



SOCIALIST REPUBLIC OF VIETNAM

MINISTRY OF TRANSPORT

PROJECT MANAGEMENT UNIT 3

**VIETNAM ROAD ASSET MANAGEMENT PROJECT**  
**ENVIRONMENTAL IMPACT ASSESSMENT**  
**OVERALL EXECUTIVE SUMMARY**

**Hanoi, June 2013**

## ACRONYMS

CSC	Construction Supervision consultant
DONRE	Department of Natural Resources and Environment
DRVN	Directorate for Roads of Vietnam
EA	Environmental Assessment
EIA	Environmental Impact Assessment
EPC	Environmental Protection Commitment
EMP	Environmental Management Plan
GoV	Vietnam Government
IEMC	Independent Environmental Monitoring Consultant
MONRE	Ministry of Natural Resources and Environment
MOT	Ministry of Transport
MPI	Ministry of Planning and Investment
NH	National Highway
OP	Operation policies
PMU 3	Project Unit Management No.3
RAP	Resettlement Action Plan
SEO	Safety and Environment Officer
SES	Workplace Safety and Environment Supervisor
VRAMP	Vietnam Road Assets and Management Program
WB	World Bank

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## 1. Background

The road sector has significantly contributed to Vietnam's recent rapid socio-economic development by providing the necessary access for communities to markets, education and health facilities. As a result of the heavy investments in road network development, Vietnam's road network has expanded rapidly, from 225,000 km in 1999 to 256,000 km in 2009. This network now includes 17,385 km of national highways and 22,783 km of provincial roads. However, the Government (GoV) recognizes the need to strategically upgrade and maintain the existing network to sustain long-term socio-economic growth. Road traffic is the most extensive mode of transport in Vietnam for both freight and passengers. In terms of its quantity (e.g., number of road kilometers/person), the traffic network and utilities could be comparable to other countries in the region.

Despite achievements in expanding the network, 30 percent of the roads in Vietnam are in "poor" or "very poor" condition. The overall network is only about 50 percent paved and a significant share of district and commune roads that remain unpaved. Of the highways that are paved, only National Highway 1A and the roads around the primary cities of Hanoi and Ho Chi Minh City have pavements that are of reasonable quality. Less than 80 percent of the 7,200 bridges along the primary road network are considered to be in good condition.

Demand for investments in infrastructure will continue to grow for many years to come, and export performance will not improve if infrastructure bottlenecks are not removed. To do so will require a continued program of upgrades, rehabilitation, and maintenance of the existing road network to maintain Vietnam's strong economic performance, local business development, and improved social capital.

The proposed VRAMP will target key sectoral needs by focusing on (i) the development of a Road Asset Management System (RAMS) to develop prioritized annual work planning based on an analysis of condition data for the road network; (ii) the advancement of the reform agenda with increased usage of Performance-Based Contracts (PBC); and (iii) facilitation of fiscally sustainable road asset management financing through provision of capacity development technical assistance to the newly formed Road Maintenance Fund (RMF). It is anticipated that successful implementation of the VRAMP will lead to a more effective road preservation strategy, a more optimal road asset management, and the efficient programming of road network operations.

## 2. Categorization and Environmental Assessments

The World Bank's Safeguard Policies triggered under the Project include: i) Environmental Assessment (OP/BP 4.01); ii) Natural Habitats (OP/BP 4.04); and iii) Involuntary Resettlement (OP/BP 4.12). According to both Vietnamese Law on Environmental Protection and regulation and the World Bank's Operational Policy 4.01 on Environmental Assessment, the proposed VRAMP project is Category B for environmental assessment purposes, due to the reduced significance of potential environmental and social impacts of the project areas. The overarching purpose of the environmental assessment (EA) process is to ensure that environmental issues have been, and will continue to be, taken into account in the design and implementation of the Project.

## 2.1 Overall Executive Summary

This EIA overall executive summary provides summarized information on VRAMP project issues addressed by three EIAs and nine Environmental Protection Commitment (EPC) reports as required by the GoV and in accordance to the guidelines of Environmental Assessments of the World Bank. In addition the overall summary also includes brief information on twelve Environmental Management Plans (eight roads and four bridges) which were elaborated for each sub-project component of VRAMP.

## 3. Management Agencies

- Ministry of Transportation (MOT): the MOT is responsible for the overall management and in charge of VRAMP project approvals.
- The Directorate for Roads of Vietnam (DRVN) is the Project Owner.
- Project Management Unit 3, on behalf of the Project Owner, will be responsible for the entire project implementation process, report preparation, and regular management of the project. PMU3 will be responsible for ensuring that the requirements of the Bank's safeguards policies are met and that all measures set out in the project Environmental Management Plans and Resettlement Plans (RPs) are carried out.

## 4. Project Overview

The proposed Project Development Objective (PDO) is to improve the efficiency and sustainability of the national road asset management system and maintenance practices performed by the road agency on selected roads in Vietnam.

The Project comprises three main components as follows:

**1). Component A: Road Asset Management System (RAMS) Development (US\$10 million).** This component will finance the development of a comprehensive Road Asset Management System (RAMS). This activity will build on previous initiatives and complement ongoing activities in the sector funded by the Asian Development Bank (ADB), and the Japan International Cooperation Agency (JICA). This component will consist of the following four activities; (i) establish a road condition database; (ii) undertake an initial data collection survey for the entire national highway network followed by a rolling update of one-third of the network in each subsequent year of the project; (iii) development of a Road Asset Management System compatible with the already established sub-systems; and (iv) development of short-, medium-, and long-term road asset management plans for maintenance and improvement of the national road network.

**2). Component B: Road Asset Preservation (US\$196.6 million).** In addition to funding traditional road asset maintenance works this component will also support pilots using performance-based contracts (PBCs) to demonstrate more efficient maintenance of selected highways. It will finance technical assistance on establishing a legal framework for PBCs, develop standard bidding documents, taking into account previous experience of PBC contracts, and the development of a supervision manual (for both engineering and environmental supervision); preservation of high priority sections of the national road network through both traditional input-based method (271 km) and PBC (273 km); a study to compare alternative

maintenance strategies as the basis of developing practical policy advice on effective, long-term preservation strategies for Vietnam.

**3) Component C: Road Asset Improvement** (US\$139.2 million). This component will finance road improvement activities for high priority sections (55 km) of the national road network. It will include civil works, supervision activities, and land acquisition and resettlement (financed by the GoV). Civil works will include widening of nine bridges over 25 m span, which are currently causing bottlenecks on the network.

It is anticipated that both maintenance and improvements activities including widening of existing roads will be confined largely (but not necessarily exclusively) to existing rights of way (ROWs) and will require minimal land acquisition and resettlement. Some non-significant realignment will be done as part of the improvement component in specific areas mostly on existing paddy fields.

**4. Component D: Institutional Strengthening Program** (US\$2.6 million). This component will support targeted activities to develop the capacity of Vietnam’s road agencies to undertake better planning, budgeting, constructing, and monitoring of road assets. Specific activities will include: (i) improving human resource management within the Directorate for Roads of Vietnam’s (DRVN) with respect to the planning, budgeting, management, and operation of the new information management system; (ii) improvements in management, transparency, and monitoring of the recently established Road Maintenance Fund (RMF); (iii) development of standard drawings for infrastructure facilities to increase consistency and quality control of pre-fabricated parts, and to expedite design and construction processes; as well as (iv) technical and financial audits of project implementation.

#### 4.1 Proposed Sub-Projects

The proposed road sub-projects for the VRAMP components related to civil works are listed in Table 1.

**Table 1. List of VRAMP’s Sub-Projects**

No	Component	Sub-Projects
I	Component B: Road Asset Preservation	<ul style="list-style-type: none"> <li>+ B2-1: NH5 Section Ha Noi - Hai Duong (Km11 – Km93);</li> <li>+ B2-2: NH2 Section Ham Yen - Ha Giang (Km163 – Km287);</li> <li>+ B2-3: NH18 Section of Noi Bai – Bac Ninh &amp; Bac Ninh - Chi Linh;</li> <li>+ B3-1: NH48 Section Km0+000 - Km20+000 &amp; Sta38+000 - Sta64+000</li> <li>+ B3-2: NH6 Section Hoa Binh - Son La (Sta78+300 - Sta303+790).</li> </ul>
II	Component C: Road Asset Improvement	<ul style="list-style-type: none"> <li>+ Component C1: Subproject of 4 bridges longer than 25m including Trang Thua, Cong Neo, Trang, Cap on NH38B;</li> <li>+ Component C1: NH.39-1 section from Trieu Duong – Hung Ha (Km44+000 – Km64+000);</li> </ul>

No	Component	Sub-Projects
		+ Component C1: NH.38 section from Quan Goi-Yen Lenh; + Component C1: NH.39 section from Vo Hoi – Diem Dien (Km91+000 – Km107+522).

## 5. Legal and Administrative Policy Framework

According to Government Decree No. 29/2011/ND-CP dated 18 April 2011 regarding regulation on Strategic environmental assessment (SEA), environmental impact assessment (EIA), environmental protection commitment (EPC), the project is required to prepare three EIAs (for NH39, NH39-1, NH38), nine EPCs (for NH2, NH5, NH6, NH18, NH48, Trang Thua, Cong Neo, Trang, and Cap bridges). The EIAs for the subprojects of NH39-1 and NH38 will be appraised and approved by the Ministry of Natural Resource and Environment (MONRE). The EIA for the subproject of NH39 will be approved by the Ministry of Transport (MOT). The remaining EPCs for the subprojects of NH2, NH5, NH6, NH18, NH48, Trang Thua, Cong Neo, Trang, Cap bridges will be approved at the respective district authorities.

The approval of EIA, EPC contents and procedures is based on Circular No. 26/2011/TT-BTNMT dated 16 July 2011 regarding detailed requirements of some articles of decree 29/2011/ND-CP on Strategic Environmental Assessment, Environmental Impact Assessment and Commitment on Environmental Protection.

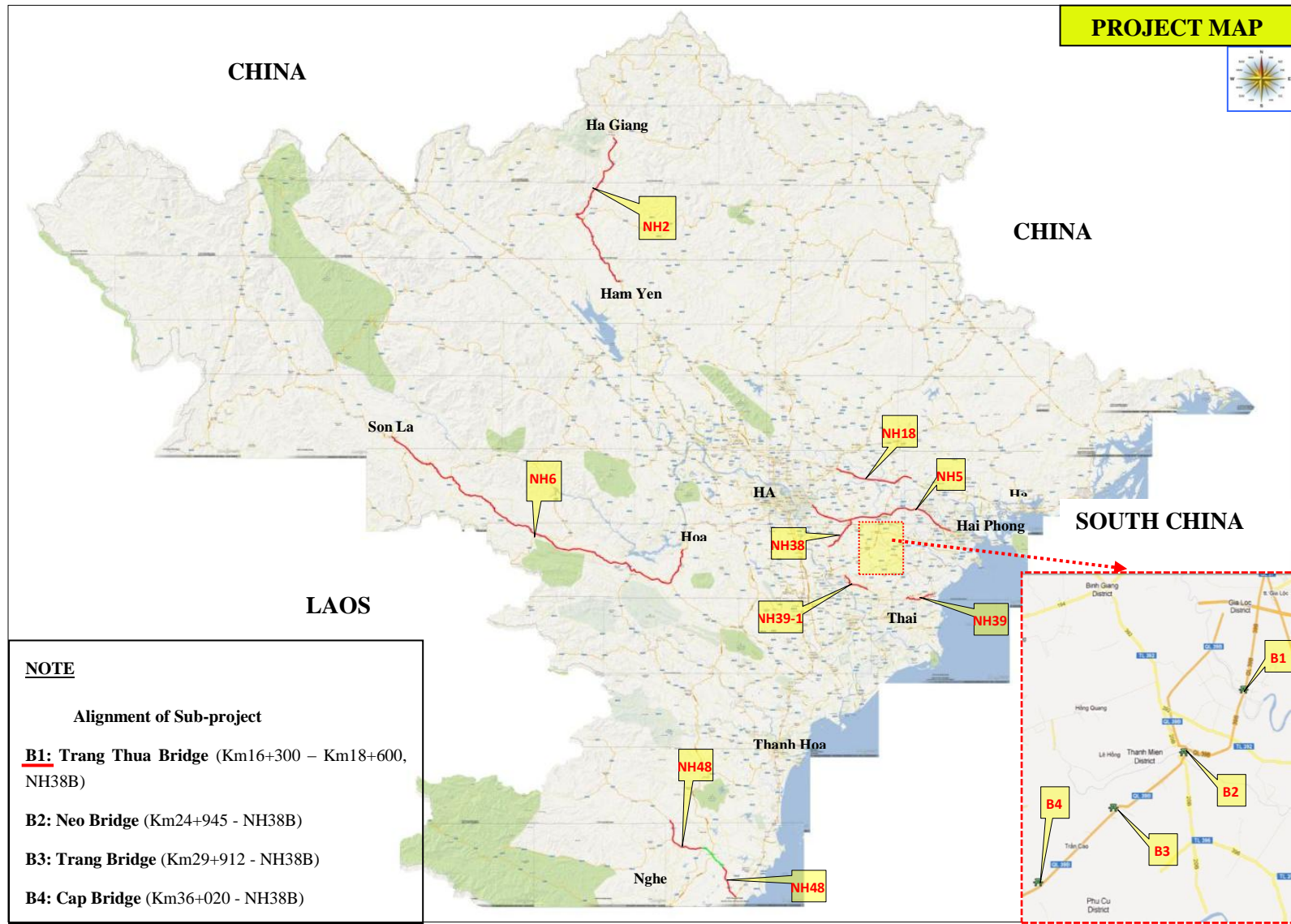
**Table 2. Type of Required Environmental Assessment Reports and Approving Agency**

No	Items	Station	Length (Km)	Type of required report	Approved by
<b>I</b>	<b>Component B: Road Asset Preservation</b>				
<b>1</b>	<b>B2: PBC Contract</b>				
(1)	NH5: Section Ha Noi - Hai Duong	Km11 - Km93	92	EPC	District People's Committee
(2)	NH2: Section Ham Yen - Ha Giang	Km163 - Km287	112	EPC	District People's Committee
(3)	NH18: Section of Noi Bai – Bac Ninh & Bac Ninh - Chi Linh	Km0 - Km79	79	EPC	District People's Committee
<b>2</b>	<b>B3: Periodic Maintenance</b>				
(1)	NH48: Nghệ An	Km0 - Km20 and Km38 - Km64	46	EPC	District People's Committee
(2)	NH6: Section Hoa Binh - Son La	Km78+300 - Km303+790	225	EPC	District People's Committee
<b>II</b>	<b>Component C: Road Asset Improvement</b>				



No	Items	Station	Length (Km)	Type of required report	Approved by
<b>1</b>	<b><i>4 bridges longer than 25m including Trang Thua, Cong Neo, Trang, Cap on NH38B</i></b>				
(6)	Trang Thua	Km18+182	2.3	EPC	District People's Committee
(7)	Cong Neo	Km24+945	0.175		
(8)	Trang	Km29+912	0.442		
(9)	Cap	Km36+020	0.249		
<b>2</b>	<b><i>Three National Highways</i></b>				
(10)	NH39-1 section from Trieu Duong – Hung Ha	Km44 ÷ Km64	20	EIA	MONRE
(11)	NH38 section from Quan Goi-Yen Lenh	Km33+963 - Km52+600	19	EIA	MONRE
(12)	NH39 section from Vo Hoi – Diem Dien	Km91 - Km107+522	16.5	EIA	MOT

Figure 1. Project Map of VRAMP's Sub-Projects



## **6. Existing Conditions**

VRAMP sub-projects cover a variety of geographical regions, such as Red River Delta Region (NH18, NH5, NH38, NH39-1, NH39 and Bridges on NH38B); the northern mountainous area (NH2 North-North-East and NH6 to the North-West); and NH48 on the Northern Central Region (Figure 1).

Northern Vietnam has large plains lying in the river basins of the Red, Lo, and Chay Rivers, which flow in a northeast-to-southwest direction into Bac Bo Gulf. North and northwest of these plains are large hilly and mountainous areas. Northern Vietnam is influenced by a monsoon climate, with four distinct seasons and high humidity. In order to cultivate land and earn their living, inhabitants of the north built dikes over the centuries, resulting in today's system of dikes that are thousands of kilometers long along the river banks.

### **6.1 Climate, Topography and Economic Activities of Major Regions**

#### **6.1.1. Red River Delta Region**

The Red River Delta region faces the Tonkin Gulf in the east. The area consists mainly of flood plains. The climate in Bac Bo Plains is quite regulated and is very suitable for intensive farming. Actually, there are many species of commercially important plants which have adapted well to the fertile land of this region. Most of the food crops, farm produce, industrial crops, and fruit trees have both high productivity and quality. In addition, livestock production and fisheries are well developed in the area.

The Red River Delta constitutes the industrial heart of Vietnam and is one of the richest and most developed regions in the country. Unlike Northern Vietnam, the Red River Delta region lacks a diversity of mineral resources, though a select few can be found in huge quantities. There are large deposits of coal, bauxite, kaolin, limestone, sandstone and smaller deposits of clay. In addition, a large natural gas reserve has been discovered recently in Thai Binh with an annual output potential of 10 million cubic meters. Although forestry is not a key industry, there are some forests that offer high quality wood. Marine resources are of great importance, as the region has 400km of coastline.

However, besides the advantages associated with natural resources, the region also faces challenges such as:

- Flooding is the biggest natural disaster threatening the fields and people's lives in Northern Delta Region because of heavy rains concentrating in the North West and North East regions. River water level is very high in some years threatening the overflow and dike breaching. In addition to the flooding disaster in Northern Delta Region, the consequences of heavy rains, high winds of storms, and tropical depressions have caused significant damages to crops. The problem of infield irrigation has deserved special attention by the Ministry of Agriculture and Rural Development (MARD), Ministry of Natural Resources and Environment (MONRE), Central Committee for Flood and Storm Control, and relative sectors to find solutions for prevention of the damages caused by flash floods and flooding;

- Northern Delta Region is also influenced by the hot dry windy weather. The drought in the dry season and the rain interruption in early summer often cause droughts which affect agricultural production.

### **6.1.2 Northwest area**

The region is bordered by Laos to the west and China to the north. The region is covered with a number of prominent mountains, including a 180km long mountain range that cuts diagonally across the region from northwest to southeast. Several peaks along the mountain range reach 3,000 meters, including the so-called “roof of Indochina”, Fansipan Mountain. The Northwest climate is less affected by extreme tropical monsoon and winter in this area is shorter and more stable than in Eastern regions such as Hoang Lien Son.

Large urban centers are missing from the Northwestern region, with Hoa Binh being the largest town. However, the region produces about 1/3 of the total hydro-electric power of the country, with the Son La Hydropower Plant being the largest producer. While the region is currently one of the poorest in Vietnam, it holds business potential, particularly in terms of its natural resources. The region harbors areas ranking third on national solar radiation potential (without considering amount of radiation on the slopes). The North-West constitutes a good opportunity to evaluate and exploit the rich solar radiation energy to supply current electric-power demands. land is suitable for the cultivation of many products such as tea, medicinal and aromatic herbs, and fruits. The region is rich in minerals, with large stocks of granite, limestone, coal, clay and various other minerals like iron and gold.

Besides these advantages, the North West also faces some significant challenges namely:

- Erosion which, due to lack of planning, has severely taking place as a result of land reclamation and forest exploitation.
- Frequent flash floods and landslides, which cause serious damages almost every year to properties and local communities.

### **6.1.3 Northeast Area**

The region is bordered by China to the north and northeast. The Northeast is mostly mountainous in the north and center, with an average altitude of 700m. Small plains are found between the mountains in the north, as well as in the flat areas towards the coast and to the south. There are many rivers that flow through this region, including the Red River, the Lo River, the Gam River, the Bac Giang River, and the Ky Cung River. There are also many lakes in the region. Winters and frequent wet weather in some areas of the region favor a variety of tropical plants including many kinds of vegetables, farm produce, and fruit trees originating from higher latitudes such as hachiya, plum, orange, tangerine as well as many medicinal plants, such as pseudo-ginseng, ligusticum wallichii, and knotweed. Even with the region’s rapid industrialization, agriculture remains an important source of livelihood for many, partially because of the area’s favorable climate and the abundance of water. Rice is the staple crop in addition to maize, potatoes, tea, lemongrass, citrus fruits and various vegetables. The region has a good climate for tea plantations. The province of Thai Nguyen is one of the country’s biggest tea industry centers (second only to Lam Dong).

The region is rich in mineral resources, ranging from metals, to precious stones and metals to nonmetals and building materials. There are more than 300 mines producing 45 different types of minerals, all found in large quantities. Given the Northeast's wealth of land, the region has huge potential for large scale industrial projects.

However, it is necessary to properly recognize some difficulties faced on the Northeast:

- The biggest obstacle in this area is the cold winter in the valleys where is necessary to plan and identify suitable production areas and residential zones.
- Other major challenges include: flash flood disaster, flooding, landslides, and soil erosion. Therefore, it is fundamental to protect forests and promoting afforestation actions; it is also important to find solutions that would restrict and decrease potential damages associated with flash flooding and landslides.
- In addition, in the eastern part of Hoang Lien Son range, and in particular the Northeast area, the humidity is quite high causing rust, short circuits, malfunction of electronic devices, etc. Therefore, it is required to invest in tropicalization treatment of equipment and machinery.

#### **6.1.4 North Central**

Besides, the natural resources endowment such as 1,112,452 hectares of forest and the large plantation of rubber trees, coffee, cashew nuts and peppers, provides the provinces of this region with important production materials for the manufacturing industries, especially for the agriculture processing industries. Natural resources such as mountains, streams, waterfalls, valleys and beaches as well as historical places and the culture of minorities living in this region also provide abundant sources for the tourism sector.

Challenges faced by the region include:

- Need to provide quality roads infrastructure and electricity supply (hard infrastructure),
- It is necessary to guarantee the ability of providing soft infrastructure (human resources, especially of skilled labor, simple and harmonized customs procedures) to attract investment from the private sector.
- Hot dry winds in summer cause droughts which severely affect crops and livestock. It is required to pay attention to irrigation to overcome the damages caused by drought yearly;
- Besides the hot weather, there are also flooding, rising sea water level, and storm effects that seriously impact productivity and the livelihood of local people. Prevention of natural disasters in the Central region is always a matter of urgency.

#### **6.2 Biodiversity Values and Protected Areas**

Vietnam is recognized as one of the high biodiversity centers in the world. National studies have identified four biodiversity centres in the country: Hoang Lien Mountains, Northern Central Truong Son Mountains, Tay Nguyen (Central Highland) and South-eastern Vietnam. The forests contain rich and diverse fauna and flora and a great variety of forest types, such as lowland and upland closed forests, dry open forests, and upland temperate forests. The mangrove forests, which occur in the northern and southern coasts, have high biological productivity and very high biodiversity levels.

Today, Vietnam has a record of at least 697 species of weeds and algae, 13,766 terrestrial plant species, 8,203 aquatic invertebrates, about 1 million of terrestrial invertebrates, 5,155 insect species, 2,582 fish species, 260 reptile species, 90 amphibian species, 830 bird species and 275 mammal species. Biodiversity however has been altered alongside the process of socio-economic development. People's livelihoods are directly dependent on natural resources, of which biodiversity is part. Agricultural, fishery, forestry products, as well as medicinal plants are critical to rural life and development. Approximately 28% of mammals, 10% of birds, and 21% of amphibians and reptiles endemic in Vietnam are listed as endangered animals. 350 kinds of plants and animals in threatened status are listed in the Biodiversity Action Plan in Vietnam (BAP-1994). In addition, Northern Mountainous areas where NH6 and NH2 are located along the border of Vietnam and Laos comprise many ethnic minorities.

The country has a small portion of land available to be set aside as protected areas. Therefore, the use of natural resources outside protected areas is likely to have direct effects on both biodiversity and livelihoods. Today, the protected area system covers over 100 nature reserves and national parks, including some marine and wetland protected areas, biosphere reserves, Ramsar sites and World Natural Heritage sites, and covers over two million hectares of forested land. Protected areas are managed by MARD and MONRE.

Most of the VARMP sub-projects are located along paddy fields and rural communities of medium to low densities without affecting areas of biodiversity significance. Only VRAMP NH6 subproject cuts through the Pa Co-Hang Kia Nature Reserve. The reserve is located in the extreme west of Hoa Binh province, on the border with Son La province. The site lies in the limestone range that extends south-east from the Son La plateau to Cuc Phuong National Park. The main physical feature within Pa Co-Hang Kia is a high ridge, which reaches 1,536 m in the north-west of the nature reserve, and gradually decreases in altitude to the east. Most of the nature reserve lies above 500 m. The region harbors hundreds of hectares of primary forest in the inaccessible limestone karsts as well as on the high mountain peaks. However, most of the forest in the nature reserve is restricted to ridges and hill tops, while valley bottoms have been cleared for wet rice cultivation and lower slopes for shifting cultivation of maize and cassava.

Pa Co – Hang Kia reserve encompasses an area of 7,091ha, of which, 2,680 ha are strict protected zone, and 4,411 ha fall under ecological restoration. In addition, the reserve has a buffer zone area of 8,010ha. A 10km section of the existing NH6 runs through the reserve area of the Pa Co commune of which approximately 7km pass through the buffer zone area and about 3km pass through the core zone (strict protection area) from Km149 to Km152. It is anticipated that the limited nature of the maintenance works on NH6 will have little effects on the protected area and its biodiversity.

The Flora of Hang Kia - Pa Co contains 17 species listed in the Red Book of Vietnam, of which 10 are Vulnerable (VU) and 7 species are listed as endangered (EN). In addition, there are five endemic plant species: *Dyospyros choboensis*, *Cinnamomum balansac*, *Alniphyllum eberhardtii*, *Eurya tonkinensis* and *Melodinus annamensis*. The sanctuary is rich in medicinal plant species including *Codonopsis javanica*, *Morinda officinalis*, *Paris polyphylla* and *Smilax grabla*. The reserve is also home to various timber species of high economic value such as *Fokienia hodginsii*, *Markhamia stipulatha* and *Garcinia faraec oides*. In addition, there are many flower species belonging to the orchidaceae family like *Amabile dnedrobium*, *Dendrobium chrysanthum*, and *Anoetochilus calareus*.

### **6.3 Archeological Findings**

Most of the VRAMP Sub-projects are constructed on the existing road embankment except for some local bypasses belonging to the subprojects on NH38 and NH39. According to research results, no historical vestiges (including archaeological relics) are found in the area of these project components.

### **6.4 Cultural Values**

Vietnam's Northern Mountain Region is highly diverse in terms of topography, climate, and biodiversity and has a very high level of cultural diversity. It is home to more than 30 different ethnic groups. Each of these groups has its own distinctive culture and is associated with a specific ecological setting. As each group has interacted with the particular environment in which it lives, it has developed its own somewhat distinctive farming system.

The Red River and coastal northeast deltas contain the entire history of Vietnam. Archaeological relics demonstrate the famous Dong Son and Hoa Binh culture. Traditional festivals such as Tran Temple Festival, Lim Festival (Bac Ninh), Huong Pagoda Festival (Ha Noi), Huong Pagoda Festival, as the home to the Cheo (traditional operetta) tunes, Quan Ho (Love Duets) songs, Van songs, the art of opera, water puppetry, music are all cultural manifestations of the people inhabiting these areas.

Unique architectural and artistic treasures such as the But Thap Pagoda (Bac Ninh), Keo Pagoda (Thai Binh), the ancient capital of Hoa Lu (Ninh Binh), Co Le Pagoda (Nam Dinh), and Tay Phuong Pagoda One Pillar Pagoda (Ha Noi), Con Son - Kiep Bac, Pho Hien, and many handicraft villages, which form part of this legacy.

There is an old adage: "First is fishery, second is gardening, and third is field cultivation". The main cultivation mode of the Red River Delta is still rice growing. There are hundreds of handicraft villages, some with high-level skilled workers on pottery, metallurgy and bronze molding. Farmers live in clustered villages. The man-to-man connection in the village is not just by ownership of the village land or through pagodas but also there is a strong spiritual and social ethics attachment. To keep these relationships, there are village conventions and regulations. The conventions and regulations provide fairly strict rules about the ways of the village, from the village territory to land use, from production regulations and environmental protection regulations to village organizations and the sense of village community. Residing in many natural areas with different economic conditions, Vietnamese people have different customs and ways of life and different skills creating unique and interesting/charming characteristics that attract domestic and foreign tourists.

## **7. Summary of Potential Impacts and Mitigation Measures**

Environmental impacts have been identified during the environmental impact assessment process including three EIAs and nine EPCs. Measures have been proposed to mitigate these effects following standard good practices. This section summarizes the likely main environmental impacts associated with each VRAMP sub-project. The predicted impacts and recommended mitigation measures are comprehensively detailed in the relevant VRAMP EIA and EPC reports. The World Bank required separate EMPs for each EIA and EPC in order to encourage good practice by implementing mitigation measures for each project component. A brief description of collective impacts and mitigation measures are summarized in Table 3.

**Table 3. Summary of Environmental Impacts and Mitigation Measures**

Main environmental impacts	Impacted locations and subjects	Mitigation measures
<b>Impacts on biodiversity and Protected Areas</b>	Hang Kia-Pa Co Reserve on NH6, station from Km146+600 to Km150+400 may be affected by construction activities (risks of forest fire, exploitation, sale and illegal use of forest animals and plants)	Secure implementation of NH6 EMP Good management of construction camp and workers by establishing clear rules about biodiversity conservation, forest protection and protection of rare plants and animal species.  Cooperate with Management Board of Nature Reserve Area to establish the plan of forest fire prevention.
<b>Air pollution due to dust generated during construction</b>	(i) The subprojects under Component C (Road asset improvement) are likely to have moderate environmental impacts on the air due to dust emission especially, on NH38, NH39-1, and bridges on NH38B. Dust will be generated at all construction sites, quarry locations, mixing plant locations and on transportation routes. Dust pollution is forecasted to exceed the permissible limits during construction period.  (ii) The subprojects under component B (Road asset preservation) are expected to generate low and medium level impacts. Dust mainly generated in specific locations under repair of damaged pavements. The level of dust pollution occurs partially and takes place in a short period of time (after the road is repaved). However, this issue might be more significant on NH5, NH18, and NH48 where population density is higher along the maintenance routes.	Good implementation of EMP including major mitigation measures.  Besides, it is also recommended that the pavement recycling technology should be considered while selecting the construction methods for pavement repair work of the road work of the subprojects under component C.
<b>Pollution of Surface Water</b>	All bridges and specific route relocation sections, concrete batching plants, camps machinery and equipment maintenance areas in construction sites associated with component C have the potential to pollute rivers and irrigation canals, mainly due to soil, mud and sewage spilling.	A good implementation of the EMP is required. Attention should be paid to establish a system of collection and treatment of wastewater, waste at the work camps and batching plants.  It is recommended that construction should be quick and according to schedule to ensure mitigating the generation of waste and avoid impacts



Main environmental impacts	Impacted locations and subjects	Mitigation measures
		on the community.
<b>Solid Waste</b>	Solid wastes of large amount of sediments are mainly concentrated in the bypass sections and bridge construction location of component C. The subprojects under component B are expected to generate small quantity of solid waste but scattered over a large spatial range.	<p>Apart from good implementation of the EMP, disposal of solid waste should be far away from the water sources, vulnerable positions (such as hospitals, schools and temples, pagodas). On the other hand, it is required to establish agreements with local authorities prior to construction commencement.</p> <p>It is recommended to select pavement recycling technologies for repairing the road pavement of the subprojects under component B to mitigate solid waste generation. On the other hand, it should be flexible to allow local households to get excavated soil to backfill their household works.</p>
<b>Impacts due to noise and vibration</b>	The noise and vibration generation is expected at all construction sites. However, level of noise and vibration impacts is assessed to be small to moderate.	EMP should be properly applied.
<b>The social issues due to land acquisition and resettlement</b>	<p>The subprojects of component C are expected to face issues of land acquisition and resettlement, which are mainly at locations of bypasses construction. Activity of land acquisition and involuntary resettlement might impact the livelihood of local communities.</p> <p>The main data on land acquisition and resettlement are as follows: NH38 Subproject:</p> <ul style="list-style-type: none"> <li>▪ A total of 11 households would be fully affected (house) with a total area of 385 m<sup>2</sup>.</li> <li>▪ There are 237 households that would be affected with more than 10% of the productive land.</li> <li>▪ There are 60 households of vulnerable groups (including eight female-headed households) that would be affected.</li> <li>▪ There are 8 households with business</li> </ul>	<p>Fully implement the measures outlined in the project Resettlement Policy Framework (RPF) and the subproject Resettlement Plans (RP) and can be summarized as follows:</p> <ul style="list-style-type: none"> <li>▪ Land that is permanently affected will be compensated on replacement cost.</li> <li>▪ Houses and structures will be compensated with an amount equal to 100% of the value of the structure in conformity with the unit prices of a newly built house or structure.</li> <li>▪ Assistance will be provided in cash according to Decree No.69 and OP4.12.</li> <li>▪ Establishing program of income restoration and livelihood improvement</li> </ul>

Main environmental impacts	Impacted locations and subjects	Mitigation measures
	<p>(shops) operating that would be impacted.</p> <p>NH39-1 Subproject:</p> <ul style="list-style-type: none"> <li>▪ There are 9 households would be fully affected on house and with a house area of 358 m2</li> <li>▪ There are 143 households would be affected with more than 10 % of the productive land.</li> <li>▪ There are 82 households of vulnerable groups (including nineteen female-headed households) that would be affected.</li> <li>▪ There are 27 households with business (shops) operating that would be impacted.</li> </ul> <p>NH38B Subproject:</p> <ul style="list-style-type: none"> <li>▪ There are 2 households would be fully affected on house and with a house area of 250 m2</li> <li>▪ There are 58 households would be affected with more than 10 % of the productive land.</li> <li>▪ There are 18 households of vulnerable groups (including two female-headed households) that would be affected.</li> <li>▪ There are 16 households with business (shops) operating that would be impacted.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Cultivated land that is temporarily affected will be: (i) fully compensated for affected assets and crops and trees based on replacement cost; (ii) compensated for income loss; and, (iii) supported for the restoration of land to its original state or better conditions.</li> </ul> <p>It is recommended that land acquisition and resettlement should be done comprehensively and without delays, which affect the general schedule of the project.</p> <p>The project design includes bypasses crossing crowded residential areas which are considered a solution to mitigate damages due to acquisition of residential land and involuntary resettlement.</p>
<p><b>Damages of Public Facilities Including Irrigation Canals and Rural Roads</b></p>	<p>The problem of damaging public facilities that include irrigation canals, rural roads, domestic water supply, etc. are expected to take place at locations of Component C subprojects. The potential damages to irrigation canals would affect rice planting in this region.</p>	<p>Compliance with the measures in EMP must be observed. It is essential to ensure a non-interrupted supply of irrigation water.</p> <p>In case of damage occurrence or lack of water caused by the project, it is required to make compensation for the damages.</p>
<p><b>Risks and Incidents of Industrial Safety and Traffic Safety.</b></p>	<p>The risk of unsafe traffic is forecasted to happen at all construction sites throughout both construction and operation phases. It is a fact that the traffic accident rate usually increases during the operation phase due to many factors (e.g., poor awareness of traffic law, low quality of means of transport, presence of animals and non-motorized vehicles, etc. while speed of traffic flow is increased). However, the issue is not only due to wider roads and faster cruising speeds, but</p>	<p>Compliance with the requirements stated in EMP; concurrently, it is required to coordinate with local traffic police or traffic inspectors to ensure traffic safety during the construction.</p> <p>Increasing inspection and penalties to traffic law violation is a good measure. However, to do this, government agencies at governmental level and local authorities shall take a more</p>

Main environmental impacts	Impacted locations and subjects	Mitigation measures
	mainly due to participants' sense of traffic (currently, it is an urgent problem of Vietnam transportation in general). The improved road pavement both facilitates the movement and development of economic activities and also facilitates the control of some issues.	important role than the project owner or management unit of the route in the future.
<b>Incidents of Collapsed Works</b>	Bridge works of the project are expected to have potential risk of collapsing causing loss of life and property and clogging flows when incidents may occur.	Implement of EMP well and strictly comply with the procedures and technical regulations for construction.

## 8. Public Consultation

Public consultation for VRAMP has been carried out at the request of the GoV and the WB. The consultation work was conducted once including: consultation meetings were held from January 2013 to March 2013 in most of the communes where component C subprojects are located including 13 communes of NH38 Subproject, 11 communes of NH39-1 Subproject; 08 communes of NH39 Subproject; 06 communes of Subproject of 4 bridges including Trang Thua, Cong Neo, Trang, Cap on NH38B. In addition, consultations were conducted in 30% of the communes (including 09 communes of NH5 Subproject, 05 communes of NH2 Subproject, 05 communes of NH18 Subproject, 05 communes of NH48 Subproject and 10 communes and Hang Kia - Pa Co Nature Reserve Area of NH6 Subproject). Concurrently, additional interviews (using questionnaires) were conducted with the impacted people at other locations at an average ratio of 10 people/commune in March 2013.

Participants included: representatives of local authorities, government departments and sectors, civil associations (women, farmer, youth, veterans, etc.), and the people affected directly and indirectly by the subproject.

### 8.1 Consultation Methods

Major activities of the project were discussed during the meetings, potential environmental impacts were described along with social and environmental mitigation measures. Environmental management plans were disclosed and comments from the participants were taken into account.

Field Investigation: Handouts: documents to introduce the main activities of the project, describe the environmental impacts that may occur, describe mitigation measures to adverse impacts on the environment and note the comments of the interviewees.

### 8.2 Public Consultation Results

Regarding opinions and questions of the people, one part was replied and explained at the meetings or at the investigation directly; the other part was recorded and included in the contents

of the EIA report, EPC, the subproject designs, and the EMPs, respectively by the Consultant and the project owner.

The opinions mainly focused on the subprojects under component C due to their moderate impacts and are listed in Table 4 below:

**Table 4. Summary of Public Consultation Results**

No.	Opinions of local residents	Notes
<b>A. National Highway No. 38: (Meetings at 13/14 communes)</b>		
<b>1. Hydrological issues and occupation of the water supply sources</b>		
-	The Project design includes the calculation of the drainage system which should be appropriate to ensure the technical standards.	<b>Recorded in the corresponding report.</b>
-	During project construction, irrigation canal system will be temporarily occupied disrupting the irrigation system, affecting agricultural production. It was requested that the project should have proper measures to overcome the above.	<b>-ditto-</b>
<b>2. Environmental hygiene, industrial safety and public order issues</b>		
-	Site leveling activities will generate dust and noise affecting agricultural production and business activities of local residents. The project is required to have appropriate remedy measures.	<b>-ditto-</b>
-	During project implementation, a large number of workers from other areas would be mobilized which may disturb the local security and public order. The project is required to have separate rules and regulations to manage this work force.	<b>-ditto-</b>
-	During project implementation, there may be incidents such as collapse, industrial accidents, traffic accidents, etc. The project owner is required to have preventive and remedy measures (if any).	<b>-ditto-</b>
<b>3. Land acquisition and resettlement issues</b>		
-	The price of compensation for arable farmland acquisition is not satisfactory at present. The project is required to have appropriate policies to avoid damages to the people losing agricultural land.	<b>-ditto-</b>
-	Agricultural land acquisition of the project will lead to loss of jobs, the main source of income of the people. The Project should have appropriate compensation modes and reasonable assistance.	<b>-ditto-</b>
-	The Project route cut my field in two parts, cultivation shall be difficult; so, who will compensating us	<b>-ditto-</b>
-	Training and vocational jobs suitable for elderly people such as: bamboo and rattan knitting could compensate for lost of jobs and land. Support concessional fund for some households to switch their production.	<b>-ditto-</b>
-	The land acquisition should be implemented in a clear and explicit manner according to the regulations to ensure the progress of the project	<b>-ditto-</b>
<b>4. Information dissemination</b>		
-	Most localities want the project owners to publicize the information about the project	<b>-ditto-</b>

No.	Opinions of local residents	Notes
	so that, local authorities as well as local residents will know and supervise the project implementation.	
<b>B. National Highway No. 39: (Meeting at 8/9 communes)</b>		
<i>1. Hydrological issues and occupation of the water supply sources</i>		
-	The Project is required to be constructed as scheduled, avoid flooding during construction	<b>-ditto-</b>
-	The project owner is required to compute the drainage system to secure the canal system for agricultural production in the project design.	<b>-ditto-</b>
-	Secure adequate drainage system for residential.	<b>-ditto-</b>
<i>2. Environmental hygiene, industrial safety and public order</i>		
-	There should be waste management plans, securing environmental sanitation.	<b>-ditto-</b>
-	It is requested to thoroughly apply mitigation measures to minimize the effects of dust, noise, waste pollution on people's lives.	<b>-ditto-</b>
-	Regarding environmental sanitation, local people require contractors to correctly and adequately comply with the commitments that were proposed for the project, ensuring the quality.	<b>-ditto-</b>
-	Avoid incidents during the construction, if incidents unfortunately happen, it is requested to have timely response measures.	<b>-ditto-</b>
-	The construction units are required to strictly follow the industrial safety rules.	
<i>3. Land acquisition and resettlement</i>		
-	Project owners are asked to carry out appropriate and reasonable compensation for land acquisition.	<b>-ditto-</b>
-	Currently, local people are living on agricultural activities mainly without extra jobs. Therefore, the project should have the appropriate compensatory and assistance measures to create jobs for them.	<b>-ditto-</b>
<b>C. National Highway No. 39-1: (meetings at 11/12 communes)</b>		
<i>1. Hydrological issues and occupation of the water supply sources</i>		
-	During road construction, it is required to pay attention to the drainage system in populated areas	<b>-ditto-</b>
-	In densely populated areas on NH39, it is noted to design the drainage systems on both sides to avoid flooding when there are heavy rains.	<b>-ditto-</b>
-	In densely populated areas, it is required to study designing enough drainage system to avoid flooding houses after backfilling the road embankment.	<b>-ditto-</b>
<i>2. Environmental hygiene, industrial safety and public order</i>		
-	The impacts due to dust and noise are often the most visible and directly impact on the lives of local residents.	<b>-ditto-</b>
-	Avoid construction at night time as this will affect the people's lives.	<b>-ditto-</b>
-	The set forth mitigation measures are quite adequate. However, it is required to pay special attention to the following issues: traffic safety, agricultural irrigation system and securing proper compensation to residents prior to construction.	<b>-ditto-</b>

No.	Opinions of local residents	Notes
-	In the communes there are many households with business in operation. During the construction, it is required not to stockpile sand and soil inside the residential areas to avoid affecting the business of those households.	<b>-ditto-</b>
<b>3. Land acquisition and resettlement</b>		
-	The land acquisition should be implemented in a clear and explicit manner according to the regulations to ensure the progress of the project. Not extend the construction time causing waste of Government's money, affecting on people's daily life.	<b>-ditto-</b>
-	A Fund must be created; land acquisition has to be completed prior to construction avoid extension of the project leading to environmental impacts in a long-term period.	<b>-ditto-</b>

### 8.3 Consultation with Hang Kia - Pa Co Nature Reserve Area

The project owner has co-operated with the consultant to conduct the consultation with the Management Board of the Hang Kia - Pa Co Nature Reserve on April 25<sup>th</sup>, 2013.

Content of consultation: Introducing Project and the subproject activities of NH6 section passes through the Nature Reserve, describing the environmental impacts that may occur, describing the proposed measures to prevent and mitigate the impacts and record the opinions of Management Board of the Nature Reserve.

## 9. Environmental Management Plan

A total of 12 EMPs were elaborated for all the subprojects. The project owner will include content of corresponding EMPs into the standard tender documents (after EMPs are cleared by WB) to be used as a basis for contractors to implement environmental management during construction phase.

The EMP contains guiding environmental principles and procedures for communication, reporting, training, monitoring and plan review to which all staff, consultants, supervisors, Contractors and sub-Contractors are required to comply with throughout the pre-construction, and constructions stages of the Road Project.

The purpose of The EMPs of the subproject is to set out a program to manage environmental issues in the preparation and construction of the works and during the operation phase of the project; including:

- Provide a management plan for implementation of the environment impact mitigation measures which have been approved environmental management agencies and converted into the terms of the specifications of the subproject;
- Ensure a sound management of waste, provide rapid response structures to environmental issues and incidents and urgently manage and deal with environmental problems;
- Continuously collect the information about changes of environmental quality in implementation of the Project, in order to timely detect additional negative environmental impacts and propose proper measures to prevent and mitigate environmental pollution,

according to the TCVN 2001, 2002; QCVN 2008, 2009, and 2010.

Each EMP is structured as follows:

**Introductions:** This section provides the objectives and structure of the EMP;

**Overview of Environmental and Social Issues:** This part includes the project description and main environmental and social impacts, the approach for identification of environmental issues along the road alignment and summarizes the main mitigation measures.

**Roles and Responsibilities for Environmental Management during Construction:** This section defines the roles and responsibilities for environmental management for all actors involved in the project, and the process of control and reporting.

**Compliance Framework:** Here the environmental duties of the contractor (s) are described, and also the environmental compliance framework that will be put in place, the environmental standards for all mitigation measures, the environmental supervision of civil works, and the independent monitoring consultant.

**EMP Implementation Plan:** Describes the requirements and staffing needs for initiation of the works, for the Contractor and supervision consultant. It also includes the capacity building and training programs that will need to be implemented for all actors involved in the environmental management of the project.

**Monitoring Program:** An environmental monitoring program for the project identifies the parameters, frequency, and responsibilities for monitoring environmental impacts during construction and operation of the road.

**Budget:** budget estimates for the implementation of the EMP will be presented.

**Appendices:** key information related to the project and the contents of the EMP are included in the appendix.

## 10. Environmental Monitoring Program

It is essential to design the monitoring program and monitoring frequency appropriately to be able to demonstrate both the overall performance of the project works as well as the short-term impact due to peak construction activities. More specifically, as the integral and critical part of the EMP, the environment monitoring program should have the following objectives:

- Determine the actual extent of the impacts;
- Control impacts which are generated from construction process and mentioned in EIA report;
- Check environmental pollution standards applied to the project during construction;
- Check and supervise implementation of environmental protection solutions during construction based on EIA report.
- Suggest mitigation measures in case of unexpected impacts;
- Suggest to the Client to coordinate with central and local environmental organizations to solve pending issues relating to environmental protection under the scope of the Project;

- Assess the effect of mitigation measures in pre-construction, construction and operation stages;
- Confirm the impacts forecasted in the EIA.

### 10.1 Monitoring Report System

In order to exchange information effectively, establish a database for monitoring the implementation of mitigation measures, and create an effective implementation of EMP, it is essential to adopt a system of standard report at all levels of management as shown in the table below.

**Table 5. System of Environmental Monitoring Report**

No	Issues to be reported	Monitoring at 1 <sup>st</sup> level	Monitoring at 2 <sup>nd</sup> level	Monitoring at 3 <sup>rd</sup> level (One duplicate must be sent to MONRE and DONRE)
<b>Construction stage</b>				
1	Implement mitigation measures on site	<b>Implemented by:</b> Contractor <b>Frequency of report submission:</b> Monthly <b>Report sent to:</b> PMU3	<b>Implemented by:</b> PMU3 <b>Frequency of report submission:</b> once every three months <b>Report sent to:</b> DRVN	<b>Implemented by:</b> DRVN <b>Frequency of report submission:</b> once every three months <b>Report sent to:</b> MOT, WB
2	Supervision of EMP implementation	<b>Implementation Unit:</b> Construction Supervision Team (CSC) <b>Frequency of report submission:</b> Monthly – Quarterly <b>Report sent to:</b> PMU3	<b>Implemented by:</b> PMU3 <b>Frequency of report submission:</b> once every three months <b>Report sent to:</b> DRVN	<b>Implemented by:</b> DRVN <b>Frequency of report submission:</b> once every three months <b>Report sent to:</b> MOT, WB
3	Monitoring of EMP implementation by the community and local authority	<b>Implemented by:</b> Community Monitoring Group <b>Frequency of report submission:</b> Monthly <b>Send report to:</b> Local authority	<b>Implemented by:</b> Local authority <b>Frequency of report submission:</b> In cases of reflection/complaints. <b>Report sent to:</b> PMU3	
4	Independent Environmental Monitoring		<b>Implemented by:</b> IEMC SIMC <b>Frequency of report submission:</b> once every three months <b>Report sent to:</b>	



No	Issues to be reported	Monitoring at 1 <sup>st</sup> level	Monitoring at 2 <sup>nd</sup> level	Monitoring at 3 <sup>rd</sup> level (One duplicate must be sent to MONRE and DONRE)
			PMU3 WB (if required)	
<b>Operation stage</b>				
1	Environment and Traffic Monitoring		<b>Implemented by:</b> Functional company of DRVN <b>Frequency of report submission:</b> once every six months <b>Report sent to:</b> DRVN	<b>Implemented by:</b> DRVN <b>Frequency of report submission:</b> once every six months <b>Report sent to:</b> MOT
2	Traffic safety monitoring			<b>Implemented by:</b> Functional company of DRVN <b>Frequency of report submission:</b> once every six months <b>Report sent to:</b> MOT

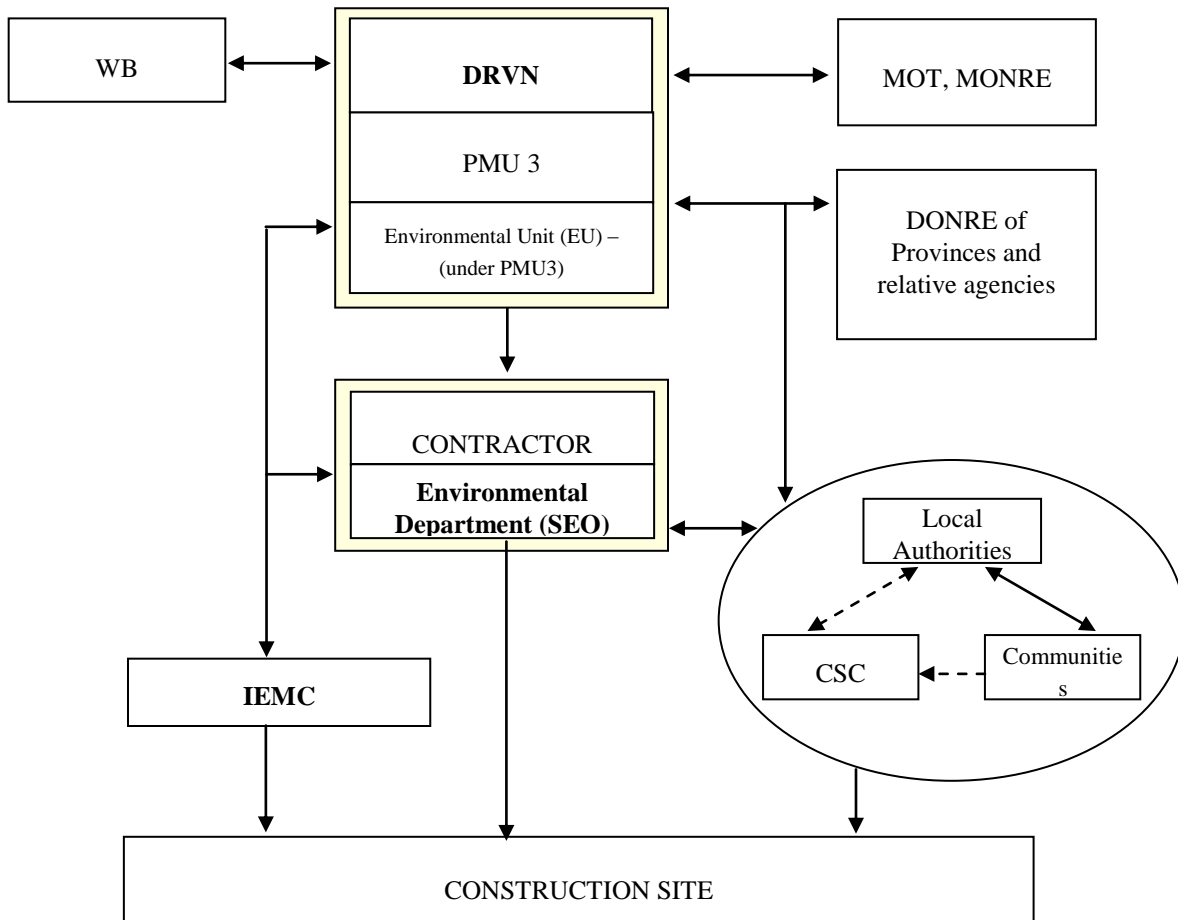
## 11. Roles and Responsibilities of Relevant Parties

Proper environmental management during construction requires the involvement of several stakeholders and agencies, each with different roles and responsibilities (Figure 2) including:

- Project owner: DRVN, PMU 3;
- The agency approved Environmental impact assessment report: Ministry Of Natural Resource and Environment (MONRE) and Ministry of Transport (MOT);
- Department of Natural Resources and Environment (DONRE) of provinces and relative agencies;
- Independent Environmental Monitoring Consultant (IMC);
- Contractor;
- Local communities;
- World Bank (WB).

The relationship and interaction among different stakeholders in environmental management of the subproject are presented in the figure below.

**Figure 2. Management System and Stakeholders during Construction Phase**



Specific responsibilities of the stakeholders are presented in Table 6 below.

**Table 6. Responsibilities of Stakeholders**

No.	Company/ Unit	Responsibilities
1	DRVN/ PMU3	<p>DRVN, the Project implementing agency, will be responsible for overseeing the project implementation.</p> <p>PMU3, representative of the DRVN, will be responsible for monitoring the overall project implementation, including environmental compliance of the project. PMU3 will have the final responsibility for environmental performance of the project during both the construction and operational phases.</p> <p>Specifically PMU3 will: i) closely coordinate with local authorities in the participation of the community during project preparation and implementation; ii) monitor and supervise EMP implementation including incorporation of EMP into the detailed technical designs and bidding and</p>

No.	Company/ Unit	Responsibilities
		<p>contractual documents; iii) ensure that an environmental management system, as indicated in Figure 2, is set up and functions properly; iv) be in charge of reporting on EMP implementation to the DRVN and the World Bank.</p> <p>In order to get effectiveness in the implementation process, PMU3 will establish an environmental unit with at least two environmental staff to help with the environmental aspects of the project.</p>
2	Environmental Unit (under PMU3)	<p>The Environmental Unit is responsible for monitoring the implementation of WB's environmental safeguard policies in all stages and process of the project. Specifically, this unit will be responsible for: i) reviewing the subproject EIAs (EPCs) and EMPs prepared by consultants to ensure quality of the documents; ii) helping PMU3 incorporate EMPs into the detailed technical designs and civil works bidding and contractual documents; iii) helping PMU3 incorporate responsibilities for EMP monitoring and supervision into the TORs, bidding and contractual documents for CSC and IEMC; iv) providing relevant inputs to the consultant selection process; v) reviewing reports submitted by the CSC and IEMC; vi) conducting periodic site checks; vii) advising PMU3's leaders on solutions to environmental issues of the project; and viii) preparing environmental performance section on the progress and review reports to be submitted to the DRVN and the Bank.</p>
3	CSC	<p>The Construction Supervision consultant (CSC) will be responsible for supervising and monitoring all construction activities and for ensuring that Contractors comply with the requirements of the contracts and the EMP. The CSC shall engage sufficient number of qualified staff (e.g. Environmental Engineers) with adequate knowledge on environmental protection and construction project management to perform the required duties and to supervise the Contractor's performance. The Environmental Engineers shall be lead by a <i>Workplace Safety and Environment Supervisor (SES)</i> who shall have extensive experience (at least 5 years' experience is required) in environmental management, supervision and monitoring on construction projects and be familiar with Viet Nam environmental legislatives requirements.</p> <p>The terms of Reference for the CSC shall be clearly stipulated in the contract signed between CSC and PMU3.</p>
4	Contractor	<p>Based on the approved EMP, the Contractor will be responsible for establishing a site-specific EMP for each construction site area, submit the plan to PMU3 and CSC for review and approval before commencement of construction. In addition, it is required that the Contractor get all permissions for construction (traffic control and diversion, excavation, labor safety, etc. before civil works) following current regulations.</p>

No.	Company/ Unit	Responsibilities
		The contractor shall be required to appoint a competent individual as the contractor's on-site <i>Safety and Environment Officer (SEO)</i> who will be responsible for monitoring the contractor's compliance with the EMP requirements and the environmental specifications.
5	Independent Environmental Monitoring Consultant (IEMC)	<p>IEMC will, under the contract scope, provide support to PMU3 to establish and operate environmental management systems, offers suggestions for adjusting and building capacity for relevant agencies during the implementation period and monitor the Contractor's EMP implementation in both construction and operation stages. IEMC will also be responsible to support PMU3 to prepare monitoring reports on EMP implementation and submit these reports to DRVN for approval.</p> <p>The IEMC shall have extensive knowledge and experience in environmental monitoring and auditing to provide independent, objective and professional advice on the environmental performance of the project.</p>
6	Ministry of Transport	Coordinate with DONRE to regularly check Contractor's performance in accordance to current regulations, especially matters related to arrangement of fences and signs whether they are following regulations, cleaning works outside fences, excavation, travelling of construction vehicles, etc.
7	Ministry of Natural Resource and Environment (MONRE)	<p>Implement or may assign its professional environmental protection agency to carry out: i) Inspecting and certifying the application of environmental protection works and measures for project operation; ii) Inspecting the application of environmental protection measures in the investment preparation and project construction phases when necessary.</p> <p>Shall detail the inspection and certification of application of environmental protection works and measures for project operation; and formulate and promulgate specialized technical guidelines for such inspection and certification.</p>
8	Department of Natural Resources and Environment (DONRE)	With the role of state management in the environmental field, DONRE will be responsible for: i) supervising the implementation of EMP; ii) enforcing applicable laws, regulations and standards; iii) coordinate the environmental protection effort among departments concerned; and iv) checking and supervising construction, completion and operation of environment facilities.

## 12. Estimated Budget

Following regulations of Vietnamese Laws and the Overseas Development Assistance regulation, the Contractor must ensure abiding with the related environmental management regulations and the EMPs of the subprojects.

The cost for organization, training, dissemination, procurement, operation of equipment, and manpower for implementation of mitigation measures in and out of the site in accordance with EMP requirements are integrated in the construction package. Contractors will be responsible to study, prepare alternatives and offer cost estimation for these activities. It is considered as one of

the criteria for assessing the capability of the Contractor in the future and compliance level of the Contractor.

In case of violations, the project owner can impose penalties or hire a third party to mitigate the impacts that contractors failed to implement.

Contractors participating in the bid package for construction supervision of the project is responsible for proposing the supervising organization for the contractor's mitigation measures implementation.

According to regulations of Vietnamese laws, community-based monitoring systems will be voluntary. However, community monitoring organizations will receive assistance from PMU3 through capacity building programs and provided with necessary documents, papers and forms to facilitate site supervision works.

However, practical experiences show that it is difficult to maintain monitoring work over a long period at high intensity. In order to increase the effectiveness, the community monitoring team should be provided with a minimum of assistance compensation rate for their performance.

**Table 7. Estimated Budget for Independent Environmental Monitoring and Capacity Building**

No	Component/ Sub-Project	Cost for Supervision (VND)			Cost for monitoring program implementation (VND)	Contingency (VND)	Total Amount	
		Independent Monitoring Consultant	Capability building and training	Total			VND	USD
<b>I</b>	<b>Component B: Road network preservation</b>							
1	NH5: Section Ha Noi - Hai Duong (Km11 – Km93)		82,000,000	82,000,000		8,200,000	<b>90,200,000</b>	<b>4,288</b>
2	NH2: Section Ham Yen - Ha Giang (Km163 – Km287)		51,000,000	51,000,000		5,100,000	<b>56,100,000</b>	<b>2,667</b>
3	NH18: Section of Noi Bai – Bac Ninh & Bac Ninh - Chi Linh		56,000,000	56,000,000		5,600,000	<b>61,600,000</b>	<b>2,928</b>
4	NH48: Section Sta0+000 - Sta20+000 & Sta38+000 - Sta64+000	88,200,000	56,000,000	144,200,000	419,556,480	56,375,648	<b>620,132,128</b>	<b>29,480</b>
5	NH6: Section Hoa Binh - Son La (Sta78+300 - Sta303+790)	88,200,000	80,000,000	168,200,000	555,324,672	72,352,467	<b>795,877,139</b>	<b>37,834</b>
<b>II</b>	<b>Component C: Road Asset Improvement</b>							
	<i>4 bridges longer than 25m including Trang Thua, Cong Neo, Trang, Cap on NH38B</i>							
	Trang Thua Bridge	242,550,000	33,000,000	275,550,000	153,577,692	42,912,769	<b>472,040,461</b>	<b>22,440</b>
	Cong Neo Bridge	176,400,000	31,000,000	207,400,000	110,818,656	31,821,866	<b>350,040,522</b>	<b>16,640</b>
	Trang Bridge	220,500,000	34,000,000	254,500,000	139,324,680	39,382,468	<b>433,207,148</b>	<b>20,594</b>
	Cap Bridge	154,350,000	31,000,000	185,350,000	96,565,644	28,191,564	<b>310,107,208</b>	<b>14,742</b>

No	Component/ Sub-Project	Cost for Supervision (VND)			Cost for monitoring program implementation (VND)	Contingency (VND)	Total Amount	
		Independent Monitoring Consultant	Capability building and training	Total			VND	USD
<b><i>Three National Highways</i></b>								
	NH.39-1 section from Trieu Duong – Hung Ha (Km44+000 – Km64+000)	286,650,000	77,000,000	363,650,000	1,080,525,999	144,417,600	<b>1,588,593,599</b>	<b>75,518</b>
	NH38: Section Quan Goi - Yen Len	286,650,000	73,000,000	359,650,000	1,268,781,045	162,843,105	<b>1,791,274,150</b>	<b>85,153</b>
	NH39: NH.39 section from Vo Hoi – Diem Dien (Km91+000 – Km107+522)	286,650,000	66,000,000	352,650,000	455,595,420	80,824,542	<b>889,069,962</b>	<b>42,264</b>
	<b>Total</b>			<b>2,500,150,000</b>	<b>4,280,070,288</b>	<b>678,022,029</b>	<b>7,458,242,317</b>	<b>354,547</b>

### **13. Conclusions**

- The project will play an important role in promoting economic development in the entire northern region while contributing to eliminate hunger and reduce poverty and improve the life quality of people.
- According to both Vietnamese Environmental Assessment laws and regulations and the World Bank's Operational Policies on Environmental Assessment (OP/BP 4.01), Natural Habitats (OP/BP 4.04), and Involuntary Resettlement (OP/BP 4.12) are triggered to the proposed VRAMP. The project is categorized as B for environmental assessment purposes, due to the reduced significance of potential environmental and social impacts of the project areas.
- Project Management Unit 3, on behalf of the project owner, will be responsible for the entire project implementation process, report preparation, and regular management of the project.
- The EMPs include a detailed assessment of mitigation measures along the alignment of each road and the four bridges part of the VRAMP. These measures were either: (i) incorporated in project design and hence already included in the bill of quantities; or (ii) will be included in the environmental specifications for contractors. In addition, site specific measures were identified for all sensitive areas along the road. The types of measures include: special culverts for irrigation canal crossings, lining of canals during construction, special crossings for community connectivity, relocation of pumping stations for irrigation etc.