

**MINISTRY OF AGRICULTURAL AND RURAL DEVELOPMENT (MAR)**

**VIETNAM: Sustainable Agriculture Transformation Project  
(VnSAT)**



**Environment and Social Management  
Framework  
(ESMF)**

**November, 2014**

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**ABBREVIATIONS**

CPMU	Central Project Management Unit
CPC	Commune People Committee
CSB	Community Supervision Board
DARD	Department of Agriculture and Rural Development
DONRE	Department of Natural Resources and Environment
DPC	District People Committee
ECOP	Environmental Code of Practices
EMPF	Ethnic Minority Policy Framework
EMP	Environment Management Plan
ESMF	Environment and Social Management Framework
GOV	Government of Vietnam
HH	Household
IPM	Integrated Pest Management
IPMP	Integrated Pest Management Plan
LEP	Law on Environmental Protection
MARD	Ministry of Agriculture and Rural Development
OP/BP	Operational Policy/Bank Procedures
PPC	Provincial People's Committee
PPMU	Provincial Project Management Unit
QCVN	National Technical Regulations
RAP	Resettlement Action Plan
REA	Regional Environment Assessment
RPF	Resettlement Policy Framework
SP	Sub-Project
TCVN	National Environmental Standards
VDIC	Vietnam Development Information Center
WB	World Bank

## 1. INTRODUCTION

In June 2013, the Prime Minister of Vietnam approved the Agricultural Restructuring Plan (ARP) prepared by the Ministry of Agriculture and Development (MARD). The Plan calls for a shift in sectoral goals beyond physical targets to include a broader set of indicators of sustainable development. Particular reference was given to addressing adverse environmental impacts of certain agricultural expansion processes and the need to mainstream effective environmental management practices into agricultural sector. The Plan also called for the broad application of collaborative arrangements among government agencies, the private sector, farmer/ community organizations, and the scientific community – the so-called ‘4 houses’.

The strategic orientation of the Vietnam Sustainable Agricultural Transformation Project (vnSAT) is to support the implementation of the Government's ARP. It will do so with a combination of assistance to policy and institutional reform that supports the reorientation of the central line ministry, MARD, and associated public agencies as well as key private sector stakeholders, and targeted support to two critical sectors where conditions are most suited to the rapid implementation of the new approach embodied in the ARP. A combination of policy and institutional reform and results in two key sectors will deliver real results for beneficiary farmers, and will demonstrate the merits of this new orientation thereby building support for the continued implementation of the strategy. VnSAT comprises of four components:

- Component A: Institutional Strengthening to Support Agricultural Transformation.
- Component B: Supporting Sustainable Rice-Based Systems.
- Component C: Supporting Sustainable Coffee Production and Rejuvenation
- Component D: Project Management, Monitoring and Evaluation

The total budget of the Project was estimated at 518 millions USD co-financed by IDA, the Government of Vietnam and private sector. The Project will be implemented in five provinces in the Central Highland and the eight provinces in the Mekong Delta of Vietnam.

The Project has been classified as Environmental Category B by the World Bank. To comply with the World Bank Safeguard Policies and environmental management requirements of the Government of Vietnam, an Environmental and Social Management Framework (ESMF, this document) was prepared to guide project implementing agencies on environmental assessment, mitigation of impacts, monitoring and reporting procedures during project implementation. This document consists of the following main sections:

- |             |   |
|-------------|---|
| Section 1:  | Introduction  |
| Section 2:  | Project Description   |
| Section 3:  | Policy, Legal and Administration Framework                              |
| Section 4:  | Background of Project Area  |
| Section 5:  | Project Potential Social and Environmental Impacts, Mitigation Measures |
| Section 6:  | Safeguard Instruments Requirements, Review and Clearance                |
| Section 7:  | Capacity Building, training   |
| Section 8:  | ESMF Implementation Cost Estimate                                       |
| Section 9:  | Grievance and Redress Mechanism   |
| Section 10: | ESMF Consultation and Disclosure  |

## 2. PROJECT DESCRIPTION

The Proposed project comprises of four components

### **Component 1: Institutional Strengthening to Support Agricultural Transformation**

This component would strengthen the capacities of various public institutions to design, implement, and monitor agricultural restructuring and sustainability initiatives. It would likely include:

- a) Technical assistance/training to MARD's Planning Department and agricultural restructuring steering committee and to provincial Departments of Agricultural and Rural Development (DARD) in relation to public expenditure management and M&E systems for sector-wide sustainable development;
- b) Technical support and training for selected MARD departments to identify and implement strategies for organizational change and improved functionality;
- c) Support for policy and institutional studies related to various types of public-private sector partnerships/ collaborations and potential restructuring of state-owned enterprises (SOEs) in the sector; and
- d) Technical assistance to banks to increase their capability to lend to the agricultural sector.

### **Component 2: Supporting Sustainable Rice-Based Systems**

The objectives of this component are to increase rice farmer's incomes, reduce the negative environmental impacts of rice-based production systems, and enhance the competitiveness of the commercial rice sub-sector. This component would support sustainable rice-based systems in the MKD through:

- a) Implementing a large-scale extension program on improved agronomic practices and management. Anticipated activities would include farmer training, establishment of demonstration sites, support for establishment of farmer organizations, provision of small matching grants to encourage farmers to adopt good farming practices, crop rotations, improved postharvest equipment and facilities, and better management/use of agricultural wastes and by-products. The activities aim at reducing the volume of seed, fertilizer, water and pesticide use, and postharvest losses, while improving productivity, quality, and profitability;
- b) Supporting and leveraging private sector investments in upgrading rice processing technology and facilities (i.e. storages, driers, processing equipment, etc.) for higher quality and specialty rice. The participating private sector agribusinesses are required to work/collaborate with farmers who are supported by the project to market their produce (i.e. contract farming); and
- c) Improving public services delivery to support farmer adoption of improved agronomic practices and management. Anticipated activities would include necessary support for

strengthening the capacity of technical departments and concerned agencies of MARD and DARDs in the project provinces (i.e. Departments of Crops, Plant Protection, Cooperatives and Rural Development, Agricultural Planning, Extension Centers, Seed Centers, etc.) to improve their extension skills, capacity and quality, and enhance capacity for foundation seed production and the certification of seed produced by farmer groups or private companies. At the central level, the project would also support a continued technical collaboration program between MARD and the International Rice Research Institute (IRRI) to provide overall technical support to MARD and the project provinces. The project would also support the on-going program to measure and monitor greenhouse gas (GHG) emissions from rice in the different agro-ecological areas of the MKD.

While this component would be geographically targeted (in around 30 key rice districts in 8 provinces of the MKD, namely Kien Giang, An Giang, Hau Giang, Dong Thap, Can Tho, Soc Trang, Tien Giang, and Long An), it is expected that it will result in a transformational impact on the rice sector as the selected districts account for more than half of the MKD paddy production and more than three-fourths of its rice exports.

### **Component 3: Supporting Sustainable Coffee Production and Rejuvenation**

The objectives of this component are to increase coffee farmer's incomes and reduce negative environmental impacts of coffee production in the Central Highlands Region. This component would support:

- a) Implementing a large-scale extension program to promote farmers' adoption of sustainable agronomic and management practices. Anticipated activities would include farmer training, establishment of demonstration sites, establishment of farmer groups, provision of small matching grants to encourage farmers to adopt good farming practices (i.e. water saving technologies, improved fertilizer management, etc.), supporting sustainable coffee rejuvenation where suitable (i.e. providing medium term credits via commercial banks), provision of small-scale public infrastructure (i.e. rehabilitating/upgrading irrigation canal), and better management/use of agricultural wastes and by-products (i.e. using coffee husk for composting). The activities aim at reducing the use of fertilizers, pesticides, and water while improving productivity, quality, and profitability.
- b) Supporting upgrades of private sector nurseries (i.e. provision of technical training, quality control, certification processes, etc.).
- c) Enhancing quality and delivery of public service delivery. Anticipated activities would include necessary support for strengthening the capacity of technical departments and concerned agencies of MARD and DARDs in the project provinces (i.e. Departments of Crops, Plant Protection, Cooperatives and Rural Development, Agricultural Planning, Extension Centers, Seed Centers, WASI, etc.) to improve their extension skills, capacity and quality, and enhance capacity for seed production and certification. In addition, the project would also support MARD and provinces in improving their master plans for sustainable coffee production and rejuvenation to 2020 and toward 2030 and piloting landscape planning approach in selected districts in each participating province.

This component would be implemented in three key coffee provinces in the Central Highlands Region, i.e. Dak Lak, Dak Nong, Lam Dong, Kon Tum and Gia Lai provinces. Success and

lessons learned from the project are expected to be scaled up through the government programs, especially the linkages between coffee replanting financing and adoption of sustainable production practices and the landscape approach to natural resources management in a mixed economy.

#### **Component 4: Project Management**

This component would provide equipment and incremental operating costs for project monitoring, financial management, and procurement activities, support short and long-term technical assistance to the project management team in selected areas, and support analysis and dissemination of findings related to the effectiveness and challenges associated with the different institutional and technical models being applied or piloted under the project.

The project would establish and support linkages with on-going and future interventions by the IFC. For instance, VnSAT partner agribusinesses would be well positioned to ‘graduate’ to more tailored advisory services (provided with a cost-sharing element reflecting the greater private-good element). Similarly, coordination between VnSAT and the IFC would facilitate linkages between sustainable small-holder coffee producers and commercial trading companies.

The project implementing agencies will be MARD and the Provincial People’s Committees (PPCs) of the thirteen project provinces.

### **3. POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK**

#### **3.1 The World Bank Safeguard Policies**

**Environmental Assessment OP/BP 4.01. This policy is triggered.** The policy is applied to all elements of a World Bank-financed operations. This policy requires that environmental assessments must be carried out at early stage of project preparation so as safeguard tools (such as Environmental and Social Management Framework, Environmental Impacts Assessment, Environmental Management Plan) can be determined and prepared in a timely manner to avoid or address potential negative environmental impacts. The Bank would not finance projects that, in the Bank’s opinion, would cause adverse impacts to the environment in biologically important areas.

VnSAT has been classified as Environmental Category B by the World Bank. The project’s overall socio-environmental impacts are expected to be positive. Civil works on some small-scale infrastructures such as storage facilities, dryer, irrigation canals would cause some small impacts such as dust, noise, waste and wastewater generation and safety concerns during construction phase. Most of the negative impacts are short term, temporary, localised and immitigable through the implementation of Environmental Codes of Practices (ECOP) which is readily available. As the Project has subprojects that will be identified during project implementation, the Bank required the Borrower (represented by MARD) to prepare an Environmental and Social Management Framework (ESMF) to guide the screening of potential impacts for subprojects.



OP4.01 also requires that public consultations must be conducted during the preparation of the safeguard documents. The final draft of these documents should be disclosed locally and at the Bank for public access.

**Pest Management OP 4.09. This policy is triggered.** The policy requires projects involving procurement of pesticide to prepare and implement a Pest Management Plan to ensure that the handling, transportation, usage, disposal of pesticide be safe for both human and the environment.

VnSAT project will not finance the procurement of any chemical pesticides or herbicides. The project is designed to promote the reduction in chemical pesticide use in existing farm land by enhancing sustainable farming practices. As national Integrated Pest Management Programs has been being implemented by MARD and DARDs for many years in project provinces, these will substitute a standalone Pest Management Plan for the project. The ESMF will include a detailed description/annex on the national IPM which is proposed to be adopted to comply with OP 4.09 instead of a standalone IMP.

**Physical Cultural Resources OP/BP 4.11. This policy is triggered.** The policy requires that siting of subprojects should avoid impacts on any known physical cultural resources. Mitigation measures must be proposed and implemented if a physical cultural resource be affected. Chance find procedures should be developed as preventive measures for projects involving earthworks.

The siting of small infrastructure under VnSAT will avoid relocation of any known existing physical cultural resources. As subprojects also may involve limited earth work, a “chance finds procedures has been developed and included in ECOP and construction contracts as preventive measures.

**Natural Habitats OP4.04. This policy is not triggered. The policy** requires project siting should avoid impacts on environmental sensitive areas. Where project siting could not be avoided, weighting between positive and negative impacts would be considered, and mitigation measures must be proposed and implemented.

VnSAT project will provide support towards good farming practices in existing farm land and will not acquire new land for farm expansion. Therefore, the project is unlikely to result in adverse impacts on environmentally sensitive areas such as protected areas, national parks, forests or special areas for biodiversity conservation. As the locations of small-scale infrastructure are not yet known at project appraisal, environmental screening will exclude subprojects that might cause adverse impacts on environmental sensitive areas.

**Forest. OP4.36. This policy is not triggered.** The policy requires impacts on forests should be avoided or mitigated.

All activities will be screened through the project ESMF to exclude activities that have potential negative impact on existing forest lands. As the project may support some limited forest restorations as part of the landscape approach in Component 3, the project will involve forest expert to screen potential negative impacts of the restoration activities to the forest.

**Indigenous Peoples OP/BP 4.10.** This policy address issues related to ethnic minorities and indigenous people affected or benefited by the World Bank-financed projects

Ethnic minorities present in some of VnSAT project area. Since location and detailed design of all project activities are not known at project preparation, an EMPF will be prepared. During implementation, where there is a presence of ethnic minorities (i.e. districts or communes), a quick social assessment will be carried out to identify specific impacts on ethnic minorities and other vulnerable groups. Consultations will be conducted to (a) receive inputs/feedback of local beneficiaries to design of investment activities, including addressing their concerns and recommendations; (b) ensure free prior consultations with ethnic minorities and provide them with culturally appropriate benefits; (c) address issues of concern by other stockholders; (d) identify specific actions to mitigate negative impacts. During project implementation, specific impacts and related actions for specific ethnic groups will be detailed in an appropriate EMDP and will be updated annually.

### **Involuntary Resettlement OP/BP 4.12**

This is triggered due to the need for land for project activities. Since the exact location of small scale infrastructure schemes are not known at project preparation, the project will develop a RPF in case there is a need for private land acquisitions. During implementation, a Resettlement Plan will be prepared for each infrastructure scheme and reviewed by the Bank prior to implementation.

### **3.2 Vietnam sectoral and Environmental Legislations**

- *The Law of Environmental Protection (LEP)(2005)*: sets out regulations on strategic environmental assessment, environmental impact assessment and environmental protection commitment of development activities. Environmental Impact Assessment report is developed at the same time as investment project preparation (feasibility study).

*Decree No. 29/2011/NĐ-CP* dated 18/04/2011, provide regulations on the preparation, appraisal and approval of Environmental Assessment reports and Environmental Protection Commitment (EPC) (Clause 29-36). At the time of formulation, appraisal and approval of reports detailed in Clause 2, Article 13 of Decree No. 21/2011/ND-CP, the screening environment (type of environmental assessment for the investment project) shall comply with the list of projects in Annex 1 and Annex 2 of the Decree 29/2011/ND-CP. *Environment Impacts Assessment (EIA)*. According to this Decree, none of the investments under VnSAT are required to prepare EIA. Only EPCs are required as part of investment procedures.

- Circular No.26/2011/TT-BTNMT, dated 18/07/2011 issued by MONRE provides guidelines to implement Decree No. 29/2011/ND-CP. This Circular gives detail guidelines to formulate EPC;
- Circular No. 16/2009/TT-BTNMT issued on 07/10/2009 of Ministry of Natural Resources and Environment on regulations, national technical criteria on environment, air quality and toxic substances in the air ambient;
- Decision No.22/2006/QĐ-BTNMT dated 25/12/2006 issued by MONRE on forcing to apply Environmental Standards of Vietnam.

### **3.3 Regulations on land use and land acquisition in investment projects**

- Law of Land Use No.13/2003/QH11 issued on 26/11/2003 by the Vietnam National Assembly (VNA); and the Revised Land Use Law no. 45/2013/QH13 passed by the VNA on 29 November 2013

- Decree No. 181/2004/ND-CP on guidance to implement Land Law, year 2003.
- Decree No. 188/2004/ND-CP on methods to determine land price and frame of land prices.
- Decree No.69/2009/NĐ-CP on additional Regulation on land use planning, land acquisition, compensation, assistance, and resettlement.

### **3.4 Regulations on Construction Management in investment projects**

- Law on Construction No. 16/2003/QH11 issued on 26/11/2003 the National Assembly Republic Socialist of Vietnam.
- Decree No No.12/2009/ND-CP dated 10/02/2009 on construction projects management and investment,

### **3.5 Regulations on integrated Water Exploitation, Forest Protection, Cultural Heritage and Bio diversity**

- Law on Water Resources issued on 21/06/2012 by the National Assembly;
- Law on Forest Development and Protection No. 29/2004/QH11 issued on 03/12/2004 by the National Assembly Republic Socialist of Vietnam;
- Decree No. 23/2006/NĐ-CP issued on 03/03/2006 of the Government on guidance to implement Law on Forest Development and Protection;
- Law on Cultural Heritage No.28/2001/QH10 issued on 07/12/2001 by the National Assembly. Article 13 - prohibitions : possession cultural heritage; destroy or risk destruction of cultural heritage; unauthorized excavation of archaeological sites, illegal construction, encroachment occupied land of historical - cultural, scenic;

### **3.6 Vietnamese Standard and Criteria related to environment protection**

- Water resources:
  - QCVN08:2008/BTNMT: National technical regulations on quality of surface water;
  - QCVN09:2008/BTNMT: National technical regulations on quality of groundwater;
  - QCVN14:2008/BTNMT: National technical regulations on quality of domestic wastewater;
- Air and land ambient management:
  - QCVN 05:2008/BTNMT: Air quality – Standards for ambient air quality;
- Solid waste management:
  - QCVN 03:2008/BTNMT: National technical regulations on limitation of heavy metal concentration in the soil;
  - TCVN 6696:2009: solid waste – general environment protection;
- Vibration and Noise:
  - QCVN 27:2010/BTNMT- national technical regulations on vibration – limitation of vibration in the community and residence;
- Health and Safety:
  - Decision 3733/2002/QĐ-BYT issued on 10/10/2002 by the Ministry of Health on the application of the 21 health standards and labor safety related micro-climate, noise, vibration and chemicals - the threshold in the workplace.

### **3.7 Administration Framework**

**The Ministry of Agriculture and Rural Development (MARD)** is the central Line Agency responsible for overall project implementation. One of MARD responsibilities is to report to the government on implementation progress and effectiveness which may include environmental and safeguard issues;.

**The Central Steering Committee** will assist the implementing agencies in solving problems or constraints faced during project implementation. The CSC will report to the MARD.

**The Central Project Management Unit (CPMU)** established within MARD, is the key project agency at the central level, responsible for the implementation of Components B and C at the central level and across provinces. CPMU also takes part in project supervision. Some of CPMU specific responsibilities are (a) providing guidance and support to the DARDs in project implementation, including preparing and implementing safeguard documents such as EMP, EMDPs, RPs, etc.; (b) monitoring the quality of implementation including safeguards compliance to report to MARD and IDA;

**The Department of Planning of MARD** will be responsible for the implementation of Component A which is to support the ARP.

**The Provincial People's Committee (PPC)** is responsible for project implementation in the respective provinces. The PCC is responsible for reporting to the government/MARD on implementation progress and effectiveness, including safeguard issues, if any;.

**The Department of Agriculture and Rural Development (DARD)** is the key project implementing agency at the provincial level, responsible for overall implementation of all project activities in the province, including procurement and financial management, project supervision, as well as results monitoring and evaluation.

**The Project Implementation Unit (PIU)** will be established under the DARD to assist in managing day-to-day project implementation, including monitoring the quality of implementation and safeguards compliance in the province; DARD Director will ensure the necessary mobilization of human and financial resources from its technical sub-departments, divisions, and centers and the additional recruitment of contracted staff, when necessary, to support project implementation and manage the quality of project implementation.

**The Wholesale Bank and Participating Financial Institutions**, selected by SBV in consultation with the Bank, will manage the Lines of Credit to provide commercial loans for: (a) agribusiness investments in increased capacity to source and process paddy from surrounding small-holders (Component B); and (b) investment costs of coffee rejuvenation among small-holder farmers (Component C). BIDV has been proposed to be the wholesale Bank and it would be responsible to select and accredit the interested PFIs based on the agreed accreditation criteria. The IDA Credit would be lent to BIDV, then it would be on-lent to the accredited PFIs in accordance with the subsidiary loan agreements between BIDV and the PFIs. The PFIs would in turn extend sub-loans to eligible rice export agribusinesses and coffee Rejuvenation farmers.

### **Technical, Advisory and Supporting Agencies**

- **The Departments of Crop Production, Plant Protection, Cooperatives and Rural Development, Planning, IPSARD, WASI and other technical agencies of MARD** will be available to assist the CPMU in implementing technical matters related to sustainable rice- and coffee-based systems including coffee rejuvenation according to their technical and management mandate assigned by MARD.

- **The Agricultural Projects Management Board** is one of the project owners to which the CPMU will directly report to. The APMB will directly support the CPMU related to internal procedures and liaise with MARD and concerned ministries to help the CPMU address problems in project implementation.
- **Sub-Departments of Crop Production, Plant Protection, Cooperatives and Rural Development, Planning, and other technical agencies of DARD** will be available to assist DARD in implementing technical matters according to their technical and management mandate assigned by DARD.
- **The Department of Natural Resources and Environment** will be available to assist the DARD in implementing activities related to environmental monitoring and supervision, as and when required.
- **Local governments, consisting of District and Commune People's Committees of the Project Districts and Communes**, will be available to assist the DARD in implementing and monitoring project activities in their locations according to their administrative and management functions.
- **Rice and Coffee Farmer Cooperatives/ Organizations** will be established on a voluntary basis through the facilitation of the project to implement participate in the sustainable rice and coffee initiatives supported by the project.

## 4. BACKGROUND OF PROJECT AREA

Vietnam has total land area of 331,150 km<sup>2</sup>, population is approximately 86 million, with an average density of 260 peoples/km<sup>2</sup>. Vietnam has 63 provinces, 579 districts, and more than 9,100 communes. Gross domestic product (GDP) per capita was US\$1,000 in 2008.

### 4.1 Mekong Delta

Total land areas of the Mekong Delta (MKD) is about 4 million hectares of which agricultural land accounts for 63.0 percent, forestry land 8.2 percent, specialized land 6.0 percent and residential land constitutes 2.8 percent. The area is flat (average 0.2-3 meter above sea level) and is under the influence of the East Sea along the south and the Gulf of Thailand along the northwest. The tropical monsoon bringing two distinct seasons: rainy season from mid May to early October and dry season from November to mid March. The delta has a large network of rivers and canals, both natural and manmade of which much of the water flows are controlled by sluices. Main soil types are alluvial soils (30%), saline soil (30%), and acid sulphate soils (40%). Agriculture is the major land use and rice farming and fruit trees has been dominated in the freshwater zone area while a mixed of rice and shrimp farming has become common in area near the coast.

The total population in the Mekong Delta was 17.2 million in 2009, of which about 8% are considered as ethnic minority (mainly Khmer, Chinese, and Charm). The Kinh constitutes a majority of the population (92.0%), then the Khmer (6.0%), the Chinese-originated people (1.0%), and the Cham and other ethnic minorities. The Khmer, the Cham and few other ethnic minorities live mainly in rural areas. Meanwhile, most of the Chinese-originated people live in

urban areas with a much higher percentage compared to other ethnic groups. The people remains poor (income of VND 200,000 per person per month in 2006-2010) and has limited access to water supply and sanitation.

The Mekong delta has been known as the rice basket of Vietnam. Kien Giang, An Giang and Dong Thap are the provinces that have the most rice field areas. Each of these province produce approximately three million tons of rice each year. Rice production is less in Ca Mau, Bac Lieu and Ben Tre, under one million tons per year per province. Industry in the region is mainly in Can Tho, Long An and Ca Mau provinces. Off-shore fishery in the region, particularly in Ben Tre, Tien Giang Kien Giang and Ca Mau also contribute to more than 50% of the country's total fishing boats.

The Mekong delta is subjected to seasonal flooding caused by the Mekong river. The region is also vulnerable to high tide and climate change risks. A research carried out by the Can Tho University indicated that the region has been being affected by climate change, i.e. drought has happened due to reduced seasonal rainfall.

## **4.2 The Central Highland**

The Highland in south central of Vietnam cover six provinces namely Dak Lak, Dak Nong, Gia Lai, Kon Tum and Lam Dong. About 5.5 millions belong to different ethnic groups such as Ba Na, Gia Rai, E De, Co Ho, Ma, Xo Dang, Mnong etc. are living in this region. Population density in 2007 is 72 people per square kilometers.

The region is 500-600 m abs. There are a number of protected natural forests in this region, such as the Cat Tien, Yok Don and KonKaKinh National Parks. These are critical natural habitats to a number of endangered species such as the big forest cows (bo rung lon), Asian water buffalo and elephants.

Volcanic formations with red soil is good for planting coffee, coco, pepper and silk worm strawberries. Cashew nuts and rubbers are also planted in this region. The total area of existing coffee plantations is 240,500 hectares, which account to 80% of the country's total coffee plantations. There is also 151 hectares of ricefields in this region. Foreign investments focused on coffee processing, garment, wooden furniture manufacturing and vegetables.

There are many waterfalls in the Central Highland. Some hydro power plants were built such as Da Nhim (160,000 KW), Dray H'inh (12,000 KW) and Yaly (700,000 KW).

Coffee production in the Central Highland is very concentrated. Coffee is grown in 56 districts in all of the five provinces in the Central Highlands, the top ten districts account for 51% of the total area of plantation. Four of these districts are located in Lam Dong and Dak Lak provinces each, and two remaining districts are in Dak Nong province. However, site visit to Dak Lak find that the coffee plantations are only present in areas where basalt red soil present, which is normally at least 40 to 50 kilometers from the bufferzone of protected forest.

## **4.3 Existing Socio-environmental Issues in Project Areas related to rice and coffee growing**

### 4.3.1 Use of fertiliser and pesticide and disposal of packaging materials

Fertiliser and pesticide has been being used widely in the Mekong Delta. A social study <sup>1</sup> indicated that an average of 53.3 kg of fertilizer per 0.1 ha and 160 ml of pesticides per 0.1 ha are being used per rice crop. Public consultations carried out during the preparation of VnSAT shown that farmers have limited access to technical guidance on proper use of pesticide and fertiliser (the amount to be applied per farm area unit, the names of chemicals banned) and while controls on the quality of agrochemicals supplied is limited. The use of the excessive agrochemicals would not only induce significant impacts on soil and water environment, human health and safety, but also affect competitiveness of products thus incomes for farmers. The Government has established regulations and policies such as “three reductions three gains (3R3G)” or ‘one must, five reductions (1M5R)’ to reduce the use of fertilizers, pesticides, and herbicides.

3R3G	3R: seed, chemicals, water 3G: productivity, quality, and economic efficiency
1M5R	1M: use registered seed 5R: seed, chemical fertiliser, pesticide, water use, post harvest loss

Farmers’ awareness on **occupational health** and application of **personal protection** when being in close contact with pesticide has been improved although still limited.

*Improper disposal of agrochemical packaging materials* has caused environmental (soil, water and air) pollution. This problem has not been paid enough attention to. Packaging materials are disposed off in the field while there is a lack of solutions for packaging materials collection and treatment. Using dug holes for disposing such packaging materials would cause groundwater pollution; and it is difficult to arrange for letting the packages exposure to sunlight for decomposition.

### 4.3.2 Natural resources usage for farming

Natural resources, particularly water, has been being used at high level for coffee production while both surface and groundwater availability in the region has been reduced. Less water is available in the dry season in central highland due to operation of five existing hydropower plants in the Central Highland. Although the causes have not been confirmed, **lowering of groundwater level** has been observed in the **Central Highland**. Groundwater extraction used to be about 20 m in the past, now new wells are normally drilled to the depth of 50-60 m. Local people in Dak Lak reported that water from shallow wells has ecoli level higher than standard, and shallow groundwater has strong odor and can not be used for domestic purposes. Groundwater has high hardness (Ca++) and not suitable for drinking purpose. Rainwater has been used for drinking when available. Dug wells for coffee irrigation is only good and allow cost-saving only if they are near farm land. Lowering of groundwater level limits accessibility to water create competitiveness between various users. Meanwhile, up to 800 to 1000 cubic meters of water has been used for irrigating each coffee plant in one crop.

<sup>1</sup> conducted during the preparation of the “Mekong Delta Water Management for Rural Development Project” in 2011

Literature review on water quality in the rivers and canals in the MKD shown that it is relatively poor compared to the national water quality standards, particularly in dry season. In particular, the issues of water pollution and waste discharges (solid and liquid) from domestic and agriculture sources are complex and have to be strategically addressed.

Overwatering and improper use of agrochemicals could affect surface ground water quality as overflow surface runoff carrying agricultural chemical residues to water sources, while part of redundant water also infiltrate into ground water bring pollutants to shallow groundwater and artisan aquifers.

The ESMF of the Mekong Delta Water Management for Rural Development Project also indicated that some areas in the Mekong Delta have involved mild condition of acid sulphate soil while contamination with pesticides and heavy metals were not observed. Previous studies/analysis of water quality and sediments in the Project areas suggested that the bottom sediment in canals is likely to be contaminated by organic pollutants (as indicated by high coliform bacteria, BOD/COD) and low pH (mainly due to acid sulphate soil). Contamination of pesticides and heavy metals to the level that can be defined as toxic is unlikely. To avoid potential adverse impacts on water quality and nearby areas during dredging and diking, mitigation measures will include analysis of sediment before dredging, treatment for acid sulfate spoil using lime powder to neutralise, and water quality monitoring.

#### **4.3.3 Reuse of rice and Coffee by-products**

Rice straw burning continued being practiced in provinces where farmers has limited awareness on negative environmental impacts of straw burning and there is a lack of applicable solutions. In other provinces, straws have been being used for mushroom production - worm farms – then fertiliser.

Coffee husk can be composted for use as fertiliser. The use of coffee husk for compost is increasing in the Central Highland as more and more farmers are receiving training on sustainable farming practices.

#### **4.3.4 Others**

Ethnic minority groups in the Central highland have been following the tradition regarding free animal grazing in human living areas. Pigs, chicken, dogs runs freely in living areas, therefore animal manure are dropped uncontrolled. On the other hand, as there is local service buying dry animal manure for pepper plantations, animal manure has also been collected in the surrounding areas and placed on the ground in front of houses for drying and then selling. That practice cause unhygienic conditions in living areas, and cause air, soil and water pollution at the same time. Training for behaviour change of ethnic minority groups under VnSAT would be challenging for VnSAT.

Coffee plantations have been affected by wind and sand blowing, loss of soil fertile and overheated by sunlight.

There were concerns about negative environmental impacts such as noise, smoke from coffee processing/drying/grinding. In some areas, generators have been being used for coffee processing. In addition to high operation costs, noise, pollution and risks related to fuel usage would also be issues.



Field investigation in Dak Lak found that coffee are planted only in places where basal red soil is available, which is about 40 km outside the bufferzones of national parks. Coffee plantation areas are distance from protected forests, national parks..

## **5. IMPACTS, RISKS AND MITIGATION MEASURES**

*(This section has been updated taking into account the recommendations from public consultation).*

This section discuss about the environmental issues, impacts and mitigation from two perspectives: those related to current farming practice and available solutions for reducing environmental impacts, and those potentially derived from project interventions, particularly physical investments on small-scale investments.

### **5.1 Rice and Coffee Farming: Existing Environmental Issues and Available Mitigation Measures**

#### **5.1.1 Existing Environmental Issues related to existing farming practice**

As discussed section 4, the following key environmental issues related to rice and coffee farming was identified:

1. Overuse of agrochemicals and improper disposal of packing materials causing environmental pollution and health concerns for farmers.
2. Surface water has limited quality in the Mekong Delta. Flood season in the MKD has implications to the stability of existing and future rice storage facilities. Groundwater in the Central Highland has limitations in both quantity and quality. Saving water from coffee watering is necessary.
3. There are demands on solutions for reuse of rice and coffee by-products, such as rice straw and coffee husks, in order to reduce waste generation from farming
4. Farmers are looking for solutions for protecting coffee plantations from wind, sandblowing and overheated by sunlight
5. Concerns and needs on mitigation measures to mitigate negative environmental impacts of coffee processing/drying/grinding such as noise, smoke.

#### **5.1.2 Existing Solutions, Activities address environmental impacts of Rice and coffee farming**

The following measures were mentioned and suggested during public consultation in project provinces:

1. Planting of trees to provide shades in order to protect coffee trees from overheated and burnt under sunlight in dry season. Shade would also help to reduce evapotranspiration from coffee leaves. The types of trees to be planted should be consulted with communities, agriculture extension centres and relevant local agencies to ensure that they would not cause any

negative secondary impacts (soil fertility degradation, invasive, or attraction of harmful fauna species)

2. Planting of trees at the edge of the coffee plantation plots to protect coffee trees from strong wind. The types of trees to be planted should be consulted with communities, agriculture extension centres and relevant local agencies to ensure that they would not cause any negative secondary impacts (soil fertility degradation, invasive, or attraction of harmful fauna species)
3. Mushroom planting, worm farm, rolling rice straw are available solutions for rice farming by-products. Composting is a solution for treating the cover of coffee seeds.
4. Remove earth dividers between rice field slots in order to save water, fertiliser, pesticide and labour works from rice farming.
5. Proper use of personal protective clothing when spraying,
6. Use of organic fertiliser instead of using chemicals
7. Measure soil fertility to keep farmers be informed about soil quality, promote reduction of agrochemical in soil from fertiliser application
8. composting of coffee husk then use as fertiliser
9. train farmers on proper disposal of agrochemical packaging materials (likely disposed off in dug holes or storage sealed with impermeable walls/concrete to prevent chemical dispersion through rain water), reduce the use of agrochemicals
10. Training, awareness raising on environmental impacts of rice and coffee production

Measures recommended during public consultation include:

1. Proposed investments are consulted with benefited communities. For example, in Dong Thap, whether the project would invests on a low embankment to protect the existing storage facility or finance the elevation of existing ground to above flood level should be voted by local community.
2. Provide information on the recommended quantity of water used coffee watering, timing of fertiliser application, and solutions for reuse of crop by-products in an effective way, advice on the quantity, distance and types of trees to be planted to shield coffee trees

### **5.1.3 VnSAT support Addressing environmental impacts of rice and Coffee farming**

Design of VnSAT allows the project to help addressing environmental issues related to existing rice and coffee planting practices in project areas through large agricultural extension program, particularly the following activities

- Training and demonstrate on three reduction three gains (3R3G; 3R: seed, pesticide, inorganic fertiliser; 3G: productivity, quality, and economic efficiency) for some 140,000 rice farmers over around 200,000 ha of rice in 8 project province. Approximately 700 demonstration sites will be established to provide practical training for farmers. Awareness raising and communication campaigns will be part of training programs (component B1 detail description)

- Training on 1M5R (must use certified seed; five reductions: seed, chemical fertiliser, pesticides, post-harvest losses and water use) for some 50,000 rice farmers over 75,000 ha of rice field (B1)
- Training on coffee sustainable farm agronomic and management practices for some 37,000 coffee growers over around 62,000 ha of coffee plantations in 18 core coffee producing districts of five project provinces. Approximately 400 demonstration sites on innovative water saving technology (e.g. application of drip irrigation and fertilisation technologies)
- Training on efficient use of water and support for dripping irrigation for coffee plantation will result in water saving.
- Matching grants to assist farmers to adopt good farming practices, crop rotation, improve post-harvest equipment and facilities, better management or reuse of agricultural waste and by-products (subcomponent 2a and 3a)
- Piloting coffee rejuvenation combined with landscaping in some project areas
- Monitoring GHG emission from rice production (Subcomponent B3)

VnSAT will incorporate the existing solutions, activities and recommended ways of implementation discussed in Section 5.1.2 into the above training, piloting and monitoring activities.

## **5.2 Project Potential Impacts and Mitigation Measures**

The Project's overall socio-environmental impacts are expected to be positive. Particularly, the design of components 2 and 3 include activities specifically aiming at reduction of agrochemicals and natural resources use in coffee and rice farming. Subcomponents 2a and 3a also cover assistance to improved agricultural waste and by-product management. Monitoring of greenhouse gas emission from rice production has also been incorporated into Project Component 3.

Technical assistance on policy, institutional and planning studies would also have some social and environmental implications. Measures should be applied to include social and environmental analysis in these studies.

In addition to the benefits that they bring about during operation phase, improvements of agricultural public infrastructure under subcomponents 2 and 3 would also have some negative environmental impacts and risks during pre-construction, construction and operation phase. Siting of subproject should avoid locations that may cause adverse impacts in socially or environmentally sensitive or important areas. Potential negative socio-environmental impacts of construction and operation should be identified and assessed during subproject preparation. Plan to managing these impacts should be developed for implementation and monitoring during construction phase.

The sections below discuss in detail the potential socio-environmental issues of the project by types of activities/investments and method, methods of impacts identification, assessment and management.

### **5.2.1 TA Activities**

TA Activities under VnSAT can be divided into two groups:

Group 1 – Support policy, institutional studies and planning may have some socio-environmental implications during the implementations of the revised policy, institutional and plans. At appraisal of VnSAT, the TA under Group 1 has not been identified specifically, thus social and environmental analysis is pending. Measures will be applied to cover social and environmental considerations in these TA.

Group 2 - TA activities under components 2 and 3 are expected to focus on sustainable farming practices thus unlikely to cause negative socio-environmental impacts. No mitigation measures are required as Group 2 TA activities as they would not cause any negative environmental impacts.

### 5.2.2 Physical Investments

Physical investments under VnSAT include small scale infrastructures such as rehabilitation or construction of farm access road, farm's irrigation canals, drip irrigation system, storage facilities, facilities/machineries for drying rice or processing by-products (rolling rice straw), etc.,

These proposed investments would have the following potential impacts:

#### 5.2.2.1 Potential Impacts and mitigation measures related to sub-project siting

As discussed in Chapter 4, there are some environmental sensitive areas in the Project provinces. If a sub-project is located in or disturb an environmental sensitive area, it may cause adverse impact on to the environment, flora and fauna and ecosystems. Construction or operational activities may cause damage or loss to the vegetation cover and trees, disturb wildlife and their natural habitat. Rare or endangered species may become extinct, loss of biodiversity and ecological balance.

Improper siting of a subproject may also cause negative impacts on landscape and biological resource of an area. For example, if a storage facility is built on a pine forest in Da Lat, pine trees would be cut down, part of the forest will be replaced with the storage building and its access road. The changes in landscape would also affect historical values of the area where pine trees and pine forest goes along with the city's history. Soil erosion potential would also be increases when excavation and construction takes place on slope.

If construction takes place in a primary forest, vegetation would be cleared, trees would be chopped down, and wildlife would loss their habitats. Dust, noise, vibration would also scare the animals and affect their growth, ecological balance would be affected.

**VnSAT** subproject The Project will provide support towards good farming practices in existing farmland and will not acquire new land for farm expansion. Landuse conversion for cropland is very unlikely. The project would also support improvement or construction of public infrastructure, siting of these subproject will avoid environmental areas. The locations of small-scale infrastructure will be screened to exclude those that may cause **adverse impacts** on social, environmental sensitive areas, including:

- Disturbance to land areas located within or 5 kilometers from any primary forest, protected areas, specialised forest, areas biologically importance
- Disturbance to critical natural habitats such as natural reserve
- Clearance of planted forest that have landscape values
- Known physical cultural resources, such as temples, pagodas, churches, graveyards, statues, monuments, historical sites, community cultural house etc.; buildings, trees or objects having spiritual values to local communities

The above-listed criteria has been combined in Environmental Screening Form – Part 1: Eligibility Screening in Annex 2. All subprojects involving infrastructure will be screened by Form 1.

#### 5.2.2.2 Construction Impacts and Risks, Mitigation Measures

Typical activities to be carried out during construction phase of small-scale infrastructure are:

- Site-clearance
- Set up contractors office and camps
- Mobilise construction materials and workers to the site
- Construction: excavation, building, installation, painting/finalisation etc.
- Commissioning

Common environmental impacts during construction phase are know, such as land acquisition, lost of trees and vegetation cover related to site clearance, dust, noise, vibration, waste and waste water generation, disturbance to domestic and farming activities, social disturbance, safety risks for workers and community etc. as described below.

- *Land acquisition* for construction of the mainworks and ancillary items, workers camps, materials loading, storage etc.
- *Loss or damages to trees and existing vegetation cover* due to site clearance: trees and plants along the Right of Ways (ROW) of canal, power line, access road or in the area where storage will be built. Trees or vegetation covers in areas where land may be acquired temporarily (for loading of construction materials, machinery, workers camps, materials storage, concrete mixing etc.) may also be removed or disturbed
- *Dust, noise and vibration* would be generated from materials transportation, loading, construction activities, compacting, machine operations etc.
- *Pollution of soil and water sources* due to waste and wastewater from construction sites and workers camps
- *Localised flooding*. Exploitation of soil/filling materials may disrupt existing drainage path at borrow pits and quarries and cause localised flooding. Elevated ground may also disrupt existing drains and cause localised flooding

- *Sedimentation in existing canals, drains:* Loose construction materials and excavated soil may be blown by wind or washed away by surface water runoff and cause sedimentation in existing drains
- *Damage or interrupt operations of Affect existing infrastructure* such as power line, irrigation canals, and drainage channels: site clearance, machinery operations, loading of materials, construction of access road may requires relocation of existing power line, irrigation canals, drains etc.
- *Loss or Damage physical cultural resources:* temples, churches, pagodas, monuments, historical sites, graves etc. may be either affected by subproject siting, or by construction activities such as materials loading
- *Damages to crops:* as construction takes place agriculture area, construction materials, waste, wastewater and surface runoff from construction sites, camps may enter rice or plantation nearby disturbed areas and cause loss or harm to plants, trees
- *Social disturbance* due to mobilisation of workers to the area. Construction activities or interactions between workers with local people may lead to conflict between the workers and local community. Workers may also involved in “social evils” in the project areas such as gambling, drinking, prostitutions etc. and these have bad impacts on local people, particularly where ethnic minority groups present.
- *Safety risks for workers* related to the presence of unexploded materials left at subproject site from the war, transportation and loading of construction materials, machinery operations, electrical uses for office, camp and construction
- *Safety risks for community* related to transpiration to and from construction sites, materials including fuel storage, electrical line for construction, construction sites,

When a subproject location is know, screening for potential impacts of subprojects will be carried out at early stage of subproject preparation using the FORM 1 in Annex 2

Social and environmental impacts of construction activities can be addressed by the application of Environmental Codes of Practices (ECOP) during construction phase. ECOP is included in Annex 3 of this ESMF.

### 5.2.2.3 Type-Specific Impacts and Mitigation Measures

In addition to the common construction impacts and risks discussed above, each type of infrastructure also have type-specific issues risks as summarised in the **Table 1** below

**Table 1 – Specific Social and Environmental Issues and Risks by Type of Infrastructure**

Type	Type Specific Issues & Risks	Phase
Canal	<i>Disrupt accessibility to canal water</i>  If a subproject support lining of canal embankment in areas where local communities usually use	<i>operation</i>

	irrigation canal water through earth embankment (quite easy and safe access), access to canal water through concrete lining embankment may be constrained (due to it is more difficult and has safety risk/sliding) for local people. Lined canals would also make it more difficult for irrigation operational staff to access water	
	Irrigation disrupted due to water cut off for canal lining/dredging There is no water for irrigation during construction phase. Crops would be affected if no mitigation measures are implemented	construction
	safety risks for traffic along line canal embankment served as rural access	operation
	Sedimentation, block up canals Rubbish may be thrown into canal by local community; solid waste, particularly agrochemical packaging materials or washed down into canal	operation
	Greening opportunities	Design, construction
Boreholes	Groundwater pollution If boreholes are drilled, if well casing is not install properly, ground water from upper aquifer (that may have poorer quality/polluted, e.g. has strong odour in Da Lak) may penetrate into groundwater at deeper aquifer to cause pollution If the seal of borehold on the ground surface broken sealed, surface runoff (may be polluted with agrochemicals) may leak into groundwater. Similarly, polluted surface water may also come to groundwater through broken/failed boreholes This risk is very low with available drilling and borehole construction technics, and manageable through subproject EMPs.	Construction, operation
Power lines	Safety risks related to excavated holes for foundation construction, workers working high above the ground, transportation of bulky materials such as electrical wires and poles etc.	Construction operation
Access Road	Stability of roads under the impacts of surface runoff in rainy season	operation
Storage	No type-specific concerns May be updated during project implementation	

The above issues impacts can be addressed through project siting and engineering design or during operation phase. Some of the issues need to be consulted with relevant stakeholders, particularly local communities as shown in the Table below

**Table 2 - Mitigation measures for type-specific impacts and issues**

<b>Impacts/Issues</b>	<b>Mitigation measures</b>	<b>Phase to be implemented</b>	<b>Responsibility</b>
<b>Canal Access to water</b>	Design of embankment include staircases on canal slopes at certain intervals to maintain canal water access	Design	Implemented by designers in consultation with local communities
	The locations of staircase on canal slopes must be consulted with local communities and irrigation operational staff		PPMU monitor and facilitate
<b>Canal Water cut off</b>	Farmers are informed about water cut off schedule at least a month before water cut off	Pre-construction	PMU, contractor
	Schedule construction in consultation with farmer association.	Construction	PMU, CSC and contractor
	Lining of canals carried out in stages	Construction	PMU coordinate CSC supervise the contractor to implement
<b>Canal Sedimentation, blockage</b>	Place warning sign about not throwing garbage into canal	Design and construction	Design consultant Contractor
	Raise awareness and pilot safe disposal of agrochemical packaging materials	Throughout project life	Carried out combined with or as part of 3R3G training
	Canal slop protection by greening measures such as planting grass	Design construction	Design consultant PMU
	Dredge canal periodically	operation	Irrigation Management Authority
<b>Groundwater pollution risk</b>	If boreholes are drilled, casing must be done properly to prevent leakage from the ground	Design and construction	Design consultant Contractor Supervision consultant, PMU monitor and supervise
	Seal ground surface surrounding the borehole	Construction	Contractor Construction supervisor monitor and supervise
	Monitor the seals at borehole periodically and fix leakage immediately	Operation	Farm owner or benefited community
	Seal broken borehole permanently	Operation	Community/ farm owner



Impacts/Issues	Mitigation measures	Phase to be implemented	Responsibility
<b>Power lines</b>  <b>Safety risks</b>	Worker must wear protective cloth and belt when working high above the ground	construction	Contractor
	Warning signs, fences must be placed around excavated holes and maintained until construction is completed	construction	Contractor
	Warning signs placed on poles	Design construction	Design consultant Contractor
	Cut tree branches higher than 3 m along the Right of Ways	Construction operation	Contractor Community
<b>Access road</b>  <b>Accessibility, durability in rainy season</b>	Proper drains (cross and along the road) are included	Design construction	Design consultant Contractor

#### 5.2.2.4 Responsibilities to implement and monitor mitigation measures

The subproject owner (PMU) and Design Engineers are responsible for incorporating environmental solutions or mitigation measures into engineering design of subproject. Engineering design should be consulted with benefited stakeholders before finalisation.

Contractors are the key entities responsible for implementation of ECOP. Contractor's environmental compliance will be monitored and supervised by the Environmental Consultant, a member of the Construction Supervision team.

##### (a) *PMU*

- PMU is responsible for ensuring that the ECOP is effectively implemented. The PMU will assign a qualified staff to be responsible for checking implementation compliance of Contractors, include the following: (a) monitoring the contractors' compliance with the environmental plan, (b) taking remedial actions in the event of non-compliance and/or adverse impacts, (c) investigating complaints, evaluating and identifying corrective measures; (d) advising the Contractor on environment improvement, awareness, proactive pollution prevention measures; (e) monitoring the activities of Contractors on replying to complaints; (f) providing guidance and on-the-job training to field engineers on various aspects to avoid/mitigate potential negative impacts to local environment and communities during construction.

##### (b) *Contractor*

- Contractor is responsible for carrying out civil works and informs PMU, local authority and community about construction plan and risks associated with civil works. As such, contractor is responsible for implementing agreed measures to mitigate environmental risks associated with its civil works.
- Contractor is required to obey other national relevant legal regulations and laws.

**(c) Construction Supervisors**

- Construction supervisor is responsible for monitoring contractor's environmental performance, require and instruct them to carry out corrective actions when pollution is detected, exceed agreed standard, or when there are complaints.
- Construction supervisors are required to prepare environmental monitoring reports as part of progress report for submission to PMU and the Bank when required.

**(a) PPMU**

- PPMU is responsible for ensuring that the ECOP is effectively implemented. The PPMU will assign a qualified staff to be responsible for checking implementation compliance of Contractors, include the following: (a) monitoring the contractors' compliance with the environmental plan, (b) taking remedial actions in the event of non-compliance and/or adverse impacts occur, (c) investigating complaints, evaluating and identifying corrective measures; (d) advising to the Contractor on environment improvement, awareness, proactive pollution prevention measures; (e) monitoring the activities of Contractors on addressing complaints; (f) providing guidance and on-the-job training to field engineers on various aspects to avoid/mitigate potential negative impacts to local environment and communities during construction.
- PPMU has responsibility for preparing monitoring reports to submit to CPMU.

**Monitoring the environmental implementation of Contractor:**

Borrower will sign a contract with the Consultant to carry out the task of Supervision Engineer. Consultant will apply the environmental and monitoring activities of the package. The environmental monitoring engineer of construction/execution monitoring Consultant is responsible to monitor daily the implementation of measures, in order to minimize environmental impact and safety of the Contractor. The construction monitoring Consultant will carry out the following main tasks:

- Before the construction stage, make sure that all of the compensation process for land, works on land and relocation and/ or recovery/ donation of land as well as the clearance of unexploded ordnances have been completed.
- Review and approve the detail plan for implementing the EMP by Contractor before the construction operation.
- During the construction process, monitoring closely the compliance with implementing of the environmental and safety mitigation measures.
- Confirm the compliance with the EMP of Contractor and check any negative effect or damage caused by the contractor. If necessary, establish a request statement for contractor to compensate/ restore the construction site, as provided in the contract. The implementation of environmental management issues of the Contractor shall be mentioned in the progress report of the sub-projects.

**5.2.2.5 Compliance Framework:**

- The contractors are not allowed to implement the construction activities, including preparation of construction within the project scope in advance the detail plan of

EMP are reviewed and approved by the construction supervision consultant and environmental official of the Borrower.

- The Borrower is mandatory the Contractor in compliance with the contract provision including compliance with ECOP. In case of incompliance with ECOP, Borrower will require the Contractor to bring out the suitable measures.
- In order to ensure in compliance with the environmental standards of the sub- project, Borrower is allowed to hire the third party to solve the problems in case the Contractor could not implement the remedies on time, leading to the negative effects into the environment, as follow:
- For insignificant mistakes (such as minor impact/ damage, temporary and repairable), Borrower or the representative of Borrower (Supervision Consultant) will notify the Contractor to correct the problems as required in the EMP within 48 hours after receiving the official report. If the mistakes are satisfactorily repaired during that time, no more action should be undertaken. Supervision consultants have the right to extend more 24 hours in the limited time for recovery, under the conditions that the Contractor has implemented activities but not completed the prescribed time, due to irresistible conditions that mentioned in the contract.
- For major violations, it is required about 72 hours for repairing, the Borrower through the supervision consultant will announce the violation and require the Contractor to rectify within the prescribed time by their budget. If the Contractor fails to complete corrective work according to the specified time, they will be punished by financial punishment (*cost punishment* is calculated by the cost of remedying damage).
- According to the evaluation of the Supervision Consultant, if the Contractor fails to resolve the problems in environmental management or the contractor conduct repairing unsatisfactorily within the specified period of time (48 hours or 72 hours), the investors have the capacity to arrange for another contractor (third-party) to implement the suitable measures and deduct money for this task from the contract with the contractor in the next payment.

### **5.2.3 Coffee rejuvenication (subcomponent 3a)**

Sup-project component also support sustainable coffee rejuvenation where suitable (i.e. providing medium term credits via commercial banks), and upgarding of private nuseries. As coffee renuvenation will take place in existing farm land, it is expected that there would be no incremental environmental impacts in such existing farming areas. Furthermore, as supports are given toward sustainable farming practices, the use of chemicals and water for replanted coffee plantation are expected to be reduced compared to existing farming practices. Impacts on income and livelihood from disrupted crops would be mitigated by phasing of rejuvenation as described in detail project description (PAD) and Project's RPF.

## **6 REQUIREMENTS OF SAFEGUARDS INSTRUMENTS, REVIEW AND CLEARANCE**

### **6.1 Environmental Safeguard Instruments requirements and management procedures**

#### **6.1.1 Investments on Physical Infrastructure**

According to Vietnam environmental legislations, particularly the Law on Environmental protection and underlaw legislations (Decree no.29/2011/ND-CP, circular no. 26-2011/TT-BTNMT), Environmental Protection Commitments (EPC) will be required to manage small impacts of small-scale infrastructure financed by VnSAT.

To assist project implementing agencies to address potential and social impacts in an effective way and to comply with the Bank's safeguard policies, the following steps are required for physical infrastructure:

- Step 1: Carry out environmental screening for subprojects (using Form 1, Annex 2) to confirm eligibility of a subproject, and to identify potential social and environmental of the proposed subproject. In addition to answering the questions in the form, site-specific and sub-project specific social and environmental impacts/issues/risks should also be noted in this form. Screening should be carried out by the Engineer of PPMU and verified by PMU Safeguard staff. It should be sign off by PPMU Director
- Step 2: Prepare and Environmental Management Plan (EMP) following the guidance given in Annex 3 of this ESMF. This requirement is applicable to subprojects covering access road, irrigation canal improvement, and drip irrigation schemes that include borehole development, and powerline construction only. EMP will include Environmental Codes of Practices (a standard ECOP has been included in Annex 3 of this ESMF, but need to be adapted to suit each sub-project circumstance) and specific measures to address/mitigate subproject specific socio-environmental impacts, issues and risks. This requirement is not applicable to construction of storage facilities as the potential impacts are mostly localised and temporary, ECOP would be sufficient. Subproject EMP, ECOP should be prepared by engineering staff/consultant who prepare technical design. PPMU Safeguard staff should review and make suggestion.
- Step 3: Inclusion of subproject-specific ECOP and other mitigation measures stated in subproject EMP/EPCs into construction bidding documents and contracts. The process should be implemented and monitored by PPMUs
- Step 4: Implementation of mitigation measures by the PMU, contractor, communities etc. Environmental performance should be monitored and reported by the Construction Supervisors.

### **6.1.2 Technical Assistance on policy and Institutional Studies**

For components 1 and 3, an analysis of potential environmental and social issues will be included in the TOR for policy and institutional studies and planning supports. The reports will describe how the identified issues will be addressed either through existing safeguard instruments or provisions in proposed policies and planning.

### **6.1.3 Coffee and Rice Farming – Pesticide usage**

As support on coffee rejuvenation focus on sustainable farming practices and goes along with trainings, demonstration on 3R3G and agricultural waste management, it is expected that environmental issues would be addressed in such a way that meet the requirements of the WB safeguard policies and Vietnam environmental management requirements.

No standalone safeguard instrument is required for coffee rejuvenation activities. However, as the Project may support some limited forest restorations as part of the landscaping existing coffee planting areas, a forest expert will be engaged in the project to screen potential negative impacts of the restoration activities to the forest.

### **6.1.3 Coffee Rejuvenation**

As both rice and coffee growing still involve pesticide use for pest management, the project is required to implement a Pest Management Plan. However, as Integrated Pest Management Program has been being implemented widely in Vietnam for longtime (since 1990s), a stand alone IPMP for the project would not be necessary. IPMP under VnSAT will be implemented in line with the existing national IPMP. Description on national approach to IPMP is attached in Annex 5 of this ESMF.

### **6.1.4 Loans to agribusiness and farmers**

Regarding the loans to agribusinesses and farmers, the environmental management will follow the procedures developed and applied under the Bank-financed Rural Finance Project III, which the wholesale bank and PFIs will apply the ESMF's environmental and social screening criteria as part of their lending manual to screen, appraise and monitor each loan/subproject to ensure it meets the environmental and social requirements of Vietnam and is consistent with the Bank's safeguards. The wholesale bank and each PFI will appoint a Safeguard Officer. Regular reporting on safeguard compliance will be carried out by the wholesale bank in coordination with the PFIs and will be monitored by the Bank

## **6.2 Social Safeguard Instruments requirements**

During project implementation, where there is a presence of ethnic minorities, quick social assessment will be carried out to assess the impacts on ethnic minorities and other vulnerable groups. Consultations will also be conducted to:

- (a) receive input/feedback of local beneficiaries to design of investment activities, including their concerns and recommendations;
- (b) ensure free prior to consultations with ethnic minorities and provide them with culturally appropriate benefits,
- (c) address issues of concern by other stakeholders
- (d) identify specific actions to mitigate negative impacts

## **6.3 Safeguard Instruments Review and clearance Arrangements**

- Environmental and Social Management Framework (ESMF), Resettlement Policy Framework (RPF), Resettlement Action Plans (RAPs), Ethnic Minority Development Framework (EMDF) and Ethnic Minority Development Plan (EMDP) (if any) will be submitted to WB for review and clearance. MARD will review and adopt these documents.
- Review of environmental screening, subproject-specific EMP, ECOP, RAP, EMDP and EPC will be carried out by the PPMU Safeguard Officer. PPMU will submit to the Bank team to review the Environmental Screening, EMP, EPC, ECOP, RAP and EMDP

of the first investments in each type of infrastructure in each province each year. Safeguard documents of other subprojects will be randomly post-reviewed by the Bank team during supervision missions.

- EPC will be submitted to Division of Natural and Environment Resources at District level for review and District People Committee (DPC) for approval. RAP and EMDP will be submitted to PPC and MARD for approval.
- TOR for TA and studies to inform policy, development, and sectoral planning and coffee plantation planning following landscape approach to include analysis of potential environmental and social issues in the TA activities and studies. The outputs will need to come up with recommendations to address the identified issues in proposed policies or planning. In addition, the Project Implementation Manual (PIM) will provide details to guide the preparation of TOR for technical assistance to include this requirement

## **7. CAPACITY BUILDING, TRAINING**

### **7.1 Safeguard Management Capacity of Implementing Agency**

MARD is the project owner, and the project will be implemented primarily at the provincial level by the DARDs. The CPMU and the Agriculture Projects Management Board both have prior good experiences of implementing World Bank-financed projects, with a good record of safeguards compliance. Project activities are similar to the former ACP project, which includes the same provinces in the MKD and some geographical overlap in the Central Highlands, which is currently rated ‘satisfactory’ for safeguard compliance. The recently (December, 2012) approved Central Highlands Poverty Reduction Project (CHPov - P128072), covering many of the same provinces demonstrates the commitment of the Government to addressing ethnic minority issues. Although the CHPov project is being implemented by MPI, lessons learned can be shared with MARD in preparation and implementation of vnSAT.

For the credit line components, it is expected that provision of credits to farmers and agribusinesses under vnSAT would be implemented by agencies with good experience under Third Rural Finance Project (RF3 - P100916) and follow similar procedures. BIDV and a number of commercial banks were participating financing institutions (PFIs) under the RF3 and effectively adhered to all safeguard requirements (environmental assessment and pest management) in the on-lending procedures. It should be noted that RF3 introduced additional environmental monitoring by the PFIs as part of their loan use monitoring of the activities being funded by the credit facility, thereby bolstering their in-house environmental monitoring capability.

### **7.2 Capacity building, training in VnSAT**

During implementation phase VnSAT, CPMU and each PPMU will appoint one Safeguard Officer (SO) to be responsible for social and environmental safeguard of subprojects in the province. The safeguard staff will receive training provided by the Project and the Bank’s Task Team on Safeguard. The SO will be responsible for preparing/quality check of safeguard documents prepared for subproject, with inputs from engineering team. The Construction Contractor shall appoint a qualified staff to monitor contractor’s compliance, and provide technical assistance

The following training activities on safeguard will be implemented during project implementation phase

- Training for CPMU and PPMU Safeguard staff on the Project's safeguard framework and subproject requirements. This training should be conducted within the first six months of the project implementation phase. The Training will be delivered by the World Bank Safeguard staff or its consultants. Refresh training will be conducted annually in the following years
- Training for workers on environment and workplace safety: conducted by the Environmental Officer of CSC Team
- On-the job training and technical assistance will be provided to PPMU safeguard staff by the World Bank Team or CPMU safeguard staff.

## 8. ESMF IMPLEMENTATION COST ESTIMATE

**Table 3 – Cost Estimate of ESMF Implementation**

Activities	Amount	Budget
<b>Mitigation</b>		
Mitigation measures of subproject		Included in subproject cost estimation
<b>Monitoring</b>		
Monitoring and reporting on construction environmental performance		Included in contract value of construction supervision contract
<b>Capacity Building</b>		
Training, communication for farmers		Incorporated with 3R3G training and demonstrations
Training for CPMU, PPMU staff on safeguard	Estimated 20,000 USD/year * 5 years <ul style="list-style-type: none"> <li>- One training workshop conducted within the first six months of project</li> <li>- Annual training workshop for PPMU staff, construction supervisors, contractor chief engineer</li> </ul>	Estimated 100,000 USD (include travel, allowance and accommodation for participants, venue, materials etc.)
	<b>Total</b>	<b>100,000 USD</b>

## 9. MECHANISM OF RESOLVING COMPLAINT AND GRIEVANCE

- Construction Supervision Consultants (CSC) will be responsible for day-to-day supervision of contractor's environmental compliance. When there are complaints, the CSC together

with the representative of the contractors will investigate the issues and agree on the corrective actions if necessary. The CSC will then follow up and document the corrective actions until the cases are completely resolved.

- Construction supervisors will certify the environmental mitigation measures carried out by the Contractors in monthly payment request or recommends bonus or fines. PPMUs makes the payment and can apply bonus or fines in accordance with the compliance framework.
- The local community will be encouraged to participate in daily monitoring of contractor's environmental compliance. Communities can make complaints to the contractor's site Engineer, local authority or PPMU or via telephone 'hotline'. PPMU will coordinate with relevant parties to address the complaints. .

## **10. PUBLIC CONSULTATION AND INFORMATION DISCLOSURE**

### **10.1 Requirement of Public Consultations**

*Consultation:* The Bank requires public consultations with project-affected groups during environmental assessment process. Feedback, relevant recommendations received through public consultations should be incorporated into project design and final safeguard documents.

*Information disclosure.* The Bank also requires that safeguard documents are disclosed for public access. Subproject safeguard documents understandable to the majority of the affected people. The English and Vietnamese versions of Project safeguard documents (ESMF, RPF, EMPF), as authorised by the Project Owner (MAR) will also be disclosed at the World Bank website and its Vietnam Information Development Centre at 63 Ly Thai To, Hanoi.

*Consultation continued through subproject preparation and implementation.* The Project requires that public consultation be a continued process through project implementation. Affected/benefited communities should be consulted on siting, technical proposals and safeguard documents of subprojects during preparation phase, prior to bidding stage. Summary of subproject safeguard documents must be disclosed for public access prior to construction phase. Affected/benefited communities must be informed about construction schedule at least two weeks prior to construction commencement.

### **10.2 Summary of public consultations carried out**

In compliance with the Bank's requirements on public consultations and information disclosure, a series of consultations have been carried out after the draft safeguard documents (ESMF, RPF, EMPF) were prepared. Consultations with representatives of local authorities, farmer association, agricultural cooperatives and representative of farmer households were conducted in October 2014 in all project provinces. Annex 1 records the time, location and list of participants attended.

At each consultation meetings, VnSAT preparation team presented: (a) the objectives of Project, and proposed investments, Project Components (b) the major activities in Sub-Project implementation, (c) prediction of potential impacts and mitigation measures of potential negative impacts.

Summary of comments received at the meeting are summarise by topics as below:

- *Project design:*



- *The Project* is essential to meet the needs of farmers in the Project areas, it is an opportunity to support restructuring of agricultural sector toward sustainability, improving living standards for farmers.
- Dig new well for irrigation should be reconsidered as digging a well would not allow cost-saving and may not be effective if the well is located far away from farm land. Coffee Rejuvenation requires supports from the project.
- There are needs for investments for the construction or rehabilitation of farm feeder roads, power supply and irrigation, if the project invests then local community will be mobilised to make contribution for implementation.
- Farmers have been harvesting green/not ripe coffee seeds and affect the quality, the project should include communication activities on this topic.
- The project should support planting of trees that provide shades for coffee trees to reduce evapotranspiration from coffee leaves under the sun
- Project budget is limited, investments should be focused
- investments with Landscaping incorporated for only Lac Duong district and Da Lat city of Lam Dong province is not sufficient, support on this approach should be given to all project provinces as this is integrated approach which also promote other sector such as tourism
- coffee seedling management, irrigation, collection, post-harvest reservation, shortatages in infrastructures including access road and power supply are constraints to coffee production. The project should support on these aspects
- Question raised about budget allocations for the project components and provinces, counterpart contribution. Response were investmetns based on the need of each province, proposed list of investments should be prepared and send to MARD and WB; the Project will support 70% and benefited communities contribute 30%. However, it is difficult to implement as other on-going models such as nursery in Da Lat was financed 100%. Project design should reconsider
- Investments on infrastructure such as improving acces roads to farmland, irrigation canals, medium and low voltages, construction of rice storage facilities should be financed 100% by the Project. Cooperatives can contribute in the form of land donations for storage construction
- investment proposals shold be screened and assessed based on the actual needs of farmers. The Project should focus on public infrastructures that individual household can not build, such as small irrigation scheme, transfer pumping station (pump house, pumps and power supply); for coffee processing, the project should support with power supply to replace the generators being in use in order to save the costs of fuels. Currently, farmers stored harvested coffee at their homes, centralised processing models would be necessary. Pilot ACOM models with four standards in Bao Loc district should be scaled up with investments on storage, monitoring equipment, humidity monitoring equipment, drier, vehicle for transport etc.
- Drip irrigation should be combined with effective fertiliser application and land management
- Component 2 should support farmers to produce rice specialties where possible

- Support training on 3R3G and 1M5R, farmers' practice at post-training should be assessed.
- Taking into account the lessons learnt from other program, community and cooperatives should be consulted on the investment priorities and the type of machineries to be purchased to make sure these meet farmer's needs
- The project should support to check the source of agrochemicals to avoid fake products
- there should be a clear roadmap for Lending
- There are also some comments and recommendations on specific project proposals:

1. Dong Thap:

- The Project should encourage farmers to remove the earthen boundaries between ricefield slots in order to increase land area for each farm, help to save water, fertiliser etc..
- Recommend the project to assist with one seed screening machine, and help to **raise the ground of the existing rice storage facility instead of building a new low embankment in Dong Thap. The reason is soil formations in Dong Thap are mainly alluvial with high permeability and low load, embankments would not be stable in flood events...**
- Recently sesame planting brings about higher income for farmers than rice. However, sesame can only be planted in one season where flood level is lower and decreases quickly. Recommend the project to support an embankment to protect sesame fields and related infrastructure, soil preparation machine training as well as facilitating to find stable market for sesame.

2. Bao Lam district, Lam Dong:

- project proposals included drilling of boreholes; however, it is not sustainable to do so and not effective as groundwater storage is low, water would not be sufficient to irrigate all areas at the righttime where the plants needed, that would lead to uneven flowering which then affect harvesting, reservation of coffee. The project would rather invest in small irrigation scheme including pumps and power supply;
- Bao Lam has been implementing coffee Rejuvenation with three priorities: (a) irrigation; (b) seedling; and (c) post harvesting
- Lending for coffee Rejuvenation : Lâm Đồng province was allocated 3,000 billion VND. Disbursement was low. Farmers are not very interested as for accessing this loan, farmers have to meet number of criteria such as the plantation must be from 10, 15 or years of age depending on the type of investments using the loan; farmers are require to uproot the trees and let the soil exposed to the for two years as guided by MARD. Such requirements are not suitable to local condition, the guidelines should be revised.
- Support project proposals to change current wasteful farming practices with overuse of fertiliser (e.g 1.5-2 times higher than recommended level), pesticide (high density) and water.

3. Tan Hiep district, Kien Giang:

- The district proposed to be supported with one storage facility, two rice driers and two harvesting machines. We have difficulties in finding land for the storage for the storage and drier. We need to know requirements such as rate of contribution.

#### 4. Gia Lai province

- What kind of supports are given for coffee Rejuvenation ? what is the interest rate and duration of the loan?
- What kind of support are given for water saving, and what are the criteria for being supported

#### - ESMF, *Environmental Impacts, Mitigation measures, monitoring*

- The ESMF document informs potential socio-environmental impacts as well as mitigation measures together with monitoring mechanism. The participants agreed with the contents of the ESMF, with resettlement and compensation policies of GOV and OP4.12 of WB. Copies of safeguard documents should be given to the participants for further study
- The project potential impacts are small, temporary and manageable by the measures introduced in the ESMF
- the negative environmental impacts of agricultural production related to residual chemicals in soil and water should also be discussed in the ESMF;
- Project Investors must appoint staff to supervise construction to ensure mitigation measures are implemented to mitigate the negative impacts on local communities
- The roles and responsibilities of stakeholders in implementing the mitigation measures should be clarified, so as the role of state management authorities.
- Coffee Rejuvenation will affect household income, the project should provide support to mitigate the impacts and maintain livelihood for farmers.
- Contractors should be required to disclose the design parameters, criteria and EPCs for public access.
- ESMF should consider environmental impacts of coffee drying.
- Fake fertilise and agrochemicals have been sold in the market, the project could support quality check for these products at local level.
- Nutrient measurements should be discussed in order to reduce chemical residues in soil from fertiliser application
- ESMF should recommend technology or measures to reduce the level of noise generated during coffee grinding
- Pollution caused by disposal of packaging materials of agrochemicals should be considered and solutions should be recommended under the proposed project. This problem has not been paid enough attention to, farmers still dispose of the packaging materials in the field, lack of solutions for collection and treatment. Some recommendations were to dispose emptied packages into dug holes, however that way of disposal would cause groundwater pollution; it is difficult to arrange for letting the packages exposure to sunlight for decomposition.
- ESMF mentioned about increasing coffee productivity, it is difficult to achieve as ceiling rate has been met; the only way is to change the seedling. Tuy nhiên trong tác động tích

cực đối với môi trường, việc tăng năng suất cây trồng: Maintaining productivity is more suitable

- ESMF should provide guidance on the quantity of water used for watering coffee, the amount and timing of fertiliser application, and reuse of crop by-products in an effective way, and the quantity, distance and types of trees to be planted to shield coffee trees
- ESMF should mention about improper use of personal protective clothing when spraying, improper disposal of agricultural hazardous wastes, and overuse of agrochemicals
- Composting of coffee covers should be discussed.
- The use of organic fertiliser and agrochemicals caused pollution in the locality. Personal protective measures and burying of packaging materials has been applied.
- Use of organic fertilise instead of using fertiliser
- The use of agricultural by-products: pilot models should be introduced to help farmers to understand the bad impacts of rice straw burning and the benefit of using rice straw for mushroom production – to mitigate environmental impacts and reduce GHG emission. Local governments should support farmers to identify stable market for rolled rice straw
- Use of agricultural by-products: Currently straws have been being used for mushroom production, then the residue will be grind and mix with treated animal manure for worm farming. Waste from worm farms are used as fertiliser. that is very good practice however the farmers are lack of resources for buying rice straw rolling machines and ancillary tools. Project should support one rice straw rolling machine for each cooperative.
- With coffee production, currently fertiliser has been over applied but unbalancly. Each coffee tree has been watered 800 to 1000 m3 of water each crop. Pesticide has been being applied twice per crop, and sprayed at high density. Most coffee plantation do not have other trees to shield coffee trees from strong wind and over sunligh. Therefore, cofee productivity is unstable and the environment has been affected negatively”
- DONRE only focus on monitor those who’ve been causing pollution or who’s been complained on environmental issues. For small-scale investments, environmental monitoring, supervision and ensure compliance relies on the Project Owners; it is not necessary to avoid drilling new borehole, but should make sure that hydrological sealing is done properly to prevent groundwater contamination

*- RPF, Land Acquisition:*

- communities need to be informed about compensation plan and amount for each locality.
- Siting of subproject should avoid acquisition of private land, public land should be used for construction of small-scale infrastructure. In cases where private land is acquired, compensation must be paid in accordance with the project RPF
- RPF should be consulted with DONREs
- The project would not require acquisition large area of land; if land acquisition is necessary, compensation should follow RPF
- it is difficult for cooperatives to acquire land for construction of public infrastructure due to lack of financial resource. We should be assisted to have access to loans with better mechanism.

- construction of 3.5 m wide access road or storage facility (3000-5000 m<sup>2</sup>) would not acquire much land. Farmers should be informed and encourage to donate land.
- Compensations should be paid prior to construction commencement

- *EMPF, Ethnic Minorities*

- Question: Would ethnic minority group migrated to project area from the north also be treated in accordance with the EMPF?
- Giồng Riềng district of Kien Giang province has KhMe ethnic group. During project implementation, any other policies other than the project EMPF should be applied in addition?
- The roles of women in family should be mentioned
- The roles of ethnic minority groups within community should be discussed
- What are the entitlements of ethnic minorities? would other ethnic groups be supported the same as indigenous people?
- Application of EMPF would be more effective if it is combined with other programs being implemented in localities such as the New Rural Program

- *coordination, communication:*

- close coordination between the donor and local authorities is necessary to ensure that the project activities are implemented in ways that suit local characteristics.
  - During the implementation of subprojects, the project implementing agencies should closely cooperate with mass organisations such as local women union, Ethnic Minority Board, farmer associations to conduct communication campaigns to encourage farmers to participate in project activities including monitoring and providing feedback, suggestions.
6. communication campaigns should be conducted to mobilise participation of local communities
  7. More training and workshops for dialogues should be arranged to help farmers to understand better about the benefits that the project would bring about. Training for ethnic minorities should be short, simple and in locally understandable language; pictures should be used
- subproject information including design parameters, budget should be disclosed prior to construction commencement
  - Awareness raising should go along with training on 3R3G, training should include field practice

- *Roles and responsibilities of benefited communities:*

- communities should participate in monitoring during construction phase; benefited communities should be required to make contribution in order to raise ownership and responsibilities to operate and maintain the facilities provided properly, and to create competitiveness between communities applied for supports given by VnSAT
- Local authorities and farmers are committed to attend the training in full, follow project procedures and make contributions in the form of covering maintenance during operation phase

Relevant information, comments and suggestions have been incorporated into the final version of this report.

**Annex 1 – Public Consultation Records**

<b>Province</b>	<b>District</b>	<b>Time, Location</b>	<b>Participants</b>
<b>I. An Giang</b>	1. An Phú	DPC Office 9h, 6 / 10/2014	<ul style="list-style-type: none"> <li>- An Giang VnSAT preparation team</li> <li>- DPC leaders</li> <li>- dDARD management</li> <li>- Leaders of CPCs</li> <li>- Representative of farmer association</li> <li>- Representative of Farmers households</li> </ul>
	2. Châu Phú	Châu Phú DPC 8h, 21/10/2014	
	3. Thoại Sơn	Thoại Sơn DPC 20/10/2014	
	4. Tịnh Biên	Tịnh Biên DPC 14h 22/10/2014	
<b>II. Đồng Tháp</b>	<b>1. Thanh Bình</b>	Thanh Bình DPC 13 h 30, 22/ 10 /2014	Nguyễn Thành Tài – DARD Deputy Director; Mr Phạm Hữu Phước –Agri. Hightech Application Centre Mr Trần Văn Lợi, Agricultural PMU; Ms Huỳnh Thị Nghĩa – Planning and Finance div. Ms Trần Thị Phiến – Thanh Bình DPC Vice Chairwoman Mr Nguyễn Văn Thật, Deputy Director Thanh Bình dDARD Mr: Nguyễn Minh Trí - Thanh Bình dDARD Mr : Nguyễn Văn Hải – Thanh Bình DPC Office Ms Liễu Xuân Nguyệt – Thanh Bình DPC Officer Mr Huỳnh Tri Kỹ - Vice chairman An Phong CPC Mr Lê Minh Tùng Mr Phan Văn Nhơn –Manager, Bình Hòa cooperative Mr Dương Thành Được, Director An Thạnh cooperative 21 representative from farmer households.
	<b>2. Tam Nông</b>	Tân Tiến Cooperative office, Phú Đức commune, Tam NMr. district  07h30 am, 22/10/2014	Mr. Nguyễn Thành Tài – DARD Deputy Director; Mr. Phạm Hữu Phước –Hitech Application Centre; Mr. Trần Văn Lợi – Agricultural PMU; Ms Huỳnh Thị Nghĩa – Planning and Finance Div., DARD Mr. Lưu Văn Tiến – Tam Nong dDARD Mr. Trần Hồng Lạc – Head, Agricultural Extension Mr. Thái Thành Văn – Tam Nong dDARD Mr. Nguyễn Văn Dũng- Phú Đức CPC Vice chairman Mr Võ Văn Đà, director Tân Tiến Coop Mr Mai Tân Tiến, vice director Tân Tiến Coop Mr: Nguyễn Thái Dương – Control Board Tân Tiến Coop Mr: Phan Văn Lũ, member Tân Tiến Coop Ms: Nguyễn Thị Huỳnh Như – Chief Accountant Mr: Trần Văn Dũng – member Tân Tiến Coop Mr Nguyễn Hoàng Ân – Director Phú Bình Cooperative Mr Trần Văn Tuyên – Control Board Phú Bình Cooperative 22 farmers represent from benefited community
<b>III. Tiền Giang</b>	Cái Bè	8h30 22/10/2014	<ul style="list-style-type: none"> <li>- commune leaders</li> <li>- households</li> </ul>
	Cai Lậy	Mỹ Thành Nam CPC, Cai Lậy 14h, 22/10/2014	Households and commune leaders
<b>IV. Sóc Trăng</b>	Sờ NMr. nghiệp	DARD meeting room	+ Mr. Huỳnh Ngọc Vân, deputy director, DARD + Ms. Phan TXinh Hường, vice chairwoman, women union; + Ms. Nguyễn Thị Phương, dDPI ; + Mr. Nguyễn Văn Thử – Head of Land division, DONRE; + Mr. Lâm Văn Sơn - provincial Ethnic Minority Board; + Mr. Ngô Văn Lập – Officer, DOF; + dDARD: Mỹ Tú, Châu Thành, Long Phú, Kế Sách, Thạnh Trị + Representatives of CPCs, Cooperatives and Farmers
<b>V. Daknong</b>	<b>Thị Xã Gia Nghĩa</b>	Đắk Nông DARD Office. 8h30 21/ 10/2014	<ul style="list-style-type: none"> <li>- Mr. Hồ Gấm, Vice director. DARD</li> <li>- Nguyễn Tuấn Khải, head, Plant Protection Agency</li> <li>- Mr. Phạm Hùng Vỹ Economic Div</li> </ul>

Province	District	Time, Location	Participants
			<b>Gia Nghĩa town PC:</b> - Mr.Lê Đình Vương, Economic Div - Mr.Nguyễn Văn Doanh, Vice chairman Đắk R'moan CPC; - Mr.Bùi Văn Công, Vice chairman Đắk N'ia <b>Đắk Mil DPC</b> - Mr. Lê Văn Điệp, dDARD; - Mr.Lê Xuân Đông, chairman, Thuận An CPC; - Mr.Nguyễn Trọng Đình, Vice chairman Đức Minh CPC; - Mr.Nguyễn Thế Quyền, Vice chairman Đức Mạnh CPC; <b>Đắk Song District</b> - Mr. Lê Viết Sinh, Đắk Song DPC Vice Chairmen; - Mr. Điều Gư, chairmaen Đắk N'drưng CPC. <b>Đắk R'lấp CPC</b> - Mr. Cao Quý Thương, head dDARD; - Mr.Nguyễn Thanh Tùng, chairman, Nghĩa Thắng CPC; - Mr. Bùi Văn Chí, vice chairman, Đắk Ru CPC; - Mr. Nguyễn Tạo, Vice chairman, Nhân Đạo CPC; - Farmers
<b>VI. Kontum</b>	<b>Dakglei</b>	Xã Đắkchong 7h30 21/10/2014	VnSAT provincial preparation team - Dakchong CPC - representatives from benefited households
	<b>Dakglei</b>	Hà Môn Comm. 8h, 22/10/2014	- Hà Môn CPC and representatives of beneficiaries
<b>VII. Lâm Đồng</b>	Đà Lạt	DARD meeting room - 8h00, 21/10/2014	- VnSAT provincial preparation team - Province: leaders of Planning-Finance, plant, Plant Protection, Seedling Research Centre, ACP PMU - District: DPC, Economic Division, Agri Extension centres of Đà Lạt city and Bảo Lộc, Lạc Dương, Đức Trọng, Lâm Hà, Di Linh and Bảo Lâm districts - Communes: CPC Leaders from participating districts: Đà Lạt (Xuân Thọ, Xuân Trường, Trại Hành); Lạc Dương (Lát, Lạc Dương); Đức Trọng (Ninh gia); Lâm Hà (Tân Hà, Đa Dòn, Nam Ban); Di Linh (Liên Đàm, Tân Châu, Tân Lâm); Bảo Lộc (Lộc Phát, Đamb'ri, Lộc Nga and Lộc Thanh); Bảo Lâm (Lộc Thắng, Lộc Ngãi, Lộc Đức, Lộc Quảng Farmers
<b>VIII. Gia Lai</b>		CPC IABA 21/10/2014	- dDARD - CPC IABA - 23 households
	<b>Đakdo</b>	CPC Tân Bình Ngày 20/10/2014	- DPC - Tân bình, kbang, glar CPCs - 28 farmers
	<b>Chư Prong</b>	Chư prong DPC office 22/10/2014	- Đại diện UBND thị trấn - UBNS 2 xã IaDrang, IaPhin. - 21 Đại biểu hộ dân
<b>IX. Kiên Giang</b>	<b>Giồng Riềng</b>	DPC Giồng Riềng 14h00 ngày 20/10/2014	<ul style="list-style-type: none"> <li>DARD:               <ul style="list-style-type: none"> <li>Mr. Trần Quang Cúi, Vice director</li> <li>Mr. Nguyễn Văn Thêm- Head of dDARD</li> <li>Mr. Bùi Trung Phù- Director</li> <li>Mr. Lê Văn Quý- Officer</li> </ul> </li> <li>Giồng Riềng DPC and dDARD               <ul style="list-style-type: none"> <li>Mr. Phan Đình Nghĩa, DPC vice chairmen</li> <li>Mr. Lê Văn Phải, head of dDARD</li> </ul> </li> <li>Hòa Hưng, Ngọc Chúc, Thanh Hưng CPCs               <ul style="list-style-type: none"> <li>Mr. Trương Ngọc Hoa: Vice chairman, Hòa Hưng</li> <li>Mr. Huỳnh Văn Thi- Vice chairman, Ngọc Chúc</li> <li>Mr. Lê Văn Chi- Vice chairman, Thanh Hưng</li> </ul> </li> <li>Farmers</li> </ul>



Province	District	Time, Location	Participants
	<b>Tân Hiệp</b>	Hội trường dDARD – PTNT – huyện Tân Hiệp – Kiên Giang 8h ngày 20/10/2014	- Provincial VnSAT preparation team, Kiên Giang - Sở NMr. nghiệp – PTNT - DPC, dDARD – PTNT huyện Tân Hiệp - CPC Tân Hiệp A, Tân Hiệp B, Thạnh Đông, Thạnh Đông A - representatives of Farmers, Cooperative
<b>X. Hậu Giang</b>	Châu Thành A	<b>Ấp 1D</b> , xã Tân Hồn, Châu Thành A, Hậu Giang (HTX Tiên Tiến), 14h ngày 17/10/2014	- Provincial VnSAT preparation team, Hậu Giang - Farmer association - Women Union - Youth Union - Cooperative - Fishery Extension
	Long Mỹ	Long Phú CPC, Long Mỹ, Hậu Giang, 21/10/2014	- Provincial VnSAT preparation team, Hậu Giang - Economic, Fishery Extension Divisions of Long Mỹ - District Plant Protection Agency - CPC Long Phú - Representatives of mass organisation and farmers
	Thành phố Vị Thanh	Meeting room of Thanh Hương hotel, Vị Thanh city, Hậu Giang 16/10/2014	- Provincial VnSAT preparation team, Hậu Giang - Officers, Agricultural Extension centre - Trung tâm KN-KN - DDARD huyện.
<b>XI. Cần Thơ</b>	1. Vĩnh Thạnh	DDARD 8h, 21/10/2014	- DARD leaders; - Provincial VnSAT preparation team - dDARD và PTNT huyện Vĩnh Thạnh; - District Plant Protection Agency, - Vĩnh Thạnh Agri Extension; - Thạnh An CPC; - Farmers and seedling unit of Thạnh An.
	2. Cờ Đỏ	CPC Trung Hưng, 8h, 23/10/2014	-DARD; - Provincial VnSAT preparation team; - DDARD và PTNT huyện Cờ Đỏ; - District Plant Protection Agency, Cờ Đỏ district agricultural extension centre; - CPC ,Trung Hưng; - Rice farmers, Trung Hưng.
	3. Thới Lai	CPC ĐMr. Bình, 13h30' ngày 23/10/2014	-DARD; -DDARD và PTNT huyện Thới Lai; -District Plant Protection Agency,Agricultural Extension centre; -CPC ĐMr. Bình; -Farmers sản xuất lúa xã ĐMr. Bình.
<b>XII. Đắk Lắk</b>	1. Cư Kuin	DPC Cư Kuin, 8h ngày 16/10/2014	- Provincial VnSAT preparation team, - dDARD; - farmers.
	2. Cư Mgar	CPC Quảng Hiệp, 9h 17/10/2014	- Provincial VnSAT preparation team - Vice chairman Quảng Hiệp CPC; - farmers
	3. Ea H'leo	DPC Ea H'leo, 9h 21/10/2014	-Provincial VnSAT preparation team -Chief dDARD; -Chairman of Farmer association and farmers
	4. KrMr. Năng	CPC Ea Tân, 8h30 15/10/2014	-Provincial VnSAT preparation team - Chairman and vice chairman of Ea Tân CPC; - farmers
	5. KrMr. Bưc	CPC Cư Pong, 8h30' 22/10/2014	-Provincial VnSAT preparation team -Chief dDARD; Cư Pong CPC VC; - farmers
	6. KrMr. Păc	Buôn Ea Kmat, 8h ngày 20/10/2014	-Provincial VnSAT preparation team -managemetn of Sustainable Coffee Cooperative -Representatives of Farmer households
	7. DONRE	DOH office	- Ms Huang, Provincial Environmental Protection Agency

Province	District	Time, Location	Participants
<b>XIII. Long An</b>	1. Vĩnh Hưng	DPC Vĩnh Hưng, 8h ngày 1/10/2014	<ul style="list-style-type: none"> <li>-Vice director, DARD;</li> <li>- Leaders of Finance Div, Planting Div;</li> <li>-Vice director, Plant Protection Agency</li> <li>-Vice director, dDARD</li> <li>-DPC Vĩnh Hưng (Chairman, dDARD, economic division, infrastructure economic Div, dDONRE, Planning -Finance);</li> <li>-Agricultural Extension centre</li> <li>-District Plant Protection Agency;</li> <li>-District Irrigation Engineering Management .</li> <li>- Vĩnh Bình, Thái Bình Trung, Vĩnh Trị, Khánh Hưng, Vĩnh Thuận CPCs;</li> <li>-Farmers (Thái Bình Trung, Khánh Hưng communes).</li> </ul>
	2. Thị xã Kiến Tường	Kiến Tường Town PC, 8h00, 2/10/2014	<ul style="list-style-type: none"> <li>-Vice directorDARD;</li> <li>-Director, Agricultural Extension centre;</li> <li>- Vice director, Plant Protection Agency;</li> <li>-Chief of Planting Div;</li> <li>Kiến Tường DPC, Economic division, dDONRE, urban management;</li> <li>-Agricultural Extension Centre;</li> <li>-District Plant Protection Agency;</li> <li>-Irrigation Management Unit.</li> <li>-CPCs: Tuyên Thạnh, Thạnh Hưng, Bình Hiệp);</li> <li>-Farmers from Tuyên Thạnh, Thạnh Hưng, Bình Hiệp).</li> </ul>
	3. Tân Thạnh	DPC Tân Thạnh, 13h30' 1/10/2014	<ul style="list-style-type: none"> <li>-Vice director, DARD;</li> <li>-Vice director, Plant Protection Agency, Plant Division,</li> <li>-Chief of Planning and Finance Div;</li> <li>- DPC Tân Thạnh (Phó chủ tịch UBND, DDARD và PTNT, - Economic, dDONRE, DPC office);</li> <li>-District Plant Protection Agency;</li> <li>-District Irrigation Engineering Management .</li> <li>- CPCs of Bắc Hòa, Hậu Thạnh Đông, Nhơn Hòa Lập, Hậu Thạnh Tây communes;</li> <li>-Farmers (Bắc Hòa, Hậu Thạnh Đông, Nhơn Hòa Lập, Hậu Thạnh Tây).</li> </ul>
	4. Tân Hưng	DPC Tân Hưng, 13h30' 2/10/2014	<ul style="list-style-type: none"> <li>-Vice directorDARD;</li> <li>- Vice director, Plant Protection Agency;</li> <li>-Chief; Planting Division</li> <li>- Chief of Planning and Finance Div;</li> <li>-DPC Tân Hưng (Phó chủ tịch DPC, DDARD và PTNT, Phòng Kinh tế hạ tầng, Phòng Tài nguyên môi trường);</li> <li>-District Plant Protection Agency;</li> <li>-District Irrigation Engineering Management .</li> <li>-UBND các xã (Thạnh Hưng, Hưng Điền B, Hưng Điền);</li> <li>-Farmers (xã Hưng Điền, xã Hưng Hà).</li> </ul>
	5.Mộc Hóa	Kiến Tường Town, 8h, 2/10/2014	<ul style="list-style-type: none"> <li>-DARD Deputy Director</li> <li>-Deputy Director, Plant Protection Agency;</li> <li>-Head Planning Division;</li> <li>-Head of Planning and Finance Division;</li> <li>- Vice Chairmam Moc Hóa DPC</li> <li>- dDARD, dDONRE, dEconomics,</li> <li>- Plant Protection Division</li> <li>-Bình Hòa Trung, Bình Hòa ĐMr. CPC leaders);</li> <li>-Representative of farmers from Bình Hòa Trung, Bình Hòa Tây.</li> </ul>

**ANNEX 2 – ELIGIBILITY AND IMPACTS SCREENING FOR SUBPROJECT****SAFEGUARD ELIGIBILITY AND IMPACTS SCREENING FOR SUBPROJECT****PART 1: BASIC INFORMATION**

1	<b>Subproject name</b>	
2	Type of construction	Newly constructed <input checked="" type="checkbox"/> Rehabilitate <input type="checkbox"/>
3	Project location: Communes Districts Province	
4	Design Parameters (area/length)	
5	Preparation period	
6	Construction	
7	Project completion and operation	
8	Is construction carried out in rainy season?	
9	Acquired land area	Permanently Within ROW
10	Total investment capital	

(Move to Part 2 after filling in all information in the table above)

**PART 2: ELIGIBILITY SCREENING**

No.	Screening Questions	Yes	No	Comments/ Explanation
	<i>Would the subproject ?</i>			
1.	located or disturb a land area located within 5 kilometers from any primary forest, protected areas, national parks, nature reserve, specialised forest, areas biologically importance?			
2	Located or disturb areas of critical natural habitats, breeding ground of known rare/endangered species?			
3	Disturb areas having landscape or historical values, for example pine tree forest in Da Lat			
4	Require relocation of any known physical cultural resources such as			
a	temples, pagodas, churches			
b	graveyards			
c	statues, monuments, historical sites,			
d	community cultural centre			
e	buildings, sacred trees or objects having spiritual values to local communities			

\* If all answers are “No”, subproject is eligible and move to Part 3

\* If at least one question answered as “yes”, the Subproject is ineligible and will be excluded from VnSAT. Project owner can reselect the site of subproject and do screening again

**PART 3: IMPACTS SCREENING**

Answer the questions below and follow the guidance to describe the potential impacts

		Yes	No	Description of the potential impacts
<b>1. PRE-CONSTRUCTION PHASE</b>				
	Will the sub-project ..?			(the texts below are guidance)
1.1	Require Land acquisition for construction and or worker's camp, construction materials loading and storage, etc.			provide the information below Total land areas to be acquired: - Permanently:      - Temporarily: In which: - public land:      Private land:
1.2	Loss or damages to trees and existing vegetation cover due to site clearance, machinery operation or disposal of excavated materials?			(Guidance: provide the information below) - number of trees to be cut down: - Total land area of vegetation cover removed
1.3	At risk of having unexploded objects (UXO) left at the site from the war			state the total land area at risk that require mine clearance:
<b>2. CONSTRUCTION PHASE</b>				
2.1	Disturb vegetation cover or damage trees at construction sites, along ROW or other areas disturbed during construction phase			observe the area and describe where existing vegetation cover, trees will be affected during construction phase:
2.2	Cause increased level of dust and noise ?			Identify source of dust and noise: loose construction materials, soil, sand blown by wind. Assess Level of impacts depends on weather (wet/dry), number and distance of houses from sites.
2.3	Generate smoke and smell (cause pollution, health impacts)			Identify possible sources: fuel burning , vehicle exhausts, toilets, domestic wastes from camp kitchen Assess level of impact: consider duration, intensity of smoke/smell taking into account wind directions
2.4	Cause ground vibration (cause nuisance to community, damages to weak existing objects and infrastructure)			Identify sources: ground compaction (roadwork's, storage, drilling) Level of impacts: intensity of compaction, and strength of existing infrastructure
2.5	Pollution of soil and water sources (from waste and wastewater generation, excavated soil, acid sulphate soil, construction, packaging materials, municipals wastes generated by the workers)			Identify sources of waste and wastewater generation, such as construction site, worker camps and quantify the waste/wastewater for assessing the level of impact, taking into account the distance from source to receptor (e.g. waterbodies). Leakage of oil stored at the site may also cause soil and water pollution

		Yes	No	Description of the potential impacts
2.6	<i>Localised flooding related to disturbance to existing drains, changes in ground elevation etc.</i>			Localised flooding may occur if existing/natural drainage path is blocked or disrupted. consider the issues at construction sites, camps, borrow pits, quarries and disposal sites. If materials are bought from existing licensed borrow pits and quarries, the issues would not be considered in the project
2.7	<i>Sedimentation in areas next to construction site as surface runoff wash away loose materials from construction sites?</i>			Loose construction materials and excavated soil may be blown by wind or washed away by surface water runoff and cause sedimentation in existing drains
2.8	<i>Damage or interrupt operations of existing infrastructure (drain, powerline, etc.)</i>			If not avoided, some subprojects (road rehabilitation, construction of large storage facility) sited in areas where power line, irrigation canals, drains etc. exist, they may be affected or cause blockage
2.9	<i>Cause loss or damage to physical cultural resources, such as grave sites, historical objects/structures, temples, worshipping facilities, sacred trees, objects of spiritual important to communities etc.</i>			If not avoided, some subprojects (road rehabilitation, construction of large storage facility, etc.) may cause loss or damages to physical cultural resources such as temples, pagodas, grave yards, sacred trees, etc. Construction activities may also cause dust, noise, visual impacts to these sites.
2.10	<i>Disturb farming activities due to the presence of workers and machineries at the site, damages to crops:</i>			If construction takes place agriculture area, construction materials, waste, wastewater and surface runoff from construction sites, camps may enter rice or plantation nearby disturbed areas and cause loss or harm to plants, trees The presence and movement of machinery, construction materials, workers may disrupt access to or affect farming activities
2.11	<i>Social disturbance due to construction activities and the presence of workers in the project area</i>			Dust, noise, vibration from construction or interactions between workers with local people may cause nuisance and conflict between the workers and local community. In some cases, workers may also involved in “social evils” in the project areas such as gambling, drinking, prostitutions etc. to have bad impacts on local people, particularly where ethnic minority groups present.
2.12	<i>Safety and health risks for workers (loading and unloading of construction materials, excavated areas, fuel storage and usage, electrical use, machinery operations etc, adequacy of accomodation etc.)</i>			There are some safety risks for workers related to transportation and loading of construction materials, working high above the ground or in canals where slopes are unstable, machinery operations, electrical uses for office, camp and construction

		<i>Yes</i>	<i>No</i>	<i>Description of the potential impacts</i>
2.13	<i>Safety risks for community (related to loading and unloading of construction materials, excavated areas, fuel storage and usage, electrical use, machinery operations etc, adequacy of accommodation etc.)</i>			If local people presence at or near construction site, they would be exposed to safety risks related to construction
2.14	<i>Disturb traffic and/or cause traffic safety risks</i>			Rehabilitation of access road to farms may disrupt traffic. Transportation of construction materials and wastes, temporary loading of materials in other subprojects may also disrupt traffic and/or cause traffic safety risks
2.15	<i>Others (specify)</i>			<i>Identify and describe site-specific and type-specific issues, concerns, risks, potential impacts</i>
<b>3. OPERATION PHASE</b>				
3.1	<i>Cause dust, noise during operation phase (e.g. from pumps)</i>			Dust and noise along access roads
3.2	Safety risks for community			(considers those related to electrical poles, falling into canals, traffic safety etc)
3.3	Water pollution?			
	Others impacts (specify)			

## ANNEX 3- RECOMMENDED OUTLINE OF EMP ENVIRONMENTAL CODES OF PRACTICE (ECOP)

### A –RECOMMENDED OUTLINE OF AN EMP

An EMP should include the following:

- Definition of the environmental management objectives to be realized during the life of a project (i.e. pre-construction, construction, operation phases) in order to enhance benefits and minimize adverse environmental impacts.
- Description of the detailed actions needed to achieve these objectives, including how they will be achieved, by whom, by when, with what resources, with what monitoring/verification, and to what target or performance level. Mechanisms must also be provided to address changes in the project implementation, emergencies or unexpected events, and the associated approval processes.
- Clarification of institutional structures, roles, communication and reporting processes required as part of the implementation of the EMP.
- Description of the link between the EMP and associated legislated requirements.
- Description of requirements for record keeping, reporting, review, auditing and updating of the EMP.

#### Common Elements of an EMP and its Contents

**Introduction:** This should provide brief but concise information on

- (i) *the EMP context:* describe how the EMP fits into the overall planning process of the sub project, listing project/subproject environmental studies such as EPC.
- (ii) *the EMP's connection with the ESMF (if relevant) and the project.*
- (iii) *the objectives of the EMP:* describe what the EMP is trying to achieve. The objective should be project specific, not broad policy statements. The project-specific EMP shall form part of the project contract specifications.

#### **Policy, legal and administrative framework**

- GOV's regulations: provide brief description of GoV regulations related to EIA and technical regulations and standards applied to the subproject.
- World Bank's safeguard policy: list World Bank safeguard policies triggered.

#### **Project description**

The project/subproject objective and description should be provided in sufficient detail to define the nature and scope of the project. These should include:

- (i) *project location:* site location should be described with location of the activities provided including location maps showing location in the project area

- (ii) *construction/operation activities*: the description may include a brief description of construction and operation processes;; employment numbers and type; the plant and equipment to be used; the location and site facilities and worker camps; bill of quantities for civil works.
- (iii) *timing and scheduling*: anticipated commencement and completion dates should be indicated. If the project is to be completed in stages then separate dates for each stage should be provided.

### ***Baseline data***

This should provide key information on the environmental background of the subproject as well as its connection with the project area, including maps. Focus should be given to provide clear data on topography, major land use and water uses, soil types, flow of water, and water quality/pollution. Brief description on socioeconomic condition and EM (if relevant) should also be provided. Photos showing existing conditions of project sites should be included.

### ***Potential impacts and mitigation measures***

For Vn Subproject, Form 1 should be used for identifying subproject potential impacts and ECOP (section B in this Annex) should be adopted to inclusion into this Section

### ***Monitoring***

Monitoring of EMP implementation would encompass environmental compliance monitoring and environmental monitoring during project implementation as described in details below:

- (i) Environmental compliance monitoring: this should be the responsibilities of CSC, PMU, and benefited communities

***EMP Implementation arrangements:*** Institutional Arrangements should be in line with the ESMF. Discussions should cover the following aspects

- *Responsibility for EMP implementation:*
- *Incorporation of EMP into detailed technical design and bidding and contractual document:*
- *Environmental compliance framework:.*
- *Reporting procedures:.*

### ***Institutional Strengthening Plan***

### ***Estimated Budget for EMP Implementation***

Normally the cost of implementing mitigation measures are incorporated in total sub-project costs. if a mitigation measure is incorporated into engineering design, it may be possible to estimate the cost of that work item

### ***Consultation, Disclosure of the EMP***

Described the consultation and disclosure activities carried out during subproject implementation as guided in the ESMF.



### 3B – GOOD PRACTICE IN PREPARING SUBPROJECT EMP FOR SUBPROJECTS

#### Access Road, Powerline

- Taking a walk or driving on motorbike along the road/powerline alignment, from the beginning point to the endpoint. On the way, observe and take photos if the following features are seen features:
  - + tall/old trees that may be affected during construction or operation
  - + existing infrastructure along the alignment, for example powerlines, houses, irrigation canals, natural drains etc. that would be affected during construction or operation phase
  - + locations that would have higher safety risks during operation phase when the road is rehabilitated. For example, at intersections with the main existing roads
  - + Physical known cultural resources such as temple, worshiping places, sacred trees, grave sites, etc.
  - + Crop land that may be affected during construction phase (by excavation and temporary loading of construction materials, excavated materials)
- Visit proposed borrow pits and disposal sites, assess if drainage pattern would be disturbed would be disturbed during construction and operation phase; and erosion potentials from dumped excavated materials
- Prepare alignment sheet following the form below and attach as an annex to the EMP:

Km	Photo	Object observed	Potential Issues/Impacts	Mitigation Measures

#### Canal rehabilitation

it is common that the side path along canal embankments are used as rural access. Therefore, canal dredging or rehabilitation should also consider to upgrade the side path for rural transport. Sedimentation traps, safety corridors etc. should be considered during engineering design phase

Water cut off would be one of the main impacts of canal rehabilitation. Therefore, consultation with local communities, farmer associations, representatives of affected households during subproject preparation is critical for managing this impact. Informing communities in advance to avoid crop loss due to lack of irrigation would also be critical. Such mitigation measures should be included in Subproject EMPs.

#### Storage facility

Ventilations, preventive measures to fire detection and fighting, dust control during operation phase should be considered and addressed during engineering design.

When the works is carried out in the Mekong Delta, testing soil pH and store lime powder at the construction site is necessary for addressing negative impacts of excavated acid sulphate soil.

### 3C – Environmental Codes of Practice (ECOP)

#### 1. Objectives

The Environmental Codes of Practice (ECOP) is prepared to manage small environmental impacts during construction. The ECOPs will apply to manage small scale infrastructure investments subproject. ECOP will be a mandatory part of construction contract or bidding documents so that contractor complies with environmental covenants. PMU and construction supervisors will be responsible for monitoring of compliance with ECOP and preparing the required reports.

#### Part 1 – Contractor’s Responsibilities

Issues/Risks	Mitigation Measure
<b>1) Dust generation/ Air pollution</b>	<ul style="list-style-type: none"> <li>The Contractor implement dust control measures to ensure that the generation of dust is minimized and is not perceived as a nuisance by local residents, maintain a safe working environment, such as:               <ul style="list-style-type: none"> <li>- water dusty roads and construction sites;</li> <li>- covering of material stockpiles;</li> <li>- Material loads covered and secured during transportation to prevent the scattering of soil, sand, materials, or dust;</li> <li>- Exposed soil and material stockpiles shall be protected against wind erosion.</li> </ul> </li> </ul>
<b>2) Noise and vibration</b>	<ul style="list-style-type: none"> <li>All vehicles must have appropriate “<i>Certificate of conformity from inspection of quality, technical safety and environmental protection</i>” following Decision No. 35/2005/QĐ-BGTVT; to avoid exceeding noise emission from poorly maintained machines.</li> </ul>
<b>3) Water pollution</b>	<ul style="list-style-type: none"> <li>Portable or constructed toilets must be provided on site for construction workers. Wastewater from toilets as well as kitchens, showers, sinks, etc. shall be discharged into a conservancy tank for removal from the site or discharged into municipal sewerage systems; there should be no direct discharges to any water body.</li> <li>Wastewater over permissible values set by relevant Vietnam technical standards/regulations must be collected in a conservancy tank and removed from site by licensed waste collectors.</li> <li>At completion of construction works, water collection tanks and septic tanks shall be covered and effectively sealed off.</li> </ul>
<b>4) Drainage and sedimentation</b>	<ul style="list-style-type: none"> <li>The Contractor shall follow the detailed drainage design included in the construction plans, to ensure drainage system is always maintained cleared of mud and other obstructions.</li> <li>Areas of the site not disturbed by construction activities shall be maintained in their existing conditions.</li> </ul>
<b>5) Solid waste</b>	<ul style="list-style-type: none"> <li>At all places of work, the Contractor shall provide litter bins, containers and refuse collection facilities.</li> <li>Solid waste may be temporarily stored on site in a designated area approved by the Construction Supervision Consultant and relevant local authorities prior to collection and disposal.</li> <li>Waste storage containers shall be covered, tip-proof, weatherproof and scavenger proof.</li> <li>No burning, on-site burying or dumping of solid waste shall occur.</li> <li>Recyclable materials such as wooden plates for trench works, steel, scaffolding material, site holding, packaging material, etc. shall be collected and separated on-</li> </ul>

Issues/Risks	Mitigation Measure
	<p>site from other waste sources for reuse, for use as fill, or for sale.</p> <ul style="list-style-type: none"> <li>• If not removed off site, solid waste or construction debris shall be disposed of only at sites identified and approved by the Construction Supervision Consultant and included in the solid waste plan. Under no circumstances shall the contractor dispose of any material in environmentally sensitive areas, such as in areas of natural habitat or in watercourses.</li> </ul>
<b>6) Chemical or hazardous wastes</b>	<ul style="list-style-type: none"> <li>• Used oil and grease shall be removed from site and sold to an approved used oil recycling company.</li> <li>• Used oil, lubricants, cleaning materials, etc. from the maintenance of vehicles and machinery shall be collected in holding tanks and removed from site by a specialized oil recycling company for disposal at an approved hazardous waste site.</li> <li>• Unused or rejected tar or bituminous products shall be returned to the supplier's production plant.</li> <li>• Store chemicals in safe manner, such as roofing, fenced and appropriate labelling.</li> </ul>
<b>7) Disruption of vegetative cover and ecological resources</b>	<ul style="list-style-type: none"> <li>• Areas to be cleared should be minimized as much as possible.</li> <li>• The Contractor shall remove topsoil from all areas where topsoil will be impacted on by rehabilitation activities, including temporary activities such as storage and stockpiling, etc.; the stripped topsoil shall be stockpiled in areas agreed with the Construction Supervision Consultant for later use in re-vegetation and shall be adequately protected.</li> <li>• The application of chemicals for vegetation clearing is not permitted.</li> <li>• Prohibit cutting of any tree unless explicitly authorized in the vegetation clearing plan.</li> <li>• When needed, erect temporary protective fencing to efficiently protect the preserved trees before commencement of any works within the site.</li> <li>• The Contractor shall ensure that no hunting, trapping shooting, poisoning of fauna takes place.</li> </ul>
<b>8) Traffic management</b>	<ul style="list-style-type: none"> <li>• Before construction, carry out consultations with local government and community and with traffic police.</li> <li>• Significant increases in number of vehicle trips must be covered in a construction plan previously approved. Routing, especially of heavy vehicles, needs to take into account sensitive sites such as schools, hospitals, and markets.</li> <li>• Installation of lighting at night must be done if this is necessary to ensure safe traffic circulation.</li> <li>• Place signs around the construction areas to facilitate traffic movement, provide directions to various components of the works, and provide safety advice and warning.</li> <li>• Employing safe traffic control measures, including road/rivers/canal signs and flag persons to warn of dangerous conditions.</li> <li>• Avoid material transportation for construction during rush hour.</li> <li>• Signpost shall be installed appropriately in both water-ways and roads where necessary.</li> </ul>
<b>9) Interruption of utility services</b>	<ul style="list-style-type: none"> <li>• Provide information to affected households on working schedules as well as planned disruptions of water/power at least 2 days in advance.</li> <li>• Any damages to existing utility systems of cable shall be reported to authorities and repaired as soon as possible.</li> </ul>

Issues/Risks	Mitigation Measure
<b>10) Restoration of affected areas</b>	<ul style="list-style-type: none"> <li>• Cleared areas such as disposal areas, site facilities, workers' camps, stockpiles areas, working platforms and any areas temporarily occupied during construction of the project works shall be restored using landscaping, adequate drainage and revegetation.</li> <li>• Trees shall be planted at exposed land and on slopes to prevent or reduce land collapse and keep stability of slopes.</li> <li>• Soil contaminated with chemicals or hazardous substances shall be removed and transported and buried in waste disposal areas.</li> </ul>
<b>11) Worker and public Safety</b>	<ul style="list-style-type: none"> <li>• Training workers on occupational safety regulations and provide sufficient protective clothing for workers in accordance with applicable Vietnamese laws.</li> <li>• Install fences, barriers, dangerous warning/prohibition site around the construction area which showing potential danger to public people.</li> <li>• The contractor shall provide safety measures as installation of fences, barriers warning signs, lighting system against traffic accidents as well as other risk to people and sensitive areas.</li> <li>• If previous assessments indicate there could be unexploded ordnance (UXO), clearance must be done by qualified personnel and as per detailed plans approved by the Construction Engineer.</li> </ul>
<b>12) Communication with local communities</b>	<ul style="list-style-type: none"> <li>• The contractor shall coordinate with local authorities (leaders of local communes, leader of villages) for agreed schedules of construction activities at areas nearby sensitive places or at sensitive times (e.g., religious festival days).</li> <li>• Copies in Vietnamese of these ECOPs and of other relevant environmental safeguard documents shall be made available to local communities and to workers at the site.</li> <li>• Disseminate project information to affected parties (for example local authority, enterprises and affected households, etc.) through community meetings before construction commencement.</li> <li>• Provide a community relations contact from whom interested parties can receive information on site activities, project status and project implementation results.</li> <li>• Inform local residents about construction and work schedules, interruption of services, traffic detour routes and provisional bus routes, blasting and demolition, as appropriate.</li> <li>• Notification boards shall be erected at all construction sites providing information about the project, as well as contact information about the site managers, environmental staff, health and safety staff, telephone numbers and other contact information so that any affected people can have the channel to voice their concerns and suggestions.</li> </ul>
<b>13) Chance find procedures</b>	<ul style="list-style-type: none"> <li>• If the Contractor discovers archaeological sites, historical sites, remains and objects, including graveyards and/or individual graves during excavation or construction, the Contractor shall:</li> <li>• Stop the construction activities in the area of the chance find;</li> <li>• Delineate the discovered site or area;</li> <li>• Secure the site to prevent any damage or loss of removable objects. In cases of removable antiquities or sensitive remains, a night guard shall be arranged until the responsible local authorities or the Department of Culture and Information takes over;</li> <li>• Notify the Construction Supervision Consultant who in turn will notify responsible local or national authorities in charge of the Cultural Property of Viet Nam (within 24 hours or less);</li> </ul>

Issues/Risks	Mitigation Measure
	<ul style="list-style-type: none"> <li>• Relevant local or national authorities would be in charge of protecting and preserving the site before deciding on subsequent appropriate procedures. This would require a preliminary evaluation of the findings to be performed. The significance and importance of the findings should be assessed according to the various criteria relevant to cultural heritage; those include the aesthetic, historic, scientific or research, social and economic values;</li> <li>• Decisions on how to handle the finding shall be taken by the responsible authorities. This could include changes in the layout (such as when finding an irremovable remain of cultural or archaeological importance) conservation, preservation, restoration and salvage;</li> <li>• If the cultural sites and/or relics are of high value and site preservation is recommended by the professionals and required by the cultural relics authority, the Project's Owner will need to make necessary design changes to accommodate the request and preserve the site;</li> <li>• Decisions concerning the management of the finding shall be communicated in writing by relevant authorities;</li> <li>• Construction works could resume only after permission is granted from the responsible local authorities concerning safeguard of the heritage.</li> </ul>

## Part 2 – Contractor's Workers Environmental Code of Conducts

Do:	Do not
<ul style="list-style-type: none"> <li>♦ Use the toilet facilities provided – report dirty or full facilities</li> <li>♦ Clear your work areas of litter and building rubbish at the end of each day – use the waste bins provided and ensure that litter will not blow away.</li> <li>♦ Report all fuel or oil spills immediately &amp; stop the spill from continuing.</li> <li>♦ Smoke in designated areas only and dispose of cigarettes and matches carefully. (littering is an offence.)</li> <li>♦ Confine work and storage of equipment to within the immediate work area.</li> <li>♦ Use all safety equipment and comply with all safety procedures.</li> <li>♦ Prevent contamination or pollution of streams and water channels.</li> <li>♦ Ensure a working fire extinguisher is immediately at hand if any “hot work” is undertaken e.g. Welding,</li> </ul>	<ul style="list-style-type: none"> <li>♦ Remove or damage vegetation without direct instruction.</li> <li>♦ Make any fires.</li> <li>♦ Poach, injure, trap, feed or harm any animals – this includes birds, frogs, snakes, etc.</li> <li>♦ Enter any fenced off or marked area.</li> <li>♦ Drive recklessly or above speed limit</li> <li>♦ Allow waste, litter, oils or foreign materials into the stream</li> <li>♦ Litter or leave food lying around.</li> <li>♦ Cut trees for any reason outside the approved construction area</li> <li>♦ Buy any wild animals for food;</li> <li>♦ Use unapproved toxic materials, including lead-based paints, asbestos, etc.;</li> <li>♦ Disturb anything with architectural or historical value</li> <li>♦ Use of firearms (except authorized security guards)</li> <li>♦ Use of alcohol by workers during work hours</li> <li>♦ Wash cars or machinery in streams or creek</li> <li>♦ Do any maintenance (change of oils and filters) of cars and equipment outside authorized areas</li> </ul>

<p>grinding, gas cutting etc.</p> <ul style="list-style-type: none"><li>♦ Report any injury of workers or animals.</li><li>♦ Drive on designated routes only.</li><li>♦ Prevent excessive dust and noise</li></ul>	<ul style="list-style-type: none"><li>♦ Dispose trash in unauthorized places</li><li>♦ Have caged wild animals (especially birds) in camps</li><li>♦ Work without safety equipment (including boots and helmets)</li><li>♦ Create nuisances and disturbances in or near communities</li><li>♦ Use rivers and streams for washing clothes</li><li>♦ Dispose indiscriminately rubbish or construction wastes or rubble</li><li>♦ Spill potential pollutants, such as petroleum products</li><li>♦ Collect firewood</li><li>♦ Do explosive and chemical fishing</li><li>♦ Use latrines outside the designated facilities; and</li><li>♦ Burn wastes and/or cleared vegetation.</li></ul>
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**ANNEX 4- ENVIRONMENTAL COMPLIANCE MONITORING FORM**

Subproject/Contract package

CSC Environmental Consultant:

Name:                      Mobile phone number                      email

Date reporting:

	<b>Environmental issues</b>	<b>Description of Mitigation Measures implemented</b>	<b>Evaluation 1=good; 0 = acceptable; -1 = bad</b>
1	Dust, smoke		
2	Noises, vibration		
3	Disturb vegetation cover, cut trees		
4	Waste generation		
5	Water pollution		
6	Localised flooding		
7	Traffic disturbance		
8	Public health and safety		
9	Damages or disrupt operations of existing infrastructure		
10	Disturb Socio economic activities		
11	Social impacts related to mobilisation of workers to the site		
12	Impacts on physical cultural objects		
	Others (specify)		

Sign

**ANNEX 5 - INTEGRATED PEST MANAGEMENT PLAN (IPMP)****(national approach)****INTEGRATED PEST MANAGEMENT (IPM)****2.1. Objectives*****a, General objectives***

Strengthening flora protection at local level, reducing pesticide use in the field, improving the efficiency of prevention, managing well pesticide and pesticide use process to reduce the risk of contamination pesticides on the environment and affect human health

***b, Specific objectives***

- Support of the Department of Plant Protection of project provinces in strengthening pest management and pesticide management in accordance with the national action plan on food hygiene and safety, food security, adaptation to climate change and the concerned international conventions that the Government has approved;
- Strengthening the capacity of IPM in Vietnam, including farmer groups to implement training IPM and research activities with farmers producing rice, vegetables ... to improve life, better and more sustainable crop production, minimizing the from pesticides.
- Strengthening environmental protection, food safety through strengthening the role of predators; reduce pesticide residues to ensure food hygiene and safety, reduce environmental pollution (water, land, air)
- Improving farmers' knowledge: distinguish the major pests, secondary; identify predators and their role in the field, clearly understand the effect of two colors of pesticides, property use, know how to survey pest and use threshold control; understand and apply pest control measures in IPM to increase income for farmers.

**2.2. The basic principles of IPM framework**

The following principles will be applied to all sub-projects likely to increase the use of fertilizers and pesticides:

- a. "Prohibited list": The list of banned pesticides will be used and circulated
- b. IPM program: Detailed planning work will be completed through consultation close to farmers, local authority/PCP organization.
- c. The improvement of knowledge and experience in the use of fertilizers and chemicals through research surveys and training courses in the work as well as selecting safe use of non-chemicals, other techniques, has been being investigated and/or applied in Vietnam. National IPM Program has also summarized the results of the implementation and the lessons of experience.
- d. IPM Program can be set up to support the implementation of the Government's policy and objectives focusing on reducing the use of chemical fertilizers and pesticides.
- e. In normal conditions, if pesticide use is considered to be a necessary option, only pesticides registered with the government and the international recognition in use and project will also provide technical and economic information for chemicals use demand. It should consider the options in the management of not harmful chemicals and can also reduce reliance on the



use of pesticides. The measures will be incorporated into the project design to reduce risks related to the handling and use of pesticides to allowed possible level and managed by users

- f. The planning and implementation of mitigation measures and other activities will be carried out closely with the authorities, powers and stakeholders, including suppliers of chemicals, to facilitate cooperation and understanding each other.

### **2.3. The approach of IPM**

Focus more on the risks of abuse and excessive use chemical of plant protection products. The concerned plant are rice, vegetables, tea ... these plants tend to be sprayed more of pesticides.

Focus on community education, the initial survey will be incorporated into the task with the aim of clarifying the root cause of the abuse and excessive use of plant protection products and the associated risks. Support the capacity building of the instructor (trainer) IPM. The current program will need to be reviewed and new modules will be supplemented to increase the portion related to reducing the risk of plant protection products. The training program will be enriched with the integration of many activities such as System Rice Intensification (System Rice Intensification - SRI), minimum tillage (minimum tillage), production community and use of bio-products replacing plant protection chemicals ... the training activities, the application will be made in the wide area application of the model.

### **2.4. The contents of IPM model**

#### ***(i) Collection of information and selection of solutions***

Before implementing IPM program, consultants must have the original investigation to have the necessary information such as:

- Survey to collect data on: staple crops have economic significance in the project area: seeds, crop, growth characteristics, farming techniques,
- Survey to collect data on soil conditions, pedology, local climate
- Investigate the situation of the pest, harmful rule arises, their economic damage causing on the major crops in the project area
- Investigate the role of natural enemies parasitic of pests on the major crops in the project area
- Investigate the actual situation of pest control measures, pesticide use and their effect at the local
- Investigate the socio-economic conditions, income, technical knowledge, and practices ...

On the basis of these findings, a proposal to evaluate IPM measures will apply on specific crops in regions and localities implement the project through the following measures:

- Cultivation methods: Soil, field sanitation, crop rotation, intercropping, crop seasons, reasonable sowing and planting density, rational use of fertilizers; appropriate caring measures
- Using seed: the tradition seed and the proposed seed in use
- The biological measures: taking advantage of available natural enemies in the field, using probiotics...
- Determination of the level of harm and prevention threshold

- Chemical measures: safe using with natural enemies, the economic threshold; 4 correct use of medicines;

### ***(ii) Develop of demonstration models IPM***

This section done by the Department of Crop Production, based on soil characteristics, climate, farming skills ... Department of Crop Production will propose to the TDA of pilot field for agricultural development with the highly effective main crops. IPM activities in the pilot field will serve for sightseeing and guidance of practice.

Some of the main contents when building the IPM in the pilot field, as follows:

- Construction of demonstration models for applying IPM measures proposed above
- Building model involved by the people with the guidance of technical staff
- In the model, there need to build nuclear farmers, group leader
- In addition to technical assistance there should be support materials, ... for households participating in demonstration models
- Compiling IPM guiding documentation for major crops: rice, vegetables ...
- Scale of model: depending on crops,... specific economic conditions, models were constructed using different scales: 5-10 ha / model.

### ***(iii) Coaching and training of IPM staff***

TOT (Training of trainers) and Farmer Field School (FFS):

- Each sub-project will organize workshops and staff training of IPM. The content of the training includes:
  - Distinguish the major and secondary pests
  - Identify the natural enemies of pests and diseases in the field
  - Investigate methods to detect worms and diseases
  - Understand the impact of two pesticides, using appropriate pesticides
  - The techniques pest control under IPM principles
  - Advanced farming techniques
- The understanding must be trained in theory and practical application in the field. The contents above can be trained under thematic groups: farming thematic, identification thematic and detection methods of pests and their natural enemies, the thematic of IPM techniques in production ...
- Training object: The technical staff of the Department of Agriculture, Sub-department of plant protection, agricultural extension of districts, communes, and cooperatives. These students will train to the farmers in the project area, the implementing of models.
- The size of each class is from 20 to 30 students, held in each district. Learning time in each stage. According to the thematic training session, each session may last 3-5 days on both theory and practice.
- Lecturer: hire experts from University/Research institute/Agricultural Extension Center...

### ***(iv) Coaching and training of farmers***

Training of Farmers (TOF) follows Farmer Field School (FFS):

- Method: Combine theoretical training and base on practical fields of farmers and demonstration model on demonstration IMP in the pilot field;
- Contents are the same as IMP staff training;
- Participants: participating farmers, farmers who direct implement the models and farmers outside if interested;
- Classes are organized in each commune.
- Lecturer: staffs attended TOT classes

***(v) Evaluate and visit the field based on of demonstration models and field applied of IPM following the models of farmers***

Visit the coast conference, farmers performing the demonstration models are reporters. The farmers implement the model directly with the participants; visiting farmers will calculate, compare economic performance and identify lessons, limitations and the work being done and not being done

***(vi) Scientific seminar, evaluation of result and exchange of experience and information, expand the model***

Invite experts in related fields participating in the assessment, analysis and additional evaluation, perfecting the processes; the mass media, the propaganda extension organization, expansion and transfer the result, the technical advances to farmers, and production areas with similar conditions

## **2.5. Expected results**

The project is expected to achieve the following results:

- The risk of food safety and the environment are minimized through the implementation of existing regulations in business management and use of plant protection products and other provisions in national policy and the implementation.
- The capacity of the provincial PPD, farmer trainers are enhanced meeting training work, IPM training and IPM practice advocacy are maintained.
- Support for farmer groups after learning IPM to continue experiment to determine the application technical advances more effectively in production and popular in the community.
- Support for strengthening commune locality, strengthening pesticide management including the implementation and enforcement of legislation controlling plant protection products. Construction and distribution of a short list of specific plant protection products proposed use for rice and safe vegetables production.

## **2.6- Implementation of IPM programs**

- Sub-Department of Plant Protection (BVTV):
  - Provide policy and technical guidelines for the implementation of the IPM program.
  - Join in IPM model building
  - Join coaching and staff training IPM

- Plant Protection Station at district level
  - Coordinate with IPM staff to implement coaching and trained of farmers implemented IPM through the approach and provide of knowledge, support for of farmers on the safe use of pesticides when necessary.
  - Guide the list of banned pesticides
  - Examine the distribution facility providing pesticides to ensure the provision of safe pesticides for farmers

- People's committee at commune level

Organizing for farmers decided to maintain the routine IPM was formed from a training course by organizing IMP-clubs or groups of farmers with the different levels of organization and structure, along with many activities (including the integration of the contents of cattle, credit, market access, etc.,)

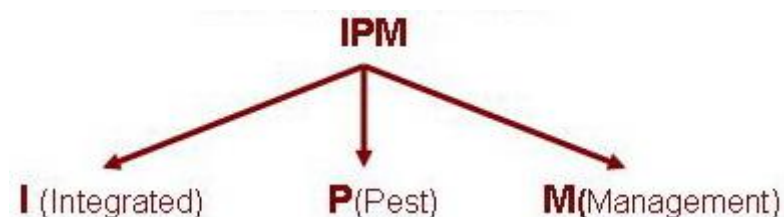
- Households in the project area:
  - Implementing IPM program has trained
  - The members of the IPM club support together to develop agricultural activities. They also play a central role in the task of organizing community IPM program and general agricultural planning of commune and district as well.

## INTEGRATED PEST MANAGEMENT IPM FOR THE RICE CROPS

### 1- Definition, basic principles of integrated pest management

#### 1.1. What is Integrated Pest Management (IPM)?

According to the expert group of the Food and Agriculture Organization (FAO), "Integrated Pest Management" is a pest management system that in the specific the context of the environment and the population dynamics of the species causing damage, using all the techniques and appropriate measures can be, in order to maintain the density of the pest below cause economic damage.



#### 1.2. Five basic principles of integrated pest management (IPM)

(i). Planting and health care of crops:

- Choose good seed, suitable for local conditions.
- Choose healthy and qualified crops.
- Planting, cared for properly techniques to grow good crops which are resistant and high yielding.

(ii) Check fields regularly, understand the progress of the growth and development of plants, pests, weather, land, water ... to take timely remedial measures.

(iii) Farmers become experts field: Farmers' technical knowledge, management skills need to advocacy field for many other farmers.

(iv) Pest prevention

- Using appropriate preventive measures, depending on the severity of disease, parasitic natural enemies in each stage.
- Using of chemical drugs has reasonable and proper technique.

(v) Protect natural enemies: Protecting the beneficial organisms to help farmers kill pests.

### 2- Contents of integrated pest management

#### 2.1. Farming methods

(i) Early land preparation and field sanitation

- Land preparation and field sanitation soon after planting to kill many caterpillars and pupae live in the rice stem borer and rice stubble, loss of shelter and food source of the brown planthopper, green hoppers... Brokers are the transmission of viral diseases for rice as dangerous illness blighted gold, rice ragged stunt disease.
- Principles of impact of field sanitation measures and handling crop residues after harvest is cut off the ring cycle of pests from the crop to other crops and pests limited source accumulation, transmission spread at beginning of the crop.

(ii) Crop rotation

Rice rotation with other crops to avoid pathogen accumulation in rice from the crop to other crop.

**(iii) Appropriate Planting**

Planting rice to ensure appropriate growth and good development, achieve high productivity, avoids the risk of the weather. The determination of appropriate the crop having to rely on the characteristics of the damage incurred pests important to ensure that rice avoiding peak of the epidemic.

**(iv) Use healthy seeds, pest resistant and short seeds**

- Healthy seeds, free disease helps to rice facilitate development
- Using resistant rice seeds reduce drug use chemical pest control, reduce pollution, protect natural enemies; keep balance agricultural ecosystems.
- Rice seed with short growth period of about 100-110 days, plant earlier in the season could have been avoided borer, deep bite panicle. Rice seed with extremely short growing period is 80-90 days brown planthopper prevention measures effective for brown plant hopper could not accumulate in sufficient quantities to cause severe damage in extremely short day breeds.

**(v) Cultivation density is reasonable**

- The density and sowing techniques, depending on the rice seeds transplanting, crop, soil and nutrition, aged rice, rice quality, process agricultural intensification...
- The density is too thick or too little will affect productivity, while also affecting the generation and development of pests, weeds.
- The rice fields are often sown too thick closed up early, causing high humidity, creating conditions for sheath blight and brown plant hopper damage incurred at the end of the crop.

**(vi) Using reasonable fertilizers**

Fertilization excessive or unreasonable fertilizer will make plants grow normally and not prone to pest infestation. Rice fields fertilization are more susceptible to infectious diseases rice blast, sheath blight, leaf blight...

**2.2. Manual methods**

Light traps catch butterflies, break eggs, rub stripping foil fencing using leaf spray, dig down to catch mice ...

**2.3. Biological methods**

(i) Creating a favorable environment for beneficial organisms are natural enemies of pest development to contribute to kill pests:

- Protection of natural enemies to avoid toxic chemicals by using selective medication drugs, narrow-spectrum drugs, drugs used when absolutely necessary and should be based on economic thresholds...
- Create habitat for natural enemies after planting by intercropping, planting legumes on bunds, disintegrator for lurking natural enemies...
- Application of cultivation techniques facilitate reasonable development natural enemies.

**(ii) Priority use drugs Biological Plant Protection;**

The medicines is effective only biological pest control, non-toxic to beneficial organisms, safe to human health and the environment

**ANNEX 6 – POSSIBLE PHYSICAL INVESTMENTS**

	
	
Access road to coffee plantations in highland	