Draft Initial Environmental Examination

June2015

Preparation for Tranche 3 of ADB Multi-tranche Financing Facility for the Power Transmission Investment Program in Viet Nam

Second transformer bank for 220 kV Vung Tau substation

Ba Ria - Vung Tau Province, Viet Nam

Prepared by

Southern Viet Nam Power Projects Management Board:

Electricity of Viet Nam

CURRENCY EQUIVALENTS

(asof24May 2015)

Currency Unit	–	Dong D
D1.00	=	$0.00005
$1.00	=	D21,770

ABBREVIATIONS

ADB:	Asian Development Bank
AH:	Affected Household
AP:	Affected people
BOD:	Biochemical Oxygen Demand
CTF:	Clean Technology Fund
COD:	Chemical Oxygen Demand
DARD:	Department of Agriculture and Rural Development
DoNRE:	Department of Natural Resources and Environment
DCST:	Department of Culture Sport and Tourism
DoLISA:	Department of Labour Invalids and Social Assistance
EA:	Executing Agency
EIA:	Environment Impact Assessment
EMP:	Environment Management Plan
EO:	Environmental Officer
ESU:	Environmental and Social Unit
EVN:	Electricity of Viet Nam
GHG:	Greenhouse gas
GRM:	Grievance Redress Mechanism
HCMC:	Ho Chi Minh City
IA:	Implementation Agency
IEE:	Initial Environmental Examination
MoLISA	Ministry of Labour Invalids and Social Assistance
MoNRE:	Ministry of Natural Resources and Environment
OHL:	Overhead lines
PCB:	Polychlorinated biphenyls
PCR:	Physical Cultural Resources
PIC:	Project Implementation Consultant
PPC:	Provincial Peoples Committee
REA:	Rapid Environment Assessment
ROW:	Right-of-way
PPMB:	Power Project Management Board
PTC4:	Power Transmission Company No. 4
TSS:	Total Suspended Solids
UXO:	Unexploded Ordnance

WEIGHTS AND MEASURES

km:	kilometre
kg:	kilogram
kV:	kilovolt
ha:	hectare
mm:	millimetre

EXECUTIVE SUMMARY

The National Power Transmission Corporation (NPT) of Viet Nam requested the second transformer bank for 220 kV Vung Tau substation be included in Tranche III of Multi-tranche Financing Facility (MFF) for the Power Transmission Investment Program (PTIP) for Viet Nam. The goal of the PTIP is to develop and improve the quality and reliability of power supply throughout Viet Nam. The second transformer bank for 220 kV Vung Tau substation is one of nine individual subprojects that comprise Tranche III. The subproject will meet the immediate power needs of rapidly developing VungTaucity.

Preliminary engineering designs,and safeguard requirements of the subproject have been completed including the approval of the EIA to meet the regulations of the Vung Tau Provincial Department of Natural Resources and Environment (DONRE). The IEE presented herein was prepared pursuant to the ADB SPS (2009). The IEEs of the other eight subprojects of Tranche III were prepared separately.

Subproject Summary

The two major components of the subproject are summarized below.

- Installation of single transformer into new 39.6 ha220kV Vung Tau substation, Vung Tau city, BaRia – Vung Tau province.
- Installation of two<40m connectors to existing 110 kV transmissionline

Potential Impacts and Mitigations

The IEE of the 220kV Vung Tau substation extension indicates that the potential environmental impacts of the subproject are restricted to the construction phase of the subproject components including the approximately 600m new access road. The common construction-related disturbances such as noise, dust, erosion, solid and liquid waste pollution, worker camp issues, reduced access, increased vehicle traffic and traffic accidents, increased risk of worker and public injury can be managed with standard construction practices and management guidelines (e.g., IFC/World Bank 2007*for* Power Transmission and Distribution).

There are no perceived negative induced, or cumulative environmental impacts of the subproject. There are no rare or endangered wildlife, critical habitat, or protected areas in the subproject site which is located in Vung Tau city. The substation is not near a national protected area.The sensitivity of the new substation and transformer to climate change is assessed as low.

A permanent area of 39.6 ha will be acquired for the substation. During construction an additional approximately 12.9 ha will be acquired all of which will affect 73 households. Details of the land acquisition and compensation are provided in the Resettlement Action Plan (RAP) of the subproject prepared by the Social Safeguards Team.

The Environmental Management Plan (EMP) prepared for the subproject provides 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.

Conclusions

The IEE concludes that the feasibility design of The second transformer bank for 220 kV Vung Tau substation combined with available information on affected environments is sufficient to identify the scope of potential environmental impacts of the subprojects. Providing that significant changes to the subproject descriptions do not occur at the detailed design phase, and new sensitive environmental or cultural resources are not determined, further detailed environmental impact assessment (EIA) of the subproject is not required.

TABLE OF CONTENTS

I. INTRODUCTION

1. The National Power Transmission Corporation (NPT) of Viet Nam has requested the subproject defined by the new 220 kV Vung Tau substation 110 kV connector lines be included in Tranche III of the Multi-tranche Financing Facility (MFF) for the Power Transmission Investment Program (PTIP) for Viet Nam. The Vung Tau subproject is one of nine individual subprojects that comprise Tranche III.

2. The goal of the PTIP is to develop and improve the quality and reliability of electrical power supply throughout Viet Nam. The Vung Tau subproject will meet the immediate power needs of rapidly developingVung Tau city and area. The NPT is the executing agency of the subproject with the South Vietnam Power Projects Management Board (SPPMB) being the implementing agency.

3. The IEE presented herein was prepared pursuant to the requirements of the ADB SPS (2009). The IEEs of the other eight subprojects of Tranche III were prepared separately.

A. Assessment Context

4. The Vung Tau subproject was assigned Environmental Category B pursuant to the ADB's Safeguard Policy[1] and recent good practice sourcebook guidance[2]. 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[3]. The results of the rapid environmental assessment (REA) of the subproject are in Appendix A.

5. The IEE was prepared for the Vung Tau subproject in the feasibility design stage using available data and information on sensitive ecological and cultural receptors that exist for the subproject site. The EIA required by the Viet Nam Law on Environmental Protection LEP (2014) and Decree 18/2015/ND-CP has been completed and approved by the Vung Tau Provincial Department of Natural Resources and Environment (DONRE)

6. The detailed designs for the Vung Tau subproject will follow subproject approval. The Environmental Management Plan (EMP) that has been prepared for the subproject (see section IX) will need to be updated where necessary to meet the final detailed designs of the subproject.

II. POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK

7. The 220 kV Vung Tau substation 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

8. The recently revised Viet Nam Environment Protection Law No. 55/2014/QH13 of 23rd June 2015(LEP 2014)prescribes the requirements for environmental assessment for international and domestic project interventions that affect natural and social environments. Following the revised the LEP (2014) the supporting Government Decree 29/2011/ND-CP on strategic environmental assessment (SEA), and environmental impact assessment (EIA) was

[1]ADB, 2009. Safeguard Policy Statement, ADB Policy Paper.
[2]ADB, 2012, Environmental Safeguards, A Good Practice Sourcebook, Draft.
[3]Footnote 6, pg 19.

replaced withDecree 18/2015/ND-CP, dated 14th February 2015. Supporting Circular 27/2015/TT-BTNMT date 29/05/2015detail guideline for Decree 18.

9. The screening criteria of Decree 18 distinguish projects that require a full EIA from comparatively simpler projects that require an IEE [formerly EPC]. The difference between the government (GoV) EIA and IEEreflects the required level of assessment, and final review and appraisal that is required.The screening criteria for power transmission projects in the Decree 18 have changed and are now based on voltage. All projects undertaken with voltages exceeding 110 kV require EIAs.

10. Thus, the 220 kV Vung Tau substation subproject required a DONRE EIA to satisfy the GoV regulatory framework.The EIA was prepared and approved in accordance with Vietnam Law and approved by the Vung Tau PPC on 31st December 2014. The GoV Environmental Compliance Certificate (ECC) for the subproject is found in Appendix C.

B. Power Transmission Sector Regulatory Framework

11. Table 1 summarized key laws and policies governing the power sector in Viet Nam that apply to the subproject. Specific legal directives and required approvals for the subproject are summarized in Table 2.

Table 1.Power Network Legislation and Associated Legal Instruments

Laws and Regulations	Description
A. Law	
Law No. 24/2012/QH13 issued on November 20, 2012	Amends and supplements a number of articles of the Electricity Law No. 28/2004/QH11 of December 3, 2004
Electricity Law No. 18/2004/QH11 dated December 3,2004	Prescribes the electricity development planning and investment; electricity saving; electricity markets; rights and obligations of organizations and individuals conducting electricity activities and using electricity; protection of electric equipment and facilities, electricity works and electric safety.
B. Decrees	
Decree No 81/2009/NĐ-CP, issued August 17, 2005	On the safety and protection of high-voltage power grids.
Decree No 14/2014/ND-CP dated February 26, 2014	Decree stipulates in detail the implementation of electricity law regarding electricity safety, including: safety in generation, transmission, distribution and use of electricity in production; compensation and assistance of housing, works, land and plants in the safety corridor of overhead power transmission line upon the construction of high-voltage grid.
C. Circular	
Circular No 22/2010/BXD issued on December 3, 2010	Regulation on labor safety in work construction, construction and installation of equipment which are newly built, repaired, renovated, relocated, embellished or restored; dismantling of works and warranty for maintenance works.
Ministry of Industry and Trade Circular No. 03/2010/TT-BCT, issued January 22, 2010	Regarding protection on high-voltage power network

Land Development and Construction Regulatory Framework.

12. Directives for land development and construction that are relevant to the power transmission sector are summarized in Table 2.

Table 1. Applicable land development and construction law and policy

Laws	Description
A. Law	
Land Law No 45/2013/QH13 dated November 29, 2013	This Law prescribes the regime of land ownership, powers and responsibilities of the State in representing the entire-people, owner of land and uniformly managing land, the regime of land management and use, and the rights and obligations of land users.
B. Decrees	
Decree No. 44/2014/ND-CP dated May 15, 2014	This Decree regulates methods for land pricing, adjustment to land price brackets and land price lists, specific land pricing and provision of consultancy on land pricing.
Decree No. 37/2014/ND-CP dated May 15, 2014	The Decree details some articles of the Law on Land concerning compensation, support, and resettlement upon land expropriation by the State.
C. Circulars	
Circular No. 36/2014 / TT-BTNMT dated June 30, 2014	Specifying detailed methods of valuation of land prices, construction, adjustment of land prices; specific land prices valuation and land prices valuation consulting service.
Circular No. 37/2014/TT-BTNMT dated June 30, 2014,	Providing detailed regulation on compensation, assistance, and resettlement when the State acquires land.
Document of Prime Minister No. 1665/TTg-CN, dated October 17, 2006	Regarding management of clearance of site, mine and explosive ordnance for construction

C. ADB Safeguard Policy

13. 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).

14. 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 and FI projects is normally not required but environmental implications need to be reviewed.

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

15. The following are additional applicable directives for environmental assessment and protection for domestic and international development in Viet Nam:

Table 3: Environmental Protection Laws and Regulations

Laws and Regulations	Description
A. Laws	
Law on Environmental Protection No. 55/2014/QH13, in effect on January 1, 2015	This Law provides statutory provisions on environmental protection activities; measures and resources used for the purpose of environmental protection; rights, powers, duties and obligations of regulatory bodies, agencies, organizations, households and individuals who are tasked with environmental protection.
Biodiversity Law No. 20/2008/QH12 dated November 13, 2008	Pursuant to the 1992 constitution of the Socialist Republic of Vietnam, which was amended and supplemented under Resolution 5/2001/QH10dated December 25, 2001 of the 10th National Assembly, this law stipulates biodiversity conservation and sustainable development.
B. Decrees	
Decree No. 18/2015/ND-CP, dated Feb. 14, 2015	Provides the requirements for Environmental Protection Plan, Strategic Environmental Assessment, Environmental Impact Assessment and Environmental Protection Scheme.This Decree took effect on April 1, 2015.
Decree No. 19/2015/ND-CP, dated Feb. 14, 2015	Regulation detailing a number of articles of the Environmental Protection Law. This Decree took effect on April 1, 2015.
Decree No 80/2014/ND-CP issued on August 6, 2014	This Decree regulates drainage and treatment of wastewater in urban areas, industrial zones, economic zones, processing and export zones, and rural residential areas. It also prescribes the rights and obligations of organizations, individuals and households having activities related to drainage and treatment of wastewater within Vietnam's territory.
Decree No.179/2013/ND-CP dated November 14, 2013	This Decree took effect on December 30, 2013 and prescribes the sanction on administrative violations on the domain of environmental protection.
Decree No.59/2007/NĐ-CP dated April 9, 2007	Prescribes the regulations on solid waste management
C. Circulars	
Circular No.27/2015/TT-BTNMT dated May 29, 2019	Guidance for Strategic Environmental Assessment, Environmental Impact Assessment, and Environmental Protection Plan.
Circular No. 01/2012/TT-BTNMT dated March 16, 2012	Regulation on setting-up, assessment, approval, inspection and certification of the implementation of detailed environmental protection project; setting up and registration of simple environmental protection projects.
Circular No. 22/2014/TT-BTNMT dated May 5, 2014	Provides the guidelines for the implementation of the Government's Decree No. 35/2014/ND-CP of April 29, 2014, amending and supplementing a number of articles of the government's decree No. 29/2011/ND-CP of April 18, 2011, providing strategic environmental assessment, environmental impact assessment and environmental protection commitment.
Circular No 12/2011/TT-BTNMT dated April 14, 2011	Regulation on the management of Hazardous Waste. Under this law, generators of hazardous waste are required to register with MONRE/DONRE and to have separate hazardous waste storage area. The treatment and disposal of hazardous waste should be contracted through a registered hazardous waste management company.

Laws and Regulations	Description
Circular No. 39/2010/TT-BTNMT dated December 16, 2010	National technical regulation on noise (QCVN 26/2010/BTNMT) and on vibration (QCVN 27/2010/BTNMT)
Circular No 25/2009/TT-BTNMT dated November 16, 2009	National technical regulation on hazardous waste threshold (QCVN 07:2009/BTNMT).
Circular No 32/2013/TT-BTNMT dated October 25, 2013	National technical regulation on ambient air quality (QCVN 05/2013/BTNMT)
D. Decisions	
Decision No. 16/2008/QD-BTNMT dated December 31, 2008	National technical regulation on surface water quality (QCVN 08.2008/BTNMT); Underground water quality (QCVN 09/2008/BTNMT) and Domestic wastewater (QCVN 14/2008/BTNMT)

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 coastalwater
- QCVN 14:2008/BTNMT–National technical regulations on quality of domesticwastewater
- 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 05:2013 – Standards for ambient air quality
- QCVN 06:2009 – 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

- IFC/World Bank Group, 2007. EHS Guidelines, *for* Electric Power Transmission & Distribution
- AWWA Standard Methods for Measurement and Analysis Environmental Quality

International Environmental Management Conventions

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

- 2009, Stockholm Convention on Protection of Human Health and the Environment from Persistent Organic Chemicals [including PCBs]
- 1971, Convention on Wetlands of International Importance Especially as Waterfowl Habitat (Ramsar)
- 1982, Protocol to Amend the Convention on Wetlands of International Importance Especially as Waterfowl Habitat, Paris
- 1972 Convention Concerning the Protection of the World Cultural and Natural Heritage October 1987]
- 1973, Convention on International Trade in Endangered Species Wild Fauna and Flora
- 1985 FAO International Code of Conduct on the Distribution and Use of Pesticides
- 1985 Vienna Convention for the Protection of the Ozone Layer
- 1987 Montreal Protocol on Substances that Deplete the Ozone Layer
- 1992, Copenhagen Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer, Copenhagen
- 1989, Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal
- 1992, United Nations Framework Convention on Climate Change
- 1992, Convention on Biological Diversity

III. SUBPROJECT DISCRIPTION

17. The 220 kV Vung Tau substationincluding the transformer financed by the ADB subproject will increaselocal capacity to meet the increasing electricity demand in Vung Tau City of Ba Ria - Vung Tau Province. The substationwill provide a safe and reliable power supply for the peak load in the Vung Tau city and its vicinity, provide 110 kV power supply for the Vung Tau City area, and meet the growing demand of some local industrial parks. The substation will also reduce power losses and enhance power quality.

18. The primarycomponents of thesubproject consist of:1) installation of a transformer; andinstallation of two short connector linesinto thenew 220 kV VungTausubstation facility. The substation will be financed by the EVN/NPT.

1. 220 kV Vung Tau substation

25. The substation infrastructure is located in an area of 39.6 ha in Ward no.11, Vung Tau City, Ba Ria – Vung Tau Province southeast of HCMC, Viet Nam (Figure 1). The site isbounded by the National Highway 51 to the north, the existing 110kV Ba Ria-Vung Tau transmissionline to the east, eucalyptus and cashew plantations to west and Rach Ba lake to the south.

a. Primary electrical component.

19. The substation will be equipped with two 220 kV power transformers with the following specifications:

- Capacity ratio: 125/125/40MVA
- Group of winding: YNa0d11

- High voltage winding: potential level 225+8x1,25%kV with rated capacity of 125MVA
- Medium voltage winding: potential level 115kV with rated capacity of 125MVA
- Low voltage winding: potential level 23kV with rated capacity of 10MVA

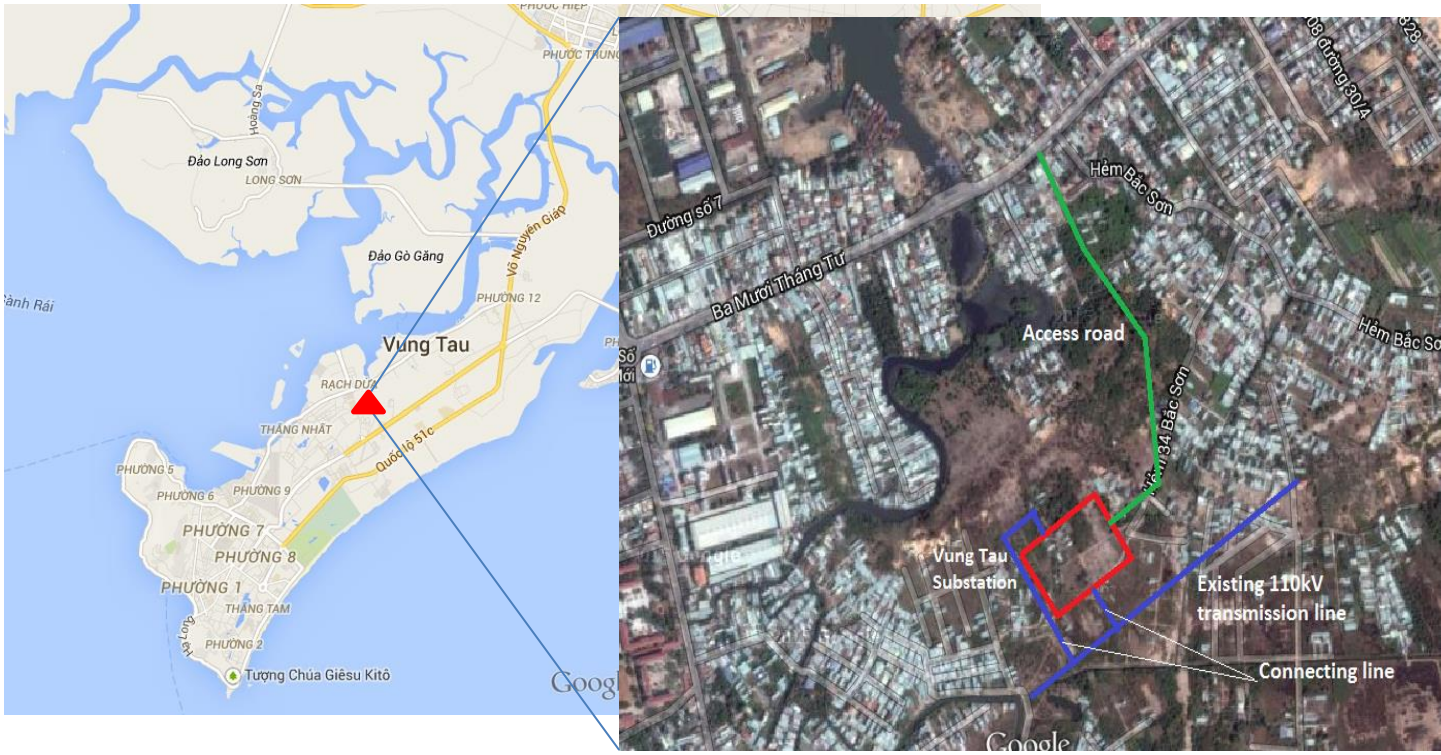
20. The two transformers will utilize a similar diagram which is described as below:

A) 220kV side: 01 feeder bay to Phu My thermal power plant, 01 feeder bay to Ba Ria thermal power plant. Additional feeder for the 2nd transformer will be installed.

B) 110kV side: 02 feeder bays to Ba Ria thermal power plant, 02 feeder bays to 220 kV Vung Tau substation, 02 feeder bays to Thang Tam and Dong Xuyen industrial zone substations. Additional feeder for the 2nd transformer, 01 feeder bay to Long Duc and 01 feeder bay to Cauwillbeinstalled in the 2st phase.

C) 22kV side: suppliedfrom the power supply of local 22kV grid.

Figure 1. Location of 220 kV Vung Tau substation



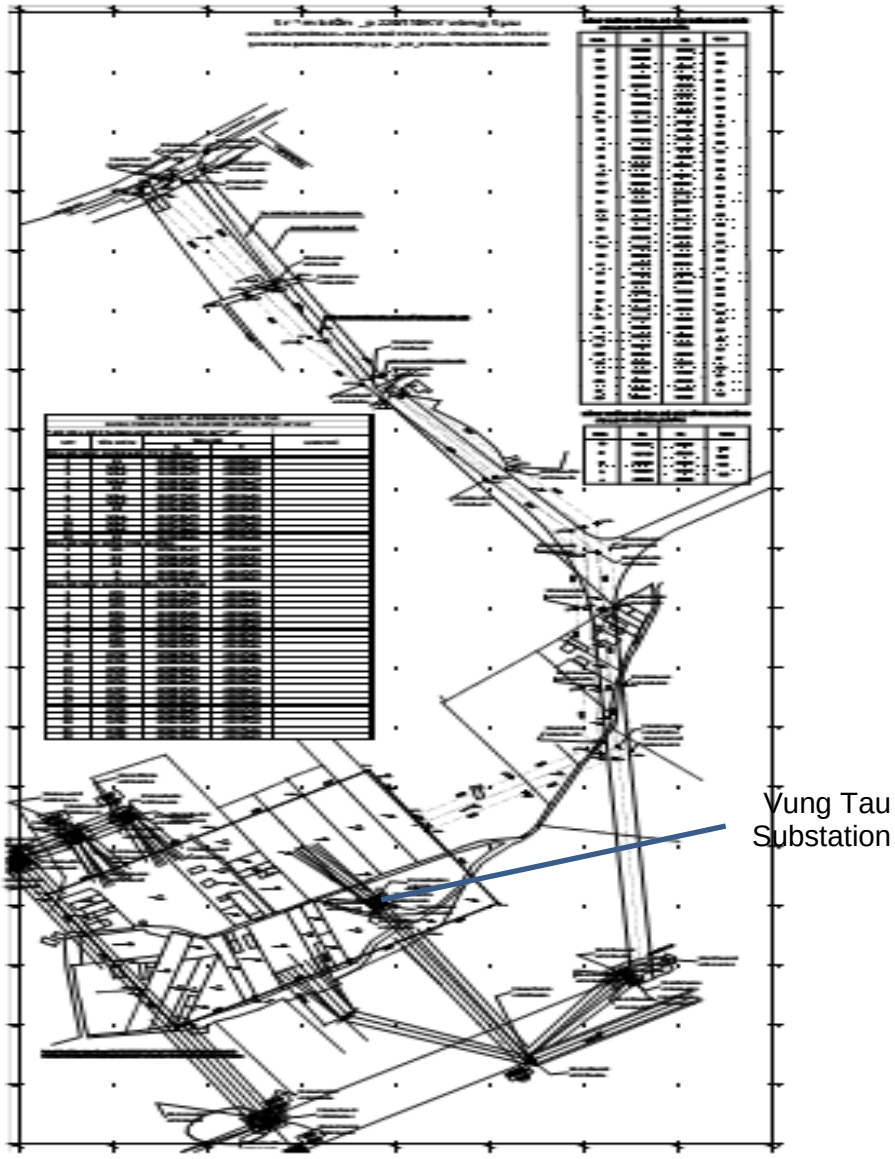
b. Civil work.

21. The civil works include the substation facility which includes the transformers and operation of the substation houseof 26.2 ha, an access road occupying approximately 12.0 ha, and a service road surrounding the substation of 1.4 ha.

22. The supporting components include a fire protection system which consists of fire cooling sprinkler system, automatic misting system for the 220 kV transformers, and the primary fire prevention tool identified as portable hand fire extinguishers.The communication

and SCADA system utilizes the existing configuration at the substation.The subproject layout is presented in Figure 2.

Figure 2. Plan view of new 220 kV Vung Tau substation



Source: Vung Tau Substation Design Document

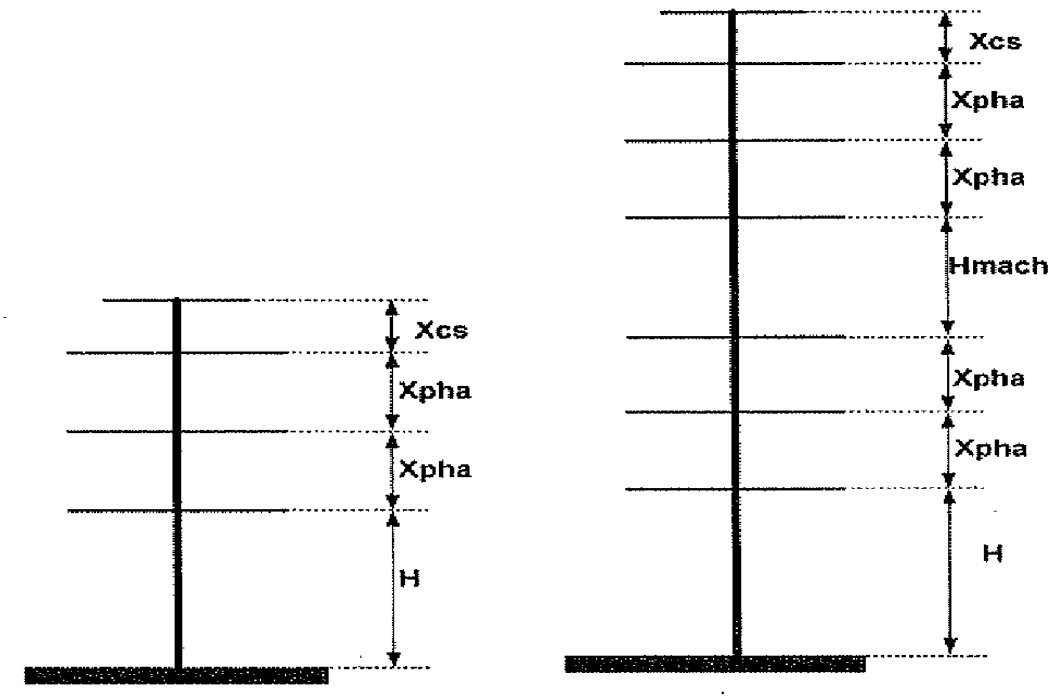
2. Transmission line

23. The short connectors join theexisting110kVBa Ria-Vung Tau overhead transmission line. The110kVtransmission line will supply power from the Phu My thermal power tithe new Vung Tausubstation.Theconnectors will cross an area perennial scrub crops in Ward no.11, Vung Tau City (Figure 1).The main component specifications of the transmission are summarized in Table 3.

Table 2.Specifications of existing 220 Vung Tau kV transmission line

Line length	2,169 m
Voltagelevel	110kV
Numberofcircuits	Doublecircuits and 4 circuits
ROW	24m
Location	Going overhead of perennial crops in Ward no.11, VungTau City
Beginningpoint	The new steel pole of double circuits and 4 circuits to be built on the existing Ba Ria–Vung Tau 110kV transmission line at section 171 and 172
Endpoint	110kV bus bar of 220 kV Vung Tau substation
Tower	7 towers of concretized steel of 20m tall
Cable	ACRS 477MCM
Insulator	Ceramic or glass type of 70kN and 120kN

Figure 3. Design of towers



Double circuit tower Four circuit tower

IV. DESCRIPTION OF THE ENVIRONMENT

24. Environmental baseline information was obtained primarily from Ba Ria-Vung Tau Statistical Yearbooks, reports by Vung Tau Municipal People's Committee, reports from

PECC2 consultant company and other EAs conducted for the same area. The description of affected environments focuses on natural features and land use.

A. Physical Environment

1. Climate

25. The subproject area is situated in the Southern Climate Zone which is typified by a tropical monsoon climate of high temperatures with very little seasonal variation. Annual average temperature is around 25.8^{o}C. There are two seasons in a year: the dry season from November to April while the rainy season is observed from May to October. The rainy season usually starts with tropical showers accompanying thunderstorms and high wind velocity.

a. Temperature

26. Air temperature is high and changes little annually. Average temperature from 2011 – 2013 is 25.8^{o}C. The mean difference between the hottest month and the coldest month in 2013 was about 3^{o}C. The cool months of year are from December to January (Table 4).

Table 3.Temperatureregime at Vung TauMet Station (^{o}C)

Station	Year	Mean Value by Month												YearAvg
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Vung Tau	2011	25.8	26.0	27.3	27.7	29.0	28.3	27.8	28.2	27.8	27.8	27.7	26.3	27.4
	2012	26.2	25.0	28.3	27.7	29.1	27.6	28.1	28.6	26.3	28.0	27.4	27.9	27.5
	2013	26.2	27.2	28.2	29.7	30.0	28.7	28.1	28.1	27.9	27.9	27.6	26.9	28.0

Source: Ba Ria-Vung Tau Statistical Yearbook 2013

28. According to the report of the Working Group on Climate Change and Development, (2007), in the Mekong region) average temperatures over the last century have risen between 0.3 to 0.8°C. Further temperature increases are expected along with more extreme weather events, such as floods and droughts, changes in the amount and distribution of rainfall, disruption of seasonal monsoons, and rising sea levels.

b. Sunlight hours

27. Average number of sunlight hours in Vung Tau is approximately 2,400 hours per year. In dry season highest sunlight hours occur approximately 9 hours/day comparing to the lowest 3.7 hours/day the rainy season (Table 5). There are remarkable fluctuations in sunshine duration from year to year and between months which reflects a clear seasonal pattern.

Table 4.Average number of sunlight hours (hrs)

Station	Year	Mean Value by Month												Year Total
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Vung Tau	2011	158	244	203	250	222	194	203	238	151	221	200	150	2,434
	2012	132	250	256	265	250	196	199	243	139	217	214	225	2,586
	2013	201	233	288	203	237	156	157	187	141	187	186	112	2,288

Source: Ba Ria-Vung Tau Statistical Yearbook 2013

c. Humidity and Rainfall

28. Average relative humidity inVung Tau City is approximately 80%, and highestduring the rainy season (Table 6).The highest average value is usually detected in September and October while the lowest average in January andFebruary. The monthly average difference between the humidity of the rainy season and dry season is minor (10%), but the deviation between min-max values within each month is very large (about 40% -50%). In space,air humidity drops from the sea to the mainland.

Table 5.Monthly humidity in Vung Tau Station (%)

Station	Value	Month												YearAvg
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Vung Tau	Avg	76	76	76	76	78	81	82	82	84	84	81	78	79
	Max	96	95	93	95	99	98	97	99	99	99	97	95	99
	Min	42	41	45	51	47	51	56	54	55	51	47	43	41

Source: Ba Ria-Vung Tau Statistical Yearbook 2013

Table 6.Monthly rainfall in Vung Tau Station (mm)

Station	Year	Value by Month												Year Total
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Vung Tau	2011	1.2	-	1.50	80.1	193	120.4	258.4	144.3	234.2	143.2	171.5	35.5	1,383.3
	2012	0.2	35.9	30.6	236.9	74.2	141.5	198.1	161.7	190.0	97.7	11.1	20.8	1,198.7
	2013	7.1	0.9	0.0	104	98.9	192.3	229.9	270.5	220.0	113.7	110	17.6	1,364.9

Source: Ba Ria-Vung Tau Statistical Yearbook 2013

29. The province of Ba Ria-Vung Tau is considered the region with the average rainfall compared to other regions in the country with annual rainfall of about 1,250 mm (Table 7). The rainfall distribution escalates from the sea to inner land, from north to south. The precipitation in rainy season takes up for 80-90% of total yearly rainfall.

30. Being situated at low latitudes the province is less directly affected by storms and tropical depressions which often cause widespread heavy rain. Therefore, in the subproject area, rains are localized in a short time; 2-3 day rains are very rare.

d. Wind velocity.

31. Similar to other provinces in the southeastern region, Ba Ria-Vung Tau is influenced by 2 prevailing winds approximately 1.5 to 3.0m/s. Overall, strong winds often occur in the dry months and wind velocity weakens in the rainy months. The highest wind speed can reach from 20-25m/sin cases of storms and swirls.(Table 8). There are about 130 days with thunderstorm a year in Vung Tau City.

Table 7.Wind velocity in Vung Tau station

Parameters	Months, year												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year (Avg.)
Wind velocity (m/s)	3.1	3.8	4.2	3.8	2.4	2.4	2.5	2.5	1.7	1.6	1.9	1.9	2.6

Source: National technical regulation on natural condition data in construction _QCVN 02:2009/BXD

2. Air quality

29. To assess ambient air quality in the project area, PECC2 in collaboration with the Centre for Research and Technological Services sampled and analyzed air quality, microclimate, noise and electromagnetic fields in three locations in the subproject area (Table 9).

30. The results shows that the air quality (SO_2, NOx, CO, dust) of the area is satisfactory as required by QCVN 05:2008/BTNMT. Noise level is also within GoV standard, compared to QCVN26:2010/BTNMT.

Table 8. Air pollutants measured at the Vung Tau Substation

No	Sampling location	Noise	Dust	SO_2	NO_2	CO
		(dBA)	*(mg/m^3)*	*(mg/m^3)*	*(mg/m^3)*	*(mg/m^3)*
1	K1	50.4	0.13	0.015	0.011	3.12
2	K2	50.6	0.11	0,012	0,011	3.08
3	K3	61.5	0.14	0,017	0,015	3.12
QCVN26:2010/BTNMT		**70**	-	-	-	-
QCVN05:2013/BTNMT		-	**0.3**	**0.35**	**0.2**	**30**
Note on location:						
K1:	431.361 E; 1.149.832 N	At the residential area 100m from the substation to the left.				
K2:	431.382 E 1.149.807 N	At the site of 2nd transformer				
K3:	431.213 E 1.149.812 N	At the access road, intersection with National Highway 51				

Source: EIA report for the substation prepared by PECC2 and Centre for Research and Technological Services, 2014

3. Topography, Geology and Soils

32. Topography of Ba Ria - Vung Tau is characterized by low hills, volcanic plateau, low plain and coastal plains with a clear stratification. Terrain elevations vary from 0m-504m. Vung Tau City is positioned in Vung Tau peninsula which is surrounded by the sea and a river. It has a 20km coastline formed by 2 mountains, Nui Lon and Nui Nho, and long sand dunes. The project location is situated in a relatively flat terrain with ground elevation ranging from -0,3m to 2.4m.

33. According to the results of an investigation, done by PECC2 in August 2014, in conjunction with field work and laboratory analysis, soil in the subproject area to the depth of 15m is divided in 3 layers as presented in Table 10.

- **Layer 1 (ambQIV**): yellowish-bluish grey, less dense to dense, fine sand (depth 0.8m ÷ 1.2m) in plastic clay loam. This layer distributes throughout the substation site, depth varies from 9.2m ÷ 10.6m.

- **Layer 2 (amQI-III):** stiff to very stiff, greyish brown, bluish grey clay loam. This layer also distributes throughout the substation site with depth varying from 2.5- 2.9m.

- **Layer 3 (amQI-III):** stiff to very stiff, bluish-yellowish grey clay. This soil stratum underlines the stratum 2 and exists throughout the substation site, with depth unidentified beyond the bottom of the borehole.

Table 9.Soil characteristics at Vung Tau substation site.

Layer / Physico-mechanicalproperties	*Layer 1 Sand*	*Layer 2 Clay loam*	*Layer 3 Clay*
Moisture contents (W%)	20.8	25.4	30.0
Natural density γ_w(g/cm^3)	1.98	1.94	1.91
Dry density γ_K(g/cm^3)	1.64	1.55	1.47
Specific gravity Δ	2.65	2.71	2.72
Porosity n%	38.1	42.9	46.0
Void ratio ε_o	0.617	0.752	0.851
Degree of saturation G%	89.4	91.6	95.9
Consistency B	-	+0.34	+0.31
Compression ratio a_{1-2} (cm^2/kG)	0.009	0.023	0.036
Internal friction angle φo	30^0 55’	15^0 09’	13^0 15’
Cohesion C (kG/cm^2)	0.037	0.177	0.308
Deformation module Eo (kG/cm^2)	260	80	44
Loading standard Ro (kG/cm^2)	1.6	1.3	1.7

Source: EIA report for the substation prepared by PECC2 and Centre for Research and Technological Services, 2014

a. Soil.

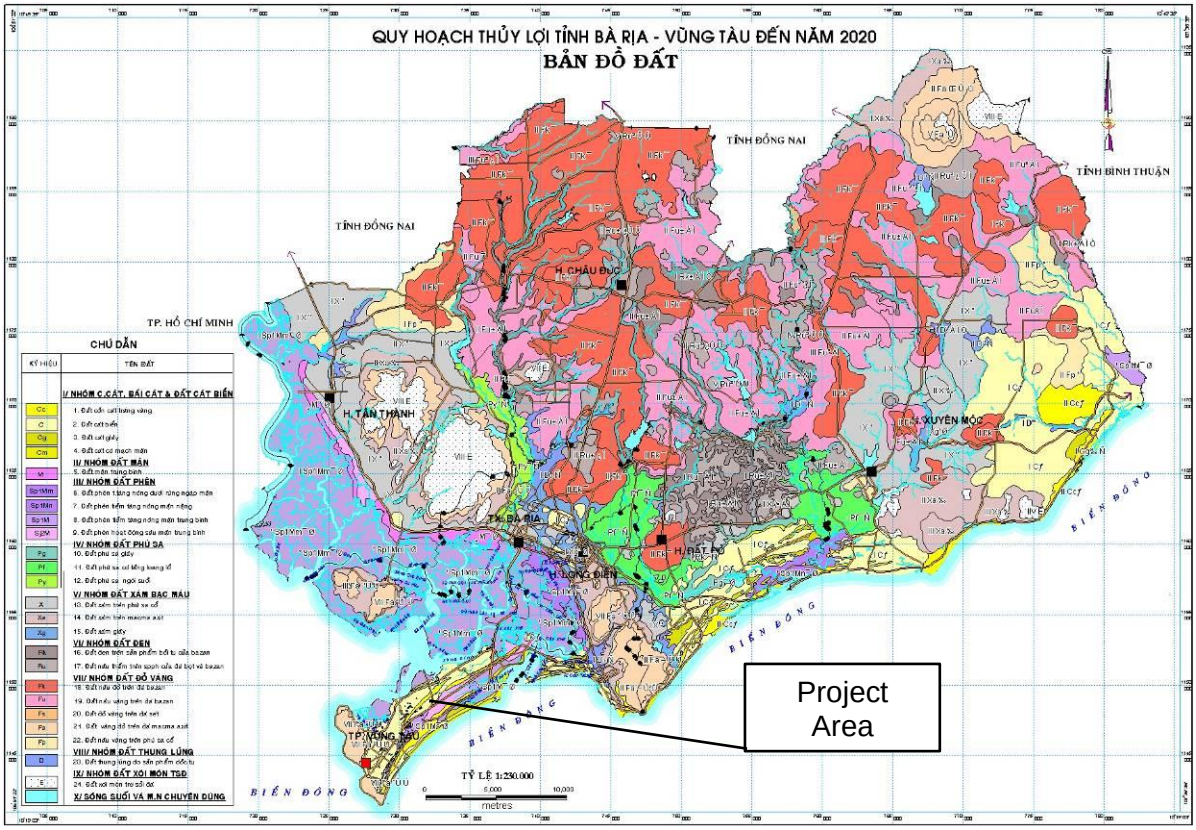
31. Major groups of soil exist in the province of Ba Ria-Vung Tau excluding Con Dao island (Figure 2). The City of Vung Tau where the substation is situated has 3 major groups as follows:

- **Sandy soils:**accounting for 11.6% of the whole area, distributed mainly in the coastal communes. Sandy soils have very low fertility, humus under 1%, low water retention, and high alkaline. It can be used for various land use purposes, including forests, orchards, perennial crops and food crops.

- **Saline soil:** occupying about 0.6% of the total natural area. This soil group distributes in coastal areas and estuaries. Suitable for salt and brackish water and seawater aquaculture.

- **<u>Ancient alluvial feralit soil:</u>**occupying about 42.3% of the total natural area. Suitable for some perennial crops.

Figure 4.Soil types in Ba Ria - Vung Tau province



*From*BaRia- Vung Tau IrrigationMaster Plan to 2020, 2011.

4. Surface water / groundwater resources

34. Ba Ria - Vung Tau province has about 24 rivers and canals with a length of 231 km, of which ThiVai River, Dinh River and Ray River are three major surface water sources serving agricultural, industrial and provide drinking water for the entire province.

35. In the subproject area in Vung Tau city, there are some small canals in neighborhoods of the site that are affected by the irregular semi-diurnal tide. Generally the terrain level at the proposed site is relatively low and prone to flooding during simultaneous storm surges and floods. This characteristic has been taken into account for the design of the substation.

36. The province is considered groundwater resource poor. Vung Tau city is located in a low-to-no groundwater region with an exploitable capacity of 6,200m^3/day. The aquifers lie in Pleistocene (qp) of condense basal with low water contention capacity. In the coastal areas, the groundwater is either completely salinized or non-existent. Currently, this resource is being adversely impacted by the overexploitation as the result of fast industrialization in the City.

5. Water quality

37. According to environmental monitoring data of the Vung Tau Department of Natural Resources and Environment, the level of pollution of surface waters of rivers and lakes in the city ofVung Tau is increasing severely. In particular, it is extremely high at the downstream of rivers such as Dinh River, Ray River, ThiVai River and the recipient Ganh Rai Gulf before entering the sea. Surface water pollution is caused by effluents from manufacturing facilities, business services and domestic sewage. Rach Ba Lake in vicinity of the project site receives about 80% of the City's wastewater. 27 seafood processing and plastic recyclingfacilities are directly discharging their wastewater into the lake without treatment.

a. Surface water quality

38. A recent survey of water quality close to the proposed Vung Tau substation in August 2014 was undertaken by EIA team. The team sampled water at the surrounding canals and Rach Ba Lake. The analysis showed a heavy pollution in surface water when most sampled parameters exceeded limits allowed by column B1 - National technical regulation on surface water quality QCVN 08:2008/ BTNMT (Table 11).

Table 10.Surface water quality at Vung Tau substation, 2014

No	Parameter	Unit	Result			QCVN08:2008/BTNMT, Colum B1
			NM1	NM2	NM3	
1	pH	-	7.10	6.59	7.13	**5.5– 9**
2	DO	mg/l	**3.20**	**3.90**	4.20	**≥4**
3	Total suspended solid(TSS)	mg/l	**150**	**204**	**90**	**50**
4	COD	mg/l	**520**	**480**	**412**	**30**
5	BOD_5	mg/l	**389**	**396**	**320**	**15**
6	Nitrate	mg/l	7.578	8.192	7.364	**10**
7	Phosphate	mg/l	**3.924**	**3.075**	**3.651**	**0.3**
8	Total oil	mg/l	**0.50**	**0.68**	**0.25**	**0.1**
9	Coliform	MPN/ml	**24,000**	**30,000**	**28,000**	**7,500**

Note on location:		
NM1:	431.441 E; 1.149.770 N	At the beginning of the canal behind the substation.
NM2:	431.422 E 1.149.635 N	At the end of the canal behind the substation
NM2:	431.012E 1.150.374 N	At Rach Ba Lake

Source: Vung Tau EIA report, August 2014

a. Groundwater quality

32. Groundwater in Vung Tau Province is the key source for residential and industrialareas while surface water sources are highly polluted. Reports from the Ba Ria-Vung Tau Province's Center for Environmental Monitoring and Analysis suggest that groundwater in

the province is contaminated with microorganisms and acidification (reduced pH) in some places.

6. Electromagnetic field safety

33. The EIA team also conducted measuring potential harmful effects by the exposure to electromagnetic field (Table 12). The results measured at 220 kV Vung Tau substation demonstrated that electromagnetic field intensity remains within the allowed level of safety for operators and people nearby.

Table 11.Measurement of electromagnetic field at Vung Tau substation, 2014

TT	Parameter	Unit	Result		
			D1	D2	D3
1	Electromagnetic intensity	V/m	0.11	0.12	0.14
Safety standard set by Decree 14/2014/ND-CP		kV/m	≤ 5	≤ 5	≤ 5
Note on location:					
D1:	431.371 E 1.149.820 N	At the Operation house			
D2:	431.353 E 1.149.814 N	At the 220kV distribution yard			
D3:	431.364 E 1.149.811 N	At the 1st transformer site			

Source: EIA report for 220 kV Vung Tau Substation, 2014.

B. Biological Environment

1. Vegetation and Land Use

39. Natural forests of Ba Ria-Vung Tau province remains at about 27,000 ha, accounting for 13% of the whole province. It is a modest figure compared with total 113,000 ha of the low-hill land area (Table 13). For a long time, the vegetationof Ba Ria-Vung Tau province has been ravaged by war and then by human exploitation activities. Since 1992, forest across the province was closed following by a directive of the provincial People's Committee.

40. More than half of the Vung Tau natural area is used for non-farm purposed such as urban and industrial development. In Ward no.11 where the substation is sited, the vegetation cover is characterized by garden fruits and perennial crops such as cashew, eucalyptus, longan, banana, mango, coconut, red cotton tree etc. There is no forest in this ward.

Table 12.State of Land Use in Vung Tau City in 2010

	Land type	Area (ha)	Proportion (%)
	Total	**15,002.75**	**100**
I	**Agricultural land**	**7,129.37**	**47.52**
	Rice field	218.84	1.46
	Perennial plantation	1,449.88	9.66

	Protection forest	1,803.56	12.02
	Salt making	353.31	2.35
	Aquaculture	2,253.50	15.02
II	**Non-agricultural land**	**7,799.97**	**51.99**
	Urban area	1,180.08	7.87
	Office area	38.93	0.26
	Army	365.22	2.43
	Public Security	31.59	0.21
	Industrial park	158.20	1.05
	Other land	6034.95	40.22
III	**Unused land**	**73.41**	**0.49**

Source: 2014 Vung Tau City's Land Use Masterplan to 2020.

2. Wildlife

41. The Ba Ria-Vung Tau Province is known for the two national reserves, Binh Chau-Phuoc Buu and Con Dao, are far from the project site. The coastal side of Vung Tau City is barren rock ridges where vegetation, mostly mangrove forest, is very poor and being depleted. The project site has been residential area for long-term period and therefore no original habitats remain in the area. No significant wildlife occurs any longer within the area.

42. Based on the field inspections and interviews with key informants, there are relatively few birds in the project area. The site is not established as a path of migratory birds. PECC2 stated that there have been no reports about birds colliding with existing transmission lines.

3. Conservation Areas

43. There are no conservation areas within the proximity of the substation. The above mentioned national reserves are 50km and 180km from the site, respectively.

C. Socio-economic condition

1. Population

44. In 2012, the population of Vung Tau City is 380,000 people with population density of 2,714 people/km². In particular, the inner city population consists of 298,969 people. The city has a rate very high urbanization; the urban population accounts for 95.27% while the rural population accounts for only 4.73%. 22 ethnic groups are living in the City with an overwhelming majority of Kinh people (98.94%). Other ethnic groups include Chinese (5.9%), Khmer (0.2%), Tay (0.1%) and Muong, Nung, Thai, Dao, Cham and San Diu.

45. According to the survey by the social safeguards team in 2015, in Ward no.11, there are 26745 people in 7408 households. 25 households in the ward belong to the minority ethnic groups (Table 14).

Table 13. Population distribution within the Vung Tau City (2011)

No	Ward/Commune	Area (km^2)	Population (people)
1	Ward no.1	1.37	16,580
2	Ward no.2	2.93	14,380
3	Ward no.3	0.9	20,107
4	Ward no.4	0.82	21,630
5	Ward no.5	3.9	17,670
6	Ward no.7	1.63	32,792
7	Ward no.8	2.46	22,340
8	Ward no.9	3.22	14.567
9	Ward no.10	3.7	18,743
10	Ward no.11	10.7	19,830
11	Ward no.12	34.3	23,708
12	ThangNhat Ward	4.4	27,543
13	ThangNhi Ward	2.7	22,098
14	Thang Tam Ward	2.5	19,675
15	Nguyen An Ninh Ward	3.9	12,034
16	RachDua Ward	3.2	21,785
17	Long Son Isle Commune	57	15,400

*Source:*Vung Tau City Statistical Yearbook 2012

2. Local Economy

46. Vung Tau City economy is supported by three pillars: oil and gas, tourism and seaports.In recent year, the local economy is booming with average growth rates of 15.3%. In 2012, total manufacturing and trading revenue reached 70,200 billion VND, an increase of 39% compared to 2011. As per economic structure in 2011, the service sector accounted for the largest proportion (71%), the industry - small industry (excluding oil and gas) sector accounted for 14% and the agriculture - forestry - fishery (mainly fisheries) for 15%.

47. In Ward no.11, a majority of households work in services and commerce (80%). The gardening accounts for 15% of households.

48. There are 2 industrial zones in the City:Dong Xuyen Industrial Zone (160 ha) and the Long Son Oil and Gas Industrial Park (1,250 ha). The city has more than 10 seaports and river ports serving the oil and gas industry and shipbuilding. The handicraft activities are developed significantly, especially jewellery made from shellsfor tourists.

3. Social Infrastructure

a. Public Health and Sanitation.

49. Currently, the city has 20 health facilities, including 2 hospitals, 1 polyclinic and 17 healthcare clinicsin all wards and commune. The total number of beds is 414, i.e. 13 beds/1 thousand people on average.

50. According to data from the Center for HIV/AIDS Prevention in Vung TauCity, in 2014 the City has detected 5,129 cases of HIV infection (2134 infected, 1425 dead). The City has the highest number of HIV/AIDS cases in the Ba Ria-Vung Tau Province. 11 people with HIV are detected in Ward no.11.

51. The city is utilizing a single drainage system for both rainwater and wastewater that is outdated and seriously degraded. The inner city drainage system has a total length of 186 km. As there is no wastewater treatment plant in the city, environmental pollution of surface water is tremendous.

52. In Ward no.11, 100% of households have sanitary toilets and 100% have access to clean tap water. 98% of domestic waste in the City are being collected and disposed at a new landfill in suburban area following the close of an overloaded inner city landfill.

b. Education

53. As the educational center of the province, Vung Tau City has 3 universities, 6 colleges and three vocational high schools. In 2011, the city has 44 schools from elementary to high schools with 51000 students and 2,510 secondary teachers. In Ward no.11, there are 3 kindergartens, 1 primary school and 1 secondary school. 100% of children of schooling age go to school and illiteracy rate is 0%.

c. Communications:

54. The subproject area is being covered by many telephone networks such as Vietel and VNPT telecoms, and some other telecom companies. Therefore, it is highly convenient for people to communicate and develop this sector.

d. Water and electricity:

55. The subproject area is supplied with clean water from the water supply network of the whole city that isDa Den Lake, Dinh River and Ba Ria Groundwater water supply plants. The average volume supplied to the City is 70,000m^3/day. In 2001, 95% of the city dwellers have access to clean water.

56. The power supply for Vung Tau City is from the Southern 110KV electric system, directly from the Ba Ria Power Plant. The City's electricity network includes 220 kV, 110 kV and 22-15 kV grid for the inner city and neighboring areas. In the inner city, 100% of households have access to electricity; 100% of roads and 97% of alleys with lighting systems.

4. Infrastructure for transportation

57. Vung Tau City transportation system is quite diverse and convenient,including roads, waterways (both river and sea) and airway. The road system includes outbound inter-province and inter-regional network: Highway 51 and Lang Cat Long Son route linking to highway 51 in Long Son Island. The domestic road has a total length of 118.3 km. Currently, 100% of main roads were concretized and asphalted. A Class 2 airport in the City is used for oil rig helicopters.

5. Cultural and Heritage Sites

58. Vung Tau City is one of the most famous tourist spots in Vietnam. It is known for beautiful coastal beach, historical and cultural relics and traditional festivals. There are religious and cultural 16 tourist sites include BaiDau church, Jesus Christ's Statue, Linh Son Ancient Pagoda, Nirvana Temple, Thang Tam temple etc. Some traditionalfestivals are organized to worship of giant whales.

59. The IEE consultant, together with PECC2, has investigated all possible sensitive receptors in a range of 5km from the Vung Tau substation and the connected transmission line (Table 15.). It is found that one religious site is within 500m of the substation, therefore any adverse impacts from the subproject should be appropriately mitigated. The table below presents all environmental sensitive receptors around the concerned site.

Table 14.Sensitive Receptorsnearsubstation and transmission line

Substation	Name of receptors	Distance from the substation	Distance from the transmission line
220kV Vung Tau Substation	Ba Ngu Linh Dien Temple	600m	50m to the right
	Dong Xuyen Parish Church	700m	500m to the left
	Trung Dong Parish Church	1.5km	1.5km to the left
	Ward 11 People's Committee Office	1.5km	1.5km to the right
	Le Quy Don High School	1.5 km	1.5km to the right
	Ba Ria-Vung Tau Community College	2km	2.5km to the right
	Binh Minh primary school	1.5km	1.5km to the left
	PhuocThang primary school	2km	2km to the right

Source: IEE consultant and PECC2 team, 2015

6. UXO Clearance

60. After decades of war UXO remains a significant issue in Vietnam, especially in the southern part of the country. In Vung Tau clearing of UXO is regular work of Ba Ria-Vung Tau Provincial Military Command. It is reports that UXO risks remain in all wards of Vung Tau City. Therefore UXO clearance should be done before commencing the construction work for the substation and tower foundations in accordance with regulations[4]. This responsibility should be assumed by NPT and is not part of the loan.

D. Subproject affected people

61. The subproject will affect 73 households and 52.5 ha of land. Details on affected people, related properties and compensation policies are presented in a separate Subproject Resettlement Action Plan prepared by the Social Safeguards Team.

E. Features of 200 kV Vung Tau Substation

62. The site of the substation and location of new transformer is shown in Figure 5

[4] Details of landmine clearance are presented in the Circular 146/2007/TT-BQP by Ministry of Defence dated September 11 2007 guiding UXO clearance for project construction.

Figure 5.Proposed 220 kV Vung Tau substation site

Fig.5a: Site of substation with adjacent 110 kV line

Fig.5b: ROW for new access road to substation

	Fig 2c: House on to be dislocated
	Fig 2d: Affected garden

V. INFORMATION DISCLOSURE AND PUBLIC CONSULTATION

A. Information disclosure

63. Formal disclosure on the 220 kV Vung Tau substation subprojectlineto affected persons (AP) and stakeholders that occurred during the public consultations on the subproject is meant to form the beginning of continued information disclosure and stakeholder involvement 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.

64. The completed IEE must be easily available to contacted stakeholders in written and verbal forms in the local language. 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 SPPMB website, at the SPPMB offices, 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. The IEE will be available on the ADB website as well as EMP reporting that is prepared by the EA/IA after implementation begins.

B. Public Consultation

65. Stakeholder consultationswere developed to meet the requirements of meaningful consultation as stipulated by the SPS (2009). The strategy included 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

66. Stakeholders were identifiedand 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 included:

1. Affected households and businesses living on or adjacent to the substation site who will be directly affected, and who have an interest in the identification and implementation of measures to avoid or minimize negative impacts;

2. Mass organizations such as Women's 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;
3. Institutional stakeholders such as: (ii) and Ward leaders (ii) National Consultant; (iii) Project EA, (iv) Environmental and Social consultant;and (v)PECC2;and
4. Other institutions or individuals with a vested interest in the outcomes and/or impacts of the subproject.

2. Public consultation meeting

67. Separate written consultations with local People's Committee and Commission were held by the Vietnamese EIA team(PECC2 consulting company) in September and October of 2014 for the 1st and 2nd phase of the subproject. A follow-up direct community consultation meetingwith interested stakeholders was heldto discuss the location and potential impacts of the substation for both environmental and social aspects. The meeting was convened in Ward no.11, Vung Tau City of Ba Ria-Vung Tau Province on 20th of March 2015.

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

1. The engineering consultant introduced the subproject including the substation location anddesign;

2. 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, and the grievance redress mechanism for environmental and resettlement problems.; and

3. The social and resettlement consultant presented ADB's resettlement policy on land acquisition and properties, policies of GOV and local authorities, and the subproject policies for compensation for loss as the state acquired land and properties on land.

69. During the meeting people identified their concerns, questions, and comments on the environmental issues. The PECC2 consultant and safeguards consultants answered and explained all questions to the participants. The majority of the concerns identified were related to compensation of lost land and resettlement scheme.

70. The participants of the public consultation meeting included Ward leaders, representatives of mass organization such as Women Union, Youth Union, Fatherland Front and affected people. The total number of people consulted was 57 (Appendix B).

3. Results of Public consultations

71. Comments from communal authorities collected by PECC2 consultation in writing
The main comments of communal authorities are as follows:

1. Agree with the environmental impacts of the project addressed in the locality.

2. Agree with the solutions and measures to mitigate environmental impacts of the project.

3. The project owner should ensure all mitigation measures during the construction phase are implemented.

4. The Operator of the substation should strictly follow regulations during the upgrading and operation of the substation.

72. The summary of comments/questions from local authorities/people and answers of consultants 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 15.Summary of issues identified during public stakeholder meetings

Location and time	Comments/questions local people	Answers of consultants	Project Response[5]
Ward no.11, Vung Tau City, Ba Ria-Vung Tau Province, 20th of March 2015.	Clarify effects of electromagnetic fields on the health of the people.	The impacts of electromagnetic fields reduce over distance. Technical analysis confirms that there is no such effect on people health especially the substation site is completely fenced and far away from residential areas.	The design of subproject and 110 kV connector lines incorporate national and international code for public and worker exposure and public areas. The EMP provides the results of an extensive who review of health effects of EMF which indicates health effects of EMF are inconclusive.
	Provide detailed construction schedules	The Project Owner commits to publicize the construction schedule and other project information in before commencing the construction activities.	The IEE and EMP prescribe the continuation of full disclosure of the subproject which includes detailed construction schedules.
	Affected land is divided into sections by connector lines and substation. Request change to alignment, or to acquisition of land and corresponding compensation. Provide information on resettlement sites and supporting policies Provide compensation price rates Provide a complaint resolution mechanism	Those affected households who are left with little land area should file a complaint to Ward authority for review and resolution. A full land acquisition is possible. The Project Owner is developing a detailed Resettlement Plan that will take into account all of these concerns and provide a workable grievance redness mechanism to handle related complaints.	The RP and compensation plan of subproject details land losses and compensation plans. The grievance response mechanism of IEE prescribes process to submit issues on subproject
Conclusion	Ward 11 People's Committee and local people agree withthe construction of 220 kV Vung Tau substation and connector lines. Social and environmental impacts from preparation, construction and operation of the substation on local people should be handled in due time. Project Owner and the Contractor will implement the EMP to minimize potential adverse impacts of the proposed subproject		The EMP prescribes impact mitigation and management requirements during construction and operation phases of subproject. The responsibility of project owner (NPT) is to oversee effective and complete implementation of environmental and social safeguards of

[5] Issues addressed by Environmental Management Plan

Location and time	Comments/questions local people	Answers of consultants	Project Response[5]
			subproject.

VI. POTENTIAL ENVIRONMENTAL IMPACTS AND MITIGATION

73. 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 structure is carried forward to the environmental management plan for the subproject (see section IX).

A. Subproject Benefits

74. The single comprehensive benefit of the subproject is the provision of needed reliableelectrical power to Vung Tau city and area to support the urban, commercial, and industrial development.Electricity will also become more reliable reducing power outages or brownouts that in the area.

B. Pre-construction Phase

75. Negative impacts associated with the pre-construction phase of the subproject concern land acquisition and compensation.Land acquisition will center on the estimated 52.5 ha of temporary and permanent land acquisition that will be occur in the peri-urban area of VungTau city. The details of the land losses and compensation are found in the Land Acquisition and Resettlement Plan (RP) which has been prepared separately.

Updating Environmental Management Plans

76. 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 designs of the 220/110 kV substation connector lines. This will involve finalization of the Mitigation and Monitoring Plans of the EMP that will manage and measure potential impact areas such as erosion, noise, dust and air quality, construction waste and spoil disposal, construction traffic, and worker and public safety at the subproject site.

77. During the pre-construction phase the government will have to review the potential existence of UXO at the substation site and along the two connector lines. The review must be done before any excavation work begins. The updated EMP will be used by the contractors to prepare their contractor environmental management plans (CEMP).

78. The key impact management measures to be implemented during the pre-construction phase are:

- Initiation of land compensation for affected households and businesses;
- Screen subproject areas for UXO
- Completion of detailed designs of the subproject; and
- Updating and initiation of the subproject EMP.

C. Construction Phase

79. The environmental impacts of the subproject are associated primarily with the construction phase of the substation and connectors. The substation and connectors are not

located in a national protected area, and there are no documented rare or endangered wildlife in the area.

1. Potential impacts of the Substation and Transmission Line

80. Potential short-term construction-related impacts and disturbances are reduced and/or blocked public access, disrupted and lost agriculture, noise and dust by construction truck traffic and heavy equipment use, landpollution caused by equipment operation and maintenance, public and worker accidents, increased traffic accidents, soil erosion and surface water sedimentation, drainage and flooding problems, solid waste and domestic pollution from worker camps, social disease and community problems caused by migrant workers.

2. Mitigation measures

81. Construction management measures to mitigate the potential the above common impacts associated with the construction phase of the substation and transmission line are itemized below. The mitigation measures are detailed in the subproject EMP.

- The entire substation area and alignments for connector transmission lines 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.
- Open excavations at the subproject site and for tower foundations should be fenced, and covered where public walkways or vehicles must cross.
- A cultural chance find management sub-plan must be in place in the EMP for cultural artifacts and property.
- Regular use of wetting agents should be employed at substation site, and along all construction roads, and access points to the connector lines.
- All construction vehicles and gas powered equipment should be maintained in proper working order to minimize emissions, and not operated at night if possible to minimize noise.
- Speed limits should be posted and adhered to by construction vehicles.
- Where possible construction vehicles should use different roads or dedicated lanes of roads shared by the public.
- Historic land use should be reviewed to assess whether excavated soils will be contaminated. Contaminated spoil should be disposed at a landfill or a location approved by DONRE.
- Berms and plastic fencing should be placed around subproject site to prevent wind erosion into agricultural and public areas, and adjacent canals.
- Local workers should be used as much as possible to prevent or minimize influx of migrant workers, and incidence of social disease and community unrest.
- Worker camps must have adequate domestic waste collection facilities and sufficient pit latrines that are located away from public areas and surface waters.
- Dedicated fuel storage areas must be established away from public areas and marked clearly.
- To minimize the risk of public and worker injury appropriate GoV regulations on Occupational, Safety, and Community Health must be applied[6], or the IFC/World Bank Environment, Health, and Safety Guidelines (2007) for Power Distribution that govern the safe and orderly operation of civil works should be followed.
- Aggregates (e.g., sand, gravel, rock) that are transported by truck should be covered.
- Prolonged use of temporary storage piles of file should be avoided, or covered, or wetted regularly to prevent dust and erosion.

[6] e.g. Circular No: 22/2010/TT-BXD, date issued: 03rd December 2010.

- 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

3. Component-specific potential construction impacts, and mitigations

a. Substation

82. Potential impact associated with construction of substation is traffic congestion and potential vehicles accidents where the new access road meets the existing district and Ward roads. Enforced well marked speed limits must be in place. Ideally dedicated lanes or temporary roads are created for construction vehicles.

b. Connector transmission lines

83. Similar to the substation access road crossing of existing roads of the connector lines must carefully manage construction traffic. The tower foundations of both connector lines must not be placed in or near local canals and all canals that are crossed must be isolated from any civil works activities with erosion and sedimentation berms.

c. Protected Areas, Rare and Endangered Species, and Physical Cultural Resources (PCR)

84. The substation and connector transmission linesarenot located in a protected area, and there are no documented rare or endangered wildlife in the area.No known avian migration flyways exist in the area. Thus, the new connector lines will not create an obstacle for annual or seasonal bird migration.

D. Operation Phase

85. The potential impacts of the completed 220kV Vung Tau substation and two connector lines is restricted to worker safety, the potential for children of the community gaining access to the property, and possible spills of hazardous waste such as transformer oils. The increase in local traffic caused by substation employee traffic and traffic for periodic maintenance of the connector lines will not be significant.

E. Climate Change

86. There have been numerous recent reports and summaries, e.g.,[7],[8],[9], of climate change scenarios for Viet Nam based on the most recent climate change projections of the different Global Circulation Models (GCM). The fact sheet for Viet Nam[10] compiled by the MONRE of Viet Nam summarizes projected climate change for Viet Nam as follows.

87. By 2100 average annual air temperature in the country is expected to increase by 2.3 C^{o} with the frequency of heat waves increasing by 100-180%, and cold surges decreasing by 20-40%. Total rainfall, and extreme rainfall events is expected to increase everywhere in the country with particular increases occurring in the mountainous northern areas. However, rainfall is expected to decrease during dry season. By 2100 mean sea level is expected to increase 1.0 m.

[7] ADB (2013). Viet Nam and Climate Change Assessment and Impacts, 31 pgs + Appendices
[8] MONRE, 2009. Climate Change and Sea Level Rise Scenarios, 15 pgs + Appendices
[9] UNEP, 2010. Assessment of Capacity Gaps and Needs of Southeast Asian Countries Addressing Impacts, Vulnerabilities, and Adaption to Climate Variability and Climate Change, 215 pgs + references
[10] MONRE 2010, Climate Change Fact Sheet for Viet Nam

1. Climate Risk and Vulnerability

88. The sensitivity[11] of the 220 kV Vung Tausubstation subproject to climate change is considered lowas determined by the initial rapid environmental assessment of the subproject (Appendix A). The substation and connector transmission lines sites are well drained which will not expose them to increased flooding from increased frequency and severity of rainfall events. Integral to the subproject design are subproject elevations and tower grades that will make the facilities resilient to potential increases in the frequency and severity of typhoons and storm surge at the coastal location due to climate change.

2. Contribution to Global Climate Change

89. Consideration of climate change includes measures to reduce the contribution of the subprojects to greenhouse gas production. Effort through design will be taken to reduce the carbon footprint of the project by ensuring for example that speed limits along upgraded roads are established and subsequently enforced, vehicles that use the upgraded roads are maintained in good working order, and all lighting installed at the subproject component sites use light bulbs that are energy efficient.

VII. ANALYSIS OF ALTERNATIVES

90. No alternative subproject designs or locations were available for the IEE.

VIII. GRIEVANCE REDRESS MECHANISM

A. Type of Grievances

91. Any affected person (AP) can submit a grievance with SPPMB or PTC4 if they believe a practice is having a detrimental impact on the community, the environment, or on their quality of life. Grievances may include:

- Negative impacts on a person or a community (e.g. health and safety issues, nuisances, etc.).
- Dangers to health and safety or the environment.
- Social impacts due to construction activities or impacts on social infrastructure.
- Failure to comply with standards or legal obligations.
- Improper conduct or unethical behavior of Contractor leading to nuisance of affected person(s).

B. Grievance Redress Mechanism

92. A subproject grievance can be defined as an actual or perceived subproject-related problem that gives ground for complaint by an affected person (AP). As a general policy, SPPMB (during construction) and PTC4 (during operation) will work proactively toward preventing grievances through the implementation of impact mitigation measures and community liaison activities that anticipate and address potential issues before they become grievances. Nonetheless, during construction and operation it is possible that unanticipated impacts may occur if the mitigation measures are not properly implemented, or unforeseen issues occur. In order to address complaints, a project grievance redress mechanism (GRM) will be developed in accordance with ADB requirements and Government procedures.

[11] ADB (2014) Climate Proofing ADB Investment in the Transport Sector: Initial Experience, 88 pgs + Appendices

93. The GRM will be established to provide an effective and transparent channel for lodging complaints and for addressing grievances. The GRM will be established prior to the construction of the subproject and will be maintained during operation and maintenance.

94. For complaints received about the construction works, the SPPMB will involve the Contractor. When these are not resolved, any complaint is then facilitated by the SPPMB through the Environment and Social Unit (ESU) under the Compensation Department. For complaints about substation operation, the PTC4 will act on the complaint. These will be entry points to whom the AP could directly register their complaints. Contact details for the entry point of complaints will be publicly disseminated on information boards at the substation. Mechanisms to contact the point of entry will be through face-to-face meetings, written complaint, telephone conversations, or email.

95. The following are the steps for the GRM (Figure 6):

Step 1: For complaints occurring during the construction phase, affected persons can register the complaint directly to the Contractor and the head of the commune by means of contact information prescribed in the information boards at the substation site. Upon receipt of the complaint, the Contactor is required to record/document all complaints and to coordinate with the complainant immediately and to provide mitigation actions to the complaint within two weeks. The Contractor is required to report complaints received, resolved, and unresolved to the SPPMB through the monthly progress report.

Step 2: If the complainant is not satisfied with the action(s) undertaken by the Contractor, the affected person can inform the head of the commune about the matter, which will document the complaint in the complaints register.The commune head/authority through the Commune People's Committee will then call a meeting of the complainant, SPPMB-Compensation Department and the Contractor to resolve the complaint. After discussion of the possible solutions, the SPPMB monitors the resolution of the complaint. The Contractor shall be required to report any action to the SPPMB in the monthly project progress reports.

Step 3: If the complainant is not satisfied with the action(s) undertaken at the level of Commune People's Committee, the affected person may elevate the case to the district level for resolution.

Step 4: Complaints not resolved at the district level is elevated to the People's Committee at the provincial level for resolution.

Step 5: When the complaint is not resolved at the People's Committee at the provincial level, the complaint is then elevated to the People's Court. The decision of the People's Court becomes the final legal basis for the decision on the complaint.

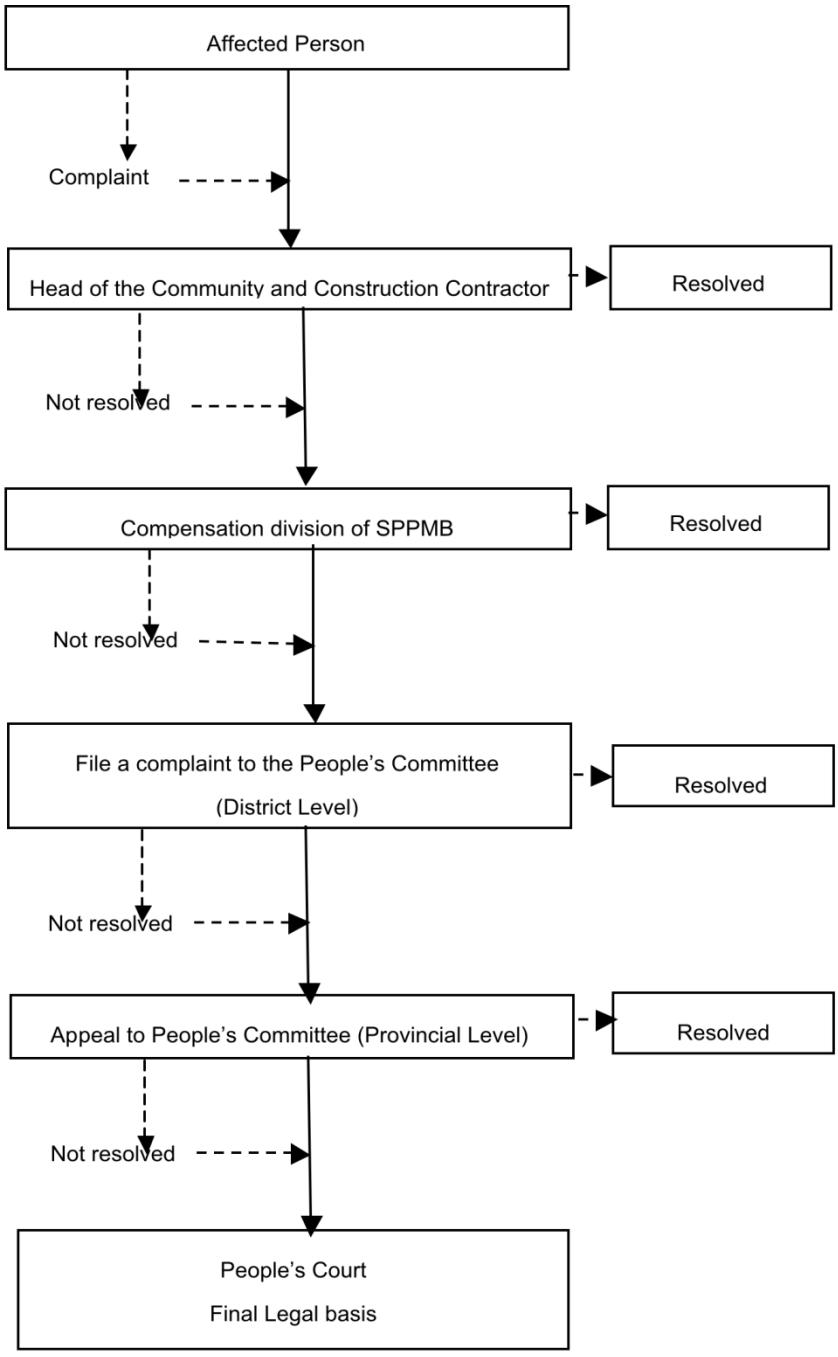
C. Legal Guarantees for Complaints and Grievances

96. Under the regulations in Viet Nam, APs having complaints or grievances will not be responsible for paying any administrative and legal fees in filing their complaints. Any site clearing is not allowed while the resolution of the complaint is still pending.

97. In cases where the AP is illiterate, the AP can ask assistance from one representative of his household who can then write all the complaints and grievances to be submitted to the district level for resolution.

98. Under the law, all meetings to resolve complaints and grievances should be documented and the minutes of meetings should be disclosed and posted at the Commune People's Committee.

Figure 6.The Grievance Redress Mechanism



IX. ENVIRONMENTAL MANAGEMENT PLAN

99. An Environmental Management Plan (EMP) has been prepared for subproject. The EMP integrates the results of the IEE into a formal plan forthe implementing agency and contractor (see below)toimplement in parallel with the subproject to prevent or minimize potential environmental impacts and issues of the subproject. The EMP addresses the results of the public consultations on the subproject that were convened as part of the IEE.

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

A. Institutional Arrangements and Responsibilities

101. At the feasibility stage the primary management framework responsible for the implementation of the EMP for the new 220 kV Vung Tau substation and connectors is summarized as follows. The National Power Transmission Corporation (NPT) of Viet Nam is the executing agency (EA). The EA takes overall responsibility for implementing the EMP with executive support from the SouthernPower Project Management Board (SPPMB) which is 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.

102. The IA/ESU is supported by the international Project Implementation Consultant[12] (PIC). The PIC assists with completion of the detailed subproject designs, works with the IU to update the EMP to address the detailed subproject designs, and assists the IU with the implementation of the EMP. The PIC also delivers required capacity development and training to the IA/ESU which will begin during the pre-construction phase of the subproject. The ESU oversees and assists the work of the environmental officer (EO) of the construction contractor who implements the EMP with the CEMP[13].

103. External support of the ESU for the implementation of the EMP is provided by the international and national environment specialists (ES) of the PIC. The PIC will have budget for an external Environmental Monitoring Consultant (EMC) which will conduct the required 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.

104. The day-to-day operations including monitoring of waste management and worker and public safety at/near the new 220 kV VungTau substation will be the responsibility of the Power Transmission Company 4 (PTC4). A summary of indicative responsibilities for implementation of the EMP is provided below.

105. 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 ADB on the implementation of the EMP; and
4. Coordinate resolution with IA/ESU with issues arising from the implementation of EMP.

106. 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 articulation of CEMP requirements in contractor bid documentswhich included appended EMP;

[12] PIC to be defined
[13] Contractor Environmental Management Plan prepared by contractor from EMP which is part of bid documents.

8. Assist PICwith bid evaluations, specifically completeness of CEMP;
9. Undertake day to day management of EMP implementation activities;
10. Work with EMC on implementation of monitoring plan of EMP;
11. Ensure compliance with loan covenants and assurances in respect of entire subproject, including EMP (as well as relevant IPPs, GAPs, resettlement plans);
12. Lead follow-up meetings with all affected stakeholders in public consultations;
13. Prepare and submit quarterly reports on EMP implementation to IA/EA;
14. Oversee implementation of CEMP by contractor;
15. Coordinate with ES of PIC for EMP implementation;
16. Undertake regular construction site inspections to ensure contractor implements CEMP properly; and
17. Ensure EO of contractor submits monthly reports on construction mitigations and monitoring.

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

18. Coordinate with ESU/IU to update EMP to meet final detailed design of subproject;
19. Provide technical direction and support to ESU/IA for implementation of EMP;
20. Oversee design and delivery of capacity development and training of ESU/IA and EO of contractor(s);
21. Provide advice and support to EMC with their monitoring activities;
22. Review all reports prepared ESU/IA and EMC for EA and ADB; and
23. Review location of any possible contaminated sites near subproject.

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

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

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

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

107. The Department of Natural Resources and Environment (DONRE) is the provincial agency which oversees environmental management of Ba Ria-Vung Tau province. The DONRE with District staff provides direction and support for environmental protection-related matters including application of the Law on Environmental Protection (2014), EIA, and environmental standards.

108. 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.Table 20 summarizes major roles and responsibilities for the completion and implementation of the EMP.

Table 16.Primary responsibilities of EMP implementation

Responsible Group	Pre-construction					Construction	Operation
	Subproject Detailed Design	Supplement Baseline	Update EMP& Prepare Bid Documents	Stakeholder Consultation & GRM	Training of NPT-CPPMB	Monitoring &Reporting	Monitoring &Reporting
EA	oversee & assist IU/ PIC		oversee	initiate & oversee		reporting to ADB	
ESU/IU	with PIC	with PIC	with PIC	with EA	with PIC	monitoring & reporting to EA	
PIC	with IU	with ESU	with ESU	assist EA/IU	with ESU	monitoring & reporting to IU/EA & ADB	
EO/contractor			prepare CEMP from EMP in bid documents			construction site observations & reporting to ESU	
EMC						field sampling with PIC/ESU& reporting to PIC	
Operational Unit							PTC4
DONRE	approvals	provide information	approvals	technical expert		regulatory	regulatory

B. Summary of Potential Impacts of Subproject

The potential impacts of the subproject are summarized in Table 18.

Table 17.Summary of potential impacts of subproject

Pre-construction Phase
• Permanent acquisition of estimated 39.6 ha of peri-urban land in VungTau city
Construction Phase
• Common construction-related civil works disturbances such as dust, noise, and reduced and/or blocked public access along roadscaused by increased truck traffic and heavy equipment use, disruption of local traffic, increased risk of traffic accidents, damage to existing roads,soil pollution caused by equipment operation and maintenance, potential public and worker accidents, land erosion and canal sedimentation, drainage and flooding problems, 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 or near new substation and transmission lines
- Spills of hazardous materials such as transformer oil

C. Impact Mitigation Plan

109. The impact mitigation measures of the EMP are presented in a comprehensive mitigation plan for the three phases of subproject implementation (pre-construction, construction, operation)which is presented for each phase in Tables19-21. The mitigation plan is comprehensive by design because it will need to be updated to meet the final detailed designs of the subproject. Themitigation plan addresses the environmental issues and concerns identified at the stakeholder meetings. The mitigation plan identifies potential impacts, required mitigations, responsible parties, location, timing, and indicative costs.

110. The mitigation plan is organized into a series of mitigation sub-plans that address common potential impact types of power transmission projects. The modularized sub-plans are meant to be selected by contractors to formulate and budget their CEMPs as part of their bid documents. Example mitigation sub-plans are for a) Construction runoff and drainage; b) Erosion; c) Noise and dust control; d) Spoil disposal; e) Solid and liquid waste disposal; f) Construction traffic; g) Worker and public safety; h) Site restoration; i) Construction materials acquisition, transport, and storage, and j) Cultural chance finds. The mitigation sub-plans are detailed in the impact mitigations for the construction phase of the subproject (Table 20).

1. Pre-construction - finalization of EMP

111. The primary objective of the pre-construction phase of the subproject is to complete the engineering detailed designs, and prepare for the initiation of the construction phase.An important activity of the pre-construction phase is to update the draft EMP that is prepared from the IEE so the EMP meets the environmental management needs of the final detailed designs of subproject.Other important environmental safeguard activities of the preconstruction phase include initiation of land acquisition and compensation and required resettlement, continuation of public disclosure and initiation ofgrievance redress mechanism,clarify with the military whether UXO are possibly in subproject areas, and ensure EMP is appended to bid documents to enable contractors to prepare their CEMPs from the EMP. Table 19 lists the important activities of the pre-construction phase.

2. Construction Phase

112. The EMP prescribes impact mitigation measures for the construction phase of the subproject which were finalized during the pre-construction phase as summarized above. As indicated by the IEE the potential environmental impacts of the subproject concern primarily the short-term disturbances and impacts during construction of the 220 kV Vung Tau substation and two connector lines. Table 20 provides the mitigation measures for the construction phase.

3. Operation Phase

113. The brief list of impact mitigations for the operation of the completed Vung Tau substation and connector lines are summarized in Table 21. Potential environmental impacts of the operation of the substation concern worker and public safety. Increased risk of traffic accidents due to additional substation worker and maintenance vehicles would be insignificant

Table 18.Finalization of impact mitigationplanduring pre-construction phase

Subproject Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Location	Timing	Activity Reporting	Estimated Cost[14] (USD)	Responsibility	
							Supervision	Implementation
Confirmation of land acquisition, and resettlement	No negative environmental impacts	1. Affected persons well informed well ahead of subproject implementation.	All affected persons in subproject area	Before subproject implemented	See resettlement plans	See resettlement plan	EA/IA/ESU	Resettlement committees
Disclosure, and engagement of community	No negative impacts	2. Continueinformation disclosure, and initiate Grievance Redress Mechanism	For all construction activities.	Beginning of subproject	Quarterly	No marginal cost[15]	IA/ESU	ESU
GoV approvals	No negative impact	3. Notify DONRE of subproject initiation to obtain required subproject permits and certificates.	Entire subproject	Before construction	As required	No marginal cost	EA/DONRE	DONRE
Detailed designs of Subproject,	Minimize negative environmental impacts	4. Work with PIC[16] to complete detailed designs of the 220 kV Vung Tau substation and connector lines. 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 homestead &culture property; c) minimal acquisition of agriculture land d) locate any required borrow pits away from public areas, and surround pits with fencing and access barriers; f) no or minimal disruption to local pedestrian and vehicle traffic along all road near subproject with contingency alternate routes; g) Notify and provide local residents and merchant's schedule of construction activities to minimize disruption to	Final siting	Before construction initiated	Once with detailed designs documents	No marginal cost	PIC	EA/IA

[14] Costs will need to be updated during detailed design phase.
[15] No marginal cost indicates that costs to implement mitigation are to be built into cost estimates of bids of contractors
[16] PIC is Project Implementation Consultant to be determined at during detailed design phase

Subproject Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Location	Timing	Activity Reporting	Estimated Cost[14] (USD)	Responsibility	
							Supervision	Implementation
		normal commercial and residential activities.						
Update EMP	Positive environmental impacts	5. Identify any new potential impacts of subproject and include in EMP with special attention to residential areas. 6. Update mitigation measures and monitoring requirements of EMP where necessary to meet detailed designs, and to protect affected environments. 7. Submit updated EMP with new potential impacts to ADB to review. 8. Complete mitigation sub-plans of EMP for: a) Construction drainage; b) Erosion; c) Noise and Dust; d) Contaminated spoil disposal; e) Solid and liquid waste disposal; f) Construction traffic; g) Worker and public safety; h) Site restoration; i) Construction materials acquisition, transport, andstorage, and k) Cultural chance finds.	All sites	Before construction initiated	Once with detailed designs documents		PIC	IA/ESU
Confirm approved construction waste disposal sites	No negative impact	9. Notify DONREto confirm locations of sites for borrow pits and disposal areas for construction waste for subproject, and obtain required permits. 10. 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	11. 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	12. Ensure updated EMP is appended to contractor tender documents, andthat tender documents instruct contractors to use EMP to construct their CEMPs, and that CEMPs must be budgeted. 13. Specify in bid documents that contractor must provide staff with training and experience with implementing CEMPs	All subproject areas	Before construction begins	Once for all tenders	No marginal cost	PIC	EA/IA
Awareness of physical cultural	No negative environmental	14. EA to review potential locations of physical resources, and explain possible PCR to contractors and PIC.	All subproject areas	Before construction	Once	No marginal cost	EA/IA	IA/ESU

Subproject Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Location	Timing	Activity Reporting	Estimated Cost[14] (USD)	Responsibility	
							Supervision	Implementation
resources in area	impact			begins				
Obtain andactivate permits and licenses	Prevent or minimize impacts	15. Contractors to comply with all statutory requirements set out by GoV for use of construction equipment, and operation of 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	16. 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. 17. 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	18. 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

Table 19.Impact mitigationsfor construction of 220 kV VungTausubstation

Subproject Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Location	Timing	Activity Reporting	Estimated Cost[17] (USD)	Responsibility	
							Supervision	Implementation
Initiate EMP and sub-plans,	Prevent or minimize impacts	1. Initiate updated EMP and CEMP including individual management sub-plans for different potential impact areas that are completed in pre-construction phase (see sub-plan guidance below).	For all construction sites	Beginning of construction	Once	No marginal cost	IA/PIC	ESU and contractors
Worker camps	Pollution and social problems	2. Locate worker camps away from human settlements. 3. Ensure adequate housing and waste disposal facilities including pit latrines and garbage cans. 4. A solid waste collection program must be established and implemented that maintains a clean worker camps 5. Locate separate pit latrines for male and female workers away from worker living and eating areas. 6. A clean-out or infill schedule for pit latrines must be established and implemented to ensure working latrines are available at all times. 7. Worker camps must have adequate drainage. 8. Local food should be provided to worker camps. Guns and weapons not allowed in camps. 9. Transient workers should not be allowed to interact with the local community. HIV/AIDS education should be given to workers. 10. 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	11. 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	Pollution, injury, increased traffic,	12. All required borrow pits should be approved by DONRE. 13. Select pits in areas with low gradient and as close as possible to	For all construction	Throughout construction	Monthly	No marginal cost	PIC/IA/ESU	contractor

[17] Costs will need to be updated during detailed design phase.

Subproject Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Location	Timing	Activity Reporting	Estimated Cost[17] (USD)	Responsibility	
							Supervision	Implementation
acquisition, transport, and storage sub-plan	disrupted access	construction sites. 14. Required aggregate volumes must be carefully calculated prior to extraction to prevent wastage. 15. Pits should not be located near surface waters or cultural property or values. 16. All topsoil and overburden removed should be stockpiled for later restoration. 17. All borrow pits should have a fence perimeter with signage to keep public away. 18. After use pits should be dewatered and permanent fences installed with signage to keep public out, and restored as much as possible using original overburden and topsoil. 19. Unstable slope conditions in/adjacent to the pit caused by the extractions should be rectified with tree planting. 20. Define and schedule how materials are extracted from borrow pits, transported, and handled and stored at sites. 21. Define and schedule how fabricated materials such as steel, wood structures, and scaffolding will transported and handled. 22. All aggregate loads on trucks should be covered. .	areas.	phase				
DBST [low grade asphalt] production, and application to create /restore any road works	Air pollution, land and water contamination, and traffic and access problems,	23. Piles of aggregates at sites should be used/or removed promptly, or covered and placed in non- traffic areas 24. 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. 25. Contractors must be well trained and experienced with the production, handling, and application of bitumen. 26. All spills should be cleaned immediately and handled as per hazardous waste management plan, and according to GoV regulations.	For all construction areas.	Throughout construction phase	Monthly	No marginal cost	PIC/ESU	contractor

Subproject Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Location	Timing	Activity Reporting	Estimated Cost[17] (USD)	Responsibility	
							Supervision	Implementation
		27. Bitumen should only be spread near any surface waters, or near any human activities. 28. Bitumen should not be used as a fuel.						
Implement Spoil management subplan	Contamination of land and surface waters from excavated spoil, and construction waste	29. Uncontaminated spoil to be disposed of in GoV-designated sites, which must never be in or adjacent surface waters. Designated sites must be clearly marked and identified. 30. Spoil must not be disposed of on sloped land, near cultural property or values, or on/near any other culturally or ecologically sensitive feature. 31. Where possible spoil should be used at other construction sites, or disposed in spent borrow pits. 32. A record of type, estimated volume, and source of disposed spoil must be recorded. 33. Contaminated spoil disposal must follow GoV regulations including handling, transport, treatment (if necessary), and disposal. 34. Suspected contaminated soil must be tested, and disposed of in designated sites identified as per GoV regulations. 35. 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	36. 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. 37. Areas of disposal of solid and liquid waste to be determined by GoV. 38. Disposed of waste should be catalogued for type, estimated weigh, and source. 39. Construction sites should have large garbage bins. 40. A schedule of solid and liquid waste pickup and disposal must be established and followed that ensures construction sites are as clean as possible.	All construction sites and worker camps	Throughout construction phase	Monthly	No marginal cost	PIC/ESU and DONRE	contractor

Subproject Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Location	Timing	Activity Reporting	Estimated Cost[17] (USD)	Responsibility	
							Supervision	Implementation
		41. Solid waste should be separated and recyclables sold to buyers in community. <u>Hazardous Waste</u> 42. Collection, storage, transport, and disposal of hazardous waste such as used oils, gasoline, paint, and other toxics must follow GoV regulations. 43. Wastes should be separated (e.g., hydrocarbons, batteries, paints, organic solvents) 44. 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. 45. All spills must be cleaned up completely with all contaminated soil removed and handled with by contaminated spoil sub-plan.						
Implement Noise and dust sub-plan	Dust Noise	46. Regularly apply wetting agents to exposed soil and construction roads. 47. Cover or keep moist all stockpiles of construction aggregates, and all truck-loads of aggregates. 48. Minimize time that excavations and exposed soil are left open/exposed. Backfill immediately after work completed. 49. As much as possible, restrict working time at substation site between 07:00 and 17:00. 50. Maintain equipment in proper working order 51. Replace unnecessarily noisy vehicles and machinery. 52. Vehicles and machinery to be turned off when not in use. 53. 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	Loss or disruption of utilities and services such as water supply and	54. Develop carefully a plan of days and locations where outages in utilities and services will occur, or are expected. 55. Contact local utilities and services with schedule, and identify possible	All construction sites.	Fulltime	Monthly	No marginal cost	PIC/ESU and Utility company	contractor

Subproject Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Location	Timing	Activity Reporting	Estimated Cost[17] (USD)	Responsibility	
							Supervision	Implementation
sub-plan	electricity	contingency back-up plans for outages. 56. Contact affected community to inform them of planned outages. 57. Try to schedule all outages during low use time such between 24:00 and 06:00.						
Implement Tree and vegetation removal, and site restoration sub-plan	Damage or loss of trees, vegetation, and landscape	58. Contact DARD for advice on how to minimize damage to trees and vegetation along connector line 59. Restrict tree and vegetation removal to within RoWs. 60. Within RoWs minimize removals of trees and install protective physical barriers around trees that do not need to be removed. 61. Where possible all RoWs to be re-vegetated and landscaped after construction completed. Consult DARD to determine the most successful restoration strategy and techniques. Aim to replant three trees for each tree removed. 62. 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	63. Berms, and plastic sheet fencing should be placed around all excavations and earthwork areas. 64. Earthworks should be conducted during dry periods. 65. Maintain a stockpile of topsoil for immediate site restoration following backfilling. 66. Protect exposed or cut slopes with planted vegetation, and have a slope stabilization protocol ready. 67. Re-vegetate all soil removal areas immediately after work completed.	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	68. Proper fencing, protective barriers, and buffer zones should be provided around all construction sites. 69. Sufficient signage and information disclosure, and site supervisors and night guards should be placed at all sites. 70. Worker and public safety guidelines of MOLISA should be followed.	All construction sites.	Fulltime	Monthly	No marginal cost	PIC/ESU	contractor

Subproject Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Location	Timing	Activity Reporting	Estimated Cost[17] (USD)	Responsibility	
							Supervision	Implementation
		71. Population near possible blast areas should be notified 24 hr ahead, and evacuated well before operation. Accepted GoV blast procedures and safety measures implemented. 72. 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. 73. Standing water suitable for disease vector breeding should be filled in. 74. 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. 75. Appropriate safety clothing and footwear should be mandatory for all construction workers. 76. Adequate medical services must be on site or nearby all construction sites. 77. Drinking water must be provided at all construction sites. 78. Sufficient lighting to be used during necessary night work. 79. All construction sites should be examined daily to ensure unsafe conditions are removed.						
Civil works	Degradation of water quality and aquatic resources	80. Protective berms orplastic sheet fencing should be placed between all earthworks and canals. 81. Erosion channels must be built around aggregate stockpile areas to contain rain-induced erosion. 82. Earthworks should be conducted during dry periods. 83. All construction fluids such as oils, and fuels should be stored and handled well away from canals. 84. No waste of any kind is to be thrown in canals. 85. No washing or repair of machinery near canals.	All construction sites	Throughout construction phase	Monthly	No marginal cost	PIC/ESU	contractor

Subproject Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Location	Timing	Activity Reporting	Estimated Cost[17] (USD)	Responsibility	
							Supervision	Implementation
		86. Pit latrines to be located well away from canals. 87. No unnecessary earthworks in or adjacent to canals.						
Civil works	Degradation of terrestrial resources	88. No unnecessary cutting of trees along RoW. 89. All construction fluids such as oils, and fuels should be stored and handled well away from forested areas. 90. No waste of any kind is to be discarded on land.	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	91. Schedule construction vehicle activity during light traffic periods. Create adequate traffic detours, and sufficient signage and warning lights. 92. Post speed limits, and create dedicated construction vehicle roads or lanes. 93. 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. 94. Demarcate additional locations where pedestrians can develop road crossings away from construction areas. 95. Increase road and walkway lighting where necessary for safety.	All construction sites	Fulltime	Monthly	No marginal cost	PIC/ESU	contractor
Implement Construction Drainage sub-plan	Loss of drainage and flood storage	96. Provide adequate short-term drainage away from construction sites to prevent ponding and flooding. 97. Manage to not allow borrow pits and quarries to fill with water. Pump periodically to land infiltration or nearby water courses. 98. Install temporary storm drains or ditches for construction sites 99. Ensure connections among surface waters (ponds) are maintained or enhanced to sustain existing stormwater storage capacity. 100. Protect surface waters from silt and eroded soil.	All areas with surface waters	Design and construction phases	Monthly	No marginal cost	PIC/ESU	contractor
Civil works and Chance finds sub-	Damage to cultural property or values, and	101. As per detailed designs all civil works should be located away from all physical cultural property and values.	All construction sites	At the start , and throughout construction	Monthly	No marginal cost	PIC/ESU	contractor

Subproject Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Location	Timing	Activity Reporting	Estimated Cost[17] (USD)	Responsibility	
							Supervision	Implementation
plan	chance finds	102. Chance finds of valued relics and cultural values should be anticipated by contractors. Site supervisors should be on the watch for finds. 103. 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. 104. Work at find site will remain stopped until DCST allows work to continue.		phase				

Table 20.Impact mitigations for operation of 220 kV VungTausubstation

Subproject Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Location	Timing	Activity Reporting	Estimated Cost[18] (USD)	Responsibility	
							Supervision	Implementation
Operation of new substation	Increased risk of worker or public injury	1. Occupational health and safety regulations and guidelines of MOLISA should be applied to operations of substation. 2. Ensure substation property is adequately fenced with clearly visible danger warning signs to keep public out. 3. Store and handle transformer fluids and other hazardous materials according to international procedures and standards	At substation	Fulltime	Biannual	O and M	PTC4	
Operation of 110 kV connector lines of substation								
Operation of new transmission line	Increased risk of worker or public injury	4. Occupational safety and health regulations and guidelines of MOLISA should be applied to operations and maintenance of TL 5. Ensure TL towers are marked with clearly visible danger warning signs to keep public out.	At all connector towers	Fulltime	Biannual	O and M	PTC4	

[18] Costs will need to be updated during detailed design phase.

D. Monitoring Plan

114. The environmental monitoring plan for the three phases of subproject implementation is provided in Table 22 which 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 unexpected positive or negative environmental impacts of the subproject.

115. The independent environmental monitoring consultant (EMC) as coordinated with the ESU/EO of the contractor will implement the environmental monitoring program with the EMC taking responsibility for all environmental sampling that must be analyzed in a laboratory. The PIC/IU will provide logistical support to the EMC and EO where necessary for the environmental monitoring plan.

116. The standards for ambient environmental quality (e.g., water and air quality) for Viet Nam listed in section II 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.

117. After construction is completedthe potential impacts of the operation of the new 220 kV Vung Tausubstation and connector lines will be monitored by the CPPMB. 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.

Performance Monitoring

118. 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 23.

E. Reporting

119. 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 19-21) summarize proposed timing of reporting.

120. 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 23), 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 21. Environmental monitoring plan for the 220 kV VungTausubstation

ENVIRONMENTAL EFFECTS MONITORING							
Environmental Indicators	**Location**	**Means of Monitoring**	**Frequency**	**Reporting**	**Responsibility**		**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 at all substation areas.	A) Substation location including access road B) RoWs for connector lines	Original field work, community consultations	Once	Once	PIC/ESU	Environmental Monitoring Consultant	$700.
A) Qualitative air quality: dust, noise B) Visual qualitative affected surface water quality, i.e., TSS, oil and grease,	A)At SS and along connector lines B)At SS and along connector lines	Using field and analytical methods approved by DONRE.	A) One day and one night measurement b) One measurement	One baseline supplement report before construction phase starts	PIC/ESU	Environmental Monitoring Consultant	A) $700 B) $700.
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 of Vung Tau substation and connector lines							
Analysis of soil quality (heavy metals (As, Cd, Pb, oil and grease,	Possible contaminated lands at all excavation sites	Using field and analytical methods approved by DONRE.	**Once if needed**	Once	ESU	Environmental Monitoring	$1,200.

hydrocarbons).						Consultant	
A) Qualitative air quality: dust, noise B)) Visual affected surface water qualityTSS, 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: $700./yr C: $700./yr D: no marginal cost
					ESU	Monitoring Consultant	
					(E and F) and daily observations:		E: $500./yr F: no marginal cost
					IA/ESU	contractor	
Operation of Vung Tau substation and connector lines							
Incidence of worker accidents, or spills on hazardous materials	At substation and along connector lines	Regular documentation and reporting	Continuous	Quarterly	PTC4		O and M

Table 22.Performance monitoringindicators for Vung Tausubproject

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[19])	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			
Affected water quality	Visual TSS, oil and grease,	GoV environmental standards and criteria met	Monitoring by EMC[20]
Air quality	Visual dust and noise	Levels never exceed pre-construction baseline levels	EMCand contractor monitoring reports,
Soil quality	Solid and liquid waste	Rigorous program of procedures and rules to collect and store all waste from construction camps and sites practiced.	Contractor and EMC monitoring reports
Hazardous materials and waste	Oil, gasoline, grease	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[21]	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 of Vung Tau substation and connector lines			
Worker and Public	Frequency of accidents and spills	No increase in pre-construction frequency	EA

[19]Contractor Environmental Management Plan developed from EMP in contractor bidding document
[20]Environmental Monitoring Consultant hired to assist implementation of Environmental Monitoring Plan
[21] OSH Guidelines provided by MOLISA, *or*IFC World Bank EHS (2007) *for* Electric Power Transmission & Distribution

Environmental Component	Key Indicator	Performance Objective	Data Source
Safety			

F. Estimated Cost of EMP

121. 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. The preliminary cost for the implementation of the EMP for the subproject including an estimated environmental training budget for NPT/ PPBM is approximately USD $17,000.00which is summarized in Table 27. The environmental costs in Table 27 are primarily for field sampling which include professional per diemsof technicians.

Table 23.Estimated costs for Environmental Monitoring Plan of EMP

Activity Type	Estimated Cost (USD)
Pre-construction Phase	
Updating Environmental Baseline	
cultural receptors	$700.00
environmental quality	$1,900.00
Construction Phase	
environmental quality	$3,800.00
public consultation	$1,200.00
Operation Phase	
environmental quality	no cost
public input	no cost
Training and capacity development of EVNHCM / PPBM / ESU	$5,000.00
Total	**$12,600.00**

122. An estimated budget of USD $5,000.00 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.

X. EMERGENCY RESPONSE PLAN

123. The Contractor must develop emergency or incident response procedures during construction and operation phases of the new 220 kV Vung Tau substation and connector lines 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

124. Currently there is insufficient experience and capacity for environmental assessment and management in SPPMB 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.

125. 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

126. The initial examination of the 220 kV Vung Tau substation connector lines in Vung Tau city indicates that potential environmental impacts are construction-related impacts and disturbances that can be mitigated and managed.

127. 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., EHS Guidelines,IFC/World Bank Group, 2007, *for*Electric Power Transmission & Distribution.

128. 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

ADB, 2003, Environmental Assessment Guidelines of the Asian Development Bank.

ADB, 2009. Safeguard Policy Statement, ADB Policy Paper.

ADB, 2012, Environmental Safeguards, A Good Practice Sourcebook, Draft.

Ba Ria-Vung Tau Provincial People's Committee 2012, Statistical Yearbook.

Ba Ria-Vung Tau Provincial People's Committee 2011, Masterplan for Irrigation Development to 2020.

Ministry of Construction, 2009. Vietnam building Code 02:2009/BXD

PECC2, 2014.220 kV Vung Tau Substation Environmental Impact Assessment Report.

Social Safeguards Team 2015, Socio-economic survey for 220 kV Vung Tau Substation.

VungTauMunicipal People's Committee, 2014, Masterplan for Vung Tau City Land Use to 2020.

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

APPENDIX A: RAPID ENVIRONMENTAL ASSESSMENT OF SUBPROJECT

Rapid Environmental Assessment Checklist **Power Transmission**

Country/Project Title: Preparation for Tranche 3 as part of the MFF Power Transmission Investment Program financed by ADB: The second transformer bank for 220 kV Vung Tau

Sector / Division: Energy / SEEN

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	The site is 15km away from Can Gio Mangrove Reserve
▪ ESTUARINE		X	
▪ BUFFER ZONE OF PROTECTED AREA		X	
▪ SPECIAL AREA FOR PROTECTING BIODIVERSITY		X	
B. POTENTIAL ENVIRONMENTAL IMPACTS WILL THE PROJECT CAUSE…			
▪ encroachment on historical/cultural areas, disfiguration of landscape and increased waste generation?		X	
▪ encroachment on precious ecosystem (e.g. sensitive or protected areas)?		X	
▪ alteration of surface water hydrology of waterways crossed by roads and resulting in increased sediment in streams affected by increased soil erosion at the construction site?		X	
▪ damage to sensitive coastal/marine habitats by construction of submarine cables?		X	
▪ deterioration of surface water quality due to silt runoff, sanitary wastes from worker-based camps and chemicals used in construction?		X	The EMP includes mitigation measures for managing waste from temporary construction camps.
▪ increased local air pollution due to rock crushing, cutting and filling?		X	No such activities on construction sites
▪ 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		Minimal noise is anticipated during construction and installation of towers. EMP prescribes noise and dust mitigation plans. There will be no blasting..
▪ dislocation or involuntary resettlement of people?	X		.See RP
▪ disproportionate impacts on the poor, women and children, Indigenous Peoples or other vulnerable groups?		X	
▪ social conflicts relating to inconveniences in living conditions where construction interferes with pre-existing roads?	X		Minor potential impact. The EMP includes mitigation measures for managing traffic caused by construction to prevent of minimize disturbance to regular traffic and local community
▪ hazardous driving conditions where construction interferes with pre-existing roads?	X		As above mitigation measures EMPs exists for managing construction truck traffic to prevent of minimize disturbance to regular traffic and local community
▪ creation of temporary breeding habitats for vectors of disease such as mosquitoes and rodents?		X	
▪ dislocation and compulsory resettlement of people living in right-of-way of the power transmission lines?	X		See RP
▪ environmental disturbances associated with the maintenance of lines (e.g. routine control of vegetative height under the lines)?	X		New transmission connector lines will require regular maintenance causing minor local disturbances
▪ facilitation of access to protected areas in case corridors traverse protected areas?		X	
▪ disturbances (e.g. noise and chemical pollutants) if herbicides are used to control vegetative height?		X	Herbicides will not be used during construction
▪ 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		Migrant worker population will be small, however, EMP have mitigation measures managing influx and activities of workers and temporary camps. Use of local workers will be maximized.
▪ social conflicts if workers from other regions or countries are hired?	X		As above
▪ poor sanitation and solid waste disposal in construction camps and work sites, and possible transmission of communicable diseases from workers to local populations?	X		The EMP prescribes mitigation measures for solid and liquid waste management in temporary construction worker camps.
▪ risks to community safety associated with maintenance of lines and related facilities?		X	
▪ community health hazards due to electromagnetic fields, land subsidence, lowered groundwater table, and salinization?		X	Human health effects of EMF have not been established by international medical community (see Appendix of IEE). Land subsidence, lowering of groundwater table and salinization are not expected to 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		Minimal risks if any. Information campaign will be provided to community prior to and during construction. EMP will have provisions to reduce or mitigate these impacts.

Screening Questions	Yes	No	Remarks
▪ 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		Minimal risks if any. Information campaign will be provided to community prior to and during construction. EMP will have provisions to reduce or mitigate these impacts.

Checklist for Preliminary Climate Risk Screening

Country/Project Title: Preparation of Tranche III of MFF for Power Distribution Development Project: The second transformer bank for 220 kV Vung Tau substation

Sector: Power Transmission

Subsector: Transmission

Division/Department:SEEN / SERD

Screening Questions		Score	Remarks
Location and Design of project	Is siting and/or routing of the project (or its components) likely to be affected by climate conditions including extreme weather related events such as floods, droughts, storms, landslides?	1	Coastal location of substation increases sensitivity to sea level rise and increased typhoon surge from climate change. However, substation and connector foundation deigns and elevations will make the facility resilient to these climate change induced events.
	Would the project design (e.g. the clearance for bridges) need to consider any hydro-meteorological parameters (e.g., sea-level, peak river flow, reliable water level, peak wind speed etc)?	0	No.
Materials and Maintenance	Would weather, current and likely future climate conditions (e.g. prevailing humidity level, temperature contrast between hot summer days and cold winter days, exposure to wind and humidity hydro-meteorological parameters likely affect the selection of project inputs over the life of project outputs (e.g. construction material)?	0	
	Would weather, current and likely future climate conditions, and related extreme events likely affect the maintenance (scheduling and cost) of project output(s) ?	0	
Performance of project outputs	Would weather/climate conditions, and related extreme events likely affect the performance (e.g. annual power production) of project output(s) (e.g. hydro-power generation facilities) throughout their design life time?	0	

Result of Initial Screening (Low, Medium, High):Low

Other Comments:n/a

APPENDIX B: MINUTES AND PARTICIPANTS OF PUBLIC CONSULTATIONS

Table 24.The summary of public consultation meeting and number of participants

No	Name of subprojects	Location	Date	Participants		
				Male	Female	Total
1	220 kV Vung Tau Substation	Ward no.11, Vung Tau City, Ba Ria-Vung Tau Province	20 March 2015	28	29	57

B.1: PUBLIC CONSULTATION OF LUONG HOA COMMUNE

a. LIST OF PARTICIPANTS

Date (Ngàytháng) :20 March 2015

Location (địađiểm) : Ward no.11, Vung Tau City, Ba Ria-Vung Tau Province

No. TT	Họvàtên (Name)	Nam (M)	Nữ (F)	Chứcvụ (Position)	Cơquan/Địachỉ (Organization/Address)	Chữký (Signature)
1	Do Manh Luc	X		Vice Chairman	Ward People's Comm.	
2	Nguyen ThiHuong		X	Vice Chairperson	Ward Fatherland Front	
3	Nguyen Xuan An	X		Staff	Land Administration	
4	Nguyen ThienThang	X		Staff	Land Administration	
5	Phan Van Khoe	X		Chairman	Farmer's Union	
6	Pham ThiThanhThuy		X		ADB environment consultant	
7	Le Minh Huong		X		ADB social consultant	
8	Nguyen Thi Minh Trang		X			
9	Nguyen ThiNham		X	Standing member	Ward Fatherland Front	
10	Chu Van Bang	X		Engineer	PECC2	
11	PhanThiThanh Nguyen		X		Ward 11	
12	PhanThiThanhThien		X		Ward 11	
13	Do Ngoc Hai	X			Ward 11	
14	Dao Huy Chu	X			Ward 11	
15	Ngo Van Hoach	X			Ward 11	
16	Dao Van Du	X			Ward 11	
17	Nguyen ThiHuyen		X		Ward 11	
18	Doan Xuan Truong	X			Ward 11	
19	Nguyen Cong Phuc	X			Ward 11	
20	Phan Van Khoe	X			Ward 11	
21	Vu Van No	X			Ward 11	
22	Le Van Cai	X			Ward 11	
23	PhanThanhTrung	X			Ward 11	
24	Nguyen Van Trong Luc	X			Ward 11	
25	Nguyen Thi Lu		X		Ward 11	
26	Pham Thi Ton		X		Ward 11	
27	Nguyen Van Ly	X			Ward 11	
28	Bui ThiThanhXuan		X		Ward 11	
29	Le Thanh Tuan	X			Ward 11	
30	Hoang ThiDanh		X		Ward 11	

31	Trinh ThiHuong		X		Ward 11	
32	Mai Thi Minh Huong		X		Ward 11	
33	Nguyen ThiNga		X		Ward 11	
34	Pham ThiKeTu		X		Ward 11	
35	Tran ThiThuy		X		Ward 11	
36	Nguyen Van Ha	X			Ward 11	
37	Cao Thi Hang Nguyen		X		Ward 11	
38	Nhu Van Vinh	X	X		Ward 11	
39	Pham Van Tha	X			Ward 11	
40	Dinh The Giam	X			Ward 11	
41	Pham ThiVinh		X		Ward 11	
42	Le ThiChuy		X		Ward 11	
43	Pham Thi Hong		X		Ward 11	
44	Vu ThiThanhHien		X		Ward 11	
45	Pham HuuHiep	X			Ward 11	
46	Nguyen Tien Dung	X			Ward 11	
47	Nguyen Van Hien	X			Ward 11	
48	Vu Duy Nam	X			Ward 11	
49	Vu ThiChau		X		Ward 11	
50	Mai ThiThanhHuong		X	Legal Staff	Ward People’s Comm.	
51	PhanThi Loan		X	Deputy Secretary	Ward Youth’s Union	
52	Tran Thi Lien		X	Chairperson	Women’s Union	
53	Tran Thi Thu Huong		X	HR Staff	Ward People’s Comm.	
54	Nguyen Manh Hung	X		Admin. Staff	Ward People’s Comm.	
55	Nguyen ThiNga		X	Cleaner	Ward People’s Comm.	
56	Hoang ThiDanh		X	Staff	Ward People’s Comm.	
57	Nguyen Minh Tam	X		Staff	Ward Cultural Center	

C. MINUTES OF MEETINGS AND PHOTOS- WARD no.11

TA-7742 VIE: Power Transmission Investment Program (MFF)
CHƯƠNG TRÌNH ĐƯỜNG DÂY TRUYỀN TẢI ĐIỆN (MFF)

CỘNG HOÀ XÃ HỘI CHỦ NGHĨA VIỆT NAM
Độc lập - Tự Do - Hạnh phúc
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Vũng Tàu, Ngày 20 tháng 03 năm 2015

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

Tiểu dự án: Trạm biến áp 220/110 KV Vũng Tàu
Phường/Xã 11, Quận/Huyện TP Vũng Tàu Thành phố Tỉnh Bà Rịa - Vũng Tàu

1. Thành phần tham dự

- Ông/Bà Đỗ Mạnh Lực Chức vụ P.C.T U.B.N.D Phường 11
- Ông/Bà Nguyễn Xuân A Chức vụ Cán bộ địa chính P.11
- Ông/Bà Nguyễn Lê Minh Trang Chức vụ Tư vấn Điện 2
- Ông/Bà Trần Thị Nhung Chức vụ Đại diện dân cư
- Ông/Bà Lê Minh Hường Chức vụ Chuyên gia xã hội ADB
- Ông/Bà Phạm Thị Thanh Thuý Chức vụ Chuyên gia môi trường ADB
- 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 tuyến đường dây 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);
- Chính sách kế hoạch bồi thường, hỗ trợ và tái định cư của ADB và Chính phủ Việt Nam; Chương trình phục hồi kinh tế; Hỗ trợ đối với các nhóm dễ bị tổn thương; Giới thiệu về giới và Tham vấn ý kiến về hình thức tái định cư và tham gia các chương trình phục hồi thu nhập và các biện pháp giảm thiểu tương ứng (như trong RP);
- Cơ chế khiếu nại khi có các vấn đề xã hội và môi trường xảy ra.

3. Ý kiến thảo luận

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

- Chúng tôi đã được thông tin về tác động môi trường đề nghị làm rõ tác động của điện từ trường đến sinh sống của người dân xung quanh

→ Trả lời: Cường độ điện trường ảnh hưởng giảm dần theo khoảng cách và thông thiết kế đã đảm bảo người dân sống bên ngoài tham là an toàn.

→ Đề nghị làm rõ tiến độ thi công để dân biết kế hoạch tổ chức cuộc sống.

→ Thống nhất với các biện pháp bảo vệ môi trường được đơn vị tư vấn đề xuất.

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

- Phần đất thu hồi xẻ đôi lô đất gây khó khăn cho dân sinh đề nghị thay đổi tuyến hoặc thu hồi hết
- Tiền đền bù thu hồi 100% chỉ tính giá nhà và đất, đề nghị cho biết chính sách đền bù với hộ thờ khai được tính thế nào?
- Chưa biết đất tái định cư ở đâu, có phải thêm tiền không đơn giá tái định cư thế nào?
- Làm nhà trên đất nông nghiệp, có 100 m² đất, chỉ thu hồi 94 m² đề nghị thu hồi hết và bồi thường lại lô đất khác hoặc đền bù với mức giá có thể mua lại đất khác.
- Xây nhà từ năm 2005 đến nay mới có quyết định thu hồi nhưng yêu cầu tự tháo dỡ, di dời.
- Có nhà đất từ năm 1992 nhưng đến nay vẫn chưa nằm được đơn giá và qui định đền bù
- Một số hộ yêu cầu có quyết định thu hồi nếu không thu hồi thì sử dụng đất cho mục đích khác

- Khiếu nại ở cơ quan các cấp nhưng đều bị trả đơn và yêu cầu nhận đền bù, đã khiếu nại 5 lần nhưng thất bại
- Về tính giá đền bù đề nghị làm rõ đơn giá, hạng mục và các khoản được hỗ trợ.

Trả lời: - Các hộ dân còn lại ít đất, không phù hợp cho sinh sống, canh tác có thể làm đơn lên phường để được xem xét thu hồi hết
- Các hộ làm nhà trên đất nông nghiệp đã được xem xét cấp đất ở mới tái định cư

4. Kết luận

UBND phường 11 và các hộ dân đồng ý với phương án bảo vệ môi trường và đồng ý cho dự án được thiển khai nhưng đề nghị xem xét về giá đền bù và cách thức thu hồi với những phần đất thu hồi ảnh hưởng lớn đến cuộc sống.

Đại diện Chủ đầu tư	Đại diện cộng đồng	Đại diện tư vấn	Đại diện UBND xã
	Trần Thị Nhung	Phạm Thị Thanh Thúy	KT. CHỦ TỊCH PHÓ CHỦ TỊCH Đỗ Mạnh Lực

TA-7742 VIE: Power Transmission Investment Program (MFF)
CHƯƠNG TRÌNH ĐƯỜNG DÂY TRUYỀN TẢI ĐIỆN (MFF)

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):
Location (địa điểm):

No. TT	Họ và tên (Name)	Nam (M)	Nữ (F)	Chức vụ (Position)	Cơ quan/Địa chỉ (Organization/Address)	Chữ ký (Signature)
01	Đỗ Mạnh Lực	X		phó CT UBND		[signature]
02	Nguyễn Thị Hường		X	phó CT MTTQ		[signature]
03	Nguyễn Xuân An	X		CC địa chính		[signature]
04	Nguyễn Thúc Thắng	X		CC địa chính		[signature]
05	Phan Văn Khoẻ	X		CT Hội ND		[signature]
06	Phạm Thị Thanh Thủy		X	Chuyên gia Môi trường ADB		[signature]
07	Lê Ninh Hương		X	chuyên gia xã hội ADB		[signature]
08	Nguyễn Lê Minh Trang		X			[signature]
09	Nguyễn Thị Thắm		X	TT MTTQ		[signature]
10	Chu Văn Bằng	X		CBKT	TV2	[signature]
11	Phan Thị Thanh Nguyệt		X		34/8D FM TPV Tân.	[signature]
12	Phan Thị Thanh Thủy		X		34/8H " "	[signature]
13	Đỗ Ngọc Hải	X			34/82 "	[signature]
14	Đào Huy Chư	X			34/6 "	[signature]
15	Ngô Văn Hoạt				144/6 Đô Lương	[signature]
	[illegible]				54/6D Bắc Sơn	[signature]
16	Nguyễn T Huyền		X		34/4A Bắc Sơn	[signature]
17	Đoàn X Trường	X			34/6A B Sơn	[signature]
18	Ng Công Khiêm	X			34/11 B Sơn	[signature]
19	Phan Văn Khoẻ	X			10 [illegible] B Sơn	[signature]
20	Vũ Văn Nô	X			34/4 B Sơn	[signature]
21	Lê Văn Cải	X		nông dân LĐ	34/17 bắc Sơn	[signature]

TA-7742 VIE: Power Transmission Investment Program (MFF)
CHƯƠNG TRÌNH ĐƯỜNG DÂY TRUYỀN TẢI ĐIỆN (MFF)

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):
Location (địa điểm):

No. TT	Họ và tên (Name)	Nam (M)	Nữ (F)	Chức vụ (Position)	Cơ quan/Địa chỉ (Organization/Address)	Chữ ký (Signature)
22	Phạm thanh Trung	Nam			34/18E Bắc Sơn F11	trung
23	Ngô Văn Trọng Lực				34/8/12 Bắc Sơn	Lực
24	Nguyễn thị Lữ		x		34/8/4 Bắc Sơn	Lữ
25	Phạm thị Tốn		Nữ		34/8 BSơn F11	tốn
26	Nguyễn Văn Lý				34/15 Bắc Sơn	[signature]
27	Bùi T thanh Xuân		x		34/11/13 Bắc Sơn	[signature]
28	Lê Thanh Tuấn	Nam			34/14 B Bắc Sơn	[signature]
29	Hoàng Thị Danh		x		988/45/12 - 30/4	[signature]
30	Trần Thị Thương		x		714/8 - 30/4	[signature]
31	Mai T Minh Hường		x		888/9/52 - Đg 30/4	[signature]
32	Ng thị Ngà		x		1020/ 30/4	nga
33	Phạm Thế Lữ				34/16B	[signature]
34	Trần Thị Thủy		x		34/12C	[signature]
35	Nguyễn Văn Hoà				34/11/13A	[signature]
36	Cao thị Hg Nguyên		x		152/5/6 Bắc Sơn	[signature]
37	Nguyễn Văn [illegible]	x			34/12A Bắc Sơn	[signature]
38	Phạm văn Thế				34/4 Bắc Sơn	[signature]
39	Đinh thế giám				34/35 Bắc Sơn	giám
40	phạm Thị Vinh		x		34/33 Bắc Sơn	[signature]
41	Lê thị chung		x		34/13B Bắc Sơn	chung
42	phạm thị Hồng		x		130 HVT P2 VTàu	[signature]
43	Đỗ Thị Thanh Hương		x		87/1 A Ngô Đức Kế	[signature]

TA-7742 VIE: Power Transmission Investment Program (MFF)
CHƯƠNG TRÌNH ĐƯỜNG DÂY TRUYỀN TẢI ĐIỆN (MFF)

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):
Location (địa điểm):

No. TT	Họ và tên (Name)	Nam (M)	Nữ (F)	Chức vụ (Position)	Cơ quan/Địa chỉ (Organization/Address)	Chữ ký (Signature)
44	Phạm Thủ Thiệp	X			356 Lê Hồng Phong p3.	
45	Nguyễn Tiến Dũng	X			91 Chu Mạnh Trinh F8	
46	Nguyễn Văn Huấn				34/27 Lê Sao F11	
47	Vũ Duy Nam	X			57/4A Ngõ Tôn Đức Thắng	
48	Vũ Thị Châu		X		72/2B PHT P7	
49	Mai Thị Thanh Hường		X	CB Tư pháp		
50	phan thị loan		X	P. Bí thư đoàn		
51	Trần Thị liên		X	CT. Hội phụ nữ		
52	Trần Thị Thu Hường		X	CB đô thị		
53	Nguyễn Mạnh Hùng	X		Văn thư		
54	Nguyễn Thị Hạnh		X	Vệ sinh		
55	Hoàng Thị Danh		X	CC xã hội		
56	Nguyễn Minh Tâm	X		TT Văn Hội		

D.PHOTOS – WARD no.11

APPENDIX C: EIA APPROVAL LETTER FOR VUNG TAU SUBSTATION

ỦY BAN NHÂN DÂN **TỈNH BÀ RỊA – VŨNG TÀU**	**CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM** **Độc lập - Tự do - Hạnh phúc**
Số: 4421/QĐ-UBND	*Bà Rịa – Vũng Tàu, ngày 04 tháng 3 năm 2015*

QUYẾT ĐỊNH

Phê duyệt báo cáo đánh giá tác động môi trường của dự án Lắp máy biến áp thứ 2 Trạm biến áp 220kV Vũng Tàu tại phường 11, thành phố Vũng Tàu, tỉnh Bà Rịa - Vũng Tàu

CHỦ TỊCH ỦY BAN NHÂN DÂN TỈNH BÀ RỊA – VŨNG TÀU

Căn cứ Luật Tổ chức HĐND và UBND ngày 26 tháng 11 năm 2003;

Căn cứ Luật Bảo vệ môi trường ngày 23 tháng 6 năm 2014;

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 quy định về đánh giá môi trường chiến lược, đánh giá tác động môi trường, cam kết bảo vệ môi trường;

Theo đề nghị của Hội đồng thẩm định báo cáo đánh giá tác động môi trường của Dự án Lắp máy biến áp thứ 2 Trạm biến áp 220kV Vũng Tàu họp ngày 19 tháng 11 năm 2014 tại Sở Tài nguyên và Môi trường;

Xét nội dung báo cáo đánh giá tác động môi trường của Dự án Lắp máy biến áp thứ 2 Trạm biến áp 220kV Vũng Tàu tại phường 11, thành phố Vũng Tàu, tỉnh Bà Rịa – Vũng Tàu đã được chỉnh sửa, bổ sung kèm theo văn bản giải trình số 0359/AMN-ĐB ngày 16 tháng 01 năm 2015 của Ban Quản lý dự án các công trình điện Miền Nam – Tổng Công ty truyền tải điện Quốc gia;

Xét đề nghị của Giám đốc Sở Tài nguyên và Môi trường,

QUYẾT ĐỊNH:

Điều 1. Phê duyệt báo cáo đánh giá tác động môi trường của Dự án Lắp máy biến áp thứ 2 Trạm biến áp 220kV Vũng Tàu tại phường 11, thành phố Vũng Tàu, tỉnh Bà Rịa – Vũng Tàu được lập bởi Ban Quản lý dự án các công trình điện Miền Nam – Tổng Công ty truyền tải điện Quốc gia (sau đây gọi là Chủ dự án) với các nội dung chủ yếu sau:

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

1.1. Quy mô: Lắp máy biến áp thứ 2 thuộc Trạm biến áp 220kV Vũng Tàu.

1.2. Phạm vi: Phường 11, thành phố Vũng Tàu, tỉnh Bà Rịa – Vũng Tàu.

2. Yêu cầu bảo vệ môi trường đối với Dự án:

2.1. Trong quá trình thi công và hoạt động phải đảm bảo kiểm soát, xử lý triệt để chất thải phát sinh, tuân thủ nghiêm ngặt các tiêu chuẩn và quy chuẩn kỹ

thuật quốc gia về môi trường có liên quan, bảo đảm tiếng ồn và độ rung đạt quy chuẩn kỹ thuật quốc gia về môi trường.

2.2. Quản lý, thu gom, lưu giữ, vận chuyển và xử lý các loại chất thải nguy hại, chất thải rắn thông thường phát sinh trong quá trình thi công và hoạt động bảo đảm các yêu cầu về vệ sinh môi trường theo quy định.

2.3. Thực hiện chương trình quản lý và giám sát môi trường dự án đúng theo nội dung báo cáo đánh giá tác động môi trường đã được phê duyệt. Định kỳ tối thiểu 06 tháng/lần báo cáo kết quả thực hiện về Sở Tài nguyên và Môi trường để kiểm tra, giám sát.

2.4. Thực hiện đúng các quy định về bảo vệ an toàn công trình lưới điện cao áp. Lập kế hoạch, phương án cần thiết và thực hiện đủ các biện pháp phòng chống, ứng phó sự cố môi trường.

Điều 2. Chủ dự án có các trách nhiệm sau đây:

1. Lập, phê duyệt và niêm yết công khai kế hoạch quản lý môi trường của Dự án trước khi triển khai thực hiện dự án.

2. Thực hiện nghiêm túc các yêu cầu về bảo vệ môi trường quy định tại khoản 2 Điều 1 Quyết định này và các trách nhiệm khác theo quy định của pháp luật về bảo vệ môi trường.

3. 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.

Điều 3. Trong quá trình thực hiện nếu Dự án có những thay đổi so với 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 UBND tỉnh Bà Rịa - Vũng Tàu.

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. Giao Sở Tài nguyên và Môi trường chứng thực báo cáo đánh giá tác động môi trường của Dự án và thực hiện việc kiểm tra, giám sát và xác nhận việc thực hiện các nội dung bảo vệ môi trường trong báo cáo đánh giá tác động môi trường đã được phê duyệt tại Quyết định này.

Điều 6. Quyết định này có hiệu lực thi hành kể từ ngày ký./.

Nơi nhận:
- Chủ dự án;
- Sở Tài nguyên và Môi trường;
- UBND thành phố Vũng Tàu;
- Lưu: VT, S.

K.T. CHỦ TỊCH
PHÓ CHỦ TỊCH

Trần Ngọc Thới

APPENDIX D: EMERGENCY RESPONSE PLAN

129. 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.

130. The Contractor will provide and sustain the required technical, human and financial resources for quick response during construction.

Table 25.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.

131. 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.

132. The Contractor will ensure that ERT members are physically, technically and psychologically fit for their emergency response roles and responsibilities.
133. 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

134. 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.

135. 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.

136. 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

137. 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

138. 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 26.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 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 27.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:

Procedure	Remarks
	- 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 28.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

Procedure	Remarks
	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.

APPENDIX E: ENVIRONMENTAL COMPLIANCE AUDIT OF VUNG TAU SUBSTATION

ENVIRONMENTAL COMPLIANCE AUDIT

220 kV VUNG TAU SUBSTATION
(not constructed yet)

SUBSTATION INFORMATION

139. The substation is expected to cover 39.6 ha in Ward 11, Vung Tau City. The construction of the substation is delayed due to site clearance and resettlement issues. The substation receives power from Phu My Thermal Power Plant to distribute power to several 110 kV substations in the region including: Vung Tau, Tam Thang and Dong Xuyen Industrial Park.

140. The following are the major facilities of the future Vung Tau substation:

- 220/110/22kV-250MVA x 1
- 01 incoming 220kV feeder Phu My Thermal Power Plant
- 03 out coming 110kV feeders to 110kV substations
- SCADA communication system
- Fire control system
- Emergency oil tank
- Substation building with office and control room

141. Once completed the substation will be operated by Power Transmission Company no.4 (PTC4) and a uniform operation and safety standards will be applied.

AUDIT FINDINGS

142. Since the substation has not been constructed the operation of the substation cannot be reviewed and assessed for compliance with national laws and regulations governing electric power substations constructed yet (see EMP section IX). Instead the Approval of the Environmental Impact Assessment conducted for the substation that was issued by the Provincial Peoples Committee will suffice. The approval is issued after the environmental due diligence of the substation has been approved by the DONRE pursuant to the Law for Environmental protection (2014). During construction the Contractor and project owner must implement the environmental and social impact mitigation measures specified for the substation by the government and ADB safeguard requirements.

CERTIFICATE OF ENVIRONMENTAL IMPACT ASSESSMENT REPORT FOR VUNG TAU SUBSTATION

Ba Ria-Vung Tau Provincial People's Committee	**Socialist Republic of Vietnam Independence- Freedom –Happiness**
No: 444/ QD-UBND	

Ba Ria-Vung Tau, March 4, 2015

DECISION
Approving the report on environmental impact assessment of the project 220 kV Vung Tau Substation at Ward 11, Vung Tau City, Ba Ria-Vung Tau Province

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THE CHAIRMAN OF BA RIA-VUNG TAU PROVINCIAL PEOPLE'S COMMITTEE

Pursuant to the Law on Organization of People's Committee and Commission dated 26th November 2003

Pursuant to the Law on Environmental Protection dated 23th June 2014.

Pursuant to the Decree No. 29/2011/NĐ-CP dated 18th April 2011 providing strategic environmental assessment, environmental impact assessment and environmental protection commitment.

Pursuant to the Circular 26/2011/TT-BTNMT dated 18th July 2011 of the Minister of Ministry of Natural Resources and Environment detailing a number of articles of the Government's Decree No. 29/2011/ND-CP of April 18, 2011, on strategic environmental assessment, environmental impact assessment and environmental protection commitment.

At the request by the Evaluation Panel for the EIA report of 220 kV Vung Tau Substation summoned on 19th November 2014 at Provincial Department of Natural Resources and Environment.

Considering the content of the report on environmental impact assessment of project 220 kV Vung Tau Substation, which has been revised and supplemented together with Written Explanation No. 0360/AMN-DB dated 16th January 2015 by Southern Power Projects Management Board (SPPMB);

At the proposal of the Director of Department of Natural Resources and Environment;

DECIDES:

Article 1. To approve the content of the report on environmental impact assessment of project "220 kV Vung Tau Substation" (hereinafter called "the Project") prepared by Southern Power Projects Management Board (SPPMB) - National Power Transmission Corporation (hereinafter called "Project Owner") with main contents as follows:

1. Scale, scope and capacity of the project:

1.1 Scale: A 220 kV Substation, connecting 110kV transmission line and associated components. Area: 35,904.9m^2 (according to Decision 2247/QD-UBND dated 1st July 2008 by Provincial People's Committee)

1.2 Scope: Ward 11, Vung Tau City, Ba Ria-Vung Tau People Committee.

2. Environmental Protection Requirements to the Project:

2.1 During the construction, it should be ensured that waste be completely controlled and treated, all related national regulations on environment be strictly followed; noise and vibration be kept within limits of national regulation on environment.

2.2 Collect, store, transport and treat hazardous waste and ordinary solid waste generated during the construction in compliance with related environmental and sanitary regulations.

2.3 Implement environmental management and monitoring program as proposed in the report of environmental impact assessment. Report the implementation performance to Department of Natural Resources and Environment every 6 months for supervision.

2.4 Conform to safety regulations for high voltage grid. Prepare necessary plans and measures for emergency situations.

Article 2. The project owner's responsibilities are:

1. Prepare, approve and publicize the environmental management plan of the project prior to project implementation.

2. Seriously implement the requirements of environmental protection specified in Paragraph 2, Article 1 of this Decision and other provisions prescribed by law on environmental protection.

3. Prepare documents on environmental protection performance to be submitted to the competent authority for examination and approval before the operation of the project.

Article 3. In the course of implementation, if the project has any change compared to Article 1 of this Decision, the project owner must provide written reports and changes are applied only after the written approval of Ba Ria-Vung Tau Provincial People's Committee is issued.

Article 4. The Decision approving the report on environmental impact assessment of the Project is the basis for Project Investment Decision and for the inspection and examination of environmental protection by authorized state agencies.

Article 5. Assign the Department of Natural Resources and Environment to certify the project's environmental impact assessment report, and to inspect, monitor the implementation of environmental protection issues in the report on environmental impact assessment which has been approved in this decision.

Article 6. This Decision takes effect from the date of signing.

Recipients:
- Project Owner
- Department of Natural Resources and Environment
- Vung Tau City People's Committee
- stored at related offices

ON BEHAFT OF CHAIRMAN
VICE CHAIRMAN

Tran Ngoc Thoi
Signed and Sealed

ỦY BAN NHÂN DÂN TỈNH BÀ RỊA – VŨNG TÀU	CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM Độc lập - Tự do - Hạnh phúc
Số: 444 /QĐ-UBND	*Bà Rịa – Vũng Tàu, ngày 04 tháng 3 năm 2015*

QUYẾT ĐỊNH

Phê duyệt báo cáo đánh giá tác động môi trường của dự án Trạm biến áp 220/110kV Vũng Tàu tại phường 11, thành phố Vũng Tàu, tỉnh Bà Rịa - Vũng Tàu

CHỦ TỊCH ỦY BAN NHÂN DÂN TỈNH BÀ RỊA – VŨNG TÀU

Căn cứ Luật Tổ chức HĐND và UBND ngày 26 tháng 11 năm 2003;

Căn cứ Luật Bảo vệ môi trường ngày 23 tháng 6 năm 2014;

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 quy định về đánh giá môi trường chiến lược, đánh giá tác động môi trường, cam kết bảo vệ môi trường;

Theo đề nghị của Hội đồng thẩm định báo cáo đánh giá tác động môi trường của Dự án Trạm biến áp 220/110kV Vũng Tàu họp ngày 19 tháng 11 năm 2014 tại Sở Tài nguyên và Môi trường;

Xét nội dung báo cáo đánh giá tác động môi trường của Dự án Trạm biến áp 220/110kV Vũng Tàu tại phường 11, thành phố Vũng Tàu, tỉnh Bà Rịa – Vũng Tàu đã được chỉnh sửa, bổ sung kèm theo văn bản giải trình số 0360/AMN-ĐB ngày 16 tháng 01 năm 2015 của Ban Quản lý dự án các công trình điện Miền Nam – Tổng Công ty truyền tải điện Quốc gia;

Xét đề nghị của Giám đốc Sở Tài nguyên và Môi trường,

QUYẾT ĐỊNH:

Điều 1. Phê duyệt báo cáo đánh giá tác động môi trường của Dự án Trạm biến áp 220/110kV Vũng Tàu tại phường 11, thành phố Vũng Tàu, tỉnh Bà Rịa – Vũng Tàu được lập bởi Ban Quản lý dự án các công trình điện Miền Nam – Tổng Công ty truyền tải điện Quốc gia (sau đây gọi là Chủ dự án) với các nội dung chủ yếu sau:

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

1.1. Quy mô: Trạm biến áp 220/110kV (01 máy biến áp), phần đường dây đấu nối 110kV và các hạng mục có liên quan. Diện tích: 35.904,9 m^2 (theo quyết định số 2247/QĐ-UBND ngày 01/7/2008 của UBND tỉnh).

1.2. Phạm vi: Phường 11, thành phố Vũng Tàu, tỉnh Bà Rịa – Vũng Tàu.

2. Yêu cầu bảo vệ môi trường đối với Dự án:

APPENDIX F:HEALTH EFFECTS OF ELECTROMAGNETIC RADIATION EMF

143. The popular concern of negative health effects of exposure to electromagnetic fields (EMF) originally arose from exposure to high voltage transmission lines. Today the concern of EMF has spread to exposure to personal electronic sources of EMF such as microwave ovens and cellular phones. The World Health organization (WHO) as part of their mandate for monitoring global human health with specific focus on developing countries recently conducted an extensive review and assessment http://www.who.int/peh-emf/en/ of the validity of the concerns of EMF.

144. Provided below is the recent review and critical summary conducted by WHO of the extensive research on human health and EMF which is reprinted verbatim below. The portion of the research database published in primary is referenced follows the summary.

145. In the area of biological effects and medical applications of non-ionizing radiation approximately 25,000 articles have been published over the past 30 years. Despite the feeling of some people that more research needs to be done, scientific knowledge in this area is now more extensive than for most chemicals. Based on a recent in-depth review of the scientific literature, the WHO concluded that current evidence does not confirm the existence of any health consequences from exposure to low level electromagnetic fields. However, it is believed that some gaps in knowledge about biological effects exist and need further research.

Effects on general health:

146. Some members of the public have attributed a diffuse collection of symptoms to low levels of exposure to electromagnetic fields at home. Reported symptoms include headaches, anxiety, suicide and depression, nausea, fatigue and loss of libido. To date, scientific evidence does not support a link between these symptoms and exposure to electromagnetic fields. At least some of these health problems may be caused by noise or other factors in the environment, or by anxiety related to the presence of new technologies.

Effects on pregnancy outcome

147. Many different sources and exposures to electromagnetic fields in the living and working environment, including computer screens, water beds and electric blankets, radiofrequency welding machines, diathermy equipment and radar, have been evaluated by the WHO and other organizations. The overall weight of evidence shows that exposure to fields at typical environmental levels does not increase the risk of any adverse outcome such as spontaneous abortions, malformations, low birth weight, and congenital diseases. There have been occasional reports of associations between health problems and presumed exposure to electromagnetic fields, such as reports of prematurity and low birth weight in children of workers in the electronics industry, but these have not been regarded by the scientific community as being necessarily caused by the field exposures (as opposed to factors such as exposure to solvents).

Cataracts

148. General eye irritation and cataracts have sometimes been reported in workers exposed to high levels of radiofrequency and microwave radiation, but animal studies do not support the idea that such forms of eye damage can be produced at levels that are not thermally hazardous. There is no evidence that these effects occur at levels experienced by the general public.

Electromagnetic fields and cancer

149. Despite many studies, the evidence for any effect remains highly controversial. However, it is clear that if electromagnetic fields do have an effect on cancer, then any

increase in risk will be extremely small. The results to date contain many inconsistencies, but no large increases in risk have been found for any cancer in children or adults.

150. A number of epidemiological studies suggest small increases in risk of childhood leukemia with exposure to low frequency magnetic fields in the home. However, scientists have not generally concluded that these results indicate a cause-effect relation between exposure to the fields and disease (as opposed to artifacts in the study or effects unrelated to field exposure). In part, this conclusion has been reached because animal and laboratory studies fail to demonstrate any reproducible effects that are consistent with the hypothesis that fields cause or promote cancer. Large-scale studies are currently underway in several countries and may help resolve these issues.

Electromagnetic hypersensitivity and depression

151. Some individuals report "hypersensitivity" to electric or magnetic fields. They ask whether aches and pains, headaches, depression, lethargy, sleeping disorders, and even convulsions and epileptic seizures could be associated with electromagnetic field exposure.

152. There is little scientific evidence to support the idea of electromagnetic hypersensitivity. Recent Scandinavian studies found that individuals do not show consistent reactions under properly controlled conditions of electromagnetic field exposure. Nor is there any accepted biological mechanism to explain hypersensitivity. Research on this subject is difficult because many other subjective responses may be involved, apart from direct effects of fields themselves. More studies are continuing on the subject.

The focus of current and future research

153. Much effort is currently being directed towards the study of electromagnetic fields in relation to cancer. Studies in search for possible carcinogenic (cancer-producing) effects of power frequency fields is continuing, although at a reduced level compared to that of the late 1990's.

154. The long-term health effects of mobile telephone usage is another topic of much recent research. No obvious adverse effect of exposure to low level radiofrequency fields has been discovered. However, given public concerns regarding the safety of cellular telephones, further research aims to determine whether any less obvious effects might occur at very low exposure levels.

a. Key emergent points

- A wide range of environmental influences causes biological effects. 'Biological effect' does not equal 'health hazard'. Special research is needed to identify and measure health hazards.
- At low frequencies, external electric and magnetic fields induce small circulating currents within the body. In virtually all ordinary environments, the levels of induced currents inside the body are too small to produce obvious effects.
- The main effect of radiofrequency electromagnetic fields is heating of body tissues.
- There is no doubt that short-term exposure to very high levels of electromagnetic fields can be harmful to health. Current public concern focuses on possible long-term health effects caused by exposure to electromagnetic fields at levels below those required to trigger acute biological responses.
- WHO's International EMF Project was launched to provide scientifically sound and objective answers to public concerns about possible hazards of low level electromagnetic fields.

- Despite extensive research, to date there is no evidence to conclude that exposure to low level electromagnetic fields is harmful to human health.
- The focus of international research is the investigation of possible links between cancer and electromagnetic fields, at power line and radiofrequencies.

Independent Published Research on Health Effects of EMF

Repacholi MH, Cardis E (1997) Criteria for EMF health risk assessment. *Radiation Protection Dosimetry,* 72:305-312.

Repacholi MH (ed) (1998) Low-level exposure to radiofrequency electromagnetic fields: health effects and research needs. *Bioelectromagnetics,* 19:1-19.

McKinlay AF and Repacholi MH (eds) (1999) Exposure metrics and dosimetry for EMF epidemiology. *Radiation Protection Dosimetry,* 83(1-2):194.

Repacholi MH and Greenebaum B (eds) (1999) Interaction of static and extremely low frequency electric and magnetic fields with living systems: Health effects and research needs. *Bioelectromagnetics,* 20:133-160.

Foster KH, Vecchia P, Repacholi MH (2000) Science and the precautionary policy. *Science,* 288:979-981.

Kheifets L (2001) Electric and magnetic field exposure and brain cancer.*Bioelectromagnetics* 5: S120-S131.

Kheifets L (2001) Electric and Magnetic Fields and Occupational Health. *Patty's Industrial Hygiene and Toxicology*, Fifth Edition 100: 141-198.

Kheifets L, Greenberg R, Neutra R, Hester G, Poole C, Rall D, Banerjee G (2001) From epidemiology to policy: An EMF case study. *American Journal of Epidemiology* 154(12): S50-59.

Kheifets L, Hester G, Banerjee G (2001) The Precautionary Principle and EMF: Implementation and Evaluation. *Journal of Risk Research* 4(2): 113-125.

Mezei G, Kheifets L (2001) "Is There any Evidence for Differential Misclassification or Bias Away from the Null in the Swedish Childhood Cancer Study?" Letter to the Editor, *Epidemiology* 12(6):750.

Repacholi MH (2001) Health risks from the use of mobile phones. *Toxicology Letters* 120: 323-331.

Foster KR, Osepchuk JM, and Repacholi MH (2002) Environmental impacts of electromagnetic fields from major electrical technologies. *Environmental Health Perspectives*

Goldstein LS, Kheifets L, van Deventer TE, Repacholi MH (2002) Comments on the paper "Long-term exposure of Em -Pim1 transgenic mice to 898.4 MHz microwaves does not increase lymphoma incidence" Radiation Research. *Radiation Research* 158: 357-364.

Goldstein LS, Kheifets L, van Deventer TE, Repacholi MH (2002) Further comments on "Long-term Exposure of E&mgr;-Pim1 Transgenic Mice to 898.4 MHz Microwaves Does Not Increase Lymphoma Incidence" by Utteridge et al., *Radiation Research* 158, 357-364 (2002)

Kheifets L, Thrall N (2002) Electromagnetic Fields and Health.*Macmillians Guide to Pollution*

Litvak E, Foster KR, and Repacholi MH (2002) Health and safety implications of exposure to electromagnetic fields in the frequency range 300 Hz to 10 MHz.,*Bioelectromagnetics,* 23(1):68-82.

Mezei G, Kheifets L (2002) Clues to the possible viral etiology of childhood leukemia. *Technology* 9: 3-14.

Repacholi MH (2002) Assessment of the Health Effects of EMF Exposure. *The Radio Science Bulletin* 301: 14-24.

Sahl J, Mezei G, Kavet R, McMillan A, Silvers A, Sastre A, Kheifets L (2002) Occupational magnetic field exposures and cardiovascular mortality in a cohort of electric utility workers. *American Journal of Epidemiology* 156:913-918.

Dewhirst MW, Lora-Michiels M, Viglianti BL, Dewey WC, and Repacholi MH (2003) Carcinogenic effects of hyperthermia.*International Journal of Hyperthermia,* 19(3):236-251

Goldstein LS, Dewhirst MW, Repacholi MH, and Kheifets L (2003) Summary, conclusions and recommendations: adverse temperature levels in the human body, *International Journal of Hyperthermia,* 19(3):373-384

Kheifets L, Repacholi MH, and Saunders R (2003) Thermal stress and radiation protection principles.*International Journal of Hyperthermia,* 19(3):215-224

McKinlay A, Repacholi MH (2003) (eds) Weak electric fields effects in the body. *Radiation Protection Dosimetry* 106 (4) 2003

Repacholi MH (2003) WHO's health risk assessment of ELF fields. *Radiation Protection Dosimetry,* 106(4):297-299

Riadh W. Habash Y, Brodsky LM, Leiss W, Krewski D, Repacholi MH (2003) Health Risks of Electromagnetic Fields. Part I: Evaluation and Assessment of Electric and Magnetic Fields. *CriticalReview in Biomedical Engineering*, 31(3&4):219–273

van Deventer TE, Repacholi MH (2004) Effet de la Téléphonie mobile su la santé humaine: état des connaissances scientifiques, *Droit de l'environnement dans la pratique*, 8, 708-724

Kheifets L, Repacholi M, Saunders R, van Deventer TE (2005) Sensitivity of Children to Electromagnetic Fields, *Pediatrics*, August 2005, 303-313

Kheifets L, Sahl J, Shimkhada R, Repacholi MH (2005) Developing policy in the face of scientific uncertainty: interpreting 0.3 μT or 0.4 μT cut points from EMF epidemiologic studies, *Risk Analysis*, 25 (4), vol. 5, no.1, 927-935

van Deventer TE, Saunders R, Repacholi MH (2005) WHO health risk assessment process for static fields, *Progress in Biophysics and Molecular Biology*, 87, 355-363

Kheifets L, van Deventer TE, Lundel G, Swanson J (2006) Le principe de précaution et les champs électriques et magnétiques : mise en œuvre et évaluation, *Environnement, risques et santé*, Jan-Feb 2006, 43-53

vanRongen E, Saunders R, van Deventer TE, Repacholi MH (2006) Static fields: Biological effects and mechanisms relevant to exposure limits. *Health Physics*, June 2007, vol. 92, no. 6, 584-590

Valberg P, van Deventer TE, Repacholi MH (2007) Workgroup Report: Base Stations and Wireless Networks: Radiofrequency (RF) Exposures and Health Consequences. *Environmental Health Perspectives*, March 2007, vol. 115, no. 3, 416-424

van Deventer TE, Simunic D, Repacholi MH (2007) EMF standards for human health, chapter in *Handbook of Biological Effects of Electromagnetic Fields*, 3rd ed., Biological and Medical Aspects of Electromagnetic Fields, F. Barnes and B Greenebaum, eds., 277-292

van Deventer E, Foster K (2008) Risk Assessment and Risk Communication for Electromagnetic Fields: A World Health Organization Perspective, chapter in book *The Role of Evidence in Risk Characterization: Making Sense of Conflicting Data*, P. Wiedemann and H. Schütz, eds., WILEY-VCH, 13-24