong Liet Substation is dominated by residences and a few small shops. The Phuong Liet substation is the most cramped Substation with the western, southern and eastern boundary walls shared by residences. Figure 4 shows the Phuong Liet Substation property and adjacent neighbourhood.

Figure 4. Views of Phuong Liet 110 kV Substation Property

Fig 4a:
View east from inside substation property showing multi-storey residences at property boundary

Fig 4b:
View west from inside substation property showing multi-storey residences at property boundary

Fig 4c:
Access road in front of Substation

80. Figure 5 shows views of Son Tay 110 kV Substation. The substation is located in a peri-urban environment in Son Tay town on western edge of Ha Noi province. The property of the substation provides much more area for substation expansion.

Figure 5. Views of Son Tay 100 kV Substation Property

Fig 5a:
Gate of Substation looking down access road

Fig 5b:
Open area west of power house

Fig 5c:
Proposed area for new building on northwest side of property

VI. INFORMATION DISLCOSURE AND PUBLIC CONSULTATION

A. Information Disclosure

81. Formal disclosure of information on the three 110 kV substations that occurred to affected persons and stakeholders during the IEE is meant to form the beginning of continued information disclosure and stakeholder involvement with the subproject as the subproject is implemented. As part of the stakeholder communication strategy regular information exchange meetings with stakeholders are strongly encouraged throughout implementation of the subproject.

82. The IEE must be easily available to the stakeholders contacted during examination in written and verbal forms in local language of Vietnamese. At a minimum the Executive Summary of the IEE should be translated to local language and distributed to all APs. The IEE should be available on the EVN HANOI web site, at the EVN HANOI office in Ha Noi, and at the subproject sites. Similarly, all subproject reporting with specific reference to stakeholder consultation minutes, environmental monitoring, and reports on EMP implementation released by the EA/IA should be available at the same offices and web sites. The IEE will be available on the ADB web site as well as EMP reporting that is prepared by the EA/IA after implementation begins.

B. Public Consultation

83. The stakeholder consultation strategy was developed to meet the requirements of meaningful consultation as stipulated by the SPS (2009). The strategy embodied the principles of meaningful engagement, transparency, participation, and inclusiveness to ensure that affected and marginalized groups such as women, and the poor, were given equal opportunities to participate in the design of the subproject.

1. Identification of Stakeholders

84. Stakeholders were identified and engaged in a participatory manner. Stakeholder communication focused on institutional stakeholders, affected communities, and persons directly affected by proposed subproject interventions. The stakeholders of the subproject include:

- Institutional stakeholders such as: (i) PPC, (ii) DPC; (iii) Project EA, (iv) PECC4, and (v) commune leaders;

- Mass organizations such as Womens Union, and Farmers Union which provided information for the design of the various subproject interventions, and which might participate in implementation of measures and interventions;

- Affected households and businesses living along the transmission line and near the substation site who may be directly and/or adversely affected, and who have an interest

in the identification and implementation of measures to avoid or minimize negative impacts; and

- Other institutions or individuals with a vested interest in the outcomes and/or impacts of the subproject.

2. Public consultation meeting

85. Formal community consultation meetings were held to discuss the location and potential environmental and social impacts of the transmission line and substation. Public consultations were held at: (i) Xuan Khanh Ward on Son Tay town on 15 October, (ii) Phan Chu Trinh Ward, Hoan Kiem District on 13 November, and (iii) Phuong Mai ward, Dong Da District, in Hanoi 23 November, 2013

86. The public meeting consisted of the following three component procedures:

(i) The consulting engineer introduced the details of planned renovation and rehabilitation of the three substations;

(ii) The environmental consultant presented ADB's environmental policy, safety regulations in the Vietnam power sector, anticipated environmental impacts and respective mitigation measures (to be developed in IEE), the grievance redress mechanism for environmental and resettlement problems; and

(iii) The social/resettlement consultants presented: ADB's resettlement plan; impacts due to the acquisition land and properties; policies of GOV and local authorities, the Project's policies in compensation for loss as the state acquired land and properties on land.

87. During the meeting, people raised their questions and comments on environmental issues. The majority of the concerns raised were fire protection system, impact of electromagnetic fields (EMF), road damage and repair, noise and solid waste mitigation. The participants of the public consultation meeting included Commune leaders, representatives of mass organization such as Women Union, Farmer union and affected people. Total consulted people were 61 (Appendix B).

3. Results of Public Consultation

a. Comments from communal authorities

88. The summary of comments/questions from local authorities/people and answers of subproject owners and consultants company PECC4 are summarized in Table 15. The main concerns of subprojects are as follows:

Son Tay substation. The 150-200 m road from the substation to the street needs to be reinforced to cope with the heavy trucks transporting during construction period. The construction wastewater needs to be collected.

Tran Hung Dao substation. The daily construction period must not extend beyond 11 p.m., and identify location to dispose the construction wastewater. The contractor must inform Phan Chu Trinh commune people's committee and local people about daily construction period.

Phuong Liet substation. The proper disposal of construction and domestic solid waste; the effects of construction activities, electromagnetic fields to the people and the commitment of investor/constructor to ensure no fire and explosion occurred.

Table 15. Comments and Issues of Public Stakeholders and Response from PECC4

Location and time	Comments/questions from local authorities	Answers of Project owners and consultants company PECC4	Project response
SƠN TÂY 15 October 2013	The150-200 m road from the substation to the street need to be reinforced.	Construction contractor will consider these items in the construction preparation	Anticipated need for expansion of access road to Substation to accommodate construction truck traffic identified in IEE.
	The lightning protection systems need to be secure and safe. There is a case that buffalo died by lightning strike.	Construction contractor will include these this in the construction preparation	Integral part of detailed design
	Proper drainage should located beside or not in middle of road to not weaken road	Construction contractor will consider these items in the construction preparation.	The access road worthiness is included in IEE, and will be addressed at detailed design.
	The construction wastewater need to be collected.	The scope of construction is small. Only small amount of wastewater generated.	Mitigation Plan of EMP has specific sub-plans for managing worker camp and construction waste.
TRẦN HƯNG ĐẠO 13 October 2013	Why does substation cause noise, and possible explosion?	The accessories in substation are too old and unsafe. The modern accessories will replace these will reduce the noise and the prevent explosion.	Primary objective of subproject that will be addressed at detailed design.
	When does the subproject start and finish?	-Start: July, 2014 (Schedule) -Building time: three months	n/a
	Building actions have to end before 11p.m.	Agree. However, with some sudden events which have to build in the night, we will notify the people in subproject area.	EMP specifies ideal working hours between 07:00 and 18:00
	The Project owner needs to inform local people about construction time.	Agree.	EMP identifies need for contractor(s) to inform community of construction schedule in pre-construction phase

Location and time	Comments/questions from local authorities	Answers of Project owners and consultants company PECC4	Project response
PHUONG MAI WARD, DONG DA DISTRICT, HANOI CITY 23 November 2013	Construction waste will be collected, but domestic waste collection of substation must be managed by sanitation companies and pay sanitation fees.	Investor and Construction contractor will work with sanitation enterprises to pay for garbage collection.	n/a
	Investor is requested to clearly describe how the construction activities affect people.	The subproject to renovate and upgrade the existing fence of Phuong Liet 110kV substation will cause short-term environmental impacts such as dust, noise, potential explosion hazards, obstructing traffic, and road damage. The upgraded electrical capacity will reduce power losses, bringing the social and economic benefits in the area.	As clarified in the IEE/EMP, the public meeting that was held represents the first step in the continued formal disclosure of information on the subproject to local community, education of the community on the subproject, and the ability of the community to identify issues to the project owner and contractor as the subproject is implemented
	Electromagnetic fields affect people or not?	- The new installation of substation equipment is designed according to international standards and in accordance with electricity regulations of Vietnam.	The WHO, and other international medical community have not determined any negative health effects caused by EMF from transmission lines or substations.
	Local people need full commitments of subproject owner and construction contractor in the construction process. What is the level of safety for the people in case of fire? The subproject owner and construction contractor need to ensure no fire and explosion occurs.	- Investor commits to implement fully environmental regulations, fire during subproject implementation.	The EMP prescribes a comprehensive Emergency Response Plan for construction phase
	The 110 kV substation is too close to residential areas. The distance is only about 1m. How can this ensure the	The subproject replace the old equipment has long operated in accordance with the new equipment to international standards. At the same time	Integral to detailed designs of the upgrading of the Substation

Location and time	Comments/questions from local authorities	Answers of Project owners and consultants company PECC4	Project response
	safety of the power grid?	the equipment is installed according to the layout as well as international standards of Vietnam to ensure electrical safety.	
Conclusion	Xuan Khanh, Phan Chu Trinh, Phuong Mai Ward People's Committees and affected households agree and will support the upgrading activities of 110kV Son Tay, Tran Hung Dao and Phuong Liet substations in Hanoi City		Follow-up consultations will occur to monitor community views of subproject

4. Comments from Army Central Hospital 108 and Army Museum

Because Tran Hung Dao substation is located close to Army Central Hospital 108, and Army Museum, the consultation with those organizations was been made by Ha Noi PMB through official letter of Letter no. 1699/HANOI PMB-X09.2 dated 27th September 2013. The comments/opinions from Army Central Hospital 108 and Army Museum are as follows:

- The organizations have agreed that, the impacts of the subproject on the natural environment and socio-economic aspects are evaluated fully.

- The measures are feasible and appropriate with the real situation at the subproject site.

- It is vital that Ha Noi PPMB should design preferential, stable and continuous power supply plan after the complete renovation of the hospital. The strict implementation of measures to minimize environmental pollution and to ensure safety in construction and operating process of the subproject is also suggested. Furthermore, measures to handle power-outages during construction and operation phases of the subproject should be planned.

VII. POTENTIAL ENVIRONMENTAL IMPACTS AND MITIGATIONS

89. The assessment of potential impacts of the rehabilitation and renovation of the three substations is structured by the three development phases of the subproject defined by: *pre-construction*, *construction*, and *post-construction operational phase.* In this way potential impacts of common activities of the three phases can be addressed together thereby minimizing redundant assessments. Potential impacts specific to a substation are discussed separately. This structure is carried forward and is also used to structure the environmental management plan (EMP) for the subproject.

A. Subproject Benefits

90. The targeted comprehensive benefit of the improvements to the substations is provision of the much needed additional and more reliable electrical power to the three districts in Ha Noi. Special reference is noted to the benefit to the numerous hospitals in the areas, and the need of the supply the overall steady increase in residential, commercial, and light industrial demand in the city. The additional electrical power will significantly reduce power outages or brownouts that occur in the area, and the need to shunt electrical power from other parts of the city.

B. Pre-construction Phase

91. At the feasibility design stage no resettlement or loss of land is expected because the renovation and rehabilitation of the three substations will occur on substation property inside the existing substation wall or fence boundaries. The details of any potential land loss or compensation are found in the draft Resettlement Plan (RP) which is under separate cover.

a. Updating Environmental Management Plan

92. The subproject EMP will need to be updated during the pre-construction to ensure the EMP fully addresses the potential impacts of the final detailed designs of the Tri-Substation renovation and rehabilitation in Ha Noi. This will involve finalization of the Mitigation and Monitoring Plans of the EMP that will manage and measure potential impact areas such erosion, noise, dust and air quality, construction waste and spoil disposal, construction traffic, and worker and public safety at the subproject sites. However, given that all renovation/rehabilitation work will occur inside the current boundaries of the three substations updates to the EMP should be minor. The updated EMP will be used by the contractors to prepare their contractor environmental management plans (CEMP).

93. Thus, the key impact management measures to be implemented during the pre-construction phase are:

1) Final review of any compensation issues with affected households and businesses;
2) Completion of detailed designs of the subproject; and
3) Updating and initiation of subproject EMP.

C. Construction Phase

94. The potential environmental impacts of the subproject are associated primarily with the construction phase of the planned renovation and rehabilitation of the three substations. The three substations are not located in protected areas, and there are no documented rare or endangered wildlife, or critical habitat in the area of the three substations.

1. Potential impacts

95. Short-term construction-related impacts common to all three substations are, for example, reduced and/or blocked public access and movement in the area, noise, dust and air pollution from NOx, SOx, and CO caused by construction truck traffic and heavy equipment use, public and worker accidents and injury, increased traffic and traffic accidents on access roads to substations, solid waste and domestic pollution construction sites and from worker camps, social issues associated with migrant worker force. In addition, the decommissioning of old equipment, cables, switches, and other related electrical materials would result to the generation of waste materials that needs appropriate handling, storage, and disposal. A suitable and adequately sized storage area must be identified by each substation prior to any dismantling operation.

a. Mitigation measures

96. Construction management measures to mitigate the potential common impacts associated with the renovation and upgrading of the three substations are exemplified below. The mitigation measures are detailed further in the subproject EMP.

1) The civil works planned at the Son Tay substation should be reviewed with the GoV military to assess the likelihood that UXO could be encountered when digging the footings of the new building. UXO clearance may be required.
2) Open excavations should be fenced, and trenches covered where public walkways or vehicles must cross.
3) A cultural chance find management sub-plan must be in place in the EMP for cultural artifacts and property.
4) Regular use of wetting agents should be employed at construction sites and along construction / access roads to substations to minimize dust.
5) All construction vehicles and gas powered equipment should be maintained in proper working order to minimize emissions, and not operated at night if possible to minimize noise.
6) Speed limits should be posted and adhered to by construction vehicles.
7) Where possible construction vehicles should use different roads or dedicated lanes of roads shared by the public.
8) Trees and other vegetation at all construction sites and along access roads should be protected with minimal removal.
9) Present and past land activities on substation property should be reviewed to assess whether excavated soils will be contaminated spoil. Contaminated spoil should be disposed at a landfill or a location approved by DoNRE.
10) Local workers should be used as much as possible to prevent or minimize influx of migrant workers, and incidence of social disease and community unrest.

11) Worker camps or stations must have adequate domestic waste collection facilities and sufficient pit latrines that are located away from public areas.

12) Dedicated fuel storage areas must be established away from public areas and marked clearly.

13) To minimize the risk of public and worker injury appropriate GoV regulations on Occupational, Safety, and Community Health must be applied[6], or the IFC/World Bank Environment, Health, and Safety Guidelines (2007) that govern the safe and orderly operation of civil works should be followed.

14) Aggregates (e.g., sand, gravel, rock) that are transported by truck should be covered.

15) Prolonged use of temporary storage piles of fill should be avoided, or covered, or wetted regularly to prevent dust and erosion.

16) Sand extraction from any rivers for construction fill should be conducted at licensed areas only.

17) Storage of bulk fuel should be on covered concrete pads away from the public and worker camp. Fuel storage areas and tanks must be clearly marked, protected and lighted. Contractors should be required to have an emergency plan to handle fuel and oil spillage.

18) Handling, storage, or disposal of transformer oils must follow internationally accepted procedures and standards.

19) Develop a plan for the decommissioning of old equipment and materials from each substation that considers the possible repair and reuse of equipment and parts, identification of potential buyer or recycler and adequate storage or warehousing of materials.

2. Substation-specific potential construction impacts, and mitigations

97. The short-term construction-related impacts and required mitigations summarized above could vary among the substations. Highlighted below are potential construction-related impacts specific to individual substations.

a. Son Tay substation

98. Potential construction-related impacts of the substation renovations will stem from the narrow access road to the station in the form of traffic congestion, periodic blocked access and vehicle movement, and increased risk of vehicle accidents. The existing

[6] e.g. Decree 110/2002/ND-CP, supplementing some Articles of Decree 06/1995 on Labour Code of Occupational Safety and Health, MoLISA

access road to substation may become too narrow near the substation for combined construction and local traffic. The road may need to be temporarily widened with dedicated construction lanes, or regular traffic re-routed.

b. Phuong Liet substation

99. Construction traffic will definitely become a problem along the narrow urban streets leading to the substation. Large truck and heavy equipment movements to the site should be scheduled between 23:00 and 06:00 hr. Extra care must be applied to daytime movement of construction vehicles.

100. The notably cramped substation property will require that extra care is taken with construction worker safety. Similarly, extra measures must be undertaken to ensure that the residents of the surrounding properties that share the substation security fence and look over the substation property are protected from injury or disturbance from the activities to renovate the substations.

c. Tran Hung Dao Substation

101. Similar to Phuong Liet, extra care must be taken to ensure that the construction workers are not injured during the rehabilitation of the Tran Hung Dao substation. And, while the substation is mostly separated from adjacent residents and businesses by two busy urban streets (e.g., Tran Hung Dao Street) extra care must be exercised to ensure that the adjacent residents and business activities are not negatively affected. Clearly marked speed limits need to be enforced along with sufficient signage that indicates that rehabilitation of the substation is underway.

D. Operation Phase

102. No marginal impacts with the rehabilitated and renovated substations are anticipated. Normal worker and public safety practices as regulated by M/DoLISA should continue. Existing regulations for the management of spills of hazardous waste such as transformer oils should be followed.

1. Climate Change

103. Regional Global Circulation Modeling project greenhouse-climate change induced changes to the frequency and severity of rainfall events in the subproject area. The rehabilitated and renovated substations will be resilient to climate change such as potential flooding associated from a 100-year storm.

VIII. ANALYSIS OF ALTERNATIVES

104. The subproject alternative of doing nothing and not renovating or rehabilitating the substations would result in the continued situation of power shortages in the three districts.

IX. GRIEVANCE REDRESS MECHANISM

105. A well-defined grievance redress and resolution mechanism will be established to address affected persons (AP) grievances and complaints regarding environmental issues, land acquisition, compensation and resettlement in a timely and satisfactory manner. All APs will be made fully aware of their rights, and the detailed procedures for filing grievances and an appeal process will be published through an effective public information campaign. The grievance redress mechanism and appeal procedures will also be explained in a subproject information booklet (PIB) that will be distributed to all APs.

106. APs are entitled to lodge complaints regarding any aspect of affected environments, land acquisition and resettlement requirements such as, noise, pollution, entitlements, rates and payment and procedures for resettlement and income restoration programs. APs complaints can be made verbally or in written form. In the case of verbal complaints, the committee on grievance will be responsible to make a written record during the first meeting with the APs.

107. A Grievance Committee with appointed environmental and social issues experience will be organized in local communes comprising of local leaders designated for such tasks. The designated commune officials shall exercise all efforts to settle APs issues at the commune level through appropriate community consultation. All meetings shall be recorded by the grievance committee and copies shall be provided to APs. A copy of the minutes of meetings and actions undertaken shall be provided to the EA/IA[7], and ADB upon request.

108. The procedures for grievance redress are defined below and summarized in Figure 6. The procedure described below should apply easily to both social and environmental issues and be consistent with the legal process for resolution of disputes in Viet Nam.

i) Stage 1: Complaints from APs for the first time shall be lodged verbally or in written form with the village head or commune leader. The complaints shall be discussed with the APs and the designated Head of Grievance Committee or members of the committee. Because initial environmental issues will most likely be construction-related, the EO/contractor and then

[7] See Section XB below for institutional responsibilities for EMP

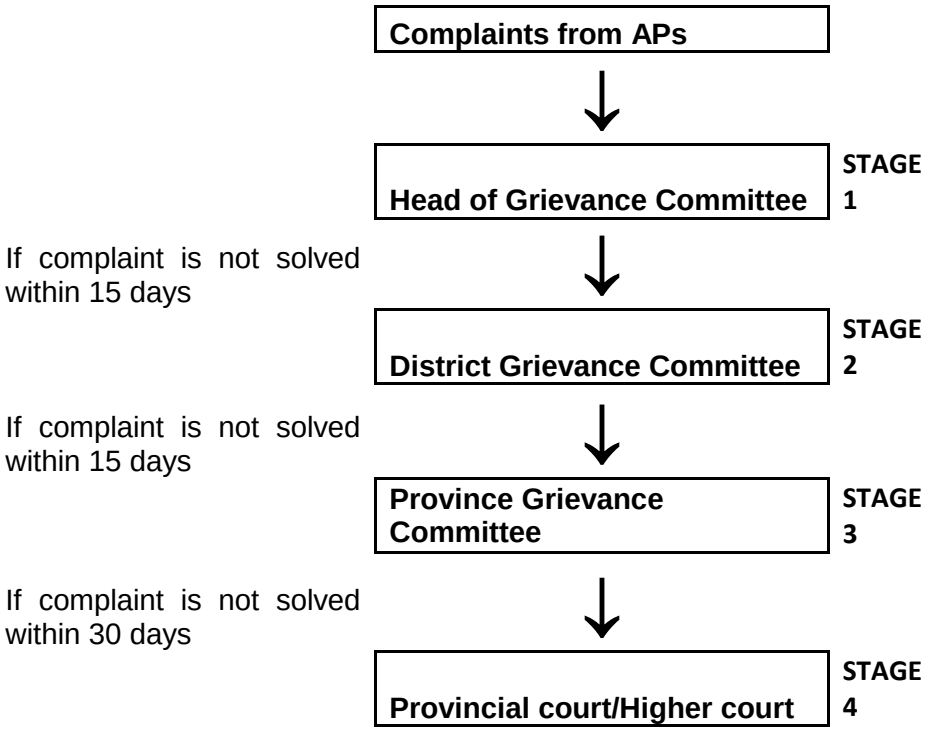
the ESU/IA need to be notified immediately. It will be the responsibility of the Head of Grievance Committee to resolve the issue within 15 days from the date the complaint is received. All meetings shall be recorded and copies of the minutes of meetings will be provided to APs.

ii) Stage 2: If no understanding or amicable solution can be reached or if no response is received from the grievance committee within 15 days from filing the complaint, the APs can elevate the case to the District Grievance Committee. The District Grievance Committee is expected to respond within 15 days upon receiving the APs appeal.

iii) Stage 3: If the AP is not satisfied with the decision of the District Office, or in the absence of any response, the APs can appeal to the Provincial Grievance Committee (PGC). The PGC will review and issue a decision on the appeal within 30 days from the day the complaint is received.

iv) Stage 4: If the AP is still not satisfied with the decision of the PGC or in the absence of any response within the stipulated time, the APs, as a last resort may submit his/her case to the provincial court. The court will address the appeal by written decision and submit copies to the respective entities which include the EA, DGC/PGC and the APs. If however, the AP is still not satisfied the court's decision, the case may be elevated to the provincial court. If however, the decision of the provincial court is still unsatisfactory to the APs, the APs may bring the complaints to the Higher Court.

Figure 6. Summary of Grievance Redress Process



109. The EA and EVN will be responsible for checking the procedures and resolutions of grievances and complaints. The EVN/EA must have expertise and experience in social and environmental issues associated with infrastructure developments. The EVN/EA may recommend further measures to be taken to redress unresolved grievances. The environmental specialists will provide the necessary training to improve grievance procedures and strategy for the grievance committee members when required.

109. In cases where APs do not have the writing skills or are unable to express their grievances verbally, they are encouraged to seek assistance from the recognized local groups, NGOs, or other family members, village heads or community chiefs to have their grievances recorded in writing, and to have access to documentation, and any survey or valuation of assets, to ensure that where

disputes do occur, all the details have been recorded accurately enabling all parties to be treated fairly. Throughout the grievance redress process, the responsible committee will ensure that the concerned APs are provided with copies of complaints and decisions or resolutions reached.

110. If efforts to resolve disputes using the grievance procedures remain unresolved or unsatisfactory, APs have the right to directly discuss their concerns or problems with the ADB Southeast Asia Department through the ADB Viet Nam Resident Mission (VRM). If APs are still not satisfied with the responses of VRM, they can directly contact the ADB Office of the Special Project Facilitator (OSPF).

X. ENVIRONMENTAL MANAGEMENT PLAN

A. Overview of Environmental Management Plan

111. An Environmental Management Plan (EMP) has been developed for the rehabilitation and renovation of the Son Tay, Phuong Liet, and Trans Hung Dao substations. The purpose of the EMP is to integrate the results of the IEE into a formal management plan that is implemented in parallel with the subproject to prevent or minimize the potential environmental impacts and issues that were identified by the IEE. The EMP addresses the results of the public consultations on the subproject that were convened as part of the IEE.

112. The EMP, *inter alia*, consists of an Impacts Mitigation Plan, a Monitoring Plan, and an Emergency response Plan. The EMP also prescribes the institutional responsibilities for the implementation of the EMP. The EMP is a management tool that provides a set of directives and guidelines that the subproject owner follows to prevent or minimize unnecessary environmental impacts of the subproject.

B. Institutional Arrangements and Responsibilities

113. At the feasibility stage the primary management framework[8] responsible for the implementation of the EMP for the renovation and upgrading of the Son Tay, Tran Hung Dao and Phuong Liet substations is summarized as follows. The EVN HANOI is the executing agency (EA). The EA takes overall responsibility for implementing the EMP with executive support from the Power Project Management Board (PPMB); a subsidiary of EVN HANOI and the implementing agency (IA) of the subproject. The IA under the direction of the EA implements the subproject and EMP with an assigned Environmental and Social Unit (ESU) whose sole responsibility is to implement the EMP.

[8] Adapted from kick-off meeting presentation slides, December 10-13

114. The IA/ESU is supported by the [international] Project Implementation Consultant[9] (PIC). The PIC assists with completion of the detailed subproject designs, updates the EMP to address the detailed subproject designs, and assist with the implementation of the EMP. The PIC also delivers required capacity development and training to the IA/ESU. The ESU oversees and assists the work of the Environmental Officer (EO) of the construction contractor who implements the contractors EMP (CEMP)[10].

115. External support of the ESU for the implementation of the EMP is provided by the international and national environment specialists (ES) of the PIC, and an Environmental Monitoring Consultant (EMC) which is required to conduct the field sampling and laboratory analyses of the environmental monitoring plan (e.g., water quality, air quality) of the EMP that cannot be performed by the contractor or IA/ESU. A summary of indicative responsibilities for implementation of the EMP is provided below.

116. The responsibilities of the EA with support from EVN include:

- Overall responsibility for implementation of EMP;
- Provide coordination and supervision for environmental and social safeguards and monitoring for IA/ESU;
- Liaise with EVN and ADB on the implementation of the EMP; and
- Coordinate resolution with IA/ESU with issues arising from the implementation of EMP.

117. The responsibilities of the ESU of IA include:

- Assist PIC with updating the EMP to meet final detailed Subproject design;
- Notify DoNRE to verify GoV approvals of subproject are met;
- Assist PIC with inclusion of CEMP requirements in contractor bid documents including bid evaluations based on updated EMP;
- Undertake day-to-day management of EMP implementation activities;
- Work with EMC on implementation of monitoring plan of EMP;

[9] PIC to be defined
[10] Contractor Environmental Management Plan prepared by contractor as part of bid documents based on EMP

- Ensuring compliance with loan covenants and assurances in respect of entire Subproject, including EMP (as well as IPPs, GAPs, resettlement plans);
- Lead follow-up meetings with all affected stakeholders;
- Prepare and submit quarterly reports on EMP implementation to IA/EA;
- Oversee implementation of CEMP by contractor;
- Coordinate with ES of PIC for EMP implementation;
- Undertake regular construction site inspections to ensure contractor implements CEMP properly; and
- Ensure EO of contractor submits monthly reports on construction mitigations and monitoring.

The responsibilities of the ES (Int'l and Nat'l) of the PIC are:

- Updating the EMP to meet final detailed design of subproject;
- Provide technical direction and support to ESU/IA for implementation of EMP;
- Oversee design and delivery of capacity development and training of ESU/IA and EO of contractor(s);
- Provide advice and support to EMC with their monitoring activities;
- Review all reports prepared ESU/IA and EMC for EA and ADB; and
- Check location of any possible contaminated sites within and near Subproject, recommend appropriate mitigating measures to address this, and evaluate implementation of mitigation plan..

The responsibilities of Environmental Officer (EO) of Contractor include:

- Implement CEMP for construction phase of Subproject; and
- Prepare and submit monthly reports on mitigation and monitoring activities of CEMP any environmental issues at construction sites.

The responsibilities of external Environmental Monitoring Consultant (EMC) include:

- Implement the environmental sampling required for monitoring plan of EMP that cannot be conducted by the contractor and ESU/IA/EO.
- Perform required laboratory analyses for monitoring program detailed in EMP; and;
- Prepare and submit quarterly reports to IA/ESU on monitoring activities.

118. The Department of Natural Resources and Environment (DoNRE) is the provincial agency which oversees environmental management of Ha Noi. The DoNRE with District staff provides direction and support for environmental protection-related matters including application of the Law on Environmental Protection No. 02/99/NA (1999), EIA, and environmental standards.

119. The ADB provides guidance to EA/IA with any issues related to EMP, and reviews biannual reports on EMP activities compiled and submitted by EA.

C. Summary of Potential Impacts of Subproject

The potential impacts of the subproject are summarized in Table 16.

Table 16. Summary of Potential Impacts of the Subproject

Pre-construction Phase
• No loss of land, or any compensation is anticipated
Construction Phase

• Common construction-related civil works disturbances such as dust, noise, reduced and/or blocked public access, disrupted business and recreation, noise, dust and air pollution from NOx, SOx, and CO caused by increased truck traffic and heavy equipment use, soil and surface water pollution caused by equipment operation and maintenance, public and worker accidents, disruption of traffic, increased traffic accidents, land erosion and surface water sedimentation, drainage and flooding problems, solid and domestic waste from worker camps, social issues and community problems caused by migrant workers. • Due to cramped working conditions the risk of worker and public injury is highest with the improvements to the Phuong Liet substation and lowest with the Son Tay substation.
Operational Phase
• Risk of worker and public safety at facilities • Spills of hazardous materials such as transformer oil

D. Mitigation Plan

120. The impact mitigation measures of the EMP are presented in a comprehensive mitigation plan for the subproject in Table 17. Similar to the IEE the mitigation plan is structured by the three development phases defined by the pre-construction; construction; and post construction operational phase. The mitigation plan addresses the environmental issues and concerns raised at the stakeholder meetings.

121. The mitigation plan combines construction phase impacts common to the three substations for which single mitigation measures are prescribed. In this way redundant mitigation measures are not re-stated numerous times. However, impacts and required mitigations specific to substation are also identified when appropriate. Or, common mitigations that are particularly important for a substation are underscored. The mitigation plan identifies potential impacts, required mitigations, responsible parties, location, timing, and indicative costs.

1. Mitigation sub-plans

122. The mitigation plan is comprehensive by design because it will need to be updated to meet the final detailed designs of the subproject. The mitigation plan is organized into a series of mitigation sub-plans that address specific potential impact areas of the subproject. The sub-plans will assist the contractors with the development of their CEMPs as part of their bid documents, and ultimately will allow the ESU/IA, PIC, and contractors to focus more or less on the different potential impact areas as they arise with the implementation of the final designs of the subproject. Mitigation sub-plans of the EMP are drafted for example for: a) Construction drainage; b) Erosion; c) Noise and Dust; d) Contaminated Spoil Disposal; e) Solid and Liquid Waste Disposal; f) Construction and Urban Traffic; g) Utility and Power Disruption; h) Worker and Public Safety; i) Tree and Vegetation Removal and Site Restoration; j) Construction Materials Acquisition, Transport, and Storage, k) Cultural chance finds, and l) disposal and management plan for decommissioned equipment and parts.

Table 17. Environmental Impact Mitigation Plan

Subproject Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Location	Timing	Activity Reporting	Estimated Cost[11] (USD)	Responsibility	
							Supervision	Implementation
Pre-Construction, Detailed Design Phase								
Confirmation of no required resettlement, land loss, or compensation	No negative environmental impacts	1. Affected persons well informed well ahead of Subproject implementation.	All affected persons in subproject areas	Before subproject implemented	See resettlement plans	See resettlement plan	EA/IA/ESU	Resettlement committees
Disclosure, and engagement of community	No negative impacts	2. Initiate Information Disclosure and Grievance process of IEE	For all construction sites.	Beginning of subproject	Quarterly	No marginal cost[12]	IA/ESU	IA/ESU
GoV approvals	No negative impact	3. Notify DoNRE of subproject initiation to complete EA requirements, and obtain required subproject permits and certificates.	Entire subproject	Before construction	As required	No marginal cost	EA/DoNRE	DoNRE

[11] Costs will need to be updated during detailed design phase.
[12] No marginal cost indicates that costs to implement mitigation are to be built into cost estimates of bids of contractors

Subproject Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Location	Timing	Activity Reporting	Estimated Cost[11] (USD)	Responsibility	
							Supervision	Implementation
Detailed designs of Subproject,	Minimize negative environmental impacts	4. Work with PIC[13] to complete detailed designs of the renovations and rehabilitation of the substations. Ensure the following measures are included: a) identification of spill management prevention plans, and emergency response plans for all construction sites; b) no disturbance or damage to culture property and values; c) minimal acquisition of agriculture lands d) locate aggregate borrow pits and rock supply areas away from human settlements with fencing and access barriers; e) no, or minimal disruption to water supplies, access roads, utilities, and electricity with contingency plans for unavoidable disruptions; f) no, or minimal disruption to normal pedestrian and vehicle traffic along all road segments with contingency alternate routes; g) for built-up areas include specific plan to notify and provide residents and merchants of construction activities and schedule to minimize disruption to normal commercial and residential activities. h) develop a plan for the management of decommissioned equipment, cables, and other related electrical materials. i) identify a storage area for decommissioned equipment and parts.	Final siting	Before construction initiated	Once with detailed designs documents	No marginal cost	PIC	EA/IA

[13] PIC is Project Implementation Consultant at detailed design phase to be determined

Subproject Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Location	Timing	Activity Reporting	Estimated Cost[11] (USD)	Responsibility	
							Supervision	Implementation
Update EMP	Positive environmental impacts	5. Identify any new potential impacts of subproject and include in EMP with special attention to residential areas. 6. Update mitigation measures and monitoring requirements of EMP where necessary to meet detailed designs, and to protect affected [social] environments. 7. Submit updated EMP with new potential impacts to ADB to review. 8. Complete individual management subplans of CEMP for: a) Construction drainage; b) Erosion; c) Noise and Dust; d) Contaminated Spoil Disposal; e) Solid and Liquid Waste Disposal; f) Construction and Urban Traffic; g) Utility and Power Disruption; h) Worker and Public Safety; i) Tree and Vegetation Removal and Site Restoration; j) Construction Materials Acquisition, Transport, and Storage, k) Cultural chance finds, and l) disposal and management plan for decommissioned equipment and parts.	All sites	Before construction initiated	Once with detailed designs documents		PIC	IA/ESU
Confirm approved construction waste disposal sites	No negative impact	9. Notify DoNRE to confirm locations of sites for borrow pits and disposal areas for construction and hazardous waste for subproject, and obtain required permits.	All substations	Before construction	As required	No marginal cost	IA/DoNRE	ESU
UXO survey, and removal	Injured worker or public	10. Ensure GoV military is consulted for potential UXO associated with Son Tay substation excavations for new building.	Son Tay substation.	Beginning of subproject	Once	See Monitoring Plan below	EA/IA	ESU/GoV

Subproject Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Location	Timing	Activity Reporting	Estimated Cost[11] (USD)	Responsibility	
							Supervision	Implementation
Develop bid documents	No negative environmental impact	11. Ensure updated EMP is included in contractor tender documents, and that tender documents specify requirements of EMP must be budgeted. 12. Specify in bid documents that contractor must have experience with implementing EMPs, or provide staff with the experience.	For all substations	Before construction begins	Once for all tenders	No marginal cost	PIC	IA/ESU
Create awareness of physical cultural resources in area	No negative environmental impact	13. EA to review potential locations of physical resources, and explain possible PCR to contractors and PIC	At all substations	Before construction begins	Once	No marginal cost	EA/IA	IA/ESU
Obtain and activate permits and licenses	Prevent or minimize impacts	14. Contractors to comply with all statutory requirements set out by GoV for use of construction equipment, and operation construction plants such as concrete batching.	At all substations	Beginning of construction	Once	No marginal cost	EA/PIC	ESU and contractors
Capacity development	No negative environmental impact	15. Develop and schedule training plan for IA/ESU/EO to be able to fully implement CEMP, and to manage implementation of mitigation measures by contractors. 16. Create awareness and training plan for contractors whom will implement mitigation measures.	For all substations	Before construction begins	Initially, refresher later if needed	No marginal cost	PIC	PIC
Recruitment of workers	Spread of sexually transmitted disease	17. Use local workers as much as possible thereby reducing #s of migrant worker	All work forces.	Throughout construction phase	Worker hiring stages	No marginal cost	EA/IA	Contractor's bid documents
Construction Phase of the Rehabilitation and Renovation of the Three 110 kV Substations								

Subproject Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Location	Timing	Activity Reporting	Estimated Cost[11] (USD)	Responsibility	
							Supervision	Implementation
Initiate EMP and sub-plans,	Prevent or minimize impacts	18. Initiate updated EMP and CEMP including individual management sub-plans for different potential impact areas that are completed in pre-construction phase (see sub-plan guidance below).	For all construction sites	Beginning of construction	Once	No marginal cost	IA/PIC	ESU and contractors
Worker camps	Pollution and social problems	19. Locate worker camps away from human settlements. 20. Ensure adequate housing and waste disposal facilities including pit latrines and garbage cans. 21. A solid waste collection program must be established and implemented that maintains a clean worker camps 22. Locate separate pit latrines for male and female workers away from worker living and eating areas. 23. A clean-out or infill schedule for pit latrines must be established and implemented to ensure working latrines are available at all times. 24. Worker camps must have adequate drainage. 25. Local food should be provided to worker camps. Guns and weapons not allowed in camps. 26. Transient workers should not be allowed to interact with the local community. HIV/Aids education should be given to workers. 27. Camp areas must be restored to original condition after construction completed.	All worker camps	Throughout construction phase	Monthly	No marginal cost	PIC/ESU	contractor
Training and capacity	Prevent of impacts through education	28. Implement training and awareness plan for IA/ESU/EO and contractors.	ESU office, construction sites	Beginning of construction	After each event	No marginal cost	PIC	PIC/ESU

Subproject Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Location	Timing	Activity Reporting	Estimated Cost[11] (USD)	Responsibility	
							Supervision	Implementation
Implement Construction materials acquisition, transport, and storage sub-plan	Pollution, injury, increased traffic, disrupted access	29. All borrow pits and quarries should be approved by DoNRE. 30. Select pits and quarries in areas with low gradient and as close as possible to construction sites. 31. Required aggregate volumes must be carefully calculated prior to extraction to prevent wastage. 32. Pits and quarries should not be located near surface waters, forested areas, critical habitat for wildlife, or cultural property or values. 33. If aggregate mining from fluvial environments is required small streams and rivers should not be used, and dry alluvial plains preferred. 34. All topsoil and overburden removed should be stockpiled for later restoration. 35. All borrow pits and quarries should have a fence perimeter with signage to keep public away. 36. After use pits and quarries should be dewatered and permanent fences installed with signage to keep public out, and restored as much as possible using original overburden and topsoil. 37. Unstable slope conditions in/adjacent to the quarry or pit caused by the extractions should be rectified with tree planting. 38. Define and schedule how materials are extracted from borrow pits and rock quarries, transported, and handled and stored at sites. 39. Define and schedule how fabricated materials such as steel, wood structures, and scaffolding will transported and handled. 40. All aggregate loads on trucks should be covered. .	For all construction areas.	Throughout construction phase	Monthly	No marginal cost	PIC/ESU	contractor

Subproject Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Location	Timing	Activity Reporting	Estimated Cost[11] (USD)	Responsibility	
							Supervision	Implementation
DBST (low grade asphalt) production, and application if needed	Air pollution, land and water contamination, and traffic and access problems,	41. Piles of aggregates at sites should be used/or removed promptly, or covered and placed in non-traffic areas 42. Stored paving materials e.g., DBST or asphalt, well away from all human activity and settlements, and cultural (e.g., schools, hospitals), and ecological receptors. Bitumen production and handling areas should be isolated. 43. Contractors must be well trained and experienced with the production, handling, and application of bitumen. 44. All spills should be cleaned immediately and handled as per hazardous waste management plan, and according to GoV regulations. 45. Bitumen should only be spread on top of cable trench not near or in any surface waters, or near any human activities. 46. Bitumen should not be used as a fuel.	For all construction areas.	Throughout construction phase	Monthly	No marginal cost	PIC/ESU	contractor

Subproject Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Location	Timing	Activity Reporting	Estimated Cost[11] (USD)	Responsibility	
							Supervision	Implementation
Implement Spoil management sub-plan	Contamination of land and surface waters from excavated spoil, and construction waste	47. Uncontaminated spoil to be disposed of in GoV-designated sites, which must never be in or adjacent surface waters. Designated sites must be clearly marked and identified. 48. Spoil must not be disposed of on sloped land, near cultural property or values, ecologically important areas, or on/near any other culturally or ecologically sensitive feature. 49. Where possible spoil should be used at other construction sites, or disposed in spent quarries or borrow pits. 50. A record of type, estimated volume, and source of disposed spoil must be recorded. 51. Contaminated spoil disposal must follow GoV regulations including handling, transport, treatment (if necessary), and disposal. 52. Suspected contaminated soil must be tested, and disposed of in designated sites identified as per GoV regulations. 53. Before treatment or disposal contaminated spoil must be covered with plastic and isolated from all human activity.	All excavation areas	Throughout construction phase	Monthly	See Monitoring Plan for contaminated soil analyses	PIC/ESU and DoNRE	contractor

Subproject Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Location	Timing	Activity Reporting	Estimated Cost[11] (USD)	Responsibility	
							Supervision	Implementation
Implement Solid and liquid construction waste sub-plan	Contamination of land and surface waters from construction waste	54. Management of general solid and liquid waste of construction will follow GoV regulations, and will cover, collection, handling, transport, recycling, and disposal of waste created from construction activities and worker force. 55. Areas of disposal of solid and liquid waste to be determined by GoV. 56. Disposed of waste should be catalogued for type, estimated weigh, and source. 57. Construction sites should have large garbage bins. 58. A schedule of solid and liquid waste pickup and disposal must be established and followed that ensures construction sites are as clean as possible. 59. Solid waste should be separated and recyclables sold to buyers in community. <u>Hazardous Waste</u> 60. Collection, storage, transport, and disposal of hazardous waste such as used oils, gasoline, paint, and other toxics must follow GoV regulations. 61. Wastes should be separated (e.g., hydrocarbons, batteries, paints, organic solvents) 62. Wastes must be stored above ground in closed, well labeled, ventilated plastic bins in good condition well away from construction activity areas, all surface water, water supplies, and cultural and ecological sensitive receptors. 63. All spills must be cleaned up completely with all contaminated soil removed and handled with by contaminated spoil sub-plan.	All construction sites and worker camps	Throughout construction phase	Monthly	No marginal cost	PIC/ESU and DoNRE	contractor

Subproject Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Location	Timing	Activity Reporting	Estimated Cost[11] (USD)	Responsibility	
							Supervision	Implementation
Implement Noise and dust sub-plan	Dust Noise	64. Regularly apply wetting agents to exposed soil and construction roads. 65. Cover or keep moist all stockpiles of construction aggregates, and all truck loads of aggregates. 66. Minimize time that excavations and exposed soil are left open/exposed. Backfill immediately after work completed. 67. As much as possible restrict working time at substation site between 07:00 and 17:00. 68. Maintain equipment in proper working order 69. Replace unnecessarily noisy vehicles and machinery. 70. Vehicles and machinery to be turned off when not in use. 71. Construct temporary noise barriers around excessively noisy activity areas where possible.	All construction sites.	Fulltime	Monthly	No marginal cost	PIC/ESU	contractor
Implement Utility and power disruption sub-plan	Loss or disruption of utilities and services such as water supply and electricity	72. Develop carefully a plan of days and locations where outages in utilities and services will occur, or are expected. 73. Contact local utilities and services with schedule, and identify possible contingency back-up plans for outages. 74. Contact affected community to inform them of planned outages. 75. Try to schedule all outages during low use time such between 24:00 and 06:00.	All construction sites.	Fulltime	Monthly	No marginal cost	PIC/ESU and Utility company	contractor

Subproject Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Location	Timing	Activity Reporting	Estimated Cost[11] (USD)	Responsibility	
							Supervision	Implementation
Implement Erosion control sub-plan	Land erosion	76. Berms, and plastic sheet fencing should be placed around all excavations and earthwork areas. 77. Earthworks should be conducted during dry periods. 78. Maintain a stockpile of topsoil for immediate site restoration following backfilling. 79. Protect exposed or cut slopes with planted vegetation, and have a slope stabilization protocol ready. 80. Re-vegetate all soil exposure areas immediately after work completed.	All construction sites	Throughout construction phase	Monthly	No marginal cost	PIC/ESU	contractor

Subproject Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Location	Timing	Activity Reporting	Estimated Cost[11] (USD)	Responsibility	
							Supervision	Implementation
Implement worker and public safety sub-plan	Public and worker injury, and health	81. Proper fencing, protective barriers, and buffer zones should be provided around all construction sites. 82. Sufficient signage and information disclosure, and site supervisors and night guards should be placed at all sites. 83. Worker and public safety guidelines of MoLISA should be followed. 84. Speed limits suitable for the size and type of construction vehicles, and current traffic patterns should be developed, posted, and enforced on all roads used by construction vehicles. 85. Standing water suitable for disease vector breeding should be filled in. 86. Worker education and awareness seminars for construction hazards should be given at beginning of construction phase, and at ideal frequency of monthly. A construction site safety program should be developed and distributed to workers. 87. Appropriate safety clothing and footwear should be mandatory for all construction workers. 88. Adequate medical services must be on site or nearby all construction sites. 89. Drinking water must be provided at all construction sites. 90. Sufficient lighting be used during necessary night work. 91. All construction sites should be examined daily to ensure unsafe conditions are removed.	All construction sites.	Fulltime	Monthly	No marginal cost	PIC/ESU	contractor

Subproject Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Location	Timing	Activity Reporting	Estimated Cost[11] (USD)	Responsibility	
							Supervision	Implementation
Civil works	Degradation of water quality and aquatic resources	92. Protective berms, plastic sheet fencing, or silt curtains should be placed between all earthworks and surface waters. 93. Erosion channels must be built around aggregate stockpile areas to contain rain-induced erosion. 94. Earthworks should be conducted during dry periods. 95. All construction fluids such as oils, and fuels should be stored and handled well away from surface waters. 96. No waste of any kind is to be thrown in surface waters. 97. No washing or repair of machinery near surface waters. 98. Pit latrines to be located well away from surface waters. 99. No unnecessary earthworks in or adjacent to water courses. 100. No aggregate mining from rivers or lakes. 101. All irrigation canals and channels to be protected the same way as rivers, streams, and lakes	All construction sites	Throughout construction phase	Monthly	No marginal cost	PIC/ESU	contractor
Civil works	Degradation of terrestrial resources	102. No unnecessary cutting of trees. 103. All construction fluids such as oils, and fuels should be stored and handled well away from forested and plantation areas. 104. No waste of any kind is to be discarded on land or in forests/plantations.	All construction sites	Throughout construction phase	Monthly	No marginal cost	PIC/ESU	contractor

Subproject Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Location	Timing	Activity Reporting	Estimated Cost[11] (USD)	Responsibility	
							Supervision	Implementation
Implement Construction and urban traffic sub-plan	Traffic disruption, accidents, public injury	105. Schedule construction vehicle activity during light traffic periods. Create adequate traffic detours, and sufficient signage and warning lights. 106. Post speed limits, and create dedicated construction vehicle roads or lanes. 107. Inform community of location of construction traffic areas, and provide them with directions on how to best co-exist with construction vehicles on their roads. 108. Demarcate additional locations where pedestrians can develop road crossings away from construction areas. 109. Increase road and walkway lighting.	All construction sites	Fulltime	Monthly	No marginal cost	PIC/ESU	contractor
Implement Construction Drainage sub-plan	Loss of drainage and flood storage	110. Provide adequate short-term drainage away from construction sites to prevent ponding and flooding. 111. Manage to not allow borrow pits and quarries to fill with water. Pump periodically to land infiltration or nearby water courses. 112. Install temporary storm drains or ditches for construction sites 113. Protect any surface waters from silt and eroded soil.	All areas with surface waters	Design and construction phases	Monthly	No marginal cost	PIC/ESU	contractor
Civil works and Chance finds sub-plan	Damage to cultural property or values, and chance finds	114. As per detailed designs all civil works should be located away from all physical cultural property and values. 115. Chance finds of valued relics and cultural values should be anticipated by contractors. Site supervisors should be on the watch for finds. 116. Upon a chance find all work stops immediately, find left untouched, and EA/IA notified to determine if find is	All construction sites	At the start , and throughout construction phase	Monthly	No marginal cost	PIC/ESU	contractor

Subproject Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Location	Timing	Activity Reporting	Estimated Cost[11] (USD)	Responsibility	
							Supervision	Implementation
		valuable. Culture division of DCST notified by telephone if valuable. 117. Work at find site will remain stopped until DCST allows work to continue.						
Disposal and management sub-plan for decommissioned equipment and parts		118. Identify an adequate area for storage or warehousing of equipment and parts that will be replaced. 119. Check decommissioned equipment or parts for possible repair and reuse 120. Pre-identify a potential buyer or recycler of decommissioned equipment. 121. Properly dispose residual waste materials according to to GoV regulations.						
Construction Phase of the Renovation of Phuong Liet and Tran Hung Dao 110 kV Substations								
Civil works and heavy equipment movement in cramped conditions	Worker or public injury	122. Special guidelines and procedure should be developed based on existing MoLISA occupational, safety and health guidelines to protect workers and the public during construction phase, particularly on safe distance from substation equipment and provision of lightning arresters.	Both substation sites and along access roads	Fulltime	Quarterly	No Marginal cost	PIC/IA	ESU/EO
Operation of the three 110 kV Substations								
Operation improved substations	Worker /public injury, or spills of hazardous materials such as transformer oil	123. Occupational safety and health regulations and guidelines of MoLISA should be applied to operations and maintenance of TL 124. Manage, store, and dispose of hazardous materials such as oils according to international procedures and	At all substations	Fulltime	Biannual	O and M	EVNHCM / PPMB	

Subproject Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Location	Timing	Activity Reporting	Estimated Cost[11] (USD)	Responsibility	
							Supervision	Implementation
		standards.						

E. Monitoring Plan

123. The environmental monitoring plan for the EMP is provided in Table 18. The monitoring plan focuses on all three phases (pre-construction, construction, post-construction operation) of the tri-substation improvements and consists of environmental indicators, the sampling locations and frequency, method of data collection, responsible parties, and estimated costs. The purpose of the monitoring plan is to determine the effectiveness of the impact mitigations, and to document any unexpected positive or negative environmental impacts of the tri-substation improvements.

124. The independent environmental monitoring consultant (EMC) identified above will implement the environmental monitoring program. The EMC will be responsible for the sampling of environmental parameters that must be analyzed in a laboratory. The ESU and EO will coordinate with the EMC. The PIC/IU will provide logistical support to the EMC where necessary for the implementation of environmental monitoring plan.

125. The standards for ambient environmental quality (e.g., water and air quality) for Viet Nam listed in section III will guide the monitoring program. The environmental standards provided by the Environmental, Health and Safety Guidelines of the IFC/World Bank (2007) should be followed to supplement standards that are not provided by the GoV.

126. After construction is completed the potential impacts of the operation of the three improved substations will be monitored by EVN HANOI.

F. Performance Monitoring

127. Performance monitoring is required to assess the overall performance of the EMP. A performance monitoring system is normally developed by the EA for the entire subproject. Select indicators of major components of the environment that will be affected primarily by the construction phase are drawn from the mitigation and monitoring plans and summarized in Table 19.

G. Reporting

128. Regular reporting on the implementation of mitigation measures, and on monitoring activities during construction phase of the subproject is required. Reporting is the responsibility of IA/ESU and should be conducted in conjunction with regular meetings with stakeholders as part of the continuation of stakeholder communications. The mitigation and monitoring plans (Tables 17 and 18) summarize proposed timing of reporting.

129. A report on environmental monitoring and implementation of EMP will be prepared quarterly for the EA by the IA/ESU. The IA report will compile monthly reports provided by the EO of contractor, the reports of the EMC on monitoring, and input from the ES of the PIC. The IA/ESU report will also be sent to the DoNRE and ADB. The reports will table all indicators measured with the monitoring plan of EMP including performance monitoring indicators (Table 19), and will include relevant GoV environmental quality standards. A semi-annual report on the environment monitoring of the subproject must be prepared and submitted to the ADB by the EA.

Table 18. Environmental Monitoring Plan

ENVIRONMENTAL EFFECTS MONITORING							
Environmental Indicators	**Location**	**Means of Monitoring**	**Frequency**	**Reporting**	**Responsibility** Supervision / Implementation		**Estimated Cost (USD)**
					Supervision	**Implementation**	
Pre-construction Phase – Update Baseline Conditions							
Update where necessary baseline on sensitive receptors (e.g., cultural property and values, new schools or hospitals, rare/endangered species, critical habitat in substation areas.	Three substation locations	Original field work, community consultations	Once	Once	PIC/ESU	Environmental Monitoring Consultant	$1,000.
A) Air quality: dust, CO, NOx, SOx, noise B) Affected soil quality: oil and grease, PCBs, heavy metals) As, Cd, Pb	At three substation sites	Using field and analytical methods approved by DoNRE.	A) One day and one night measurement b) One measurement	One baseline supplement report before construction phase starts	PIC/ESU	Environmental Monitoring Consultant	A) $3,000 B) $3,000 .
Inventory of present and past land uses that could cause contaminated soil.	Possible contaminated lands at all excavation sites	Using field and analytical methods approved by DoNRE.	Once	Once	PIC/ESU	Environmental Monitoring Consultant	$500.
Construction Phase of the three 110 kV Substations							
Analysis of soil quality, PCBs, heavy metals (As, Cd, Pb), oil and	Possible contaminated lands at all excavation sites	Using field and analytical methods approved by DoNRE.	Once if	Once	ESU	Environmental Monitoring	$2,500.

<table>
<tr><td>grease.</td><td></td><td></td><td>needed</td><td></td><td></td><td>Consultant</td><td></td></tr>
<tr><td rowspan="4">A) Air quality: dust, CO, NOx, SOx, noise

B)) Affected soil quality: oil and grease, PCBs, heavy metals (As, Cd, Pb)

C) Analysis of contaminated soil quality (heavy metals (As, Cd, Pb)

D) Domestic (worker) and construction solid waste inside and outside construction sites including worker camps.

E) Public comments and complaints

F) Incidence of worker or public accident or injury</td><td rowspan="4">A and B): Baseline sites of pre-construction phase.

C) At sites where contaminated soil is suspected.

D) All construction sites and worker camps

E) Using hotline number placed at construction areas

F) At all construction areas</td><td rowspan="4">A – C : Using field and analytical methods approved by DoNRE.

Include visual observations of dust and noise from contractor and public reports .

D) Visual observation

E) Information transferred by telephone hotline number posted at all construction sites.

F) regular reporting by contractors/ESU</td><td rowspan="4">(A – B): Quarterly during construction periods

Daily visual records

C) Once at start of excavations

D) Monthly

E) Continuous public input

F) Continuous</td><td rowspan="4">Monthly</td><td colspan="2">(A - D):</td><td></td></tr>
<tr><td rowspan="2">ESU</td><td rowspan="2">Monitoring Consultant</td><td>A and B: $3,000./yr

C: $1,500./yr

D: no marginal cost</td></tr>
<tr><td colspan="2">(E and F) and daily observations:</td><td></td></tr>
<tr><td>EA/ESU</td><td>contractor</td><td>E: $1,000./yr

F: no marginal cost</td></tr>
<tr><td colspan="8">Operation of three 110 kV Substations</td></tr>
<tr><td>Incidence of worker accidents, or spills on hazardous materials</td><td>At all substations</td><td>Regular documentation and reporting</td><td>Continuous</td><td></td><td colspan="2">EVNHCM /PPMB</td><td>O and M</td></tr>
</table>

Table 19. Performance Monitoring Indicators for Subproject

Major Environmental Component	Key Indicator	Performance Objective	Data Source
Pre-construction Phase			
Public Consultation and Disclosure	Affected public and stakeholders	Meetings with public stakeholders contacted during IEE and new stakeholders convened for follow-up consultation and to introduce grievance mechanism	Minutes of meeting, and participants list
EMP	Updated EMP	All stakeholders contacted during IEE re-contacted for follow-up consultation	EMP
Bid Documents	Requirements of EMP (CEMP[14])	EMP appended to bidding documents with clear instructions to bidders for CEMP	Bid documents
Training of IA/ESU	Training course(s) and schedule	By end of pre-construction phase, required course(s) that will be delivered are designed and scheduled	Course(s) outline, participants, and schedule
Construction Phase			
Air quality	dust, CO, NOx, SOx, noise	Levels never exceed pre-construction baseline levels	EMC and contractor monitoring reports,
Soil quality	Solid and liquid waste	Rigorous program of procedures and rules to collect and store all waste from construction camps and sites practiced.	Contractor and EMC monitoring reports
Hazardous materials and waste	Oil, gasoline, grease, PCBs	Rigorous program of procedures to manage and store all waste from construction camps and sites practiced.	Contractor and EMC monitoring reports
Public and worker safety	Frequency of injuries	Adherence to GoV occupational health and Safety regulations[15]	Contractor reports
Cultural property	Incidence of damage, or complaints	No valued cultural property, or unearthed valuable relic is harmed in any way	Public input, contractor reports, public input, EMC reports
Traffic	Frequency of disruptions and blocked roadways	Disruptions, stoppages, or detours are managed to absolute minimum.	Public input, contractor reports, EMC reports

[14] Contractor Environmental Management Plan developed from EMP in contractor bidding document
[15] OSH Guidelines provided by MoLISA, *or* IFC World Bank EHS (2007)

Major Environmental Component	Key Indicator	Performance Objective	Data Source
Operation Phase of Improved Substations			
Worker and Public Safety	Frequency of accidents and spills	No increase in pre-construction frequency	EA

XI. ESTIMATED COST OF EMP

130. The marginal costs for implementing the EMP are primarily for environmental monitoring because the costs for implementing impact mitigation measures are included with the construction costs in contractor bid documents. From Table 18 the preliminary cost for the implementation of the EMP for the subproject including an estimated environmental training budget for EVNHCM / PPBM is approximately USD $30,500.00 which is summarized in Table 20.

Table 20. Estimated costs for Environmental Monitoring Plan of EMP

Activity Type	Estimated Cost (USD)
Pre-construction Phase	
Updating Environmental Baseline	
cultural receptors	$1,000.00
environmental quality	$7,500.00
Construction Phase	
environmental quality	$14,000.00
public consultation	$2,000.00
Operation Phase	
environmental quality	no cost
public input	no cost
Training and capacity development of EVNHCM / PPBM / ESU	$6,000.00
Total	**$30,500.00**

131. These costs are for field sampling and laboratory per diem which include technician per diem fees.

132. An estimated budget of USD $6,000.00 is required for training of the EA/IA/ESU on environmental assessment and management, and the implementation of the EMP. The

estimated costs of the EMP and training will need to be updated by the PIC in conjunction with the IA/ESU during the pre-construction phase.

XII. EMERGENCY RESPONSE PLAN

133. The Contractor must develop emergency or incident response procedures during construction and operation phases of the renovated and upgraded Son Tay, Tran Hung Dao, and Phuong Liet substations to protect workers and the public. The emergency response plan (ERP) outlines the roles and responsibilities of persons from first identification of an incident or emergency to the final steps of safe and complete closure of the situation. The detailed requirements for the ERP are described in Appendix D.

XIII. INSTITUTIONAL CAPACITY REVIEW AND NEEDS

134. Currently there is insufficient experience and capacity for environmental assessment and management in EVN HANOI for the implementation of the EMP, and to develop future safeguards for the non-core subprojects. The PIC with assistance from the ESU/IA of the subproject will develop and deliver training courses to the IA staff including the EO of the contractor. The purpose of the course(s) is to strengthen the ability of the project owner including the ESU to oversee implementation of the EMP by construction contractors, and EMC. Costs for training should be included with costs for implementation of the EMP.

135. Training on the implementation of an EMP should address two thematic areas. The first area should be principles environmental assessment and management focused on the potential impacts of subproject activities on the natural and social environments. The second area should be environmental safeguard requirements of the ADB and GoV with specific reference to the EMP.

XIV. CONCLUSIONS AND RECOMMENDATION

136. The initial examination of the renovation and rehabilitation of the Son Tay, Phuong Liet, and Tran Hung Dao substations in Ha Noi indicates that potential environmental impacts are construction-related impacts and disturbances that can be mitigated and managed.

137. The public consultation meetings underscored the need for effective management of construction impacts such as noise, dust, traffic disruptions, and public safety. Follow-up meetings with the consulted stakeholders to address any construction-related issues are required. The civil construction impacts of elevated dust, noise, traffic disruptions, erosion and sedimentation, and public and worker safety can be managed effectively with standard construction practices (e.g., IFC/World Bank 2007).

138. The IEE concludes that the description of the feasibility design of the subproject combined with available information on the affected environment is sufficient to identify the scope of potential environmental impacts of the subproject. Providing that significant changes

do not occur to the design of one or more of the subproject components, and that new sensitive environmental or PCR components are not identified in pre-construction phase, further detailed environmental impact assessment (EIA) of the subproject is not required.

XV. REFERENCES CITED

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World Bank Group, 2007. Environmental, Health, and Safety Guidelines. Washington DC., 96 pgs.

APPENDICES

A. Rapid Environmental Assessment (REA) Checklist

B. Minutes of Public Consultation Meetings

- B.1 Xuan Khanh Commune Son Tay District
- B.2 Phan Chu Trinh ward – Hoan Kiem District
- B.3 Phuong Mai ward – Dong Da District
- B.4 Army Hospital 108 and Army Museum

C. EIA Certifications for the Thee Core Projects of EVN Hanoi

- C.1 Tran Hung Dao Substation
- C.2 Phuong Liet Substation
- C.2 Son Tay Substation

D. Emergency Response Plan

APPENDIX A RAPID ENVIRONMENTAL ASSESSMENT (REA) CHECKLIST

Instructions:

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

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

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

Country/Project Title:	**Ha Noi and Ho Chi Minh City Power Grid Development Sector Project**
Sector Division:	Rehabilitation & Renovation of Son Tay, Phuong Liet, and Tran Hung Dao 110 kV Substations

Screening Questions	Yes	No	Remarks
A. Project Siting Is the Project area adjacent to or within any of the following environmentally sensitive areas?			
▪ Cultural heritage site		X	
▪ Protected Area		X	
▪ Wetland		X	
▪ Mangrove		X	

Screening Questions	Yes	No	Remarks
▪ Estuarine		X	
▪ Buffer zone of protected area		X	
▪ Special area for protecting biodiversity		X	
B. Potential Environmental Impacts Will the Project cause…			
▪ encroachment on historical/cultural areas, disfiguration of landscape and increased waste generation?		**x**	The construction works will take place inside the existing substation areas. Appropriate disposal and management of decommissioned equipment will be identified.
▪ encroachment on precious ecosystem (e.g. sensitive or protected areas)?		X	
▪ alteration of surface water hydrology of waterways crossed by roads and resulting in increased sediment in streams affected by increased soil erosion at the construction site?		**X**	
▪ damage to sensitive coastal/marine habitats by construction of submarine cables?		X	
▪ deterioration of surface water quality due to silt runoff, sanitary wastes from worker-based camps and chemicals used in construction?		**X**	
▪ increased local air pollution due to rock crushing, cutting and filling?		X	
▪ risks and vulnerabilities related to occupational health and safety due to physical, chemical, biological, and radiological hazards during project construction and operation?		X	
▪ chemical pollution resulting from chemical clearing of vegetation for construction site?		X	
▪ noise and vibration due to blasting and other civil works?		X	
▪ dislocation or involuntary resettlement of people?		**X**	

Screening Questions	Yes	No	Remarks
▪ disproportionate impacts on the poor, women and children, Indigenous Peoples or other vulnerable groups?		X	
▪ social conflicts relating to inconveniences in living conditions where construction interferes with pre-existing roads?	X		Potential traffic and access disruptions along access road to SS site, especially for Phuong Liet SS during construction phase which are easily mitigated.
▪ hazardous driving conditions where construction interferes with pre-existing roads?	X		Potential increased traffic accidents during construction phase along construction which are easily mitigated.
▪ creation of temporary breeding habitats for vectors of disease such as mosquitoes and rodents?		X	
▪ dislocation and compulsory resettlement of people living in right-of-way of the power transmission lines?		X	
▪ environmental disturbances associated with the maintenance of lines (e.g. routine control of vegetative height under the lines)?		X	
▪ facilitation of access to protected areas in case corridors traverse protected areas?		X	
▪ disturbances (e.g. noise and chemical pollutants) if herbicides are used to control vegetative height?		X	
▪ large population influx during project construction and operation that cause increased burden on social infrastructure and services (such as water supply and sanitation systems)?		X	Due to small construction scale, only small group of workers will be at construction site.
▪ social conflicts if workers from other regions or countries are hired?		X	
▪ poor sanitation and solid waste disposal in construction camps and work sites, and possible transmission of communicable diseases from workers to local populations?	X		Mitigation measures should be developed to provide daily rubbish collection and transport to locally approved rubbish disposal area.

Screening Questions	Yes	No	Remarks
▪ risks to community safety associated with maintenance of lines and related facilities?	X		There are potential hazards related to explosion, fire and lightning. EA will undertake measures to protect community.
▪ community health hazards due to electromagnetic fields, land subsidence, lowered groundwater table, and salinization?		X	
▪ risks to community health and safety due to the transport, storage, and use and/or disposal of materials such as explosives, fuel and other chemicals during construction and operation?	X		There is minimal risk that accidents could happen but not expected to be significant. If so, measures will be in place to deal with them.
▪ community safety risks due to both accidental and natural hazards, especially where the structural elements or components of the project (e.g., high voltage wires, and transmission towers and lines) are accessible to members of the affected community or where their failure could result in injury to the community throughout project construction, operation and decommissioning?	x		These are fire and explosion risks that may happen at three stations, especially at Phuong Liet substation. Mitigation measures will be implemented. Also, in the process of maintenance, the operating unit will conduct regular inspection for timely detection and repair of equipment.

Climate Change and Disaster Risk Questions The following questions are not for environmental categorization. They are included in this checklist to help identify potential climate and disaster risks.	**Yes**	**No**	**Remarks**
▪ Is the Project area subject to hazards such as earthquakes, floods, landslides, tropical cyclone winds, storm surges, tsunami or volcanic eruptions and climate changes (see Appendix I)?		x	
▪ Could changes in precipitation, temperature, salinity, or extreme events over the Project lifespan affect its sustainability or cost?		x	
▪ Are there any demographic or socio-economic aspects of the Project area that are already vulnerable (e.g. high incidence of marginalized populations, rural-urban migrants, illegal settlements, ethnic minorities, women or children)?		x	

▪ Could the Project potentially increase the climate or disaster vulnerability of the surrounding area (e.g., increasing traffic or housing in areas that will be more prone to flooding, by encouraging settlement in earthquake zones)?		x	

Appendix I: Environments, Hazards and Climate Changes

Environment	Natural Hazards and Climate Change
Arid/Semi-arid and desert environments	Low erratic rainfall of up to 500 mm rainfall per annum with periodic droughts and high rainfall variability. Low vegetative cover. Resilient ecosystems & complex pastoral and systems, but medium certainty that 10–20% of drylands degraded; 10-30% projected decrease in water availability in next 40 years; projected increase in drought duration and severity under climate change. Increased mobilization of sand dunes and other soils as vegetation cover declines; likely overall decrease in agricultural productivity, with rain-fed agriculture yield reduced by 30% or more by 2020. Earthquakes and other geophysical hazards may also occur in these environments.
Humid and sub-humid plains, foothills and hill country	More than 500 mm precipitation/yr. Resilient ecosystems & complex human pastoral and cropping systems. 10-30% projected decrease in water availability in next 40 years; projected increase in droughts, heatwaves and floods; increased erosion of loess-mantled landscapes by wind and water; increased gully erosion; landslides likely on steeper slopes. Likely overall decrease in agricultural productivity & compromised food production from variability, with rain-fed agriculture yield reduced by 30% or more by 2020. Increased incidence of forest and agriculture-based insect infestations. Earthquakes and other geophysical hazards may also occur in these environments.
River valleys/ deltas and estuaries and other low-lying coastal areas	River basins, deltas and estuaries in low-lying areas are vulnerable to riverine floods, storm surges associated with tropical cyclones/typhoons and sea level rise; natural (and human-induced) subsidence resulting from sediment compaction and ground water extraction; liquefaction of soft sediments as result of earthquake ground shaking. Tsunami possible/likely on some coasts. Lowland agri-business and subsistence farming in these regions at significant risk.
Small islands	Small islands generally have land areas of less than 10,000km^2 in area, though Papua New Guinea and Timor with much larger land areas are commonly included in lists of small island developing states. Low-lying islands are especially vulnerable to storm surge, tsunami and sea-level rise and, frequently, coastal erosion, with coral reefs threatened by ocean warming in some areas. Sea level rise is likely to threaten the limited ground water resources. High islands often experience high rainfall intensities, frequent landslides and tectonic environments in which landslides and earthquakes are not uncommon with (occasional) volcanic eruptions. Small islands may have low adaptive capacity and high adaptation costs relative to GDP.
Mountain ecosystems	Accelerated glacial melting, rockfalls/landslides and glacial lake outburst floods, leading to increased debris flows, river bank erosion and floods and more extensive outwash plains and, possibly, more frequent wind erosion in intermontane valleys. Enhanced snow melt and fluctuating stream flows may produce seasonal floods and droughts. Melting of permafrost in some environments. Faunal and floral species migration. Earthquakes, landslides and other geophysical hazards may also occur in these environments.

Volcanic environments	Recently active volcanoes (erupted in last 10,000 years – see www.volcano.si.edu). Often fertile soils with intensive agriculture and landslides on steep slopes. Subject to earthquakes and volcanic eruptions including pyroclastic flows and mudflows/lahars and/or gas emissions and occasionally widespread ashfall.

APPENDIX B MINUTES OF PUBLIC CONSULTATION MEETINGS

Table 1. The summary of public consultation meetings and number of participants

No.	Name of subprojects	Location	Date	Participants*		
				Male	Female	Total
1	Renovation of Son Tay 110 kV SS	**B1**. Xuan Khanh commune-Son Tay District	15 Oct, 2013	15	5	20
2	Renovation of Tran Hung Dao 110 kV substation (SS)	**B2**. Phan Chu Trinh ward-Hoan Kiem District	13 Nov, 2013	5	9	14
3	Renovation of Phuong Liet 110 kV SS	**B3**.Phuong Mai ward – Dong Da District	23 Nov, 2013	16	11	27
			TOTAL	**36**	**25**	**61**

**This numbers is counted from list of participants; some persons are repeatedly counted since they participated in all meetings.*

APPENDIX B.1 PUBLIC CONSULTATION AT SON TAY STATION- SON TAY TOWN

a) LIST OF PARTICIPANTS – SƠN TÂY

Date (Ngày tháng) : 15/10/2013
Location (Địa điểm) : Phường Xuân Khanh Ward Sơn Tây Town, Hà Nội

No	Họ và tên (Name)	Nam (M)	Nữ (F)	Cơ quan/Địa chỉ (Organization/Address)	Chữ ký (Signture)
01	Trần Phạm Hùng	✓		Chairman of commune people's committee	
02	Hà Đức Huệ	✓		Vice Party committee secretary	
03	Phạm Thị Lệ Hằng		✓	Vice chairman of commune people's committee	
04	Kiều Anh Quân	✓		Vice chairman of people's council	
05	Đàm Mạnh Cường	✓		Secretary Fatherland Front ward	
06	Lê Văn Luật	✓		Vice Chairman of the Veteran	
07	Trần Đình Hưng	✓		Chairman of the Veteran	
08	Nguyễn Tiến Hợp	✓		Vice Secretary of Ward Fatherland Front	

09	Trương Thanh Huyền		✓	Women's union of Son Tay	
10	Đàm Ngọc Doanh	✓		Head of population group	
11	Trần Đức Dũng	✓		Party secretary	
12	Trần Khắc Tuấn	✓		Vice chairman of commune people's committee	
13	Nguyễn Thị Bình		✓	Staff	
14	Đặng Tuấn Anh	✓		Deputy manager of plan department	
15	Nguyễn Thị Loan		✓	Consultant of ADB	
16	Bùi Quang Vinh	✓		Northern Power Consulting	
17	Đỗ Tiến Cường	✓		Northern Power Consulting (Project managers)	
18	Nguyễn Mạnh Hùng	✓		Staff of plan department	
19	Mai Chấn Chiến	✓		Clearance Department - Project management	
20	Khúc Thị Thanh Vân		✓	Consultant of ADB	

Ha Noi and Ho Chi Minh City Power Transmission Development Sector Project
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PUBIC CONSULTATION ON ENVIRONMENT

THAM VẤN CỘNG ĐỒNG VỀ MÔI TRƯỜNG

LIST OF PARTICIPANTS
DANH SÁCH NGƯỜI THAM DỰ

Date (Ngày tháng) : 15/10/2013
Location (địa điểm) : Phường Xuân Khanh thị xã Sơn Tây Hà Nội

No. TT	Họ và tên (Name)	Nam (M)	Nữ (F)	Chức vụ (Position)	Cơ quan/Địa chỉ (Organization/Address)	Chữ ký (Signature)
01	Trần Phạm Hưng	✓		Chủ tịch uỷ ban	Phường Xuân Khanh	
02	Hà Đức Huệ	✓		Phó bí thư thường uỷ	"	
03	Phạm Thị Lệ Hằng		✓	Phó chủ tịch uỷ ban		
04	Kiều Anh Quân	✓		Phó chủ tịch mặt trận tổ quốc		
05	Đàm Mạnh Cường	✓		Chủ tịch mặt trận tổ quốc		
06	Lê Văn Luật	✓		Phó chủ tịch hội cựu chiến binh		
07	Trần Đình Hưng	✓		Chủ tịch hội cựu chiến binh		
08	Nguyễn Tiến Hợp	✓		Phó chủ tịch mặt trận tổ quốc		
09	Trương Thanh Huyền		✓	Chủ tịch hội phụ nữ		
10	Đàm Ngọc Doanh	✓		Tổ trưởng dân phố		
11	Trần Đức Dương	✓		Bí thư đảng uỷ		
12	Trần Khắc Tuấn	✓		Phó chủ tịch uỷ ban		
13	Nguyễn Thị Bình		✓	Địa chính		
14	Đặng Tiến Anh	✓		Phó Phòng KH ban ALDA		
15	Nguyễn Thị Loan		✓	Tư vấn ADB.		
16	Bùi Quang Vinh	✓		Tư vấn điện miền bắc		
17	Đỗ Tiến Cường	✓		Tư vấn điện miền bắc (Chỉnh sửa Dự Án)		
18	Nguyễn Mạnh Hùng	✓		Phòng KH Ban ALDA		
19	Mai Chấn Chiến	✓		phòng QPMB-BALDA		
20	Khúc Thị Thanh Vân		✓	Tư vấn ADB		

b) MINUTE OF MEETINGS AND PHOTOS - SƠN TÂY

Comments/questions from local authorities	***Answers of project owners and consultants company PECC4***
50-100 ton – truck are going at night affecting power lines, some households have to pay 10 million VND for electricity due to electricity leakage	Constructor will consider these items in the construction preparation
Constructor needs to check if the road can cope with heavy load otherwise the road need to be reinforced	Constructor will consider these items in the construction preparation
The lightning protection systems need to be stable. There is a case that buffalo was died by lightning strike.	Constructor will consider these items in the construction preparation
A drainage is located in the middle of road making the road weak, the contractor should consider that.	Constructor will consider these items in the construction preparation
150-200 m road from the station to the street need to be reinforced.	Constructor will consider these items in the construction preparation
The road to substation is very dark at nigh time	It should be written in Son Tay power because the project does not involve
At some place, high voltage power line was swooping down lowly, power pole tilted	
The construction wastewater need to be collected	The scope of construction is small. Only small amount of wastewater generated

Ha Noi and Ho Chi Minh City Power Transmission Development Sector Project
DỰ ÁN NGÀNH PHÁT TRIỂN ĐƯỜNG DÂY TRUYỀN TẢI ĐIỆN THÀNH PHỐ HÀ NỘI VÀ HỒ CHÍ MINH

CỘNG HOÀ XÃ HỘI CHỦ NGHĨA VIỆT NAM
Độc lập - Tự Do - Hạnh phúc
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Sài Tây ..... Ngày 15 tháng 10 năm 2013

BIÊN BẢN HỌP THAM VẤN CỘNG ĐỒNG VỀ ĐÁNH GIÁ MÔI TRƯỜNG

Tiểu dự án: Cải tạo trạm biến áp 110 kV Sài Tây
Phường/Xã: Xuân Khanh ....., Quận/Huyện.....Thành phố / Thị xã Sài Tây

1. Thành phần tham dự

- Ông/Bà Trần Đức Dũng.....Chức vụ Bí thư Đảng ủy...
- Ông/Bà Trần Phan Hùng.....Chức vụ Chủ tịch UBND Xuân Khanh
- Ông/Bà Đàm Mạnh Cường.....Chức vụ Chủ tịch MTTQ Việt Nam TP Sài Tây
- Ông/Bà Trần Đình Hoàng.....Chức vụ Chủ tịch Hội nông dân thị xã
- Ông/Bà Trương Thanh Huyền.....Chức vụ Chủ tịch Hội phụ nữ
- Ông/Bà Đàm Ngọc Doanh..... Chức vụ Tổ trưởng tổ dân phố
- Ông/Bà Đặng Tuấn Anh.....Chức vụ Ban QLDA lưới điện TP Hà Nội
- Ông/Bà..... Chức vụ .....
- Đại diện những người bị ảnh hưởng: .....người (*chi tiết xem danh sách đính kèm*)

2. Nội dung tham vấn

- ***Tư vấn thiết kế giới thiệu dự án***: Vị trí trạm, các hạng mục xây dựng
- ***Tư vấn môi trường trình bày về:*** Chính sách môi trường của ADB; Các quy định về môi trường trong ngành điện của chính phủ Việt Nam; Các tác động về môi trường và các biện pháp giảm thiểu tương ứng; Cơ chế khiếu nại khi có các vấn đề môi trường xảy ra

3. Ý kiến thảo luận

Về các tác động môi trường tiêu cực, biện pháp giảm thiểu và các vấn đề liên quan khác

- Cần kiểm tra dây vào trạm có chịu được khi vận chuyển VTTB
- Cần chú ý việc cháy nổ
- Cần chú ý vấn đề tiếng ồn trong quá trình thi công
- ~~Nước~~ nước thải phải thu gom trong quá trình xây dựng

- Quá đường có rãnh thoát nước, đề nghị yêu nhà thầu phải lưu ý khi vận chuyển
- Dây điện hạ thế có chỗ thấp, cần lưu ý
- Đường vào trạm chiếu sáng chưa tốt.

4. Kết luận

- UBND Phường đồng ý chủ trương cải tạo TBA 110 kV sân bay của ngành Điện và rất hỗ trợ giúp đỡ trong quá trình thi công cải tạo

Đại diện Chủ đầu tư	Đại diện cộng đồng	Đại diện tư vấn	Đại diện UBND xã
Đặng Văn M	Đàm ngọc Doanh		

CHỦ TỊCH
Trần Phạm Hùng

c) PICTURES - SƠN TÂY

APPENDIX B.2

PUBLIC CONSULTATION AT PHAN CHU TRINH WARD – TRAN HUNG DAO SUBSTATION

a) LIST OF PARTICIPANTS – TRẦN HƯNG ĐẠO

Date (Ngày tháng) : 13/11/2013
Location (Địa điểm) : Phường Phan Chu Trinh, Quận Hoàn Kiếm, TP Hà Nội

No	Họ và tên (Name)	Nam (M)	Nữ (F)	Cơ quan/Địa chỉ (Organization/Address)	Chữ ký (Signture)
1	Giao Thi Minh Huong		x	Party secretary	Phan Chu Trinh ward
2	Chu Trong Xa	x		Chairman of Ward people's committee	Phan Chu Trinh ward
3	Do Dang Khanh	x		Chairman of people's council	Phan Chu Trinh ward
4	Ngo Thi Hieu		x	Party secretary of Group No.6	Phan Chu Trinh ward
5	Duong Anh Dao		x	Team leader	Phan Chu Trinh ward
6	Dinh Hang Thanh		x	Staff	Phan Chu Trinh ward
7	Dang Tuan Anh	x		Deputy manager of plan department	Ha Noi project management Board
8	Nguyen Thi Loan		x	Consultant of ADB	
9	Khuc Thi Thanh Van		x	Consultant of ADB	
10	Nguyen Manh Hung	x		Staff of plan department	Ha Noi project management Board
11	Duong Duc Minh	x		Consultant	Dong Hai consulting and construction Joint-stock Company
12	Gian Thi Thanh Tu		x	Consultant	Dong Hai consulting and construction Joint-stock Company
13	Nguyen Thi Lien		x	Consultant	Dong Hai consulting and construction Joint-stock Company
14	Bui Thi Ninh		x	Consultant	Dong Hai consulting and construction Joint-stock Company

Hanoi and Ho Chi Minh City Power Transmission Development Sector Project
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PUBIC CONSULTATION ON ENVIRONMENT AND SOCIAL/RESETLEMENT

THAM VẤN CỘNG ĐỒNG VỀ MÔI TRƯỜNG VÀ XÃ HỘI/TÁI ĐỊNH CƯ

LIST OF PARTICIPANTS
DANH SÁCH NGƯỜI THAM DỰ

Date (Ngày tháng) : 13/11/2013
Location (địa điểm) : Phường Phan Chu Trinh, Quận Hoàn Kiếm, TP Hà Nội

No. TT	Họ và tên (Name)	Nam (M)	Nữ (F)	Chức vụ (Position)	Cơ quan/Địa chỉ (Organization/Address)	Chữ ký (Signature)
1	Giáo Thị Minh Hường		✓	Bí thư đảng uỷ	phường Phan Chu Trinh	
2	Chu Trọng Xa	✓		Chủ tịch UBND	"	
3	Đỗ Đăng Khánh	✓		Chủ tịch HĐND	"	
4	Ngô Thị Hiếu		✓	Bí thư chi bộ 6	"	
5	Dương Anh Đào		✓	Tổ trưởng tổ dân phố	"	
6	Đinh Hằng Thanh		✓	Nhân viên		
7	Đặng Tuấn Anh	✓		Phó phòng KH Ban QLDA		
8	Nguyễn Thị Loan		✓	Tư vấn ADB		
9	Khúc Thị Thanh Vân		✓	Tư vấn ADB		
10	Nguyễn Mạnh Hùng	✓		Phòng KH Ban QLDA		
11	Dương Đức Nhật	✓		Tư vấn		
12	Trần Thị Thanh Tú		✓	"		
13	Ngô Thị Lan		✓	"		
14	Bùi Thị Nhị		✓	"		

b) MINUTE OF MEETINGS - TRẦN HƯNG ĐẠO

Question/Suggestion	Answer
What is a purpose of project?	- Electricity demand of people in project area is high. - The current transformer station is too old and unsafe accessories. Therefore, substation improvement is very necessary.
Why does the substation cause the noise and the explosion?	Because the accessories in substation is too old and unsafe. The modern accessories which are exchanged will damp the noise and the explosion.
When does the project start and finish?	-Start: July, 2014 (Schedule) -Building time: three months
Construction activities have to be ended before 11p.m.	Agree. However, with some sudden events which have to build in the night, we will notice to people in project area.
Where the construction waste will be disposed?	In substation precinct.
The wall of substation should be built higher	It could not be done, because it is not suitable with the operation process of the substation.
Before starting works, the contractor must inform Phan Chu Trinh commune people's committee.	Agree.
The Project owner needs to inform local people about construction time	Agree.
The information about resettlement.	There is no household to move, so there is not resettlement.

Hanoi and Ho Chi Minh City Power Transmission Development Sector Project
DỰ ÁN NGÀNH PHÁT TRIỂN ĐƯỜNG DÂY TRUYỀN TẢI ĐIỆN THÀNH PHỐ HÀ NỘI VÀ HỒ CHÍ MINH

CỘNG HOÀ XÃ HỘI CHỦ NGHĨA VIỆT NAM
Độc lập - Tự Do - Hạnh phúc
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Hà Nội, Ngày 13 tháng 11 năm 2013

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

Tiểu dự án: Cải tạo, nâng cấp TBA 110 KV E12 - Trần Hưng Đạo
Phường/Xã: Phan Chu Trinh, Quận/Huyện Hoàn Kiếm Thành phố Hà Nội

1. Thành phần tham dự

- Ông/Bà: Chu Trọng Xa ..... Chức vụ: Chủ tịch UBND
- Ông/Bà: Giao Thị Minh Hường ..... Chức vụ: Bí thư Đoàn thanh niên
- Ông/Bà: Đỗ Đăng Khánh ..... Chức vụ: Chủ tịch HĐND
- Ông/Bà: Phùng Anh Tiến ..... Chức vụ: Tổ trưởng tổ dân phố
- Ông/Bà: Đặng Tuấn Anh ..... Chức vụ: Phó phòng KH Ban QLDA
- Ông/Bà: ..... Chức vụ: .....
- Đại diện những người bị ảnh hưởng: .....người (*chi tiết xem danh sách đính kèm*)

2. Nội dung tham vấn

- ***Tư vấn thiết kế giới thiệu dự án***: Vị trí trạm, tuyến đường; vị trí và chiều dài tuyến đường dây trên địa bàn phường, xã.
- ***Tư vấn môi trường trình bày về:*** Chính sách môi trường của ADB; Các quy định về môi trường trong ngành điện của chính phủ Việt Nam; Các tác động về môi trường và các biện pháp giảm thiểu tương ứng (như trong IEE); Cơ chế khiếu nại khi có các vấn đề môi trường xảy ra
- ***Tư vấn xã hội/tái định cư trình bày về:*** Kế hoạch tái định cư của ADB; Những tác động khi thu hồi đất và các tài sản trên đất; Những chính sách của Chính phủ nước Cộng hoà xã hội chủ nghĩa Việt Nam và địa phương, chính sách của dự án trong vấn đề bồi thường thiệt hại khi Nhà nước thu hồi đất đai và các tài sản trên đất; Các tác động thu hồi đất/tái định cư dự kiến trên địa bàn; Các phương án bồi thường đề xuất (*theo Khung chính sách của dự án đã được phê duyệt*); Tổ chức thực hiện, kế hoạch thực hiện kế hoạch tái định cư.

3. Ý kiến thảo luận

3.1 Về các tác động môi trường tiêu cực và biện pháp giảm thiểu

- Do nhu cầu về điện nên việc cải tạo là cần thiết.
- Phần mặt trường cần bảo đảm để không ảnh hưởng đến người dân
- Thời gian thi công là 5 tháng bắt đầu từ tháng 7/2014
- Do trạm cũ nên gây nổ và tiếng ồn, do thiết bị cũ nên cần phải nâng cấp
- Hoạt động xây dựng phải kết thúc trước 11h đêm, cấm xây trường cao. Trung chuyển nguyên vật liệu và xây dựng từ 6h sáng đến 23h đêm. Phế liệu xây dựng phải để trong khuôn viên trạm
- Trước khi khởi công phải thông báo cho UBND phường để phường báo cho dân

3.2 Về các vấn đề thu hồi đất, các tài sản trên đất và các chính sách

- Cần có địa chỉ / điện thoại của chủ đầu tư để phường / hộ dân gần liên hệ.
- Về tái định cư: Việc xây dựng không gây ảnh hưởng đến các hộ dân buôn bán xung quanh

IV. Kết luận

UBND phường Phan Chu Trinh đồng ý với chủ trương cải tạo, nâng cấp TBA 110K E12 - Trần Hưng Đạo của ngành điện và ủng hộ, giúp đỡ trong quá trình thi công

Đại diện Chủ đầu tư	Đại diện cộng đồng	Đại diện tư vấn	Đại diện UBND xã
Đỗ Mạnh Hà	Đại diện hộ DC Giản Thị Thanh Tú	Nguyễn Thị Loan	CHỦ TỊCH Chu Trọng Xa

c) PICTURES - TRẦN HƯNG ĐẠO

APPENDIX B.3
PUBLIC CONSULTATION AT PHUONG MAI WARD – PHUONG LIET SUBSTATION

a) LIST OF PARTICIPANTS – PHUONG MAI WARD, DONG DA DISTRICT, HANOI CITY

Date (Ngày tháng) : 23/11/2013
Location (Địa điểm) : Phương Mai Ward, Đống Đa, Hà Nội

No. TT	Họ và tên (Name)	Nam (M)	Nữ (F)	Chức vụ (Position)	Cơ quan/Địa chỉ (Organization/Address)	(Signature)
1	Ngo Manh Hung	x		Secretary	Phuong Mai ward	
2	Nguyen Thi Lien		x	Chairman's Council	Phuong Mai ward	
3	Le Ke Viet	x		Chairman	Phuong Mai ward	
4	Hoang Thi Bao Phuong		x	Vice Chairman	Phuong Mai ward	
5	Trinh Van Quyet	x		Secretary of Ward Fatherland Front	Phuong Mai ward	
6	Tran Van Tau	x		Vice Secretary Ward Fatherland Front	Phuong Mai ward	
7	Nguyen The Luyen	x		Chief inspector People	Phuong Mai ward	
8	Tran Thi Tuyet Hai		x	Women's union of Phuong Mai	Phuong Mai ward	
9	Le Thi Anh Tuyet		x	Staff	Phuong Mai ward	
10	Quach Thuy Hoa		x	Staff	Phuong Mai ward	
11	Nguyen Khac Hong	x		Secretary of population group	Phuong Mai ward	
12	Pham Nguyen Thai	x		Secretary of population group	Phuong Mai ward	
13	Pham Manh Bao	x		Head of population group 65B	Phuong Mai ward	
14	Dang Thi Sinh		x	Head of population group 65A	Phuong Mai ward	
15	Pham Van Tu	x		Head of population group 62	Phuong Mai ward	
16	Dang Thi Ky		x	Head of population group 61	Phuong Mai ward	
17	Truong Quang Linh	x		Household	Phuong Mai ward	
18	Nguyen Xuan Ninh	x		Household	Phuong Mai ward	

19	Nguyen Thi Lan Phuong		x	Household	Phuong Mai ward	
20	Nguyen Thi Luan		x	Household	Phuong Mai ward	
21	Vu Dinh Nhan	x		Household	Phuong Mai ward	
22	Nguyen Khac Minh	x		Household	Phuong Mai ward	
23	Khuc Thi Thanh Van		x	ADB Resettlement Consultant		
24	Nguyen Thi Loan		x	ADB Environmental Consultant		
25	Dang Tuan Anh	x		Vice manager of the Planting department	HNPMB-EVNHANOI	
26	Nguyen Manh Hung	x		Staff	HNPMB-EVNHANOI	
27	Ho Ta Tan Duong	x		Staff	PECC1	

Hanoi and Ho Chi Minh City Power Transmission Development Sector Project
DỰ ÁN NGÀNH PHÁT TRIỂN ĐƯỜNG DÂY TRUYỀN TẢI ĐIỆN THÀNH PHỐ HÀ NỘI VÀ HỒ CHÍ MINH

PUBIC CONSULTATION ON ENVIRONMENT AND SOCIAL/RESETLEMENT

THAM VẤN CỘNG ĐỒNG VỀ MÔI TRƯỜNG VÀ XÃ HỘI/TÁI ĐỊNH CƯ

LIST OF PARTICIPANTS
DANH SÁCH NGƯỜI THAM DỰ

Date (Ngày tháng) : 23/11/2013
Location (địa điểm) : UBND Phường Phương Mai - Đống Đa - Hà Nội

No. TT	Họ và tên (Name)	Nam (M)	Nữ (F)	Chức vụ (Position)	Cơ quan/Địa chỉ (Organization/Address)	Chữ ký (Signature)
1	Ông Ngô Mạnh Hùng	x		Bí thư Đảng ủy	Phường Phương Mai	
2	Bà Nguyễn Thị Liên		x	Chủ tịch HĐND	"	
3	Ông Lê Kế Việt	x		Chủ tịch UBND	"	
4	Bà Hoàng Thị Bảo Phương		x	Phó Chủ tịch UBND	"	
5	Ông Trịnh Văn Quyết	x		CT MTTQ Phường	"	
6	Ông Tuấn Văn Tàu	x		Phó CT MTTQ Phường	"	
7	Ông Nguyễn Thế Luyện	x		Trưởng ban TTND	"	
8	Bà Tuấn Thị Tuyết Hải		x	Chủ tịch Hội phụ nữ	"	
9	Bà Lê Thị Tuyết		x	Cán bộ địa chính	"	
10	Bà Quách Thúy Hòa		x	Cán bộ địa chính	"	
11	Ông Nguyễn Khắc Hải	x		Bí thư chi bộ	"	
12	Ông Phạm Nguyên Thái	x		Bí thư chi bộ	"	
13	Ông Phạm Mạnh Bảo	x		Tổ trưởng tổ 65B	"	
14	Bà Đặng Thị Sinh		x	Tổ trưởng tổ 65A	"	
15	Ông Phạm Văn Tư	x		Tổ trưởng tổ 62	"	
16	Bà Đặng Thị Ký		x	Tổ trưởng tổ 61	"	
17	Ông Trương Quang Linh	x		Đại diện hộ dân	"	
18	Ông Nguyễn Xuân Ninh	x		Đại diện hộ dân	"	
19	Bà Ng T. Lan Phương		x	Đại diện hộ dân	"	
20	Bà Nguyễn Thị Liên		x	Đại diện hộ dân	"	
21	Ông Vũ Đình Thắng	x		Đại diện hộ dân	"	
22	Ông Nguyễn Thái Ninh	x		Đại diện hộ dân	"	
23	Bà Thúc Thị Thanh Vân		x	Tư vấn tái định cư		
24	Bà Nguyễn Thị Loan		x	Tư vấn MT		
25	Đặng Tuấn Anh			Phó phòng KH B&LDA		
26	Nguyễn Mạnh Hùng			Phòng KH B&LDA		
27	Hồ Tạ Tấn Dương			Tư vấn thiết kế		

b) MINUTE OF MEETINGS - PHUONG MAI WARD, DONG DA DISTRICT, HANOI CITY

Questions	Answers
- Fire prevention by CO_2 fire extinguishing powder is reliable or not?	- Use fire extinguishing powder inhalers for the function of the room control and distribution. The transformer fire extinguishing system with water.
- Construction waste has been collected, but domestic waste is to work with sanitation enterprises to pay sanitation fee collection.	- Investor and Construction contractor will work with sanitation enterprises to pay for garbage collection.
- Investor is requested to clearly describe how the construction activities affect people	- The project to renovate and upgrade the existing fence located in the Phuong Liet 110kV substation, but also causes environmental impacts during construction and operation of the project such as: Increased dust, causing the sound noise, explosion hazard, obstructing traffic, road damage. When performing renovation project will upgrade electrical capacity, reducing power losses, bringing the social and economic benefits in the region.
- Normally no power station could be located in residential areas because noise affects people living at surrounding area	- Phuong Liet 110kV Substation completed and energized in 1991 while the population in the project area is not much.
- Has the Investor defended the project with the Ministry of Natural Resources and Environment and other agencies or not?	- The "environmental protection plan" for Phuong Liet 110kV substation was approved in 2012.
- Electromagnetic fields affect people or not?	- The new installation of substation equipment is designed according to international standards and in accordance with electricity regulations of Vietnam.
- Noise must comply with regulations?	- The noise of the equipment in the building process to ensure that noise standards allow - Developing mainly in the daytime, at night if construction must inform the people surrounding the project said. - The new equipment installation projects were built according to the regulations on the permitted noise level.
- Environmental problems in the construction process does not significantly impact during operation.	Agree
- The project should assess the environmental impact, the new station's noise level compared to that of the old	The scope of the project implementation equipment 110kV outdoor will be replaced by the GIS equipment (SF6 insulation) and 22kV and

station. If the new substation can not change the noise level need not to replace it	10kV distribution cabinet is placed in the distribution of building control the new. So greatly reduced noise during operation of the station.
- The fire prevention measures involve only the station. When the fire occurs in the station, could it spread to surrounding neighborhoods? Because fire truck can not go to the area.	- Investor commits to implement fully fire protection regulations during the project implementation period.
- Local people need full commitments of investor/constructor in the construction process. When fire is happening, what is the level of safety for the people? Investor/constructor need to ensure no fire and explosion occurred.	- Investor commits to implement fully environmental regulations, fire during project implementation.
- Agree with the upgrading but investor needs to ensure safety for people.	
- The renovation and upgrading to ensure reduced noise, accidents, fires and explosions. Lane 30, Alley 2 no way out when the explosion.	
- 110 kV substation is too close to residential areas, the distance is only about 1m to ensure the safety of the power grid?	- The project will replace the old equipment, which has been operated long time, by the new equipment in accordance with international standards. At the same time the equipment is installed according to the layout as well as international standards of Vietnam to ensure electrical safety.
- There was an explosion, big noise. Roads into the renovated station frequently for damage, noise at night.	- Substation was designed in fire prevention regulations.
- The construction activity needs to be approved by the competent authority in order to assess it is appropriate or not	- Electricity Corporation Hanoi has approved on the basis of planning. Ministry of Natural Resources and Environment has approved.
- The solid walls need to be built around the substation	- Reinforced fence of the station are being constructed
- Phuong Mai Ward People's Committee asked to provide information, technical specifications on noise, power grid safety corridors, fire safety for the substation.	Investor will provide "environmental protection report" of 110kV station to Phuong Mai Ward People's Committee
- The further meetings to get people's opinions on construction permits would be organised	

Hanoi and Ho Chi Minh City Power Transmission Development Sector Project
DỰ ÁN NGÀNH PHÁT TRIỂN ĐƯỜNG DÂY TRUYỀN TẢI ĐIỆN THÀNH PHỐ HÀ NỘI VÀ HỒ CHÍ MINH

CỘNG HOÀ XÃ HỘI CHỦ NGHĨA VIỆT NAM
Độc lập - Tự Do - Hạnh phúc
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Phường Mai, Ngày 23 tháng 11 năm 2013

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

Tiểu dự án: Cải tạo, nâng cấp TBA 110 kV E13 - Phường Liệt
Phường/Xã: Phường Mai, Quận/Huyện: Đống Đa, Thành phố Hà Nội

1. Thành phần tham dự

- Ông/Bà: Mạc Mạnh Hùng ..... Chức vụ: Bí thư Đảng ủy
- Ông/Bà: Nguyễn Thị Liên ..... Chức vụ: Chủ tịch HĐND
- Ông/Bà: Lê Kế Việt ..... Chức vụ: Chủ tịch UBND
- Ông/Bà: Đặng Tuấn Anh ..... Chức vụ: EVN Hà Nội
- Ông/Bà: Trần Văn Tấn ..... Chức vụ: Phó chủ tịch MTTQ phường
- Ông/Bà: Đặng Thị Kỷ ..... Chức vụ: Tổ trưởng tổ 61
- Đại diện những người bị ảnh hưởng: .....người (*chi tiết xem danh sách đính kèm*)

I. Nội dung tham vấn

- ***Tư vấn thiết kế giới thiệu dự án***: Vị trí trạm, tuyến đường; vị trí và chiều dài tuyến đường dây trên địa bàn phường, xã.
- ***Tư vấn môi trường trình bày về:*** Chính sách môi trường của ADB; Các quy định về môi trường trong ngành điện của chính phủ Việt Nam; Các tác động về môi trường và các biện pháp giảm thiểu tương ứng (như trong IEE); Cơ chế khiếu nại khi có các vấn đề môi trường xảy ra
- ***Tư vấn xã hội/tái định cư trình bày về:*** Kế hoạch tái định cư của ADB; Những tác động khi thu hồi đất và các tài sản trên đất; Những chính sách của Chính phủ nước Cộng hoà xã hội chủ nghĩa Việt Nam và địa phương, chính sách của dự án trong vấn đề bồi thường thiệt hại khi Nhà nước thu hồi đất đai và các tài sản trên đất; Các tác động thu hồi đất/tái định cư dự kiến trên địa bàn; Các phương án bồi thường đề xuất (*theo Khung chính sách của dự án đã được phê duyệt*); Tổ chức thực hiện, kế hoạch thực hiện kế hoạch tái định cư.

- **III. Ý kiến thảo luận**

III.1 Về các tác động môi trường tiêu cực và biện pháp giảm thiểu

+ Cần có biện pháp giảm thiểu tiếng ồn trong quá trình xây dựng, và vận hành máy
+ Cần chú ý đến các PCCC, do địa điểm TBA lớn
+ Chú ý đến điện từ trường ảnh hưởng đến khu dân cư, hành lang tuyến điện đi và khu dân cư

III.2 Về các vấn đề thu hồi đất và các tài sản trên đất và các chính sách

- Cây trồng cây cây bị hủy do quá trình thi công thêm khoản đền bù, sửa chữa
- gia cố lại tường bao của trạm

IV. Kết luận

UBND phường Phương Mai và các hộ dân bị ảnh hưởng đồng ý với chủ trương cải tạo nâng cấp cải tạo trạm biến áp 110KV Phương Liệt. Đề nghị chủ đầu tư làm đúng các quy định của nhà nước

Đại diện Chủ đầu tư	Đại diện cộng đồng	Đại diện tư vấn	Đại diện UBND xã
Đỗ Văn Nhi. Đặng Thị Tuy		Hồ Tạ Tâm Đường Nguyễn Thị Loan	CHỦ TỊCH Lê Kế Việt

c) PICTURES - PHUONG MAI WARD, DONG DA DISTRICT, HANOI CITY

APPENDIX B.4 PUBLIC CONSULTATION OF ARMY HOSPITAL 108 AND ARMY MUSEUM

THE MINISTRY OF NATIONAL DEFENCE
ARMY CENTRAL HOSPITAL 108

THE SOCIALIST REPUBLIC OF VIETNAM
Independence – Freedom – Happiness

No: 2323/BV-HCKT
Ref: Counselling on the project "Renovation and upgrading of E12 – Tran Hung Dao 110kV Substation"

Hanoi, 21st November 2013

To: Hanoi Electric Network Project Management Board (HANOI PMB)

Army Central Hospital 108 has received Letter no. 1699/HANOI PMB-X09.2 dated 27th September 2013 from HANOI PMB, which was attached with the summarized documents on main investment items, environmental impacts and environmental protection measures under the project "Renovation and upgrading of E12 – Tran Hung Dao 110kV Substation". After review of such documents, we would like to express our opinion as follows:

1. **Negative impacts of the project on the natural environment and socio-economic aspects**

The hospital would like to supplement our recommendations to the host of the project. We are now launching the construction project of central work cluster: House of internal medicine, House of external medicine, House of special medicine and House of subclinical technique. According to the engineering of the central work, it has two foreground power supply from E12 – Tran Hung Dao 110kV Substation with total capacity of 18 MVA. It is essential that this substation should be upgraded.

Impacts of the project on the natural environment and socio-economic aspects are evaluated elaborately and fully. We completely agree with these contents.

2. **Solutions and measures minimizing bad effects of the project on the natural environment and socio-economic aspects**

The measures are feasible and appropriate with the real situation at the project site. We have a high opinion of such measures.

3. **Recommendations to the host of the project**

It is vital that HANOI PMB should design preferential, stable and continuous power supply plan after the complete renovation of the hospital. The strict implementation of measures minimizing environmental pollution and ensuring safety in building and operating process of the project is also suggested. Furthermore, measures which timely handle with break-downs in building and operating process of the project should be planned.

We would like to send you our recommendations for review and finalization of the environmental impact assessment report of the project.

DIRECTOR

Recipients:
- Above;
- Archive:

Lieutenant-general Tran Duy Anh

BỘ QUỐC PHÒNG
BỆNH VIỆN TWQĐ 108

Số 2323/BV-HCKT
V/v ý kiến tham vấn về
Dự án Cải tạo nâng cấp TBA
110kV E12-Trần Hưng Đạo

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

Hà Nội, ngày 21 tháng 10 năm 2013

Kính gửi: Ban quản lý dự án lưới điện Hà Nội.

Bệnh viện Trung ương quân đội 108 đã nhận được văn bản số 1699/HANOI PMB-X09.2 ngày 27 tháng 09 năm 2013 của Ban quản lý dự án Lưới điện Hà nội kèm theo tài liệu tóm tắt về các hạng mục đầu tư chính, các vấn đề môi trường, các giải pháp bảo vệ môi trường của Dự án cải tạo Nâng cấp TBA 110kV E12-Trần Hưng Đạo. Sau khi xem xét tài liệu này, Bệnh viện Trung ương Quân đội 108 có ý kiến như sau:

1. Về những tác động xấu của Dự án đến môi trường tự nhiên và kinh tế - xã hội

Bệnh viện Trung ương Quân đội 108 xin được bổ sung kiến nghị với chủ dự án như sau: Hiện nay Bệnh viện Trung ương quân đội 108 đang triển khai dự án xây dựng cụm Công trình trung tâm: Nhà nội khoa; Nhà ngoại khoa + chuyên khoa; Nhà kỹ thuật nghiệp vụ cận lâm sàng. Theo thiết kế Công trình Trung tâm nói trên được cấp nguồn bằng 02 đường ưu tiên từ nguồn điện 110kV trạm biến áp trung gian E12-Trần Hưng đạo với tổng công suất 18 MVA.Việc nâng cấp trạm biến áp 110kV E12-Trần Hưng Đạo là rất cần thiết.

Đối với các tác động do hoạt động của dự án đến môi trường tự nhiên và kinh tế - xã hội được đánh giá khá chi tiết, đầy đủ trong tài liệu. Chúng tôi đồng ý với các nội dung đã được trình bày.

2.Về giải pháp, biện pháp giảm thiểu các tác động xấu của Dự án đến môi trường tự nhiên và kinh tế - xã hội

Các giải pháp giảm thiểu tác động xấu của dự án đến môi trường tự nhiên và kinh tế- xã hội có tính khả thi, phù hợp với tình hình thực tế tại khu vực dự án. Do vậy, chúng tôi nhất trí với các giải pháp đã nêu.

3.Kiến nghị đối với chủ dự án

Đề nghị Ban Quản lí dự án lưới điện Hà nội trong dự án cải tạo TBA 110kV E12-Trần Hưng Đạo cần bổ sung phương án cung cấp điện đảm bảo ưu tiên, ổn định và liên tục cho Bệnh viện ương Quân đội 108 sau khi hoàn thành việc xây mới Bệnh viện.

Ngoài ra đề nghị Ban quản lí dự án Lưới điện Hà Nội thục hiện đúng các biện pháp giảm thiểu ô nhiễm môi trường, các biện pháp bảo đảm an toàn trong quá trình thi công và quá trình vận hành của Dự án.

Ban quản lý dự án Lưới điện Hà Nội xây dựng các phương án ứng phó kịp thời với các sự cố xảy ra trong quá trình xây dựng và vận hành dự án.

Trên đây là ý kiến của Bệnh viện Trung ương Quân đội 108 gửi Ban quản lý dự án Lưới điện Hà Nội để xem xét và hoàn chỉnh báo cáo đánh giá tác động môi trường của Dự án./.

Nơi nhận:
-Như trên;
-Lưu: VT, HCKT; H03b.

GIÁM ĐỐC

Trung tướng Trần Duy Anh

APPENDIX C
EIA CERTIFICATIONS FOR THE THREE CORE PROJECTS OF EVN HANOI

C.1 TRAN HUNG DAO SUBSTATION

Hoàn Kiếm district
People's Committee

SOCIALIST REPUBLIC OF VIETNAM
Independence – Freedom - Happiness

Number: 34/GXN-UBND

Hoan Kiem, April 16th, 2010

REGISTRATION CERTIFICATE OF ENVIRONMENTAL PROTECTION PROJECT

Base: 110KV substation (E1.12)

Base Owner: Enterprise Management 110KV grid

Address: 2B Tran Hung Dao Street - Phan Chu Trinh ward, Hoan Kiem District - Ha Noi

Pursuant to Law on Environmental Protection dated on November 29th, 2005;

Pursuant to Decree No. 21/2008/ND-CP dated February 28th, 2008 of the Government regarding amending and supplying a number of articles of Decree No. 80/2006/ND-CP dated August 9th, 2006 of the Government about detailing and guiding the implementation of some articles of Environmental Protection law;

Pursuant to Circular No.04/2008/TT-BTNMT dated September 18th, 2008 of the Ministry of Natural Resources and Environment about guiding settlement, approval or certification of environmental protection scheme for the production, sales, and focused service and manufacturing sector, business, services operateded before July 1st, 2006 without approval assessment of environmental impacts or the registration certificate was environmental standards;

Pursuant to the function, duty and power certification scheme for environmental protection made by circular No.04/2008/TT-BTNMT dated September 18th, 2008 of the Ministry of Natural Resources and Environment;

Considering the content environmental protection scheme: 110KV substation of Enterprise 110KV grid management at 2B, Tran Hung Dao street - Phan Chu Trinh ward , Hoan Kiem District - Hanoi together with a written request for confirmation of owner;

Considering the requestment of the Natural Resources and Environment Department, Hoan Kiem District,

PEOPLE'S COMMITTEES OF HOAN KIẾM DISTRICT CERTIFICATION:

Article 1. Confirming enterprise grid management 110KV has registered and commited implementing the environmental protection scheme: the 110kv Substation (E1.12) at 2B, Tran Hung Dao Street, Phan Chu Trinh ward, Hoan Kiem district - Hanoi is in operation.

Article 2. Base owner is responsible for properly and fully implement the content of environmental protection outlined in the environmental protection scheme certificated and the following mandatory requirements:

1. About management and disposal of waste:

- Exhaust gas and dust must be treated at standard of QCVN 05:2009/BTNMT

- Wastewater at standard of QCVN 14:2008/BTNMT before being discharged into the public sewer system of the city .

- Ensuring that noise at the standard of TCVN 5949:1998.

- Solid waste is collected, transported and handled in accordance with regulations.

- Strictly complying with fire regulations

- In the operation if the hazardous waste generated, base owner is responsible for the waste generator registration of hazardous waste subject to the Natural Resources and Environment Department of Hanoi.

- If groundwater extraction, extracting permittion document must be settled according to 195/2005/QD-UB Decision on 22.11.2005 of the Hanoi People's Committee of the licensing requirements for exploration, exploitation and using water resources.

2. Implementation of environmental monitoring programs by content protection environmental scheme approved. To perform environmental monitoring program as promised. Monitoring sampling process must be participated by Nature Resource and Eenvironmental Department of Hoan Kiem District. Environmental monitoring results must be sent through People's Committee of Hoan Kiem District to Natural Resources and Environmental of the District to check periodically monitored at least 2 times/ year.

3. The time limit for completion of the waste treatment facilities and environmental protection (as planned in the project are confirmed), but the latest in September 30th, 2010 must be completed. Over the above time limit, base owner does not make it, be handled in accordance with the law, which in addition to the sanctions remedy pollution, may also be temporarily suspended, banned or forced away from the residential areas, consistent with the carrying capacity of environment in accordance with the law.

4. After completing all contents of the environmental protection plan has been confirmed, the owner must has a written report to certifying agency about the completed contents for inspecting and monitoring.

Article 3. Environmental Protection Scheme of Enterprise 110KV grid management and mandatory requirements of Article 2 of this certificate as a basis for the management of the state agency authorized to check and inspect the implementation of environmental protection of the facility.

Article 4. This certificate is valid from the date of signing./.

Recipients: - Nature Resource & Environmental Department of Hà Nội - Mr. Chairman District People's Committee - Sub- Department of Environmental Protection in Hà Nội - Phan Chu Trinh ward People's Committee (to follow) - Base owner of the facility - Storage	**ON BEHALF OF PEOPLE'S COMMITTEE** **PP. CHAIRMAN** **DEPUTY CHAIRMAN** ***Nguyễn Quốc Hoa***

ỦY BAN NHÂN DÂN QUẬN HOÀN KIẾM Số: 34 /GXN-UBND	CỘNG HOÀ XÃ HỘI CHỦ NGHĨA VIỆT NAM Độc lập - Tự do - Hạnh phúc *Hoàn Kiếm, ngày 16 tháng 4 năm 2010*

GIẤY XÁC NHẬN
ĐĂNG KÝ ĐỀ ÁN BẢO VỆ MÔI TRƯỜNG

Cơ sở: Trạm biến áp 110KV (E1.12)

Chủ cơ sở: Xí nghiệp quản lý lưới điện 110KV

Địa chỉ: Số 2B phố Trần Hưng Đạo - phường Phan Chu Trinh - quận Hoàn Kiếm - Hà Nội

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

Căn cứ Nghị định số 21/2008/NĐ-CP ngày 28 tháng 02 năm 2008 của Chính phủ về sửa đổi, bổ sung một số điều của Nghị định số 80/2006/NĐ-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 04 /2008/TT-BTNMT ngày 18 tháng 09 năm 2008 của Bộ Tài nguyên và Môi trường về hướng dẫn việc lập, phê duyệt hoặc xác nhận đề án bảo vệ môi trường đối với các khu sản xuất, kinh doanh, dịch vụ tập trung và cơ sở sản xuất, kinh doanh, dịch vụ đã hoạt động trước ngày 01 tháng 7 năm 2006 mà không có quyết định phê duyệt báo cáo đánh giá tác động môi trường hoặc giấy xác nhận bản đăng ký đạt tiêu chuẩn môi trường;

Căn cứ quy định chức năng, nhiệm vụ và quyền hạn xác nhận Đề án bảo vệ môi trường thực hiện theo Thông tư số 04 /2008/TT-BTNMT ngày 18 tháng 09 năm 2008 của Bộ Tài nguyên và Môi trường;

Xét nội dung Đề án bảo vệ môi trường: Trạm biến áp 110KV của Xí nghiệp quản lý lưới điện 110KV tại Số 2B phố Trần Hưng Đạo - phường Phan Chu Trinh - quận Hoàn Kiếm - Hà Nội kèm theo Văn bản đề nghị xác nhận của Chủ cơ sở;

Xét đề nghị của Phòng Tài nguyên và môi trường quận Hoàn Kiếm,

UBND QUẬN HOÀN KIẾM XÁC NHẬN:

Điều 1. Xác nhận Xí nghiệp quản lý lưới điện 110KV đã đăng ký và cam kết thực hiện Đề án bảo vệ môi trường: Trạm biến áp 110KV (E1.12) tại Số 2B phố Trần Hưng Đạo - phường Phan Chu Trinh - quận Hoàn Kiếm - Hà Nội trong quá trình hoạt động.

Điều 2. Chủ Cơ sở có trách nhiệm thực hiện đúng và đầy đủ những nội dung về bảo vệ môi trường nêu trong Đề án bảo vệ môi trường được xác nhận và những yêu cầu bắt buộc sau đây:

1. Về quản lý và xử lý chất thải:

- Khí thải và bụi phải xử lý đạt QCVN 05:2009/BTNMT.
- Nước thải đạt QCVN 14:2008/BTNMT trước khi thải vào hệ thống thoát nước chung của Thành phố.
- Tiếng ồn đảm bảo tiêu chuẩn TCVN 5949:1998.
- Chất thải rắn được thu gom, vận chuyển và xử lý theo đúng quy định.

- Tuân thủ đúng các quy định về PCCC.

- Trong quá trình hoạt động nếu phát sinh chất thải nguy hại Chủ cơ sở phả có trách nhiệm đang ký chủ nguồn thải đối tượng chất thải nguy hại với Sở Tà nguyên và môi trường Hà Nội.

- Nếu khai thác nước ngầm phải lập hồ sơ xin phép khai thác nước the Quyết định 195/2005/QĐ-UB ngày 22/11/2005 của UBND Thành phố Hà Nội v việc quy định cấp phép thăm dò, khai thác, sử dụng tài nguyên nước.

2. Thực hiện chương trình giám sát môi trường theo nội dung Đề án bảo v môi trường đã được phê duyệt.Phải thực hiện chương trình quan trắc môi trườn như đã cam kết.Quá trình lấy mẫu quan trắc phải có sự tham gia của Phòng Tà nguyên và môi trường quận Hoàn Kiếm.Kết quả giám sát môi trường phải gửi v UBND quận Hoàn Kiếm qua Phòng Tài nguyên và môi trường quận để kiểm tr giám sát định kỳ tối thiểu 02 lần/năm.

3. Thời hạn hoàn thành các công trình xử lý chất thải và bảo vệ môi trườn (theo kế hoạch trong Đề án được xác nhận) nhưng chậm nhất là ngày 30 tháng 0 năm 2010 phải hoàn thành.Quá thời hạn nêu trên, Chủ cơ sở không thực hiện t sẽ bị xử lý theo quy định của pháp luật, trong đó ngoài các hình thức xử phạ khắc phục ô nhiễm, còn có thể bị tạm thời đình chỉ, cấm hoạt động hoặc buộc dời ra khỏi khu dân cư, phù hợp với sức chịu tải của môi trường theo quy định củ pháp luật.

4. Sau khi hoàn thành các nội dung của Đề án bảo vệ môi trường đã được xá nhận, Chủ cơ sở phải có văn bản báo cáo cơ quan xác nhận về các nội dung đ hoàn thành để kiểm tra, giám sát.

Điều 3. Đề án bảo vệ môi trường của Xí nghiệp quản lý lưới điện 110KV những yêu cầu bắt buộc tại Điều 2 của Giấy xác nhận này là cơ sở để các cơ qu quản lý nhà nước có thẩm quyền kiểm tra, thanh tra việc thực hiện công tác bảo v môi trường của Cơ sở.

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

Nơi nhận:
- Sở TN và MT Hà nội
- Đ/c Chủ tịch UBND quận
- Chi cục Bảo vệ môi trường Hà Nội
- UBND phường Phan Chu Trinh (để theo dõi)
- Chủ cơ sở
- Lưu

(để báo cáo)

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

Nguyễn Quốc Hoa

C.2 PHUONG LIET SUBSTATION

DECISION

Approval for detailed Environmental Protection Project

Base: 110KV E1.13 Phuong Liet substation and incoming line

Address: Phuong Mai ward, Dong Da district, Hanoi

Base Owner: Hanoi High Voltage Network Company

DIRECTOR OF HANOI DEPARTMENT OF NATURAL RESOURCES AND ENVIROMENT

Pursuant to the Law on Environmental Protection dated November 29, 2005;

Pursuant to the Decree No.29/2011/ND-CP dated April 18, 2011 of the Government on strategic environmental assessment, environmental impact assessment, environmental protection commitments;

Pursuant to the Circular No. 01/2012/TT-BTNMT dated March 16, 2012 of the Minister of Natural Resources and Environment Ministry regulating on formulation, appraisal, approval and inspection and certification of the implementation of detailed Environmental Protection Project, and register of Simple Environmental Protection Project;

Pursuant to the Decision No 2238/QD-UBND dated May 24, 2012 0f Hanoi People Committee for authorizing the Director of DoNRE to sign the decision for establishment of environmental impact assessment report evaluation Council; Confirming on additional page of environmental impact assessment report cover; Certification of finalizing environmental protection measures implementation for project operation period; Decision on Approval for detailed Environmental Protection Project; Certification of finalizing ddetailed Environmental Protection Project implementation;

Considering the request of Hanoi High Voltage Network Company at the written document No. 2546/CV-HANOI HGC dated December 3, 2012 on appraisal, approval for ddetailed Environmental Protection Project of: 110KV E1.13 Phuong Liet substation and incoming line at Phuong Mai ward, Dong Da district, Hanoi;

Pursuant to the inspecting minutes of environmental protection work dated December 11, 2012 for 110KV E1.13 Phuong Liet substation and incoming line;

Considering the content of basic detailed Environmental Protection project: completed 110KV E1.13 Phuong Liet substation and incoming line enclosed by the written document No 2795/CV-HANOI HGC dated December 21, 2012 of Hanoi High Voltage Network Company;

Considering the request of the Head of Hanoi Environmental Protection Department in the submitted document No.1396 /TTr-CCMT dated December 27, 2012;

DECISION

Article 1. Approval for Detailed Environmental Protection Project of 110KV E1.13 Phuong Liet substation and incoming line (hereinafter referred to as Project) of Hanoi High Voltage Network Company (hereinafter called the Base Owner) with the following contents:

1. Location, operational capacity of the Base
   - Capacity: 126 MVA (two equipment with capacity 63 MVA)
   - Base location: Phuong Mai ward, Dong Da district, Hanoi

2. Requirements of Environmental Protection for the Base

2.1 Correctly and completely performance of solutions, measures and commitments on environmental protection outlined in the project.

2.2. To ensure garbage to be treated to reach standards, technical specifications on current environment before discharging to the surrounding environment as followings:

- Noise and vibration must be mitigated as the regulation stipulated at National Technical Standard QCVN 26:2010/BTNMT on noise and QCVN 27:2010/BTNMT on vibration

-Dust and air during operation must be mitigated as stipulated at National Technical Standard QCVN 19/2009/BTNMT, column B, QCVN 20/2009/BTNMT and QCVN 05:2009/BTNMT on surrounding air quality.

- Household solid garbage must be collected and treated as per regulation at Circular 59/2007/NDD-CP dated 09/04/2007 of the Government on solid garbage management, normal solid garbage management in Hanoi city issued together with the Decision no 11/2010/QDD-UBND dated 23/02/2010 of People's Committee of Hanoi and Decision no 56/2010/QDD-UBND dated 17/12/2010 of People's Committee of Hanoi on amendment, supplement the Article 13 of Decision no 11/2010/QDD-UBND.

- Dangerous garbage created during operation must be classified, collected, storage, managed and treated as regulation at Circular no 12/2011/TT-BTNMT dated 14/4/2011 of MONRE stipulated on Dangerous garbage management.

- Household waste water must be collected and treated as per QCVN 14:2008/BTNMT before discharge to common discharge system of the region.

- Electric field of the transformer substation shall be within limited permission standard as per Decision no 183NL/KHKT of MOIT dated 12/4/1994 – branch specification on permitted electric field insensitive and regulation on work area checking and branch standards

2.3. No using of equipment machine, raw material, fuel, chemical and other materials have been prohibited using in Vietnam as per current regulations totally.

Article 2. During implementation, if action plan of investor, project content changed, investor has to report to DONRE and can only implement after approval.

To authorize to Hanoi Environmental Protection Department to check and supervise the implementation of environmental protection content in detail approved EIA.

Article 3. This Decision to be effected since signed date. Chief of Bureau's DONRE, Director of Environmental Protection Department, chief of Dong Da DONRE; Director of Hanoi High Voltage Electricity Network Company and 110kV substation and transmission line utility which connect to E1.13 Phuong Liet to be implemented this Decision.

To: - As Article 3; – HN People's Committee (reported); – Director of Department (reported); – Vice Director Pham Van Khanh; - Achieved;	**For Director** **Vice Director** **Pham Van Khanh**

UBND THÀNH PHỐ HÀ NỘI
SỞ TÀI NGUYÊN VÀ MÔI TRƯỜNG
Số: 468 /QĐ-STNMT

CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM
Độc lập - Tự do - Hạnh phúc
Hà Nội, ngày 28 tháng 12 năm 2012

QUYẾT ĐỊNH

Về việc phê duyệt đề án bảo vệ môi trường chi tiết

Cơ sở: **Trạm biến áp và đường dây 110 kV vào trạm biến áp E1.13 Phương Liệt**
Địa chỉ hoạt động: **Phường Phương Mai, quận Đống Đa, thành phố Hà Nội**
Chủ cơ sở : **Công ty Lưới điện cao thế thành phố Hà Nội**

GIÁM ĐỐC SỞ TÀI NGUYÊN VÀ MÔI TRƯỜNG HÀ NỘI

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

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

Căn cứ Thông tư số 01/2012/TT-BTNMT ngày 16 tháng 3 năm 2012 của Bộ trưởng Bộ Tài nguyên và Môi trường quy định về lập, thẩm định, phê duyệt và kiểm tra, xác nhận việc thực hiện đề án bảo vệ môi trường chi tiết; lập và đăng ký đề án bảo vệ môi trường đơn giản;

Căn cứ Quyết định số 2238/QĐ-UBND ngày 24/5/2012 của UBND Thành phố Hà Nội về việc ủy quyền cho Giám đốc Sở Tài nguyên và Môi trường ký Quyết định thành lập Hội đồng thẩm định báo cáo đánh giá tác động môi trường; Xác nhận vào trang phụ bìa báo cáo đánh giá tác động môi trường; Giấy xác nhận hoàn thành việc thực hiện các biện pháp bảo vệ môi trường phục vụ giai đoạn vận hành của dự án; Quyết định phê duyệt đề án bảo vệ môi trường chi tiết; Giấy xác nhận hoàn thành việc thực hiện đề án bảo vệ môi trường chi tiết;

Xét đề nghị của Công ty Lưới điện cao thế thành phố Hà Nội tại văn bản số 2546/CV- HANOI HGC ngày 03 tháng 12 năm 2012 về việc đề nghị thẩm định, phê duyệt đề án bảo vệ môi trường chi tiết của: Trạm biến áp và đường dây 110 kV vào trạm biến áp E1.13 Phương Liệt tại Phường Phương Mai, quận Đống Đa, thành phố Hà Nội ;

Căn cứ Biên bản kiểm tra công tác bảo vệ môi trường ngày 11/12/2012 đối với Trạm biến áp và đường dây 110 kV vào trạm biến áp E1.13 Phương Liệt;

Xét nội dung dề án bảo vệ môi trường chi tiết cơ sở: Trạm biến áp và đường dây 110 kV vào trạm biến áp E1.13 Phương Liệt đã được hoàn chỉnh gửi kèm Văn bản số 2795/CV-HANOI HGC ngày 21/12/2012 của Công ty Lưới điện cao thế thành phố Hà Nội;

Xét đề nghị của Chi cục trưởng Chi cục Bảo vệ Môi trường Hà Nội tại Tờ trình số 1396/TTr-CCMT ngày 27/12/2012,

QUYẾT ĐỊNH:

Điều1. Phê duyệt đề án bảo vệ môi trường chi tiết cơ sở: Trạm biến áp và đường dây 110 kV vào trạm biến áp E1.13 Phương Liệt (sau đây gọi là Đề án) của Công ty Lưới điện cao thế thành phố Hà Nội (sau đây gọi là Chủ cơ sở) với các nội dung chủ yếu sau đây:

1. Vị trí, công suất hoạt động của cơ sở:

- Công suất: 126 MVA (2 máy công suất 63 MVA).

- Vị trí cơ sở: Phường Phương Mai, quận Đống Đa, thành phố Hà Nội

2. Yêu cầu về bảo vệ môi trường đối với cơ sở:

2.1. Thực hiện đúng và đầy đủ các giải pháp, biện pháp, cam kết về bảo vệ môi trường đã nêu trong đề án.

2.2. Phải đảm bảo các chất thải được xử lý đạt các tiêu chuẩn, các quy chuẩn kỹ thuật về môi trường hiện hành trước khi thải ra môi trường. Cụ thể như sau:

- Tiếng ồn và độ rung phải có biện pháp giảm thiểu, đảm bảo tuân thủ quy định tại Quy chuẩn Kỹ thuật Quốc gia QCVN 26:2010/BTNMT về tiếng ồn và QCVN 27:2010/BTNMT về độ rung.

- Bụi và khí thải phát sinh trong quá trình hoạt động của cơ sở phải có các biện pháp giảm thiểu, đảm bảo tuân thủ quy định tại Quy chuẩn Kỹ thuật Quốc gia đạt quy chuẩn QCVN 19/2009/BTNMT cột B, QCVN 20/2009/BTNMT và QCVN 05:2009/BTNMT về chất lượng không khí xung quanh.

- Chất thải rắn sinh hoạt phải được thu gom và xử lý theo đúng quy định tại Nghị định 59/2007/NĐ-CP ngày 09/04/2007 của Chính phủ về quản lý chất thải rắn, Quy định về quản lý chất thải rắn thông thường trên địa bàn Thành phố Hà Nội ban hành kèm theo Quyết định số 11/2010/QĐ-UBND ngày 23/02/2010 của UBND Thành phố Hà Nội và Quyết định số 56/2010/QĐ-UBND ngày 17/12/2010 của UBND Thành phố Hà Nội về việc sửa đổi, bổ sung Điều 13 của Quyết định số 11/2010/QĐ-UBND.

- Chất thải nguy hại phát sinh trong quá trình hoạt động của cơ sở phải được phân loại, thu gom, lưu giữ, quản lý và xử lý theo đúng quy định tại Thông tư 12/2011/TT-BTNMT ngày 14/4/2011 của Bộ Tài nguyên và Môi trường quy định về quản lý chất thải nguy hại.

- Nước thải sinh hoạt phải được thu gom và xử lý đạt quy chuẩn QCVN 14:2008/BTNMT trước khi thoát vào hệ thống thoát nước chung của khu vực.

- Điện từ trường của trạm biến áp phải trong giới hạn cho phép đạt tiêu chuẩn theo Quyết định 183NL/KHKT của Bộ Năng lượng ngày 12/4/1994 - Tiêu chuẩn ngành về mức cường độ điện trường cho phép và quy định việc kiểm tra ở chỗ làm việc và các tiêu chuẩn của ngành.

2.3. Tuyệt đối không sử dụng các loại máy móc, thiết bị, nguyên liệu, nhiên liệu, hóa chất và các vật liệu khác đã bị cấm sử dụng tại Việt Nam theo quy định của pháp luật hiện hành.

Điều 2. Trong quá trình thực hiện nếu nội dung hoạt động của cơ sở, nội dung của đề án có thay đổi, chủ cơ sở phải có văn bản báo cáo với Sở Tài nguyên và Môi trường và chỉ được thực hiện những thay đổi sau khi có văn bản chấp thuận.

Ủy nhiệm Chi cục bảo vệ môi trường Hà Nội thực hiện việc kiểm tra, giám sát việc thực hiện các nội dung bảo vệ môi trường trong Đề án bảo vệ môi trường chi tiết đã được phê duyệt.

Điều 3. Quyết định này có hiệu lực thi hành kể từ ngày ký. Chánh Văn phòng Sở Tài nguyên và Môi trường, Chi cục trưởng Chi cục Bảo vệ môi trường; Trưởng phòng Tài nguyên và môi trường quận Đống Đa; Giám đốc Công ty Lưới điện cao thế thành phố Hà Nội và đơn vị vận hành Trạm biến áp và đường dây 110 kV vào trạm biến áp E1.13 Phương Liệt chịu trách nhiệm thi hành Quyết định này./.

Nơi nhận:
- Như Điều 3;
- UBND thành phố (để b/c)
- Giám đốc Sở (để b/c);
- PGĐ Sở Phạm Văn Khánh;
- Lưu: VT, CCMT.
  MHS: 40847.CCMT

KT. GIÁM ĐỐC
PHÓ GIÁM ĐỐC

SỞ TÀI NGUYÊN VÀ MÔI TRƯỜNG THÀNH PHỐ HÀ NỘI

Phạm Văn Khánh

C.3. SON TAY SUBSTATION

DECISION

Approval for detailed Environmental Protection Project

Base: 110KV E1.7 Son Tay substation and incoming line

Address: Xuan Son commune, Son Tay city, Hanoi

Base Owner: Hanoi High Voltage Network Company

DIRECTOR OF HANOI DEPARTMENT OF NATURAL RESOURCES AND ENVIROMENT (DoNRE)

Pursuant to the Law on Environmental Protection dated November 29, 2005;

Pursuant to the Decree No.29/2011/ND-CP dated April 18, 2011 of the Government on strategic environmental assessment, environmental impact assessment, environmental protection commitments;

Pursuant to the Circular No. 01/2012/TT-BTNMT dated March 16, 2012 of the Minister of Natural Resources and Environment Ministry regulating on formulation, appraisal, approval and inspection and certification of the implementation of detailed Environmental Protection Project, and register of Simple Environmental Protection Project;

Pursuant to the Decision No 2238/QD-UBND dated May 24, 2012 0f Hanoi People Committee for authorizing the Director of DoNRE to sign the decision for establishment of environmental impact assessment report evaluation Council; Confirming on additional page of environmental impact assessment report cover; Certification of finalizing environmental protection measures implementation for project operation period; Decision on Approval for detailed Environmental Protection Project; Certification of finalizing ddetailed Environmental Protection Project implementation;

Considering the request of Hanoi High Voltage Network Company at the written document No. 2538/CV-HANOI HGC dated December 3, 2012 on appraisal, approval for ddetailed Environmental Protection Project of: 110KV E1.7 Son Tay substation and incoming line at Xuan Son commune, Son Tay city, Hanoi;

Pursuant to the inspecting minutes of environmental protection work dated December 11, 2012 for 110KV E1.7 Son Tay substation and incoming line

Considering the content of basic detailed Environmental Protection project: completed 110KV E1.7 Son Tay substation and incoming line enclosed by the written document No 2792/CV-HANOI HGC dated December 3, 2012 of Hanoi High Voltage Network Company ;

Considering the request of the Head of Hanoi Environmental Protection Department in the submitted document No. /TTr-CCMT dated December 24, 2012

DECIDES

Article 1. Approval for Detailed Environmental Protection Project of 110KV E1.7 Son Tay substation and incoming line (hereinafter referred to as Project) of Hanoi High Voltage Network Company (hereinafter called the Base Owner) with the following contents:

1. Location, operational capacity of the Base
   - Capacity: 80 MVA
   - Base location: Xuan son commune, Son Tay city, Hanoi

2. Requirements of Environmental Protection for the Base

2.1 Correctly and completely performance of solutions, measures and commitments on environmental protection outlined in the project.

2.2. To ensure garbage to be treated to reach standards, technical specifications on current environment before discharging to the surrounding environment as followings:

- Noise and vibration must be mitigated as the regulation stipulated at National Technical Standard QCVN 26:2010/BTNMT on noise and QCVN 27:2010/BTNMT on vibration

-Dust and air during operation must be mitigated as stipulated at National Technical Standard QCVN 19/2009/BTNMT, column B, QCVN 20/2009/BTNMT and QCVN 05:2009/BTNMT on surrounding air quality.

- Household solid garbage must be collected and treated as per regulation at Circular 59/2007/NDD-CP dated 09/04/2007 of the Government on solid garbage management, normal solid garbage management in Hanoi city issued together with the Decision no 11/2010/QDD-UBND dated 23/02/2010 of People's Committee of Hanoi and Decision no 56/2010/QDD-UBND dated 17/12/2010 of People's Committee of Hanoi on amendment, supplement the Article 13 of Decision no 11/2010/QDD-UBND.

- Dangerous garbage created during operation must be classified, colleted, storage, managed and treated as regulation at Circular no 12/2011/TT-BTNMT dated 14/4/2011 of MONRE stipulated on Dangerous garbage management.

- Household waste water must be collected and treated as per QCVN 14:2008/BTNMT before discharge to common discharge system of the region.

- Electric field of the transformer substation shall be within limited permission standard as per Decision no 183NL/KHKT of MOIT dated 12/4/1994 – branch specification on permitted electric field insensitive and regulation on work area checking and branch standards

2.3. No using of equipment machine, raw material, fuel, chemical and other materials have been prohibited using in Vietnam as per current regulations totally.

Article 2. During implementation, if action plan of investor, project content changed, investor has to report to DONRE and can only implement after approval.

To authorize to Hanoi Environmental Protection Department to check and supervise the implementation of environmental protection content in detail approved EIA.

Article 3. This Decision to be effected since signed date. Chief of Bureau's DONRE, Director of Environmental Protection Department, chief of Dong Da DONRE; Director of Hanoi High Voltage Electricity Network Company and 110kV substation and transmission line utility which connect to E1.13 Phuong Liet to be implemented this Decision.

To: - As Article 3; – HN People's Committee (reported); – Director of Department (reported); – Vice Director Pham Van Khanh; - Achieved;	**For Director** **Vice Director** **Pham Van Khanh**

UBND THÀNH PHỐ HÀ NỘI
SỞ TÀI NGUYÊN VÀ MÔI TRƯỜNG
Số: 965 /QĐ-STNMT

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

Hà Nội, ngày 28 tháng 12 năm 2012

QUYẾT ĐỊNH

Về việc phê duyệt đề án bảo vệ môi trường chi tiết

Cơ sở: **Trạm biến áp và đường dây 110 kV vào trạm- E1.7 Sơn Tây**

Địa chỉ hoạt động: **Xã Xuân Sơn, thị xã Sơn Tây, thành phố Hà Nội**

Chủ cơ sở : **Công ty Lưới điện cao thế thành phố Hà Nội**

GIÁM ĐỐC SỞ TÀI NGUYÊN VÀ MÔI TRƯỜNG HÀ NỘI

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

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

Căn cứ Thông tư số 01/2012/TT-BTNMT ngày 16 tháng 3 năm 2012 của Bộ trưởng Bộ Tài nguyên và Môi trường quy định về lập, thẩm định, phê duyệt và kiểm tra, xác nhận việc thực hiện đề án bảo vệ môi trường chi tiết; lập và đăng ký đề án bảo vệ môi trường đơn giản;

Căn cứ Quyết định số 2238/QĐ-UBND ngày 24/5/2012 của UBND Thành phố Hà Nội về việc ủy quyền cho Giám đốc Sở Tài nguyên và Môi trường ký Quyết định thành lập Hội đồng thẩm định báo cáo đánh giá tác động môi trường; Xác nhận vào trang phụ bìa báo cáo đánh giá tác động môi trường; Giấy xác nhận hoàn thành việc thực hiện các biện pháp bảo vệ môi trường phục vụ giai đoạn vận hành của dự án; Quyết định phê duyệt đề án bảo vệ môi trường chi tiết; Giấy xác nhận hoàn thành việc thực hiện đề án bảo vệ môi trường chi tiết;

Xét đề nghị của Công ty Lưới điện cao thế thành phố Hà Nội tại văn bản số 2538/CV- HANOI HGC ngày 03 tháng 12 năm 2012 về việc đề nghị thẩm định, phê duyệt đề án bảo vệ môi trường chi tiết của: Trạm biến áp và đường dây 110 kV vào trạm- E1.7 Sơn Tây tại xã Xuân Sơn, thị xã Sơn Tây, thành phố Hà Nội ;

Căn cứ Biên bản kiểm tra công tác bảo vệ môi trường ngày 11/12/2012 đối với Trạm biến áp và đường dây 110 kV vào trạm- E1.7 Sơn Tây;

Xét nội dung đề án bảo vệ môi trường chi tiết cơ sở: Trạm biến áp và đường dây 110 kV vào trạm- E1.7 Sơn Tây đã được hoàn chỉnh gửi kèm Văn

bản số 2792/CV-HANOI HGC ngày 03/12/2012 của Công ty Lưới điện cao thế Hà Nội;

Xét đề nghị của Chi cục trưởng Chi cục Bảo vệ Môi trường Hà Nội tại Tờ trình số 1168 /TTr-CCMT ngày 21 / 12 /2012,

QUYẾT ĐỊNH:

Điều1. Phê duyệt đề án bảo vệ môi trường chi tiết Trạm biến áp và đường dây 110 kV vào trạm- E1.7 Sơn Tây (sau đây gọi là Đề án) của Công ty Lưới điện cao thế Hà Nội (sau đây gọi là Chủ cơ sở) với các nội dung chủ yếu sau đây:

1. Vị trí, công suất hoạt động của cơ sở:

- Công suất : 80 MVA

- Vị trí cơ sở: Xã Xuân Sơn, thị xã Sơn Tây, thành phố Hà Nội

2. Yêu cầu về bảo vệ môi trường đối với cơ sở:

2.1. Thực hiện đúng và đầy đủ các giải pháp, biện pháp, cam kết về bảo vệ môi trường đã nêu trong đề án.

2.2. Phải đảm bảo các chất thải được xử lý đạt các tiêu chuẩn, các quy chuẩn kỹ thuật về môi trường hiện hành trước khi thải ra môi trường. Cụ thể như sau:

- Tiếng ồn và độ rung phải có biện pháp giảm thiểu, đảm bảo tuân thủ quy định tại Quy chuẩn Kỹ thuật Quốc gia QCVN 26:2010/BTNMT về tiếng ồn và QCVN 27:2010/BTNMT về độ rung.

- Bụi và khí thải phát sinh trong quá trình hoạt động của cơ sở phải có các biện pháp giảm thiểu, đảm bảo tuân thủ quy định tại Quy chuẩn Kỹ thuật Quốc gia đạt quy chuẩn QCVN 19/2009/BTNMT cột B, QCVN 20/2009/BTNMT và QCVN 05:2009/BTNMT về chất lượng không khí xung quanh.

- Chất thải rắn sinh hoạt phải được thu gom và xử lý theo đúng quy định tại Nghị định 59/2007/NĐ-CP ngày 09/04/2007 của Chính phủ về quản lý chất thải rắn, Quy định về quản lý chất thải rắn thông thường trên địa bàn Thành phố Hà Nội ban hành kèm theo Quyết định số 11/2010/QĐ-UBND ngày 23/02/2010 của UBND Thành phố Hà Nội và Quyết định số 56/2010/QĐ-UBND ngày 17/12/2010 của UBND Thành phố Hà Nội về việc sửa đổi, bổ sung Điều 13 của Quyết định số 11/2010/QĐ-UBND.

- Chất thải nguy hại phát sinh trong quá trình hoạt động của cơ sở phải được phân loại, thu gom, lưu giữ, quản lý và xử lý theo đúng quy định tại Thông tư 12/2011/TT-BTNMT ngày 14/4/2011 của Bộ Tài nguyên và Môi trường quy định về quản lý chất thải nguy hại.

- Nước thải sinh hoạt phải được thu gom và xử lý đạt quy chuẩn QCVN 14:2008/BTNMT trước khi thoát vào hệ thống thoát nước chung của khu vực.

- Điện từ trường của trạm biến áp phải trong giới hạn cho phép đạt tiêu chuẩn theo Quyết định 183NL/KHKT của Bộ Năng lượng ngày 12/4/1994 - Tiêu chuẩn ngành về mức cường độ điện trường cho phép và quy định việc kiểm tra ở chỗ làm việc và các tiêu chuẩn của ngành.

2.3. Tuyệt đối không sử dụng các loại máy móc, thiết bị, nguyên liệu, nhiên liệu, hóa chất và các vật liệu khác đã bị cấm sử dụng tại Việt Nam theo quy định của pháp luật hiện hành.

Điều 2. Trong quá trình thực hiện nếu nội dung hoạt động của cơ sở, nội dung của đề án có thay đổi, chủ cơ sở phải có văn bản báo cáo với Sở Tài nguyên và Môi trường và chỉ được thực hiện những thay đổi sau khi có văn bản chấp thuận.

Ủy nhiệm Chi cục bảo vệ môi trường Hà Nội thực hiện việc kiểm tra, giám sát việc thực hiện các nội dung bảo vệ môi trường trong Đề án bảo vệ môi trường chi tiết đã được phê duyệt.

Điều 3. Quyết định này có hiệu lực thi hành kể từ ngày ký. Chánh Văn phòng Sở Tài nguyên và Môi trường, Chi cục trưởng Chi cục Bảo vệ môi trường; Trưởng phòng Tài nguyên và môi trường thị xã Sơn Tây; Giám đốc Công ty Lưới điện cao thế thành phố Hà Nội và đơn vị vận hành Trạm biến áp và đường dây 110 kV vào trạm- E1.7 Sơn Tây chịu trách nhiệm thi hành Quyết định này./.

Nơi nhận:
- Như Điều 3;
- UBND thành phố (để b/c)
- Giám đốc Sở (để b/c);
- PGD Sở Phạm Văn Khánh;
- Lưu: VT, CCMT.
MHS: 40939.CCMT

KT. GIÁM ĐỐC
PHÓ GIÁM ĐỐC

SỞ TÀI NGUYÊN VÀ MÔI TRƯỜNG

Phạm Văn Khánh

Appendix D: Emergency Response Plan

1. The Contractor must develop emergency or incident response procedures (ERP) during construction. In the operational phase the operator/civil authorities will have responsibility for any emergencies or serious incidents. The construction phase should ensure:

i) Emergency Response Team (ERT) of the Contractor as initial responder;
ii) the District fire and police departments, emergency medical service, the Department of Public Health (DPH), collectively referred to as the External Emergency Response Team (EERT), as ultimate responders.

2. The Contractor will provide and sustain the required technical, human and financial resources for quick response during construction.

Table 1. Roles and Responsibilities in Emergency Incident Response

Entity	Responsibilities
Contractor Team (ERT)	- Communicates / alerts the EERT. - Prepares the emergency site to facilitate the response action of the EERT, e.g., vacating, clearing, restricting site. - When necessary and requested by the EERT, lends support / provides assistance during EERT's response operations.
External Emergency Response Team (EERT)	- Solves the emergency/incident
Contractor Resources	- Provide and sustain the people, equipment, tools and funds necessary to ensure Subproject's quick response to emergency situations. - Maintain good communication lines with the EERT to ensure prompt help response and adequate protection, by keeping them informed of Subproject progress.

3. The ERT will be led by the senior Contractor engineer (designated ERTL) on site with a suitably trained foreman or junior engineer as deputy. Trained first-aiders and security crew will be the core members of the ERT.

4. The Contractor will ensure that ERT members are physically, technically and psychologically fit for their emergency response roles and responsibilities.

5. Prior to the mobilization of civil works, the Contractor, through its Construction Manager, ERTL, in coordination with the EA/IA, will meet with the ultimate response institutions to discuss the overall construction process, including, but not limited to:

i) Subproject sites;
ii) construction time frame and phasing;
iii) any special construction techniques and equipment that will be used; i
iv) any hazardous materials that will be brought to and stored in the construction premise and details on their applications and handling/management system;
v) the Contractor's Emergency Management Plan
vi) names and contact details of the ERT members

6. The objective of this meeting is to provide the ultimate response institutions the context for:

i) their comments on the adequacy of the respective Emergency Management Plans
ii) their own assessment of what types, likely magnitude and likely incidence rate of potential hazards are anticipated
iii) the arrangements for coordination and collaboration.

7. To ensure effective emergency response, prior to mobilization of civil works, the Contractor will:

i) set up the ERT;
ii) set up all support equipment and facilities in working condition
iii) made arrangements with the EERT;
iv) conducted proper training of ERT members, and encouraged and trained volunteers from the work force; v) conducted orientation to all construction workers on the emergency response procedures and facilities, particularly evacuation procedures, evacuation routes, evacuation assembly points, and self-first response, among others; and vi) conducted drills for different possible situations.

8. To sustain effective emergency response throughout Subproject implementation an adequate budget shall be provided to sustain the capabilities and efficiency of the emergency response mechanism, the emergency response equipment, tools, facilities and supplies. Drills

and reminders will take place regularly, the former at least every two months and the latter at least every month.

Alert Procedures

9. Means of communicating, reporting and alerting an emergency situation may be any combination of the following: i) audible alarm (siren, bell or gong); ii) visual alarm (blinking/rotating red light or orange safety flag); iii) telephone (landline); iv) mobile phone; v) two-way radio; and vi) public address system/loud speakers. Some rules relative to communicating/alerting will be:

(i) Whoever detects an emergency situation first shall immediately :

- call the attention of other people in the emergency site,
- sound the nearest alarm, and/or
- report/communicate the emergency situation to the ERT.

(ii) Only the ERTL and, if ERTL is not available, the Deputy ERTL are authorized to communicate with the EERT. Exceptional cases to this rule may be necessary and should be defined in the Emergency Management Plans.

(iii) When communicating/alerting an emergency to the EERT, it is important to provide them with at least: i) the type of emergency situation; ii) correct location of the emergency; ii) estimated magnitude of the situation; iii) estimated persons harmed; iv) time it happened; v) in case of a spill, which hazardous substance spilled; and vi) in case of fire and explosion, what caused it. Such details would allow the EERT to prepare for the appropriate response actions. For an effective reporting/alerting of an emergency situation:

(i) The names and contact details of the relevant persons and institutions should be readily available in, or near to, all forms of communication equipment, and strategically posted (at legible size) in all Subproject sites and vehicles:

- Most relevant construction/operations staffs namely, the ERTL, Deputy ERTL, first-aiders, supervising engineers, foremen
- EERT institutions/organizations
- Concerned village authority/ies
- IA Office, SS

(ii) All Subproject sites should have good access to any combination of audible and visual alarms, landline phones, mobile phones and two-way radio communication at all times.

(iii) Contractor's construction vehicles should also be equipped with the appropriate communication facilities.

Emergency Response Situations

10. The following tables suggest general procedures that will be refined in the final EMP during detailed design, and described in more detail in the Emergency Management Plans of the Contractor.

Table 2. Evacuation Procedure

Procedure	Remarks
▪ Move out as quickly as possible as a group, but avoid panic.	▪ All workers/staff, sub-contractors, site visitors to move out, guided by the ERT.
▪ Evacuate through the directed evacuation route.	▪ The safe evacuation shall have been determined fast by the ERTL/Deputy ERTL and immediately communicated to ERT members.
▪ Keep moving until everyone is safely away from the emergency site and its influence area.	▪ A restricted area must be established outside the emergency site, all to stay beyond the restricted area.
▪ Once outside, conduct head counts.	▪ Foremen to do head counts of their sub-groups; ERTL/Deputy ERTL of the ERT.
▪ Report missing persons to EERT immediately.	▪ ERTL/Deputy ERTL to communicate with the EERT.
▪ Assist the injured in evacuation and hand them over to the ERT first-aiders or EERT medical group	▪ ERT to manage injured persons to ensure proper handling.
▪ If injury warrants special care, DO NOT MOVE them, unless necessary and instructed/directed by the EERT.	▪ ERTL/Deputy ERTL communicates with EERT to get instructions/directions in handling the injured.

Table 3. Response Procedure During Medical Emergency

Procedure	Remarks
▪ Administer First Aid regardless of severity immediately.	▪ Fundamentals when giving First Aid: - Safety first of both the rescuer and the victim. - Do not move an injured person unless: - victim is exposed to more danger when left where they are, e.g., during fire, chemical spill - it would be impossible for EERT to aid

Procedure	Remarks
	victims in their locations, e.g., under a collapsed structure - instructed or directed by the EERT. ▪ First AID to be conducted only by a person who has been properly trained in giving First Aid.
▪ Call the EERT emergency medical services and/or nearest hospital.	▪ ERTL/Deputy ERTL or authorized on-site emergency communicator
▪ Facilitate leading the EERT to the emergency site.	▪ ERTL/Deputy ERTL to instruct: - an ERT member on- site to meet EERT in access road/strategic location. He/she shall hold orange safety flag to get their attention and lead them to site. - Other ERT members to clear access road for smooth passage of the EERT.
▪ If applicable, vacate site and influence area at once, restrict site, suspend work until further notice.	▪ Follow evacuation procedure.

Table 4. Response Procedure in Case of Fire

Procedure	Remarks
▪ Alert a fire situation.	▪ Whoever detects the fire shall immediately: - call the attention of other people in the site, - sound the nearest alarm, and/or - Foreman or any ERT member among the construction sub-group contacts the fire department (in this case it should be agreed on that it is alright for any ERT member in the sub-group to alert the fire department) - report/communicate the emergency situation to the ERTL/Deputy ERTL.
▪ Stop all activities/operations and evacuate.	▪ All (non-ERT) workers/staff sub-contractors, site visitors and concerned public to move out to safe grounds following the evacuation procedure.
▪ Activate ERT to contain fire/control fire from spreading.	▪ Guided by the training they undertook, ERT members assigned to mitigate the fire shall assess their own safety situation first before attempting to

Procedure	Remarks
	control fire spread.
▪ Call the nearest fire and police stations and, if applicable, emergency medical services.	▪ When alerting the EERT, ERTL will give the location, cause of fire, estimated fire alarm rating, any injuries.
▪ Facilitate leading the EERT to the emergency site.	▪ ERTL/Deputy ERTL to instruct: - an ERT member to meet the EERT in the access road or strategic location and lead them to the site. He/she shall hold the orange safety flag to get their attention and lead them to the site. - some ERT members to stop traffic in, and clear, the access road to facilitate passage of the EERT.
▪ ERT to vacate the site as soon as their safety is assessed as in danger.	▪ Follow appropriate evacuation procedure.