Initial Environmental Examination

June 2014

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

(Mo Lao 110kV Substation and Transmission Line)

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

CURRENCY EQUIVALENTS

(as of 11 June 2014)

Currency Unit	–	Vietnam Dong VND
VND 1.00	=	$0.000047
$1.00	=	21,195

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 Labor 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
EVH 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 Labor Invalids and Social Assistance
MoNRE:	Ministry of Natural Resources and Environment
NPA:	National Protected Area
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
UXO:	Unexploded Ordnance

WEIGHTS AND MEASURES

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

NOTE

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I. EXECUTIVE SUMMARY

1. The Project, which financed through Asian Development Bank's (ADB) sector loan modality, will strengthen the capacity and reliability of power infrastructure in Ha Noi and Ho Chi Minh City through the rehabilitation and development of 110 kV and 220 kV transmission system and associated substations to supply their medium voltage (MV) distribution system. The Project also strengthens 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.

2. The Initial Environmental Examination (IEE) presented herein addresses the Mo Lao 110 kV Substation and Transmission Line subproject in Ha Noi which represents one of the non-core subprojects that were identified by Electricity of Viet Nam (EVN) for Ha Noi. The IEEs of other non-core subprojects[1] are being prepared separately.

A. Subproject Summary

3. The subproject consists of construction of a new 110 kV substation at Mo Lao with a new 620m 110 kV underground cable (UGC) transmission line from the substation to the existing electricity Pole No. 30 at Le Van Luong road in Ha Noi. The substation will be built in the new urban area of Mo Lao in western Ha Noi. The UGC will be placed along a major road alignment in the Mo Lao area to connect to electricity Pole No. 30. The 110 kV Mo Lao substation will supply electricity for daily and public activities of the Mo Lao urban area in Ha Dong district, and will provide power for the Thanh Xuan, North and South Tu Liem districts of Hanoi.

B. Potential Impacts and Mitigation

4. The IEE of the 110 kV substation and transmission line indicates that the potential environmental impacts of the subproject will primarily occur during 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, damage to existing roads traversed by the transmission line, increased risk of worker and public injury can be managed with standard construction practices and management guidelines (e.g., IFC/World Bank 2007). Potential impacts of the UGC crossing of the Nhue river such as sedimentation from soil erosion will be negligible because the UGC will be attached to the underside of the existing road bridge, and no excavations or pole placements will occur along both approaches to the bridge. There are no rare or endangered wildlife, critical habitat, or protected areas in the subproject sites which are located in developed urban Ha Noi.

5. The subproject will result in permanent and temporary losses of public land of 5,333 m^2 and 1,360 m^2, respectively. Lost land and associated compensation is addressed in detail in the Resettlement Plan (RP) prepared separately.

[1] The non-core subprojects were developed by EVN to follow implementation of the higher priority core subprojects

6. There are no expected negative induced, or cumulative environmental impacts associated with the subproject objective of providing additional electrical power to supply electricity to daily and public activities of Mo Lao Urban Area in Ha Dong district and support for the Thanh Xuan, North and South Tu Liem districts, Hanoi.

7. The Environmental Management Plan (EMP) prepared for the subproject provides a comprehensive impacts mitigation plan, and environmental monitoring plan to minimize and manage the potential impacts of the subproject. 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

8. The IEE concludes that the feasibility design of the 110 kV Mo Lao subproject combined with available information on affected environments is sufficient to identify the scope of potential environmental impacts of the subproject. Providing that significant changes to the subproject description 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 subproject is not required.

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A. Background to IEE

9. The goal of the Ha Noi and Ho Chi Minh City Power Grid Development Sector Project is to 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 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 in their respective areas.

10. The Mo Lao Substation and Transmission Line subproject will be implemented as part of a sector loan for the overall Project under ADB's Operation Manual Section D3 – Sector Lending. The subproject was selected by EVNHANOI as one of the non-core projects[2] which are being further detailed and prepared for project implementation.

B. Assessment Context

11. The overall Project was assigned Environmental Category B pursuant to the ADB's Safeguard Policy[3] and recent good practice sourcebook guidance[4]. 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[5]. The IEE was prepared for the Mo Lao subproject in the feasibility design stage using available data and information on sensitive ecological and cultural receptors that exist for the subproject site.

12. The detailed design for the Mo Lao subproject will follow subproject approval. The Environmental Management Plan (EMP) that has been prepared for the subproject (Section IX) will need to be updated where necessary to meet the final detailed designs of the Mo Lao substation and transmission line subproject.

III. POLICY, LEGAL, AND ADMINISTRATIVE FRAMEWORK

13. The Mo Lao 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 of for the parent sector project.

A. Viet Nam Regulatory Framework for Environmental Assessment

14. The Viet Nam Law on Environmental Protection (LEP 2005)[6] prescribes the requirements for environmental assessment (EA) for development and domestic project

[2] The non-core subprojects were developed by EVN to follow implementation of the higher priority core subprojects
[3] ADB, 2009. Safeguard Policy Statement, ADB Policy Paper.
[4] ADB, 2012, Environmental Safeguards, A Good Practice Sourcebook, Draft.
[5] Footnote 2, pg 19.
[6] The revision of the LEP (2005) was approved by the GoV in June /14 and will take effect in 2015. Decree 29 will be updated in support of revised law.

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).

15. 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 Mo Lao substation and transmission line subproject.

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

Environmental Legal Documents

16. 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 2000
- 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 Labor Code of Occupational Safety and Health

- Decree 06/1995, Elaborating Provisions of Labor 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 Labor 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

17. 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 Trans-boundary Movements of Hazardous Wastes and their Disposal
- 1992, United Nations Framework Convention on Climate Change
- 1992, Convention on Biological Diversity

C. ADB Safeguard Policy

18. The ADB Safeguard Policy Statement (ADB SPS, 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).

19. 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. The Rapid Environmental Assessment (REA) checklist of the subproject is presented in Appendix A.

IV. DESCRIPTION OF SUBPROJECT

20. The Mo Lao 110kV transformer station will meet residential electricity demand in the developing western area of Hanoi, improve power supply stability, provide safe operation of the Ha Noi electric line network, and supply the surcharge for domestic and municipal use in Mo Lao town – Ha Dong. The new substation will also provide support for the overloaded substations in Thanh Xuan and Tu Liem.

21. The subproject consists of two 2 main components: (i) new Mo Lao 110/35/22 kV substation with capacity 2x63 MVA with single transformer installed at first stage; (ii) double circuit 110 kV underground cable system and overhead line connecting to substation. The transmission line to connect 110 kV Mo Lao to national network consists of three separate sections:

Section 1: connecting tower 85a (110 kV Ha Dong - Chem) to tower 7 (220kV Ha Dong - Thanh Cong). This section is an underground 150 m cable 1,200 mm^2.

Section 2: from tower 7 to tower 30 (220kV Ha Dong - Thanh Cong). This 3,900 m overhead transmission line uses same tower and route of 220 kV Ha Dong - Thanh Cong. This section is addressed by a separate project outside of scope of Mo Lao subproject.

Section 3: from tower 30 (220kV Ha Dong - Thanh Cong) to 110kV Mo Lao substation. This is a 800 m underground cable of 1200 mm^2.

The location of the new Mo Lao 220 kV Substation and UGC route is shown in Figure 1.

Figure 1. Site of new Mo Lao 220 kV substation and underground cable

A. 110 KV MO LAO SUBSTATION

The Mo Lao 110kV substation will occupy 3,670 m^2 of flat land close to the major road of Mo Lao urban area. The site is bounded to the north and west by the cemetery of Mo Lao commune, the Construction Material Factory and Stockyard to the south, and the main road of Mo Lao urban to the east.

1. Primary Electric Component

22. The substation is designed with 2 110kV-63MVA transformers, potential level: 115 ± 9x1, 78%/35 ± 2x2, 5% /23kV, group of winding: Yo/ Δ/ Yo–11, capacity ratio: 63/31,5/63MVA. In this phase. A single transformer will be installed along with the following features:

+ 110kV side: designing a diagram for 5 circuit breakers, 2 winding feeders, 1 bridge circuit feeder, and 2 feeders for transformers.

+ 35kV side: designing a system diagram for the sectionalized bus bar: 01 sectionalized bus bar includes 08 complete sets of distribution panels.

The 35kV distribution facility has in-door complete panels. Switchgears for outgoing cubicles and incoming cubicles to be installed in a 35kV complete panel.

+ 22kV side: Designing the system diagram for a sectionalized bus bar, 01 sectionalized bus bar includes 17 complete sets of distribution panel.

2. Secondary Electric Component

Equipment will be provided for the following:

a) control and protection of T1 and T2 110/35/22kV transformer stations;

b) control and protection of 2 feeders of 110kV electric lines to Ha Dong 220 kV transformer station and Quoc Oai 220 kV transformer station (Chem 220kV);

c) control and protection of bus section breakers and 110kV bus bar;

d) control and protection of 35kV incoming cubicles;

e) control and protection of 22kV incoming cubicles; and

f) an instrumental camera system for monitoring the entire station.

The substation layout is presented in Figure 2

Figure 2. Layout of 110 kV Mo Lao substation

B. Main Components of 110kV UGC

23. The 110kV underground cable starts from pole #30 (220kV Ha Dong – Thanh Cong) to the 110kV Mo Lao substation, and consists of following specifications:

- Voltage: 110kV
- Number of circuits: 2
- Length: 800m

24. The underground cable is Cu/XLPE 110kV – 1200 mm^2. From Pole #30 the cable will lay below the median of Le Van Luong Street then cross the Nhue river to Mo Lao urban area where the cable will remain buried under the pavement until connected to substation. To cross the 32 m section of the Nhue River the cable will pass under the bridge in a 2 X 0.8 m attached cable tray through the bridge separators. No excavation, or pole installation will occur on both approaches to the bridge. Cable installation will be parallel to the bridge construction schedule. After crossing the bridge the cable will be buried in a 1.7 m deep and 2 m wide trench and later backfilled with the excavated soil. Residual soil will be transported to a DoNRE-approved landfill. The 110kV underground cable route is presented in Figure 3.

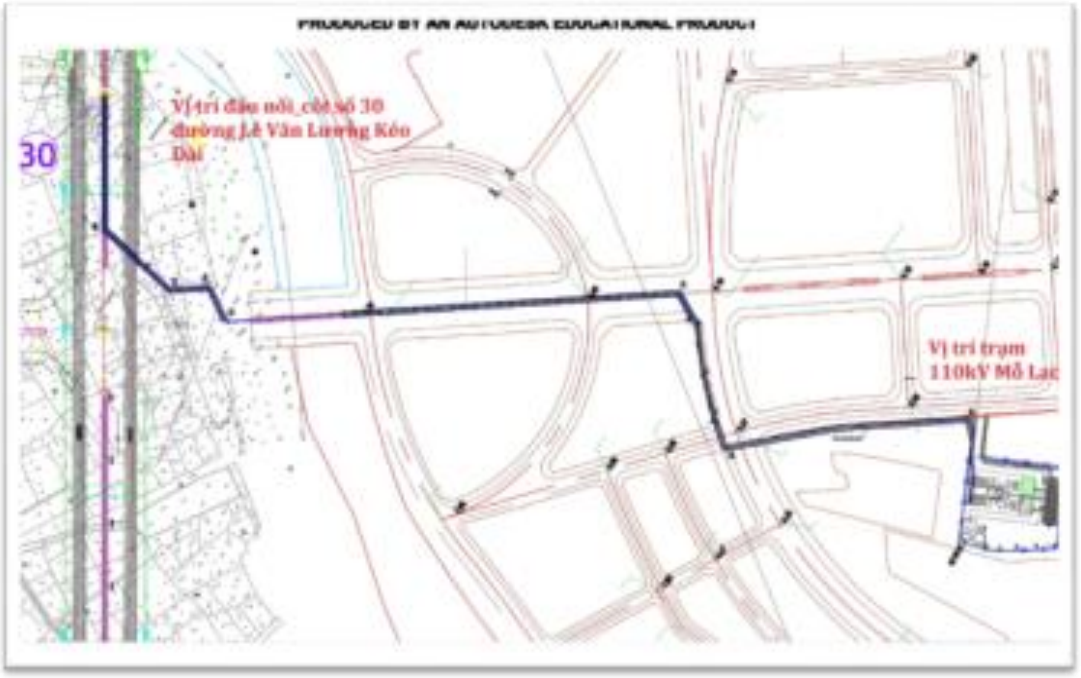


Figure 3. Route of Mo Lao 110kV underground cable

V. DESCRIPTION OF EXISTING ENVIRONMENT

25. The environmental baseline information was obtained primarily from Ha Noi Statistical Yearbooks, state of the environment reports (SoER) prepared by Ha Noi DoNRE, reports from EVN's technical consultant, and other environmental assessments conducted for the same area. The description of the affected environment focuses on natural features and land use.

A. Physical Environment

1. Climate

26. Ha Dong District has fairly typical tropical monsoon climate, which is characterized by hot, rainy summers and cold, dry winters. Ha Noi has two seasons. The hot season is from April to October with a normal maximum temperature of 38^0C, with the rainy season from July to September. The cold season is from November to March with minimum temperatures ranging 8-12^0C.

a. Temperature

27. The average annual and monthly air temperatures in Ha Noi during 2008 to 2011 are presented in Table 1 and Figure 4

Table 1. Average monthly air temperature in Ha Noi (Son Tay station)

Month Year	Jan	Feb	March	April	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	**Average**
2008	15.0	13.7	21.3	24.5	27.0	28.3	28.7	28.7	27.8	26.1	21.0	17.7	**23.3**
2009	19.2	22.2	20.5	24.3	26.7	29.7	29.0	29.2	28.4	26.0	20.1	19.4	**24.6**
2010	18.0	20.8	21.9	23.2	28.2	30.2	30.0	28.0	27.9	24.8	21.0	18.8	**24.4**
2011	12.4	17.5	16.9	23.5	26.3	28.8	29.6	28.4	27.2	24.3	23.2	17.0	**22.9**

(Source:Hanoi Statistical Yearbook 2011)

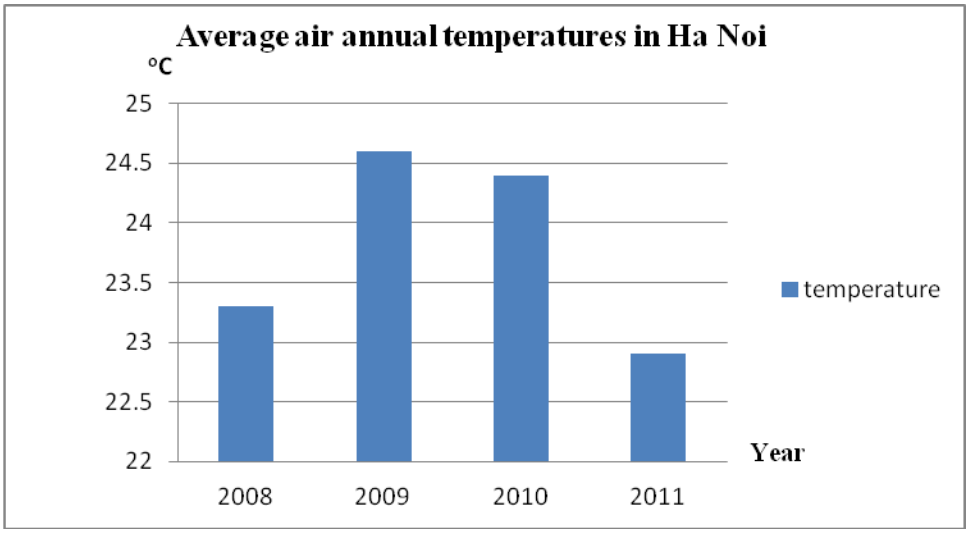


Figure 4. Average annual air temperature in Ha Noi

28. Average annual temperatures from 2005 to 2011 in Ha Noi fluctuate slightly with highest temperatures in June and July, and lowest temperatures in January and February.

b. Sunlight hours

29. Average annual and monthly sunlight in Ha Noi during 2008 to 2011 are presented in Table 2 and Figure 5.

Table 2. Average sunlight hours in Ha Noi (Son Tay station)

Month Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	**Average**
2008	63.0	27.0	64.5	69.3	151.8	116.2	166.4	154.0	130.7	91.6	150.7	92.6	**1277.8**
2009	41.7	71.0	44.0	103.3	135.1	171.5	149.0	197.3	153.1	131.8	123.9	66.4	**1388.1**
2010	27.4	88.5	39.6	54.7	124.0	145.5	205.3	136.2	150.1	122.5	102.2	74.9	**1270.7**
2011	1.7	34.9	8.9	55.9	136.3	129.4	162.1	172.2	111.4	80.5	111.4	79.9	**1084.6**

(Source:Hanoi Statistical Yearbook 2011)

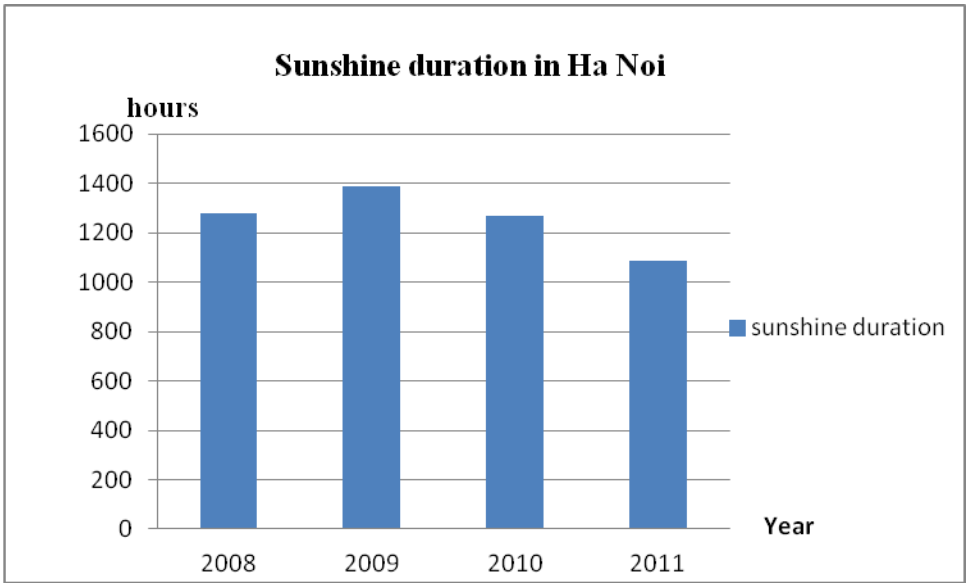


Figure 5. Total sunshine in Ha Noi

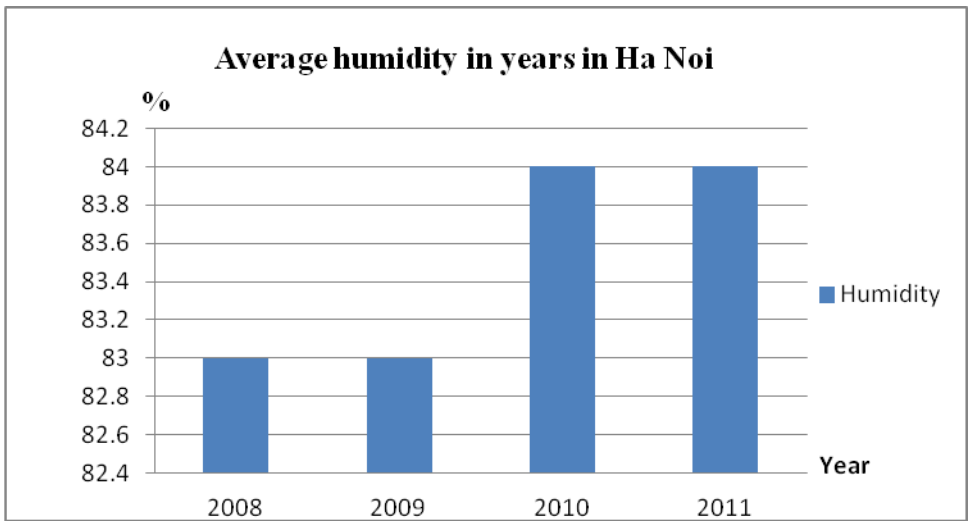
30. Sunshine has fluctuated between years in Ha Noi with the greatest fluctuation occurring between months. The months which experience the greatest sunshine are June, July and August, whereas the months with the least sunshine are December, January and February.

c. Humidity and Rainfall

31. Ha Noi climate is subtropical hot and humid with abundant rainfall. Average humidity varies from 83% to 84% during 2008 and 2011 (Table 3 and Figure 6). Total average annual rainfall in Hanoi from 1,800 mm to 2,000 mm. Table 4 and Figure 7 show the average precipitation in the Son Tay meteorological station during 2008-2011

Table 3. Average monthly humidity in Ha Noi (Son Tay station)

Month Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	**Average (%)**
2008	80	76	82	86	83	84	83	87	87	84	81	79	**83**
2009	86	87	87	86	85	80	85	84	82	82	75	79	**83**
2010	84	83	81	87	85	81	83	89	87	81	80	84	**84**
2011	83	86	86	85	83	86	82	86	85	84	84	77	**84**



(Source:Hanoi Statistical Yearbook 2011)

Figure 6. Annual average humidity in Ha Noi

32. The climate in the project area is influenced by a wet monsoon tropical climate because the average humidity is high. While differences in humidity among months are comparatively high, the average humidity among years does not fluctuate significantly.

Table 4. Monthly rainfall in Ha Noi (Son Tay station)

Month Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	**Average**
2008	35.7	29.6	15.9	46.3	217.9	231.4	202.2	259.1	217.8	400.6	226.2	10.8	**1893.3**
2009	17.7	3.4	52.0	95.6	174.4	149.7	398.8	298.1	109.1	71.0	6.9	3.7	**1380.4**
2010	51.8	3.9	5.7	79.5	77.4	276.1	313.1	329.2	209.6	131.9	4.3	22.1	**1504.6**
2011	14.6	19.6	97.5	67.8	207.0	378.7	176.1	373.0	230.9	143.5	11.4	61.5	**1781.6**

(Source: Hanoi Statistical Yearbook 2011)

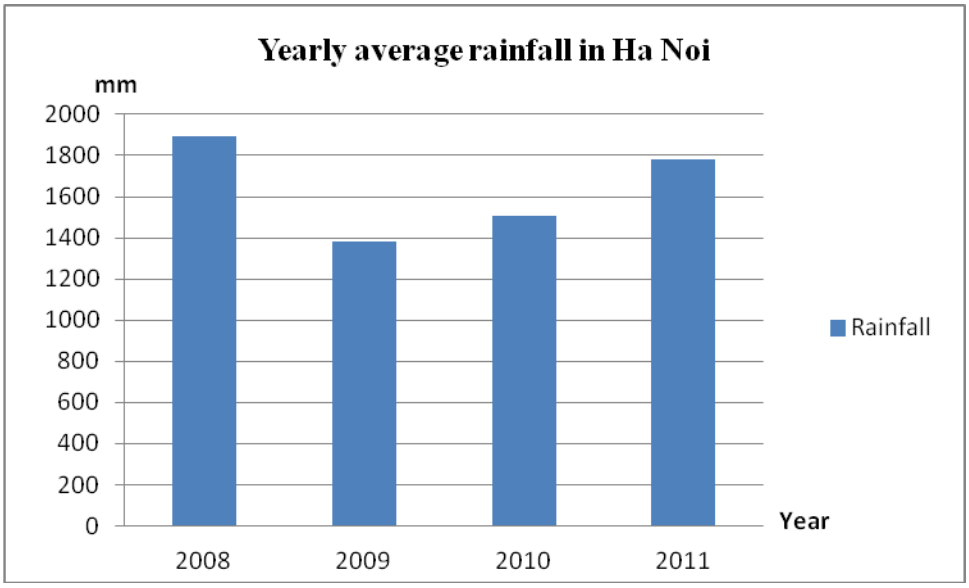


Figure 7. Annual rainfall in Ha Noi

33. Total rainfall among years in Ha Noi fluctuates significantly with rainfall reaching 2,267 mm in 2008 as an example. Within each year, however, the rainy-wet and dry seasons always prevail. Observations at the meteorological station indicate that the average maximum daily rainfall during many years is 155mm. Minimum daily rainfall during 1983 to 1997 approached 88 mm.

34. The subproject is located in areas that experience lightning. The average annual lightning days is 75 days ranging from 45 days to 105 days/year. During these events high winds, and heavy rain also occur which will affect the subproject

35. The rainy season accounts for 70-78% of total annual rainfall with August receiving the greatest amounts. During these months flooding is common with maximum flooding occurring from August to October. According to local surveys in the years since the flood century (1971) and now, the area is for 110 kV Mo Lao substation is less directly affected by the flood waters of the Red River.

d. Wind velocity

36. In the subproject area prevailing winds direction are north by northwest. Average greatest long-term average is 16m/s. Average monthly wind speed in Ha Noi is shown in Table 5.

Table 5. Average monthly wind speed 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

37. According to a report on the environmental status of the 2011 Ha Noi Department of Natural Resources and Environment (DONRE), the status of air pollution in Ha Noi is at a "red alert". The concentration of suspended dust in the urban districts exceeds air quality standards by 5-6 times, sometimes 10 times. Average in public places in the capital, dust concentrations exceed permitted levels 2-4 times. Environmental monitoring results from 2004 - 2011 for the TSP dust values in Hanoi are shown in Figure 8.

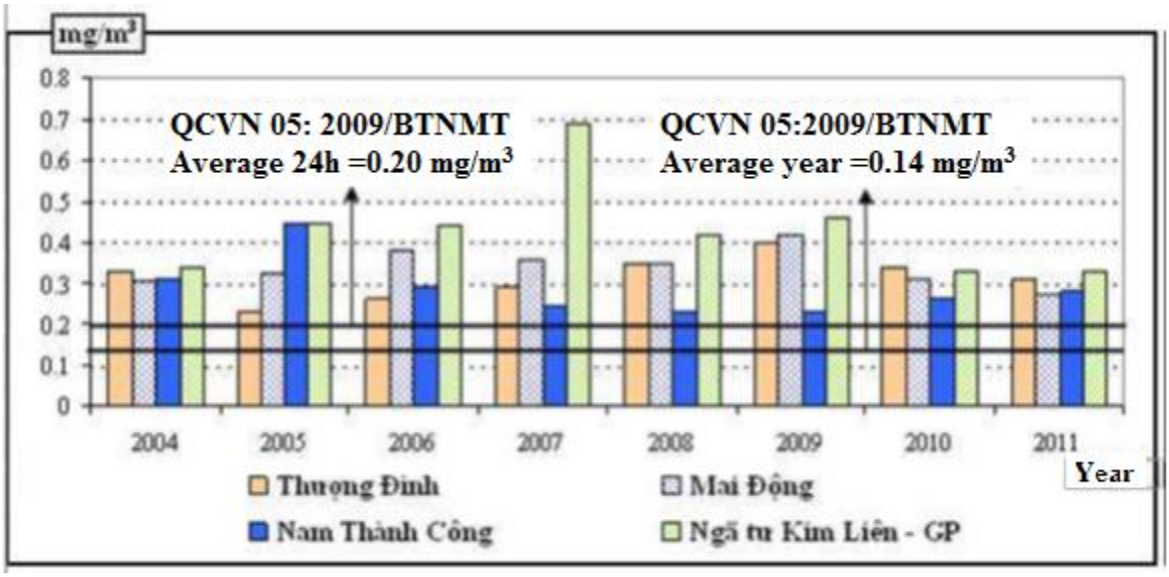


Figure 8. TSP dust levels in Ha Noi from 2004 – 2011

(Source: VEPA, 2012)

The current air quality in the project area (May 2013) is shown in in Table 6.

Table 6. Air quality at project area in 2013

No	*Measurement position*	*Dust (mg/m^3)*	*CO (mg/m^3)*	*SO2 (mg/m^3)*	*Nox (mg/m^3)*	*Temp (^0C)*	*Humidity (%)*	*Wind Speed (m/s)*	*Electromagnetic (V/m)*	*Noise (dBA)*
1	**KK1**	0.15	0.427	0.113	0.097	31.5	69.3	1.2	0.23	60.1
2	**KK2**	0.23	0.399	0.106	0.089	31.5	68.9	0.8	0.14	54.4
3	**KK3**	0.11	0.360	0.098	0.081	31.0	68.1	0.5	0.19	57.4

4	**KK4**	0.134	0.379	0.093	0.09	31.3	70.5	1.6	0.21	56.2
QCVN05:2009 BTNMT		**0.3**	**30**	**0.35**	**0.2**	-	**-**	**-**	**-**	**-**
QCVN26:2010 BTNMT		**-**	**-**	**-**	**-**	-	**-**	**-**	**-**	**70**
Decree 81/2009/NĐ-CP		**-**	**-**	**-**	**-**	-	**-**	**-**	**5000**	**-**

- KK1: Northeast area of the subproject, coordinates (20098'28, 38 "N-105078'16, 66" E)
- KK2: Northwest area of the subproject, coordinates (20098'24, 78 "N-105078'08, 46" E)
- KK3: Southwest area of the subproject, coordinates (20098'19, 17 "N-105078'13, 02" E)
- KK4: Southeast area of the subproject, coordinates (20098'24, 18 "N-105078'20, 53" E)
(Source: EVN Hanoi, 2013)

The monitoring results at 4 stations in the project area indicate that air quality in the project area is good. The noise levels at the stations also meet the standards of 26:2010/ BTNMT, air quality (SO2, NOx, CO and dust) at the measurement points are met QCVN 05:2009/ BTNMT, electric field at the measurement points are within the permissible limits under Decree 81/2009/ND-CP dated October 12, 2009.

3. Topography, geology and soils

a. Topography

The majority of the Ha Noi area is 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 Chan Chim peak at 462 m. The topography of Ha Noi decreases from north to south and from west to east. The main topographic form is the enriched alluvial river plain with high alluvial terraces interspersed with low lying lakes. The high terraces are only in Soc Son district in northern and eastern of Dong Anh district. In addition are mountainous terrain and hills concentrated in Soc Son mountain area.

Ha Dong District is a flat delta with little variation in elevation ranging 3.5 m - 6.8 m. The terrain is divided into 3 main areas: the north and the east areas of Nhue River; north area of La Khe canal; and south area of La Khe canal. The ground leveling code of Mo Loan 110 kV station is selected as 7.2 m based on the basis of consistent planning height and urban flooding of Mo Lao urban area. Thus, the substation will not be sensitive to flooding.

b. Geology

38. The geology in the subproject area consists of mostly clay, sand and clay derived marine sediment. The exploratory drilling that has been conducted at 3 points at the substation area (K1 - K3) included:

- Manual drills 24 m.

- Soil samples: 06 samples.

- Water samples: 01 sample.

- Measurement of resistivity: 03 points (D1 - D3).

39. Based on the geological survey data collected in the field and soil laboratory results, it can be concluded that the natural ground of the substation area to a depth of 8.0 m includes the following soil layers and classes from top to bottom as follows:

Layer 1:
Layer 1 is widely distributed surficial landfill of thickness from 1.2 - 1.6 m. The main components of class 1 are sand, clay and scrap building materials.

Layer 9:
Layer 9 is lightning semi-solid state that underlies layer 1. The thickness of the layer varies from 1.5 - 1.9 m. Two soil samples from layer 9 were analyzed to show the major components to be clay brown, yellow and red spots, white gray under the alternating deep sand circuit. The land status is slightly tight, semi-rigid, and saturated.

Layer 14:
Layer 14 is liquid sand distributed just below the layer 9 with thickness ranging from 0.8 to greater than 4.5 m. Two soil samples were analyzed to reveal the essential components of the soil to be sand particles smooth medium gray to white, brown, gray. The land status is slightly tight, flowing, saturated.

Layer 11:
Layer 11 flowing loam with a thickness greater than 4.0 m. Soil samples analyzed indicate major components of layer 11 include dark gray silt clay. The land status is slightly tight, fluidized and saturated.

c. Soil

40. Most of surface area of the Red River Delta (RRD) which includes Ha Noi is covered with sediment formation. The youngest formation around 3,000 years of age is mainly was originally composed of lacustrine and shallow-sea sediment. In Ha Noi area the highest thickness reaches around 30 m and dominated by soft soils. Ha Noi has 18 major soil types including 36,769 ha of alluvial soil accounting for 56%, 16,819 ha of degraded land accounting for 26%, with the remaining 12,019 ha accounting for 18%.

41. Soil types in Ha Dong district include the following:

- Built-up alluvial soil of 261 ha representing 10% of the total agricultural land area;
- Non-built-up alluvial soil of 1,049 ha accounting for 37% of agricultural land area; and
- Grey alluvial soils of 1,472 ha accounting for 53 of agricultural land area

4. Surface water / groundwater resources

a. Surface water

42. Surface water sources of Ha Noi are from 19 large and small rivers with water surface area of 32.6 km^2 and 3,600 ha of ponds, lakes, marshes. The surface water reserve is 49.4 million m^3, with reservoir capacity of 10.7 million m^3. Surface water quality in Ha Noi is severely polluted. The rivers and lakes within the city are very dirty and polluted by the current wastewater drainage of the city.

43. In Ha Dong district, the Day River, Nhue River and La Khe canal directly influence the water supply and drainage. These rivers have sufficient flowing capacity to ensure the irrigation demand for agricultural production activities, activities for industrial and residential community in the whole district. The Nhue River is about 700 m from Mo Lao Urban area. It has a total length of 74 km counting from upstream of Lien Mac culvert to Phu Ly curvet and then it is confluent with the Day river. Nhue River flows through the 61.5 km territory of Ha Noi with an average width of 30-40m. Flow distribution is dependent on the seasonal distribution of rainfall. The rainfall data in five years showed flow well unevenly distributed and represent two distinct seasons: the rainy season and dry season. The rainy season starts from May to October, rainfall accounts for 80-85% of the year, flow capacity is 150 150 m^3/s. The dry season is from November to April next year. In the dry season, water levels and water discharge is small. The flow volume of the dry season accounted for 20-25% flow throughout the year, flow capacity is 41m^3/s. Nhue River also receives a large volume of wastewater from the residential areas, villages, factories into neighboring areas. Nhue River serves as a drainage river for wastewater from Hanoi city. Since it is polluted (Table 7), its use purpose is only irrigation.

Table 7. Water quality of Nhue river

Parameters	The whole river		Near Project area		QCVN 08"2008/B2
	Dry season (December-May)	Rainy season (June-November)	Dry season	Rainy season	
pH	7.2-7.31	7.18-7.35	7.16	7.32	5.5-9
TSS	18-93	18,21 - 76,42	41	104	100
DO	18.21 - 76.42	0.9 - 2.3	0.6 -	1.5	2
COD	25.35 - 119.15	20.68 - 96.52	100.25	61.87	50
BOD	14.58 - 91.93	13.82 - 69.10	67.12	43.72	25
NH_4^+	0.19 - 25.31	0.15 -19.9	14.218	9.117	1
PO_4^3	0.366 - 2.79	0.28 - 1.207	2.043	1.207	0.5
Coliform	170000-450000	-	2.410.000 -	3.128.333 -	10000

Column B2: for water transportation and other use purpose with low water quality requirement (Source: MONRE, 2013)

The results showed that the water quality of Nhue River is polluted with all parameters (except pH) exceeding permitted standards. To assess the environmental status of wastewater in the project area, wastewater from a sewer adjacent to the subproject area was collected and analyzed on 05 May 2013. The results are shown in the Table 8.

Table 8. Wastewater quality

No	Parameter	Unit	Results	QCVN 14: 2008 / MONRE
1.	pH		6,8	5 - 9
2.	BOD_5 (20^0C)	mg/l	31	50
3.	Total suspended solids (TSS)	mg/l	57	100
4.	Total dissolved solids	mg/l	341	1000
5.	Sulphur (by H_2S)	mg/l	0,5	4.0
6.	Ammonia (by N)	mg/l	13	10
7.	Nitrate (NO_3-) (by N)	mg/l	1,73	50
8.	Grease and oil	mg/l	0,1	20
9.	Total surface-active substances	mg/l	0,3	10
10	Phosphate (PO_4) (by P)	mg/l	1,5	10

(Source: EVN Hanoi, 2013)

The analysis results showed that almost all of the parameters are within the permissible limits of QCVN 14:2008 / BTNMT for domestic wastewater, the only NH4 + criteria is beyond permissible limit of 30%.

b. Ground water

44. Currently the main source of water supply is groundwater which extracted from the borehole system. Today groundwater is also being depleted and polluted. According to the Ha Noi 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 projected extraction in 2020 is expected to reach 1.4 million m^3 /day.

45. 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.

46. Based on hydrogeological survey at the station area (May 2012) the stable underground water is at a depth of 3.8 - 5.0 m. One groundwater sample was taken at K1 sampling point at the substation area. The water analyzed showed that the groundwater has weak intrusion (lateral flow) characteristics according to ISO 3994-85. The expected highest water table is from 1.2 m to 1.5 m.

B. Biological Environment

1. Vegetation and Land Use

47. Ha Noi has 23,510 ha of forest land (former Ha Noi: 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 19,568 ha 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 hill land from eroding. In addition, forest creates landscapes for tourist activities and resort buildup.

48. In the substation area several kinds of vegetables are grown. There are annual crops such as cucumber, cauliflower, and potato can be harvested before construction starts.

2. Wildlife

49. The subproject area is an urban - residential area. No significant wildlife occurs any longer 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 instead heads south through the Philippines.

3. Conservation Areas

50. There are no conservation areas within the proximity of the substation and transmission line.

C. Socioeconomic condition

1. Population

51. Ha Dong District has a natural area of 4,792 ha and 198,687 inhabitants. The UGC line and substation is situated within 2 wards (Mo Lao and Van Phuc) of Ha Dong district. The main construction area is situated in Mo Lao ward, which has a natural area of 12,463 hectares, more than 5,000 households and 20,000 people.

2. Local Economy

52. In 2008, gross domestic product (GDP) of the city (the expanded city) rose 10%, of which industrial additional value is up 11.7%, service 10.78%, agro-forestry-fishery 2.68%. Its economic structure in 2008 is as follows: service making up 52.17% industry-construction 41.28%; and agriculture-forestry-fishery 6.55%.

53. In 2012, the Ha Noi economy continued to grow giving increasingly important position for the country and an economic impetus for the northern key economic area. Product value and revenue of Hanoi accounted for approximately 10% GDP of the country and nearly 20% of the total national budget, respectively and increased 2 times since 2008. In 2012, the value of the product per capita increased by 1.33 times, total social investment capital increased 1.87 times, exports increased by an average of 10.5 times compared with 2008. The social security aspects are of particular concern, especially policy for the poor. In the period 2008 - 2012, the poverty rate decreased 1.5-2 times per year, and in 2013 the poverty rate is estimated 2.35%. The socio-economic situation of Mo Lao wards in the subproject area is summarized below.

54. Ha Dong District's economic structure has shifted, with the proportion of construction industry accounted for 53.5%, trade and tourism services-accounted for 45.5%, agriculture 1.0% only. Manufacturing industry and handicraft industry have made great strides in terms of size, output, GDP growth rate during 3 years (2005-2008) reached average 17.7%. From August 2008 to August 2009, the output value of industry and handicraft outside the state of Ha Dong district of nearly 1,821 billion; State budget revenues reached 1964.5 billion.

3. Social Infrastructure

a. Public Health and Sanitation.

55. The location of the subproject is the newly developed urban area of Hanoi City. It means that all communities have good access to medical services. Local medical facilities include healthcare station at the ward level which includes first aid and medical assistance for minor illnesses and maternal services. Medical emergencies are referred to district hospitals while more complex surgery is carried out in the main hospitals in Ha Noi City. Services and trained medical staff are increasing.

56. Ha Noi is the largest Vietnamese health center. According to the figures from Vietnam Statistics Agency in 2007, former Ha Noi had 232 health stations, 26 clinics, 19 hospitals, 4,448

patient beds, 1,705 doctors under the Ministry of Health. Former Ha Tay had 322 heath stations, 17 clinics, 16 hospitals, 4,500 patient beds, and 986 doctors. Its health system is more and more developed; many health centers in districts were upgraded to increase health care services for patients from other provinces. Coupled with the state-run health system, Ha Noi has private hospitals and clinics. In 2008, Ha Noi had 8 private hospitals with some 300 patient beds. Ha Noi is to have more 8-10 private hospitals by 2010 when total patient beds amount to some 2,500.

57. Hanoi 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 about 24,000 people who are 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 Hanoi area, nearly 2,000 HIV infected persons are not Hanoi citizens. The sanitation situation in the subproject areas are presented below.

58. In Mo Lao Ward 100% of households use electricity, tap water and solid waste is collected by Hanoi URENCO

b. Education

59. Ha Noi has hundreds of leading institutes, more than 50 universities and colleges that are training important 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.

60. Infrastructure and literacy is high in the subproject area due to good access to primary and secondary schools, while technical and tertiary education is available in numerous colleges within Ha Noi City. The number of schools in the subproject area in presented in Table 9.

Table 9. Number of schools in the subproject area

District	Education categories	Schools	Classes	Teachers	Pupils
Ha Dong	Kindergarten	22	234	495	9502
	Primary	20	419	645	16800
	Middle school	15	283	688	10877

District	Education categories	Schools	Classes	Teachers	Pupils
	High school	4	171	287	6983

(Source:Hanoi Statistical Yearbook 2010)

c. Communications

61. Ha Noi is the biggest communications center in the country. Its communications network satisfies swift communication information demand nationwide 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 communes or wards have their own mass communication facilities. The post office locations are a short distance for all people.

62. Subproject area is covered by many telephone networks as Viettel and VNPT telecommunications, and a number of other telecommunications companies. Thus, it is very convenient for people to communicate and develop this sector.

d. Water and electricity and transport

63. Ha Noi has a synchronous and developed transport system. Ha Dong district is 10 km away from its center.

64. Water supply: Currently 96-97% of Ha Noi urban dwellers are supplied with 120 liters/ person/day. Mo Lao urban area is supplied drinking water by Da river water supply system.

65. Water drainage: the water drainage is underground system.

66. Power supply: 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.

67. Transport: Since Mo Lao is new urban area, the road network is well developed throughout the subproject area. All roads are asphalted and concreted

4. Cultural and Heritage Sites

68. Ha Noi is one of the city's largest cities and oldest in Vietnam. There are many heritage and cultural relics. The most prominent cultural heritage sites in the city center are Ho Chi Minh Mausoleum, Ethnographic Museum, Hoan Kiem Lake, Ngoc Son temple, Cathedral, Temple of Literature-Quoc Tu Giam, Mot Cot temple, Quan Su Pagoda, Kim Lien Pagoda, Hanoi Old Quarter, Hanoi Opera House, the Presidential Palace, history Museum, Ho Chi Minh Museum, Ba Dinh Square, Ly Thai To monument, Lenin monument, Hang Co station, Hanoi Museum etc.

69. While there are several public infrastructures within the vicinity of the substation and transmission line corridor, the RoW has been sited to avoid these structures. Based on the subproject scale and activities, it can be confirmed that the subproject activities will not have an impact on those public infrastructure sites. A list of environmental sensitive areas and public infrastructure within the vicinity of the substation and underground cable is given in Tables 10.

Table 10. Environmental sensitive areas and public infrastructure 500m of substation

Construction items	***Name of infrastructures***	***Distance and direction from the substation/underground cable***
Mo Lao substation	Mo Lao cemetery	10 m
Underground cable	Phung Khoang Cemetery	200 m
	Bridge across Nhue River	Along the road
	Le Van Luong road	Along the road separator

Source: EPC, 2014

5. UXO Clearance

70. After decades of war UXO is a significant issue in Vietnam. While most UXO has been cleared from agricultural areas the Ha Noi area, GoV military officials consider that there is a high risk of UXO remaining within area proposed for the transmission line RoW. It is a legal requirement that the safety of construction workers is ensured by having specialized army units to clear UXO before construction commences. It is a requirement that surveys be made to identify and clear UXO before construction.

6. Subproject affected people

71. No household will lose land or assets within the RoW, and only 5 households are affected from lost vegetable growing area on area of the substation area. The losses will be compensated according to the Resettlement Plan (RP). Land loss includes both permanent and

temporary losses.

a. Permanent loss

72. According to Resettlement Plan conducted by EPC (2014), the permanent loss of land is 5,333 m^2 of Mo Lao and Van Phuc (Table 11). The permanent loss of tree and vegetation at the project area are presented in Table 12.

Table 11. Detail of permanent land acquisition

District	Ward	Total land permanently acquired (m^2)	Land use type			
			Annual crop land	Company/ organization land (m^2)	Transportation land (m^2)	Public land (m^2)
Hà Đông	Mộ Lao	4.353	0	4.353	0	0
	Vạn Phúc	980	0	980	0	0
Total		5.333	0	5.333	0	0

(Source: EPC, 2014)

Table 12. Permanent loss of trees and vegetation at the project area

No.	Tree and vegetable	Affected households	Unit	Amount
1	Vegetable	5	m2	560
2	Timber tree	-	tree	-
3	Fruit tree	1	tree	7
4	Decoration tree	3	tree	10

(Source: EPC, 2014)

(i) Mo Lao 110 kV substation: 3,670 m^2

(ii) No graves are to be relocated.

(iii) There are no houses, no buildings located in the corridor of the line.

b. Temporary loss

73. The temporary loss of land area for the UGC trench excavation is listed in Table 13.

Table 13. Temporary loss of land

District	Ward	The total land area temporary Acquired (m^2)	Land use type			
			Annual crop land	Company/organization land (m^2)	Transportation land (m^2)	Public land (m^2)
Hà Đông	Mộ Lao	380	0	0	380	0
	Vạn Phúc	980	0	0	980	0
Tổng		**1.360**	**0**	**0**	**1.360**	**0**

(Source: EPC, 2014)

74. The temporary land loss includes land along the UGC. There are 1,360 m^2 of temporarily affected land which is under the existing roads managed by the Department of Transportation Hanoi, Mo Lao ward, DPC of Ha Dong District. During project operation, the route will be used normally with bearing capacity according to the road surface.

75. The impact on public works mainly relate to pavement, electricity poles, water drainage and decoration trees due to excavation of trench for cable installation (Table 14)

Table 14. Impact on public works

Ward	Affected Asset	Owner	Category	Unit	Amount
Van Phuc	Land of People Committee	People's Committee Ward	Technical trench	m^2	608
	Palm tree	Ha Thanh Urban Trees	Technical trench	tree	26
	Crepe jasmine tree	Ha Thanh Urban Trees	Technical trench	tree	26
	Street lamp	Ha Dong Electricity	Technical trench	Pole	3
	Power cord	Ha Dong Electricity	Technical trench	m	84
Mo Lao	Land of Mo Lao Urban PMU	Mo Lao Urban project management	Mo Lao 110KV transformer substation	m2	3670
	Land of People's Committee	People's Committee Ward	Technical trench	m^2	1568
	Brick Sidewalk	People's Committee Ward	Technical trench	m^2	224
	Street lamp	Ha Dong Electricity	Technical trench	buttress	4
	Power cord	Ha Dong Electricity	Technical trench	m	214
	Sewer	Ha Dong Water Supply and Sewerage Company	Technical trench	pies	7
	Banyan tree	Mo Lao Urban project management	Mo Lao 110KV transformer station	tree	1
	Terminalia catappa Tree	Mo Lao Urban project management	Mo Lao 110KV transformer station	tree	1
	Sapele Tree	Mo Lao Urban project	Mo Lao 110KV	tree	1

Ward	Affected Asset	Owner	Category	Unit	Amount
		management	transformer station		
	Milk flower tree	Mo Lao Urban project management	Mo Lao 110KV transformer station	tree	3

7. Features of Mo Lao 110 kV and Transmission Line Sites.

76. Supplementing views of the site for the 110 kV Mo Lao Substation and underground cable are shown in Table 15.

Table 15. Views of Mo Lao 110 kV substation and transmission line

	Location of new 110 kV Mo Lao substation Site supports local vegetables growing
	Gate of Mo Lao Cemetery. Substation area located on left side

	
	Outside of the 110 kV Mo Lao substation where the UGC will be laid below pavement

	Pole No. 30 under construction
	UGC will be laid underneath road median

	UGC will cross a bridge

VI. INFORMATION DISCLOSURE AND PUBLIC CONSULTATION

A. Information Disclosure

77. Formal disclosure of information on the Mo Lao 110 kV Substation and Transmission Line project 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.

78. The IEE must be easily available to the stakeholders contacted in written and verbal forms and 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 website, 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 websites.

B. Public Consultation

79. The stakeholder consultation strategy was developed to meet the requirements of meaningful consultation as stipulated by the ADB 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

80. 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) EPC, and (v) commune leaders;
- Mass organizations such as Women 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

81. 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 in (i) Mo Lao ward on 22 May 2014.

82. The public meeting consisted of the following three integrated activities:

(i) The engineering consultant introduced the subproject including the substation location, the route of underground cable, and the length of the cable that will traverse communes and wards;

(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 of land and properties, policies of GOV and local authorities, and the Project's policies for compensation for loss due to state acquired land and property.

83. During the meeting, people raised their questions and comments on the environmental issues. The participants of the meetings included Commune leaders, representatives of mass organization such as Women Union, Farmers union and affected people. A total of 26 people (10 females and 16 males) were consulted on the views and concerns of the subproject (Appendix B).

3. Results of Public Consultation

a. Comments from communal authorities

84. The main comments of communal authorities are as follows:

(i) The effect of electromagnetic fields on the human health
(ii) The impact of construction work on the daily activities of local people
(iii) The substation near the Mo Lao Cemetery where people often visit, and therefore, the lightning protection devices should be installed for people safety
(iv) The noise of power stations can disturb quiet atmosphere of the cemeteries
(v) When trenching for underground cables attention should be paid to avoid damaging other underground technical cables

85. The summary of comments/questions from local authorities/people and answers of project owners and consultants company EPC are summarized in Table 16. Subsequent formal consultations are not required by an IEE. However, required input from stakeholders and response from project owners will occur through the Grievance Redress Mechanism (see below)

Table 16. Discussion summary of public consultation

Location and time	Opinions of people	Response of owner/ consultant	Response of Project
Mo Lao Ward 22 May 2014	Can electromagnetic fields (EMF) and electromagnetic waves affect people?	There are safety regulations for substation and UGC. If these regulations are followed the electromagnetic fields will not affect people	No confirmed effect of EMF and human health has been documented by international medical community. RoW distances along new line will follow EVN & international standards

			as per Environmental Mitigation Plan
	How construction work will be implemented?	The construction of substation will be implemented inside the planned land plot. The UGC will be laid under pavement, road alignment and road divider	The EMP prescribes careful construction phase activities, including notifying community of construction schedule. Civil works will be conducted to minimize construction impacts.
	The substation near the Mo Lao Cemetery, where people often visit, therefore the lightning protection devices should have been installed for people safety	Will be implemented	The design of all components of the substation and UGC transmission line will include required earthing technology
	Power stations can make noise, avoid make noise to cemeteries	Noise will be managed	The EMP prescribes careful construction and operational phase activities to minimize noise
	When trenching for underground cables should avoid other underground technical cables	Will be implemented	As described in the EMP

86. Prior to the construction the project owner will inform the ward PC about construction schedule, disseminate IEE, EMP and Vietnamese EIA at the ward office. However, no public consultation meeting will be organized.

VII. POTENTIAL ENVIRONMENTAL IMPACTS AND MITIGATIONS

87. The assessment of potential impacts of the subproject is structured by the three development phases of the subproject defined by: pre-construction; construction; and post-construction operational phase. The two major components of the subproject (substation and transmission line) addressed in this IEE.

88. In this way potential impacts of common activities of the three phases can be addressed together thereby minimizing redundant assessments. Potential impacts specific to the subproject component are discussed separately. This structure is carried forward and is also used to structure the EMP for the subproject.

A. Subproject Benefits

89. The primary targeted benefit of the subproject is provision of needed electrical power to the expanding Mo Lao area of Ha Noi, and to support the rapid peri-urban, commercial, and industrial development that is occurring in the area.

B. Pre-construction Phase

90. The permanent loss of land will occur mostly from the substation while the temporarily lost land for the transmission line will be only public land. The details of the land losses and compensation are found in the draft Resettlement Plan (RP).

a. Updating Environmental Management Plan

91. The subproject EMP will need to be updated during the pre-construction phase to ensure that the EMP fully addresses the potential impacts of the final detailed design of the Mo Lao 110 kV substation and transmission line. This will involve finalization of the mitigation and monitoring plans of the EMP that will manage and measure potential impact areas such as noise, dust and air quality, construction waste and spoil disposal, construction traffic, and worker and public safety at the subproject sites. The updated EMP will be used by the contractors to prepare their contractor environmental management plans (CEMP).

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

1) Initiation of the RP and land compensation for affected households and public organizations;

2) Completion of detailed designs of the subproject; and

3) Updating and initiation of subproject EMP.

C. Construction Phase

93. The potential environmental impacts of the subproject are associated primarily with the construction phase of the two subproject components. The substation and entire transmission line are not located in a national protected area, and there are no documented rare or endangered wildlife in the area.

94. Potential impacts associated with construction worker areas and camps are solid and liquid waste, and social issues associated with potential use of non-local or migrant construction workers. The EMP provides a specific mitigation sub-plan for managing potential impacts of construction worker population and camps. Further existing worker and public safety regulations of the MoLISA will be employed as indicated in mitigation item 11 below.

1. Potential Impacts of the Substation and UGC Transmission Line

95. Short-term construction-related impacts common to the construction of the Mo Lao substation and transmission line are, for example, reduced and/or blocked public access, noise, dust and air pollution from NOx, SOx, and CO caused by construction truck traffic and heavy equipment use, public and worker accidents, increased traffic accidents, damage to existing roads traversed by the transmission line. Soil and surface water pollution caused by equipment operation and maintenance, especially erosion and sedimentation, solid waste and domestic pollution from worker camps, social disease and community problems caused by migrant workers. The potential risk of public and worker injury, especially for local people visiting the Mo Lao Cemetery located west of substation.

a. Mitigation measures

96. Construction management measures to mitigate the potential impacts associated with the construction phase of the Mo Lao substation and transmission line are exemplified below. The mitigation measures are detailed further in the subproject EMP.

1) The entire substation area and corridor for the transmission line must be reviewed, and surveyed for unexploded ordnance (UXO) by the military of Viet Nam prior to construction. If such ordnance is detected, clearing work will need to be commissioned prior to undertaking civil works.

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 roads to minimize dust.

5) All construction vehicles and gas powered equipment should be maintained in proper working order to minimize emissions, and should not be operated at night if possible to minimize noise nuisance.

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 road corridors should be protected with minimal removal.

9) Present and past land use should be reviewed to assess whether excavated soils are contaminated spoil. Contaminated spoil should be disposed at a landfill or a location approved by DoNRE.

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

11) To minimize the risk of public and worker injury, appropriate GoV regulations on Occupational, Safety, and Community Health must be applied[7], or the IFC/World Bank Environment, Health, and Safety Guidelines (2007) that govern the safe and orderly operation of civil works should be followed.

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

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

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

15) 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.

2. Component-specific potential construction impacts and mitigations

97. The short-term construction-related impacts and required mitigations summarized above will vary between the substation site and transmission line. Listed below are highlighted potential construction-related impacts specific to both subproject components.

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

a. Mo Lao substation

98. The potential impacts of the construction of 110 kV Mo Lao substation are restricted to dust emissions, generation of cut / excavated soil erosion, runoff, worker safety, local worker camp pollution, and noise of civil works equipment to people visiting adjacent cemetery. Noise and overall disturbance of the cemetery and surrounding area was identified by during the public consultations. To mitigate those impacts, constructor should follow strictly their CEMP which will be developed from the EMP, pay particular attention to community and health safety regulations and guidelines of MoLISA, keep worker camp in hygienic condition including proper and regular solid and liquid waste management. All migrant workers must register with local authority.

b. Mo Lao transmission line

99. The installation UGC sections of the 620 m transmission line will directly affect public land along the road. The impacts on public works mainly relate to pavement, electricity poles, water drainage, and decoration trees due to excavation of trench for cable installation. In addition, the excavation of technical trench (2 m wide and 1.7 m deep) may interfere with existing underground communication cables and utilities. In order to reduce the impact, contractor will excavate, install, and restore 50 m sections of UGC line each night in order to minimize disturbance during the day. When the installation of the cable is completed the final rehabilitation of sidewalk, road, infrastructure as well as re-growing street decoration trees will be implemented. To avoid damage to underground infrastructure an excavation permit from Transportation Department must be obtained before construction. The permit will indicate clearly the locations of buried and surface infrastructure that must be avoided. Mo Lao is new urban area located at the outskirt of Ha Noi, therefore, traffic density is not high. Therefore the impact on public transportation is small.

100. Referring to the section crossing Nhue River, local soil erosion and land slide could occur. However, no excavation and electricity pole installation will occur for both approaches of the cable to the river. However, as an extra mitigation measure a civil works and erosion mitigation sub-plan of the EMP will need to be followed by the contractor to prevent all erosion and river sedimentation. Thus, the impacts of construction activities on water quality of Nhue River should be negligible.

D. Operation Phase

1. Mo Lao Substation

101. The potential impacts of the operation of the completed 110 kV Mo Lao substation could be worker safety, spills of hazardous materials, perceived harm from electromagnetic field exposure to workers and local people, lightning, and noise of machine operation to people visiting the cemetery. However, the design of the substation excludes use of harmful materials such as PCBs, and negative health effects of EMF are unfounded. However, the substation will operated following EVN and international accepted procedures and regulations which protect workers and local community and physical cultural resources such as cemeteries. The risk of lightning strikes is a non-issue because all components of the substation and UGC will be earthed using appropriate technology.

2. Mo Lao Transmission Line

102. Potential impacts associated with the operation of the OHL and UGC portions of the transmission line are restricted to worker and public safety during routine maintenance activities, and unauthorized public access to the towers, respectively. The potential risk of negative health effects from EMF from the transmission line is further reduced because the cable is buried at a depth of 1.5 m with safety corridor width on both sides of 1 m.

103. The collective mitigation for potential operation effects is to prevent public access to the substation property and at the transmission towers. This management action would be implemented with effective fencing and clear signs indicating the dangers of the different facilities.

3. Climate Change

104. Regional Global Circulation Modelling project greenhouse-climate change induced changes to the frequency and severity of rainfall events in the subproject area. The design of the Mo Lao substation site includes sufficient infilling to raise the substation to a grade that will be resilient to flooding associated from a 100-year storm. Similarly, the underground section of the transmission line will be designed to withstand long standing water periods from flooding.

105. The backfilling of the substation site will not impact to the surrounding areas because the substation site is located in the Mo Lao new urban area where the drainage system is well designed that could accommodate runoff water to avoid flooding of the immediate areas and it would not impede construction.

VIII. GRIEVANCE REDRESS MECHANISM

106. 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 project information booklet (PIB) that will be distributed to all APs.

107. 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.

108. 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[8] and ADB upon request.

109. The procedures for grievance redress are defined below and summarized in Figure 5. 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 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.

[8] See Section IXB below for institutional responsibilities for EMP

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.

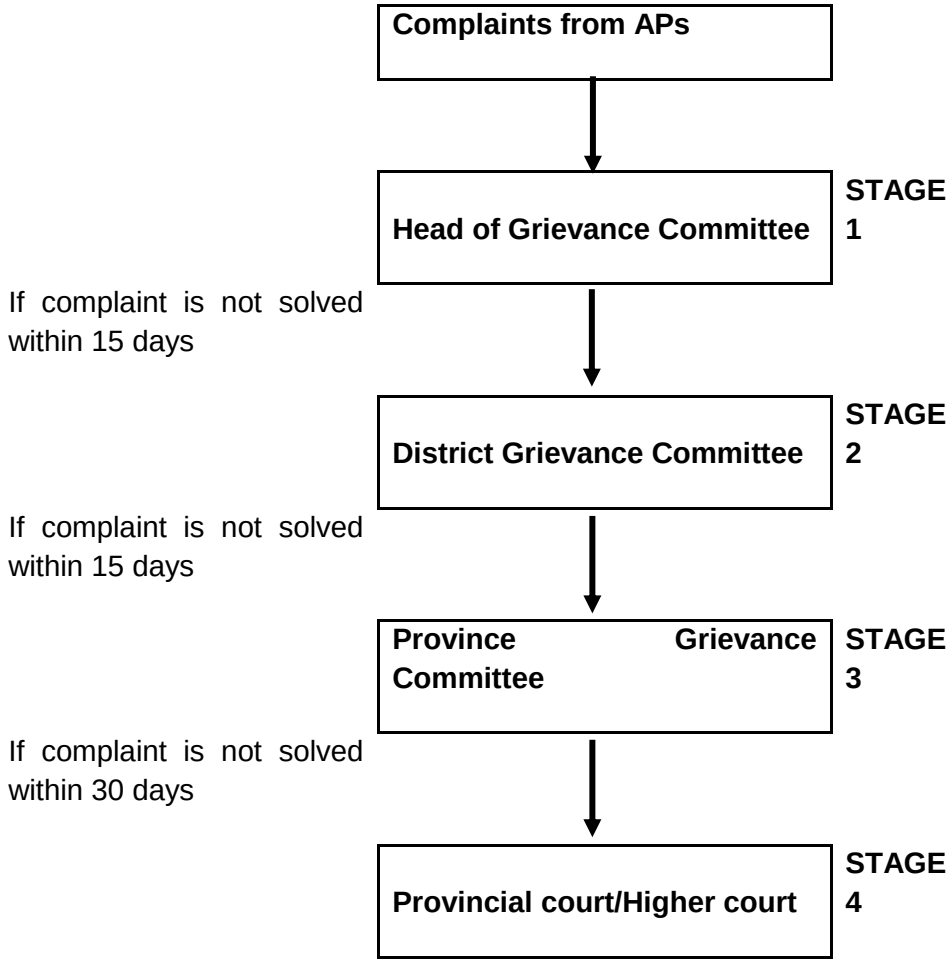


Figure 6. Summary of Grievance Redress Process

110. 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.

111. 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.

112. 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).

IX. ENVIRONMENTAL MANAGEMENT PLAN

A. Overview of Environmental Management Plan

113. An environmental management plan (EMP has been developed for the implementation of the Mo Lao 110 kV Substation and Transmission Line subproject. 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.

114. 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 project owner follows to prevent or minimize unnecessary environmental impacts of the subproject.

B. Institutional Arrangements and Responsibilities

115. At the feasibility stage, the primary management framework[9] responsible for the implementation of the EMP for the Mo Lao 110 kV substation and transmission line subproject 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.

116. The IA/ESU is supported by the [international] Project Implementation Consultant[10] (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)[11].

117. 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.

[9] Adapted from management framework for original core subprojects
[10] PIC to be defined
[11] Contractor Environmental Management Plan prepared by contractor as part of bid documents based on EMP

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

1. Overall responsibility for implementation of EMP;

2. Provide coordination and supervision for environmental and social safeguards and monitoring for IA/ESU;

3. Liaise with EVN and ADB on the implementation of the EMP; and

4. Coordinate resolution with IA/ESU with issues arising from the implementation of EMP.

119. The responsibilities of the ESU of IA include:

5. Assist PIC with updating the EMP to meet final detailed subproject design;

6. Notify DoNRE to verify GoV approvals of subproject are met;

7. Assist PIC with inclusion of CEMP requirements in contractor bid documents including bid evaluations based on updated EMP;

8. Undertake day-to-day management of EMP implementation activities;

9. Work with EMC on implementation of monitoring plan of EMP;

10. Ensuring compliance with loan covenants and assurances in respect of entire subproject, including EMP (as well as IPPs, GAPs, resettlement plans);

11. Lead follow-up meetings with all affected stakeholders;

12. Prepare and submit quarterly reports on EMP implementation to IA/EA;

13. Oversee implementation of CEMP by contractor;

14. Coordinate with ES of PIC for EMP implementation;

15. Undertake regular construction site inspections to ensure contractor implements CEMP properly; and

16. Ensure EO of contractor submits monthly reports on construction mitigations and monitoring.

120. The responsibilities of the ES (International and National) of the PIC are:

17. Updating the EMP to meet final detailed design of subproject;

18. Provide technical direction and support to ESU/IA for implementation of EMP;

19. Oversee design and delivery of capacity development and training of ESU/IA and EO of contractor(s);

20. Provide advice and support to EMC with their monitoring activities;

21. Review all reports prepared ESU/IA and EMC for EA and ADB; and

22. Review location of any possible contaminated sites near subproject.

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

23. Implement CEMP for construction phase of subproject; and

24. Prepare and submit monthly reports on mitigation and monitoring activities of CEMP any environmental issues at construction sites.

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

25. Implement the environmental sampling required for monitoring plan of EMP that cannot be conducted by the contractor and ESU/IA/EO.

26. Perform required laboratory analyses for monitoring program detailed in EMP; and;

27. Prepare and submit quarterly reports to IA/ESU on monitoring activities.

123. 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 (2005)[12], Decree 29 for EIA, and environmental standards.

124. 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

125. The potential impacts of the subproject are summarized in Table 17.

Table 17. Summary of Potential Impacts of Subproject

Pre-construction Phase
• Permanent loss of some public land • Temporary loss of some public land, infrastructure, street decoration trees
Construction Phase
• Temporary loss of public land along RoW of TL.

[12] Revision of LEP (2005) approved by GoV June /14, but not in effect until end of /14.

• 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, damage to existing roads, solid and domestic waste from worker camps, social issues and community problems caused by migrant workers.
Operational Phase
• Risk of worker and public safety at facilities. • Spills of hazardous materials.

D. Mitigation Plan

126. The impact mitigation measures of the EMP are presented in a comprehensive mitigation plan for the subproject in Table 18. The mitigation plan is structured by the three development phases of the subproject 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.

127. The mitigation plan combines construction phase impacts common to all subproject components 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 subproject component are also identified or common mitigations that are particularly important for a subproject component are underscored. The mitigation plan identifies potential impacts, required mitigations, responsible parties, location, timing, and indicative costs.

Mitigation sub-plans

128. 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, and k) Cultural chance finds.

Table 18. Environmental Impact Mitigation Plan

Subproject Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Location	Timing	Activity Reporting	Estimated Cost[13] (USD)	Responsibility	
							Supervision	Implementation
Pre-Construction, Detailed Design Phase								
Confirmation of required resettlement, relocations, and 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[14]	IA/ESU	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

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

Detailed designs of Subproject,	Minimize negative environmental impacts	4. Work with PIC[15] to complete detailed designs of the Mo Lao 110 kV Substation and Transmission Line. 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) locate aggregate borrow pits and rock supply areas away from human settlements with fencing and access barriers; d) none or minimal disruption to village water supplies along access roads, utilities, and electricity with contingency plans for unavoidable disruptions; e) none 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.	Final siting	Before construction initiated	Once with detailed designs documents	No marginal cost	PIC	EA/IA

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

Update EMP	Positive environmental impacts	5. Review finalized RoW of TL to confirm absence of valued ecological or cultural resources. 6. Re-clarify with DoNRE that no known rare or endangered species inhabit the Subproject areas 7. Identify any new potential impacts of subproject and include in EMP with special attention to residential areas. 8. Update mitigation measures and monitoring requirements of EMP where necessary to meet detailed designs, and to protect affected environments. 9. Submit updated EMP with new potential impacts to ADB to review. 10. Complete individual management sub-plans 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, and k) Cultural chance finds.	All sites	Before construction initiated	Once with detailed designs documents		PIC	IA/ESU
Update EMP	Positive environmental impacts	11. Update information where necessary on water quality and presence of valued aquatic biota in surface waters underneath entire TL and at SS site	Entire TL and at SS site	Before construction initiated	Once with updated EMP	See Monitoring Plan below	PIC	IA/ESU

Confirm approved construction waste disposal sites	No negative impact	12. Notify DoNRE to confirm locations of sites for borrow pits and disposal areas for construction and hazardous waste for Subproject, and obtain required permits. 13. Create registry for local and migrant workers.	Entire Subproject	Before construction	As required	No marginal cost	IA/DoNRE	ESU
UXO survey, and removal	Injured worker or public	14. Ensure GoV military is consulted and clears UXO areas where necessary	All construction sites.	Beginning of Subproject	Once	See Monitoring Plan below	EA/IA	IA/GoV
Develop bid documents	No negative environmental impact	15. Ensure updated EMP is included in contractor tender documents, and that tender documents specify requirements of EMP must be budgeted. 16. Specify in bid documents that contractor must have experience with implementing EMPs, or provide staff with training and experience.	All Subproject areas	Before construction begins	Once for all tenders	No marginal cost	PIC	EA/IA
Create awareness of physical cultural resources in area	No negative environmental impact	17. EA to review potential locations of physical resources, and explain possible PCR to contractors and PIC.	All Subproject areas	Before construction begins	Once	No marginal cost	EA/IA	IA/ESU
Obtain and activate permits and licenses	Prevent or minimize impacts	18. Contractors to comply with all statutory requirements set out by GoV for use of construction equipment, and operation construction plants such as concrete batching.	For all construction sites	Beginning of construction	Once	No marginal cost	EA/PIC	ESU and contractors
Capacity development	No negative environmental impact	19. 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. 20. Create awareness and training plan for contractors whom will implement mitigation measures.	All Subproject areas	Before construction begins	Initially, refresher later if needed	No marginal cost	PIC	PIC

Recruitment of workers	Spread of sexually transmitted disease	21. Use local workers as much as possible thereby reducing number of migrant worker	All work forces.	Throughout construction phase	Worker hiring stages	No marginal cost	EA/IA	Contractor's bid documents
Construction Phase of 110 kV Mo Lao Substation and Transmission Line								
Initiate EMP and sub-plans,	Prevent or minimize impacts	22. 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
Long-term or periodic worker camps	Pollution and social problems	23. Locate all temporary or long-term worker camps for substation or TL away from human settlements. 24. A solid waste collection program must be established and implemented that maintains a clean worker camps 25. Worker camps must have adequate drainage. 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/IA/ESU	contractor
Training and capacity	Prevent of impacts through education	28. Implement training and awareness plan for IA/ESU//EO and contractors.	IA office, construction sites	Beginning of construction	After each event	No marginal cost	PIC	PIC/ESU

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 borrow pits and quarries should have a fence perimeter with signage to keep public away. 35. 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. 36. Unstable slope conditions in/adjacent to the quarry or pit caused by the extractions should be rectified with tree planting. 37. Define and schedule how materials are extracted from borrow pits and rock quarries, transported, and handled and stored at sites. 38. Define and schedule how fabricated materials such as steel, wood structures, and scaffolding will transported and handled. 39. All aggregate loads on trucks should be covered. .	For all construction areas.	Throughout construction phase	Monthly	No marginal cost	PIC/IA/ESU	contractor

DBST [low grade asphalt] production, and application to repair/restore any road works	Air pollution, land and water contamination, and traffic and access problems,	40. Piles of aggregates at sites should be used/or removed promptly, or covered and placed in non- traffic areas 41. 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. 42. Contractors must be well trained and experienced with the production, handling, and application of bitumen. 43. All spills should be cleaned immediately and handled as per hazardous waste management plan, and according to GoV regulations. 44. Bitumen should only be spread on top of cable trench not near or in any surface waters, or near any human activities. 45. Bitumen should not be used as a fuel.	For all construction areas.	Throughout construction phase	Monthly	No marginal cost	PIC/ESU	contractor

Implement Spoil management sub-plan	Contamination of land and surface waters from excavated spoil, and construction waste	46. 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. 47. A record of type, estimated volume, and source of disposed spoil must be recorded. 48. Contaminated spoil disposal must follow GoV regulations including handling, transport, treatment (if necessary), and disposal. 49. Suspected contaminated soil must be tested, and disposed of in designated sites identified as per GoV regulations. 50. 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

Implement Solid and liquid construction waste sub-plan	Contamination of land and surface waters from construction waste	51. 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. 52. Areas of disposal of solid and liquid waste to be determined by GoV. 53. Disposed of waste should be catalogued for type, estimated weigh, and source. 54. Construction sites should have large garbage bins. 55. A schedule of solid and liquid waste pickup and disposal must be established and followed that ensures construction sites are as clean as possible. 56. Solid waste should be separated and recyclables sold to buyers in community. <u>Hazardous Waste</u> 57. Collection, storage, transport, and disposal of hazardous waste such as used oils, gasoline, paint, and other toxics must follow GoV regulations. 58. Wastes should be separated (e.g., hydrocarbons, batteries, paints, organic solvents) 59. 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. 60. 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

Implement Noise and dust sub-plan	Dust Noise	61. Regularly apply wetting agents to exposed soil and construction roads. 62. Cover or keep moist all stockpiles of construction aggregates, and all truck loads of aggregates. 63. Minimize time that excavations and exposed soil are left open/exposed. Backfill immediately after work completed. 64. As much as possible, restrict working time at substation site between 07:00 and 17:00. 65. Maintain equipment in proper working order 66. Replace unnecessarily noisy vehicles and machinery. 67. Vehicles and machinery to be turned off when not in use. 68. 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	69. Develop carefully a plan of days and locations where outages in utilities and services will occur, or are expected. 70. Contact local utilities and services with schedule, and identify possible contingency back-up plans for outages. 71. Contact affected community to inform them of planned outages. 72. 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

Implement Tree and vegetation removal, and site restoration sub-plan	Damage or loss of trees, vegetation, and landscape	73. Contact DoT/DARD for advice on how to minimize damage to trees and vegetation along transmission line 74. Restrict tree and vegetation removal to within RoWs. 75. Within RoWs minimize removals of trees and install protective physical barriers around trees that do not need to be removed. 76. Where possible all RoWs to be re-vegetated and landscaped after construction completed. Consult DoT/DARD to determine the most successful restoration strategy and techniques. Aim to replant three trees for each tree removed. 77. Restore sections of roads damaged by the construction of facilities.	All construction sites.	Beginning and end of Subproject	Monthly	No marginal cost	PIC/ESU	contractor

Implement Erosion control sub-plan	Land erosion	78. Berms, and plastic sheet fencing should be placed around all excavations and earthwork areas. 79. Earthworks should be conducted during dry periods. 80. Maintain a stockpile of topsoil for immediate site restoration following backfilling. 81. Protect exposed or cut slopes with planted vegetation, and have a slope stabilization protocol ready. 82. Re-vegetate all soil exposure areas immediately after work completed. 83. Proper fencing, protective barriers, and buffer zones should be provided around all construction sites. 84. Sufficient signage and information disclosure, and site supervisors and night guards should be placed at all sites.	All construction sites	Throughout construction phase	Monthly	No marginal cost	PIC/ESU	contractor

Implement worker and public safety sub-plan	Public and worker injury, and health	85. Worker and public safety guidelines of MoLISA should be followed. 86. Population near possible blast areas should be notified 24 hrs ahead, and evacuated well before operation. Accepted GoV blast procedures and safety measures implemented. 87. 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. 88. Standing water suitable for disease vector breeding should be filled in. 89. 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. 90. Appropriate safety clothing and footwear should be mandatory for all construction workers. 91. Adequate medical services must be on site or nearby all construction sites. 92. Drinking water must be provided at all construction sites. 93. Sufficient lighting be used during necessary night work. 94. All construction sites should be examined daily to ensure unsafe conditions are removed.	All construction sites.	Fulltime	Monthly	No marginal cost	PIC/ESU	contractor

Civil works	Degradation of water quality and aquatic resources	95. Protective coffer dams, berms, plastic sheet fencing, or silt curtains should be placed between all earthworks and surface waters. 96. Erosion channels must be built around aggregate stockpile areas to contain rain-induced erosion. 97. Earthworks should be conducted during dry periods. 98. All construction fluids such as oils, and fuels should be stored and handled well away from surface waters. 99. No waste of any kind is to be thrown in surface waters. 100. No washing or repair of machinery near surface waters. 101. Pit latrines to be located well away from surface waters. 102. No unnecessary earthworks in or adjacent to water courses. 103. No aggregate mining from rivers or lakes. 104. 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	105. All construction sites should be located away forested or all plantation areas as much as possible. 106. No unnecessary cutting of trees along RoW. 107. All construction fluids such as oils, and fuels should be stored and handled well away from forested and plantation areas. 108. 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
Implement Construction and urban traffic sub-plan	Traffic disruption, accidents, public injury	109. Schedule construction vehicle activity during light traffic periods. Create adequate traffic detours, and sufficient signage and warning lights. 110. Post speed limits, and create dedicated construction vehicle roads or lanes. 111. 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. 112. Demarcate additional locations where pedestrians can develop road crossings away from construction areas. 113. 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	114. Provide adequate short-term drainage away from construction sites to prevent ponding and flooding. 115. Manage to not allow borrow pits and quarries to fill with water. Pump periodically to land infiltration or nearby water courses. 116. Install temporary storm drains or ditches for construction sites 117. Ensure connections among surface waters (ponds) are maintained or	All areas with surface waters	Design and construction phases	Monthly	No marginal cost	PIC/ESU	contractor

		enhanced to sustain existing storm water storage capacity. 118. Protect surface waters from silt and eroded soil.						
Civil works and Chance finds sub-plan	Damage to cultural property or values, and chance finds	119. As per detailed designs all civil works should be located away from all physical cultural property and values. 120. Chance finds of valued relics and cultural values should be anticipated by contractors. Site supervisors should be on the watch for finds. 121. Upon a chance find all work stops immediately, find left untouched, and EA/IA notified to determine if find is valuable. The Culture division of the DCST notified by telephone if valuable. 122. Work at find site will remain stopped until DCST allows work to continue.	All construction sites	At the start , and throughout construction phase	Monthly	No marginal cost	PIC/ESU	contractor
Post-construction Operation of 110 kV Mo Lao Substation								
Operation of new substation	Increased risk of worker or public injury	123. Occupational health and safety regulations and guidelines of MoLISA should be applied to operations of substation. 124. Ensure substation property is adequately fenced with clearly visible danger warning signs to keep public out. 125. Store and handle transformer fluids and other hazardous materials according to international procedures and standards	At substation	Fulltime	Biannual	O and M	EVNHCM / PPMB	
Post-construction Operation of 110 kV Mo Lao Transmission Line								

Operation of new transmission line		126. Occupational safety and health regulations and guidelines of MoLISA should be applied to operations and maintenance of TL 127. Ensure TL towers are marked with clearly visible danger warning signs to keep public away from UGC area.	At all TL towers	Fulltime	Biannual	O and M	EVNHCM / PPMB

E. Monitoring Plan

129. The environmental monitoring plan for the EMP is provided in Table 19. The monitoring plan focuses on all three phases (pre-construction, construction, post-construction operation) of the subproject 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 subproject.

130. 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.

131. 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

132. After construction is completed, the potential impacts of the operation of the new Mo Lao 110 kV substation and transmission line will be monitored by EVN HANOI. Monitoring of the success of the minor resettlement in the affected areas will be undertaken as part of the separate RP prepared for the subproject.

F. Performance Monitoring

133. 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. Selected 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 15.

G. Reporting

134. 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 18 and 19) summarize proposed timing of reporting.

135. 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 19. 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 along TL corridor.	A) RoW for UGC transmission line B) Substation (SS) location	Original field work, community consultations	Once	Once	PIC/ESU	Environmental Monitoring Consultant	$1,000.
A) Air quality: dust, CO, NOx, SOx, noise B) Water quality of Nhue river: TSS, oil and grease	A): Along TL and at SS site B): Above and below UGC crossing site.	Using field and analytical methods approved by DoNRE.	A) One day and one night measurement B) One day measurement	One baseline supplement report before construction phase starts	PIC/ESU	Environmental Monitoring Consultant	A) $1,000. B) $1,500.
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 220 kV Substation and Transmission Line							
Analysis of soil quality (heavy metals (As, Cd, Pb, oil and	Possible contaminated lands at all excavation sites	Using field and analytical methods approved by DoNRE.	Once if **needed**	Once	ESU	Environmental Monitoring	$1,000.

grease, hydrocarbons).						Consultant	
A) Air quality: dust, CO, NOx, SOx, noise B)) Water quality of Nhue river:: TSS, oil and grease C) Analysis of contaminated soil quality (heavy metals (As, Cd, Pb, Hg, Mn), hydrocarbons. 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	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	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	(A – B): Quarterly during construction periods Daily visual records C) Once at start of excavations D) Monthly E) Continuous public input F) Continuous	Monthly	(A - D):		A and B: $3,000./yr C: $1,000./yr D: no marginal cost (E and F) and daily observations: E: $1,000./yr F: no marginal cost
					ESU	Monitoring Consultant	
					EA/ESU	contractor	
Operation of 220 kV Substation and Transmission Line							
Incidence of worker accidents, or spills on hazardous materials	At substation and along UGC transmission line	Regular documentation and reporting	Continuous		EVNHCMC /PPMB		O and M

Table 20. 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[16])	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			
All Subproject areas	Critical habitat, rare or endangered species ***if present***	All *present* critical habitat and R and E species if unchanged, and unharmed	Monitoring by EMC[17]
Affected water quality of Nhue river	TSS, oil and grease	GoV environmental standards and criteria met	Monitoring by EMC
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

[16] Contractor Environmental Management Plan developed from EMP in contractor bidding document
[17] Environmental Monitoring Consultant hired to assist implementation of Environmental Monitoring Plan

Major Environmental Component	Key Indicator	Performance Objective	Data Source
Hazardous materials and waste	Oil, gasoline, grease	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[18]	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
Operation Phase of Substation and Transmission Line			
Worker and Public Safety	Frequency of accidents and spills	No increase in pre-construction frequency	EA

H. Estimated Cost of EMP

136. 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 19 the preliminary cost for the implementation of the EMP for the subproject including an estimated environmental training budget for EVNHCM / PPBM is approximately USD $15,000.00 which is summarized in Table 21. The environmental costs are for field sampling and laboratory analyses which include professional per diems of technicians.

137. An estimated budget of USD $3,000.00 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.

[18] OSH Guidelines provided by MoLISA, *or* IFC World Bank EHS (2007)

Table 21. 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	$3,000.00
Construction Phase	
environmental quality	$8,000.00
public consultation	$1,000.00
Operation Phase	
environmental quality	no cost
public input	no cost
Training and capacity development of EVNHCM / PPBM / ESU	$3,000.00
Total	**$15,000.00**

X. EMERGENCY RESPONSE PLAN

138. The Contractor must develop emergency or incident response procedures during construction and operation phases of the new Mo Lao 110 kV substation and transmission line 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.

XI. INSTITUTIONAL CAPACITY REVIEW AND NEEDS

139. 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.

140. 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.

XII. CONCLUSIONS AND RECOMMENDATION

141. The initial examination of the Mo Lao 110 kV Substation and Transmission Line subproject in Ha Noi indicates that potential environmental impacts are construction-related impacts and disturbances that can be mitigated and managed.

142. 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).

143. 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.

XIII. REFERENCES CITED

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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:	**Preparing the Ha Noi and Ho Chi Minh City Power Grid Development Sector Project TA 8205-VIE**
Sector Division:	Mo Lao 110 kV Substation and 110 kV Underground Cable

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	
▪ ESTUARINE		X	
▪ BUFFER ZONE OF PROTECTED AREA		X	
▪ SPECIAL AREA FOR PROTECTING BIODIVERSITY		X	
B. POTENTIAL ENVIRONMENTAL IMPACTS WILL THE PROJECT CAUSE…			

Screening Questions	Yes	No	Remarks
▪ Encroachment on historical/cultural areas, disfiguration of landscape and increased waste generation?		x	The project will not cut through the temples and cemetery. The contractors will manage and prevent workers from encroaching into these sites. The Project owner and contractors will strictly implement mitigation measures in construction phase.
▪ **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**		The Nhue River flows across the project area. Mitigation measures to minimize the water quality reduction will be strictly applied
▪ Damage to sensitive coastal/marine habitats by construction of submarine cables?		x	No submarine cables will be installed by the project.
▪ Deterioration of surface water quality due to silt runoff, sanitary wastes from worker-based camps and chemicals used in construction?		x	Low impact level during construction phase. Construction water will settled down in grid chamber before flow into the city's drainage. No domestic wastewater of worker-based camps. No chemicals used in construction Mitigation measures will be implemented.
▪ Increased local air pollution due to rock crushing, cutting and filling?		x	Low level. There will not be rock crushing, or cutting in the project. However, rock is used to mix concrete and filled into dug channel. The mitigation measures will be implemented to reduce air pollution
▪ 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	

Screening Questions	Yes	No	Remarks
▪ Noise and vibration due to blasting and other civil works?		x	Medium impact level due to noise and vibration occurred during road cutting and movement of construction vehicles along access road in construction phase. No blasting will occur. Mitigations for noise and vibration caused by construction-related activities are specified by the EMP for the subproject **.**
▪ Dislocation or involuntary resettlement of people?		x	The project affects only agricultural land without houses/ accommodations. Required resettlement and compensation for land loss is addressed by RP for subproject.
▪ Dis-proportionate 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	Small impacts. The construction of underground cable sections on roadways will obstruct traffic. However, the Project owner, contractors will implement the proposed mitigation measures which are highly feasible such as: constructing completely each section (50m/section) during one night, putting signs, and barricades, clean the site daily to ensure temporary traffic back to normal, repair damaged road after the construction.
▪ Hazardous driving conditions where construction interferes with pre-existing roads?	x		Small impact. The digging cable ditches on roadways and increase of project heavy trucks can cause risk in traffic accident. However, mitigation measures, and ensuring safety will be taken strictly, as railings, set the speed control signs, traffic regulation etc.
▪ Creation of temporary breeding habitats for vectors of disease such as mosquitoes and rodents?		x	

Screening Questions	Yes	No	Remarks
▪ 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	No tree taller than 6 m is under transmission line
▪ Facilitation of access to protected areas in case corridors traverse protected areas?		x	No protected areas within 10 km of the project area
▪ Disturbances (e.g. noise and chemical pollutants) if herbicides are used to control vegetative height?		x	No herbicides will be used to control vegetative height
▪ 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	
▪ Social conflicts if workers from other regions or countries are hired?		x	All workers are Vietnamese. Workers from other regions or countries are not hired
▪ Poor sanitation and solid waste disposal in construction camps and work sites, and possible transmission of communicable diseases from workers to local populations?		x	Since the number of workers is small, no worker camps are built but hired local houses. Work sites are also small areas, thus solid waste generated is small. The transmission of communicable diseases from workers to local populations is not likely However, the Contractor shall implement measures to ensure the hygiene and health of workers and local people, such as hiring hygiene sufficient accommodation, and hiring specialized units to collect waste daily.
▪ Risks to community safety associated with maintenance of lines and related facilities?		x	

Screening Questions	Yes	No	Remarks
▪ Community health hazards due to electromagnetic fields, land subsidence, lowered groundwater table, and salinization?		x	Minor impact. No land subsidence, lowered groundwater table, and salinization would be happed. Electromagnetic fields occur in operation phase, but are not a medical issue. - Underground cable is designed according to international and GoV safety standards and will not impact public health. Risk of subsidence at cable cellar may occur if heavy trucks illegal run through the road, or by the construction of other infrastructure systems. No salination of groundwater will occur
▪ 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	Low risk level. These risks maybe happen only at location connecting to tower No. 30. The tower may be collapsed due to typhoons or tropical cyclones. The underground cable may cause risks of power shock, cable broken when it happen earthquake, but this hazard will rarely appear in this project area and the project was designed to probably stand the earthquake. Also, in the process of maintenance, the operate unit will conduct regular inspection for timely detection and treatment.

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, heat waves 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 meeting and number of participants

No	Name of subprojects	Location	Date	Participants*		
				Male	Female	Total
1	New Mo Lao 110 kV Substation	B1.Mo Lao Ward	22 May 2014	16	10	26
			TOTAL	***16***	***10***	***26***

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

APPENDIX B.1: PUBLIC CONSULTATION OF MO LAO WARD

List of participants
Date (Ngày tháng) : 22 May 2014
Location (địa điểm) : Mo Lao Ward

No. TT	Họ và tên (Name)	Nam (M)	Nữ (F)	Chức vụ (Position)	Cơ quan/Địa chỉ (Organization/ Adress)	Chữ ký (Signature)
1	Bạch Hồng Đảng	x		Population groups 8	Mo Lao Ward	
2	Bạch Hồng Tiến	x		The Fatherland Front Committee Officer	Mo Lao Ward	
3	Bạch Đảng Tân	x		Head of Street population groups 9	Mo Lao Ward	
4	Bạch Phương Thúy		x	Chairman of the Women's Union	Mo Lao Ward	
5	Bạch Quang Xuân	x		Head of Street population groups 8	Mo Lao Ward	
6	Phạm Thu Nguyệt		x	Chairman of People's Assembly	Mo LaoWard	
7	Trần Xuân An	x		A party secretary clusters 9	Mo Lao Ward	
8	Lương Thị		x	Party Committee	Mo Lao Ward	

	Hồng			Officer		
9	Nguyễn Thị Linh		x		Mo Lao Ward	
10	Vũ Như Trang		x	Assistant	Mo Lao Ward	
11	Nhậm Thanh Tùng	x		Commune people's committee Officer	Mo Lao Ward	
12	Phùng Tuấn Anh	x			Mo Lao Ward	
13	Nguyễn Trọng Kiên	x		Deputy manager of Project management	Mo Lao Ward	
14	Phạm Như Ngoc		x	Vice chairman of commune people's committee	Mo Lao Ward	
15	Nguyễn Xuân Mạnh	x		Design Consultant	Mo Lao Ward	
16	Bành Phước Chung	x		Deputy manager of Clearance Department - Project management	Hanoi Power Network Project Management Board (PNP)	
17	Nguyễn Đình Hà	x		Plan department- Project management	Hanoi Power Network Project Management Board (PNP)	
18	Nguyễn Minh Tưởng	x		Plan department- Project management	Hanoi Power Network Project Management Board (PNP)	
19	Nguyễn Thị Loan		x	Environmental Specialist	ADB Consultant	
20	Vũ Chí Công	x		Environmental Specialist	FDI Company	
21	Lê Đức Anh	x		Environmental Specialist	FDI Company	
22	Nguyễn Ngọc Anh		x		Mo Lao Ward	
23	Lê Hồng Minh		x		Mo Lao Ward	
24	Dương Văn Thắng	x		Culture Officer	Mo Lao Ward	
25	Nguyễn Việt Hùng	x		Urban Officer	Mo Lao Ward	
26	Lê Thị Hằng		x	Cadastral Officer	Mo Lao Ward	

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

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) : 22/05/2014
Location (địa điểm) : Phường Hồ Lao - Quận Hà Đông

No. TT	Họ và tên (Name)	Nam (M)	Nữ (F)	Chức vụ (Position)	Cơ quan/Địa chỉ (Organization/Address)	Chữ ký (Signature)
1	Bùi Hồng Thắng			Bí Thư 8		
2	Bùi Huy Dần			CT UBMTTQ		
3	Bùi Thị Tần			TổTrưởng TổQ		
4	Bùi Phương Thuỷ			CT Phụ Nữ		
5	Bùi Quang Xuân			TổTrưởng Tổ 8		
6	Phạm Thái Ngọt			Phó CT HĐND		
7	Trần Xuân An	V		Bí Thư TổQ.		
8	Lường Thị Hồng		V	VP Đảng ủy		
9	Ng Thị Linh		V	Đội TT		
10	Vũ Như Thắng		V	Thủ Quỹ Bố		
11	Nhâm Thanh Tùng	V		VP UBND		
12	Phùng Tuấn Anh	V		CHT Q Sự		
13	Ng Trọng Kiên	V		Phó Ban GLDA	CBT Hồ Lao	
14	Phạm Văn Ngọc	V		Phó CT Hội đồng ND P Hồ Lao		
15	Ng Xuân Mạnh	V		Cán bộ Thiết kế		
16	Bành Phước Chi	V		Phó GĐ Ban QLDA Phát triển ĐL Hà Nội		
17	Nguyễn Đức Hà	V		Phụ trách kế hoạch - Ban QLDA phát triển Đưa lưới Hà Nội		
18	Nguyễn Mạnh Tuấn	V		CV phụ trách kế hoạch - Ban QLDA phát triển ĐL Hà Nội		
19	Ng Thị Loan		V	Tư vấn ADB		
20	Vũ Chí Công	V		Tư vấn môi trường Công ty PDI		
21	Lê Đức Anh	V		Tư vấn môi trường Cty PDI		
22	Nguyễn Ngọc Anh					
23	Lê Hồng Minh					KT
24	Dương Văn Thắng	V		Cb Văn hoá		

b. MINUTES OF MEETINGS AND PHOTOS-Mo Lao Ward

Opinions people	The project owner/consultant anwer
Electromagnetic fields and electromagnetic waves can affect people?	There are safety regulations for substation and UGC. If these regulations are complied and respected, the electromagnetic fields and electromagnetic waves can not affect people
How construction work will be implemented?	The construction of substation will be implemented inside the planned land plot. The UGC will be laid under pavement, road alignment and road divider
The substation near the Mo Lao Cemetery, where people often visit, therefore the lightning protection devices should have been installed for people safety	Will do that
Power stations can make noise, avoid make noise to cemeteries	Will do that
When trenching for underground cables should avoid other underground technical cables	Will do that

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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.....Mễ Lao.., Ngày 22 tháng 5 ....năm 2014

BIÊN BẢN HỌP THAM VẤN CỘNG ĐỒNG VỀ ĐÁNH GIÁ MÔI TRƯỜNG VÀ TÁI ĐỊNH CƯ

Tiểu dự án:..Trạm biến áp 110 KV Mễ Lao và nhánh rẽ đường dây 110 KV
Phường/Xã....Mễ Lao....., Quận/Huyện..Hà Đông....Thành phố .Hà Nội

1. Thành phần tham dự

- Ông/Bà.Nguyễn Văn Long.....Chức vụ Chủ tịch UBND Phường
- Ông/Bà..Bạch Hùng Tiến.....Chức vụ Cán bộ MBMTTQ.
- Ông/Bà..Phạm Văn Ngọc.....Chức vụ Phó chủ tịch hội đồng nhân dân
- Ông/Bà.Bành Phước Chung.....Chức vụ Phó GĐ ban QLDA phát triển LĐ HN
- Ông/Bà..Nguyễn Đình Hà.....Chức vụ Phụ trách BQLDA
- Ông/Bà.Nguyễn Thị Loan..... Chức vụ Tổ chức MTADD
- 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 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

3. Ý kiến thảo luận

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

- Điện từ trường và sóng điện từ có ảnh hưởng đến người dân xung quanh không ?
- Các giải pháp làm hạ tăng như thế nào
- Trạm làm gần nghĩa trang Mỗ Lao có người đi lại, do vậy cần có thiết bị chống sét
- Máy chạy có gây tiếng ồn hay không ? tránh gây tiếng ồn cho nghĩa trang
- Khi đào hào đặt cáp ngầm cần tránh các công trình ngầm khác

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

4. Kết luận

UBND phường Mỗ Lao và các ban ngành, đại diện cộng đồng nhất trí và ủng hộ chủ trương xây dựng "trạm biến áp 110 KV và nhánh rẽ đường dây 110KV". Chủ đầu tư và nhà thầu cần chấp hành nghiêm chỉnh các quy định về môi trường

Đại diện Chủ đầu tư	Đại diện cộng đồng	Đại diện tư vấn	Đại diện UBND xã phường
		Nguyễn Thị Loan	CHỦ TỊCH Nguyễn Văn Long

c .PUBLIC CONSULTATION MEETING PHOTOS- Mo Lao WARD.




APPENDIX C: CERTIFICATE OF EIA FOR MO LAO SUBSTATION AND UGC

HANOI PEOPLE'S COMMITTEE

SOCIALIST REPUBLIC OF VIETNAM
Independence – Freedom – Happiness

No: 1716/QĐ-UBND

Hanoi, March 31st, 2014

DECISION

Approval of Environmental impact assessment report
Project: The Mo Lao110 KV substation and transmission line 110kV
Location: Mo Lao urban area, Ha Dong District, Hanoi City
Investor: Hanoi Power Corporation

HANOI PEOPLE'S COMMITTEE

Pursuant to Law on Organization of People's Council and People's Committee dated November 26th, 2005;

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

Pursuant to Decree no.29/2011/ND-CP dated April 18th, 2001 of the Government regarding Regulation on strategic environment assessment, environmental impact assessment, and environmental protection commitment;

Pursuant to Circular no. 26/2011/TT-BTNMT dated July 18th, 2011 of Ministry of Natural Resources and Environment clarifying some articles of Decree no.29/2011/ND-CP dated April 18th, 2001 of the Government.

With reference to the request of the Director of Hanoi DONRE in the Official Document no. 4881/TTr-STNMT-CCMT dated 23th September 2014, with reviewing the revised EIA report according to the comments of the Appraisal Board for the respective EIA report after meeting on 17 July 2014

DECISION

Article 1. Approving the Environmental impact assessment report of Project "110 kV Mo Lao substation and 110KV transmission line" prepared by the Hanoi power network PMU (hereinafter referred to as the project owner) with the following main contents:

1. Scope, scale and capacity of the project: mentioned in the investment records and reports of projects.
2. The environmental protection requirement for the project: The project owner and operation unit must be responsible to implement the following requirements:

   2.1 Responsible for implementation and application of environmental mitigation measures and treatment during the whole construction and operation periods, especially the followings:

   - The process of construction and dismantlement of buildings must comply with regulations on ensuring order, safety and environmental sanitation during the construction of buildings in Hanoi promulgated together with the resolution No. 55/2009/QD-UBND dated 17th March, 2009 and the dust reduction measures specified in the Decision No. 02/2005/QD-UBND dated October 01st, 2005 of the People's Committee of Hanoi City.
   - Noise and vibration in the process of construction shall be prevented by mitigation measures in compliance with the provisions of National Technical Regulation QCVN 26:2010/MONRE (common area) on noise and QCVN 27:2010/MONRE (table 2 – common area) on vibration.
   - Dust and emissions generated during the construction shall be prevented by mitigation measures in compliance with the provisions of National Technical

Regulations QCVN 05:2009 / MONRE on ambient air quality and QCVN 06:2009 / MONRE on toxic substances in the ambient air.

- Domestic solid waste must be collected and processed in accordance with Decree 59/2007/ND-CP dated September 04th, 2007 by the Government on the solid waste, the regulations on common solid waste management in the area of Hanoi issued together with Decision No. 03/6/2013 16/QD-UBND of Hanoi city People's Committee.
- Hazardous waste discharged in the process of construction and operation of the project must be classified, collected, stored, managed and disposed according to the provisions of Circular 12/2011/TT- BTNMT dated April 14th, 2011 by the Ministry of Natural Resources and Environment for the management of hazardous waste.
- All wastewater from the process of construction and operation of the project must be collected and treated in accordance with QCVN 14:2008 / MONRE (column B) before being discharged into the public drainage system in the area.
- Electric magnetics follows Decision No. 183NL/KHKT by Ministry of Energy dated 12th Apr. 1994 – standard for allowed magnetics and regulations on work place monitoring and other related standards.

2.2. Project owner and the unit that manages and operates the project have to implement the annual environmental monitoring program mentioned in the report on assessment of environmental impact. The periodical environmental monitoring results must be sent to the Environment Protection Agency - Department of Natural Resources and Environment in Hanoi for inspection and monitoring.

2.3. Project owner and the unit that manages and operates the project have to compensate those environmental damages that may be caused by the project pursuant to the Environment Protection Law and Decree 177/2009/ND-CP dated 31th December.,2009 of Government on handling of violations of law in the field of environmental protection.

2.4. Project and the unit that manages and operates the project have to ensure budget for the investment and construction and operation of environmental treatment facilities as committed in the report on the assessment of environmental impact.

Article 2. Project owner have to establish, approve and publicly list the environmental management plan of the project; strictly satisfy the requirements of environmental protection in the preparation period for investment and the construction period of the project; Prepare the inspection request letter sent to authorized authorities to inspect and approve the implemented environmental protection works for the operation period, following the to Circular no. 26/2011/TT-BTNMT dated July 18th, 2011 of Ministry of Natural Resources and Environment clarifying some articles of Decree no.29/2011/ND-CP dated April 18th, 2001 of the Government Regulation on strategic environment assessment, environmental impact assessment, and environmental protection commitment

Article 3. During the implementation process, changes on the content of paragraphs 1 and 2 of Article 1 of this Decision, if any, shall be submitted in a written report by the project owner and shall only be made upon written approval of the appropriate authorities.

Article 4. The Decision approving the report on the assessment of environmental impact shall act as the foundation for project investment decision; as a basis for the State's competent management agencies to supervise and inspect the implementation of environmental protection of the project.

Article 5. Authorizing the Director of the Department of Natural Resources and Environment to authenticate the supplemental cover page of the approved report on the assessment of environmental impact and execute the examination and monitoring on the implementation of environmental protection in the approved report on the assessment of environmental impact.

Article 6. This decision takes effect from the date of signing. Chief of Office of the People's Committees of the city, Director of the Department of Natural Resources and Environment, the Heads of provincial Departments, Chairman of People's Committee of Ha Dong district, Director of the board of management of the power grid project in Hanoi and the civil work contractors are responsible for executing this decision./.

Destination:
- As the article 6;
- The Ministry of Resources and Environment(to report);
- The President of People's Committee of City(to report);
- The Vice- President Mr. Vo Hong Khanh;
- Committee Office, Chief of Office, Vice-chief of office Mr. Pham Chi Cong;
- Sub-Department of Environmental Protection in Hanoi;

ON BEHALF OF PEOPLE'S COMMITTEE
pp. Chairman
Deputy Chairman

(signed and sealed)

Vu Hong Khanh

ỦY BAN NHÂN DÂN THÀNH PHỐ HÀ NỘI	CỘNG HOÀ XÃ HỘI CHỦ NGHĨA VIỆT NAM Độc lập – Tự do – Hạnh phúc
Số: 6203 /QĐ-UBND	*Hà Nội, ngày 14 tháng 10 năm 2013*

QUYẾT ĐỊNH

Về việc phê duyệt Báo cáo đánh giá tác động môi trường
Dự án: Trạm biến áp 110kV Mỗ Lao và nhánh rẽ đường dây 110kV
Địa điểm: Khu đô thị Mỗ Lao, phường Mộ Lao, quận Hà Đông, thành phố Hà Nội
Chủ đầu tư: Ban quản lý Dự án lưới điện Hà Nội

UỶ BAN NHÂN DÂN THÀNH PHỐ HÀ NỘI

Căn cứ Luật tổ chức HĐND và UBND ngày 26/11/2003;

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

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

Căn cứ Thông tư số 26/2011/TT-BTNMT ngày 18 tháng 7 năm 2011 của Bộ Tài nguyên và Môi trường quy định chi tiết một số điều của Nghị định số 29/2011/NĐ-CP ngày 18 tháng 4 năm 2011 của Chính phủ;

Xét đề nghị của Giám đốc Sở Tài nguyên và Môi trường Hà Nội tại Tờ trình số 4181 /TTr-STNMT-CCMT ngày 8 tháng 9 năm 2013; kèm theo bản xác nhận, báo cáo đánh giá tác động môi trường dự án "Trạm biến áp 110kV Mỗ Lao và nhánh rẽ đường dây 110kV" đã được chỉnh sửa, bổ sung theo ý kiến nhận xét tại biên bản của hội đồng thẩm định họp ngày 11/7/2013.

QUYẾT ĐỊNH:

Điều 1. Phê duyệt báo cáo đánh giá tác động môi trường của dự án "Trạm biến áp 110kV Mỗ Lao và nhánh rẽ đường dây 110kV" Ban quản lý Dự án lưới điện Hà Nội (sau đây gọi là Chủ dự án) với các nội dung chủ yếu sau đây:

1. Phạm vi, quy mô, công suất của dự án:

Với phạm vi, quy mô được nêu trong báo cáo đầu tư của dự án

2. Yêu cầu bảo vệ môi trường đối với dự án: Chủ dự án và đơn vị tiếp nhận, quản lý vận hành dự án có trách nhiệm thực hiện đúng những nội dung đã được nêu trong báo cáo đánh giá tác động môi trường và những yêu cầu bắt buộc sau đây:

2.1. Chịu trách nhiệm thực hiện và áp dụng các biện pháp giảm thiểu và xử lý ô nhiễm môi trường trong suốt quá trình đầu tư xây dựng và đi vào hoạt động của Dự án, đặc biệt lưu ý các vấn đề sau đây:

- Quá trình thi công xây dựng và phá dỡ các công trình phải thực hiện đúng Quy định về đảm bảo trật tự, an toàn và vệ sinh môi trường trong quá trình xây dựng các công trình tại Thành phố Hà Nội ban hành kèm theo Quyết định số 55/2009/QĐ-UBND ngày 17/3/2009 và các biện pháp giảm bụi theo quy định tại

Quyết định số 02/2005/QĐ-UBND ngày 10/01/2005 của UBND Thành phố Hà Nội.

- Tiếng ồn và độ rung trong quá trình thi công xây dựng dự án phải có biện pháp giảm thiểu, đảm bảo tuân thủ quy định tại Quy chuẩn Kỹ thuật Quốc gia QCVN 26:2010/BTNMT (khu vực thông thường) về tiếng ồn và QCVN 27:2010/BTNMT (Bảng 2- Khu vực thông thường) về độ rung.

- Bụi và khí thải phát sinh trong quá trình thi công xây dựng dự án phải có các biện pháp giảm thiểu, đảm bảo tuân thủ quy định tại Quy chuẩn Kỹ thuật Quốc gia QCVN 05:2009/BTNMT về chất lượng không khí xung quanh và QCVN 06:2009/BTNMT về một số chất độc hại trong 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 16/QĐ-UBND ngày 03/6/2013 của UBND Thành phố Hà Nội.

- Chất thải nguy hại phát sinh trong quá trình thi công xây dựng và vận hành khai thác dự án 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.

- Toàn bộ nước thải phát sinh trong quá trình thi công xây dựng và vận hành của dự án đều phải được thu gom và xử lý đạt QCVN 14:2008/BTNMT (cột B) trước khi thải ra hệ thống thoát nước chung trong 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 ngành.

2.2. Chủ dự án và đơn vị tiếp nhận, quản lý vận hành dự án phải thực hiện chương trình giám sát môi trường hàng năm đã nêu trong báo cáo đánh giá tác động môi trường. Kết quả giám sát môi trường định kỳ phải gửi đến Chi cục Bảo vệ Môi trường - Sở Tài nguyên và Môi trường Hà Nội để kiểm tra và giám sát.

2.3. Chủ dự án và đơn vị tiếp nhận, quản lý vận hành dự án phải đền bù những thiệt hại môi trường do dự án gây ra theo Luật Bảo vệ Môi trường và Nghị định 117/2009/NĐ-CP ngày 31/12/2009 của Chính phủ về xử lý vi phạm pháp luật trong lĩnh vực Bảo vệ Môi trường.

2.4. Chủ dự án và đơn vị tiếp nhận, quản lý vận hành dự án phải đảm bảo nguồn kinh phí đầu tư xây dựng và vận hành các công trình xử lý môi trường đã cam kết trong báo cáo đánh giá tác động môi trường.

Điều 2. Chủ dự án phải lập, phê duyệt và niêm yết công khai kế hoạch quản lý môi trường của dự án; nghiêm túc thực hiện các yêu cầu về bảo vệ môi trường trong giai đoạn chuẩn bị đầu tư và giai đoạn thi công xây dựng dự án; lập hồ sơ đề nghị kiểm tra, xác nhận việc đã thực hiện các công trình, biện pháp bảo vệ môi trường phục vụ giai đoạn vận hành của dự án gửi cơ quan có thẩm quyền để kiểm tra, xác nhận trước khi đưa dự án vào vận hành chính thức theo quy định tại Thông tư số 26/2011/TT-BTNMT ngày 18 tháng 7 năm 2011 của Bộ Tài nguyên và Môi trường quy định chi tiết một số điều của Nghị định số 29/2011/NĐ-CP ngày 18

tháng 4 năm 2011 của Chính phủ quy định về đánh giá môi trường chiến lược, đánh giá tác động môi trường, cam kết bảo vệ môi trường.

Điều 3. Trong quá trình thực hiện nếu dự án có những thay đổi so với các khoản 1 và 2 Điều 1 của Quyết định này, Chủ dự án phải có văn bản báo cáo và chỉ được thực hiện những thay đổi sau khi có văn bản chấp thuận của cấp có thẩm quyền.

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

Điều 5. Ủy nhiệm Giám đốc Sở Tài nguyên và Môi trường xác nhận vào trang phụ bìa của Báo cáo đánh giá tác động môi trường đã được phê duyệt và thực hiện việc kiểm tra, giám sát việc thực hiện các nội dung bảo vệ môi trường trong báo cáo đánh giá tác động môi trường đã được phê duyệt.

Điều 6. Quyết định này có hiệu lực thi hành kể từ ngày ký. Chánh Văn phòng UBND Thành phố; Giám đốc Sở Tài nguyên và Môi trường; Thủ trưởng các Sở, Ban, Ngành liên quan, Chủ tịch UBND quận Hà Đông, Giám đốc Ban quản lý Dự án lưới điện Hà Nội và các nhà thầu thi công xây dựng chịu trách nhiệm thi hành Quyết định này./.

Nơi nhận:
- Như điều 6;
- Bộ Tài nguyên và Môi trường (để b/c);
- Chủ tịch UBNDTP (để b/c);
- Phó Chủ tịch Vũ Hồng Khanh;
- VPUB: CVP, PCVP Phạm Chí Công;
- Chi cục Bảo vệ Môi trường Hà Nội;
- TH, TNMT (b,th);
- Lưu: VT.

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KT. CHỦ TỊCH
PHÓ CHỦ TỊCH

Vũ Hồng Khanh

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 22. 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

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 23. 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.
▪ Once outside, conduct head counts.	▪ Foremen to do head counts of their

Procedure	Remarks
	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 24. 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 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 25. 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 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.