



**Vietnam Agricultural Science Institute
Project: VIE/00/018/08**

**Participatory Rural Environmental Management:
Synthesized Report**

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Abbreviations/Acronyms

AD	Administrative Departments
CPC	Commune People's Committee
FAO	Food and Agriculture Organization
LMO	Local Mass Organizations
MARD	Ministry of Agriculture and Rural Development
MPI	Ministry of Planning and Investment
PRA	Participatory Rural Appraisal
SWOT	Strength, Weakness, Opportunity and Threat
UN	United Nations
UNDP	United Nations Development Program
VASI	Vietnam Agricultural Science Institute
VND	Viet Nam Dong

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1 Executive Summary

❖ Summary of findings and recommendations

Vietnam's rapid industrialization, urbanization and population growth has had dire consequences on its rural environment. Remaining natural resources such as water and land are in great demand for income generation activities such as agricultural and craft village work. Through the overuse and misuse of these resources the environment has become degraded and as a result the Vietnamese people are suffering from poor health, living conditions and decreasing returns.

Participatory Rural Appraisal's (PRA) were conducted by Vietnam Agricultural Science Institute (VASI) scientists in the three northern provinces of Hai Duong, Ha Tay and Son La. The PRA's found that water, soil and air quality in all three provinces to be seriously degraded. The local communities were found to be aware of the damage caused by agricultural and craft production, however only a few villagers were active in participatory rural environmental management.

The report on rural environmental management at the policy and institutional level found that current policies are misdirected, non-existent or too weak to effectively enforce environmental protection. A lack of a synchronized policy system, a lack of interdepartmental information and knowledge sharing, a lack of staff training and education in environmental issues and large volumes of emigration have all contributed to the current situation.

Both short and long term solutions are required to curb pollution trends and to avoid the increasing number of environmental conflicts that are occurring. These solutions should aim to ensure that "Economic growth connects with social progress and equality, cultural development and environment protection."

Listed below is a summary of the recommendations found within this report.

Summary of policy recommendations:

- Implement and improve natural resource planning policies
- Strengthen the State's judicial law to protect and improve the law
- Strengthening policies for agricultural and rural development to include:
 - Strengthened capacity of management by municipal governments,
 - A ban the use of chemicals that are detrimental to the environment,
 - Establishing environmental management regulations governing relationships between the concerned agencies.
- Introduce a policy to promote advanced technology that protects the environment.
- Introduce policies to ensure self-contained processes for food production industries
- Develop policies to implement the socialization of environmental management
- Mobilize media and social groups to promote community participation

Summary of Institutional Recommendations:

- Improve systems of ‘vertical environment management’ in the institutions
- Define role of government institutions including their role when dealing with other organizations
- Establish an institution at the commune level focused on environmental management and the maintenance of local management at the village level
- Increase professional knowledge in environment management in agriculture
- Increase funds for environmental activities and more projects that improve environmental targets in agricultural development projects
- Strengthen cooperation between government institutions at the district level
- Improve the system of monitoring and reporting on environmental activities in rural areas
- Strengthen penalties and define supervision responsibilities at different levels.
- Establish a set of environmental guidelines at the institutional level, including deterrents to bad practices.

Summary of community-based solutions

- Always clean the flows in drainage systems
- Establish general planning to improve drainage systems
- Establish waste collection groups
- Develop or adapt crafts that cause little or no pollution
- Actively assist in the research of technologies for treating waste and waste water at the household level.

2 Introduction

2.1. Summary of the original statement of project objectives

At present, environmental concerns are only marginally considered during the planning of rural activities. There have been adverse impacts on the rural environment. This situation can be largely attributed to a number of factors including the lack of a comprehensive policy and legislative framework for the protection of the environment, low capacity of the central and local authorities, limited awareness within both the government and local communities, and limited community participation in policy making and decisions, and in environmental management activities.

The goal of this project is to assist the Government of Vietnam in addressing these issues by:

- Producing a synthesized report describing rural environmental issues including a set of policies and institutional recommendations promoting the enhanced role of local communities in environmental management;
- Holding in-country regional and national workshops to discuss the report with the aim of raising awareness on the issues within stakeholders including the governments and local communities.

2.2. Reasons for incorporating the five component reports into this one synthesis report

The findings from the five studies have been synthesized into one report to ensure that the research findings are succinct, usable and practical for key stakeholders. Recommendations for future reports will be based on the information contained in this synthesis report.

3 Main Report

3.1. Introduction to the current rural environment situation in Vietnam

Viet Nam is one of the poorest countries in the world with a GNP per capita of about US\$400. The population grew from 57 million in 1987 to 80 million in 2002 and is projected to reach 92-95 million in 2010, creating a high population density. Viet Nam is largely a rural agricultural economy with 75% of the population living in rural areas. Two-third of the population is currently dependent on agriculture for living.

Despite the concentration of population in rural areas, the disparities between urban and rural areas are increasing more than ever. The top performing twelve provinces, which are mostly urban areas, recorded only an average 5.8 % of their population below the national poverty line in 1999, whereas the twelve bottom provinces, which are rural areas, recorded an average of 25.7%. In 2001, 90% of the poor lived in the rural areas (1). The rural economic sector has begun to grow, especially in the agriculture, forestry and handicraft sectors. This has improved the socio-economic life in the rural areas. However many farmers still suffer from poverty and hunger, particularly in remote areas. Poverty is especially severe in mountainous regions. There the population growth rate is higher and the level of education is much lower than the rest of the country. Furthermore, farmers in remote areas have a limited access to the market. This inhibits their sales of agricultural, forestry, fishery and handicraft products, leading to a low income. To address this situation, a considerable number of programs for hunger eradication and poverty alleviation have been launched in most of the rural areas. These programs are by the Vietnamese Government and many international organizations. They have led to a dramatic improvement in rural life. Nevertheless, the rural areas remain as the country's lowest income areas.

The rural environment is suffering from a number of environmental problems including soil erosion and leaching, soil with low fertility and imbalanced nutrition, salinization, acidification, deforestation and organic degradation. These problems are often caused by the overuse of fertilizers and pesticides and a lack of appropriate infrastructure to treat pollutants and sewage water properly. Such environmental problems have seriously affected the rural environment. Deteriorated area accounts for 42.8 per cent of the total natural land of the country. Deterioration can be observed commonly in mountainous areas, which represents 3/4 of the total natural land. Such degradation has contributed not only to the deterioration of fauna and flora but also to a reduction in agricultural productivity per capita, placing further burden on the poor in rural areas.

Due to this concentration of poverty and a deteriorating environment in rural areas, the Government of Viet Nam has formulated strategies, policies and action plans to alleviate such problems. Some major documents are listed as follows:

(1) Millennium Development goals :Bringing MDGs Closer to the People". UNDP, 2002.

- The Objectives of The Social-Economic Development Strategy 2001-2010 and the Socio-Economic Development Plan for 2001-2005 highlight a healthy society with a well-protected and enriched ecological environment.
- The National Strategy for Environmental Protection 2001-2010 and the National Environmental Action Plan 2001-2005 emphasize the need to combat against pollution and degradation of the environment in agricultural and rural areas. The action plan underlines the need for improved rural environmental management, including the protection of biodiversity and the sustainable use of resources.
- The Comprehensive Poverty Reduction and Growth Strategy (CPRGS), which was approved by the Government in May 2002, elaborates all general objectives, institutional arrangements, policies and solutions of the 10 year Socio-Economic Strategy and its Action Plan into detailed specific action plans. The CPRGS advocates the protection of the environment and maintenance of a healthy life for the poor while tackling poverty reduction. However, this document has failed to incorporate environmental perspectives into sectoral development plans, which is critical for sustainable development.
- The draft of the Strategic Orientation for Advancing Viet Nam Towards Sustainable Development (Viet Nam Agenda 21) is a general framework for activities to shift Viet Nam's development towards the path of sustainable development. The document stresses the importance of sustainable agricultural and rural development by facilitating development while protecting the environment. This document was submitted to the Government in August 2002 and then presented to the Johannesburg Summit in September 2002.

As these documents show, Viet Nam is committed to achieving socio-economic growth while preserving the environment in order to alleviate poverty and eradicate hunger. However this concept of sustainable development has faced enormous difficulties at the implementation stage. Some of the difficulties are caused by:

- 1.) the lack of an effective policy and institutional framework for the environment,
- 2.) low capacity of the central and local authorities involved in environmental management, ,
- 3.) and low awareness on environment protection among the actors in the public, private sector, and households.

Furthermore, Viet Nam has only limited participation of local communities in environmental management. We understand that experience from around the world shows that active participation of rural communities in environmental management provides a win-win option, facilitating a more robust livelihood and a healthier environment.

This project is aimed at the formulation of recommendations on a policy and institutional framework which facilitates an active participation of rural communities in environmental management. The project focused on the rural environment because rural areas are the place where a majority of the

population resides and poverty is rampant. The project's ultimate goal is to assist the Government of Viet Nam in strengthening rural environmental management.

This project provides a strong linkage to broader policy context in Vietnam. The government has been implementing important policies in different locations, ones which are very relevant to rural environmental management. *Examples are:*

- *On farm-household economy and agriculture:* The Government considers every farm household to be an independent and self-directed economic unit that has the right to plan and perform its own production and business, and to enjoy its results. The Government has thus created a favorable environment for the development of this economic sector.
- *Land:* Land has been allocated to farmers on a stable long-term basis. They have the right to manage their lands and are encouraged to reclaim additional fallow or virgin lands.
- *Agricultural land-utilization tax:* To help farmers accumulate more resources to expand their production and improve their living conditions, the Government has enacted a new law of agricultural land-utilization tax. People in extremely difficult farming areas are exempt from land-utilization tax.
- *Credit for farm households:* A policy on rural credit has been adopted for over 3 million farm households to provide additional investment capital and reduce borrowing from the unofficial, high-interest-rate system in rural areas
- *Science, technology, and agricultural extension:* The Government has enacted policies on development of science and technology for agriculture by increasing investment levels for agricultural science and agricultural extension. This promotes technical transfer to improve the income and living conditions of farm households.
- *Distribution of agro products and agricultural input materials:* The Government has promoted a new distribution mechanism to facilitate the circulation of agro products and their input materials at the best price. The Government has also adopted policies to regulate and stabilize the prices of agro product and input materials using a national reserve fund and a pricing stabilization fund as an instrument in favor of farmers. The Government also promoted a closer linkage between the production of high value crops and the development of storage and processing facilities.
- *Hunger eradication, poverty alleviation, employment, and rural development:* The Government has promoted these activities through a number of policies including the Comprehensive Poverty Reduction and Growth Strategy (CPRGS). In addition, the State has developed the Ten-Year Socio-Economic Development Strategy and other Strategies for Sectoral and Industrial Development during the 2001-2010 period (Strategy for People's Health Care and Protection; National Strategy for Rural Clean Water Supply and Sanitation; National Strategy for Reproductive Health Care; Overall Program for Public Administrative Reform etc.). The long-term vision for poverty reduction is reflected in various other programs and government decisions including the National Targeted Poverty Reduction and Job Creation Program, Prime Minister's Decisions on Socio-Economic Development in Central Highland, North Mountainous and Mekong Delta River

Provinces and the Program for Socio-economic Development in Communes Faced with Extreme Difficulties in Remote and Mountainous Areas (Program 135).

- *Public administration reform (PAR):* This process has obtained considerable progress in the following four areas: administrative institutions, organizational structure, capacity of staff and civil servants, and public finance.
- *Forested areas:* The overall objective of the 5 Million Hectare Program is to reforest and rehabilitate five million hectares of forest by the year 2010. The program has ecological, economic and social objectives. This Program has now been incorporated into more comprehensive forestry protection efforts called, the Forestry Sector Support Partnership (FSSP) and until today FSSP has contributed to the forestation of significant areas, thus decreasing the speed of land degradation and improving the livelihoods of the rural populations.

3.2. Research Objectives

3.2.1. General Objectives

The overall purpose of the project was to assist the Government of Viet Nam in improving environmental management in rural areas, ultimately contributing to an increase in the quality of life in rural areas and to promote decentralization with an active involvement of civil society in socio-economic issues. To this end, the project formulated a set of recommendations on a policy and institutional framework promoting the role of rural communities raised awareness on rural management issues through in-country regional and national workshops.

3.2.2. Specific Objectives

Objective 1

To formulate a set of policy and institutional recommendations for improving the rural environment. The recommendations are centered on rural environmental policy, institutional framework and the active participation of local rural communities in the planning and management of the rural environment.

Objective 2

To increase awareness of stakeholders at the central and local levels on the importance of rural environmental management and on win-win strategies with enhanced participation of the rural communities.

3.3. Methods for in data collection

Methods applied in data collection were tailored for each research site and included:

- a. Selection of Research Sites: The basis for identification of the research sites were i) available statistical data, ii) related documents, iii) ecological and socio-economic characteristics of the regions.
- b. Baseline Data Surveys (BDS): Baseline data was extracted from related documents and from local authorities at all levels.
- c. Topographical Transect Investigations: conducted along the typical local topography transect focusing on the change of the transect over time.
- d. Investigation of changing production patterns: Data was collected in relation to the history of production and the development process.
- e. Rapid Rural Appraisal (RRA): used to investigate and assess the household economic and production situation, as well as environmental pressure.
- f. Participatory Rural Appraisal (PRA). PRA aims to collect information relating to community opinion. The information presented was agreed upon by the community as a whole, rather than individuals. In using this method, the researchers play the role of facilitators in the discussion, they record information discussed by community members and will at times direct the discussion to ensure that the content is relevant.

This form of assessment was used to identify:

- Problems faced by rural communities
- Causes of environment pollution
- Responses from the communities to environmental problems
- Readiness of the local people to participate in rural environmental management
- Capacity of local communities to enact new environment policies and conditions
- Local community expectations of environmental management policies
- Knowledge and awareness of legislation, rules and community behavior (measured by the community)

- g. Venn's diagram: used to describe the roles of different players in environment management at the community and village level.
- h. Processing of information and data: use of computer software such as IRRSTAT, EXCEL, etc.
- i. Diagramming: Diagrams were created to describe the impacts of production activities on the environment.
- j. Experts: employed to analyze information and data.
- k. Seminars and workshops were organized for discussion on the research progress and results.

Information collected from different levels of government:

Provincial level: The research team collected data and information from administrative officers and technicians from the Departments of Natural Resources and Environment, Agriculture and Rural Development, Center of Spare Health and other offices relevant to rural environmental management in three provinces, namely Hai Duong, Ha Tay and Son La .

District level: Data and information relating to environmental management activities was collected from the Office of the District People's Committee, Department of Rural Infrastructure's Management, Department of Agriculture and Rural Development, Agricultural Extension, Plant Protection Station, Veterinary Station and the Department of Statistics of the three selected districts, namely Nam Sach (Hai Duong province), Hoai Duc (Ha Tay province) and Moc Chau (Son La province). As Moc Chau is an upland district, data was also collected from the district Forest Protection Station.

Commune level: Data and information relating to environmental management was collected from the Chairman of the People's Committee, land cadastre staff, plant protection and veterinary staff, health care staff and other staff members who have responsibilities within environmental management. The data and information was collected by interviews and discussion groups.

Villager community level: Data and information relating to environmental management activities was collected from the village head, mass organizations and a group of community representatives. This group consisted of people that created environmental pollution and those that lived with its effects. They were involved in group discussion and assessment of environmental pollution within their village.

3.4. Implementation Process

Under direction from MARD, VASI was the national implementing agency of the project. The Government assisted with the mobilization and involvement of local capacities and allowed local people to continue to actively participate in the project implementation process.

The Project Management Office (PMO) was established to manage project activities. The PMO consisted of one National Project Director (NPD), Dr Le Quoc Doanh (Deputy Director General of VASI), who also acted as National Project Coordinator and 25 VASI scientists. The NPD was seconded from VASI for the duration of the project and assumed responsibility for the overall supervision of the project activities and for coordination with other government ministries and other relevant organizations. The NPD was also responsible for day-to-day project operations and management, working closely with other PMO members, international and national consultants. The other PMO members and collaborators were environmental, agricultural, economic and social scientists seconded from VASI, the Ministry of Natural Resource and Environment (MONRE), the Ministry of Agriculture and Rural Development (MARD) and other relevant ministries.

The Food and Agriculture Organization (FAO) was the executing agency, assuming responsibility for technical issues. FAO assumed responsibility for identifying, recruiting and

backstopping the national and international consultants along with close consultation with the Government of Viet Nam and the UNDP.

The project was financially supported by the UNDP and experts from the UNDP together with those of the FAO closely assisted VASI on technical and management issues during the project.

3.4.1. Assumptions regarding project implementation

1. Capacity building of people and institutions is a key factor for sustainability of the project although it was beyond the scope of the project. The public institutions are still insufficiently adapted to the market economy and their centralized structures and their low capacities do not allow them to play a dynamic role in rural development. Due to efforts promoting decentralization, rural communities have begun to become active in policy development to a limited extent.

A necessary first step was to identify institutional/organizational and knowledge gaps, and to clarify the needs for capacity building in response to the gaps. This process was complemented by in-country regional case studies and workshops concerning:

- a. Various constraints faced in the formulation of appropriate rural environmental policies and the needs of the different categories of rural population
- b. Current responses from institutions in different regions
- c. Categorization of different actions in the rural environmental field
- d. Willingness to participate in developing new modes of environmental policy formulation.

These activities were implemented in a selected number of pilot communities. The results of these activities provided the basis to formulate recommendations for policy and institutional frameworks for sustainable rural environment in Viet Nam.

2. Implementing pro-poor and pro-environmental policies will require a deep attitudinal shift by government agencies, NGOs, other civil society actors and the private sector.. These shifts are critical for achieving the overall objective of sustainable rural environment management.

3. Building partnerships with the poor requires a commitment by rural communities to actively participate in decision making as well as a willingness to experiment and fine-tune solutions to local conditions.

Listed below are some key principles of building partnerships with the poor. They need to be considered within the context of national framework for rural environmental policy formulation. It must be noted that these go beyond the scope of this project:

- a. Empower the poor as actors in identifying their problems and seeking their own solutions;
- b. Engage the poor as partners, not as beneficiaries and use a people-centered framework for planning and implementation;
- c. Build local institutions that effectively represent the needs and aspiration of rural households, communities and marginalized groups;
- d. Move to decentralized planning and improve revenue sharing mechanisms;

- e. Link environmental issues and concerns with interventions in other sub-sectors. Promotion of sustainable rural livelihoods in the short-term is of utmost importance for long-term success with environmental concerns. Thus, there is a need to establish a short-term incentive system for community participation in environmental issues;
- f. Shift toward more pluralistic approaches to decision-making which incorporate a range of stakeholders and accommodate different interests and potential conflict. In addition, it is critical to develop community-based decision-making and a transparent dialogue;
- g. Take specific note of the roles of men and women in environmental management. Ensure that women are not further marginalized through new policies and programs.

3.5. Findings

3.5.1. Rural environmental issues identified by PRA's

Research teams conducted an assessment of current issues faced by local communities in three provinces. Selection for the research locations was based upon meeting the requirements of the project goals and objectives. Local authorities and villagers agree to the selected research sites where environmental issues had become a matter of urgency. The three sites were:

1. Hai Duong Province (intensive lowland agriculture)
2. Ha Tay Province (craft villages)
3. Son La Province (intensive upland agriculture)

Participants were asked to identify the most important problems faced by their community. The PRA showed that participants in each district were concerned about environmental degradation, with the level of concern more prominent in Ha Tay and Son La provinces than in Hai Duong. Poverty, unemployment and a lack of access to capital were other important issues identified..

Table 1: PRA of Problems Faced By Communities

	Hai Duong Province	Ha Tay Province	Son La Province
1.	Poverty	<i>Environmental degradation</i>	Poor infrastructure
2.	Unemployment	Animal disease	Lack of capital investment
3.	Lack of suitable agricultural land	Insecurity re farming crops	<i>Environmental degradation</i>
4.	Cost of production	Lack of capital investment	Poverty
5.	Lack of output markets	Lack of output markets	Illiteracy
6.	Poor Healthcare	Unemployment	Isolation
7.	Poor Education	-	Lack of appropriate technology
8.	<i>Environmental degradation</i>	-	Lack of suitable agricultural land
9.	Poor infrastructure	-	Poor healthcare & education

Rural Environment Issues

Researchers found that in each of the three case studies the local communities were aware of and concerned about the current state of the environment. Table 2 outlines the results of the PRA that required participants to rank environmental problems faced by their community, ranging from the most important to the least important.

Table 2: Rural Environmental Issues Identified

	Hai Duong Province	Ha Tay Province	Son La Province
1.	Waste water from animal husbandry	Drainage Systems emitted foul odour	Soil erosion
2.	Flooded roads	Polluted water in ponds, lakes and river (Day River)	Pesticide use
3.	Pesticide use	Household waste	Deforestation
4.	Household waste	Air - foul odours/smoke and dust	Reduction of wildlife numbers
5.	Coal smoke/ onion odour	Polluted deep wells	Lack of water treatment/storage
6.	Animal manure	Food processing waste	Over populated
7.	Pesticide packaging	Pesticide use	Animal husbandry waste
8.	Waste water from onion processing	Drilled wells emitted odour	
9.	Smoke from brick kilns		
10.	Transportation exhaust		

The three surveyed provinces share many of the same environmental problems. Each form of environmental pollution/degradation outlined in this table is either the direct result of, or associated with income generating activities undertaken by local rural communities. Participants also noted that the adverse environmental effects of agriculture and craft production can have far reaching effects, in particular to surrounding and downstream communities. Listed below are the main causes of environmental degradation as identified by the PRA.

Waste from Animal Husbandry

Wastes from pig farming include animal faeces, waste water from cleaning, and food waste. It was found that waste was disposed of directly into ponds, lakes and river systems. Pollution also occurs when run-off from waste areas drains into local water sources, and when the stench from waste becomes objectionable.

Pesticide Usage

Participants reported that the over-use and use of illegal pesticides has contributed to environmental pollution within their communities. According to the PRA conducted in Hai Duong Province, up to 60% of farmers continue to use banned pesticides such as Wofatox and Monitor, at dosages 1.5 to 2 times the recommended amount. A lack of a quality alternative and knowledge of

optimal spraying times and quantities and solid waste produced from pesticide packaging were all factors identified as contributing to this pollution.

Household Waste

Disposal of daily household (garbage) waste was considered by Hai Duong and Ha Tay provinces to be of serious concern. The lack of a regular collection service means that villagers are inclined to scatter waste rather than deposit it in a central area to be collected and disposed of. Participants explained that solid and liquid household waste was often disposed of in or near water sources including wells, ponds, lakes and rivers.

Food Processing Waste

Waste from food processing was seen to be a particular problem within Ha Tay province. Annually this area processed between 100,000 and 120,000 tons of canna root and 150,000 to 200,000 ton of cassava root material for flour processing (approximately 300 to 350 ton of canna and 350 to 400 ton of cassava per day). This requires vast amounts of water. In 2002 the Department of Science Technologies and Environment of Ha Tay estimated that the food processing villages in Cat Que, Duong Lieu and Minh Khai commune produced about 15,000 m³ of waste water per annum, including 8,500 m³ of waste water from food processing activities alone.

It should be noted that waste in Cat Que was created mainly from the processing of cassava (accounting for 92.7% of the total). This waste could not be used to produce animal feed or fertilizer for crop cultivation.

Table 3. Waste from food processing activities

No	Kind of waste	Unit	Cat Que	Duong Lieu	Minh Khai
1	Waste from canna processing	Ton/day	4,44	21,46	27,38
2	Cassava skin	Ton/day	9,0	12,56	3,6
3	Waste from cassava processing	Ton/day	32,4	45,00	12,9
4	Coal residues	Ton/day	2,64	8,58	2,15
5	Total	Ton/day	48,72	88,60	46,28

Source: Ha Tay Department of Science, Technology and Environment, 2002

Figure 1: Food processing Waste in Cat Que



Smoke/Brick Kilns

Hai Duong and Ha Tay provinces both identified smoke from income generating activities to be a major concern. Brick production is an example. The results from the PRA indicate that only 5% of the population experience adverse health effects due to smoke. However the smoke significantly reduced vegetable and rice production in surrounding areas. The owners of the kilns are therefore required to compensate affected farmers for their losses.

The participants also identified the use of local soils in the production of bricks as an environmental issue. Areas surrounding dykes have been excavated for materials, increasing the possibility of flooding and landslides during the wet season.

Transportation Pollution

Included in this category is dust from the use of unsealed roads and exhaust from transportation machinery (motorcycles, cars, trucks and tractors). Participants identified transportation pollution to be most detrimental to air quality.

Soil Erosion

Son La Province identified soil erosion as the issue of most concern to the local environment. The participants identified the clearing of forests for continuously growing of food crops, mainly maize crop on sloping land area as the primary cause of soil erosion.

3.5.2. National viewpoints, strategies, action plans, institutions and policies at the central level.

3.5.2.1. State views on environment & sustainable development

Vietnam State policy on the environment is comprehensively expressed in "*National plan on environment and sustainable development*", which was drafted and implemented in compliance with the directive No.187/CT dated 12 June1991 by the Chairman of Ministerial Council, with the following items:

- In order to achieve sustainable development, it is necessary to change basic attitudes, assessment on natural resources and environment, behavioral treatment and exploitation, consumption, protection and development. Every organization needs to be aware of their responsibilities and to try and change current production and consumption methods, settling environmental and development issues and ensuring for sustainable development.
- It is necessary to coordinate and harmonize relationships among social, economic and environmental fields in national, sector and local plans. It is useful to apply measures and tools such as environmental impact assessment of natural resources and to encourage the use of environmentally friendly technologies.
- As a densely populated country, Vietnam has paid special attention to the relationship between the population and natural resources and the environment. As a result, it is vital to highlight and encourage family planning, to assist in the reduction of population growth, and to strive to escape the "poverty - environmental degradation - poverty" cycle.
- Urban- rural development and delta- mountainous development harmonization should be given due consideration. During the development process, it is necessary to plan urban and industrial zones. This includes a network of large, medium and small urban areas, and satellite urban areas, and also developing rural areas by diversifying the rural economy and improving rural infrastructure.
- Vietnam aims to protect and maintain forests, oceans and land ecosystems. This is vital for the sustainable development of the state.
- In the process of industrialization, urbanization and agricultural development, it is necessary to prevent the environment from pollution and degradation.
- Vietnam is constantly under threat of natural disasters, in particular storms, floods and drought. Preventing disaster and the protection of human life and their properties is paramount and is included in the national policies on environmental sustainable development.
- Environmental production and sustainable development is the responsibility of the community. Active involvement by Vietnamese citizens is central to the success of our policies. The Vietnam State highlights education, propaganda and promotion of awareness and mass organization mobilization for participation into related activities.
- Vietnam suggests that all nations and international communities should establish a system of economic funding to assist developing countries address environmental issues and sustainable development.

- Vietnam has committed to implement its environmental protection and sustainable development policies within its borders. Vietnam plans to expand and promote international and regional cooperation for the realization of regional and global sustainable development.

3.5.2.2. Central Level Strategies

“Environment protection is an important task of the whole society, levels, branches, organizations, communities and all the people”¹. In accordance with Decision No 256-TTg (12 February, 2003), the government approved 36 programs, plans, schemes and national projects to hand over to the relevant ministries/branches to implement. The following section details the activities of each ministry assigned by the Government. Based on the specific activity required, the assigned ministry will choose the relevant agency to coordinate in implementation.

- Ministry of Agriculture and Rural Development:

- a. The reforestation of five million hectares (realizing Decision No 661/QD-TTg, dated 29 July 1998 by the Prime Minister, who quoted the target, task, policy and organization).
- b. Forest regeneration in the watershed areas which have suffered from serious degradation.
- c. National objective program on the provision of clean water and environmental hygiene (realizing in accordance with Decision No 237/1998/QD-TTg dated 3 December 1998, approved by the Prime Minister, namely the National Objective Program on Rural Clean Water and Environmental Hygiene).
- d. Enhancing the capacity of management, protection and development of natural preservation areas (in accordance with Decision No 192/2003/QD-TTg dated 17 September 2003 by Prime Minister giving approval of strategy Management of Vietnam’s Natural Preservation Area Systems Up To 2010).
- e. Protection of wetland areas at the international and national level.
- f. Rehabilitation of specific ecosystems which are degraded.
- g. Construction and popularizing a national model of ecological economic villages.
- h. Protection of endangered animal species.

-Ministry of Natural Resources and Environment

- a. Development of a sustainable plan to effectively deal with small enterprises involved in the creation of serious pollution (application of Decision No 64/2003/QD-TTg dated 22 April 2003 by Prime Minister).
- b. Disposal of toxic chemicals used by the American army in the Vietnam War (application of Decision No 33/1999/QD-TTg dated 1 March 1999 by Prime Minister on establishing a Guidance Board in order to effectively dispose of chemical toxic chemicals).
- c. Treatment of harmful waste
- d. Capacity building for environmental protection from the local level up to the central level.
- e. Strengthen the current legal system for environmental protection.

¹ Article 1, Decree 256-Ttg dated 2 December 2003 of Prime Minister

- f. Research, formulation and application of economic tools in terms of environmental management.
- g. Protection of Cau river valley environment
- h. Protection of Nhue and Day river valley environment
- i. Protection of Sai Gon-Dong Nai river valley environment
- j. Socialization of environmental protection works
- k. Environmental monitoring capacity building

- *Ministry of Health:*

- a. Treatment of hospital waste

- *Ministry of Construction*

- a. Improvement of polluted and seriously degraded canals and ditches, rivers, lakes in urban areas.
- b. Upgrading of urban drain systems and sewage disposal systems.
- c. Capacity building of solid waste management in urban area and industrial zones.

- *National Committee of Searching and Rescue:*

National Plan for Coping with oil spills in the period of 2001-2010 (in compliance with Decision No.129/2001/QD-TTg promulgated on 29 August 2001 by the Prime Minister on approving the national plan for coping with oil overflow in the period of 2001-2010)

- *Ministry of Education and Training*

Implementation of environmental protection as a training subject in the national education system (in compliance with Decision No.1363/QD-TTg promulgated on 17 October 2001 by the Prime Minister)

- *Ministry of Investment and Planning*

Integration of environmental protection into plans and projects of socio-economic development.

- *Vietnam Fatherland Front*

Popularizing environmental protection issues.

- *Ministry of Transportation*

Improving air quality in urban areas.

- *Ministry of Industry*

- a. Construction of sewage treatment systems meeting environmental standards in industrial zones.
- b. Application of clean and environment-friendly production technology.
- c. Environment restoration in mineral mining areas

- *Ministry of Culture and Information*

- a. Improving the role of the media for better community awareness on environmental protection.
- b. Protection and development natural and cultural heritage.

- *Ministry of Trade*

Support for enterprises involved in environmental protection and international economic integration.

- Ministry of Science and Technology

- a. Establishment and implementation of technological restructuring which is environmentally friendly.
- b. Capacity building for scientific research and technology development for environmental protection.

3.5.2.3. Central Level Action Plan

National plans for environment protection period 2001-2010

General objective: to protect and improve the environment in order to increase quality of life and health, and to ensure sustainable national development.

Strategy objective: continue to prevent increases in pollution, strengthen bio-diversification, and paying attention to sustainable natural resource management.

Detail objectives

Pollution prevention: Strengthen capability of management, investment, judicial measures and solutions to support and prevent pollution of air, water, noise, solid and poisonous waste; to improve awareness and knowledge of people; to supply information of pollution prevention to the whole community.

Planning sustainable development for urban, industrial, rural and ecological areas:

- Application of clean and suitable technology for production and treatment of environmental pollution.
- Introduction of an environmental indices as per other another advanced countries in the South East Asia region
- Sustainable use of natural resources
- Strengthening the capability of management, investment, judicial measures and solutions to support the development and use of sustainable ecological systems: forestry, ocean, on land and under water
- Protecting, recovering and efficient use of the existing natural resources such as land, forestry, mineral, power, and bio-diversification to support sustainable development of Vietnam
- Preservation of specific areas important to ecological balance.

Environmental Improvements

- Capacity building of management, investment, judicial measures and solutions to support and promote technological improvements in production methods that create pollution.
- Collection and reduction of solid, industrial, hospital and household waste.
- Reforestation to achieve forest cover at least 40 percent of the total land area of the country by 2010. Limit the use of poisonous agro-chemicals such as pesticides.
- Ensure 90 percent of the population has access to clean water and environmental standard sanitation systems by 2010. Find solutions for areas polluted and degraded as a consequence of war and production activities.

Strategy highlights

Water resources protection and sustainable use

In order to protect current water resources, the Government will strengthen the clauses and regulations found in the ‘Strategy for National Environmental Protection, 2001-2010’ (SNEP). This document states that underground water resources, surface water, valley catchments and dams must be protected. According to the SNEP document, by 2005, significant improvements in water quality will be found in 40 percent of rivers and drainage systems, nation-wide. This will be achieved by a 90 percent reduction of pollution in industrial zones.

Air Protection

Within their functions and responsibilities, individual enterprises and state agencies must monitor the discharge of CO₂, SO₂, CO, air pollutants from manufacturing, energy, construction, agriculture and transportation. The condition of Vietnam’s environment needs to be significantly improved to meet the average standard of the ASEAN countries.

Rural environment protection

Protecting the rural environment requires the reduction of solid waste, maintenance of cleanliness and prevention of further contamination. Other issues that need to be addressed include the development of hygiene guidelines and safe standards for the use of fertilizers and pesticides in farming activities.

Family planning policies need to be implemented to control population growth rate levels and assist in hunger eradication and poverty alleviation in rural areas. By the year 2010, the Government of Vietnam hopes that ninety percent of the rural households will have access to clean water, and that ninety percent of waste will be processed to meet environmentally safe standards.

Protecting the environment of the coastal land and islands

Mirroring the socio-economic development strategy outlined for the country, protection of the sea, coastal and island environment is especially important including the following areas:

Development of a marine economy needs to incorporate appropriate use and reservation of resources and protection of the sea and coastal environment. Fuel, transportation, aquaculture, forestry and tourist agencies need to adhere to regulations designed to protect the environment of coastal lands and islands.

The implementation of international and regional conventions and agreements related to coastal environments aims to successfully eradicate poverty, hunger and promote sustainable economic development through improved management.

Management of marine and coastal land environments includes the classification of functional marine areas, comprehensive management systems of fishery and aquaculture, establishment of reservation areas, improving the livelihood of local communities, mitigating and prevention of disasters in the coastal areas and capacity building to manage the coastal and marine environment.

Cleaner Production

Cleaner production is achieved through the continuing application of an integrated environmental protection strategy in technological procedures, products and services in order to enhance economic efficiency, minimizing possible risks, ensuring health, safety, and environmental quality. It is necessary to develop a national program to issue policies that stipulate the transfer of clean technology, and to organize meetings and communication between experts on cleaner production technologies.

Environmental protection to be linked with regional socio-economic development

Environmental protection strategies for particular regions and river basins need to be integrated into the socio-economic development objectives of that area. The integration is based on the current status of the regional environment and predicted future challenges to that environment. Attention should also be paid to environmental interactions with surrounding areas (including possible impacts of other countries), regional capacity to address environment-related issues, people's perception and associated cultural and environmental customs and options to implement the regional strategies.

Environmental protection is linked with economic development

The Environmental Protection Strategy for 2001-2010 targeted links with the socio-economic development sectors including, agriculture, forestry, fisheries and rural economy, infrastructure and services. The development of these industries is necessarily interlinked.

Agriculture, forestry and the rural economy have been identified as a priority for the period 2001-2010. The development of these sectors will contribute to changes in economic structures and thus have strong and positive impacts on the environment. Environmental protection strategies must be integrated into the socio-economic structures for the above mentioned sectors in the following areas:

- Environmental planning links with sustainable planning for food production, ensuring food safety as well as environmental protection.
- Improvement of farming patterns in agriculture.
- Protection of forestry resources aimed at creating a positive impact on the ecological system. Rural Development is interlinked directly with rural sanitation and environmental protection strategies to improve the quality of life and redesign production patterns in agriculture.
- Forestry and fisheries continue to move towards more advanced and modern production methods that cause less pollution and degradation to the environment.

Accelerate the growth of industries producing diversified products with advanced and modern manufacturing techniques. To minimize the negative impacts of this strategy and to stimulate the positive impacts, environmental protection strategies needs to be linked with the following issues:

- Application of clean production technology; sustainable use of economic and natural resources; industrial planning must be consistent with environment planning strategies.
- Special attention should be given to exploration and use of materials, fuels and industrial waste processing.

Poorly designed infrastructure such as road and/or river transportation systems may result in destruction of the ecological systems through pollution of the environment, including surface water in rivers and oceans, and noise pollution in urban and residential areas. Environmental strategies should be integrated with the infrastructure strategies in the following areas:

- Transportation planning consistent with planning of ecological areas and natural preservation (both in the mainland and in the sea). Infrastructure planning in industrial and residential areas linked to clean water supply and sewage processing.

Services play an integral role in the development of a modern market-driven economy. However, the need for profits and 'fast tracking' of the market system result in short term/immediate environmental pollution. It is therefore important to promote the use of services such as eco tourism to retain and restore traditional cultural and festive customs.

The key issues include: Identifying the economic/environment linkages with benefits from tourism, developing services and trade policies related to environmental protection and restoration of traditional cultures.

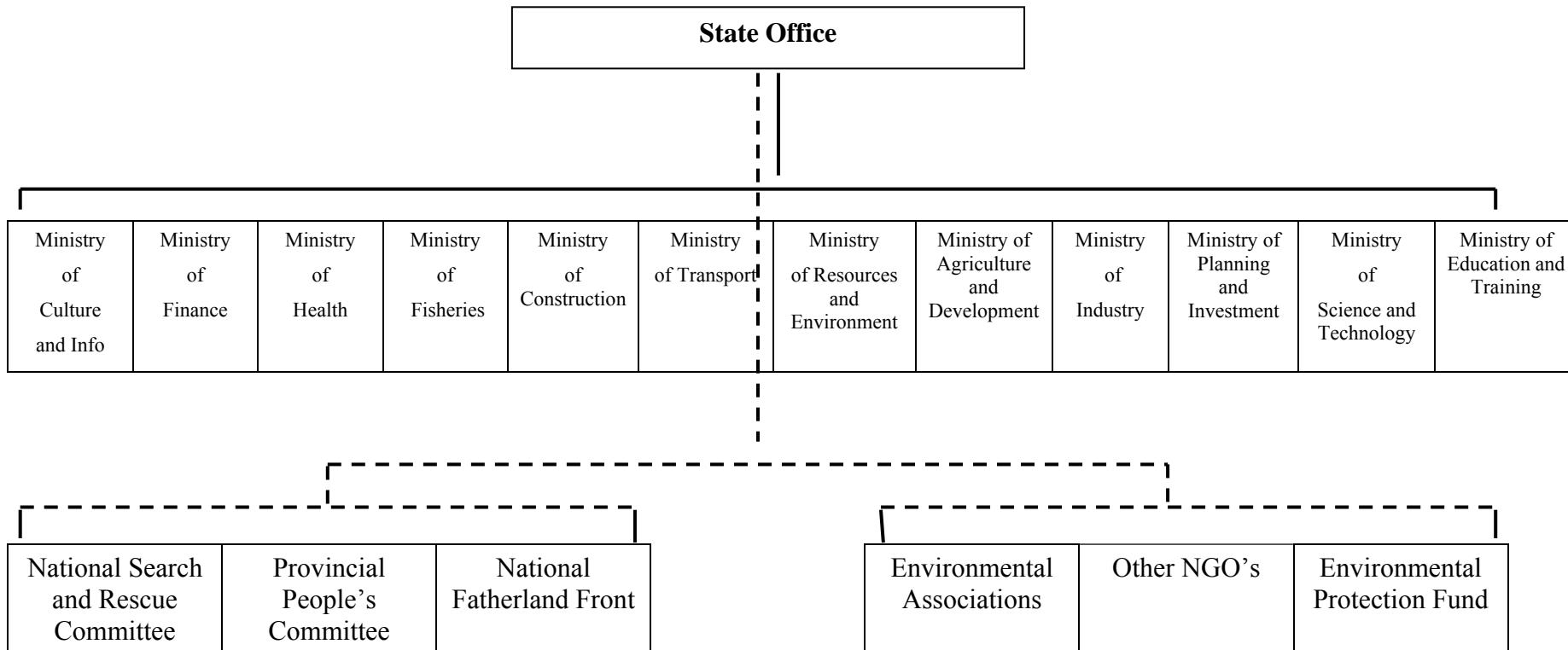
Environmental research

It is necessary to further improve capacity to accelerate research in environmental studies in order to secure a firm foundation for environmental development. This will allow for effective handling of environment related issues and ensuring sustainable socio-economic development in Vietnam.

Research is also aimed at providing the basis for accurate assessment of the current status of the environment, making recommendations to protect the environment as well as to establish policies in environment management, and to apply advanced environmental technology in addressing environmental pollution and regression.

In order for environmental research to be effective, it is necessary to establish an environmental research facility that has sufficient capacity to i) undertake research at national level, ii) conduct research programs on current issues, iii) promote studies in environmental protection.

Diagram 1: Ministerial/branch, official, and other organizations relating to resource and environmental management



3.5.3. Arrangements and performance in the local environmental institutions at the provincial level

3.5.3.1. Formal Institutions

Department of Natural Resources and Environment

The department is a specific agency focusing on the management of all natural resources and environment. Functions:

- Assist the Provincial People's Committee to issue, guide, implement and inspect laws, plans and programs relating to environmental management.
- Monitor systems and conduct reports on current environmental issues
- Resolve disputes and complaints, and punish individuals and companies involved in breaking environment and natural resources laws
- Research, educate and popularize environmental issues
- Soil and mineral resource management
- Organize and collect environment taxes and levies
- Lead and guide natural resources and environmental management professions in districts and communes

Department of Agriculture and Rural Development

Functions:

- Management of environmental protection – through the use of plants/vegetation as protective barriers, review of suitable fertilizers and research into suitable new plants and animals
- Encourage the application of improved technology and biological products in industry
- Management of hydroelectric works/sustainable use of underground water
- Management of safe animal husbandry techniques
- Plans to mitigate effects of flood and drought

Center of Fresh Water and Environment

The center is a sub-division of the Department of Agriculture and Rural Development. It was established to assist with the provision of running water and preserving the rural environment within the province. Functions:

- Build long-term, medium-term, yearly plans and projects related to running water and rural environment and organize projects after obtaining approval. Supervise the overall situation of running water and rural environment in the province.
- Ensure optimal assistance from the government and UN agencies and various international organizations sponsoring running water and rural environment programs. Execute these programs and projects in the province.
- Assess and manage projects and programs for individuals and organizations. Control licenses allowing the use of running water and the rural environment.

- Coordinate branches to examine solutions to avoid pollution of running water and the rural environment
- Survey, design, build models; propagandize, popularize, apply science and technology and suggest policies aimed at managing the rural environment and use of running water systems
- Organize the provision of materials, equipment and transfer of building techniques; knowledge of running water and preservation of rural environment.
- Provide training skills and techniques for departmental staff, workers, farmers; propagandize and mobilize rural people to use running water and preserve rural environment.
- Manage civil servants and assets of the center based on law and authority given by Department of Agriculture and Rural Development.

Provincial Plant Protection Department

Functions:

- Survey, inspect, find and predict developments of major insect and pests attacks on crops in the field and in local storage
- Research, apply, train and transfer technology to local communities to help establish plant protection networks and guide farmers in management and control of insects and pests
- Manage, inspect and check the circulation of plant protection chemical and plant quarantine
- Take part in management of reserved plant protection chemicals and distribute them within the province.

Provincial Extension Centers

Functions:

- Train and transfer expertise and technological advances to local farmers. Provide information on production techniques and guide farmers on its application.
- Implement various sustainable agriculture projects such as the bio-gas program

Provincial Health Care and Prevention Centers

Functions:

- The department often combines with the Department of Natural Resources and Environment to organize the joint activities of World Environment Day, Clean Water and Environment Week. After these events, the department takes responsibility to write report on activity results and submit to the Department of Natural Resources and Environment
- In the past, under UNICEF funding, the department has been involved in technical consultation to build water systems, toilets and animal cages which meet hygiene standards. These activities are now conducted by the Center of Fresh Water and Environment
- The department is also involved in the development of hygiene propagation programs. For example the Department of Labor Health and Environment in Hai Duong province is currently involved in a program to implement health standards for every family at Thanh Mien district. The purpose of activity is to encourage the use of clean food, clean water, early disease

detection and the building of hygienic toilet systems. The budget for this activity is 10 million VND per year.

- The department is also involved in an annual survey of pesticides found in local shops.

Other Professional Offices

Beside the offices mentioned above, other departments also have roles relevant to the general environment as well as the rural agricultural environment.

Department of Planning and Investment: Responsible for providing investment advice for projects, paying particular attention to environmental impacts and to provide solutions to protect the environment when implementing projects.

Department of Construction: Responsible for issues of environmental protection relating to design and approval of urban construction, industrial zones and concentrated residential zone management. Issue construction licenses for investment projects when approving decisions regarding environmental impacts.

Department of Industry: Responsible for creating linkages between environmental protection and planning for small scale industry development. Manages the industrial sector, department guides, propagates and supervises other organizations to develop planning and implement methods of pollution prevention and environmental problems in industry operations, including the exploration for minerals.

Department of Transportation: responsible for managing mechanical transportation measures to ensure the minimization of environmental pollution in accordance with regulations. Guide, promote and supervise design and construction organizations; assess environmental impacts on planning projects; new construction; upgrade and maintain transportation networks in provinces.

Department of Health Care: Responsible for the guidance and supervision of hygiene operations, food and work safety; collecting, transporting, treating and destroying waste matter from health services and guidance in the use of radiation sources in accordance with Government regulations.

Department of Trade and Tourism: Responsible for the control of trade, service and tourist industries to ensure that these activities compliment environmental protection. Trading licenses for agencies/units are only issued when the organizations provide their environmental management plans.

Department of Education and Training: Responsible for introducing environmental protection curriculum into schools and other training facilities.

Department of Culture and Information: Responsible for environmental protection at culturally significant sites, including traditional festivals. The department often distributes information relating to environmental protection.

Judicial Department: Together with other organizations, responsibility for disseminating and supervising the implementation of environmental protection laws and legal regulations related to environmental protection.

Finance Department: Responsible for controlling the budget assigned to environmental protection activities.

Provincial Public Security: Responsible for the management of units/organizations at the community level. Properly implement preventative activities. Investigation and punishment of offenders in accordance with the law.

Provincial Army Command: Responsible for supervising, detecting and treating toxic chemicals and unexploded ordinance from the Vietnam War. Works with other organizations to restore areas of the environment that have become degraded.

3.5.3.2. Non-formal Institutions

Provincial Women's Union

The Provincial Women's Union (PWU) in Hai Duong City, Thanh Ha District and Nam Sach often promotes environmental activities such as garbage collection.

Table 4: Human resources of Provincial Women Union

	Hai Duong	Ha Tay	Son La
Total of staff	18	28	27
Professional level	10 BSc, 8 intermediate	18 BSc, 10 intermediate	18 BSc, 9 intermediate
Propaganda and training unit	3	6	5

The union works with the Provincial Center of Fresh Water and Environment to implement propaganda and education, such as public broadcasts to the districts on the health impacts of environment degradation. This program has opened 4 classes with more than 100 trainees, organized training courses for leaders of unions, and also assessed the knowledge of trainees.

In addition, the PWU has established organizations to implement activities such as Rural Clean Water Week and environmental hygiene promoted in conjunction with the Department of Science Technology and Environment of Gia Loc District.

In general, the PWU works in association with other organizations to encourage participants in environmental management. However they do not directly carry out the work.

Provincial Farmers Union

The main activities of the union are in propagation and promotion of environmental movements. The two main movements are:

The Provincial Farmers Union (PFU): promotes competition and linkages between producers and business. The PFU attempts to create conditions conducive for members and farmers to expand production. These activities include development of plans, transfer of modern technology into production, design and implementation of training courses, plant protection for rice, transfer of animal husbandry technology, organize meetings to discuss and exchange ideas, production experiences and economic development.

The IPM training and the support program for Biogas is also organized by the PFU in conjunction with agricultural extension units.

Bio-environmental Association

The Bio-environmental Association was originally funded by international organizations; it is now funded entirely by member contributions of 70,000 VND per member per year.

The main activities of the association include:

- Promoting and propagating knowledge of environment and environmental protection
- Transferring technology of environmental protection into local areas.
- Organizing projects in environmental protection
- Doing environmental service, such as producing environmental products. The Association has a service center to sell these products

3.5.3.3. Assessment of the real performance of current institutions at different levels

3.5.3.3.1. District Institutions

District Functional Office of Environmental Management

Functional offices exist at the district level to manage the environment. Depending on the province, the name may be either the Office of Finance, Commerce, Science, Technology (Ha Tay and Hai Duong) or Office of General Technical Management (Son La).

The current budget for environment management is about 10 to 25 million VND per year (including budget for science, technology, environment and measure).

Current environmental activities

On average, this office will organize 4 to 5 environmental activities per year, within the commune. These activities are implemented on a volunteer basis by the community, without funding. Local environmental management projects currently include The Green Productivity Project, which involves the construction of modified agricultural product kilns. The office will inform the community of any news, guidelines or new legal documents relating to the environment by holding meetings with farmers or by distributing letters.

The office is required to produce a 6 month report covering all activities relevant to environmental management. The report goes to the District People's Committee and to the Department of Natural Resources and Environment.

Non-official institutions

There are many social institutions such as the local women association, local farmer association and local youth union at each suburban district. However, these institutions do not have much input on environmental management. It should be noted that the role of these institutions from district level downward is relatively weak.

Comments on institutions at district level

At the district level, few agencies are responsible for environmental management. Moreover, the Department of Environmental Management lacks funding and human resources needed to complete the task.

Co-operation between district, provincial and commune agencies is very weak. Most projects are implemented by the Department of Science, Technology and Environment in co-operation directly with commune administration without notice to functional department of district.

3.5.3.3.2. Organizations at commune level

Human resources and the financial state of environmental management at the commune level

Relevant to environment protection activities, no management or finance team currently exists. All environment-related activities at the commune level are directed from national, provincial and district levels. The chairperson of commune has the majority of the responsibilities and presides over the relevant projects and programs. Normally the task of environmental management is delegated to the commune medical station or the commune's cadres.

Table 5: Human resources and financial state for environmental management at the commune level

Rural environment-related units	Function	Human resource	Expense
People's committee of Commune	General management	Chairperson of commune	None, extracted from commune's fund
Commune medical station	Medical examination and treatment	Station leader One middle-ranking medical officer/a village	Wage from national budget The people contribute 1kg of rice/per person/1 year
Cadre of Commune's	Mainly responsible for building and traffic	One person	Wage from national budget

Activities concerned with rural environment: the People's Committee of the Commune

When the Department of Science, Technology and Environment (now Department of Resources and Environment) launched the environmental protection campaigns to welcome the “Week of Clean Water and Pure Environment” on World Environment Day, 5th of June, the People's Committee co-operated with other groups within the commune to mobilize people to collect garbage, sweep up village's roads and dredge ditches.

Centers of Agricultural Extension encouraged the development of IPM programs to protect plants against insects pests in several communes.

Groups are established within communes to collect garbage. Rural people contribute VND4000/per family to support these groups.

Environmental activities at medical stations

Activities include the provision of vaccinations, examinations and medical treatment. On a fixed day during the month, mobile medical stations provide vaccination for children and gynecological examinations for females. While rural people attend for vaccinations, females are reluctant to have a gynecological examination due to the high cost of medicine and ultrasound examination.

The medical station also examines water quality for human consumption from May to September. These stations are not equipped to test quality of water so they have to rely on visual observations. It is assumed that a family is using clean water if they have rain-water tank of no less than 3 m³ in volume (according to the standard of provincial Standby Medical Center).

Regulations of people's committee of commune related to rural environment

Generally speaking, commune administration has not promulgated many regulations related to the local environment such as: Ensuring sewerage and trenches in residential area remain unobstructed, to appropriate Commune's Land People's Committee rules prescribed in commune's documents and contracts of transferring right of land use between local administration and households.

However, in reality these rules are not followed by the people as the administration has neither coercive regulations nor does it take coercive measures

Box 1. Methods to manage sewerage in residential areas of Hop Tien commune

Since the beginning of 2002, due to serious flooding in villages, leaders of village, working with commune's cadres and teams of guards remeasured depth and width of sewerage drains and required the people to ensure these standards. After that, households that had trenches in farming land were to take charge of these trenches. They would be fined if these trenches got stuck. In this case, some members of the working group would be required to clear these trenches and that household would have to pay 10,000VND to 15,000VND/a day. These were carried out three times a month.

For trenches that did not belong to any household, the village leader would require some people to do this task and be paid 10,000 to 15,000VND/a day from the commune's fund. These activities were carried out 3 times a month.

Effect of regulations of commune administration

It is noticeable that, although people are aware of commune administration regulations, they do not follow since there is no clear sanctions, no rules of supervision and no one responsible for environmental management. The following is an example of environmental rules in practice at a commune on the Red River Delta.

Table 6: Effect of environmental regulations on people in La Soi village, Hop Tien commune, Nam Sach, Hai Duong province

Rules among the people	Issuer	Public that edit	People know	Effect	Reason
Do not tether buffalo on the road Do not build latrines or pig cess pools with lid toward roads	Section of cultural information	No	Yes	Have effect Good effect	Notice given frequently, have coercive measures
Do not build or produce, trade products which obstruct the traffic	Traffic section	No	Yes	Little effect	Notice but no coercive measures
Do not let a dog go out without snout-ring	Commune's police	No	Yes	No effect	Not practical
Keep depth and width of sewerage and trenches. Do not appropriate commune's land	Land section of commune	No	Yes	No effect	No notice, no coercive measures
Village regulations Households are not allowed to throw bottles, package of insecticide into the fields	Leader of village with approval of people's committee of commune	Approved	Yes	No effect No effect	No notice, no coercive measures

General comments on institutions at commune level

The biggest disadvantage of the commune is that there is no funding dedicated to environmental management, protection and improvement. Thus, all environment protection campaigns are conducted by volunteers. As local people are poor, they are unlikely to invest money in protection and enhancement of their area's environment.

There are few environmental regulations concerned with the commune administration in comparison with the state's views on environment. Current regulations are mainly implemented by higher levels of the administration.

3.5.3.3.3. Institutions at village level

Environmental rules and regulations

There have not been many rules and regulations suggested and implemented by the public at the village level. Village conventions have occurred in many places, but they are usually suggested by the village leader after receiving the public's views and approval of people's committee of commune and the district. Ben village's community proposed regulations that have subsequently been approved by the District People's Committee, however these rules have not come into effect yet.

Activities employed by the people and public organizations

Spring cleaning in December of the Lunar Year

On the lunar 25th and 26th Dec every year, there is spring-cleaning in villages. On the 24th Dec, the village leader collects an amount of money from each household for the spring-cleaning that

will occur over the next two days. Every household has at least one member to take part in that spring-cleaning which ranges from tidying up the village roads to dredging the ditches. This is a traditional activity.

Tidying up the village roads

This is raised by youth union of commune and started in the commune in 2000. Once a month members of the union in each village sweep up the roads and collect garbage. The fee, which is between 50,000 and 60,000VND per activity comes from the commune's fund for public needs. Yet these activities occur so seldom that they have little effect on the environment or on people's awareness of environmental protection.

Require households that obstruct the traffic to follow rules of commune

To illustrate, in Cat Que village, Hop Tien commune, Nam Sach district, Hai Dong, some families raising chicken often place parcels of chicken manure on the side of roads. In July 2003, the village leader hired a man with a modified tractor to collect the manure and throw it into local fish ponds.

Activities of people's committee in cooperation with other public organizations such as the Women Association, Youth Union, and Farmer Association.

Commemorate environment days

Environmental programs in communes often include commemorating environmental days such as World Environmental Day (5th of June) and the Week of Clean Water and Environment. On these days, people collect garbage on the roads and fields without any fee.

Solve disputes concerned with environment

Disputes arise in communes and villages and a village leader is required to solve these cases by working as a mediator. In more serious disputes, a selection of reputable persons will participate in the mediation. The village leader analyzes the points and decides who is right and wrong, but there is no penalty.

Village level organizations, and individuals concerned with the rural environment

After analysis of the three provinces, the results indicate that environmental institutions exist, or have existed. There are both similarities and differences between rural areas on the delta (Hi Dong, Ha Tay) and mountainous areas (Son La). With regard to similarities, the Commune People's Committee is the most important institution as it has authority to decide on every aspect, including its villages' environment. However in reality, it has not established rules that have had much effect on the environment. This is managed by the village leader, who has the largest influence on local people and directly manages environment-related activities. Production groups and guards also play a key role in implementing environment regulations. Youth unions contribute a great deal to the enhancement and protection of the environment. Medical stations contribute to protect the environment by making people aware of environmental effects on health.

3.5.4. Review of environmental documents and national programs on socio-economic development and environmental management

Table 7: Laws related to environmental issues

No	Field	Relations to Environmental issues	Date of issue
1	Criminal Law	<p>Article 179. Crimes on violating regulations on natural resource research, exploration, exploitation and protection in entrails of the earth, in territorial waters and Vietnamese mainland terrace.</p> <p>People who break the state's rule on natural resource research, exploration, exploitation and protection in entrails of the earth, internal water, sea territory, economic privileged areas and Vietnamese mainland terrace, violating on regulations on fishery source protection will be warningly punished, fined up to 10,000,000 VND or be sentenced to jail for 3 months to 1 year.</p> <p>Crime tools and materials can be confiscated. All the things from crime also be confiscated.</p> <p>Article 180. Crimes on violating rules on land management and protection.</p> <p>1- People who trade, transgress land or have other behavior breaking the state's regulations on land management and protection resulting in serious consequences or have been administratively treated but still break again, will be penalized or detained to 1 year or be fined in prison for 3 months to 3 years.</p> <p>2- Crimes on extremely special situation will be punished for 2 to 7 years in prison.</p> <p>Article 181. Crimes on breaking rules on forestry management and protection.</p> <p>1- Anyone illegally exploit forest trees, hunt birds and animals or having other behaviors breaking state's regulation on forestry management and protection causing serious consequences or have been administratively treated but still violate, will be penalized or detained to 1 year or be punished for 3 months to 3 years in prison.</p> <p>2- Crimes on extremely special situations will be punished with prison terms of 2 to 10 years.</p>	7 September 1985

2	Law of commerce	<p>Article 13: Commercial policy on rural areas</p> <p>Article 14: Commercial policy on mountainous areas, island, remote and deep-lying areas.</p> <p>Article 15: Circulation policy on commercial goods and services, defines: "Prohibiting goods circulation, service supply injuring to national defense, security, social safety order, historical, cultural, moral tradition, Vietnamese good customs, ecological environment, production and people's health.</p>	23 May 1997
3	Law of Foreign Investment in Vietnam	<p>Article 3:</p> <p><i>"Vietnamese state encourages foreign investors participating in the following fields and areas:</i></p> <p>1 – Fields:</p> <ul style="list-style-type: none"> a) Production of export goods; b) Agricultural, forestry, fishery raising, planting and processing; c) Applying high technology, modern technique, protecting ecological environment, investing in research and development; d) Using many laborers, processing materials and effectively utilizing natural resources in Vietnam; e) Establishing infrastructure and important industrial production units. <p>2 – Areas :</p> <ul style="list-style-type: none"> a) Mountainous and remote areas; b) Difficult economic-socio areas. <p>Vietnamese state doesn't grant foreign investment in fields and areas which injure to national defense, security, historical places, culture, fine customs and ecological environment.</p>	12 November 1996
4	Cooperative Law	<p>Article 5:</p> <p>"The state protect cooperative's legal interest, guaranteeing cooperative's equality right in production, business, services; issuing legal documents and policies to encourage cooperative development; implementing policies on supporting and helping cooperative member eliminate hunger, reduce poverty, striving for equality, equity and</p>	20 March 1996

		social advancement through cooperatives. The state respects self-control right, responsibility in cooperative's production, business, services, not interfering in cooperative's management and legal activities"	
5	Mineral law	<p>The law emphasizes: "Minerals are natural resources mostly non-recyclable. They are important national property and must be appropriately, economically and effectively managed, protected, exploited in order to meet short-term and long-term demand of national industrialization, modernization and sustainable socio-economic development, assuring national defense and security".</p> <p>With a view to strengthen state management ability, effectively protect, utilize every material source of the country, the development of exploitative and material process industry, protect environment, ecology and labor safety in mineral-related activity is promoted"</p>	20 March 1996
6	Law of environmental protection	<p>Article 1:</p> <p>" Environment consists of natural and physical factors connected closely to each other, surrounding human, having impact on their lives, production, existence, development of human and nature.</p> <p>Environmental protection mentioned in this law is activities keeping environment clean, clear, improving environment, ecological balance, preventing, overcoming bad consequences caused by human and nature to environment, exploiting, reasonably and economically using natural resources."</p>	7 December 1993
7	Law of petroleum and gas	<p>Article 4: " Institutions, individuals operating in petrol field must use advanced technology, abiding by regulations of Vietnam law on natural resource protection, environmental protection, keeping safe for human and cattle."</p> <p>Article 5: "Institutions, individuals operating in petrol field must plan on environmental protection, implementing all methods in order to prevent pollution, eliminating all pollution -caused reasons and are responsible for overcoming consequences caused by environmental pollution."</p>	6 July 1993
8	Law of forestry protection and development	<p>"Forestry is national precious natural resource, recyclable, a key part of ecological environment, having a great worth to national economy, closely connecting to people lives and national existence.</p> <p>In order to strengthen managing function of the state on forestry, prevent forestry destruction, enhance</p>	12 August 1991

		responsibilities and encourage institutions, individuals to protect, develop forest, raise benefits from forest supporting national construction and protection."	
9	Law of preventing flood	<p>The law confirms:</p> <p>"Flood and storms are natural calamities that frequently appear in Vietnam and have caused serious losses in terms of people, state assets, public assets and private assets, as well as leading to negative ecological effects to the environment".</p> <p>Article 1:</p> <p>"Preventing flood and storms tasks are concerned with opposing and overcoming the consequences of flood, and the activities aim to reduce the subsequent loss and to stabilize people's lives, protect and reestablish production and limit the negative ecological effects to the environment".</p>	20 March 1993
10	Law of Dykes and dyke-maintenance	"Dykes and dyke-maintenance is vital work. Dykes must be built up, maintained and repaired by generations, with an aim to prevent and protect people's lives, state assets, public assets and private assets from flood and sea water.	24 August 2000
11	Law of Resource Tax (adjusted)	<p>To participate in sensible, efficient and economic protection, to exploit and use resources which aim to preserve the environment and ensure the State Budget's earning, the Law of resource tax regulates:</p> <p>Article 1:</p> <p>1- The resources within land, island, internal water, and sea territory are the economic privilege and continent bench of the Socialist Republic of Vietnam and are owned by the people and managed by the government.</p> <p>2- All organizations and individuals exploiting the natural resources referred to in Part 1 of the Article are tax-resource payers, except for those who are regulated at the Article of the Law.</p>	16 April 1998
12	The Science and technology Law	Article 4: The tasks of science and technology activities are to "improve science and technology abilities and to master high, advanced technologies, better management methods, sensible utilization of natural resources and protection of the environment and people's heath through timely forecasts and the prevention, and limitation of natural calamities.	9 June 2000

13	The Business Enterprise Law	Article 8: The obligations of the business enterprise: "obey the law on national defense, security, order, social security, and the protection of natural resources, historical elements, cultural vestiges and famous landscapes"	12 June 1999
14	The water resource Law	<p>The water resource Law states that "water is the most important resource, the most vital factor to the survival of life and the environment and sustainable development". On the other hand water also causes disasters for people and the environment.</p> <p>In order to increase effective state management, it should be promoted as a responsibility of the relevant authorities. These include economic organizations; political, social and socio-political organizations; individuals in army units; individuals in water resource protection, exploitation and utilization as well as prevention and overcome the disasters caused by water.</p>	20 May 1998

National programs related to environmental protection:

Since the residence and settled agriculture campaign of the VCP and Government in the early 1960s, the following national programs have focused on the development of rural areas and in particular mountainous areas. After implementing these programs for over 40 years, there were significant improvements in rural infrastructure, living conditions and the environment. This section describes the main content of policies from six large government programs which have been carried out in recent years.

❖ Fixed residence and settled agriculture program

The policy supports compatriot or ethnic minorities to stabilize their productions and lives and to stop shifting cultivation of wandering hill tribe situation. It also supports the relocation of peasants from land areas that are lacking in resources to exploit thinly populated areas. The government and Party have paid close attention to this problem in the first five-year plan (1961-1965) and detailed the 71/TW Resolution in 23 February 1963 and 38/CP resolution in 12 March 1968 to define direction, mission and scale of implemented organization. The following documents were Resolutions of the fourth, fifth and sixth Congress as No. 108/HĐBT, No 31/HĐBT Resolutions on developing socio-economic in midland, mountain, and highland; The 10 Resolutions of Politburo of CPV on improving agricultural management, and the No 22/TW Resolution issued on 27 November 1989. The content of these resolutions confirmed that we need to continue the fixed residence and settled agriculture program and revise policies on guidelines to be carried out at different stages of the socio-economic development period.

To clearly draft an implementation process and make it convenient for considering policies over each period (based on different periods of socio-economic development), the research is divided into three periods as follows:

- The period of fixed residence and settled agriculture campaign (1963-1989): Residence and settled agriculture work in this time focused on the content of 38/CP Resolution and helped compatriots initiate plans without any obligations. There were no detailed programs or projects or investment plans in the local areas.
- The period of implementing fixed residence and settled agriculture under annual plan (1960-1997): The 22/TW Resolution of Politburo in 23 November 1989 and 72/HĐBT Decision in 13 March, 1990 showed the directions and new measures to carry out residence and settled agriculture in the new situations. Since then, residence and settled agriculture was realized under the annual plan via investment projects for each local area. During the five-year plan (1991-1995), the government disbursed 752 investment projects at the communal level with total VND 473 billions.
- From 1998 to present: The No 112/CP Resolution on 21 November 1997 has paved the way to develop mountainous rural areas through the national strategic poverty-alleviation program (The 133 program). The program includes developed socio-economics at difficult communes in

mountainous and remote areas (The 135 Program). This was combined with the fixed residence and settled agriculture program. During this period, the obligation of fixed residence and settled agriculture is one of the requirements of the 133 and 135 Programs and is carried out via residence and settled agriculture projects.

❖ **The 133 and 135 Programs²:**

To focus on comprehensive development in the agriculture sector, rural areas and established irrigation works are used to preserve production and living. To this end, the government has carried out economic structure movements and improved farming patterns as well making sure there is guaranteed food security. In July, 1998 the Prime Minister approved and deployed the national strategic poverty-alleviation program (called the 133 Program) and the Program of developed socio-economics for difficult communes in mountainous and remote areas (The 135 Program). The general purpose of these programs concentrates on "creating favorable and suitable conditions to help the poor improve their production, increase their income and reduce the rate of poor households to 10% in 2000. This is based on the targets issued in the eighth Congress of the Party, in particular for the mountainous communes, remote areas, frontier, island and ethnic regions.

In 1999, the total investment mobilized for the poverty-alleviation program was estimated to be VND 6572 billion, the bulk of which (62.1 percent) comes from Bank for the Poor. The rest came from international organizations (15.2 percent) and the State Bank (14.2 percent). The disbursement in 1999 reached around VND 5,419.6 billion, and focused on credit assistance (approximately VND 4,086 billion), VND 900 billion on infrastructure establishment and VND 252.2 billion on the residence and settled agriculture. The extension and guideline farming methods expended VND 7.2 billion. In 1999, the poverty-alleviation program was deployed synchronously all over the country.

Implementing poverty-alleviation is the key task of the local socio-economic development plans, and the plan has many suitable measures to carry this out. The local union and people are supportive and actively take part in eliminating hunger and reducing poverty. Thanks to their efforts, the percentage of poor households recently fell from 15.7 % to 13.1 %.

Various projects under the framework of programs 133 and 135 target to the poor and disadvantaged groups. The program includes 8 projects:

- Infrastructure assistance for poor communes
- Assistance for ethnic minorities facing difficulties
- Fixed residence and settled agriculture and migration
- Training staff in poverty-alleviation methods
- Agricultural, forestry and fishery extension
- Credit assistance

² The 133 is a “national target program”. This is a frame program to implement big objectives of the nation. The 135 is “development program”. This program is a follow up to target investment and development objectives.

- Health service assistance
- Education assistance

It can be seen that the program directly and indirectly offers support by giving opportunities to poor and vulnerable groups, while helping them to produce more commodities or increase their incomes through non-agricultural development. Investing in infrastructure on roads and bridges has been distributed to reduce the gaps between regions, in particular in the rural and remote areas. Peasants could then access trading or services that support agricultural production or improve their earnings via the non-agricultural performance aim to guarantee food security and overcome poverty. Moreover, the capital and technical assistances would create favorable conditions for the difficult regions to expand and maintain sustainable food production and non-agricultural development. In general, it can be seen that the program has supported the poor and contributed to overall economic growth.

❖ **Land Assistance**

Lack of land or inaccessibility to land is one of the factors that lead to poverty for most households. The residence and settled agriculture within the national strategic poverty-alleviation program aims to create favorable conditions for the poor, better access to land and to provide support technical and production tools, stop the shifting cultivation of wandering hill tribes, develop sustainable production, and have them participate in increased outputs and environment protection. Through this plan, the program has settled residences for 1.2 million people, continued assistance for 1.9 million people in fixed residences and settled agriculture, and steadied their lives, mainly in the northern mountain and highland regions. Under the Circular No 33/1999/TT/BTC, the fund provided from the state budget will be used to assist for those who are subject to fixed residences and settled agriculture to produce and stabilize their lives. In 1999, the program reclaimed 1,387 hectares of land, fixed residences and settled agriculture for 47,120 households.

There were many poor families who had little or no land, which motivated the land policy in the Program 135. It showed that for provinces with wild land, the government gave support through investment in reclaiming land and allotting land for producers. In addition, farms and forests can be used by those who have no land or allotted land.

❖ **Program of fresh and sanitary water**

This is a program of national objective on clean water and environment in rural areas in the period 1998-2005.

Objectives of the program

General objectives:

- Enhancing rural peoples' health, especially children and women through reduction of the occurrence of diseases related to water and the environment.
- Improving living facilities and rural infrastructure through industrialization and modernization, including narrowing the distance between urban and rural locations.

- Reducing pollution and diseases related to water resources contaminated by human and animal waste and waste from trading locations.

Detailed objectives

Up to 2005, the program concentrates in gaining the following three objectives:

- 80 percent of rural population utilizing clean water for living
- 50 percent of households utilizing latrines properly.
- 30 percent of breeding facilities and 10 percent of craft villages having a waste treatment system

The program broadens in the whole of rural areas (excepting cities and towns), including about 600 districts, 9000 communes and townships, with priority for activities in the difficulties areas such as upland, frontier and island locations and where there is a serious lack of water and in badly polluted areas (about 15 million people).

❖ Program 327

Since 1992, the government recognized that sustainable development in mountainous areas need increased forest cover. At present, “bare land” areas accounted for 60-65 percent in the North, and 20-25 percent natural areas in the Central Area. In total, they are about 12-13 million ha; higher than the agricultural and forested areas.

To resolve this, the government launched the program 327 (Decision 327/CT in September, 1992) – “Covering green on bare hills” with total fund of USD 68 million. About 40 percent the funds were poured directly into tree planting and tending by households. The remainder was spent on building infrastructure, science – technology, necessary services for activities of planting forests and on emigration for new economic development. By the end of 1998 the government had spent about USD 270 million (VND 2.980 million) including 14 percent from a preferential interest fund and 86 percent from direct investment.

By considering forest regeneration and protection as main issues, the program 327 achieved some results in covering green bare hills and resolving habits of ethnic minorities such as shifting cultivation of wandering hill tribes, burning forest to cultivate. This created the agriculture and forestry model to develop the economy in the midland and mountain areas.

❖ Five million ha reforestation program

Decision No. 661 QD-TTg by the Government was in effect from 29 July 1998 on the basis of lessons from program 327. The decision is to replant 5 million ha of forest land including 2 million ha of protection forest, 2 million ha of production forest, and 1 million ha of industrial perennial crops, increasing the areas of forest cover from 28 percent to 43 percent. This is to be done by effectively using the bare hills, resettling residents and thereby improving incomes for mountainous residents. Total funds for the program is about USD 2.5 billion over the lifetime of the program from 1998 to 2010.

❖ **Comprehensive Poverty Reduction and Growth Strategies (CPRGS)**

From the experiences in the national programs on economic and social growth, and poverty reduction, the state wants economic growth and equal income can help solve the problems of poverty and hunger. The government assigned MPI together with 16 ministries to draft the strategies of growth and HEPR with management by members of the localities. The strategies were approved by the government on 21 May 2002 (document No.2685/VPCP-QHQT). The Prime Minister also issued the decision No. 825/2002/QD-TTg on 20 September 2002, establishing the managing board of CPRGS.

3.5.5. Participatory rural environmental management – case illustrations in three locations:

3.5.5.1. Participatory rural environmental management in the craft villages of Ha Tay province:

With the mobilization of mass organizations, villagers have participated in environmental protection. In 2003, Cat Que organized three events to clean sanitation systems done by the Youth Unions and villagers. In many small hamlets, elders organized to clear drainage systems, communal roads and areas surrounding villager's houses. Groups also collected garbage with funds from donations from villagers.

In some hamlets, farmers contributed funds to build drainage systems for their farm activities, while in other hamlets villagers built and improved drainage systems in their residential areas. The activities of villagers in rural environmental management were found to be very practical. However, the scale of the activities is too small compared to the increasing levels of pollution. They need more support from higher levels of government.

Strengths, weaknesses, opportunities and threats associated with participatory environmental management in Cat Que Commune (SWOT Analysis):

A SWOT approach was used to analyze the capacity of villagers to implement environmental management in craft villages in Cat Que. The results are shown in Table 11.

Strengths:

- *Villagers started to recognize environment pollution:* The community began to attend to environmental pollution through discussion and action. The elders are particularly concerned about the increase in environmental pollution and have helped to establish action groups to solve the problems. Some hamlets organized construction of drainage systems and roads, many of which were concreted by money contributions from the village community. An average of 500,000 VND to 700,000 VND was contributed per household. In 1998 in Hamlet 1, Xuan Thang village, each household contributed 400,000 VND to 500,000VND to build drainage systems and roads. Each household contributed 2000 VND per month to pay for garbage collectors. Over the past several years villagers have organized

themselves to collect garbage and clean drainage systems during the food processing season. Hamlet 1 in Xuan Thang village is a leader in environmental management in Cat Que commune.

- Investment in environmental protection by local authorities has increased recently: In 2002 and 2003, Cat Que commune invested 300 million VND to build an important drainage canal in Tam Hop and Xuan Thang and 1 billion VND to construct a road. In addition to this, the Commune People's Committee encouraged villagers to contribute money to help build drainage canals around hamlets and households, with the committee contributing money to pay for the construction. This action by the committee was very symbolic in that it showed its awareness and acceptance of responsibility in regards to environmental management.

Weaknesses

- Environmental awareness amongst villagers was low: Assessment participants noted that only some of the environmental degradation could be attributed to villager's behavior. Low awareness levels have been a major barrier to solving environmental pollution in craft villages, particularly in rural areas. Disposal of garbage in drainage systems was a common occurrence in hamlets. While the Cat Que People's Committee tried to regulate the disposal of garbage and waste, some people continued to litter the streets and drainage systems.

- Organized waste collection had limitations: Even though the Cat Que People's Committee providing a dust-cart and safe working clothes, hamlets did not organize garbage collection. The hamlets explained that there was too much garbage for the workers to collect and that the commune had not been supplied with enough equipment to collect all of the garbage. This resulted in the hamlet remaining polluted and the villagers' awareness remaining low.

- Poor distribution of legal documents and regulations relating to environmental management: Legal documents relating to environmental management did not reach the villagers. In 1999 the Convention of Building Cultural Village for Cat Que, Part C of Articles 17,18,19 clearly regulated environmental protection. However this information never reached the villagers. In a regional meeting it was claimed by leading government officials that policies relating to environmental protection were distributed. However the leader of Duong Lieu said that they did not have these documents.

Table 8: Strengths, weakness, opportunities and threats of participatory environmental management in Cat Que commune

No	SWOT	Description	Causes	Meanings to environment management
1	Strengths	1. Many villagers attended to environmental pollution and contributed money to pay for garbage collectors and the construction of drainage system	Deteriorating human health directly attributed to environmental pollution	Significant in mobilization of environmental protection activities
		2. Commune authorities paid attention to improve drainage system and communal road	Many conflicts were addressed by commune authorities, economic development contributed to increase in commune's capital wealth	Commune authorities described their administrative function to solve environmental pollution. Environmental management was attended by commune authorities
2	Weaknesses	1. Low villager awareness in environmental management (disposal of garbage and other wastes into drainage system)	Poor promulgation and education of environmental management. Low awareness of environmental protection by villagers	Damage to environment will increase, creating difficulties for environmental management
		2. Poor drainage systems and lack of planning	Lack of capital and general planning	Drainage of waste water was not sufficient, especially during wet season
		3. Until now, Cat Que has no waste water treatment solution at household level	Lack of solutions to waste water issues	Untreated waste water and waste brought about more serious pollution
		4. Poorly funded (main contributions by villagers) for environmental management in rural areas	Until now, no capital commitment by government to solve environmental pollution	Drainage system was not maintained, allowing pollution of the environment
		5. Local authority not strong enough to enforce environmental management	Difficult application of local sanctions for environmental management	Expected behavior in environmental management is not clear
		6. No environmental movement established within the village. Lack of cooperation between mass organization	The role of mass organizations in villages is still poorly implemented	Environmental protection was not seen as an individual's responsibility. Mass organizations' role is weak, resulting in weak villager participation
		7. Small scale craft production, decentralized within villages and minimal skills and antiquated technologies	Craft production in villages was spontaneous, small scale because of a lack of capital and access to stable markets	Dispersed production and low skill levels will create difficulties in securing capital investment in environmental management

No	SWOT	Description	Causes	Meanings to environmental management
3	Opportunities	1. Research institution began studying environmental pollution in rural areas; environmental pollution was urgent matter for authorities, commune and villagers	Increases in environmental pollution and its effects on craft producing activities.	Technologies are required to solve environmental pollution. Local authorities were required to find solutions
		2. Economic development raised villagers' living standard s. Villagers experiencing better conditions to participate in activities of environmental protection	Crafting production has created benefits for villagers. They have money for everyday activities and savings	Improvements in living conditions and infrastructure
		3. Legal, institutional and policy documents were sent out by government.	Environmental pollution became urgent matter at all levels	Establishment of local sanctions to regulate responsibility for villagers in environmental protection
4	Threats and challenges	1. Increase in disease caused by environmental pollution	Environment pollution problems are very serious.	Environmental pollution has impacted craft production and the community's health
		2. Underground water resources for human activity and production threaten to be polluted and exhausted	Long term accumulation of waste and waste water in drainage systems, ponds and lakes. Too much water consumption	Threatens food processing and animal husbandry
		3. Increases in waste and waste water overwhelm drainage systems, ponds and lakes	Waste has overloaded drainage system capacity	Crisis of waste water and waste require immediate resolution
		4. Differential increases in income between producers in craft villages and people in neighboring villages	Use of the same drainage system	Immediate resolution required to avoid possible conflicts
		5. Differential increases between craft producing development and rural environmental degradation	Poor craft village planning	Continued environmental pollution will hold back craft producing development
		6. Increasing environmental pollution is exceeding village and commune capacity	Commune and villager's capacity is limited	Environmental pollution effects will continue to increase. Government support is required.
		7. Ineffective investment in rural environmental protection	Decentralized distribution of enterprises located close to residential areas	Unattractive to potential investors

- Planning and management of drainage systems has continued to exceeded commune's capacity: Over several years authorities and people in Cat Que have attempted to upgrade the sewerage system in Xuan Thang village. The villagers' assessment states that many of the main sewers are unable to cope with the large volume of sewage. Furthermore, ownership and responsibility to maintain sewer systems has been a problem, highlighted by the proposed sewer to be located between Duong Lieu and Cat Que communes. To build this sewer, Duong Lieu and Cat Que need to seek the support of the Hoai Duc district People Committee.

- State investment for improving Cat Que Commune environment has had a low impact: In 1998 the Institute of Irrigation Science carried out an unsuccessful project of waste water treatment. The main reason given for the lack of success was an under estimation of the quantity of water that needed to be treated each day. Furthermore the time taken to treat the waste water was too high. At around the same time the Ha Tay People's Committee invested in a waste water treatment factory for the food processing center of Duong Lieu, Minh Khai and Cat Que, located in Duong Lieu. However this factory could not operate for long periods of time because of the costs associated with power consumption, maintenance, and repair.

- Environmental protection regulations were hard to enforce: Inappropriate garbage disposal both on the streets and directly into drains continued to occur. In these situations local authorities did not have enough power to punish the offenders.

- Poor co-operation between authorities and mass organizations: Collaboration of local authorities and mass organization in environmental management remains limited. To date, they have not established any movements that have attracted villagers' participation in rural environmental management. The activities of mass organizations concentrate mainly on economic development, and environmental pollution is not a concern to these organizations.

Opportunities for villagers and local authorities to participate in environmental management.

The living conditions of villagers have improved in instances where craft production has been developed. This is the time to canvass villagers to contribute money and labor within the formula of "State and people cooperate to do (*Nha nuoc va nhan dan cung lam*)" to build infrastructure and to achieve environmental protection. In this situation any new buildings could be fitted with biogas, sewers, drainage system, and roads.

The research team visited a biogas plant in Thap Thuong village operated by Mr. Nguyen Ba Toan. The area of the plant is approximately 24m². Mr. Toan explained that dung and waste water from 100 pigs had previously been disposed of directly into the village drainage system, now it is collected and used in the biogas tank, improving the local environment. Mr. Toan also said the biogas is used to cook for over 100 pigs and provides boiling water and lighting. The odorless waste from biogas production was used to irrigate crops.

Threats and challenges to environmental management in rural areas:

While there are opportunities for villagers to improve their situation, the core threats and challenges of environmental pollution have remained, and increased over time. The threats and challenges are follows:

Increase in diseases related to environmental pollution:

The villagers' assessment reported that present day diseases rarely occurred in the past. Results published by the Institute of Technological Science and Environment, University of General Technologies show that 13% – 38% of women living in food processing villages had been infested by some form of gynecological disease. Although this study did not include Cat Que, we believe that since the environment is similar, the results would also be similar. Following the villagers' assessment in Tam Hop and Hamlet 1 (in Xuan Thang village), over the past ten years, 30% of deaths were attributed to cancer.

Pollution and exhaustion of underground water resources:

About 90% of households in the Cat Que commune currently use drilled wells, following the UNICEF standard. During the flour processing season, Cat Que uses approximately 2,500 to 3,000m³ liters of fresh water. If water continues to be consumed at this rate it is expected that underground water resources will be exhausted in the near future. Surface water in villages such as Xuan Thang, has been frequently polluted and leaching threatens to transfer this pollution to the underground water resources, creating a long term problem.

Conflict between communities:

Disunity has increased between people involved in pollution-creating activities and people that are forced to live with its adverse effects both between households within villages and also between villages. This is threatening the traditional goodwill that exists between villages.

The challenge is how to harmonize the development of craft production while actively reducing environmental pollution:

Craft village development in rural areas has created economic benefits, but has also led to pollution. Villagers and local authorities are faced with the challenge of finding a balance between craft development, improving living standards, and reducing environmental pollution and adverse effects to health. If environmental pollution is not solved it will hold back the development of craft villages. The process of harmonizing economic benefits achieved through craft production developments and the resulting environmental pollution will not be easy, especially with the limited authority of local groups.

3.5.5.2. Participatory rural environmental management in the intensive farming area

of Hai Duong lowland province of the Red River Delta:

Communities of Hai Duong organized meetings to discuss possible solutions involving community participation to improve the local rural environment.

La village (Hop Tien commune)

According to the ACC, the community's priority is to solve three problems:

- Water polluted by pig farming activities
- Flooded roads
- Air pollution from pesticides

The ACC chose these 3 problems because they seriously negatively impact on daily life, the health of the community, and natural resources.

Solutions recommended by the community:

Table 9: Common solutions at La village

Solution 1. Establish an institution (organization) responsible for the local environment	Human resource: 1 person per hamlet assigned by PCC based on proposals of the community	Finance: from veterinary fees (each farmer yearly contributes 3 kg of rice)	Duties of this person: <ul style="list-style-type: none"> - Propagate, educate, monitor the implementation of regulations relevant to environment - Give timely information relevant to environment of the community - Consult the PCC to implement policies and activities relevant to environment
Solution 2. Improve broadcasting system in community	Implemented by commune broadcasting station	Finance: Commune budget	Purpose: guarantee all households can hear information relevant to the environment and be warned not to pollute

Table 10: Solutions for specific environmental problems at La village

Solution 1. Improve the drainage system			
Implementing activities	Financial budget	Implementer	Expected results
<ul style="list-style-type: none"> - Planning the water system, direct households during any pond filling and house building to leave room for drainage pipelines according to land tenure agreement between the People's committee and the Households - The people's committee of commune stipulates a regulation to prohibit raising fish weirs in the fish ponds - Establish teams to clean drains 	Commune's budget	Entire community	Waste water flows without local interruption

Solution 2. Treatment waste water from pig farming			
Implementing activities	Financial budget	Implementer	Expected results
Drainage system improvement	Commune's budget	Entire community	Reducing the pollution of waste water from pig breeding
Built Biogas tank Built Septic tank	Government, with local contribution		
Commune People's Committee moves some larger farms to transition area	Pig breeders	Farmers	Reducing the pig density in residential areas
Solution 3. Reducing the pollution from inappropriate pesticide use			
Implementing activities	Financial budget	Implementer	Expected results
1. Technical training for cultivators	Commune People's Committee, Plant protection Department, encourage the agricultural extension organization, Office of agriculture	encourage agricultural extension officers, Plant protection Department officers arrange training, Commune People's Committee informs farmers on training schedules	Identify pesticides and insecticides Practice safety methods.

2. Forecast insect situations and appropriate preventive action for each area.	Plant protection Department, Botanical protection organization of the district, agriculture co-operatives	Plant protection Department of district, agriculture co-operatives	Prevent the overuse of insecticides for a long time and in large areas
3. Broadcast information about the suitable time for insecticides spraying	Commune People's Committee	Commune broadcast	Prevent overuse of insecticides over a long period of time and over a large area
4. Intensive control of the quality of insecticides sold by local insecticides suppliers	Plant protection Department of province, of district, Commune People's Committee	Plant protection Department of province, of district, Commune People's Committee	- Reduction of the supply of illegal pesticides

Ben village:

Insecticides

- Technical training to improve knowledge of effective use of insecticides and the minimization of environmental pollution
- Information by loud speaker broadcast about when particular insecticides should be effectively used
- Control of insecticides at local suppliers.
- Recommend an experiment on IPM and microbiological insecticides usage on crops.

Waste from insecticides use

- Build tanks for collecting wrappings and packaging of insecticides in the fields.
- On the spot waste treatment of wrappings and packaging wherever possible

Floods

- Both ACCs for La and Ben villages recommended that the commune People's Committee check and severely punish households which violate regulations. (The regulations prohibit raising fish weirs in the fish ponds, and regulate dimensions of irrigation channels for communities according to the land tenure agreement between the People's committee and the Households.)
- Establish the drainage system clearing team in the community.

In brief, the community has posed practical solutions to reduce local pollution, especially technical solutions such as building biogas systems and 3-tier filter-beds. Besides the required effort of the community, support by local and other authorities is needed for the communities to carry out the solutions and programs they have proposed.

Prior to this project, the impacts of agricultural and daily life activities were not given high importance by the community, or were considered to be too difficult to deal with. Given expected increases in the intensity of crop cultivation and animal breeding, placing further pressure on the local environment, a substantial change in the attitude of the community is needed. Apart from the noted, any diversification of production that leads to less intensive activities that pollute should be considered.

Regarding the pollution risk from external sources, this matter is a public problem. To overcome the situation, district and provincial authorities have to issue a policy to force large polluters, (such as factories), to implement pollution control measures or be made to compensate the communities. At present, it's seems that environmental authorities do not have a strong mandate to monitor and implement regulations concerning this matter.

Furthermore, the community has not had an opportunity to submit their opinions and ideas in relation to large developments that may negatively impact on their environment. There needs to acknowledgement by authorities (provincial and district) that there are negative impacts and that a system for collecting community opinions and recommendations is needed.

3.5.5.3. Participatory rural environmental management in Son La Upland Province

Table 11: Solutions of Moc chau participatory for protecting natural resources and environment

	<i>Pa Phang Village</i>	<i>Ke Teo Village</i>	<i>So Luon Village</i>	<i>Team 70</i>
Land resources	<ul style="list-style-type: none"> - Focusing on intensive farming on upland to maintain yields and to protect the soils. - Practicing soil protection techniques. 	<ul style="list-style-type: none"> - Fallow for some time. - Implementing alternative farming. - Changing crop structure (plant more fruit trees, and forest trees). 	<ul style="list-style-type: none"> - Increasing intensive farming on upland fields to maintain crop yields and to protect the soil. - Changing crop structure (plant more fruit trees and forest trees). 	<ul style="list-style-type: none"> - Mixed farming. - Alternative farming.
Pesticides	<ul style="list-style-type: none"> - Following suggested instructions. - Protecting labour from harms. 			
Residential environment	<ul style="list-style-type: none"> - Moving cattle out of residential areas. - Setting up simple sewage drainage systems. - Keeping residential area clean and hygienic 	<ul style="list-style-type: none"> - Moving cattle out of living areas. - Setting up simple drainage systems. - Keeping residential area clean and hygienic. 	<ul style="list-style-type: none"> - Moving cattle out of living areas. - Keeping residential area clean and hygienic 	<ul style="list-style-type: none"> - Building new and durable cattle breeding facilities. - Constructing septic tanks for wastewater. - Discharging wastewater to pastures. - Keeping cattle breeding facilities clean and hygienic. - Setting up clean water supply system. - Self-supply of safety equipment.

Forest resources	<ul style="list-style-type: none"> - Protecting the allocated forest areas. - Planting more trees annually. - Exploiting a specified amount of timber. 	<ul style="list-style-type: none"> - Protecting the allocated forest areas. - Planting more trees annually. - Exploiting a specified amount of timber. - Protecting the primitive forests. 	<ul style="list-style-type: none"> - Protecting the allocated forest areas. - Planting more trees annually. - Exploiting a specified amount of timber. 	
Water resources	<ul style="list-style-type: none"> - Using clean water from water tanks provided by Program 135). - Improving the irrigation system. 	<ul style="list-style-type: none"> - Using clean water from water tanks provided by Program 135). 	<ul style="list-style-type: none"> - Using clean water from water tanks provided by Program 135). - Improving the irrigation system. 	

4 Conclusions and Recommendations

4.1. Conclusions

In Vietnam, the process of socio-economic development has progressed rapidly with increased industrialization, urbanization and population growth. This has resulted in increased pressure on the environment. The majority of natural resources are found in rural areas the rural people have lower income and fewer opportunities to access education compared to the urban population. Therefore, the challenge is to simultaneously promote sustainable economic growth as well as environmental protection. People are currently exploiting natural resources for income, and while doing so are threatening their health and living standards.

Vietnam is an agricultural country and water and land are in great demand for production. Increased production leads to degradation of these resources. As well, farmers are forced to use available technologies and sometimes inappropriate fertilizers, pesticides and veterinary chemicals to maintain an income. The misuse of these chemicals is adding to rural environmental degradation.

During the process of economic restructuring, non-agricultural sectors have assumed an increased role in rural environmental management. The development of non-farm activities has resulted in increased water, land/soil and air pollution, and related human and animal diseases.

❖ Policy issues identified

It was found that policies were misdirected, too weak or non-existent to effectively enforce environmental protection. The main causes identified were:

- Lack of synchronization within the policy system.
- No plan for agricultural production coupled with large volumes of emigration; increased areas of deforestation and wasteland.
- Land becomes degraded, infertile and poisoned as a result of farmers cultivating sloping lands, destroying forests, using the wrong fertilizers and plant protection chemicals, etc. Therefore, natural disasters such as drought or floods happen more often.
- Government has been unable to effectively control rapidly expanding rural industrial development.
- Ineffective policies dealing with the problem of air pollution (organic and inorganic), and gases from residues of fertilizer and veterinary chemicals.
- Policies relating to plant protection and veterinary chemicals have been ineffective.
- Limited policy awareness amongst the rural population. A lack of advanced technology in farming and processing techniques.

❖ Institutional issues identified

Organizational

- Institutional organizations are poorly organized
- Systems of environmental management operate independently and without consultation between institutions.
- Role of Department of Natural Resource and Environment is not supported by strong legislation
- Environmental management at district, commune and village levels lacks a responsible organization

Operational

- Provincial level institutions are unable to delegate environmental management tasks
- Functions and duties of agencies overlapped
- Government environment staff lack relevant skills and knowledge
- There is a lack of funding for environment issues which focus on clean water projects
- Raising awareness is a serious need
- Management and penalties are difficult to enforce
- Lack of overall objectives in agricultural production and environment
- Scarce human resources results in limited supervision and inspection
- Environmental sanctions are not strict enough and not interconnected with other regulations

❖ Rural environment issues identified by community participants

Community participants in the local workshops identified issues that contribute to environmental degradation at the policy, institutional and community levels.

Issues identified by participants at the policy level included:

- *Current environmental protection regulations are difficult to enforce:* local authorities lack the power to enforce regulations relating to issues such as production and household waste disposal.
- *Lack of policies relating to intensive agriculture:* villagers believe policies are required to regulate intensive farming techniques, including the use of fertilizers and pesticides, clearing of vegetation, and the use of external labour to increase the intensity of farming (identified in Pa Phang).
- *Poor dissemination of legal documents and regulations relating to environmental management:* participants were unaware of many new and amended legal statutes. For example in 1999 the Convention of Building Cultural Village for Cat Que, Part C of Articles 17, 18, 19 clearly regulated environmental protection, however this information never reached the villagers.
- *State investment the environment has had little impact:* State policies to increase investment have had a low impact due to poor research and implementation by authorities.

Issues identified by participants at the institutional level included:

- *Poor cooperation between authorities and mass organizations:* Participation of local authorities and mass organizations in environmental management remains limited. To date, no movement has attracted large scale villager participation in rural environmental management. The activities of mass organizations concentrate on economic development. That said, organizations such as the Youth Association in Hop Tien commune, Nam Sach district, Hai Duong province have organized activities such as cleaning roads and environmental days.
- *Environmental management at district, commune and village levels:* lack a responsible organization to coordinate activities amongst formal and informal organizations.
- *Planning and management:* activities such as planning, implementation and management of drainage systems currently exceed the capacity of local institutions, and require the assistance of higher authorities.
- *Organized waste collection has limitations:* Despite the Cat Que People's Committee providing equipment for waste collection, the hamlet did not organize the activity as the problem was seen to be too large to solve with this simple solution. The People's Committee lacked the power to enforce collection.

Issues identified by participants at the community level included:

- Waste from animal husbandry activities is a significant source of pollution affecting the quality of soil, water and air. Livestock breeding areas are close to residential quarters
- Pesticides, fertilizers and veterinary drugs are being used incorrectly and excessively, resulting in the pollution of soil, water and air. These chemicals are being used to increase production outputs. New rice varieties are high yielding but are also very vulnerable to pests and diseases.
- Forest resources are degraded with reduced area, low timber quality, and diminishing wildlife.
- Household waste is not being disposed of correctly, resulting in pollution of the village environment.
- Also food processing waste is not being disposed of correctly and is polluting the village environment.
- Smoke/Brick Kilns produce large quantities of smoke and ash that creates air pollution and respiratory problems/disease.
- Pollution from transportation is caused by exhaust from motor vehicles and the use of unsealed roads.
- Soil erosion is caused by clearing of vegetation and the excavation of soil from unstable areas for use in brick production.
- Water resources are not regularly available year around. There is too much water in the rainy season and no water in the dry season.

4.2. Recommendations

4.2.1. Recommendations for each concerned stakeholder

4.2.1.1. Policy recommendations

Both short and long term solutions are required to curb pollution trends and to avoid the increasing number of environmental conflicts that are occurring. These solutions should aim to ensure that “Economic growth connects with social progress and equality, cultural development and environment protection.”

- Implement policies to ensure that the development of agricultural products considers the effects to the ecological environment. When utilizing natural resources and current production, planning must be carried out to ensure restoration of the environment.
- Strengthen the State’s judicial law to protect and improve the environment. Priority should be shown to the article “Criminal Environment” in Criminal Law (amendment in 1999), Environment Protection Law, Land Law, Civil Law, Protection and Developing Forestry Law, Water Resources Law etc.
- Policy strengthening for agricultural and rural development should include:
 - Strengthening capacity of management for plant protection and veterinary chemicals from central to municipal governments, and from private and State-owned production and trading firms.
 - Implement policies to outlaw the use of chemicals/medicines that cause detrimental effects to human health and the environment.
 - Establish environmental management regulations governing relationships between collaborating agencies.
 - Implement policies regulating traders and users of harmful chemicals and medicines that cause damage to the ecological environment, such as the destruction of forests, hunting precious animals, and polluting water resources.
- Develop policy to encourage rapid application of advanced technology that protects the environment. Promote the use of methods such as use of high production techniques and disease resistant breeds, increased use of organic fertilizer, using IPM to protect crops, and using appropriate farming practices on sloping lands, to avoid erosion and floods.
- In the livestock sector, it is necessary to concentrate policy on issues such as gender equality, breeding facilities, treatment of animal husbandry waste, and avoidance of infectious diseases to people.
- In agricultural food processing, technology must be refined and processes established to reduce environmental pollution from noise, dust and waste water. The Government must invest in improving agricultural techniques to protect the environment.

- Policies to implement the socialization of environmental management. Environmental protection is the responsibility of municipal governments, the industrial sectors, and the wider community. Individuals and groups must take responsibility to disseminate the information to local households.
- Media and social groups should be mobilized to promote community participation and to condemn activities causing environmental destruction. This will encourage community consciousness to protect and to enrich the environment. Of crucial importance is improving the knowledge of individuals, helping them be aware of production, profit and environment.

According to specialists working in environment and rural development, for better results, we should observe the bottom up as well as the top-down view. The State policies and the level of interest shown to the environment will be the most effective way to solve the issue completely.

In order to engage local communities in rural and mountainous areas to deal with the current environmental difficulties, activities should aim to solve the most urgent needs and to meet the people's expectations. Improving villager awareness and belief in environmental issues can strengthen the relationship between top-down policies and the bottom-up feedback.

4.2.1.2. Institutional Recommendations

- Improve systems of 'vertical environment management' amongst institutions.
- Clearly define the role of government institutions involved in environmental management and their role when dealing with other organizations concerned with the environment.
- At the commune level, establish an institution focused on environmental management and maintaining local management at the village level.
- Increase professional knowledge of agricultural environmental management through professional exchanges with developed nations and study tours.
- Raise funds for environmental activities and future projects by improving environmental targets in agricultural development projects
- Strengthen cooperation between government institutions at the district level
- Attract Vietnamese and international non-government organizations to participate in environment activities
- The Department of Natural Resources and Environment must delegate environmental activities to agencies at province level. Agencies should report directly back to the Department of Natural Resources and Environment.
- Improve the system of measuring and reporting on environmental activities in rural areas.
- Strengthen penalties and define supervision responsibilities at different levels.
- Establish a set of environmental guidelines at the institutional level that includes deterrents for those that are involved in actions detrimental to the environment. Penalties may include closure of factories, revoking of licenses, and withdrawal of land.

4.2.1.3. Community-based solutions suggested by participants

Villagers involved in the workshops using participatory approaches established their action plans to contribute to environmental protection. Many of their suggestions were based around changes in policy and institutional approaches to environmental management, which have been outlined above. The community based solutions (outlined below) were established by both villagers involved in pollution creating activities and those who suffer environmental pollution.

- **Always clean the flows in drainage system:** This is a practical solution and needs to be implemented as soon as possible. Local mass organizations and leaders of villages will be responsible for the mobilization of villagers to participate in this form of environmental protection. We believe that this solution is very easily implemented.
- **General planning to improve drainage system:** Villagers believe that this solution needs to be implemented as soon as possible. Local authorities will be responsible for implementing this solution. This solution will be funded by the government with contributions from villagers.
- **Waste collection groups to be established:** This solution should be implemented as soon as possible. Villagers believe that commune level authorities and village leaders should be responsible for the establishment of the program and the work, while villagers will contribute money to pay for collection.
- **Develop or adapt crafts that reduce pollution:** The research team was surprised with this solution because of the large amount of capital invested in food processing production in Cat Que. There the villagers are also experienced in crafts. It is therefore possible to assume that villagers place more importance on the reduction of environmental pollution than on maintaining tradition skills. We do not believe that the time frame for implementation of the solutions suggested by villagers is achievable.
- **Research technologies for treating waste and waste water at the household level.**

4.2.2. Project recommendations

The following project recommendations have been developed in response to the findings of this research. It is intended that these recommendations be reviewed and further developed with funding agencies, collaborating institutions and other relevant stakeholders.

Possible collaborating institutions include, but are not limited to, MARD, UNDP, World Bank, ADB, ACIAR, Hanoi Agricultural University, Center for Informatics, National Institute for Animal Husbandry Research, Ecological-Economy Institute (Vietnamese NGO), Thai Nguyen Agricultural Forestry University, and the Ministry of Natural Resources and Environment.

4.2.2.1. Education pilot program for local farmers and agricultural workers in the Son La province

Develop an education pilot program for local farmers and agricultural workers in the Son La province. The program will be designed to educate farmers on improved agricultural techniques, current alternatives and participatory environmental management at the village level. By conducting the education at the village level it is anticipated that the knowledge will remain within the community. These pilot programs would provide case study examples of improved techniques through education tailored to the local situation and would allow for lessons learned to be generated for the use in wider scale interventions.

Please see annex for further project details.

4.2.2.2. Assessment of ‘lessons learned’ from local experience in community-based rural environmental management in Hai Duong province

It is recommended that an assessment be conducted of ‘lessons learned’ from local experience in community-based rural environmental management in lowlands and uplands be conducted. This assessment would provide case study examples of community-based rural environmental management and would allow for lessons learned to be further researched and expanded upon for the use in wider scale interventions.

Please see annex for further project details.

4.2.2.3. Development of animal husbandry waste management strategy and pilot program in the Ha Tay Province

Animal husbandry activities in Ha Tay province were identified as a major source of environmental pollution. It is recommended that an animal husbandry waste management strategy be developed and implemented with a series of pilot programs be developed and implemented. These pilot programs would provide case study examples of waste management techniques tailored to the local situation and would allow for lessons learned to be generated for the use in wider scale interventions within waste management.

Please see annex for further project details.

4.2.2.4. Increasing the scale of implementation of previously identified appropriate land use strategies in Son La Province

Current agricultural activities in the northern upland areas of Son La province were identified as a major source of environmental degradation. Appropriate land use strategies for this region have been identified. It is recommended that a program be implemented to increase the scale of appropriate land strategies amongst farmers in the Son La Province. These programs would provide case study examples of the effectiveness of land use tailored to the local situation and would allow for further lessons learned to be generated for the use in wider scale interventions.

Please see annex for further project details.

4.2.2.5. Development of cassava processing waste reduction strategy and pilot program in Cat Que Commune, Ha Tay Province

Cassava processing activities in the craft villages of Cat Que commune, Ha Tay province was identified as a major source of environmental pollution. It is recommended that a cassava waste reduction strategy be developed and implemented with a series of pilot programs be developed and implemented. These pilot programs would provide case study examples of waste reduction techniques tailored to the local situation and would allow for lessons learned to be generated for the use in wider scale interventions.

Please see annex for further project details.

5 Follow-Up Activities

The following activities are envisaged to ensure that the information collected for this report and lessons learned through the process are accessible and available as a valuable resource for future projects and funding.

- Documentation and dissemination of project materials to stakeholders.
- Further support for survey sites to implement action plans.
- Approach policy makers to share ideas on how to incorporate project recommendations into improved policy development process
- Seek further support from donors to:
 - Implement project recommendations
 - Conduct further research activities to provide baseline information for project targeting
 - Develop monitoring and evaluation regime to monitor success of the implementation of the action plans
 - Conduct further research to confirm and quantify issues raised by stakeholders.
- Use the knowledge gained to develop other relevant projects on participatory rural environmental management

6 Lessons Learned

Key findings relevant to the design and implementation of related projects

1. Improved rural environmental management should be considered a sound strategy in the process of industrialization and modernization in Vietnam, given the fact that the present rural degraded environment has clearly impacted on the social and economic development in both lowland and upland areas, nation-wide.
2. Research and development on participatory rural environmental management is of great importance, given the fact that currently, very few R&D projects / programs on rural environment issues are undertaken in Vietnam. Special attention is needed in especially under specific situations such as the rice farming areas, the craft villages, the sloping lands which are farmed continuously with short duration food crops.
3. VASI has been shown to be a capable and dedicated national research institution and focal point in research and development of participatory rural environmental management in both lowland and upland areas, nationwide.
4. Integrated R&D on agriculture and rural environment proves to be a sound strategy for the national agricultural research institutions to get better impact from their research, development and training work.
5. Sound and comprehensive assistance and support from multilateral organizations including UNDP, FAO and other development donors will greatly assist national agricultural research and development institutions.
6. External support aimed at improving rural environment is very important, but it should be incorporated with efforts from local communities and authorities as well as social institutions.
7. The move from the agriculture to the agro-industry sector is needed strategically with a focus on capacity building for participatory environmental management, especially to local authorities and social organizations.
8. Strengthening participatory rural environmental planning and management will be of crucial importance.
9. Priority should be given to concerted capacity building and institutional strengthening projects at the provincial, district, commune and village level.
10. Explore the underlying reasons for the weak role of research, universities and local social organizations in the rural environmental research and development. The “lessons learned” can be applied by both Government and the donor community, and can be used to assess training and human resource development needs.
11. We found that working intensively with villagers is an effective way to assess real environmental situations and needs. This also facilitates the planning process for communities to work out and implement their action plans by themselves and proves to be a sound solution for improved environmental management and community empowerment.

12. Most of current rural environmental problems can be solved satisfactorily through working closely with local communities on a bottom-up, participatory approach. This encourages and motivates local contributions from villagers who are willing to contribute their own efforts to get their rural environment improved.
13. Rural environmental action plans which are developed by local communities can be implemented by the community.
14. Environmentally related legal and policy documents should be summarized, disseminated and discussed widely and comprehensively in rural communities, aimed at getting people involved in local environmental management.
15. Rural environmental management-related projects in North Vietnam should take into due consideration on such crucial challenges as, among others, the pollution caused by animal husbandry (mainly pig rearing) activities and the use of pesticides in lowland intensive rice-based farming areas. Other challenges are the environmental degradation caused by forest clearing and continuously growing short duration food crops (mainly maize) on sloping upland areas.
16. One important issue to potentially contribute to the improvement of rural environment management would be the participatory planning for the long-term establishment of separated farming areas, including the animal sties, and locating the tuber food processing workshops away from local residential quarters.

Operational lessons learned

17. This project was implemented flexibly. The National Project Director and the Project Management Office was allowed discretion to adopt a flexible approach. This allowed for efficient use of time and resources to produce a quality report that clearly states current issues and identifies possible future studies relevant to community and environmental needs.
18. Close collaboration was maintained between government organizations, NGOs and international organizations. VASI's knowledge of current and past Vietnamese rural environmental issues allowed it to quickly identify and recruit other organizations and individuals to assist with the project. One such example is the connection and close working relationship with Ecological – Economy, a Vietnamese NGO.
19. There was more information sharing and consultation with relevant ministries and national level institutions. A lesson learned through the project was the value of experience sharing with other organizations and ministries. Inviting organizations and representatives from the ministries to meetings and workshops allowed for good information exchange.
20. The role of the local communities was crucial in the research and implementation of this participatory rural environmental management project.

21. Information and data sources as a part of the PRA needs to be checked with the wider local community to ensure accuracy of facts and data.
22. While conducting field research, the personnel must be familiar with local socio-economic conditions experienced within the community and surrounding areas.
23. It is important to incorporate local people and their knowledge within the research collection process.

Annexes

Annex 1

Develop an education pilot program for local farmers and agricultural workers in the Son La province

The program will be designed to educate farmers on improved agricultural techniques, current alternatives and participatory environmental management at the village level. By conducting the education at the village level it is anticipated that the knowledge will remain within the community.

Activity 1: Develop an education strategy in consultation with stake holders, including:

- Literature reviews
- Interviews with key stake holders including village level producers

Activity 2: Design pilot programs. This should include:

- Workshops with key stake holders including village level producers

Activity 3: Conduct feasibility study

Activity 4: Select and approve pilot programs. This should include:

- Workshops with key stake holders

Activity 5: Conduct pilot programs under the supervision of the project team.

Activity 6: Lessons learned report and information dissemination workshop

Personnel requirements

Team Leader: Dr Le Quoc Doanh

Sector Experts: Mr. Dau Quoc Anh, Mrs. Bui Thi Thai, Mrs. Nguyen Thanh Thuy, Dr Dao The Anh, Dr Tran Duc Vien

Budget: 480,000 USD

Assessment of ‘lessons learned’ from local experience in community-based rural environmental management in Hai Duong province

It is recommended that an assessment be conducted of ‘lessons learned’ from local experience in community-based rural environmental management in lowlands and uplands be conducted. This assessment would provide case study examples of community-based rural environmental management and would allow for lessons learned to be further researched and expanded upon for the use in wider scale interventions.

Activity 1: Assessment of ‘lessons learned’ in consultation with stake holders. This should include:

- Literature reviews
- Interviews with key stake holders including village level producers

Activity 2: Design pilot programs. This should include:

- Workshops with key stake holders including village level producers

Activity 3: Conduct feasibility study

Activity 4: Select and approve pilot programs. This should include:

- Workshops with key stake holders

Activity 5: Conduct pilot programs.

- Conduct pilot programs under supervision of project team

Activity 6: Lessons learned report and information dissemination workshop

Personnel requirements

Team Leader: Mr. Ha Dinh Tuan

Sector Experts: Mr. Dau Quoc Anh, Mrs. Nguyen Thanh Thuy, Prof Le Van Tiem, Mrs. Pham Thi Ngoc Linh

Budget: 350,000 USD

Development of animal husbandry waste management strategy and pilot program in the Ha Tay Province

Animal husbandry activities in Ha Tay province were identified as a major source of environmental pollution. It is recommended that an animal husbandry waste management strategy with a series of pilot programs be developed and implemented. These pilot programs would provide case study examples of waste management techniques tailored to the local situation and would allow for lessons learned to be generated for the use in wider scale interventions within waste management.

Activity 1: Develop a village level waste management strategy in consultation with stake holders. This should include:

- Literature reviews
- Interviews with key stake holders including village level producers

Activity 2: Design pilot programs. This should include:

- Workshops with key stake holders including village level producers

Activity 3: Conduct feasibility study

Activity 4: Select and approve pilot programs. This should include:

- Workshops with key stake holders

Activity 5: Conduct pilot programs.

- Conduct pilot programs under supervision of project team

Activity 6: Lessons learned report and information dissemination workshop

Personnel requirements

Team Leader: Dr Vu Trong Binh

Sector Experts: Dr Nguyen Que Ca, Mrs. Dang Kim Khoi, Mrs. Bui Thi Thai

Budget: 420,000 USD

Increasing the scale of implementation of previously identified appropriate land use strategies in Son La Province

Current agricultural activities in the northern upland areas of Son La province were identified as a major source of environmental degradation. Appropriate land use strategies for this region have been identified. It is recommended that a program be implemented to increase the scale of appropriate land strategies amongst farmers in the Son La Province. These programs would provide case study examples of the effectiveness of appropriate land use tailored to the local situation and would allow for further lessons learned to be generated for the use in wider scale interventions.

Activity 1: Develop a village level appropriate land use strategy in consultation with stake holders.

This should include:

- Literature reviews
- Interviews with key stake holders including village level producers

Activity 2: Design pilot programs. This should include:

- Workshops with key stake holders including village level producers

Activity 3: Conduct feasibility study

Activity 4: Select and approve pilot programs. This should include:

- Workshops with key stake holders

Activity 5: Conduct pilot programs.

- Conduct pilot programs under supervision of project team

Activity 6: Lessons learned report and information dissemination workshop

Personnel requirements

Team Leader: Dr Le Quoc Thanh

Sector Experts: Mr. Dam Quang Minh, Mr. Ha Dinh Tuan, Mr. Dau Quoc Anh, Prof Le Van Tiem

Budget: 480,000 USD

Development of cassava processing waste reduction strategy and pilot program in Cat Que Commune, Ha Tay Province

Cassava processing activities in the craft villages of Cat Que commune, Ha Tay province was identified as a major source of environmental pollution. It is recommended that a cassava waste reduction strategy with a series of pilot programs be developed and implemented. These pilot programs would provide case study examples of waste reduction techniques tailored to the local situation and would allow for lessons learned to be generated for the use in wider scale interventions.

Activity 1: Develop a village level cassava waste reduction strategy in consultation with stake holders.

This should include:

- Literature reviews
- Interviews with key stake holders including village level producers

Activity 2: Design pilot programs. This should include:

- Workshops with key stake holders including village level producers

Activity 3: Conduct feasibility study

Activity 4: Select and approve pilot programs. This should include:

- Workshops with key stake holders

Activity 5: Conduct pilot programs.

- Conduct pilot programs under supervision of project team

Activity 6: Lessons learned report and information dissemination workshop

Personnel requirements

Team Leader: Mr. Nguyen Van Hoan

Sector Experts: Mr. Nguyen Khac Quynh, Mr. Tran Van The, Le Viet Luu

Budget: 400,000 USD

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