

Initial Environmental Examination

Stage of the document: Final
Project number: 49026-002
April 2017

VIE: Basic Infrastructure for Inclusive Growth in the Northeastern Provinces Sector Project-Construction of Infrastructure for Agricultural and Rural Value Chains in Van Quan District, Lang Son Province

Prepared by Planning and Investment Department of Lang Son province for the Asian Development Bank.

CURRENCY EQUIVALENTS

(as of 27 April 2017)

| | | |
|---------------|---|-------------------|
| Currency unit | – | Viet Nam Dong (D) |
| D1.00 | = | \$0.000044 |
| \$1.00 | = | Đ 22,730 |

ABBREVIATIONS

| | | |
|-------------|---|--|
| ADB | – | Asian Development Bank |
| CPC | – | Commune People's Committee |
| DARD | – | Department of Agriculture and Rural Development |
| DONRE | – | Department of Natural Resources and Environment |
| DPC | – | District People's Committee |
| EMP | – | Environmental Management Plan |
| HortLangSon | – | Horticultural Sector Industry Organization |
| IEE | – | Initial Environmental Examination |
| MONRE | – | Ministry of Natural Resources and Environment |
| MPI | – | Ministry of Planning and Investment |
| PMU | – | Project Management Unit |
| PPC | – | Provincial People's Committee |
| PPE | – | Personal Protective Equipment |
| PPTA | – | Project Preparatory Technical Assistant |
| SPS | – | Safeguard Policy Statement |
| SST | – | Subproject Support Teams |
| The PPTA | – | The Project Preparatory Technical Assistant Consultants |
| The Project | – | Basic Infrastructure for Inclusive Growth in the Northeastern Provinces Sector Project |

WEIGHTS AND MEASURES

| | | |
|------------------------------------|---|---------------------|
| Km ² (square kilometer) | – | unit of length |
| m ³ (cubic meter) | – | A measure of volume |

Note:

- (i) In this report, "\$" refers to US dollars.

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I. EXECUTIVE SUMMARY

A. Objectives

1. The proposed Basic Infrastructure for Inclusive Growth in the Northeastern Provinces Sector Project (BIIG 1) will include support to improved agricultural value chains (ARVCs) among investments to support transport and water resource management infrastructure. The subproject comprises the support to ARVCs in Lang Son province, complementing existing support projects to ARVCs .
2. The subproject is initially categorized as B for environmental safeguards, according to the ADB system as specified in the 2009 Safeguards Policy Statement (SPS). This IEE is prepared as required for category B projects.

B. POLICY AND LEGAL FRAMEWORK

3. The subproject shall comply with requirements of ADB SPS 2009 and the GOV's Guidelines on Implementation of Law on Environmental Protection 2014, both of which are detailed in the IEE.

C. DESCRIPTION OF THE SUBPROJECT

4. The subproject is designed to strengthen co-ordination of agricultural industries in Lang Son, assist with strategic planning to overcome constraints of small product industry size and develop competitive export produce value chains. The expected outcome is improved horticultural sector economic performance through a coordinated industry led business and market focused strategy for sector growth and development that features market driven product value chains aimed at added value "export" markets. It has the following outputs:

1. Horticultural Industry Organization Development: to support development of a horticultural sector industry body in the province

2. Star Anise Value Chain Development: to consist of a set of activities that will coordinate star anise export orientated product development through the product group and value chain development. Output 2 will support the construction of small buildings for production and processing such as greenhouses and shade houses, tanks and pipe systems for drip irrigation, pulley systems for conveyance of produce growing on slopes to collection points, and feeder roads (of maximum 1.5m width) on primarily flat land connecting connection points to local roads. A combination of these will be included for each production group supported, of which there will be a maximum of 20, and the value of such improvements will be in the order of \$10,000 to \$20,000, to fit within a budget ceiling of \$55,000 per group, which will also be used for organizational support and training.

3. Safe Vegetable Value Chain Development: this will be based upon intensifying district vegetable production farming systems that are currently producing for local markets. The Project will connect the farmers with safe vegetable markets in Lang Son city and in Hanoi. Vegetable farmer groups will be formed, and will consist of farmers who are experienced winter season vegetable producers. There will be an investment package with an upper limit of \$40,000. Output 3, similar to output 2, will support the construction of small buildings for production and processing such as greenhouses and shade houses, tanks and pipe systems for drip irrigation, and possibly pulley systems for conveyance of produce. Feeder roads (of

maximum 1.5m width) may also be supported which will also be on primarily flat land connecting connection points to local roads. A combination of these items will be included for each production group supported, of which there will be a maximum of 30, and the value of such improvements will be in the order of \$10,000 to \$20,000, to fit within a budget ceiling of \$40,000 per group, which will also be used for organizational support and training.

4. Support to Other Product Value Chains: To commence in the third year of subproject implementation, support for other value chains will be dependent on decisions of HortLangSon, with the input of sector product groups as to which value chains to assist. Activities will be preparation of Preparation of plans for product value chain development; implementation of product value chain development plans; establishment of farmer groups and assistance with their operations, including technical market assistance and assistance to farmer groups with production and marketing advice.

5. Planning and organizational support activities will be directed province wide, with pilot activities for the various outputs in Van Quan district, including the communes of Yen Phuc, Binh Phuc and Tu Xuyen.

6. The total budget for each of the four outputs is **\$14,958,000**.

D. Description of the Environment

1. Physical Environment

7. Lang Son has a complex topography including a high mountain area; a low mountain area; a limestone mountain area; and cultivated valleys. The subproject is located in Van Quan district, has an average elevation of about 400m above sea level and features small valleys that lie in Southwest - Northeast direction. Soils in the project area are predominantly ferralitic soils.

8. The climate is classified as warm temperate, with wet winters and hot summers. Total is around 1,500mm and temperatures average 21.2°C over the year, with lowest temperatures of around 13.8 °C occurring in January, and reaching 27.1 °C in July.

9. The province a dense river and stream network, and some 271 reservoirs and 639 rolling weirs. Surface water quality is monitored in the province, including two monitoring stations are in Van Quan district. Groundwater in the region occurs in fissures in limestone rock, and in sandstone and clay stone deposits but yields are minor and difficult to assess or predict.

10. In comparison to QCVN standards, the parameters of air quality and noise in Lang Son province and in particular Van Quan district are within the allowable levels.

2. Biological Environment

11. Forests covered 48% of the total area of the province in 2010, of which 55% was natural forest, and the balance being plantation forest, following a trend of increasing forest cover attributable to plantations. Agricultural land occupies a smaller proportion of the land area, around 4%, largely due to the steep terrain.

3. Socio-Economic Conditions and Infrastructure

12. The total population in the three target communes is 6,517 people in 1,476 households, in 23 villages. Ethnic minorities account for 99.25% total population in the project area, primarily the Tay ethnic group (28.6%), Nung (55.3%) and Dao (15.3%). All three communes are primarily poor under according to the government classification P135. Agriculture remains dominant economic activity in the district. The main agricultural crops in the district are rice, maize, cassava, soybean, groundnut and cash crops such as tobacco, sugarcane and star anise. Livestock rearing and poultry raising are important.

13. Each commune has a healthcare station with one doctor and four nurses and midwives, one kindergarten, one primary school and one secondary school. The proportion of households with access to mains electricity varies from 57% in Quy Hoa commune, to 76% in Hoa Tham commune and 95.46% in Vinh Yen commune.

14. Access to schools is high, around 4% have never been to school, the figure is higher among the Dao ethnic group (11%) and the poor (8.75%). Education levels are highest amongst the Tay people, the majority of whom have completed high school education.

15. Common to much of Northern Viet Nam, unexploded ordinance remaining from the conflict that took place in the region between 1962 and 1976, and also longer border conflicts into the 1980s may be present in some areas, which can be encountered when ploughing fields, searching for scrap metal and similar activities.

16. There is no archaeological significance in Van Quan district.

E. Anticipated Environmental Impacts and Mitigation Measures

1. Impacts related to Support to Sector Planning and Organization

17. Support to HortLangSon is to be broad, helping to overcome constraints of small product group size to develop competitive export value chains. Secondary impacts associated with increased production and processing are, those associated with (i) the use of inputs such as pesticides and fertilizers, (ii) crop water requirements and (iii) the need for facilities and inputs for processing including extraction, drying and packaging.

2. Support for infrastructure

18. Infrastructure that may be supported by contestable funding includes trickle feed irrigation equipment, installation of water tanks, shading and greenhouses, and feeder road improvements. A pre-requisite for funding of these is submission of a competent business development plan. Water tanks, shade houses and greenhouses will entail only minor impacts, and not more than one of each will be built per production group. Impacts associated with the construction of these buildings will be mitigated by preparing environmental management requirements to be included in bid documents for construction contracts.

19. Feeder roads will be constructed from produce collection points to local roads, along primarily flat or undulating terrain and will be up to 1.5m in length. Potential impacts will be addressed in design and in the preparation of an environmental management plan for each subproject guiding subproject planning, design and construction and detailing mitigation.

20. Other items of infrastructure may include pulley systems, and pack houses. Safety of pulley systems is potentially and mitigation will include adherence to high specifications during construction, making funding conditional on user commitment for upkeep and training in safe operation and maintenance.

21. Further, unspecified initiatives may be supported with the use of contestable funds, the precise scope of which will not be known until applications are received. Impacts will generally be minor (small quantities of spoil generation; impacts associated with sourcing of materials; site clearance) and an environmental statement will be prepared prior to approval of funding demonstrating that there will either be no significant impacts or that these will be mitigated. Impacts on biodiversity will be avoided by the exclusion of subprojects that involve or may involve: (i) clearance of previously undisturbed forest and (ii) possible encouraging of illegal logging or other illegal activity. In addition applications should include a statement indicating that environmental impacts have been considered, and information on how these will be avoided or mitigated.

F. Information Disclosure, Consultation and Participation

22. Stakeholders include Lang Son DPI; Van Quan DPC; DONRE and DARD offices of Van Quan district; Tu Xuyen, Yen Phuc and Binh Phuc CPCs; and local people who cultivate star anise in Yen Phuc, Binh Phuc communes and vegetable in Tu Xuyen commune. Consultations took place in 12 December 2017.

23. The information disseminated during public consultation included: (i) background of the Project and subproject; (ii) basic information related to ADB and the Government requirement for environmental protection and management; (iii) potential impacts during subproject implementation and mitigation measures; and (iv) the grievance redress mechanism. Stakeholders are support the implementation of the subproject.

G. Grievance Redress Mechanism

24. A three stage grievance redress mechanism has been developed for the project as a whole, providing for resolution of any complaints at the commune level in the first instance, the district level at the next stage and the provincial level, coordinated by the Department of Natural Resources and Environment (DONRE).

H. Environmental Management Plan

25. An environmental management plan has been prepared for the subproject detailing mitigation and management measures and responsibility for implementation. Environmental measures relate to the use of agrochemicals and impacts associated with track improvements to facilitate motorcycle access, small scale irrigation and buildings as may be required for processing and cultivation. Such impacts are generally limited by the small scale of each investment, which relate to growing operations of around one to two hectares and would be assessed on a case by case basis. Environmental compliance monitoring is carried out to test the compliance with operating procedures, technical standards and/or contractor specifications in the EMP.

I. Conclusions and Recommendations

26. The assessment finds that no further or additional impact assessment is considered necessary at this stage and the subproject is category B.

II. BACKGROUND

A. Objectives of the Project

1. The Basic Infrastructure for Inclusive Growth in the Northeastern Provinces Sector Project

27. The proposed Basic Infrastructure for Inclusive Growth in the Northeastern Provinces Sector Project (BIIG 1) will invest in the recently completed Four Northeastern Provinces (FNEP) Overall Development Plan (2015). The development plan responds to the Government of Vietnam's strategy of targeting the investment into poorer provinces and regions. The use of a sub-regional approach seeks to build the interrelationship between provinces as one of the foundations for accelerating growth in the more remote regions. As such the plan targets investment into outputs that build areas of comparative advantage in a manner that increases the competitiveness of economic activity in the sub-region. The expected impact is to improve socio-economic wellbeing of local communities through the improved financial returns and through lower costs of accessing public health services, education, water supply and markets.

28. The project has four outputs being (i) improved FNEP road network connectivity, (ii) improved rural water supply, (iii) improved ARVCs in Lang Son and (iv) strengthened FNEP regional investment planning and development management.

29. The subproject is initially categorized as 'B' for environmental safeguards, and this IEE is required according to the ADB Safeguards Policy Statement (SPS) of 2009. The objectives and scope of this IEE are to (i) assess the existing environmental conditions in the vicinity of the subproject area; (ii) identify potential environmental impacts from the proposed improvement works; (iii) evaluate and determine the significance of the impacts; (iv) develop an environmental management plan (EMP) detailing mitigation measures, monitoring activities, reporting requirements, institutional responsibilities and cost estimates to address adverse environmental impacts; and (v) carry out public consultations to document any issues/ concerns that stakeholders may have on the subproject and to ensure that such concerns are addressed in the subproject design and mitigation measures.

III. POLICY AND LEGAL FRAMEWORK

30. The subproject shall comply with requirements of ADB SPS 2009 and the GOV's Guidelines on Implementation of Law on Environmental Protection 2014. Decree No. 18/2015/ND-CP has detailed information on environmental protection assessment, environmental impact assessment and environmental protection plans.

A. Asian Development Bank requirements

31. ADB safeguard policy statement (SPS) 2009 imposes safeguard requirements for all its funded projects. The SPS 2009 clarifies the rationale, scope and contents of the environmental assessment. It emphasizes environmental and social sustainability in progress of economic growth and poverty reduction in Asia and the Pacific, with the following aims:

- Avoid adverse impacts of projects on the environment and affected people, where possible;
- Minimize/mitigate and/or compensate for adverse impacts on environment and affected people when avoidance is not possible; and
- Help borrowers/clients to strengthen their safeguard systems and develop the capacity to manage environmental and social risks

32. For environmental safeguards, the Subproject is initially categorized as 'B'. A subproject that is classified as category A on environmental safeguards would be ineligible as a BIIG 1 subproject.

B. Legal and Administrative Framework for Environmental Protection in Vietnam

33. The subproject has to comply with the environmental legal framework of Vietnam, which is outlined in this section. The main components of the framework, if not, the more applicable ones are shown here.

1. Laws

- Law No. 55/2014/QH13 of 23 June 2014 by the National Assembly on environment protection
- Law No. 17/2012/QH13 of 21 June 2012 by the National Assembly on water resources
- Law No. 20/2008/QH12 of 13 November 2008 by the National Assembly on biodiversity
- Law No. 68/2006/QH11 of 29 June 2006 by the National Assembly on standards and technical regulations
- Law No. 29/2004/QH11 of 03 December 2004 by the National Assembly on forest protection and development

2. Decrees and Regulations

- Decree No. 18/2015/ND-CP dated February 14, 2015 on environmental protection planning, strategic environmental assessment, environmental impact assessment and environmental protection plans.
- Circular No. 27/2015/TT-BTNMT dated May 29, 2015 on strategic environmental assessment, environmental impact assessment and environmental protection plans.

- Circular No. 36/2015/TT-BTNMT of 30 June 2015 by the Ministry of Natural Resources and Environment stipulating hazardous waste management
- Decision 07/2012/QD-TTg dated February 08, 2012 of the Prime Minister promulgating some regulations on intensified enforcement of forest protection
- Decision 186/2006/QD-TTg dated August 14, 2006 of the Prime Minister promulgating the Regulation on forest management
- Decree 09/2006/ND-CP dated 16th January, 2006 of the Government on forest fire prevention and control
- National Technical Regulations on air and noise quality
 - QCVN 05: 2013/BTNMT on ambient air quality
 - QCVN 26: 2010/BTNMT on noise
 - QCVN 27: 2010/BTNMT on vibration
- National Technical Regulations on water quality
 - QCVN 01: 2009/BYT on drinking water quality
 - QCVN 02: 2009/BYT on domestic water quality
 - QCVN 08-MT:2015/BTNMT on surface water quality
 - QCVN 09-MT:2015/BTNMT on underground water quality
 - QCVN 14: 2008/BTNMT on domestic wastewater

3. Other legislation applicable to the subproject are the following:

- Law No. 27/2001/QH10 of 29 June 2001 by the National Assembly on fire prevention and fighting
- Law No. 40/2013/QH13 of 22 November 2013 by the National Assembly on amending and adding a number of articles of the Law No. 27/2001/QH10 of 29 June 2001 on fire prevention and fighting
- Decision No. 3733/2002/QD-BYT of 10 October 2002 by the Ministry of Health promulgating 21 labor hygiene standards, 5 principles and 7 labor hygiene measurements
- Law No. 50/2014/QH13 of 18 June 2014 by the National Assembly on construction
- Circular No. 22/2010/TT-BXD of 03 December 2010 by the Ministry of Construction on labor safety in work construction
- Law No. 10/2012/QH13 of 18 June 2012 by the National Assembly on labor code.

IV. DESCRIPTION OF THE SUBPROJECT

34. The subproject is designed to strengthen co-ordination of agricultural industries in Lang Son, assist with strategic planning to overcome constraints of small product industry size and develop competitive export produce value chains. The expected outcome is improved horticultural sector economic performance through a coordinated industry led business and market focused strategy for sector growth and development that features market driven product value chains aimed at added value “export” markets, prioritises quality assurance, achieves strong business relationships between value chain actors, and where income for all actors, including farmers, is increased.

35. The subproject will proposed investment will address the need for coordinating the small, fragmented and disjointed structure of the existing horticulture sector and the associated market failure, primarily through support to the functioning of the Horticultural Sector Industry Organization (which has the working title HortLangSon). There will be three outputs, Horticultural Industry Organization Development; Star Anise Value Chain Development, Safe Vegetable Value Chain Development and support to other product value chains. The outputs and their component activities are as follows:

A. Outputs

1. Horticultural Industry Organization Development

36. This output will support development of a horticultural sector industry body mandated for coordinated strategic sector planning and oversight, enhanced quality control standards, trade relationships and compliance, and representing the product members. Activities will be:

- (i) Establishment and operational support to (HortLangSon)
- (ii) Appointment of a Service Provide for HortLangSon
- (iii) Preparation of a horticulture sector strategic and market plan
- (iv) Establishment of a contestable funding mechanism
- (v) Provision of trade, markets and quality information and support for HortLangSon members
- (vi) Establishment of quality assurance systems
- (vii) Formation and operational support to product groups
- (viii) Sector outreach and education
- (ix) Design and implementation of a system to monitor and assess sector performance

The industry level support will operate at two levels. One at the sector level involving marketing, quality assurance systems, and logistics. Secondly support will be provide for post-harvest value chain infrastructure that may include cross commodity facilities such as logistics and distribution based on the finding of market and sector assessments conducted during implementation

At the producer level of the value chain the project will support first step value additions this may include the construction of small scale production and processing facilities for drying, storing and aggregation of output. Within the production systems member of producer groups with market linkages can access resources to finance greenhouses and shade houses, tanks and pipe systems for drip /spray irrigation, pulley systems for conveyance of produce growing on slopes to collection points, and feeder roads (of maximum 1.5m width) on primarily flat land connecting connection points to local roads. A combination of these will be included for each production

group supported for up to 80 producer groups depending on feasibility and market assessments and to fit within a budget ceiling of \$55,000 per group, which will also be used for organizational support and training.

2. Representative Long Value Chain - Star Anise Value Chain Development

37. The output will consist of the activities that will coordinate star anise export orientated product development through producer groups and value chain development.

- (i) Preparation of a plan for star anise value chain development
- (ii) Implement of the star anise value chain development plan
- (iii) Assistance to farmer group formation and operations
- (iv) Farmer groups assisted with production and marketing advice
- (v) Producer groups will receive support for infrastructure including feeder roads, harvesting equipment and first step storage grading and drying

3. Safe Vegetable Value Chain Development

38. Support to vegetable value chains will be based upon intensifying district vegetable production farming systems that are currently producing for local markets. The Project will connect the farmers with safe vegetable markets in Lang Son city and in Hanoi. Vegetable farmer groups will be formed, and will consist of farmers who are experienced winter season vegetable producers. There will be an investment package with an upper limit of \$40,000. Some flexibility is needed with investment activities in the package as the conditions in the various commune production sites will vary. Investments items in the package may include: (i) group formation and legal costs (ii) trickle feed irrigation equipment and water tank; (iii) shade (green) houses, (iv) feeder roads to improve access to production areas and land levelling - if required; (v) working capital for vegetable inputs and then used as revolving fund; and (vi) contracted technical and business advice. The irrigation equipment and shade houses must be shared on a group basis. The Project will not fund any investment in upgrading of the commune's irrigation canals. The final mix of investment items will be decided by the group and presented in their business plan. Activities will be:

- (i) Preparation of a plan for vegetable value chain development (based on satisfactory market assessment)
- (ii) Implementation of the vegetable value chain development plan
- (iii) Establishment of farmer groups and assist their operations, and technical market assistance
- (iv) Assistance to farmer groups with production and marketing advice

4. Support to Other Product Value Chains

39. To commence based on market assessments to be conducted in year 1 of implementation, support for other value chains will be provided depending on decisions of HortLangSon, with the input of sector product groups as to which value chains to assist. Investment inputs will be available for the value chain members including the farmer groups on the same basis as for star anise and vegetable value chain members. Thus the activities will be:

- (i) Preparation of plans for product value chain development (based on satisfactory market assessment)
- (ii) Implementation of product value chain development plans
- (iii) Establishment of farmer groups and assistance with their operations, including technical market assistance
- (iv) Assistance to farmer groups with production and marketing advice

B. Location

40. Planning and organizational support activities will be directed province wide, with representative subproject value chains being developed in Van Quan district, including the communes of Yen Phuc, Binh Phuc and Tu Xuyen.

Figure 1 – General Map of the Subproject and the vicinity



C. Budget

Detailed Costs

| | Base Cost (US\$ '000) | | | | | Total |
|---|-----------------------|----------------|----------------|----------------|----------------|-----------------|
| | 2018 | 2019 | 2020 | 2021 | 2022 | |
| I. Investment Costs | | | | | | |
| A. HORTLANGSON_Marketing Association Horticultural Values Cf | | | | | | |
| 1. 3.1.2: Business and Support Service Provider | 480.0 | 720.0 | 720.0 | 480.0 | - | 2,400.0 |
| 2. Establishment OF HortLangSon | | | | | | |
| a. Activity 3.1.1: Organisation Development | | | | | | |
| Subtotal | 72.5 | 180.0 | 105.0 | 105.0 | 105.0 | 567.5 |
| b. Activity 3.1.3 Contracted Sector and Thematic Studies | | | | | | |
| Subtotal | 18.0 | 54.0 | 54.0 | 36.0 | 36.0 | 198.0 |
| Subtotal | 90.5 | 234.0 | 159.0 | 141.0 | 141.0 | 765.5 |
| 3. HortLang Son Industry Membership | | | | | | |
| Commodity Association Support | 40.0 | 120.0 | 40.0 | - | - | 200.0 |
| 4. HortLangSon Core Services | | | | | | |
| Trade Access and market definiton services | - | 90.0 | 135.0 | 45.0 | 45.0 | 315.0 |
| Quality Assurance Systems | 180.0 | 180.0 | 180.0 | 180.0 | 180.0 | 900.0 |
| Advocacy, Outreach and Training | - | 180.0 | 180.0 | 180.0 | 180.0 | 720.0 |
| Subtotal | 180.0 | 450.0 | 495.0 | 405.0 | 405.0 | 1,935.0 |
| 5. Value Chain Financial Support | | | | | | |
| Business grants | 340.0 | 340.0 | 340.0 | 340.0 | 340.0 | 1,700.0 |
| Innovation Grants | 180.0 | 180.0 | 180.0 | 180.0 | 180.0 | 900.0 |
| Subtotal | 520.0 | 520.0 | 520.0 | 520.0 | 520.0 | 2,600.0 |
| Subtotal | 1,310.5 | 2,044.0 | 1,934.0 | 1,546.0 | 1,066.0 | 7,900.5 |
| B. Representative Sub project Value Chain Investment Support | | | | | | |
| 1. Producer Group Investment | | | | | | |
| Star Anise - Producer Group Infrastructure Investment /c | 275.0 | 550.0 | 1,100.0 | - | - | 1,925.0 |
| Safe Vegetable Group Infrastructure | 200.0 | 500.0 | 1,500.0 | - | - | 2,200.0 |
| Subtotal | 475.0 | 1,050.0 | 2,600.0 | - | - | 4,125.0 |
| C. Additional Sub project Value Chain Investment Support | | | | | | |
| 1. ADB COL Funded | | | | | | |
| a. Producer Group Investment | | | | | | |
| Producer Group Infrastructure Investment /d | - | 329.1 | 548.5 | 658.2 | 658.2 | 2,194.0 |
| 2. Counter Part Contribution | | | | | | |
| Process costs and Support | - | 312.5 | 312.5 | 312.5 | 312.5 | 1,250.0 |
| Subtotal | - | 641.6 | 861.0 | 970.7 | 970.7 | 3,444.0 |
| Total Investment Costs | 1,785.5 | 3,735.6 | 5,395.0 | 2,516.7 | 2,036.7 | 15,469.5 |

V. DESCRIPTION OF THE ENVIRONMENT

A. PHYSICAL ENVIRONMENT

1. Topography, Geology, and Soils

41. Lang Son has a complex topography including a high mountain area; a low mountain area; a limestone mountain area; and cultivated valleys. In the Northeast of the province are continuous mountain ranges along the border with China. The Southwest side is the limestone mountain area with steep slopes and a large cave system. In the Southeast side is a hilly area mainly in Loc Binh and Dinh Lap districts.

42. The subproject is located in Van Quan district, which borders with Van Lang and Binh Gia districts to the North; Bac Son district to the West; Lang Son city and Cao Loc district to the East and the borders with Chi Lang district to the South. The average elevation of Van Quan district is about 400m above sea level with discontinuous topography of mountains and small valleys lie in Southwest - Northeast direction.

43. In general, soil in Lang Son includes those that have originated from metamorphic parent rock such as limestone, clay schist and conglomerate.¹ Soils in the project area are predominantly ferralitic soil.

2. Weather, natural disaster and climate change

44. The climate is classified as warm temperate, with wet winters and hot summers². Rainfall is influenced mainly by the southern monsoon, when south to south easterly winds carrying moist air result in higher rainfall, peaking in July to August. A north monsoon also occurs between October and April, bringing cloud, light rain and cooler air. Total rainfall in Van Quan district is 1,500mm. The occurrence of very dry, or wet years is well known and pre-dates the emergence of the concept of climate change. Climate change may result in greater frequency and intensity of droughts, or of high precipitation. Similarly, the catchment is vulnerable to typhoons, which can be catastrophic (local residents report that severe typhoons took place in 2003) and the occurrence of typhoons may be influenced by climate change.

45. Temperature averages 21.2°C over the year, with lowest temperatures of around 13.8 °C occurring in January, and reaching 27.1 °C in July.

3. Hydrology

46. Lang Son has a dense river and stream network, with a density ratio varying from 0.6 km - 1.2 km of waterway per square kilometer. The district has two rivers namely Ky Cung and Mo Phia with several tributaries and streams.

47. Ky Cung River is the biggest river in Lang Son with total length of 243 km, total catchment area of 6,660 km². Annual average flow capacity is 2,300 m³/s, flow module of 17.5 liter/s/km². It belongs to the Tay Giang River system originating from mountainous area of Bac Xa (Dinh Lap), flowing from Southeast to the West. The Ky Cung River has total of 77 tributaries

¹ Status of Environment report (SOE) of Lang Son province 2015 prepared by Lang Son DONRE

² Kottek, M., J. Grieser, C. Beck, B. Rudolf, and F. Rubel, 2006: World Map of the Köppen-Geiger climate classification updated. *Meteorol. Z.*, 15, 259-263

with an average river density of 0.88 km/km², including 26 primary river branches, 34 secondary river branches; 16 tertiary river branches and 1 quaternary river branch.³

4. Surface and ground water

Surface water resources

48. Lang Son is a mountainous province with a dense river, stream, lake and pond network. There are 271 reservoirs and 639 rolling weirs. Lang Son DONRE has implemented a monitoring program for surface water quality with 31 monitoring locations in all 11 district towns / cities of Lang Son over the 2011-2015 period. Water in each location has been sampled 2 times per year in dry and rainy season. The main monitoring parameters are pH; Dissolved Oxygen (DO); NH₄⁺; NO₂⁻; COD; BOD₅; Fe; Zn; Oil and grease and coliform bacteria. Two of the monitoring stations are in Van Quan district. The first one is in Ban Quyen Reservoir, about 7km to the Northeast of the subproject area and the second is the pumping site for irrigation water in Van Quan town, about 5km to the Northeast of the subproject area. Results show that water quality of both stations are good, within all the monitoring parameters are under the allowed level of QCVN 08MT:2015/BTNMT - National Technical Regulation on Surface Water quality.⁴

Groundwater resources

49. Groundwater in the region occurs in fissures in limestone rock, and in sandstone and clay stone deposits. Owing to the complexity and fragmented nature of the aquifers, groundwater yields are usually small and better suited to domestic use. Sources within Lang Son are monitored by DONRE which has established 32 monitoring stations around the province. Results show that water quality of all stations in Van Quan district are good, within all the monitoring parameters are under the allowed level of QCVN 09MT:2015/BTNMT - National Technical Regulation on Ground Water quality.⁵

5. Air quality and noise

50. In comparison to QCVN standards⁶, all the parameters of air quality and noise in Lang Son province and in particular Van Quan district are within the allowed levels, according to monitoring data obtained between 2011 and mid 2015. The monitoring locations in Van Quan district are residential area near Van Quan District People Committee and Diem He market area in Van Quan town. Both locations are about 5 km to the Northeast of the subproject area.

B. BIOLOGICAL ENVIRONMENT

1. Forestry

51. The total forest area of Lang Son in 2010 was 401,616ha, or 48.27% of the total area of the province. Fifty-five percent of the forested area, 223,269ha, was natural forest, the balance being plantation forest (178,347ha), following a trend of increasing forest cover, primarily due to the establishment of plantation forest. The forest cover status of the province is shown in Table 5 below.

³ Status of Environment report (SOE) of Lang Son province 2015

⁴ Status of Environment report (SOE) of Lang Son province 2015

⁵ Status of Environment report (SOE) of Lang Son province 2015

⁶ QCVN 05: 2013/BTNMT National Technical Regulation on Ambient Air Quality and QCVN 26:2010/BTNMT National Technical Regulation on Noise

Table 1 – Forest cover status of Lang Son province in 1998 - 2013 period (ha)⁷

| Year | Forest area (ha) | Natural forest (ha) | Plantation forest (ha) |
|------|------------------|---------------------|------------------------|
| 1998 | 248,913 | 184,077 | 64,836 |
| 1999 | 243,331 | 184,017 | 59,314 |
| 2000 | 259,160 | 185,000 | 74,160 |
| 2001 | 264,000 | 185,000 | 79,000 |
| 2002 | 288,587 | 185,457 | 103,130 |
| 2003 | 322,820 | 185,457 | 137,363 |
| 2004 | 336,149 | 185,457 | 150,674 |
| 2005 | 346,799 | 185,457 | 161,324 |
| 2006 | 357,660 | 214,716 | 142,944 |
| 2007 | 368,676 | 220,249 | 148,427 |
| 2008 | 383,787 | 217,699 | 166,088 |
| 2009 | 400,026 | 218,052 | 181,974 |
| 2010 | 408,698 | 219,069 | 189,629 |
| 2011 | 414,524 | 222,863 | 191,688 |
| 2012 | 435,117 | 252,521 | 182,596 |
| 2013 | 446,658 | 257,646 | 189,012 |

Source: Statistical Yearbook 2000-2014 period

52. Despite the high level of forest coverage, there are no fauna or flora species listed in the Vietnam Red Book that have been found in the subproject area in the recent years⁸. The nearest protected area is the Huu Lien Nature Reserve in Huu Lung district, about 15 km to the South of the subproject area.

2. Agriculture and land use

53. Agricultural land occupies a smaller proportion of the land area, largely due to the steep terrain. Coverage is 2.4% in Hoa Tham, 4.3% in Quy Hoa communes and 1.6% in Vinh Yen commune (see table 6), although agricultural production is still the dominant income source in these communes. Main crops are paddy, maize, cassava, and soybean. Livestock is considered as one of main income sources of the target communes. Information related to land use in the subproject area could be found in Table 6 below.

Table 2 - Land use in the subproject area 2015

| Type of land | Hoa Tham commune | | Quy Hoa commune | | Vinh Yen commune | |
|---------------|------------------|--------|-----------------|--------|------------------|--------|
| | Area (Ha) | % | Area (Ha) | % | Area (Ha) | % |
| Total of land | 11,300 | 100.0% | 7990.7 | 100.0% | 5,014.80 | 100.0% |

⁷ Figures provided by Lang Son DONRE

⁸ Information provided by staff of Lang Son Environmental Protection Agency and via public consultation meeting in Hoa Tham, Quy Hoa and Vinh Yen communes.

| | | | | | | |
|-------------------|-------|-------|---------|-------|---------|-------|
| Agricultural land | 266 | 2.4% | 345.1 | 4.3% | 77.8 | 1.6% |
| Forestry land | 7,800 | 69.0% | 5,887.7 | 73.7% | 2,601.5 | 51.9% |

C. SOCIO-ECONOMIC CONDITIONS AND INFRASTRUCTURE

1. Population and Ethnicity

54. The total population in the three target communes is 6,517 people in 1,476 households, in 23 villages. Ethnic minorities account for 99.25% total population in the project area, primarily the Tay ethnic group (28.6%), Nung (55.3%) and Dao (15.3%), see table 7.

55. All three communes are primarily poor under according to the government classification P135. Table 8 presents the poverty incidence in the target communes.

Table 3 – Composition of population in target commune, 2015

| | Hoa Tham commune | Quy Hoa commune | Vinh Yen commune | Total |
|---------------------------------|------------------|-----------------|------------------|-------|
| Number of Villages | 13 | 5 | 5 | 23 |
| Population (person) | 3514 | 1994 | 1009 | 6517 |
| <i>By sex</i> | | | | |
| Women | 1748 | 656 | 508 | 2912 |
| Men | 1766 | 1338 | 501 | 3605 |
| Number of Households | 821 | 427 | 228 | 1476 |
| <i>By ethnic group</i> | | | | |
| Kinh | 10 | 1 | 0 | 11 |
| Tay | 422 | 0 | 1 | 423 |
| Nung | 383 | 426 | 7 | 816 |
| Dao | 6 | 0 | 220 | 226 |
| other | 0 | 0 | 0 | 0 |
| Female headed households | 68 | 13 | 19 | 100 |
| Number of poor household | 469 | 290 | 155 | 914 |

Source: Data collection from Hoa Tham, Quy Hoa and Vinh Yen communes, 2016

Table 4 – Poverty incidence in target commune, 2016

| | Poverty rate (%) | | |
|-------------------|------------------|-------------|-----------------|
| | As whole | Kinh people | Ethnic minority |
| Binh Gia district | 46.4 | 1 | 99 |
| Hoa Tham commune | 57.12 | 0 | 100 |
| Quy Hoa commune | 67.9 | 0 | 100 |
| Vinh Yen commune | 68.0 | 0 | 100 |

Source: Data collection from target communes, 201

2. Economic development and income

56. Agriculture remains dominant economic activity in the district. According to the district annual report 2015, the economic growth rate of district was 10.26%. Growth rates for agriculture and services were 7.83% and 14.14% respectively. The shares of the agricultural sector in the district GRDP is 43.86%, almost equivalent to the service sector (43.29%). The industry sector contributes 13.85%. Income per capita in 2015 reached VND 17.6 million.

57. The contribution of agricultural production to gross output in the district is shown in Table 9. The main agricultural crops in the district are rice, maize, cassava, soybean, groundnut and cash crops such as tobacco, sugarcane and star anise. Livestock rearing and poultry raising are important.

Table 5 – Gross output in project district, 2014-2015 (VND million)

| Indicators | 2014 | 2015 |
|--------------------|---------|---------|
| Gross output value | 429,297 | 544,153 |
| From Industry | 114,428 | 129,971 |
| From Agriculture | 153,604 | 165,186 |
| From Services | 224,256 | 248,996 |

Source: Annual report 2015 of Binh Gia district People's Committee

3. Social services

58. According to the annual reports of the three communes, each commune has a healthcare station with one doctor and four nurses and midwives, one kindergarten, one primary school and one secondary school. The proportion of households with access to mains electricity varies from 57% in Quy Hoa commune, to 76% in Hoa Tham commune and 95.46% in Vinh Yen commune.

4. Education levels

59. Survey results undertaken by the PPTA team showed that overall, 4% respondents had never been to school. Amongst ethnic minority groups, a higher proportion of Dao people had never been to school (11.54%) compared to those of other ethnic minority groups. The proportion of poor people who had never been to school was 8.75%. A greater proportion of women (4.7%) than men (3.7%) had never been to school. Ninety-two percent of respondents had attained at least a primary level of education. Education levels were highest amongst the Tay people, the majority of whom had completed high school education, and several had gone on to vocational education. The higher the level attained, the more likely the household is to be non-poor. The highest level of education attained by members of female-headed households was primary school (100%).

5. Unexploded Ordnance

60. In farthest region of Northern Viet Nam, ordnance used by combatants during conflict that took place in the region between 1962 and 1976, and also from border conflict with China, which went on into the 1980s. Unexploded ordnance (UXO) includes bombs dropped from aircraft, booby traps and land mines, all of which are indiscriminate and all of which result in concealment of the ordnance, defying the assessment of risks to a reliable level. Information on

the extent and location of UXO is sparse at any level. The Viet Nam military authorities estimate that the volume of UXO left in the country following the cessation of hostilities with the United States was between 350,000 to 700,000 tons, which does not take into account ordnance that remains from earlier conflict with French colonial forces and later conflicts with China in border regions. In some locations, such as the sites of former combat bases or military supply routes, the scale of the risk is high. For most of the rest of the country, the level of risk for any one site is largely unknown.

61. UXO devices are encountered when ploughing fields, searching for scrap metal and even by children playing. In recent years, UXO related accidents have occurred in areas near the Chinese border. Information on the level of risk in any subproject area includes that available from local officials and residents, and records of incidents in the area, which are maintained by the Government agency, the Technology Centre for Bomb and Mine Disposal, under the Ministry of Defense. Risk assessment may also be based on the existing use of land to be used under the subproject, and the level of disturbance necessary in implementing the subproject: if land is already subject to foot and vehicle traffic, and disturbance such as plowing and excavations, is likely to be relatively safe. However UXO risks are always present to some degree when excavation is to take place.

D. Archaeological, Historical and Cultural Treasures

62. There is no archaeological significance in Van Quan district. Some sites have been discovered in the neighbor districts of Van Lang and Binh Gia districts. The subproject will only concrete some small road and the potential of artifacts is insignificant.

E. Key Environmental Features

63. **Physical environmental features:** The subproject area is located in the central area of Lang Son in the star anise plantation area of Yen Phuc, Binh Phuc communes and vegetable cultivation area of Tu Xuyen commune, Van Quan district.

64. **Social environmental features:** There is no residential area located along the proposed trails for upgrading.

VI. ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

65. This section discusses the potential environmental impacts of the subproject and identifies mitigation measures to minimize the impacts in all design, construction and operation phases of the subproject.

66. Subproject activities focus on sector planning and organization, and funds will be provided on a contestable basis for the development of infrastructure including drip irrigation systems and feeder roads.

A. Support to Sector Planning and Organization

67. Support to HortLangSon is to be broad, helping to overcome constraints of small product group size to develop competitive export value chains. This support will translate to improved performance in production, processing and marketing and thus there are potential secondary impacts which may be associated with increased production and processing. However, negative impacts will be avoided by the inclusion of guidelines for environmentally friendly development of production and processing. Any expansion of these activities or establishment of new facilities will be subject to EPL provisions.

68. Secondary impacts associated with increased production and processing are, those associated with (i) the use of inputs such as pesticides and fertilizers which may be necessary to improve yields and combat persistent pest problems, (ii) crop water requirements should these significantly increase demand for irrigation water and (iii) the need for facilities and inputs for processing including extraction, drying and packaging such as buildings drying areas and sheltered areas. The impacts of these, if any, would be assessed on a case by case basis. The scope of these impacts will be determined by the scale of operations and the nature of the support to the value chain groups. In terms of scale, support, whether for assistance with improved techniques, use of agrochemicals, construction of buildings or others, will be given to up to 20 star anise value chain groups and up to 30 vegetable production groups, each group being a cluster of farmers with a production area in the order of 1 to 2 hectares. The budget for support in each case will be in the order of \$10,000 to \$20,000. While production will increase, potentially harmful effects of the use of agrochemicals will be mitigated through advice and guidance given to the groups which will cover (i) avoidance of the use of chemicals where practicable, (ii) approach choice of inputs, which significantly will be restricted to the use of registered chemicals, (iii) correct, or optimized dosing and (iv) safety in handling, application and storage. Similarly, advice will be provided as required on issues related to irrigation and construction of storage and handling facilities, the impacts of which, in terms of impacts related to location, construction and operation, would be assessed on a case by case basis. While Vietnam has strict regulations on the registration of agrochemicals and requirements for clear instructions to be included with the sale of such products, the ease of access to Chinese manufactured agrochemicals over the border at Lang Son has resulted in use of unregistered agrochemicals.

B. Support for infrastructure

69. Infrastructure that may be supported by contestable funding include trickle feed irrigation equipment, installation of water tanks, shading and greenhouses, and feeder road improvements. A pre-requisite for funding of these is submission of a competent business development plan.

70. Water tanks, shade houses and greenhouses will entail only minor impacts. Not more than one of each will be built per production group. Impacts associated with the construction of these buildings include site clearance, effects on slope stability, sourcing of materials (ensuring that they come from licensed sources to avoid use of ad hoc quarries or timber extracted from natural forests) and arrangements for waste management. These will be mitigated by preparing environmental management requirements to be included in bid documents for construction contracts.

71. Feeder roads will be constructed from produce collection points to local roads, along primarily flat or undulating terrain and will be up to 1.5m in length. Potential impacts include issues associated with the sourcing of materials, effects on drainage flows, and construction impacts such as management of construction waste, noise and dust generation, temporary use of land for storage and parking of plant and impedance to traffic during construction. These measures can be mitigated by inclusion of an environmental management plan for each subproject guiding subproject planning, design and construction and detailing mitigation.

1. Feeder road improvement

72. Support to feeder road improvement is aimed at upgrading tracks to small, all weather roads usually by concreting. Support will be provided in response to requests from users, and each request shall be subject to an engineering review of feasibility and cost. Important factors will include the feasibility at each site to construct safe roads, in terms of gradient, width and visibility, particularly at the point where the roads join existing trafficked roads, as well as cost considerations. Improvements will generally consist of concreting of existing pathways, with some minor realignment where warranted, and provision of drains and culverts where necessary. The roads are intended to serve the movement of people between population groups, households and from home to fields, production facilities, for transport of commodities and small livestock. Forms of transportation on the routes are mainly bicycles, motorized two-wheelers, rickshaws, or horse-drawn carts. Roads are to be Category D: 2.0 m bed width and pavement of 1.5m width. During the PPTA, feasibility studies have been prepared for one subproject, entitled "Construction of Improved Agricultural and Rural Infrastructure for Value Chains in Van Quan district, Lang Son province". This includes 15.5km of such road improvements.

73. While narrow, with limited requirement for realignment or slope cutting, potential impacts may include (i) generation of spoil, which if cast onto the downslope side of the road can smother vegetation and encourage gully formation (ii) changes in drainage flows, which can also lead to gully formation and slope instability and (iii) construction impacts, including temporary impedance of traffic on the tracks, (iv) generation of waste, including cement bags, discarded formwork and human waste from workers on the site. Risks can be minimized by requiring a simple environmental management plan to be included with contracts for the road improvement work addressing these risks. Use of labour based techniques, engaging local labour will also minimize potential effects associated with groups of construction workers residing temporarily in the project area, including waste management.

2. Drip irrigation

74. Assistance will be given in the use of drip irrigation, aimed at high efficiency in the use of water. The assistance will be provided in response to requests from users, and the emphasis will

be on minimizing use of available water, either reducing the level of water use from existing schemes or ensuring that, in the case of new irrigation installations, only minimal levels of water are drawn to enable growing stock to benefit while reducing impacts on stream flow. Environmental risks such as those associated with competition for water from other users and waterlogging of soils are minimal because of the limited use of water to provide the drip supply. Tanks for drip irrigation will have significant capacities in order to be able to maintain supplies through rainless periods. Care is therefore required in the siting and installation of tanks, ensuring that they are on level platforms with secure foundations.

3. Other infrastructure

75. Other items of infrastructure may include pulley systems, and pack houses. Pulley systems have a minimal footprint and consequently limited impacts on the environment such as clearance of vegetation or effects on slope stability during the operational phase. Safety of operation can be ensured by (i) ensuring a high standard of construction including foundations and cable strength and durability, (ii) making the grant of funds conditional on users providing a commitment to control operation and carry out maintenance of the systems and (iii) providing instruction to user groups in safe operation and maintenance,

76. Steps need to be taken during construction to ensure that clearance for the construction of foundations for support structures, and access to construction sites, is kept to a minimum and areas are revegetated if necessary.

C. Management of contestable funds

77. Potentially, a wide range of initiatives may be supported with the use of contestable funds, the precise scope of which will not be known until applications are received. Potential impacts are those that arise from the activities that will be funded. These activities may include the installation of equipment such as pulleys for transporting produce grown on steep slopes, improved "feeder" paths (up to 1.5m width connecting pulley stations to district roads along primarily flat land), small scale drip irrigation, crop drying facilities or shade houses. The scope of investment will be within the grant envelope, which is \$55,000 for star anise value chain groups and \$40,000 for vegetable value chain groups of which between \$20,000 to \$30,000 would be available for construction, the remainder being used to meet organizational and training costs. Impacts will generally be minor (small quantities of spoil generation; impacts associated with sourcing of materials; site clearance) and an environmental statement will be prepared prior to approval of funding demonstrating that there will either be no significant impacts or that these will be mitigated. Impacts on biodiversity will be avoided by the exclusion of subprojects that involve or may involve: (i) clearance of previously undisturbed forest and (ii) possible encouraging of illegal logging or other illegal activity. In addition applications should include a statement indicating that environmental impacts have been considered, and information on how these will be avoided or mitigated.

VII. INFORMATION DISCLOSURE, CONSULTATION AND PARTICIPATION

78. Stakeholders are people, groups, or institutions that may be affected by, can significantly influence, or are important to the achievement of the stated purpose of a proposed intervention. The stakeholders consulted for the implementation of the subproject included representatives from Lang Son DPI; Van Quan DPC; DONRE and DARD offices of Van Quan district; Tu Xuyen, Yen Phuc and Binh Phuc CPCs; and local people who cultivate star anise in Yen Phuc, Binh

Phuc communes and vegetable in Tu Xuyen commune. Consultations took place in 12 December 2017.

79. The information disseminated during public consultation included: (i) background of the Project and subproject; (ii) basic information related to ADB and the Government requirement for environmental protection and management; (iii) potential impacts during subproject implementation and mitigation measures; and (iv) the grievance redress mechanism.

80. In general, all the relevant stakeholders are support the implementation of the subproject. As the subproject implementation has no significant impact on environment, the main concern is related to product processing and develop the main agriculture product of for Van Quan district.

VIII. GRIEVANCE REDRESS MECHANISM

A. Purpose of the mechanism

81. During the preparation of the subproject, information is disseminated to local people on the scope of the subproject, and environmental and social impacts. Negative impacts of an environmental or social nature, or resettlement impacts, may occur during the construction and operational phases. Any comments/ suggestions of local people will be solved quickly, transparently in accordance with protected the law, particularly for people affected by the subproject. This grievance redress mechanism is classified by level and responsibilities of involved parties.

B. Grievance redress process

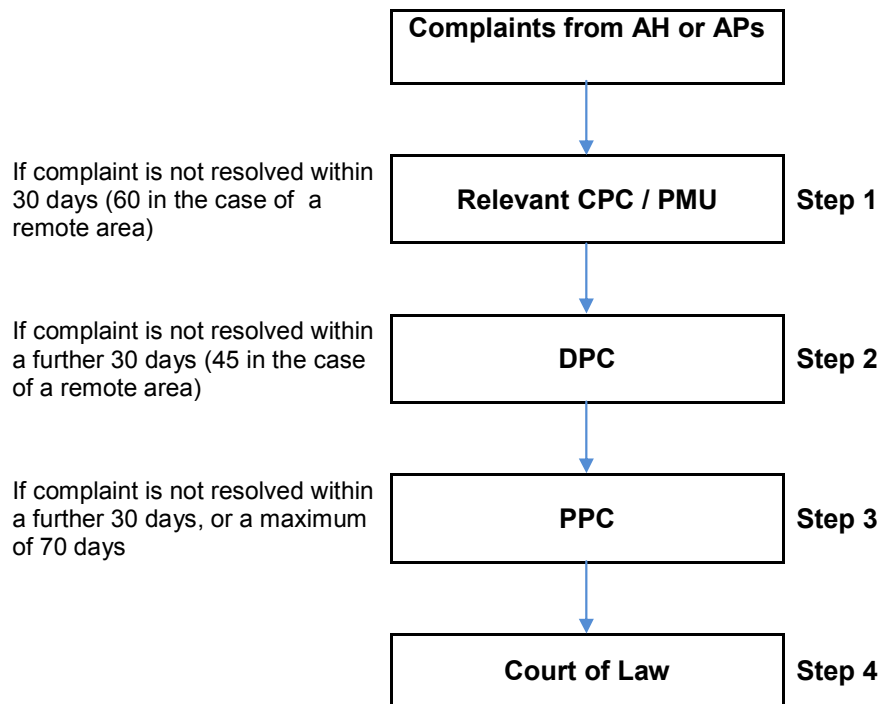
82. The GRM will be disclosed with the IEE and other safeguard documents to ensure that potentially affected persons are aware of it and their entitlement to raise complaints. The subproject is designed to proceed on the basis of close co-operation with participants and beneficiaries, ensuring that interventions are acceptable to users. However, in the event grievances may arise, a focal point will be appointed from HortLangSon or other appropriate stakeholder agency. There are three steps to address complaints received from stakeholders:

Stage 1: If a household or individual has any complaint he/she can submit a complaint in written or verbal form to the representative of the CPC-community monitoring board (usually the Deputy Chairman of the commune/town). The CPC will work with PMU to solve complaints and a representative PMU will respond in written form to the complainant. The CPC, as a whole body will meet personally with the aggrieved affected household and will have 30 days and a maximum of 60 days after the lodging of the complaint to resolve the complaint, however, depending upon whether it is a complicated case or case comes from a remote area. The CPC secretariat is responsible for documenting and keeping file of all complaints that it handles.

Stage 2: If after 30 days or 45 days (in remote areas) the aggrieved affected household does not hear from the CPC, or if the affected household is not satisfied with the decision taken on his/her complaint, the affected household may bring the case, either in writing, to any member of the DPC. The DPC in turn will have 30 days or a maximum of 70 days after the lodging of the complaint to resolve the case, however, depending on whether the case is complicated or in remote area. The DPC is responsible for documenting and keeping file of all complaints that it handles and will inform the District Resettlement Committee (DRC) of any decision made and the DRC is responsible for supporting DPC to resolve AH's complaint. The DPC must ensure that the complainant is notified of the decision made

Stage 3: If after 30 days or 45 days (in remote area) the aggrieved affected household does not hear from the DPC, or if the affected household is not satisfied with the decision made on his/her complaint, the affected household may bring the case, either in writing, to any member of the PPC. The PPC has 30 days or a maximum of 70 days to resolve the complaint to the satisfaction of all concerned. However, depending if the case is complicated or from a remote area The PPC is responsible for maintaining records of complaints received, action taken and outcomes.

Stage 4: If efforts to resolve disputes using the grievance procedures remain unresolved or unsatisfactory, after a period of thirty days, complainants have the right to bring the case to a Court of law for adjudication. The decision of the Court is binding on all parties.



IX. ENVIRONMENTAL MANAGEMENT PLAN IMPLEMENTATION ARRANGEMENTS

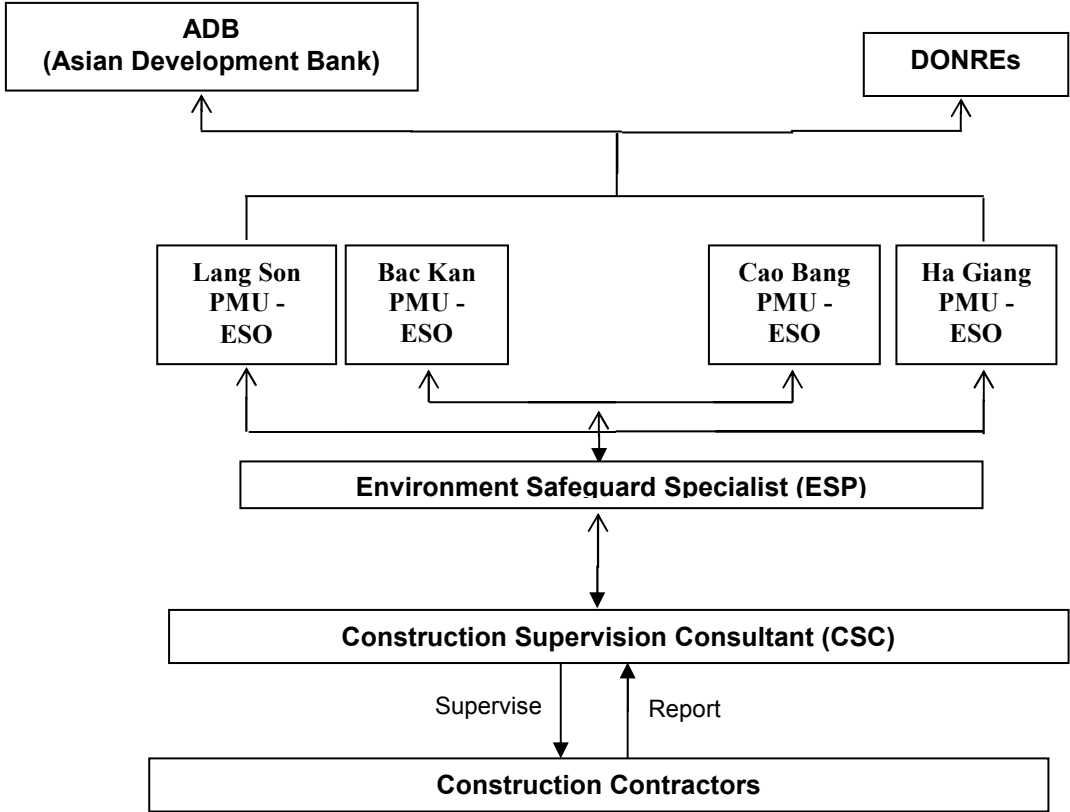
Table 6 – Responsibilities for EMP implementation

| Agency | Responsibilities |
|--|---|
| Lang Son Project Management Unit under DPI (PMU) | <ul style="list-style-type: none"> - Ensure that EMP provisions are strictly implemented during various subproject phases (design/pre-construction, construction and operation) to mitigate environmental impacts to acceptable levels. - Ensure that Subproject implementation complies with ADB's environmental policy and safeguards policy statement (SPS 2009) principles and requirements - With the support from ESP, updated EMP to suitable with any changing in subproject scope or any unanticipated impact rise. - Obtain necessary environmental approval(s) from DONRE prior to award of civil works contracts - Establish an environmental grievance redress mechanism, as described in the IEE, to receive and facilitate resolution of affected peoples' concerns, complaints, and grievances about the Subproject's environmental performance. |
| Environmental Safeguards Staff (ESO) | <ul style="list-style-type: none"> - PMU staff support for EMP implementation - Work closely with ESP to daily supervise of EMP implementation and preparation of EMP monitoring report |
| Environment Safeguard Specialist (ESP) | <ul style="list-style-type: none"> - Update EMP to make it suitable with the current condition or whenever subproject scope change or any unanticipated impact rise. - Ensure that the environmental protection and mitigation measures identified in the EMP for the design stage has been incorporated in the detail design; - Assist PMU to ensure that all environmental requirements and mitigation measures from the IEE and EMP are incorporated in the bidding documents and contracts. - Undertake environmental management capacity building activities for PMU as described in the IEE and EMP. - Ensure proper implementation of EMP provisions. Through these specialists, the ESP shall: (i) ensure proper and timely implementation of ESP's tasks specified in the EMP, (ii) conduct environmental training as specified in the IEE/EMP for PMU, (iii) conduct workers' orientation on EMP provisions. |
| Construction Supervision Consultant (CSC) | <ul style="list-style-type: none"> - Provide the ESP relevant information as well as full access to the subproject site and all project-related facilities (such as construction yards, workers' camps, borrow and quarry areas etc.) to monitor contractors' implementation of the subproject EMP, assess environmental impacts resulting from on-going site works and operation related facilities, undertake environmental effects monitoring and orientation of workers on EMP implementation. - Undertake day-to-day subproject supervision to ensure that contractors properly implement the EMP. - Document and report to PMU on occupational accidents, diseases and incidents - As part of regular progress report submission to PMU, prepare reports on the status of the contractors' implementation of the EMP and health and safety issues. |
| Contractors | <ul style="list-style-type: none"> - Provide sufficient funding and human resources for proper and timely implementation of required mitigation measures in the EMP - Implement additional environmental mitigation measures, as necessary |
| Lang Son Department of Transportation (DOT) | <ul style="list-style-type: none"> - Responsible for operation and maintenance of Subproject infrastructures - Implement EMP monitoring during operation |
| Lang Son Department of Natural Resources and | Review and approve environmental assessment reports required by the Government. |

| | |
|---------------------|---|
| Environment (DONRE) | - Undertake monitoring of the subproject's environmental performance based on their mandate |
|---------------------|---|

The organization structure of Environmental Management Plan is showed in the chart below:

Figure 2 – EMP Implementation organization chart



A. ENVIRONMENTAL MITIGATION

83. The anticipated environmental impacts and mitigation measures discussed in the previous section is presented in Table 9. The table also shows responsibilities and timeframe/schedule for implementation of mitigation measures and monitoring.

Table 7 - Detail Environmental Mitigation Plan

| Potential Impact | Mitigation Measure | Responsibility | Cost (Price unit) |
|---|---|----------------|--------------------------------------|
| <i>Pre-construction Phase: Measures relating to planning and design to take place at the PMU in Lang Son</i> | | | |
| Management of Contestable funds | Screening of applications to remove those that entail environmental damage such as disturbance of intact forests or other threats to biodiversity. Inclusion of condition on grants as appropriate. | PMU | Included in PMU staff cost |
| Feeder roads: Changes in drainage flows | Examination of hydrology on the alignment and provision for side drainage and culverts as appropriate. | Designers | Included in design cost |
| Siting of tanks for drip irrigation | Ensuring tanks are on suitable firm ground and have adequate foundations | | |
| Potential hazards associated with pulley systems | Ensuring adequate specifications for foundations, cable strength and durability and other critical components are included. Making support to pulley systems conditional on user commitment to safe operation and regular maintenance | Designers | Included in design cost |
| Assessment of activities to be funded under contestable funds | Screening to exclude any activities that involve clearance of natural forests or that may in any way encourage illegal logging or other illegal activity. Reviewing for potential impacts and making support conditional on an environmental statement and commitment to carrying out specified mitigation. | PMU | Included in PMU staff cost |
| <i>Construction Phase: Measures to be implemented at subproject sites</i> | | | |
| Generation of spoil when constructing feeder roads | Utilise excavated spoil for filling purpose, as much as possible, to minimize the volume of excess spoil Temporary spoil disposal site shall be located at least 50 m from water bodies, like Ban Gieng and Mo streams, Mopedia river, Ban Quyen reservoir Unused excavated soil need to be transported to and disposed at the agreed dumping site with Tu Xuyen, Binh Phuc and Yen Phuc CPCs | Contractor | Includes in contract with contractor |
| Pollution risks associated with construction | Store chemicals (oil, lubricants, etc.) for construction in a secure place with impervious floor and roof cover to avoid rainwater and flooding. No temporary material stockpile near Ban Gieng stream in | Contractor | Includes in contract with contractor |

| Potential Impact | Mitigation Measure | Responsibility | Cost (Price unit) |
|--|---|-------------------|---|
| | <p>Tu Xuyen commune or Mo stream in Binh Phuc commune (50 m)</p> <p>Ensure vehicles and equipment are maintained in good condition</p> <p>Regularly collecting waste land to avoid sedimentation;</p> <p>Wash construction vehicles and equipment near Ban Gieng and Mo streams shall not allow avoiding pollution by lubricating oil from washing.</p> <p>Install sediment ditches at the construction site near the stream. Collect sediment from the ditches regularly and transfer to the temporary dumping sites as agreed with Tu Xuyen, Binh Phuc and Yen Phuc CPCs.</p> | | |
| <p>Temporary impedance of traffic on the tracks</p> | <p>Inform construction schedule and scope to Tu Xuyen, Yen Phuc and Binh Phuc CPCs and local people in the subproject area through informal public consultation or any local people meetings and notice board in the CPCs;</p> <p>Arrange construction material neatly along the tracks and complete construction section by section to reduce the impact period;</p> <p>Avoid material transportation in the rush hours</p> | <p>Contractor</p> | <p>Includes in contract with contractor</p> |
| <p>Generation of waste, including cement bags, discarded formwork and human waste from workers on the site</p> | <p>Waste water and wasted lubricating oil should be controlled in accordance with relevant regulations on wastewater and hazardous wastes;</p> <p>Provide rubbish bins for each construction sites request workers to collect waste and not to leave litter into any water resources</p> | <p>Contractor</p> | <p>Includes in contract with contractor</p> |
| <p>Clearance of vegetation on steep sites when constructing support towers for pulley systems</p> | <p>Minimizing clearance of vegetation at construction sites and access pathways</p> | <p>Contractor</p> | <p>Includes in contract with contractor</p> |

B. Environmental monitoring

84. Environmental compliance monitoring is carried out to test the compliance with operating procedures, technical standards and/or contractor specifications in the EMP

Table 8 - Environmental Effects Monitoring Plan

| Mitigation Measure | Parameters | Location | Methods | Frequency | Responsibility | Cost |
|----------------------------------|---|---|---|--|----------------|--|
| Construction Stage | | | | | | |
| Minimization of noise generation | Noise level | At 6 track-construction sites in Binh Phuc and Yen Phuc | Observation and community consultation | Weekly, monthly or when community's feedback is raised | CSC | Included in the Contract signed with PMU |
| | | | | Monthly during construction duration or if there is feedback about high noise levels from the community | ESO of PMU | PMU Operation budget |
| Minimization of dust generation | Dust concentration | At 6 track-construction sites in Binh Phuc and Yen Phuc | Observation and community consultation | Weekly, monthly or when community's feedback is raised | CSC | Included in the Contract signed with PMU |
| | | | | Monthly during construction duration or if there is feedback about high dust concentration levels from the community | ESO of PMU | PMU Operation budget |
| Control of surface water quality | Sedimentation, rubbish, lubricating oil and solid waste | Water bodies near the track-construction sites | Visual observation; Public consultation | Weekly and after the heavy rain events | CSC | Included in the Contract signed with PMU |
| | | | | Once during the construction phase or in case of complaints of residents | ESO of PMU | PMU Operation budget |

Table 9 - Environmental Compliance Monitoring Plan

| Mitigation Measure | Parameters | Location | Methods | Frequency | Responsibility | Cost |
|---|--|--|--|---|-----------------|--|
| Construction Stage | | | | | | |
| Storage of materials, spoil dumping sites; waste disposal impact on water quality | Condition of material stockpile, spoil dumping site, waste disposal area | Overall construction area | Observation and community consultation | Monthly or after heavy rainfall, flood | CSC | Included in the Contract signed with PMU |
| Impact on the traffic | Use of equipment; signal system; material arrangement at site; obey for traffic law of transportation vehicles | In construction site and on material transportation road | Observation and community consultation | Weekly/ Monthly or when community's feedback is raised | CSC/ ESO of PMU | Included in the contract signed with PMU |
| Control dust, noise and vibration generated from construction activities | Ensure to minimize dust, noise and vibration generated from construction activities | Overall construction area. | Observation and community consultation | Monthly | CSC | Included in the Contract signed with PMU |

C. REPORTING

Table 10 - Monitoring and reporting system

| Project Phase | Type of Report | Frequency | Responsibility | Submitted To Whom |
|---------------------|--|-----------|----------------|-------------------|
| Construction | EMP Compliance Report indicating compliance with all subprojects' EMPs and monitoring results | Monthly | CSC | PMU |

| Project Phase | Type of Report | Frequency | Responsibility | Submitted To Whom |
|---------------|--|---------------|----------------|-------------------|
| | EMP Environmental Report indicating overall subproject environmental performance and EMP compliance | Semi-annually | PMU | ADB |

X. CONCLUSIONS AND RECOMMENDATIONS

85. The subproject of "Support to Agriculture Value Chains in Lang Son Province" in Tu Xuyen, Binh Phuc and Yen Phuc Communes, Van Quan District, Lang Son Province is being implemented by Lang Son PMU, as a part of the Basic Infrastructure for Inclusive Growth Sector Project in Northeast Provinces.

86. An environmental assessment of the project has been carried out and the main potential environmental impacts of the sub-project during construction phase are:

- (i) Generation of spoil.
- (ii) Changes in drainage flows, which can also lead to gully formation and slope instability.
- (iii) Construction impacts, including temporary impedance of traffic on the tracks.
- (iv) Generation of waste, including cement bags, discarded formwork and human waste from workers on the site.
- (v) Potential impacts from the use of contestable funds for different initiatives proposed by beneficiaries

87. A range of mitigation and monitoring measures has been developed for the sub-project, which have been described in the Table 9 above.

88. Based on the findings of the environmental assessment and EMP contained in this document, it is concluded that:

89. The investment on the Subproject "Support to Agriculture Value Chains in Lang Son Province" aims to upgrade the tracks for the transportation of star anise product and support the clean vegetable cultivation model, contribute to social and economic development activities and modernization in rural area, improve the welfare of people in Tu Xuyen, Binh Phuc and Yen Phuc communes, Van Quan district, Lang Son province.

90. No further or additional impact assessment is considered necessary at this stage. At the implementation stage, PMU through ESP will develop detail EMP to monitor the schedules of mitigation measures and conduct of environmental effects monitoring activities. EMP must be updated to ensure effective environmental monitoring and should be develop follow-monitoring plan as specified in the EMP. With these measures in place, environmental impacts of the subproject should be manageable and will not result in any residual impacts, which are above accepted environmental standards.

Appendix: Record of Consultations

Meeting minute

Time: December 12, 2016

Venue: Meeting room of Van Quan DPC

Participant: See Attendance List

Mr. Hong - Chairman of Van Quan' s DPC:

There are about 400ha of star anise plantation in 2 communes - Yen Phuc and Binh Phuc.

Yen Phuc: mainly in Dong B and Tay B villages

Binh Phuc: mainly in Khon Nhu and Khon Moi

Chairman of Tu Xuyen CPC: Need support for the clean vegetable in Na Lim village, Tu Xuyen commune: about 1.5 ha.

Main current production is squash, calabash. There is some cooperation program with the small enterprises. For squash: more than 200 ha under cultivation in seasonal manner.

Mr. Hong - Chairman of the DPC: The main obstacle is the small scale and separated cultivation. There is no cooperation in terms of planning and processing the product. Local farmers are cultivating in their own land and decide which kind of crops they will apply.

The irrigation water supply for vegetable plantation area is adequate. Water could be taken from Ban Gieng stream of Tu Xuyen commune; Suoi Mo stream (Yen Phuc - Binh Phuc communes). These streams are then form Mopedia river before join Ky Cung River and flow to China.

Cho Bai town of Yên Phúc has a waste-collecting system. Waste is transfer to the dumping site of Van Quan district.

The main water supply source for Van Quan town is ground water. Stream and lake water is use for irrigation purpose only.

The star anise productivity is not constantly every year. Star anise could be harvested when they are planted for 7 years. The trees could be stay up to 100 years.

Irrigation water: Taking from Dong Xe pumping station in Tu Xuyen commune.

List of people met in Lang Son (Value chain component 12 December 2016)

| No | Name | M/F | Position/ address |
|----|-------------------|-----|---|
| 1 | Mr. Hong | M | Chairman of Van Quan district |
| 2 | Mr. Vuong | M | Officer of District Division of Agriculture and Rural Development |
| 3 | Mr. Hoang | M | Chairman of Tu Xuyen Commune |
| 4 | Mr. Chuyen | M | Chairman of Yen Phuc Commune |
| 5 | Mr. Linh | M | Chairman of Binh Phuc Commune |
| 6 | Mr. Kiem | M | Social (poverty reduction) staff of Tu Xuyen commune |
| 7 | Mr. Giang | M | Agricultural staff of Tu Xuyen commune |
| 8 | Mrs Van | F | Head of Tu Xuyen commune Youth Union |
| 9 | Mrs. Thoan | F | Head of Tu Xuyen commune Women Union |
| 10 | Mr. Phan | M | Cadastral staff of Yen Phuc commune |
| 11 | Mr. Loc | M | Statistic officer of Yen Phuc commune |
| 12 | Mrs. Tu | F | Head of Yen Phuc commune Women Union |
| 13 | Mr. Cuong | F | Head of Yen Phuc commune Youth Union |
| 14 | Mrs Thuy | F | Head of Binh Phuc Women Union |
| 15 | Mr. Tien | M | Statistic officer of Binh Phuc commune |
| 16 | Nguyễn Thị Trường | F | Farmer at Tây B Village of Yen Phuc commune |
| 17 | Hoàng Thị Hương | F | Farmer at Đông B Village of Yen Phuc commune |
| 18 | Lô Thị Điệp | F | Farmer at Tây B Village of Yen Phuc commune |
| 19 | Hoàng Thị Thu | F | Farmer at Đông B Village of Yen Phuc commune |
| 20 | Nông Văn Cao | M | Farmer at Tây B Village of Yen Phuc commune |
| 21 | Linh Thị Bình | F | Farmer at Tây B Village of Yen Phuc commune |
| 22 | Nông Văn Dự | M | Farmer at Đông B Village of Yen Phuc commune |
| 23 | Lô Văn Hải | M | Farmer at Đông B Village of Yen Phuc commune |
| 24 | Phùng Văn Mến | M | Farmer at Đông B Village of Yen Phuc commune |
| 25 | Linh Thị Xéo | F | Farmer at Tây B Village of Yen Phuc commune |
| 26 | Trần Thị Hồng | F | Farmer at Còn Mới village of Binh Phuc commune |
| 27 | Triệu Thị Yến | F | Farmer at Còn Nhừ village of Binh Phuc commune |
| 28 | Hoàng Thị Thoa | F | Farmer at Còn Nhừ village of Binh Phuc commune |
| 29 | La Thị Thanh | F | Farmer at Còn Nhừ village of Binh Phuc commune |
| 30 | Triệu Thị Toàn | F | Farmer at Còn Nhừ village of Binh Phuc commune |
| 32 | Hoàng Văn Hiệu | M | Farmer at Còn Nhừ village of Binh Phuc commune |
| 33 | Mạc Văn Bình | M | Farmer at Còn Nhừ village of Binh Phuc commune |