AGRICULTURAL COMPETITIVENESS PROJECT

Updated

ENVIRONMENTAL ASSESSMENT
AND MANAGEMENT FRAMEWORK

March 2011
ABBREVIATIONS

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>ACP</td>
<td>Agricultural Competitiveness Project</td>
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<tr>
<td>ADP</td>
<td>Agricultural Diversification Project</td>
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<tr>
<td>DARD</td>
<td>Department of Agriculture and Rural Development</td>
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<tr>
<td>DOI</td>
<td>Department of Industry</td>
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<tr>
<td>DONRE</td>
<td>Department of Natural Resource and Environment</td>
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<tr>
<td>DOT</td>
<td>Department of Transport</td>
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<tr>
<td>DPI</td>
<td>Department of Planning and Investment</td>
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<tr>
<td>EA</td>
<td>Environmental Assessment</td>
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<td>EMF</td>
<td>Environmental Management Framework</td>
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<td>GAP</td>
<td>Good Agricultural Practices</td>
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<td>IPM</td>
<td>Integrated Pest Management</td>
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<tr>
<td>PCU</td>
<td>Project Central Unit</td>
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<td>PPMU</td>
<td>Provincial Project Management Unit</td>
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<tr>
<td>TOR</td>
<td>Terms of References</td>
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<td>WTO</td>
<td>World Trade Organization</td>
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INTRODUCTION

The proposed Agriculture Competitiveness Project (herein after referred to as “the Project”) is a new operation that evolved from discussions and agreements between MARD and World Bank management over the past year with the aim of improving the competitiveness of Vietnam’s agricultural sector in the wake of Vietnam’s recent membership of WTO.

The Project is required to meet environmental management requirements of the Government of Vietnam and the World Bank’s environmental safeguarding policies. Therefore, an Environmental Assessment and Management Framework (this document) has been prepared by MARD, with supports from the World Bank, during preparation phase of the ACP and updated after two years of implementation. The EA framework has been developed with predictions on the Project’s potential environmental impacts, proposals on management program which includes details mitigation measures. The EMF also set out the procedures for review and clearance of sub-project safeguard documents, propose institutional arrangements as well as resources needed for the implementation of the mitigation measures and monitoring activities.

ACP – PROJECT DESCRIPTIONS

The ACP Project’s objective is to the competitiveness, entrepreneurship and organization of farmers in the central region of Vietnam. The project would result in the increase in total value of sales from farmers adopting new technologies, an increase in sales by farmer organizations (and its members) supported under the project, and a reduction of losses resulting from low quality infrastructure.

The proposed project comprises of four components:

- **Component A:** Enhancing Agricultural Technology (estimated USS 15 millions)
- **Component B:** Support to Productive Partnership (estimated USS 30 millions)
- **Component C:** Critical Infrastructure (to address key bottlenecks) estimated USS 25 millions
- **Component D:** Project Management and Institutional Development,

**Component A: Enhancing Agricultural Technology**

The key objective of this component is to conduct applied research and extend successful technologies which are responsive to market demands and incentives, cost-efficient, and that enhance the environmental sustainability of increasingly competitive farming practices. Component A comprises of three subcomponents as described below:
Subcomponent A1: Technology R&D for a Competitive Agriculture.

This sub-component focuses on identification of applied research, development and extension of technological packages that directly respond to improving productivity and quality and market requirements in a specific product value chain. This subcomponent will target smallholder farmers both in and outside productive partnerships to improve their product quality, productivity, and cost efficiency.

Subcomponent A2: Enhancing Sustainable Farming Practices.

This subcomponent aims at developing and extending technological packages that promote the application of good farming practices and the sustainable use and management of land and coastal resources. The subcomponent will finance pilot activities on a communal basis to enhance sustainability of a competitive agriculture.

Subcomponent A3: Monitoring and Controlling Chemical Residues.

This subcomponent aims at strengthening the institutional capacity for monitoring and controlling chemical residues on agricultural produce at three levels: provincial, agribusinesses, and smallholders. The subcomponent will provide necessary equipment and technical training for conducting appropriate chemical residue tests at different levels. The subcomponent also supports the Provincial Protection Department in preparing and publishing (with annual updates) a list of illegal and harmful chemicals, conducting public awareness raising campaigns, and carrying out farm and market surveillance.

Component B: Support to Productive Partnerships

The objective of this component is to facilitate the establishment, development and operation of private, demand driven productive partnerships as well as enhancing the provincial rural investment climate. This component consists of four subcomponents:

B1: Supporting new productive partnerships

Productive partnerships between farmer organizations (and their members) with private agribusiness enterprises aiming to develop a long-term, voluntary and commercial relationship will be supported through the project to implement a detailed partnership business plan that will help the participating partners to improve their competitiveness in terms of cost, productivity, quality and sales. Project support will be provided to some 100 partnerships on a matching grant basis for eligible expenditures (including advisory services, training, as well as goods and materials) to smallholder farmers, their farmer organization, and partnering agribusinesses. A further effort under this subcomponent will be made at promoting and training private providers of support services critical to the development of farmer organizations, agribusinesses and partnerships.

B2: Scaling up successful value chain initiatives

This sub-component will build on and expand successful, ongoing value chain partnerships between farmer groups and agribusinesses, helping them to scale-up in order to broaden their activities, outreach and impact. Value-chains eligible for scaling up will be selected on a country-wide basis (i.e. beyond the confines of the provinces otherwise associated with this project).

B3: Information and communications campaign, networking and match making

Under this subcomponent, the project will carry out an information and communications campaign to introduce the productive partnership program.
**B4: Fostering the agricultural investment climate and improving service delivery.**

This subcomponent will support provincial-level, participatory policy dialogues with key provincial stakeholders, especially the private sector through public-private agriculture roundtables.

**Component C: Critical Infrastructure (to address key bottlenecks)**

The objective of this component is to address critical public infrastructure needs supporting the competitiveness of the agricultural sector. These investments would contribute to increased agricultural productivity and the reduction of marketing costs. This component comprises of two subcomponents:

**C1: Locally-identified Infrastructure Priorities.**

Under this sub-component the project would support critical infrastructure needs that have been identified at the district and commune level in collaboration with the local agri-business sector. Infrastructure sub-projects would need to demonstrate that they comply with social and environmental guidelines and would maximize the benefits accruing to local farming communities. The sub-projects would be small-scale, and would exclude infrastructure works that require involuntary resettlement or land acquisition. All sub-projects would be subject to screening to assess the suitability of the proposed investment. As much as possible, sub-projects would follow established procedures for implementation, emphasizing local participation in implementation and maintenance.

**C2: Infrastructure Support to Productive Partnerships.**

Productive Partnerships supported under Component B could apply for funds under this subcomponent to address critical public infrastructure constraints that directly impact their agricultural business activities. The funds provided under this sub-component would be additional to support received under Component B. Proposals would be included in business proposals submitted under B1 and B2. Other that the identification, the subcomponent would be implemented as under C1.

**Component D: Project Management**

The objective of this component is to provide (1) the inputs to allow for an effective management of the project; and (2) to strengthen the institutional capacity in key areas, particularly at provincial, district and community level to monitor and evaluate project activities and sustain project interventions.

**D1 Project management**

This subcomponent would support all necessary activities to ensure that the project is implemented in accordance with the project implementation manual. It would support goods and equipment, training, and operating costs to ensure effective coordination and good project management at PCU and PPMU levels including safeguards, financial management and audits, reporting and supervision.

**D2: Monitoring and Evaluation.**

The sub-component would support the establishment and operation of the M&E system under the project. This would include support to the design and implementation of the various surveys and other tools for monitoring and evaluating the progress of project implementation and the results of the project, including the level of impact on intended beneficiaries.
III. ENVIRONMENTAL LEGISLATIONS APPLICABLE TO ACP

3.1 Vietnamese Environmental Legislations

- Environment Protection Law 52/2005/QH11 passed by the National Assembly dated on 29/11/2005 regulating responsibilities of individuals and organizations regarding environmental protection.


- The Law on Water resources no. 08/1998/QH10 dated 20 May 1998

- Government Decree No.34/2005/ND-CP dated 17/03/2005 regarding regulations on fines applied to violation to water resources legislations

- Government Decree N° 80/2006/ND-CP dated August 9th, 2006 by Vietnamese Government on detail regulations and guidance on the implementation of some Articles of the Environment Law.


- Government Decree N° 81/2006/ND-CP dated August 9th, 2006 by Vietnamese Government on administrative fine applicable to environmental Law violations.

- Government Decree No. 34/2005/ND-CP dated 17 March 2005 regarding administrative fines applicable to violations to the Law on Water resources.

- MONRE Circular N° 08/TT-BTNMT dated September 8th, 2006 by Ministry of Natural Resources and Environment guiding the preparations of strategic environment assessment, environmental impact assessment and environmental safeguard commitment.

- MARD Decision No. 23/2007/QD-BNN dated 28 March 2007 by MARD providing the lists of usable/banned pesticides in Vietnam

- Existing Vietnamese Environmental standards.

3.2 World Bank Safeguard Policies applied to the ACP

OP 4.01 Environmental Assessment
OP 4.09 Pest Management
Public Consultations and Information Disclosure

IV DEScriptions of the Project Provinces

4.1 Geographical Locations

The ACP Project is proposed to be implemented in eight provinces of Vietnam including two provinces in the north central, three provinces in the central highland and three provinces located along the central coasts. The location of the project provinces are shown in Figure 1.
During implementation, the project also considers to cover additional provinces in the Mekong Delta of Vietnam.

4.2 Basic Features of Proposed project provinces

Thanh Hoa is located at 150 km south of Hanoi, border with the east sea and three provinces. Administratively, the province comprises of Thanh Hoa City, two district towns namely Bim Son and Sam Son, and 24 districts.

The province has a population of 3.67 millions people. Total land area is approximately 1.1 millions ha. Topographically, the province is divided into three regions:

- mountain (elevation from 600-700 m) and hilly areas (elevation from 150 - 200 m) accounts for 75.4 % of total land area
- Flat plains intervened with limestone mountains, account for 14.6% total land area
- Coastal plains with elevation averaged from 3 to 6 m runs along 102 km coastal line and account for 10% total land area

Thanh Hoa is located in tropical monsoon areas, average annual rainfalls is 1,600 – 2,300 mm. There are 90 – 130 rainy days each year. Water resource is abundant with four major river systems including Hoat, Ma, Chu and Yen rivers.

The province has 484,000 ha of forested land which accounts for 44% total land area. Forests are biological diverse.

In the period from 2001 – 2005, agricultural, forestry and aquaculture combined contributes 31.6% to the provincial GDP. In recent years the province has planned to shift its economy toward industrialization. Currently 90% of urban population and 80% of rural population have access to clean water.

Nghe An is bordered with Thanh Hoa in the North with similar physical and climate conditions. Topographically, the province is lowered from northwest to southeast, hills and mountains account for 83% of total land areas. Nghe An has approximately 745,000 ha of forested land.

Administratively, the province is divided into 17 districts, one city and one district town. Population in 2005 is approximately 3 millions people with density at 183 people/km². Nghe An has a dense river system (0.7 km/km²). Large rivers are Lam 9532 km long, 361 km of which cross Nghe An province). The province has a developed irrigation system and water supply meets production and domestic demands.

In 2005, agricultural, forestry and aquaculture combined contribute 34.16% of the provincial’s total GDP. By 2005, 85-90 % of rural population have access to clean water and electrical supply has reached 95% of rural population. Similar to Thanh Hoa, in recent years the province’s economic structures have been shifted towarding industrialization.

Gia Lai has a population of 1.1 millions people in 2005. The province has a total land area of approximately 15,537 square kilometers, in which 390,000 ha currently being used for cultivation. Another 260,000 ha are upstream forests which is rich in biodiversity.

The province is located on the central highland with two distinct seasons. Annual rainfall varies from 2200 to 2500 mm. Rainy season lasts from May to October.

The national highway no.19 connects Gia Lai with Quy Nhon Port while highways no. 14 and 23 connects Gia Lai with other provinces in the highland. Currently asphalted roads have been constructed to district centers and most of communes are accessible by cars.

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By 2004, **Dak Lak** has a population of 1.7 millions people of 44 ethnics with more than 70% are the Kinh people. Like Gia Lai province, Dak Lak is also located in the central highland with elevation varies from 300 to 800 m.

Dak Lak has a relative dense river systems, however most of them are short and have high bed slope. Rainfall in rainy season contributes about to 84% of the total annual rainfall which averages from 1600 to 1800 mm. Lak - KrongAna areas are usually subject to flooding in August and September which are the months having highest rainfalls. Drought and water shortage in dry season has been an arising challenge in recent years. Short dry period in rainy seasons which usually last from 15 to 20 days has also caused loss to agricultural productions.

The province has approximately 689,000 ha of forested land with high biological values. Forests are usually structured with three layers and are distributed throughout the districts in the province. Dak Lak has Yorkdon National Park, Man Kar, Chu Yangsin and other protected areas which are natural habitats of some rare/endangered species listed in Vietnamese and Internal red books.

**Lam Dong** province has in three highlands which are upstream of seven large river systems. Topographically, the province comprises of mostly high mountain intersected by flat valleys. Average elevation is from 800 to 1000m. Total land area is 9,772 square kilometers.

Lam Dong has relatively well-developed waterworks systems with 29 irrigation works and over 190,000 km of irrigation canals have been concerted. Irrigated area in 2005 was 64,000 ha including two rice crops, industrial, fruit trees, vegetation and flowers.

Road network has been developed to district centers however not all the communes are yet accessible by vehicles.

**Binh Dinh** is a coastal province located in the south central region with a population of about 1.5 millions people by 2005. The Kinh ethnic accounts for 98% of the population and the remaining 2% are mostly Ba Na, H’re and Cham ethnic minorities living in the mountainous/hilly communes.

Total land area is 6,025 square kilometers in which agricultural land occupies 117,000 ha and 154,000 ha is natural forest. There are thirty soil groups in Binh Dinh, in which alluvial soils covers 71,000 ha. Agriculture, forestry and aquaculture combined contribute 42% of GDP.

There are four large river systems in Binh Dinh, including Kon, Lai Giang, La Tinh and Ha Thanh. Average annual rainfall from 1700 to 1800 mm. 98.2% of rural population having access to power supply and most commune centers are accessible by cars.

Compare to other project provinces, **Ninh Thuan** has smaller land area (3,360 square kilometers) and smaller population which is at approximately 565,000 people in 2005.

Ninh Thuan has three types of topography: mountains (63.2%), semi-arid (14.4%) and coastal plains (22.4%). Forested land covers about 160,000 ha in which more than 50% are in Bac Ai district.
The province is located in hot and dry areas with rainy season lasts from September to November. Groundwater storage is about 30% of the country’s average. Annual rainfall ranges from 700 to 800 mm in Phan Rang city and gradually increases to 1100 mm in the mountainous region. Evaporation potential is high, by 2005 just over 30% of the province’s total agricultural land have been irrigated adequately.

Erosion and sand blowing has been existing problem to human lives and crops in the province’s coastal plains. A type of tree named “nem” has been planted along the coast to limit sand dispersion. It was reported that the leaves of this tree is also a good “biological pesticide”

Binh Thuan’s population is 1.1 millions people. Like Ninh Thuan, Binh Thuan is located in dry area with low annual rainfall. The province has three main types of topography, i.e. mountains, hills and coastal.

Binh Thuan has four rivers including La Nga, Quao, Dinh and Cong rivers. Irrigation has been relative well developed. 186,000 ha of land are being used for agriculture and 400,000 ha are natural forests and pastures. Binh Thuan also has 34,000 ha of planted forest.

Phase 2 of the project will also consider implement activities under components A and B in the Mekong delta.

4.3 Agriculture in proposed project provinces – An Outline

Vietnam agricultural development has been oriented toward modernization and specialization. Common provincial agricultural sector development strategy are² (i) promote the applications of improved seedlings, improve post harvest and processing technologies; (ii) expand and maintain cultivation areas of long term crops providing raw materials for processing industry; (iii) prioritize food crops with focus on increasing productivity; and (iv) livestock raising development in connection with processing industry.

Rice fields are usually account for significant portion (30-50%) of each province’s total agricultural land. Other popular crops are vegetables, fruits, sugar canes, soybean, peanuts, etc. Some provinces also have crops of their specialties such as dragon fruits (Binh Thuan), vegetable and flowers (Lam Dong), coffee, tea, rubber, pepper, cashew nuts (provinces in the high land), grapefruits (Ninh Thuan), sedge (Thanh Hoa), coconut (Binh Dinh).

² Information from provincial government websites
Table 1 below presents major crops in some Project provinces:

Table 1 – Crops and Livestock’s in some project provinces*

<table>
<thead>
<tr>
<th>Province</th>
<th>Crops</th>
<th>Livestock</th>
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<tr>
<td><strong>Thanh Hoa</strong>&lt;br&gt;(2010 data)</td>
<td>Rice: 255100 ha, 1.4 millions T/year&lt;br&gt;Cassava: 15.300ha, 169,200 T&lt;br&gt;Soybean: 6000ha, 9,300 T&lt;br&gt;Rubber: 11,200 ha/7,400 ha&lt;br&gt;Sugar canes: 1.4 millions T / 30,300 ha&lt;br&gt;Peanuts: 26,200 T/15,000ha</td>
<td>Being developed towarding large scale farm model&lt;br&gt;Account for 27% of total income from agricultural. Pigs, cow, milk cow</td>
</tr>
<tr>
<td><strong>Gia Lai</strong></td>
<td>Coffee: 75,900 ha&lt;br&gt;Maize: 56,000 ha&lt;br&gt;Cashew nuts: 19,700&lt;br&gt;Pepper: 3,575 ha&lt;br&gt;Tobacco: 2,500 ha&lt;br&gt;Some plants have been developed for processing rubber, coffee, sugar, vegetable oil, cassava, fruits and meat.</td>
<td>Pigs, buffalo, cow, goat, etc.</td>
</tr>
<tr>
<td><strong>Dak Lak</strong></td>
<td>Coffee: 258,498 ha (2001)&lt;br&gt;Rubber: 30,000 ha&lt;br&gt;Cashew nut: 9,500 ha (there are two processing plants, capacity 4,000 T/year)&lt;br&gt;Pepper: 7,000 ha&lt;br&gt;Soyabean 21,250&lt;br&gt;Cotton 14,450 ha</td>
<td>Pigs, buffalo, cow, goat, etc.</td>
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### Agricultural Competitiveness Project

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<tr>
<th>Province</th>
<th>Crops</th>
<th>Livestock</th>
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<tr>
<td><strong>Binh Dinh</strong></td>
<td>Rice and other food crops: 53,221 ha</td>
<td>Pigs, buffalo, cow, goat, milk cow etc.</td>
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<td></td>
<td>Rice fields in mountainous areas: 4442</td>
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<tr>
<td></td>
<td>Other short term crops: 26,012 Cashew nut</td>
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<tr>
<td></td>
<td>Mixed gardens: 15,078 ha</td>
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<td></td>
<td>Long term trees: 15315</td>
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<tr>
<td></td>
<td>Pastures: 22</td>
<td></td>
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<tr>
<td></td>
<td>Water surface for aquaculture: 2,867</td>
<td></td>
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<tr>
<td><strong>Lam Dong</strong></td>
<td>Vegetation and flowers: 30,000 ha</td>
<td>Pigs, buffalo, cow, goat, etc.</td>
</tr>
<tr>
<td>(data from</td>
<td>Coffee: 118,000 ha</td>
<td></td>
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<tr>
<td>DARD, 2007)</td>
<td>Tea: 27,000 ha</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cashew nuts: 13,000 ha</td>
<td></td>
</tr>
<tr>
<td><strong>Ninh Thuan</strong></td>
<td>Typical crops are:</td>
<td>In recent years, large scale livestock farms has been being extended</td>
</tr>
<tr>
<td>(data from</td>
<td>Cotton, Sugarcanes, Grapefruits, Tobacco</td>
<td>Sheep: 92,160 Cows: 108,090</td>
</tr>
<tr>
<td>DARD, 2007)</td>
<td>Maize, vegetables, Grapes</td>
<td>Goats: 119,055 Poultries: 600,000</td>
</tr>
<tr>
<td></td>
<td>Focus in on drought-proof crops such as garlic and onions</td>
<td></td>
</tr>
<tr>
<td><strong>Binh Thuan</strong></td>
<td>Rice: 186,334 ha</td>
<td>Pig: 450,000</td>
</tr>
<tr>
<td>(data from</td>
<td>Dragon fruit: 8671 ha</td>
<td>Cow: 230,000</td>
</tr>
<tr>
<td>DARD, 2007)</td>
<td>Rubber: 19,136 ha</td>
<td>Goats and sheep: 70,000</td>
</tr>
<tr>
<td></td>
<td>Cashew nuts: 32,271 ha</td>
<td></td>
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<tr>
<td></td>
<td>Short term crops: 245,000 ha</td>
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*Data sourced from provincial government websites year 2005 otherwise noted [PCU should update the above table] and add some data on the Mekong*

As indicated in the table above, raising pigs, cow and milk cow, poultry are popular in all project provinces while goats, sheep and buffalo are being practiced in some province. In recent years, large-scale livestock farm models have been extended and become more commonly practiced.

### V EXISTING ENVIRONMENTAL ISSUES RELATING TO AGRICULTURE PRODUCTIONS

#### 5.1 Environmental Issues

Site visits and discussions with officers from provincial Departments of Agricultural and Rural Development (DARD) and Department of Natural Resource and Environment (DONRE), agribusinesses representatives and farmers during field visits conducted in September 2007 have identified the following issues:

(i) Most of farm wastes, wastewater and unused products are dumped onto open land, water sources (streams nearby farms) or burnt onsite. Lack of awareness from farmers and unavailability of solutions (including technology and resources) have been major constraints for treatment of agricultural wastes;
A vegetable business in Da Lat was visited. Annually they export 10,000 – 15,000 T of vegetables annually. Vegetable are primarily processed for removal of ruin or outside leaves. Each day four to six trips of a 5T truck carrying the unused products (approximately 24T daily) to landfill.

Another plant producing frozen vegetables was visited. Each year they export about 80% of their products, which is 12,000 to 15,000 T. Wastes, which accounts for 40 to 60% of total raw materials are buried at the back of the factory. It was reported that lime and deodorant are applied intermittently.

Interview at meeting with a group of about 40 farmers, respond to the question what they normally do with unsaleable or byproducts was “dumping onto streams”.

For current pig husbandry, 60% of the pigs are assumed to be kept on farms with a conventional system, meaning that all manure is directly discharged to the environment. Manure contains high level of organics, nutrient, heavy metals as well as pathogens. When large amount enter water bodies, it will cause water quality degradation and lead to algae bloom. Some types of algae generate toxic substances and kills other aquatic living organisms. When the algae dies, decomposition process use up dissolved oxygen.

Farmers in some provinces including Nghe An sometimes treat straws left over from rice crops by burning on-site. By doing so, smokes and gas emission cause air pollution and cause danger to traffics in cases where rice fields are near road or highway. Straws burning on the farm also turn organics into inert and kill living organisms in the soil. These will lead to soil fertility degradation.

(ii) Improper use of pesticides and other chemicals in agricultural productions including those for preservative purposes has been a significant limiting factor to the competitiveness of agricultural products; Farmers have limited access to information about banned pesticides while effectiveness on control on providers are limited;

(iii) Unavailability of equipment for locally testing of pesticide and chemical residues has been a major constraints to authorities in charge of food quality control and exporting businesses;

(iv) Physical conditions have been limiting factors to agricultural production in some provinces such as access to water for irrigation, sand blowing, poor soil fertility etc.

(v) Uncontrolled land use for agricultural cultivation has been taken place in some provinces;

(vi) No interviewed project provincial DARDs have experienced any agricultural wastes treatment project or program;

3 Environmental Assessment, LIFSAP, November 2007
5.2 Available Options for Improving Traditional Agricultural Practices

1. Apply and promote the applications of IPM which is discussed in more details in Section 8
2. Training, awareness raising campaigns and law enforcement aiming at achieving better control on chemicals uses in agriculture.
3. Agricultural and land use planning at provincial level to suit local physical conditions such as:
   - Select crops persistent to drought in areas having water scarcity problem. For example grapefruits and dragon fruits farms in Ninh Thuan and Binh Thuan province
   - Develop irrigation models that help saving water. A model originated from Israel has been applied widely in the central and south central provinces. However due to initial investment cost is high, at around 20,000,000 for 100 m2 of cultivation land, it is more suitable for flowers and fresh vegetable farms.
   - Planting trees along the coast to minimize sand blowing effects on mainland and agricultural land. Ninh Thuan province has planted “Nem” tree as corridor for sand blowing and it was also reported that the leaves of this tree having been used as “biopesticide”

The followings models which are more environmental-friendly than traditional agricultural production have been practiced but their applications are limited at individual farm levels:

- Use straws from rice crops for mushroom production.
- Produce oil from cashew nut covers
- Use byproducts such as dragon fruit leaves and smashed grapes from wine factories as animal food;
- Build biogas to treat livestock raising wastes
- Use cattle manure for grassland, which, in turns, provide food for cattle
- Improve soil fertility by raising earthworms. A group of farmers will initiate a trial earthworm model in January 2008.
- Composting

VI ACP POTENTIAL ENVIRONMENTAL IMPACTS
Aiming at improving the competitiveness of agriculture in Viet Nam, The ACP has been designed with various activities including research and technology transfer, support businesses establishing partnerships, investments on small scale infrastructure etc. During the project design, the following key environmental issues were identified and considered during project design and environmental impact assessment: (1) proper use and management of agricultural chemicals and pesticides in agricultural production; (2) management and treatment of agricultural wastes; (3) impacts of construction activities of small-scale market infrastructure; and (4) increased encroachment risks to undisturbed/forested land or natural habitats.

In general, the ACP is expected to bring about major positive impacts and insignificant moderate negative environmental impacts as discuss in the sections below:

6.1 Component A

Under Component A1 of the ACP, may be some small-scale civil works shall be invested for on-farm demonstration sites such as fencing, roofing, watering systems etc. Consider the small scale and localized nature of the demonstration models, it is expected that only minor impacts such as increase local noise and dust levels may occur and some wastes may be generated on-site. These minor impacts are negligible and there is no need to implement mitigation measures unless the sites are very close to houses and may affect people there. In cases where increased dust level may affect people, farmers will spray water to reduce dust level. Safety for farmers during installation of these works including electrical system will be a concerns due to accidents such as falling into excavated channels, holes or electrical shocks may happen.

Under Component A2 – Enhancing Sustainable Farming practices, the ACP will identify applied research, development and extension of technological packages that directly respond to improving productivity and quality and market requirements in a specific product value chain. Primary activities proposed to be undertaken under this sub-project are:

- Implementation and expansion of IPM and GAP through service providers
- Promote models on agricultural Waste Reduction such as:
  ③ Reuse by-products as raw materials such as mushroom production or vegetation oil production from cashew nut production
- Implement demonstration models on agricultural waste treatment such as:
  ③ Biogas
  ③ Composting
- Models encouraging sustainable use of natural resources and enhance coastal resource management, such as
  ③ Irrigation models that allows water savings
  ③ greenhouses for vegetables.

The above-mentioned activities are expected to bring about significant positive environmental impacts, such as:

- IPM and GAP will help to reduce the introduction of chemicals into the soil and water compare to traditional farming practices.
- Farmers will be informed and have chances to implement safe practice when dealing with agrochemicals.
- The sustainability of natural resources relating to agricultural production, particularly soil and water, shall be enhanced through the implementation of demonstration models such as water saving.
- Demonstration models such as biogas or composting, reuse of agricultural wastes or by-product shall reduce the amount of waste generated from agriculture.

More information on IPM and GAP as well as the principles that would be applied to the APC are provided in Section VIII. Additional information on biogas and composting models are also provided in that section.

Beside the positive impacts, some minor negative impacts may occur during the construction of the civil works relating to pilot models. These impacts are very similar to those described under subcomponent A1 and can also be mitigated by the measures described in section 7.1.1.

On the other hand, the operations demonstration models relating to agricultural waste treatment models (landfilling, biogas, composting, reuse animal wastes for grassland etc.) should consider the following environmental issues and apply relevant mitigation measures described in section 7.1.1:

1. Safe operation of the model, including connecting facilities (particularly biogas model)
2. Odour problem
3. Pathogens in animal waste

SubComponent A3 will provide necessary equipment and technical training for conducting appropriate chemical residue tests at provincial, business and small holders. The subcomponent also supports the Provincial Protection Department in preparing and publishing (with annual updates) a list of illegal and harmful chemicals, conducting public awareness raising campaigns, and carrying out farm and market surveillance.

For sub-component A3, the key environmental issue of concern would be:

3. Safety during storage of chemical and operation of testing tool;
4. Safe disposal of materials used for testing

Storage, handling, and disposal of the chemicals in the test kit pose short term and long term health risks for people directly involved and even for those who have access to the chemical, particularly children. Looking beyond the project, application of safety rules related to agricultural chemicals should also be promoted to reduce environmental and health risks for farmers. Therefore, safety rules have to be strictly be followed. Details on such rules are provided in the annex of this framework.

Mitigation measures for the above-mentioned impacts are discussed in Section 7.1.1 and Annex

6.2 Component B

Under this component, the Project provide financial assistance to co-finance the implementation of partnership business plans, including investments in advisory services as well as long term assets (goods and
works) enhancing post-harvest and production activities of the potential partnerships;

At the time this EA&EMF is prepared, the physical elements that partnerships would be supported by the ACP have not been identified specifically. Investigations during project design phase found that the following supports are needed by potential partnerships
① better access road to farms
② supports on seedling or fertilizer or pesticides
③ new machines or parts for processing agricultural products, for example machines for processing coffee or parts for upgrading existing cashew nut drying system;
④ Cooling storage
⑤ technical assistance, infrastructures such as irrigation infrastructure, for example new boreholes developments, irrigation canals or other water storage/conveyance facilities
⑥ access roads to farms
⑦

With such assistance, the associated potential environmental impacts would be:

Table 2 – Potential environmental impacts of activities under Component B

<table>
<thead>
<tr>
<th>Demand</th>
<th>Potential impacts</th>
</tr>
</thead>
</table>
| 1 upgrade access roads, bridges to farms | - increased encroachment risks to forest/protected areas  
- increased erosion relating to over clearance of vegetation for road upgrade;  
- temporarily block access to nearby farms, houses located at the side of the upgrading road/infrastructure  
- Block drainage path (mostly natural in rural areas) leading to stagnant water accumulation at/near the construction sites  
- increased turbidity in surface water sources nearby |
| 2 supports on seedling, fertilizer or pesticides | Introduce more chemical residues into the soil leave chemical residue in products |
| 3 Cooling storage or other civil facilities | increased noise, dusts and safety risks during construction |
| 4 new boreholes developments for irrigation | Increase groundwater pollution risks due to leakage of surface and subsurface runoff containing agricultural chemicals into the wells due to:  
- improper siting of the wells  
- improper design of the wells, including poor hydrological insulation, selection of valves, |
<table>
<thead>
<tr>
<th>Demand</th>
<th>Potential impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>pumping machine selection</td>
</tr>
<tr>
<td></td>
<td>- low casing quality</td>
</tr>
<tr>
<td></td>
<td>- improper casing practices</td>
</tr>
<tr>
<td></td>
<td>- improper operation and maintenance of the wells</td>
</tr>
<tr>
<td></td>
<td>Contribute to groundwater depletion as recharge rate of groundwater is much lower</td>
</tr>
<tr>
<td></td>
<td>than that of surface water</td>
</tr>
<tr>
<td>5 provision of new machines or parts for processing agricultural</td>
<td>- disturb communities due to increased traffic density/ accident risks,</td>
</tr>
<tr>
<td></td>
<td>- cause local environmental problems such as air and noise</td>
</tr>
<tr>
<td></td>
<td>- improved capacity lead to increased waste and waste water generation</td>
</tr>
</tbody>
</table>

As the demands on supports of each partnership is different from the other, the ACP will apply a mechanism (described in section 7.2) which allows each partnership be able to identify potential impacts relating to the supports they proposed and the mitigation measures they need to apply to meet the Project’s environmental safeguarding policy. The mitigation measures shall be identified based on those listed in Section 7.1.2.

6.3 Component C

Under component C, the Project will finance small-scale civil works such as rural roads, bridges, and market place, drains, irrigation canals (<$200,000 per scheme) for improving the condition of critical public market infrastructure. While the works under Component C1 would be identified locally (community-based), the works under component C2 would be identified through partnership business plan proposals to be prepared under sub-component B. Nevertheless, in any cases, no land acquisition will be required for the works under this component and the physical works need to be carried out during construction would be:

- Excavation and leveling;
- Loading and unloading of construction materials such as sand, gravels, steels, concrete etc.;
- Concrete mixing and steel works;
- Construction;
- Finishing and withdrawal from sites;

Beside the significant positive impacts that are expected to occur during operation phase, some short-term temporary negative impacts may occur during the construction of these works, such as:

1. Encroachment to forest/protected areas
2. Increase groundwater pollution potentials from agricultural wastewater
3. increased erosion risk, particularly at the discharge points of drains or irrigation canals
4. dusts and noise problem
5. Increased surface water turbidity
6. Block existing drainage path
7. traffic disruption, particularly where construction activities are carried out near residential areas, markets, schools, clinics, churches, temples or any other places that attract high density of traffic
8. Obstruct access to other existing roads, houses and other buildings located along the road or near construction site
9. Increased agrochemical use in areas newly irrigated by the Project
10. Accident risks
11. Waste Generation

The Table below describes the potential impacts of the civil works under component C:

**Table 3 – Potential Environmental Impacts of Civil works under component C**

<table>
<thead>
<tr>
<th>Impacts / Issue</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Encroachment to forest/protected areas</td>
<td>Upgraded roads create easier access to farmlands located nearby protected areas or forest may lead to increased flow of people entering forests/protected area for resource exploitation, or expansion of farmland to forest land nearby.</td>
</tr>
<tr>
<td>2. Increase groundwater pollution potentials from agricultural wastewater</td>
<td>In cases where boreholes are developed in or near farm land, the improper siting, construction, operation or maintenance of the wells would lead to serious groundwater pollution by surface water runoff which is likely containing high concentration of agrochemicals. With limited local capacity in controlling the quality of well development as well as correct use and proper maintenance of the boreholes, there risk of groundwater pollution by surface and subsurface agricultural runoff is high. It is very costly, timely and technically difficult to restore contaminated groundwater quality.</td>
</tr>
<tr>
<td>3. Increased erosion risk</td>
<td>Site clearance and leveling may lead to increased erosion risk due to runoff, wind and surface runoff, particularly on slopes. Water falling from high of drains or irrigation canals into receiving bodies also has high potential to cause erosion at the foot of discharge point if it is not protected properly.</td>
</tr>
<tr>
<td>4. Air pollution (increased noise and dust levels)</td>
<td>Dust can cause irritant when in contact with eyes. Larger particles may cause nuisance when they deposit on skin, hair and the outside respiratory systems of people. Smaller particles may enter deeper parts and contribute to long term health effect. Increase localized dust levels may happen due to: ☀ Wind blow granular materials from sand loads, excavated</td>
</tr>
<tr>
<td>Impacts / Issue</td>
<td>Description</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>soils etc.</td>
<td>1. uncovered trucks carrying sand, soils may generate dusts on roads. Muddy transportation means is also a source generating dusts on the road 2. trucks running on unsealed roads Smoke from vehicles on stand-by may also affect air quality Odor problem due to fine particles spreading from objected being or newly painted. Impacts from dust and smoke may occur at both the market, access road as well as the places surrounding material loading areas. Construction at market place is likely affect more people than the other sites as the impacts may occur. The impacts of smoke, dusts and odour are worse in hot dry weather. Noise generated during construction phase of such small-scale civil works is considered insignificant and negligible as it only occurs in short time and noise levels are expected not far too high.</td>
</tr>
<tr>
<td>5. Increased water turbidity / water quality degradation</td>
<td>Increased turbidity may affect aquatic lives when it enter fish gills and obstruct their respiration. Increased turbidity also obstructs sunlight from reaching deeper water thus limiting photosynthesis capacity of alga and other microorganisms. Turbidity in surface water bodies may increase if due to:  - construction site is near or on water surface (bridge)  - excavated soils are loaded at the edge a water body  - wastewater from concrete mixing area have way to enter water bodies  - concrete mixing and other construction equipments are washed in water bodies The level of impact depends on the amount of solids actually being introduced into water bodies.</td>
</tr>
<tr>
<td>6. Block existing drainage path</td>
<td>Currently in many rural areas there are no constructed drainage systems in place. In such areas, rainwater usually follow natural earth drain path. Construction materials from construction sites of access roads or market place may disrupt existing drainage and cause localized flooding or water stagnant.</td>
</tr>
<tr>
<td>7. Obstruct access to other existing roads, houses etc. and traffic on roads</td>
<td>Temporary loading of construction materials may obstruct people and traffic means. For the case where the entire width of an existing road is being built, traffic will be halted if no mitigation measures are applied. In coming /out going trucks also may cause traffic disruption on busy rural roads Bridge construction may obstruct boats, if there are any, traveling along canals.</td>
</tr>
<tr>
<td>8. Accident risks</td>
<td>Accidents risks may occur due to:  - sand and soil are drifted along the road  - load of sand and soils obstruct narrow roads or make the road become slippery and danger to motorbikes and bicycles  - vehicles access excavated locations in the dark and there is no warning signs  - In/out trucks carrying construction materials occupy roads with high traffic.</td>
</tr>
</tbody>
</table>
Agricultural Competitiveness Project

Impacts / Issue | Description
---|---
| Accident risk is higher when construction is carried out in populated areas such as market near commune centre.

9. Waste Generation
During Construction phase, wastes generated would be:
- Package materials for cements, paints etc. These can be paper, metals or plastic
- Unused excavated soils
- Formworks materials, likely be wood of low quality

During Operation phase, access roads or bridges will not generate any wastes.

At market place, wastes will be mainly organics from ruined/unsolvable vegetables, leftover food etc. If these wastes are not properly collected and dumped, it will cause odor problem and soil/water pollution.

VII MITIGATION MEASURES AND IMPLEMENTATION ARRANGEMENTS

7.1 Mitigation Measures

7.1.1 Component A

Table 4 – Mitigation Measures for negative impacts of Component A

<table>
<thead>
<tr>
<th>Potential Impacts/Issue</th>
<th>Mitigation Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Air quality and Noise</td>
<td>spray water when dust is high</td>
</tr>
<tr>
<td></td>
<td>cover excavated soils or granular construction materials such as sand</td>
</tr>
<tr>
<td></td>
<td>turn off vehicle engines when parking</td>
</tr>
<tr>
<td></td>
<td>(i) and (ii) are only required where there are houses that may be affected by construction</td>
</tr>
<tr>
<td>2. Waste management</td>
<td>Burry wastes on-site with proper soil coverage.</td>
</tr>
<tr>
<td></td>
<td>Do not reuse packing materials or containers of toxic/hazardous wastes such as paint containers for food or drinking water storage. This type of wastes should be buried at the farm and away from water bodies;</td>
</tr>
<tr>
<td>3. Safety</td>
<td>Place signaling materials such as signboard, tree trunks on unfinished excavation works;</td>
</tr>
<tr>
<td></td>
<td>Monitor and apply precautionary actions when installing and operating electrical wires and equipment</td>
</tr>
<tr>
<td></td>
<td>Keep children away from the site</td>
</tr>
<tr>
<td>4. Safety - biogas operations</td>
<td>Monitor the quality of the valves, tubes and other fittings</td>
</tr>
<tr>
<td></td>
<td>Develop and implement safe operational manual and train farmers/workers on:</td>
</tr>
<tr>
<td></td>
<td>testing procedures to detect leakage and other system failure including overflow of undigested manure, odour etc</td>
</tr>
</tbody>
</table>
5. Safety - agro-chemical residual testing practice

<table>
<thead>
<tr>
<th>Actions taken when leakage is detected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Options for safe disposal of materials from biogas outlets, e.g. to composting or farm land</td>
</tr>
</tbody>
</table>

5. Safety - agro-chemical residual testing practice

3. Provide guidance / training for technical workers, businesses and small holders on safe contact with chemicals and safe disposal of the wastes relating to residual tests

3. Provide necessary protective equipment together with testing facilities and train people on proper use. Monitor their practice

7.1.2 Civil works under Component B and C

The potential environmental impacts described in Section 6.2 and 6.3 shall be mitigated by the measures described in Table 4 below:

Table 5 – Mitigation Measures for activities under component B and C

<table>
<thead>
<tr>
<th>Impacts / Issue</th>
<th>Mitigation Measures</th>
</tr>
</thead>
</table>
| 1. Risks relating to encroachment to forest/protected areas or increased deforestation | - Screen and check the relative distance from the proposed infrastructure to be supported by the Project to the nearest forest
- Consult with the nearest local forest management to verify the estimation
- Set criteria to exclude the sites located within 1 km from the core of forest/protected areas
- DONRE participate in the process of proposal evaluations |
| 2. Groundwater pollution from surface runoff from farmland | - Exclude borehole development proposals if surface water supply for irrigation is feasible
- Where exploitation of groundwater is critical to the success of the business plan, strict monitoring and supervision shall be applied during the selection of design consultant, contractor, and during the construction. Particular attentions shall be paid on:
  - Siting of the wells, as far from field as possible and not within minimal distance recommended by well designer/hydrologist
  - Hydrogeological insulations, including on the surface around the wells, casings, valves and fittings, pumps
  - discharge of agricultural runoff in cropland surrounding the wells
  - Operational practices by farmers
  - Maintenance capability and arrangements
- Frequent groundwater monitoring shall be carried out |
<table>
<thead>
<tr>
<th>Impacts / Issue</th>
<th>Mitigation Measures</th>
</tr>
</thead>
</table>
| 3. Erosion risks | - Do not over clear the vegetation at the construction site. Clear vegetation within road/farm track design width only.  
- Avoid temporary loading of construction materials or excavated soil on vegetation. Load them on bare land or sealed surface  
- Avoid excavation works on slope in rainy weather  
- Apply engineering solutions to prevent erosion/landslides  
- Provide drains along the road or on slope; use engineering measures such as construction of incomplete walls at cross sections to reduce the dynamic energy of flow when running along the drains on steepy conditions |
| 3. Environmental pollution due to increased waste and wastewater generation | - Include waste and wastewater treatment facilities in Business Plan proposal, such as biogas, composting, landfill, reuse of by-products  
- Apply technology and production process that allow reduction of wastewater  
- Periodical monitoring at outlet |
| 4. Noise and dust problem | The following measures shall be carried out at and near construction sites having residential houses nearby  
- Consider to include access road to proposals and contracts for upgrading to civil works  
- Cover granular materials loads such as sand, soils etc in dry and windy weather  
- Order sand in lots to reduce detention time from temporary loadings  
- Cover trucks carrying soil, sand properly  
- In dry windy day, spray water at the site and its surroundings, at least 20m on access road from the site  
- Regulate and remind drivers to turn off engine when stopping for more than five minutes  
- Use material sheets to isolate construction sites if market place is within 200 m from residential area, schools or other public facilities  
- Clean up roads within 20 m from the site everyday if there are soils dripped along.  
- Workers must wear protective equipment such as hats and musk while working with granular materials or when dust level is high  
Investigate and timely address community complaints regarding air quality problem |
| 5. Block existing drainage path | - Check existing drainage path and make sure that excavated soil do not block them  
- If there is stagnant water at or near construction site, create ways for stagnant water to enter existing drainage path. |
| 6. Increased water turbidity / water quality degradation | - Fence the site properly if it and/or material loads are adjacent to water bodies. Make sure that the fence is firm enough and soils have no way to enter water bodies nearby  
- Do not wash concrete mixing equipments directly in water bodies.  
- Do not wash vehicles at the side of water bodies so as solids |
<table>
<thead>
<tr>
<th>Impacts / Issue</th>
<th>Mitigation Measures</th>
</tr>
</thead>
</table>
| 7. Obstruct access to other existing roads, houses, farmland etc.               | - Provide temporary access road if construction occupies largely the existing access roads;  
- Use construction method to reduce areas occupied at one time if possible. For example, build half of the road on one side and then build the remaining when the newly built half of the access road are accessible;  
- Avoid loading construction materials on busy roads;  
- Instruct in/out trucks to reduce traffic disruption;                                                                                                                  |
| 8. Accident risks                                                              | - If there are soils drifted on access road to construction site, workers shall clean up roads within 20 from the site.  
- Load of sand and soils at sites that will not affect traffic, i.e. place them by the side of the road  
- Place warning signs at unfinished excavation works. Ensure there is enough light at construction site, if possible  
- Authorize workers to instruct in/out trucks  
- Fence construction site properly and restricting access to the site where it is located in populated areas                                                                                                                        |
| 9. Waste Generation                                                            | - Collect package materials for cements, paints etc. and sell to junk collector or burry. Do not throw these wastes into water bodies  
- Reuse excavated soils for leveling low areas  
- Make use of formworks materials for households useful purpose  
- Include simple waste collection/treatment in market place design if possible. Otherwise create or provide options for waste collection arrangements or dumped in locations acceptable by local community and government                                                                 |
| 10. Discovery of objects culturally/archaeologically or spiritually important  | In cases where objects are found during excavation at construction sites, borrow pits or quarries, the chance-find procedure described below will be applied  
*                                                                                                                                                                                                                      |
| The following measures are applicable for some activities under component B only |                                                                                                                                                                                                                                                                                                                                                      |
| 10. Introduce more chemical residues into the soil (for the case of pesticides, fertilizer are provided) | - Apply IPM and GAP (see details in section 8)  
- Enhance capacity of local authorities, businesses and small holders on chemical residues testing  
- Implement demonstration models on biogas and composting to provide supplement fertility to the soil  
- Promote the use of biofertilizer                                                                                                                                     |
| 11. Waste Generation during operation/production                               | - Reuse of wastes or by-products as raw materials for other production  
- Introduce pilot models for agricultural wastes treatment such as composting or biogas (through Component A)  
- Reduce waste generation by measures such as:  
  - Feed animals with unused products  
  - Use byproducts as raw materials for other production, |

---
<table>
<thead>
<tr>
<th>Impacts / Issue</th>
<th>Mitigation Measures</th>
</tr>
</thead>
</table>
| for example mushroom production | - Build and use environmentally waste/wastewater treatment structures such as  
  o Composting  
  o Biogas  
  o Apply soil cover when dump the wastes. Apply deodorance / disinfectant as necessary |
| | - Section 8.3 provide more detail descriptions of the above options |

The mitigation measures listed above should be selected for inclusion into Environmental Protection Commitments. Sample of environmental specifications for bidding document and construction contracts are included in Annex 2. Guidance on site environmental supervision is also provided in this annex.

7.2 Implementation Arrangements:

7.2.1 Component A

For activities under components A and B, the environmental mitigation measures will be identified and implemented as part of the investment activities. The Bank will carry out post random check only.

During Implementation phase, the project will hire an Environmental Consultant (EC) whose TOR is attached to Appendix 1 of this document. Each PMU/PPMU shall allocate one staff responsible for environmental issues. In early stage of the Project, these staff will work under the supervision of the EC and receive formal and on-the-job environmental training. Environmental responsibilities shall be fully handed over to PMU/PPMU environmental staff when the EC input is finished.

The simple mitigation measures listed in Table 3 shall be implemented by farmers, local service providers and activity operators. PPMU environmental staff shall be responsible for monitoring the implementation.

The Environmental Consultant hired by the Project during implementation phase will coordinate with PPMUs, local service providers to identify research activities that promote sustainable agricultural farming practices, including waste treatment options that suits practical conditions and to arrange for implementation of demonstration models. He/she will also take part in monitoring of construction and operation of the provided facilities.

7.2.2 Component B

Partnerships shall be required to prepare business plans in two stages including (i) short business plan; and (ii) full business plan. At the short business plan preparation stage, environmental screening criteria shall be applied to determine the eligibility of short proposals:

(i) Does the partnership propose access road/bridge upgrading or other infrastructure that is located within 1 km from forests, protected areas or natural reserves?
(ii) Does the partnership use any banned chemicals listed in relevant table of Appendix 2 of this document?

Only short proposals having the answers as “no” for both questions are environmentally eligible for further considerations and short-listed. Provincial/District DONRE shall participate into the evaluation process and verify relevant information declared in the short proposals.

The short-listed partnerships will be required to prepare full business plan proposals which also include environmental impacts screening and management plan using the form in Table 6 below.

Table 6 – Environmental Impacts Screening and Management Plan

<table>
<thead>
<tr>
<th>Screening questions</th>
<th>Yes</th>
<th>No</th>
<th>Management Plan*</th>
<th>Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does the business plan proposal involve:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 Provision of pesticides or other agricultural chemicals?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 Activities that increase erosion/landslide risks in the locality, such as farming or operations on hill slopes?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 Exploitation of limited/nonrenewable natural resources (such as ground water)?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 Provision of equipment, materials, facilities or services that generate noise and dusts during operation?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 Provision of equipment, materials, facilities or services that generate waste and/or wastewater during operation?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 Provision of equipment, materials, facilities or services that obstruct existing local drain paths?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 Provision of facilities/infrastructure that is located within 100 m from residential areas or public buildings such as offices, schools?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Management Plan: If yes, then describe existing/proposed mitigation measures have been/will be implemented.
Answer the following questions if answer “yes” to question 6:

<table>
<thead>
<tr>
<th>Does the proposed business:</th>
<th>If yes, then describe existing/ proposed mitigation measures have been/ will be implemented</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 Disrupt local traffic or operations affect local infrastructures such as roads?</td>
<td>If yes, then describe existing/ proposed mitigation measures have been/ will be implemented</td>
</tr>
<tr>
<td>9 Cause any accident risks including fire hazard?</td>
<td>If yes, then describe existing/ proposed mitigation measures have been/ will be implemented</td>
</tr>
</tbody>
</table>

* waste and wastewater treatment facilities and other works for mitigating potential environmental impacts can be selected among those listed in Table 5 or those described in Section 8 of this document.

The Project Environmental Consultant/PPMU Environmental staff shall assist short-listed businesses to fill in Table 6. Environmental screening questions and management plan shall be verified or evaluated by DONRE as a member of the evaluation committee. Figure 2 describes how environmental considerations are incorporated into Component B.

The costs for environmental mitigation measures of Component B shall be estimated and included in total costs of proposed business plan. The mitigation measures shall be incorporated into the contract that ACP signed with partnerships and related bidding documents.

### 7.2.3 Component C

The ACP Project will not finance any infrastructure or construction activities that use borrow areas located within 1 km from protected areas, forest land or natural reserve. No infrastructure that requires relocation of temples or other structures of cultural important would be financed by the ACP.

Table 7 below shall be filled in by feasibility consultant/design engineers at feasibility/design stage to identify the potential socio-environmental impacts. Accordingly, an Environmental Protection Commitment will be prepared for approval by local environmental authorities. The mitigation measures shall be incorporated into the technical design, bidding document and construction contract as appropriate.

Project Environmental Consultant/PPMU environmental staff shall supervise and monitor the preparation of management plan and implementation of mitigation measures. DONRE shall carry out random inspection, if necessary, and when there are complaints.

#### Table 7 – Environmental Screening

<table>
<thead>
<tr>
<th>Screening questions</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does any section of the proposed civil work including alignment, borrow pits, camps etc. :</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 7 – Environmental Screening
1. Located within 50 m from crop land?

2. Located within 100 m from any pagoda, temples, cultural centres, health care centre

3. Located within 200 m from any residential house, market, schools?

4. Cut through existing drains/irrigation canals, pipes?

5. Cause contamination risk to groundwater from runoff through farmland?

6. Cause increase erosion/land slide risks in the locality, such as involving excavation works on slope?

7. Generate significant noise and dusts?

8. Generate waste and/or wastewater?

9. Construction works obstruct existing local drain paths?

10. Limit access to houses/farmland during construction phase?

11. Disrupt local traffic or operations affect local infrastructures such as roads?

12. Cause accident risks including fire hazard?

As the implementation of the above-mentioned measures can usually be combined with daily or normal construction practices thus related costs shall be incorporated into contract values signed with contractor. If additional environmental mitigation facilities are needed for some specific cases, the contractor shall estimate related costs and include it in the subproject’s total investment costs.

Details on the mitigation measures to be included in bidding documents, construction contracts as well as issues that should be observed in the field are included in Annex 3 of this document.

VIII ACP, IMP, GAP AND SUSTAINABLE FARMING PRACTICES

8.1 IPM in Viet Nam

Integrated Pest Management (IPM) has been introduced into Viet Nam since the early 1990s with assistance from UNDP and other international donors. Broadly, IMP can be interpreted as the use of different techniques in combination (biological, cultural, and genetic methods) to control pests, with an emphasis on methods that are least injurious to the environment and most specific in effect to a particular pest. IPM relies on natural mortality factors, such as natural enemies, weather, cultural control methods, and careful applications of pesticide.

Within provincial DARD, the responsibility for the delivery IPM is shared between the Plant Protection Division, who is responsible for promoting the technical position that aims to manage and lower use of chemical, and the Agricultural Extension
Division which has the network to distribute a range of messages including IPM. In addition to the DARD extension team, there are commune level appointees who are responsible for promoting messages at commune and village level.

IPM has been delivered as a “Model”. This technique basically sets up a working demonstration site, which is supported by a staff member and may have the combined interaction of 30 or more farmers. The Model promotes those actions that are necessary for farmers to adopt. Problems are explained by staff who is responsible for the running of the ‘demonstration’. Good records are kept. In the lowlands, women had a high involvement in attendance at these extension groups.

8.2 ACP with IPM and GAP

As described in Section II, the application of integrated pest management (IPM) or good farming practices (GAP) and the promotion of sustainable use and management of land and coastal resources (on a communal basis) or improving soil fertility (at the farm level) to ensure long term sustainability of farming practices shall be implemented under subComponent A2 of the ACP.

The Table below describes principles of IPM/GAP that will be adopted by the ACP.

Table 8 - IPM/GAP adopted by ACP

<table>
<thead>
<tr>
<th>Issue</th>
<th>IPM/GAP approach</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agro chemical use</td>
<td><strong>Apply non-chemical solutions for pest control:</strong></td>
</tr>
<tr>
<td></td>
<td>- Clean the farms prior to seedling by water: inundation the soils in a few days shall damage insect eggs, grass roots and the others that potentially cause harm to crops</td>
</tr>
<tr>
<td></td>
<td>- Choose appropriate seedlings, i.e. persistent to pests</td>
</tr>
<tr>
<td></td>
<td>- create favorable environment for crop pest predators to grow</td>
</tr>
<tr>
<td></td>
<td>- cut pest food chain by rotating crops</td>
</tr>
<tr>
<td></td>
<td>- Catch the pest manually or by traps, for example use lights at night time to catch the butterflies or put sand mixed with oil into rice field and vibrate the trees so as the pest fell off the trees and got trapped.</td>
</tr>
<tr>
<td></td>
<td>- Disposed off the infected trees in such away that make sure that pests have no way to come back to farm.</td>
</tr>
<tr>
<td></td>
<td><strong>Follow the “four correct” rules:</strong></td>
</tr>
<tr>
<td></td>
<td>- Crop-specific rules should be advised by Agricultural Extension Centers</td>
</tr>
<tr>
<td></td>
<td>- use the correct pesticide/herbicide</td>
</tr>
<tr>
<td></td>
<td>- apply the correct content and concentration</td>
</tr>
<tr>
<td></td>
<td>- apply at the right time</td>
</tr>
<tr>
<td></td>
<td>- apply in correct manual</td>
</tr>
<tr>
<td></td>
<td><strong>Only Use chemicals when necessary:</strong></td>
</tr>
<tr>
<td></td>
<td>- The use of pesticides and other agrochemicals shall be complied with Decision No. 23/2007/QĐ-BNN dated 28 March 2007 by MARD (see attachment 1 of this document, in Vietnamese) which provides the “List of pesticides allowed to be used in Vietnam” and the list of banned agrochemicals.</td>
</tr>
<tr>
<td>Issue</td>
<td>IPM/GAP approach</td>
</tr>
<tr>
<td>-------</td>
<td>------------------</td>
</tr>
</tbody>
</table>
| - The use of biological/herbal pesticides or those with low toxicity or can decompose quickly (classified as group III, IV in the above-mentioned list) is preferred.  
- Do not use chemicals of un-known origins.  
- ACP may also provide equipment and training for chemical residue tests |
| **Ensure Health Safety when contact with agrochemicals** | - Train farmers/field workers on safety rules such as:  
  - Wear protective equipment for the entire body when spraying pesticides and other chemicals  
  - Wash hands properly after finishing works  
  - Stick firmly labels with large, bold texts providing sufficient warning information when using containers for temporary storage  
  - Place agrochemicals out of reach of children  
  - Do not spray during high wind that chemicals may be brought to buildings near by  
  - Do not enter farms too soon after spraying pesticides (when the farm is still smelly) |
| **Waste Management** | - Reduce waste generation by measures such as:  
  - Feed animals with unused products  
  - Use byproducts as raw materials for other production, for example mushroom production  
  - Build and use environmentally waste/wastewater treatment structures such as  
    - Composting  
    - Biogas  
    - Apply soil cover when dump the wastes. Apply deodorance/disinfectant as necessary  
  Section 8.3 provide more detail descriptions of the above options |
| **Water pollution Control** | - Provide drain path for farm that ensure:  
  - Wastewater is not discharged directly into drinking water sources  
  - Do not wash spraying bottles, agrochemical containers in water source. Wash them in farmland. |
| **Promote Sustainability of natural resources in Farming** | - Use organic fertile to supplement soil fertility  
- Apply water-saving irrigation models |
8.3 Biogas and Composting as Mitigation Measures in ACP

As mentioned in Section 7.1.2, biogas and composting models shall be provided for mitigating the potential impacts of farming models to be supported by the ACP under Component A, and potentially under Component B.

8.3.1 Biogas

In parallel to the preparation of the ACP, a project named “Livestock Competitiveness and Food Safety” (LIFSAP) has also been prepared by the World Bank. Most of the information below is the findings of the Consultants carrying out Environmental Assessment for LIFSAP.

Biogas

Current data and the Consultants’ field trips have clearly indicated that there is a growing positive attitude among small and medium scale farmers towards the use of biogas. Positive effects of anaerobic digestion are the production of an ‘easy to use’ (domestic use) energy source biogas (lowering emissions of the greenhouse gas methane; reduced use of fuel wood, hence reduced deforestation; reduced use of non-renewable energy sources), storage of the biogas effluent (offering possibilities for e.g. local cropping), reduction of odors (diminishes complaints by neighboring residents), and reduction of COD/BOD (reduced impact on water systems). Furthermore, the lack of oxygen, the retention time, and the temperature of the digested manure reduces the survival of plant pathogens, weed seeds, and viruses. It has, however, to be noted that the effluent of anaerobic digesters still can weigh heavily on the environment when being discharged in an uncontrolled way to waters, since little changes in the nutrient composition take place. Furthermore, it is very important that all the gas produced is oxidized, preferably to produce useful heat.

Nevertheless, anaerobic digestion is also a potential option for cattle farms, especially when manure is combined with co-products (e.g. unused fodder, household wastes) to increase gas yields and combine to a better manageable effluent.

During the field trips, different examples of well and poorly managed biogas units were observed. In the case of poor management, surplus biogas was released to the air. In this way the environmental benefit from biogas production could even have a negative balance. Flaring should be operated at least if surplus gas could not be used. In one situation, surplus gas was delivered to neighboring households for cooking and lighting.

Transporting liquid manure or the effluent from the biogas tank to for instance a fish pond should be through a water tight evacuation channels to prevent leaking of minerals to the soil and to ground water.

The costs (in millions VND) for biogas construction quoted by GTEC based in Hai Phong. Quoted price exclude connecting pipes, valves, elbows etc. It is expected that the costs of biogas models using other service providers should be similar:
Table 9 – Estimated cost for Biogas – concrete typed

<table>
<thead>
<tr>
<th></th>
<th>12 pigs</th>
<th>25 pigs</th>
<th>35 pigs</th>
<th>45 pigs</th>
<th>55 pigs</th>
<th>65 pigs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4.6</td>
<td>6</td>
<td>7.4</td>
<td>8.6</td>
<td>9.7</td>
<td>10.8</td>
</tr>
</tbody>
</table>

8.3.2 *Composting*

Composting, also referred to as biological, aerobic drying, is generally used to produce a stabilized organic fertilizer. An important feature of composting is the temperature inside the heap (up to 70 °C) reached when the process runs under optimal conditions. The heat produced from oxidation of organic compounds drives the evaporation of water vapor (drying), and a variety of gases (NH₃, CO₂, CH₄, N₂O, odors). Their quantities greatly depend on the composting conditions, like substrate quality (mainly the ratio between nitrogen and carbon), porosity (to allow entering of oxygen), and management (frequency of turning).

Compost is usually a well respected organic fertilizer for use on arable farms, horticulture and in gardens, since it increases soil nutrient content and organic matter, hence improving the water binding capacity, porosity and fauna in soils. Besides these positive effects, composting has also adverse effects, mainly related to the emissions of polluting gases.

For composting, the following issues should be considered:
- storage pits and lagoons of appropriate size, so liquid manure can be applied at the right moment
- covering storage areas exposed to rain
- effluent evacuation channels
- canalization / irrigation bringing effluents to ponds, paddy fields, grassland or other crops

8.4 Sustainable Farming Practices

During the implementation phase, the options for promoting sustainable agricultural practices including those mentioned in Section 5.2 shall be investigated and considered for inclusive into SubComponent A2 activities.

IX COST ESTIMATION

The Cost of EMP implementation and monitoring are summarized in Table 10 below:

Table 10 – ENVIRONMENTAL MANAGEMENT COSTS SUMMARY

<table>
<thead>
<tr>
<th>Component</th>
<th>Environmental Mitigation Costs</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td></td>
<td>Included in service contract</td>
</tr>
<tr>
<td>B</td>
<td></td>
<td>Included in the total cost of business plan</td>
</tr>
</tbody>
</table>
C  Included in the total costs of Civil Works contract or estimated by contractor in their bids

D  100,000 Including:
- Environmental Consultant Fees (USD 60,000),
- Formal, informal environmental training for PPMU/PCU environmental staff and workshops for sharing experiences (USD 10,000).
- Environmental monitoring (10,000 USD)
- EMP implementation monitoring by independent monitoring consultant (carry out six monthly) and auditing (final year) (20,000)

X  IMPLEMENTATION RESPONSIBILITIES

Responsibilities of project implementing agencies in implementing the ACP EMP are described in Table 11 below:

Table 11 – Responsibilities of Stakeholders in EMP implementation

<table>
<thead>
<tr>
<th>Agency</th>
<th>Implementation Functions</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCU</td>
<td>• Allocate staff responsible for environmental issues</td>
</tr>
<tr>
<td></td>
<td>• Recruit Project Environmental Consultant and supervise his/her work</td>
</tr>
<tr>
<td></td>
<td>• Monitor the implementation of EMP by PPMU</td>
</tr>
<tr>
<td></td>
<td>• Inclusive the implementation of EMP into progress report</td>
</tr>
</tbody>
</table>

|                | • Allocate staff responsible for environmental issues                                     |
|                | • Inclusive the implementation of environmental mitigation measures into Project periodical Implementation Planning, particularly those indicated in component A and B |
|                | • Recommend solutions for sustainable farming and participate in the implementation of demonstration models |

<p>| DARD/PPMU      | • Coordinate with environmental consultant to guide businesses to include environmental screening and mitigation measures into their business plans |
|                | • Check to make sure that environmental specifications are included in the bidding documents, cost estimates and contractual documents for FS and civil works contract |
|                | • Monitor and/or arrange for monitoring the implementation of environmental mitigation measures by civil works contractor |</p>
<table>
<thead>
<tr>
<th>Agency</th>
<th>Implementation Functions</th>
</tr>
</thead>
</table>
| **Provincial / District DONRE** | • Provide advices when being consulted by DARD/PPMU relating to ACP  
• Verify declarations on responsive to environmental criteria stated in Business Plan Proposals prepared under Component B, C and appraise their proposed mitigation plans  
• Appraise environmental mitigation measures proposed in the Investment Report of Civil Works under Component B, C  
• Carry out random environmental inspections or when complaints are received or when required by the ACP |
| **DPC**               | • Issue environmental certificates when recommended by DONRE  
• District environmental staff gives advices on environmental issues required by the evaluation committee.  
• Participate in monitoring the environmental impacts during construction and operation of the facilities provided by the Project. |
| **IMC**               | ① Monitor the implementation of EMP in project provinces (six monthly) and submit report to PMU/WB.  
② Carry out environmental audit at project completion |
| **FS Consultants**    | • Include environmental screening and mitigation measures in to Investment Reports of Civil works component C  
• Incorporate environmental mitigation measures into detail design and bidding documents  
These requirements shall be included in the FS contract |
| **Contractor**        | • Implement mitigation measures, observe the effectiveness and report to Employer/Project Owner. This requirements shall be included in the Bidding and Contractual documents |

**XI   PUBLIC CONSULTATION AND INFORMATION DISCLOSURE**

The Project will comply with the Bank’s policy on public Consultation and Information Disclosure. Therefore, the English version of the EA&EMF has been disclosed at VIDIC, 63 Ly Thai To, Hanoi, and in Infoshop in Washington prior to project appraisal.

During project implementation phase, PPMUs are required to facilitate consultation with affected and benefited households, preferably in the form of community meetings. At such consultation meeting, PPMU/Consultants should: (i) inform communities basic information about technical proposals, present the predicted socio-environmental issues, mitigation measures and monitoring program presented in the final draft Environmental Protection Commitment Reports (EPC); and (ii) asked communities to advise PPMUs on the socio-environmental issues and mitigation measures that should be but not have been included in the environmental reports. Records of public consultation will be documented as part of the Environmental Protection Commitment Report, which clearly indicate: Location of the meeting, time, the number of participants, the number of women and ethnic minorities, key information provided to communities and full information on the comments received at the public consultation meeting (see form in annex 2).
Vietnamese version of the Environmental Commitment Reports accepted by the Bank will be sent to the Bank for Disclosure at Infoshop, 63 Ly Thai To, Ha noi, Vietnam. English version of the EPC should be submitted when required.

XII  Sub-projects environmental safeguard documents review and clearance

The Bank will carry out prior review environmental safeguard documents prepared for component C sub-projects only.
- Road and power supply (distribution) sub-projects: The Bank will prior review at least 30% of the proposed sub-projects of each annual program. Subprojects to be randomly be prior reviewed will be advised by the Bank Task Team based on the list submitted by each PPMU.
- Drainage, irrigation and other water works: all subprojects will be prior review.

Safeguard documents submitted to the Bank will include (i) Environmental Protection Commitment and Certificate which includes maps, sketches, and photos taken along the alignment and at borrowed areas; (ii) records of public consultation;
Appendix 1 – Safety Regulations and rules for Pesticide usage, handling, storage and disposal

Legislations:

**Ordinance on Plant Protection and Quarantine**

**Chapter IV Pesticide management**

**Article 29**

The Ministry of Agriculture and Rural Development takes responsibility to:

1. Regulate the testing and registration of new pesticides for use in Vietnam;
2. Grant testing permit and pesticide registration certificate in Vietnam;

**Article 30**

1. The manufacturing, formulation, bottling, packaging, storage, distribution, transportation, sale, use and disposal of pesticides must be safe to the health of humans, plants, animals and the environment. 
2. The person who has caused the leakage of pesticides, must timely carry out treatment measures according to provisions of law. In case of leakage in a large scale and causing serious consequences, that one must immediately inform the plant protection and quarantine authority, environmental protection agency, local authorities or other relevant agencies for treatment and must be liable in accordance with provisions of law. 
3. Any person who has found the leakage of pesticides, shall have responsibility to inform immediately the plant protection and quarantine authority or the nearest People’s Committee.

**Article 31**

1. Any person directly involved in the management and trading of pesticides in the areas of production, formulation, bottling, packaging and sale of pesticides, must obtain an official license and meet other requirements according to provisions of law.
2. The granting of permit for foreign investment in the areas of production, formulation, bottling and packaging of pesticides in Vietnam must obtain the consent of the Ministry of Agriculture and Rural Development.
3. The import of any pesticide which is outside the list of permitted pesticides and is used for a foreign investment project, and the import of any pesticide which is included in the list of restricted pesticides, must obtain a permit from the Ministry of Agriculture and Rural Development.

**Article 32.**

1. Any organization and/or individual involved in the importation, production, formulation, bottling, packaging and sale of pesticides must assure quality and standards as registered with the plant protection and quarantine authority. Labels must be provided in accordance with provisions of law.
2. Any organization and/or individual using pesticides must follow the instructions with regard to target, type, dosage, concentration, timing, post harvest interval, expiry date and scope of use.
3. Any organization and/or individual using pesticides must ensure safety to humans, crops, animals, food and the environment, and be liable for using pesticides not in compliance with Point 2 of this Article.

**Article 33**

1. Pesticides shall be destroyed or returned to the place of origin may include:
   a) Pesticides banned for use in Vietnam;
   b) Counterfeit pesticides;
   c) Obsolete pesticides;
   d) Pesticides without clear origin;
   e) Pesticides falling outside the list of pesticides permitted for use in Vietnam.

   The Government specifies pesticides that will be destroyed or returned to the place of origin.

2. The disposal of pesticides and/or package must be conducted in accordance with provisions of law and must be supervised and certified by the plant protection and quarantine authority, environmental protection agency and local authorities.

3. In case of a pesticide to be destroyed or returned to the place of origin, all related costs and expenses shall be borne by the organization and/or individual involved in the importation, production and sale of that pesticide.
Agricultural Competitiveness Project

### Article 34
The reservation of pesticides is stipulated as follows:
1. National pesticide reserves shall be established at the central level;
2. Local pesticide reserves shall be established at the provincial level;
The Government shall decide the establishment, management and use of pesticide reserves.

### Article 35
The following activities are strictly prohibited:
1. The manufacturing, formulation, bottling, packaging, storage, importation, distribution, transportation, sale and use of banned pesticides; counterfeit pesticides; pesticide without clear origin; pesticides with labels not in compliance with provisions of law; pesticides falling outside the list of pesticides restricted and permitted for use in Vietnam, unless otherwise stipulated in Point 3, Article 30 of this Ordinance.
2. Importation, sale and use of obsolete pesticides.
3. Advertisement of pesticides that are banned and restricted for use, not in the list of permitted pesticides and not consistent with those that have already been registered.

<table>
<thead>
<tr>
<th>MARD Decision No. 145/2002/QD-BNN – Chapter VI - Transporting and storing pesticide</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Article 23 - Transporting pesticides:</strong> Transporting pesticides and raw materials must ensure safety for human beings, the environment on road maps; stopping or parking in crowded areas, near schools, hospitals, markets, water sources is prohibited.</td>
</tr>
<tr>
<td><strong>Article 24 - Occurrences while transporting pesticides:</strong> If pesticide breaks, spills or traffic accidents happen while transporting, owners of vehicles or goods must inform the nearest local authority or state competent agency so as to work out measures to prevent and overcome timely consequences caused by the leaking pesticide, and the goods owners shall have to bear all the associated costs.</td>
</tr>
<tr>
<td><strong>Article 26 - Storing pesticide:</strong> Pesticide storage must ensure safety for human beings, animals and the environment in surrounding areas. In case pesticide leaks, diffuses, having bad effects on the environment, pesticide owners must be responsible for overcoming the consequences under guidance or examination by the Agency for Quarantine and Plant Protection, Provincial level Agency for Environment Management and bear all associated costs.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MARD Decision No. 145/2002/QD-BNN – on disposal of Pesticide</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Article 31 - Disposal:</strong> “The disposal of pesticides and packages is conducted in line with stipulations in Regulations on Management of Dangerous Waste, issued in conjunction with Decision No. 155/1999/QD-CP dated July 16, 1999 by the Prime Minister and must be in accordance with Point 5, Part 2, Directive No. 29/1998/CT-TTg dated August 25, 1998 by the Prime Minister and other regulations of the Law on Pesticide Disposal.”</td>
</tr>
</tbody>
</table>
ACP PROJECT SPECIFIC GUIDANCE ON TRANSPORTATION, STORAGE, HANDLING AND DISPOSAL OF AGROCHEMICALS:

Transportation and Storage:
- Transport and store pesticide away from (i) food, drinks and pet food; (ii) items, such as clothing, that come into close contact with people; (iii) substances that are flammable, explosive, chemical reactive, or otherwise likely to increase the risk of accidents.
- Adequate pesticide storage areas that are locked, sheltered, ventilated, supervised, and free of spills or leaking containers; are not subjected to flooding, and are equipped with drainage outfalls with evaporation ponds to eliminate contamination of water supply.
- Post a sign that states Pesticide Storage.
- Pesticides should be stored away from high traffic areas.
- Make sure there is good lighting throughout the storage area.

Handling:
- Read the labels and follow directions and safety precautions. Never use pesticides inconsistently with the label.
- Use face masks and protective clothing during spraying. Avoid breathing spray mist or dust.
- If pesticides are spilled on the skin or clothing, wash thoroughly with soap and water. Change cloth.
- Do not eat, drink or smoke when handling pesticide.
- Provide adequate ventilation when applying pesticides.
- To prevent illegal meat and milk residues and possible harm to the animal, never exceed label rates of application.
- Never apply pesticides closer to slaughter dates than the number of days listed on the label.
- Avoid drift to adjacent cropland, yards, wood lots, lakes or ponds. Some materials may injure and kill fish or wildlife and crops.
- Avoid treatment of animals that are sick. Overheated or stressed from shipping, recent weaning etc.
- Avoid contamination of feed, managers, water, milk and milking equipment.
- Do not spread treated manure on cropland unless label approval.

Contact a physician at once in all cases of suspected poisoning. Symptoms of organic phosphate poisoning include blurred vision, abdominal cramps and tightness in the chest. Atropine is antidotal for some organophosphorus pesticides.

Application Practice:

Spraying. Pesticides to be sprayed should be selected with the knowledge that surrounding areas are likely to receive drift. Spraying operations should be closely supervised to ensure good performance and minimize hazards. For example, spraying should be done when the weather is suitable. Local populations should be notified ahead of time to stay out of the fields during spraying and for an appropriate period thereafter.

Protective Clothing. Many pesticides are readily absorbed through the skin and can be used safely only if operators wear protective clothing. Requirements for protective clothing are usually indicated on the pesticide label. Depending on the level of hazards, protective clothing can ranges from long-sleeves shirts, long pans, and enclosed shoes to rubber gloves, masks, etc.

Training. Training on pesticide handling should cover safety aspects thoroughly, including the danger of pesticide absorption through the skin and lungs, short and long-term effects of intoxication, and hazards of environmental contamination. Training should also include the importance of optimizing pesticide use through integrated pest management.

Disposal:
- Dispose of empty pesticide containers promptly and properly according to specific recommendations stated in the labels, if available.
- Do not reuse pesticide containers for any other purpose, including selling to recycling businesses.
- Do not disposed of pesticide containers in water sources. Place them away from water sources.
- Dispose of used pesticide containers in places allowing hydrological insulation with surface and ground water, for example apply clays around the burying hole.

Stay out of the smoke if containers are burned.
Some information on health impacts of agrochemicals in general and pesticide in particular


Thuộc bảo vệ thực vật gây tác hại đến sức khỏe như thế nào?

Thuộc bảo vệ thực vật gây tác hại đến sức khỏe như thế nào?

---------tra loi---------

Thuộc bảo vệ thực vật là các loại hoá chất do con người sản xuất ra để trừ sâu bệnh và có đại có hại cho cây trồng.

Thuộc bảo vệ thực vật được phân thành hai loại chính là thuốc trừ sâu và thuốc diệt cỏ. Các loại thuốc này có ưu điểm là diệt sâu bệnh, cố đề nhanh, sử dụng lại đơn giản, nên được nông dân ưa thích. Nhưng thuốc bảo vệ thực vật cũng có rất nhiều tác hại, đó là:


Các loại thuốc trừ sâu đều có tính độc cao. Trong quá trình dùng thuốc, một lượng thuốc nào đó có thể đi vào trong thân cây, quá, hoặc di chuyển bảm chất trên lá, quả. Người và động vật ăn phải các loại nông sản này có thể bị ngộ độc tức thì đến chết, hoặcimet độc mềm, từ gây ảnh hưởng nghiêm trọng đến sức khỏe. Do tính độc hơn chê, một số nông dân không tiêng ưa càc quy định về sử dụng, bảo quản thuốc trừ sâu, có người cất thuốc vào chăn, vào tủ quản điều, nên đã gây nhiễm những trường hợp ngộ độc, thậm chí chết thảm thương do ăn nhiễm phải thuốc.

Một số loại thuốc trừ sâu có khả năng bay hơi mạnh nên gây khó chịu, một số, thậm chí gây ngạt cho người trực tiếp phun thuốc sâu trên dòng ruộng, nhất là trong tương hợp không có các biện pháp phòng tránh tốt.


Một số loại thuốc trừ sâu có tính năng hoá học ổn định, khó phân huỷ, nên dễ tích lũy trong môi trường. Sau nhiều lần sử dụng lượng tích lũy này có thể cao đến mức gây độc cho môi trường đất, nước, không khí và con người. Do thuốc tồn đọng lâu không phân huỷ, nên có thể theo nước và gió phát tán tới các vùng khác, theo các loại sinh vật di khảo môi nơi. Thuốc diệt cỏ được dùng đủ mức ít hơn. Tuy nhiên do có tính độc, chúng gây nên những tác hại tới môi trường giống như thuốc trừ sâu.

Nói tóm lại, thuốc trừ sâu, được có không chỉ có tác dụng tích cực bảo vệ mùa màng, mà còn gây nên nhiều hệ quả môi trường nghiêm trọng, ảnh hưởng lớn hệ sinh thái và con người. Do vậy cần phải thận trọng khi dùng thuốc và phải đúng dùng liệu, đúng loại, đúng lức theo chỉ dẫn của căn bổ kỳ thuốc.

Appendix 2 - Forms of Public Consultation Meeting Records

BIỂN BẢN THAM VĂN CỘNG ĐỒNG
VỀ CHÍNH SÁCH AN TOÀN MÔI TRƯỜNG, XÃ HỘI CỦA DỰ ÁN
(dùng để ghi chép tại cuộc họp và định kèm vào báo cáo)
Tiểu dự án:  

Địa điểm hợp tham vấn:  

Thành phần tham dự:  
trong đó có... phụ nữ,... người là người dân tộc  
(Đính kèm Danh sách các hộ bị ảnh hưởng dự hợp)  

Nội dung:  

cung cấp thông tin và lấy ý kiến của nhân dân về dự án, tác  
dộng môi trường, biện pháp giảm thiểu và công tác công khai  
thông tin)  

Chi tiết các ý kiến phản hồi nhận được tại cuộc họp:  

Trả lời/cam kết của Chủ dự án.

Ngày .... tháng .... năm ....
Cán bộ lập biên bản (ghi rõ họ tên, chức danh)

(đính kèm danh sách đại biểu)
Annex 3
RECOMMENDED ENVIRONMENTAL ENVIRONMENTAL SPECIFICATIONS
FOR CONSTRUCTION CONTRACTS – COMPONENT C
(to be included in the bidding document and construction contracts)

The Contractors shall be complied with relevant Vietnamese environmental legislation AND:

Workforce, Camps and Site Management:

- Workers’ camps will be located at least 200 m away from schools and health care centres and not be located on steep slopes. The workforce shall be provided with safe, suitable and comfortable accommodations and safe portable water. They have to be maintained in clean and sanitary conditions;
- Site offices, camps, mixing stations, and workshops shall be located NOT within 100m from any water courses, 500 meters of existing residential area.
- Engineers and workers shall register their temporary residence with the local authority;
- Allocate officer to be the Contractor’s Workplace Safety and Environment Officer responsible for environmental and safety issues including training for workers
- Septic tank toilets must be provided at all construction camp areas where there will be concentration of labor.
- First aid boxes shall be provided in each construction camp site;

Code of Conducts: The following activities are prohibited on or near the project site:

- Cutting of trees for any reason outside the approved construction area;
- Hunting, fishing, wildlife capture, or plant collection; Buying of wild animals for food or having caged wild animals (especially birds) in camps;
- Disturbance to anything with architectural or historical value;
- Doing maintenance (change of oils and filters) of cars and equipment outside authorized areas:
- Disposing trash in unauthorized places; Latrine outside the designated facilities; and
- Driving in an unsafe manner in local roads;
- Working without safety equipment (including boots and helmets);
- Spillage of potential pollutants, such as petroleum products;
- Burning of wastes and/or cleared vegetation.

Dust and noise Control:

- The Contractor shall implement dust suppression measures (e.g. water spray vehicles, covering of material stockpiles, etc.) if and when required;
- Construction vehicles shall comply with speed limits and haul distances shall be minimized;
- Material loads shall be suitably covered and secured during transportation to prevent the scattering of soil, sand, materials or dust; Loads shall have appropriate cover to prevent them spilling from the vehicle during transit;
- The Contractor shall be responsible for any clean-up resulting from the failure by his employees or suppliers to property secure transported materials.
- To the extent possible, nighttime operations shall be kept to a minimum and banned near sensitive receptors such as residential or health care centres;

Earthworks, Cuts and Fill Slopes:

- Vegetation clearing shall take place in a phase manner in order to retain vegetation cover for as long as possible; Re-vegetation, where applicable, shall start at the earliest opportunity.
- maintain stable cut and fill slopes at all times and cause the least possible disturbance to areas outside the prescribed limits of the works.
- Any excavated cut or unsuitable material shall be disposed of in designated disposal areas agreed to by the Construction Supervisor.
Disposal sites should not be located where they can cause future slides, interfere with agricultural land or any other properties, or cause soil from the dump to be washed into any watercourse.

Stockpiles, Quarries and Borrow Pits:
- The Contractor buy materials from licensed borrow pits and quarries only. Copy of licensed must be submitted to Construction Supervisor.
- New stockpiles, quarries and borrow pits shall be at least 25m from any steep slopes, erosion-prone soils, cultivated lands, and areas that drain directly into water bodies.
- Store topsoil when first opening the borrow pit. After all usable borrow has been removed, the previously stockpiled topsoil should be spread back over the borrow area and graded to a smooth, uniform surface, sloped to drain.
- Existing drainage channels in areas affected by the operation should be cleaned up weekly by the contractor.
- Ensure that all borrow pits used are left in a trim and tidy condition with stable side slopes, no stagnant water bodies are created which could breed mosquitoes.

Disposal of Debris:
- Establish and enforce daily site clean-up procedures; The disposal of debris shall be carried out only at sites identified and approved by the Construction Supervisor. The contractor should ensure that these sites (a) are not located within cultivated areas; (b) do not impact natural drainage courses; and (c) do not impact rare flora.
- In the event any debris or silt from the sites is deposited on adjacent land, the Contractor shall immediately remove such debris or silt and restore the affected area to its original state.
- Water courses shall be cleared of debris and drains and culverts checked for clear flow paths;
- Septic tank toilets shall be provided on site for construction workers and be cleaned up on regular basis. At completion of construction works, soak pits and septic tanks shall be covered and effectively sealed off;
- Wastewater shall not be disposed in watercourses without treatment.

Solid Waste Management
- The Contractor shall ensure that the sites are maintained in a neat and tidy condition, free of litter;
- Waste storage containers shall be covered, weatherproof and scavenger proof;
- No burning, on-site burying or dumping of waste shall occur;
- All solid waste shall be disposed of offsite at an approved disposal site.
- Random disposal of solid waste in scenery areas shall be strictly prohibited;
- Recyclable materials such as wooden plates for trench works, steel, scaffolding material, site holding, packaging material, etc shall be collected and separated on-site from other waste sources. Collected recyclable material shall be re-used for other projects or sold to waste collector for recycling.
- When heating of bitumen products, the Contractor shall take appropriate fire control measures; excess gravel shall not be left on road / paved area verges. This shall be swept /raked into piles and removed to an area approved by the Construction Supervisor;
- Concrete mixing directly on the ground shall not be allowed and shall take place on impermeable surfaces to the satisfaction of the Construction Supervisor;
- All runoff from batching areas shall be strictly controlled, and cement-contaminated water shall be collected, stored and disposed of at a site approved by the Construction Supervisor;
- Unused cement bags shall be stored out of the rain where runoff won’t affect it;
• Used (empty) cement bags shall be collected and stored in weatherproof containers to prevent windblown cement dust and water contamination. Used cement bags shall not be used for any other purpose and shall be disposed of on a regular basis via the solid waste management system;

• All excess concrete shall be removed from site on completion of concrete works and disposed of. Washing of the excess into the ground is not allowed. All excess aggregate shall also be removed.

Hazardous Substances Management
• All hazardous material / substances such as fuel, oil and bitumen etc. shall be stored in a secured, appointed area that is fenced and has restricted entry. All storage shall take place using suitable containers to the approval of the Construction Supervisor;

• Used oil and grease, bitumen shall be removed from site and return/sold to an approved recycling company;

• Inform the Construction Supervisor of any accidental spill or incident and initiate a remedial action following any spill or incident;

• Hazard signs indicating the nature of the stored materials shall be displayed on the storage facility or containment structure;

Safety and Traffic Management
• Provide personal protective equipment and clothing (goggles, gloves, respirators, dust masks, hard hats, steel-toed boots, etc..) for construction workers and enforce their use;

• During heavy rains, accidents, or emergencies of any kind, suspend all work;

• Establish safe sight distance in both construction areas and construction camp sites;

• Limit the speed of vehicles moving within the construction site;

• Place signs around the construction areas to facilitate traffic movement, provide directions to various components of the works, and provide safety advice and warning. All signs shall be constructed according to Vietnamese specifications;

• Construction vehicles comply with speed limits;

• Maintain adequate traffic control measures throughout the duration of the construction activities and such measures shall be subject to prior approval of the Construction Supervisor;

• If school children are in the vicinity, include traffic safety personnel to direct traffic during school hours;

• Ensure traffic safety at intersections, especially near sensitive areas (schools, markets, hospitals, and historical, cultural and religious places).

• Maintain a supply for traffic signs (including paint, easel, sign material, etc.), road marking, and guard rails to maintain pedestrian safety during construction;

• Materials leaving or entering the construction site shall be transported during non-peak hours in order to minimize traffic noise due to the increase in traffic volume;

• Not use any vehicles, either on or off road with grossly excessive noise or exhaust emissions, producing bad odors, or overloaded. In any built up areas, noise mufflers shall be installed and
maintained in good condition on all motorized equipment under the control of the Contractor. Exhaust fumes shall comply with Standard TCVN 6438-2001.

**Chance-Find Procedure**

In case of a site or an artifact discovered during the implementation earthworks, the procedures to be carried out shall be:

- contractor/workers immediately halt the work at the site;
- Contractor/workers protect the site and found objects, and report to the Site Supervisor.
- The Site Supervisor report to the Provincial Project Management Unit (PPMU) and the provincial Department of Culture, Sport and Tourism (DCST).
- Officer from DCST visit the site and carry out preliminary investigation to determine the significance of the object/the site.
- Then he/she will decide whether the workers can continue to work at the site, or contact the National Institute of Archaeology for further investigation.

Contractor/Workers are allowed to resume their work if no further investigation is required, otherwise resiting of the civil works would be likely.
Annex 4 – Guidance on Environmental Supervision

Một số biện pháp giảm thiểu tác động môi trường – xã hội cần lưu ý thực hiện

Biện pháp thiết kế

<table>
<thead>
<tr>
<th>Thiết kế đường phải có mương thoát nước dốc và thoát nước ngang với khẩu độ hợp lý để tránh bị xói lở trong quá trình sử dụng</th>
<th>Nước xả từ ông thoát nước phải được lắp thảp hở hoặc đàm xướng chắn đốc để tránh xói lở tại chân đốc khi nước đổ xuống</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Image" /></td>
<td><img src="image2.png" alt="Image" /></td>
</tr>
</tbody>
</table>

Biện pháp quản lý thi công

<table>
<thead>
<tr>
<th>Lập biên cung cấp thông tin về công trình</th>
<th>Thông báo với giáo viên khi thi công gần trường học</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image3.png" alt="Image" /></td>
<td><img src="image4.png" alt="Image" /></td>
</tr>
</tbody>
</table>

- Chí khai thác đất ở những khu vực được cấp phép, không lấy ở các khu vực có giá trị văn hóa, lịch sử. Sau khi khai thác xong phải san ủi và phối hợp với địa phương trồng cây xanh.
- Không tập kết, đổ vật liệu hoặc chất thải nơi đất đai không có biện pháp bảo vệ sẽ bị xói bởi nước mưa gây nguy hiểm và ô nhiễm nguồn nước ở chân đốc.
Đảm bảo an toàn cho con người, môi trường và đất canh tác trong khi thi công

<table>
<thead>
<tr>
<th>Phải đặt biển báo, gờ giảm tốc để gắn lối ra vào công trường, mở đất và các bài đất mương</th>
<th>Trang bị và sử dụng bảo hộ lao động khi làm việc</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="94x519.png" alt="Image" /></td>
<td><img src="301x682.png" alt="Image" /></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Không để nước thải thi công, nước mưa cuốn theo đất, cắt tập kết hai bên đường chảy vào đất canh tác</th>
<th>Xăng dau, nhiên liệu phải được lưu trữ trong các thùng kín. Nội chứa này cần có mái che, rao chắn và cảnh báo nguy hiểm.</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="100x328.png" alt="Image" /></td>
<td><img src="320x525.png" alt="Image" /></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chất rắn trong nước thải, nước mặt chảy tràn từ công trường phải được thu và lắng cần trước khi chảy vào mương, kênh, suối..</th>
<th>Sởi, đá xây dựng cần được tập kết trên nền cống hoặc lót y bao xiăng để sử dụng hết, tránh lãng phí vật liệu</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="102x138.png" alt="Image" /></td>
<td><img src="322x141.png" alt="Image" /></td>
</tr>
</tbody>
</table>
Bảo dưỡng, vận hành

<table>
<thead>
<tr>
<th>Văn động công động giữ thậm thực vật trong quá trình sử dụng để giảm thiểu nguy cơ xói lở dẫn đến hỏng hóc</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image-url" alt="Image" /></td>
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</tr>
</tbody>
</table>

### Appendix 5:
Lists of pesticides usable / banned in Vietnam, issued as attachment to Decision No. 23/2007/QĐ-BNN dated 28 March 2007 by MARD

#### BỘ NÔNG NGHIỆP VÀ PHÁT TRIỂN NÔNG THÔN

**CỘNG HOÀ XÃ HỘI CHỦ NGHĨA VIỆT NAM**  
Độc lập - Tự do - Hạnh phúc

**DANH MỤC THUỐC BẢO VỆ THỨC VẬT ĐƯỢC PHÉP SỬ DỤNG Ở VIỆT NAM**  

<table>
<thead>
<tr>
<th>TT</th>
<th>COMMON NAME</th>
<th>TRADE NAME</th>
<th>CROP/PEST</th>
<th>APPLICANT</th>
</tr>
</thead>
</table>
| 1  | Brodifacoum (min 91%) | Klerat 0.05%; 0.005 pellete | 0.05%: chuột/ nhả, kho tàng, chuồng trại, động ruộng, nơi công cộng  
0.005pellete: chuột trong quán cười, nhà kho | Syngenta Vietnam Ltd |
|    |             | Forwarat 0.05%, 0.005% | chuột/ động ruộng, quán cười | Forward International Ltd |
| 2  | Bromadiolone (min 97%) | Broma 0.005H | chuột/ lúa | Guizhou CVC INC.  
(Tổng Công ty Thương mại Zhongyue Quy Châu Trung Quốc) |
|    |             | CAT 0.25WP | chuột/ động ruộng | Công ty TNHH TM - DV Thanh Sơn Hoá Nông |
|    |             | Killrat 0.005 Wax block | chuột/ động ruộng, quán cười | Forward International Ltd |
|    |             | Lanirat 0.005G | chuột/ trang trại, kho tàng, quán cười | Novartis Consulting AG |
|    |             | Musal 0.005WB | chuột/ động ruộng, quán cười | Bayer Vietnam Ltd (BVL) |
| 3  | Clorat Kali 28.5% + Sulfur 4% + (mùn cua + carbon) 67.5% | Thuốc hùn khối diệt chuột | chuột/ cây trồng ngoài động ruộng | Viện Bảo vệ thực vật |
| 4  | Coumatetralyl (min 98%) | Racumin 0.0375 paste; 0.75TP | 0.0375 paste: chuột/ ruộng lúa, nhà kho, trang trại  
0.75TP: chuột/ động ruộng, kho, trang trại | Bayer Vietnam Ltd (BVL) |
<table>
<thead>
<tr>
<th></th>
<th>Product Name</th>
<th>Description</th>
<th>Company Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Diphacinone</td>
<td>Yasodion 0.005G</td>
<td>Otsuka Chemical Industrial Co., Ltd</td>
</tr>
<tr>
<td>6</td>
<td>Flucoumafen</td>
<td>Storm 0.005% block bait</td>
<td>BASF Singapore Pte Ltd</td>
</tr>
<tr>
<td>7</td>
<td>Nitrate Kali 33% + Sulfur 30%</td>
<td>Xìgà - Sg 63 q</td>
<td>Công ty TNHH 1 TV BVTV Sài Gòn</td>
</tr>
<tr>
<td>8</td>
<td>Samonella enteriditis Isatchenko 10⁸ tế bào/gam + Cumarin 0.04%</td>
<td>Miroca 10⁷ tế bào/ml</td>
<td>VIỆN KHKT NONG NGHIỆP VIỆT NAM</td>
</tr>
<tr>
<td>9</td>
<td>Sarcocystis singaporensis</td>
<td>Prorodent 2.10⁵ bào tử (sporocyst)/g</td>
<td>VIỆN KHKT NONG NGHIỆP VIỆT NAM</td>
</tr>
<tr>
<td>10</td>
<td>Sulfur 33% + Carbon</td>
<td>Woolf cigar 33%</td>
<td>Mekong Trading Ltd. Hungary</td>
</tr>
<tr>
<td>11</td>
<td>Warfarin Sodium + Samonella var. I 7 F-4</td>
<td>Biorat</td>
<td>Công ty TNHH Bio Việt Nam</td>
</tr>
<tr>
<td>12</td>
<td>Warfarin 0.05% + Salmonella enteriditis isatchenko 7. F-4</td>
<td>Bắt diệt chuột sinh học</td>
<td>VIỆN BẢO VỆ THỰC VẬT</td>
</tr>
<tr>
<td>13</td>
<td>Warfarin</td>
<td>Ars rat killer 0.05% viên</td>
<td>Công ty TNHH TM Viên Phất</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rat K 2% D</td>
<td>Công ty CP TST Cần Thơ</td>
</tr>
</tbody>
</table>
## DANH MỤC THUỐC BẢO VỆ THỰC VẬT CÁM SỮ DỤNG TẠI VIỆT NAM

<table>
<thead>
<tr>
<th>TT</th>
<th>TÊN CHUNG (COMMON NAMES ) - TÊN THƯƠNG PHẨM (TRADE NAMES )</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Thuốc trừ sâu, thuốc bảo quản làm sán:</strong></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Aldrin ( Aldrex, Aldrite ...)</td>
</tr>
<tr>
<td>2</td>
<td>BHC, Lindane (Gamma - BHC, Gamma - HCH, Gamatox 15 EC, 20 EC, Lindafor, Carbadan 4/4 G; Sevidol 4/4 G ...)</td>
</tr>
<tr>
<td>3</td>
<td>Cadmium compound (Cd)</td>
</tr>
<tr>
<td>4</td>
<td>Chlorodane (Chlorotox, Octachlor, Pentichlor...)</td>
</tr>
<tr>
<td>5</td>
<td>DDT (Neocid, Pentachlorin, Chlorophenothane...)</td>
</tr>
<tr>
<td>6</td>
<td>Dieldrin (Dieldrex, Dieldrite, Octalox ...)</td>
</tr>
<tr>
<td>7</td>
<td>Endosulfan (Cycloden 35EC, Endosol 35EC, Tigidan 35ND, Thasodant 35EC, Thiodol 35ND...)</td>
</tr>
<tr>
<td>8</td>
<td>Endrin (Hexadrin...)</td>
</tr>
<tr>
<td>9</td>
<td>Heptachlor (Drimex, Heptamul, Heptox...)</td>
</tr>
<tr>
<td>10</td>
<td>Isobenzen</td>
</tr>
<tr>
<td>11</td>
<td>Isodrin</td>
</tr>
<tr>
<td>12</td>
<td>Lead compound (Pb)</td>
</tr>
<tr>
<td>13</td>
<td>Methamidophos: ( Dynamite 50 SC, Filitox 70 SC, Master 50 EC, 70 SC, Monitor 50EC, 60SC, Isometha 50 DD, 60 DD, Isosuper 70 DD, Tamaron 50 EC...)</td>
</tr>
<tr>
<td>14</td>
<td>Methyl Parathion ( Danacap M 25, M 40; Foliodol - M 50 EC; Isomethyl 50 ND; Metaphos 40 EC, 50EC; (Methyl Parathion) 20 EC, 40 EC, 50 EC; Milion 50 EC; Proteon 50 EC; Romethyl 50ND; Wofatox 50 EC...)</td>
</tr>
<tr>
<td>15</td>
<td>Monocrotophos: (Apadrin 50SL, Magic 50SL, Nuvacron 40 SCW/DD, 50 SCW/DD, Thunder 515DD...)</td>
</tr>
<tr>
<td>16</td>
<td>Parathion Ethyl (Alkexon, Orthophos, Thiopphos...)</td>
</tr>
<tr>
<td>17</td>
<td>Sodium Pentachlorophenate monohydrate (Copas NAP 90 G, PMD 90 bột, PBB 100 bột)</td>
</tr>
<tr>
<td>18</td>
<td>Pentachlorophenol (CMM 7 đầu lòng)</td>
</tr>
<tr>
<td>19</td>
<td>Phosphamidon (Dimecron 50 SCW/DD...)</td>
</tr>
<tr>
<td>20</td>
<td>Polychlorocamphene (Toxaphene, Camphechlor, Strobane...)</td>
</tr>
<tr>
<td>21</td>
<td>Chloridimeform</td>
</tr>
<tr>
<td><strong>Thuốc trừ bệnh:</strong></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Arsenic compound (As) (việc thuốc Dinasin 6.5SC được tiếp tục sử dụng đến hết năm 2007 để trừ bệnh khó vấn/ lửa)</td>
</tr>
<tr>
<td>2</td>
<td>Captan (Captane 75 WP, Merpan 75 WP...)</td>
</tr>
<tr>
<td>3</td>
<td>Captafol (Difolatal 80 WP, Folcid 80 WP...)</td>
</tr>
<tr>
<td>4</td>
<td>Hexachlorobenzene (Anticaric, HCB...)</td>
</tr>
<tr>
<td>5</td>
<td>Mercury compound (Hg)</td>
</tr>
<tr>
<td>6</td>
<td>Selenium compound (Se)</td>
</tr>
<tr>
<td><strong>Thuốc trừ chuột:</strong></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Talium compound (Tl)</td>
</tr>
<tr>
<td><strong>Thuốc trừ cỏ:</strong></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>2.4.5 T (Broctox, Decamine, Veon ...)</td>
</tr>
</tbody>
</table>

**Ghi chú:** Các chế phẩm có chứa Pentachlorophenol, Sodium Pentachlorophenate đã được gia công, chế biến tại Việt Nam được tiếp tục sử dụng hết để tránh ứ đọng, gây ô nhiễm môi trường.
Appendix 6

List of WB Safeguard Policies

| OP4.01 | Environmental Assessment |
| OP 4.04 | Natural Habitats |
| OP4.36 | Forests |
| OP4.09 | Pest Management |
| OP4.11 | Physical Cultural Resources |
| OP7.50 | International Waterway |
| OP 4.36 | Safety of Dams |
| OP4.12 | Involuntary Resettlement |
| OP4.10 | Indigenous People |
| OP7.60 | Projects in Disputed Areas |

Public Consultations and Information Disclosure