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The Summery Report

**The Research on Community-Based Upland Natural Resources Management in
Hong Ha Commune, Aluoi District, Thua Thien Hue Province, Vietnam**

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Researching groups

Le Van An, Project Leader
Le Quang Bao, MSc. Forestry
Le Duc Ngoan, Dr. of Tropical Husbandry System
Nguyen Minh Hieu, Dr. of Horticulture
Nguyen Thi Cach, MSc. Agronomy
Hoang Thi Sen, MSc. Forestry
Vo Thi Minh Phuong, MSc. Biology
Nguyen Xuan Hong, MSc. Society
Hoang Huu Hoa, Dr. Agricultural Economics
Truong Tan Quan, BSc. Economics
Tran Minh Tri, BSc. Economics
Nguyen Phi Nam, MSc. Fishery
Ngo Huu Toan, MSc. Animal Husbandry
Nguyen Khac My, BSc. Agriculture
Nguyen Thi My Van, B.A of Foreign Language

Cooperation of specialists:

Dr. John Graham, IDRC Senior officer in Singapore
Dr. Peter Kerridge, CIAT Senior officer in Philippines via IRRI office
Dr. Sam Fuzika, CIAT consultant
Prof. Dr Hans Sheier, British Columbia University, Canada

Project Collaborators:

Vice Prof. Dr. Le Khac Huy
Vice Prof. Dr. Tran Van Minh
Prof. Dr. Vo Hung

Liaison Address:

Upland Natural Resource Management Project Office
Hue University of Agriculture and Forestry
24 Phung Hung Street, Hue, Vietnam
Tel: (54)-538405
Fax: (54)-524923
Email: upland@ hotmail.com

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**The Research on Community-Based Upland Natural
Resource Management in Hong Ha,
Aluoi, Thua Thien-Hue**

Introduction

The Project “Community-based Natural Resource Management in Mountainous Areas Hong Ha, Aluoi, Thua Thien-Hue, Vietnam” has financial aids from IDRC-Canada during the period of 1998-2001.

The general objective of the project is to develop sustainable and equitable resource use and management options in fragile upland areas in central Vietnam and to build capacity in research and development based on participatory approaches.

The specific objectives

- i. To characterize the site with emphasis on determining the status of water, soil, agriculture, forestry, livestock and human resource; to understand the formal and informal social structures governing the use of natural resources; to determine the key processes and direction of changes.
- ii. To study the governmental policies and the local regulations; and how these policies are implemented in the local area and their effects on the livelihoods villagers and natural resources.
- iii. To evaluate crops, livestock, home garden and other options to enhance the food and income security position of farmers in this area through the methods of farmers’ participation.
- iv. To study and test options to bring imperata grassland back to more productive and sustainable uses.
- v. To strengthen participatory approaches within institutions, providing technical training to villagers and district staff and to communicate and disseminate results.
- vi. To monitor and evaluate changes in social economic conditions and in the natural resources and environment as affected.

The project is carried out by the researchers of Hue University of Agriculture and Forestry with the cooperation of the members of the Economic Department of Hue Institute and Hue University.

The researching results of the project are described in the annual reports. This report describes the most general researching results and information in the last three years.

The study groups appreciate the financial aids of IDRC of Canada; Dr. John Graham, the direct supervisor; the experts of CIAT, especially Dr. Peter Kerridge; the Principal of Hue Agricultural University and other members in Hue University who have a concern and make advantages to implementing this project.

The study groups would like to express the whole-hearted gratitude to the helpful cooperation of the Leaders of Thua thien Hue Province, especially the Aluoi People's Committee, other provincial agricultural and rural developing offices, the Leaders of Hong Ha Commune, other local committees, and farmers in the Commune.

The Characteristics of Hong Ha, Aluoi.

1. Bio-physical setting

1.1 Location:

Hong Ha is one of twenty-one mountainous communes of Aluoi district, located in the West, 50 kilometers far from Hue City and 20 kilometers far from the center of Aluoi. The commune stretches all the way about 10 kilometers along the Hue-Aluoi National Street number 49.

Hong Ha is contiguous to Hong Quang Commune in the North, to Huong Lam in the South, to Huong Tra District in the East, to Huong Nguyen in the Southeast and to Hong Thuong in the West. Hong Ha terrain stretches down from the West to the East and from Northwest to Southeast.

1.2 Climate

Hong Ha is influenced by the tropical monsoon weather. There are two separate seasons: the dry season from February to August and the rainy season from September to January. The yearly average temperature is 22 -25°C, the high temperature is 38,8 - 40°C in May, June and July, the low temperature is 12°C, combined with rains in December, January and February.

- The yearly average humidity is about 79,8-81,3%
- The yearly average rainy level is 2.690mm, the highest one is 3.240mm in November and the lowest one is 1.135mm in June and July.

1.3 Water resources

Hong Ha has big rivers such as Bo river, a river, and streams such as Vi Linh, Vi tuong , A chat, Tava This system of rivers and streams plays an important role in providing fresh water in living and producing not only for Hong Ha Commune but also for the lower areas of Thua Thien- Hue. In Hong Ha there are some artificial dykes that are small scale but very important in providing water to agricultural production. In former days, the water level of these streams was quite stable due to the large forest-covered surfaces. However, nowadays, the water level of the rivers and the streams has been changed a lot because the covered-forest surfaces have been decreased seriously.

1.4 Land resources

Most of the land in Hong Ha is mountainous and sloping. Before 1945, most areas in Hong Ha are old forests with big trees, plants and vegetation covers. However, because of the decreasing of the covered forest scale and unreasonable procedures of using lands, the soil has been eroding, the cultivating land is thin, and its fertility is decreasing.

1.5 Natural resources

During the wars, the natural forests were destroyed seriously. Many forests were burnt and could not be regenerative. After the wars, the forest surfaces and their qualities have been decreasing continuously because of many reasons but mainly of people with a limited knowledge and the habits of burning forest for cultivation. The areas of empty forests and bare hills have been increasing while the cultivating lands just occupy a small scale in the total of land.

2. Social economic conditions

2.1 Ethnic, population and history of Hong Ha

Before the August Revolution (1945), the mountainous areas of Thua Thien -Hue were divided into four parts: the higher section of Bo river, O Lau river, the right side and the left one. Hong Ha belonged to the higher section of Bo River.

After the national liberation, Hong Ha belongs to the leading of the Aluoi People's Committee and the District Committee.

Ethnic and population:

Hong Ha has 183 households and 1100 inhabitants, dividing into villages as follows:

VILLAGE	HOUSEHOL	INHABITANTS	MALE	FEMALE
	DS			
Con Tom	37	225	115	110
Pa Hy	41	272	130	142
Con Sam	27	158	84	84
Pa Rinh	39	230	112	118
Arom	39	215	98	107
Total	183	1.10	539	561

The survey on October/1998

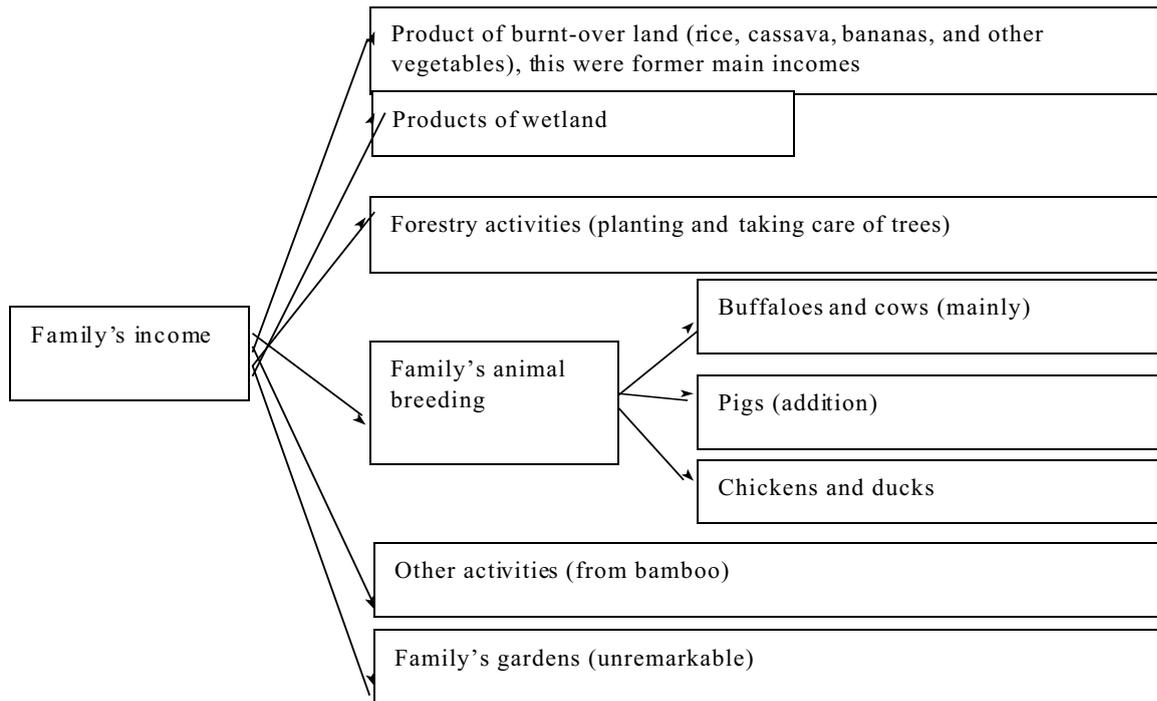
N ⁰	Ethnic	Population	Scale (%)
1	CoTu	524	49,3
2	Tai(Paco,Pahy)	498	45,3
3	Kinh	55	5,0
4	Bru-Van Kieu	4	0,4

Hong Ha has more than 1100 inhabitants, mainly belonging to the minorities such as Katu, paco, Taoi, Pahy, occupying 95% of the total population. Before, they lived on nomadic farming. At present, they have settled down to sedentary life. However, their cultivating is still self-sufficing, depending on nature. They are poor-equipped of materials and techniques in production. The producing methods are in backward with mainly traditional ones. As the results, the incomes are low and unstable and people are in difficulties. Transports and communications are limited. Culture, education, health service and other welfare are still low. The poor households mainly live on exploiting forest product (the income of forest product of better-off households is 18.1% while the one of the poor is 44.5%)

3. Producing systems

Hong Ha, a mountainous commune, occupies large natural areas (14.100 ha). However, the cultivating area is only of 10%(148.2ha), including 13.4 ha of wetland rice planting, 10 ha hilly areas of dry rice, 20 ha of gardening ones (that have not been invested in cultivating yet), 60 ha of planting crops which are not effective. Even though this is a mountainous area, the cultivating land per person is very small (0.13ha/person), of which the area for planting rice is 120m²/ person (distributing unequally among villages). The productivity of the crops is low; rice is 2,3tons/ha/year; cassava is 6,7tons/ha.

The diagram of the incomes from producing as follows:



At present, it is forbidden to burn forests for cultivating and the new target is changing the areas of burnt-over land to planting long-term trees. At the results, the incomes from forest and burnt-over land are gradually decreasing; that causes many difficulties to villagers' lives.

3.1 Planting

Wetland rice: The main rice seeds are IR38, NN8, and IR36. Most of people here do not use fertilizer and insecticide in producing. The cultivating knowledge is still limited. The productivity is 19-20 tons/ha.

Upland rice: Some local seeds are used widely and laid aside for years. The cultivating duration is long so that it is often damaged when the floods come. The cultivating depends on nature completely.

Cassava: Cassava is one of the main plants of local people. The local cassava seeds are of low productivity, which are harvested all year round as the main food resources. Cassava is planted on the sides of hills or on the flat areas near houses for years. People do not fertilize or rotate crops, which lead to low productivity.

Farm products: Corns, peanuts, bananas are traditional plants. They are planted alternatively on the cultivating lands. Besides people pay no intention to their own nutritious needs and the process of growth, that causes bad influences to productivity.

Gardening: The traditional cultivation of the minority is on burnt-over lands; so that the main cereals of local people are the products harvested from the gardens like cassava, dry rice, and bananas. People here are rarely interested in developing their gardens. Most of gardens are jumbled up with low productivity.

3.2 Cultivating on burnt-over lands

Cultivating on burnt-over lands is the specific traits of people in mountainous areas in general and Hong Ha in specific. This kind of cultivating brings the main incomes to farmers' households. Its annual average incomes are 1.7 higher than ones from water rice and 5 times higher than gardening cultivation and occupy 54% in VA construction of planting.

Each family in Hong Ha Commune has 3.4 areas of land for revolving. When the first land is impoverished, people lay it up and move to cultivate on the next one. After 3, 4 years or maximum 5, 6 years, the second one will be exhausted, then they move to the third land. After the first round, they will be back to the first one. It is the minority's habits of cultivating not to use fertilizer and insecticide. The main plants on the burnt-over lands are dry rice, cassava, corn and peanuts.

The cultivating cycles on burnt-over lands of Hong Ha people:

Area selection:

Selecting soils is the first step. This work is carried out after the Lunar New Year holidays. The villagers' s experiences of soil selection depend on the reality observation: the terrain, colors, and its botanic system to evaluate exactly soils' properties.

Cutting and burning trees:

It is in February or March (Lunar Year) that is suitable to cutting trees. The duration of cutting trees is carried out reasonably: cutting small branches, arundinaceous cane, then cutting trees from the foot to the top of the hills. It is dry and light windy in March and April, which is suitable to burn them. They often burn trees when the wind stops blowing at 11 am or in the afternoon.

Sowing:

The suitable time for sowing dry rice seeds is in April and May (Lunar Year) (at some places lasting in June). To the minority, sowing rice seeds is really a festival. Men dig holes and women follow to put seeds in and cover them. The distance between each hole is 25 to 30 centimeters the hole is 4-6cm depth. People never sow seeds in the lengthwise rows but in the horizontal ones up to the hills, which could prevent the water flows not to eroding the soils.

Care and management

After sowing seeds, people make fences round the burnt-over lands. The fences are made from bamboo or base of cut tree-stocks. Together with making fences, people put traps to catch animals coming to damage crops. In some places, villagers make scarecrows to prevent the cultivating lands from animals.

Harvesting and seeds selection:

Before the harvests, people make rice houses keeping. They often harvest crops from the foot to the top of the hills in horizontal rows. It is a labor work based on people' strength and hands, so that the productivity is often low due to rice remained or fallen down on during the harvests. At present, in some places, people learn to reap rice with a sickle or use machines in harvesting.

Laying up seeds is an important work. The minorities' experience of laying up seeds is in the afternoon of a sunny day. At the moment, the temperature is low and so is water inside the chosen seeds, which keeps seeds away from mould. Seeds are put on the shelves in the kitchen in order not to be damaged by mice or floods.

3.3 Animal husbandry

. Domestic

Animal breeding has appeared long ago in Hong Ha. However, it has not developed and just played a minor role in local people's lives. The targets of animal breeding depend on the customs of each tribe. The scale of breeding is very simple, mainly at households by the way of free-range animals.

The food sources for animals are mainly from nature not from planting. The quality of foods is very low; the scale fiber is very high (30-60%). There is a lot of animal decease.

The breeder animals are mainly internal ones with low productivity and it is lack of experience and technique.

. Fish

Fish is used in most households. There are three sources providing fish: natural exploited fish, raised fish and sea fish in which natural exploited fish occupies a large rate (85%). Raised fish is only used in the households whose fishing ponds are self-sufficing. Sea fish is rarely used because people have no cash to buy it.

Fishing has been very popular in this region for ages and played an important role in the local people' lives. The local people' s way of exploiting fish is very simple: catching fish in the streams or brooks by Xavloc (a simple kind of fish-pot made from bamboo).

Raising fish at this local area started at the beginning of 1990s and developed spontaneously thanks to those who had experiences when they were in the army of went far from home to earning for living. Then as being back home, they raised fish at their own households. At the beginning, there were only four households at Paring and Can Sam raising fish, and then expanding widely to others. In 1998, in the whole commune, there were 34 households with 46 ponds and the total water surface is 12.700 m². The productivity at ponds in the commune is very low. The average level is 0.08-0.1 kg/m (approximately 800-1200 kg/ha). There were some households depending on natural growth fish source in the lakes not investing breeder fish. Most of fishing lakes at the local areas is not satisfied with fishing technique requirement.

. **Depth:** Most fishing lakes are too shallow. The average depth is 0.6-0.8 meters, even 0.5meter in some lakes.

. The system of providing and draining water away is not designed in a good way. Therefore, the water is not so fresh and easy to precipitate alum in the bottom of the lakes.

. The fishing lakes ' environments are not satisfied with fish breeding. Usually, the underground water source provides water to fishing lakes. The daily exchanged water is low; the pH, dissolved oxy scale and its fresh are, too.

. Preventing fish diseases 'activities have not been carried out and people have not realized its role.

PROGRAMES AND POLICIES HAVE BEEN CARRIED OUT IN HONG HA

1. The Settlement Programs:

The Settlement is a big program of the Government that has been carried out for 30 years. It aims at settling down and developing production, at investing for infrastructure, at raising welfare, at protecting the environment, at using effectively natural resources to those who are minority living in mountainous areas and some Kinh dwellers in cities.

The situation of carrying out the Settlement programs

Categories and investing structures

The investing categories of the programs are very abundant with building infrastructure (electricity, roads, schools, and stations); replanting, taking care, preventing forests; and reclaiming virgin soil to make gardens, and building fish lakes and cattle breeding. This kind of investing is suitable for those who have just settle down to sedentary. They need not only a good place to live but also other producing conditions to ensure for their lives.

Table 1: Categories and investing structures of the program of setting down to sedentary life in Hong Ha in the period of 1993-1998

Categories	Expenses (1000 VND)	Scale (%)
Investing Funds	2.075.414	100,0
I. Investing for producing development	387.060	18,6
1. Reclaiming virgin soil	41.343	2,0
2. Home gardens	47.000	2,3
3. Cows breeding	30.038	1,4
4. Fish ponds.	60.000	2,9
5. Irrigation	133.679	6,4
6. Supports of production	75.000	3,6
II. Investing for welfare.	1.280.800	61,7
2. Transports	225.000	10,8
3. Wells	54.000	2,6
3. Clean water system	158.000	7,6
4. Electricity	300.000	14,5
5. Schools, teachers' dormitories	262.000	12,6
6. People's Committee office	116.000	5,6
7. Emigration	45.800	2,2
8. Supports of production	120.000	5,8
III. Investing for environmental protection	290.079	13,9
1. Forest protection	159.660	7,7
2. New plantation	117.186	5,6
3. Forest maintain	13.233	0,6
IV. Designing and managing projects	117.475	5,7

Most of the investing categories were for developing infrastructure, occupying 60.2% of the total. Especially, three units of irrigation with the capitals of 133.679.000 VND occupied 6.4%; transportation with the capitals of 225.000.000 VND occupied 10.8% and the electricity of 300.000.000 VND occupied 14.5%. The scale of investing categories not only ensured the living settlements but also created good conditions to stable production.

Besides, there were categories of planting, taking care and protecting forest, which met the aims of the programs of people' settling down and protecting natural resources. This investment helped people get used to a new way increasing incomes, which is planting, protecting forests and making rich from forests not exploiting forests.

The biggest scale of investment of 1.280.800.000 VND was for social welfare, occupying 67% of the total budget capitals. At the results, the local welfare was increasing quickly. However, the scale invested investment for producing development occupied 18.6%.

Production had not been paid attention to investing, which restrict the producing development at the settled areas.

It was the invested producing that created the basic conditions not the stimulating factors throughout the programs. Training officers, techniques and encouragement agriculture had not been paid attention. At the results, the capitals for investment were rather big but the effects improving people' lives were not remarkable. Therefore, it was necessary to concentrate funds on production (increasing the scales of producing investment).

The rate of progress of investment

The rate of progress of investment was a factor influencing much to the process of settling down to sedentary life. If the rates of progress of investment were reasonable, it would make the settling down process stable quickly and use the natural resources effectively from which increases the standards of people' living. In 1993, the capitals of investment reached 570.580.000VND(occupying 27.5%) and in 1997, it was only 43.844.000 occupying 2%. This tendency was quite reasonable. Firstly, it is necessary to have a strong effect on to change the way of living and producing. Then it may be decreased gradually to let people free in deciding their lives. The rate of progress ensured the changes when being stimulated. By the way, it ensured the settlement when the stimulation stopped. It was in 1998 when the total investing capitals increased 508.800.000VND(occupying 24,4%). Especially, it was quite reasonable that these investments were for infrastructure (mainly for electricity). After settling down their lives, electricity would help people access to the new knowledge, the progressive thoughts of living as well as producing development.

The first year of the projects was for infrastructure and other conditions to developing production (such as transports, irrigation, schools and reclaiming virgin soil). As the results, the basic conditions of settling down process as well as of production, of infrastructure, health care and education were established. A few years' later, other supplementary conditions were invested. Therefore, the progress of investing of all categories was quite reasonable, which could support to one another and stimulate other ones later.

Table 2: The progress of settlement programs in the period of 1933-1998

Categories	1993	1994	1995	1996	1997	1998
1. Forest Protection	33.400	53.905	72.355			
2. Forest Plantation	16.292	25.194	75.700			
3. Forest maintain		3.104	10.192			
4. Reclaiming virgin soil.	14.343					27.000
5. Gardens building			35.000		12.000	
6. Cows raising		30.038				
7. Fish ponds	35.000	25.000				
8. Irrigation	64.181	69.498				
9. Transports.	135.000	90.000				
10. Wells		30.000	24.000			
11. Clean water system.				5.000		153.000
12. Electricity						300.000
13. Schools and teachers' dormitories.	20.000			142.000 116.000		
14. People Committee's house at the commune	120.000 32.292	45.000 22.304	46.400 15.815		29.400 2.484	28.800
15. Occupations						
16. Designing and managing projects.						
Total of expenses	570.580	394.043	279.399	278.780	43.884	508.800
Scale (%)	27,5	18,9	13,5	13,4	2,2	24,5

Table 3: The results of the investment of the project.

Categories	Unit	Amount
I. Forestry		
1. Protection	Ha	3.603,3
2. New plantation	Ha	176,2
3. Maintain	Ha	63,7
II. Agriculture		
1. Reclaiming virgin soil	Ha	20,9
- Lands for rice	Ha	7,4
- Lands for sugar cane	Ha	13,5
2. Home garden building	Households	112
3. Breeding (cows)		
4. Fish ponds	Head Ponds	32
		40
III. Infrastructure		
1. Irrigation	Ct	2
- Cãn Tãm Irrigation Canal.	Ct	1
- The Katã dam	Ct	1
2. Transportations	Km	5
3. Wells	Unit	9
4. Running water	Point	1
5. Fresh water	Point	8
6. Electricity	Households	115
7. Schools	m ²	160
8. Teachers' dormitories	m ²	50
9. People Committee's office	m ²	100
IV. Occupations		
1. Immigration	Households	57
2. Supports of production	Households	57
3. Supports of life	Households	152

Source: The Program 327

The investment of settling down to sedentary life in Hong Ha played an important role in developing economy and society in general and households of shifting cultivation in specific. The project has supported for living to 152 households; for producing and emigrating to 57 households, and for replanting of 176.2 ha forests.

Remains:

- + In some investing categories, the investing capital has not been effective; the using value is still low.
- + Even some producing modals were built but they were not maintained. The managing, supervising, helping people in techniques, seeds, and fertilizer have not been noticed.
- +The capital for producing investment is still low and inconstant, especially in developing forest.
- + Not depending on the community's ideas or cooperating with the local labor resource that the stable characters of the projects are still low.

4. The Program 327

The Program 327 had been expanded throughout the country since 1993 to 1998. The specific objective of the whole program was covering empty areas and hills by trees, solving work for redundant labors, increasing economy effect in the area carried out the project in order to solve the environment, strengthening and developing economy and society in highlands.

Therefore, the objective of the program is protecting and developing forests by creating economic benefits from plating and protecting forests to people and wiping out gradually the way of living depending on exploiting and exhausting natural resource.

The situation of carrying out the program 327 in Hong Ha

The objective of programs at Hong Ha is replanting and protecting effectively the watershed at Bo River. The specific objectives:

- Protecting the natural protective forests remained in the commune
- Delineating and developing effectively the poor forests in the protecting areas in order to ensure the increasing covering scale of the watershed.
- Expanding into the renew-planting of the empty lands and bare hills belonging to protective areas.

Categories and investing results:

Table: Categories of investment of the Program 327 from 1993-1998

Categories	Units	Amount	Expenses (Million dong)	Scale (%)
I. Forestry			1.690.060	94.41
1. Management and protection	Ha	2.564,3	331.000	18.49
2. New plantation		573.5	771.000	43.07
3. Maintain		1.667,0	588.060	32.85
II. Agriculture			42.400	3.27
1. Economic gardens	Households	10	12.800	0.72
2. Breeding (cows)	Households	37	29.600	1.65
III. Designing and managing project			57.500	3.22
Total			1.789.960	100

Source: The Program 327

Investing for forestry is the biggest categories including replanting, managing, taking care of, delineating and protecting forestry. In the investing categories of forestry, the model of Agriculture -Forestry coordination was expanded, which took plants with high economic value, monitoring technique, supplying fertilizer, providing loans for farmers to gardening. With this kind of model, the program has invested in ten households on the whole commune with the budget capitals of 12.8 million dong, occupying 7.02 %. Although the scale in these investing activities is not high but here is the model of villagers following, helping them improve the way of producing, increasing the standards of living for villagers and creating work to community. Besides, the program has given loan to villagers under the way of providing cows with the total of 37 cows equivalent to 29.6 million dong, occupying 1.65% of the total budget.

Together with the categories of forestry and producing development, it is interested in investing for cultural social development, in ensuring livelihoods, and in health cares of the villagers. However, these categories are always joined with other programs. In general, after 6 years of implementing investment in Hong Ha, all the categories are carried out quite completely and reasonably.

The structure of budget investment

The capital investment for the projects of the Program 327 is from two sources: the budget and non-interest loan. In two-mentioned source, the budget is mainly used (occupying 97.63%), and the non-interest loan occupies a small scale (2.37%).

Table 5: The structure of capital investment of the Program 327 from 1993 to 1998

Targets	Total		Budget capital		Non-interest loan	
	Amount	Scale (%)	Amount	Scale (%)	Amount	Scale (%)
1. Forest protection	331,00	18,49	331,00	18,94		
2. New plantation	771,00	43,07	771,00	44,12		
3. Forest management	588,06	32,85	588,06	33,65		
4. Home gardens	12,80	0,72			12,80	30,19
5. Breeding (cows)	29,60	1,65			29,60	69,81
6. Project scheme and management	57,50	3,22	57,50	3,29		
Total	1.789,96	100	1747,56	100	42,40	100
Scale (%)	100	-	97,63	-	2,37	-

Source: the summary data collected from the yearly projects

The budget provides mainly for forestry activities such as: replanting, delineating, taking care, managing and protecting forests. The investing of replanting and taking care of forests is 1.359.060 million dong (occupying 77.77% of the budget capital). The investing of delineating and protecting forests is remarkable with 331 million dong (occupying 18.94% of the budget capital). As the results, the exploiting forests and cutting trees illegal are limited.

- The non-interest capital is invested in the model of agriculture-forestry cooperation - cows breeding and home gardens.

The investing process of the project

The investing process of the project has changed remarkable. The year 1993 was the first time carrying out the program so the total capital was still low with 43.92 million dong (occupying 2.45% of the total investing capital for 6 years). It was concentrated on designing and replanting on a small surface, on which focused on designing.

In 1994, the investing scale did not increase and was still at the low level, occupying 1.67% in the total of investing capital for 6 years. In the forestry investing structure, the investing for planting forest as well as for taking care previous forest were increasing.

During the two years 1995 and 1996, the investing capital was increasing remarkable, so that the investing capital of each category had been changed much. In those years the project concentrated on developing home gardens with the model of agriculture and forestry cooperation. In 1996, the investing capital was 261,12 million dong, occupying 14.6% the total capital for 6 years, in which the investing in forestry categories occupied 86.5% and in agriculture occupied 11.3%.

Especially, the investing progress of the project in 1997 occupied 47.77% the total capital for 6 years. It was the time that the project was concentrated on developing the covered surfaces on the largest scale at the commune after the infrastructure had been improved. It proved

that the way and the investing progress of the project were reasonable. It not only met the objectives but also created good conditions to the development supports between each investing category and the investing would be promoted effectively.

Table 6: The investing progress of Program 327 in the period of 1993-1998

Payment unit: million dong

Categories	Total		1993		1996		1996		1997		1998			
	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%		
I. Forestry	1690,06	94,41	20,84	47,5	25,17	85,7	218,71	91,9	225,76	86,5	843,91	98,7	355,67	98,7
1. Forest management	331,00	18,49							95,32	36,5	207,00	24,2	28,68	7,9
2. Replanting Forest	771,00	43,07	20,84	47,5	21,85	74,4	165,76	69,7	84,53	32,4	478,02	55,9		
3. Forest Maintain	588,06	32,85			3,32	11,3	52,95	22,2	45,91	17,6	158,89	18,6	326,99	90,4
II. Agriculture	42,40	2,37					12,80	5,4	29,6	11,3				
1. Home gardens	12,80	0,72					12,80	5,4						
2. Breeding (cows)	29,60	1,65							29,60	11,3				
III. Design and management project	57,50	3,22	23,08	52,5	4,20	14,3	6,43	2,7	5,76	2,2	11,20	1,3	6,83	1,9
Total of investing capital	1.789,96	100	43,92	100	29,37	100	237,94	100	261,12	100	855,11	100	362,50	100
Scale (%)	100		2,45		1,64		13,29		14,60		47,77		20,25	

Source: The data was collected in the projects for years.

Some remained limitations during the process of the program 327 in Hong Ha

+ The maintenance and management forest were not invested constantly. Especially, this objective had not been linked with the permanent work of delivering forests to households, which led to the low investing effects of the projects, some what restrained the development of maintain and management forest movement.

+ In 1998, the unused surfaces were still in a large area.

+ There was the overlap in the management between Aluoi Department of Forestry Inspection and Management Board of Watershed Bo River, especially in 1994 and 1995

+ The maintaining and replanting forest plans in the following years were not in details, so the their effects were not high.

3. Sugar cane Programs

Implementing the National Sugar cane Programs, a serious sugar cane factories were built, leading the establishment and development of the raw material areas (in which was the Phong An-Phong dien Sugar cane Factory). Even the economic effects of the sugar cane to households were not negated. However, after the disintegration of Phong An Sugar cane Factory (in 1999), many social-economic problems needed to be solved to the planting sugar-cane villagers in Hong Ha.

The producing sugar cane situations in Hong Ha

Table 7: The results of planting sugar cane in Hong Ha Commune for three years 1997-1999

Targets	1997	1998	1999	Comparison (%)			Average
				98/97	99/98	99/97	
1.Areas (ha)	4	18,6	29,6	465	159,1	740	171,9
2. Production (quintal/ha)	394,5	350	389,8	88,8	111,4	98,8	99,4
3. Amount (ton)	157,8	651	1154	412,5	177,3	731,3	270,4

Source: People's Committee Reports in Hong Ha Commune

Looking at the Table 7, we realized that the planting sugar cane surfaces in the Commune were increasing quickly. In 1997, there were only 4 hectares, but in 1999, they reached the number of 29.6 ha in which the wild lands were mainly used and a small part one from uplands and home gardens. Here was a good tendency in using lands at the moment. Together with increasing the planting sugar cane surfaces, the sugar cane productivity was also increasing 631 tons from 157.8 tons in 1997 to 1154 tons in 1999.

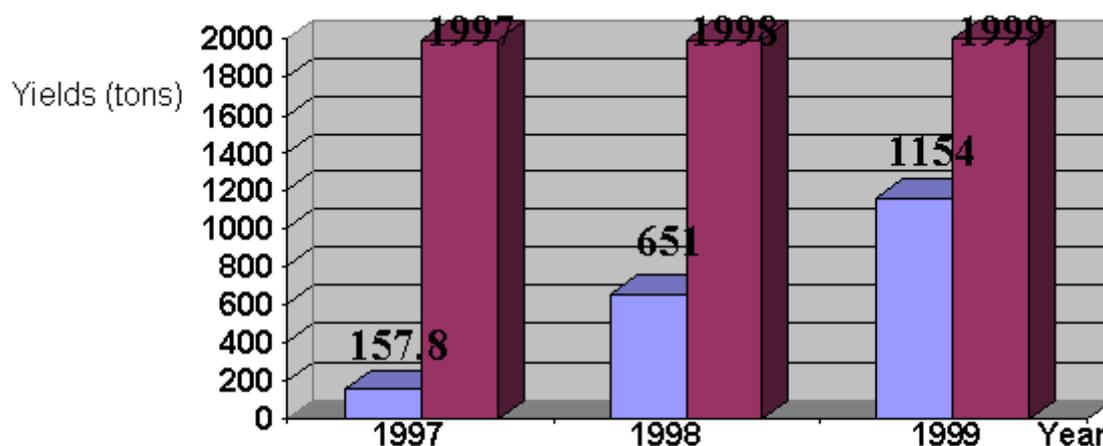


Diagram 1 : The yields of sugar cane in Hong Ha in the period of 1997-1999

Table 8: The producing value and incomes from planting sugar cane
unit: 1000^a

Households target	Producing value (GO)	The average total CP	Included IC	Labor expenses	Average VA
Average	4.225,26	1.841,37	1.693,11	148,25	2.532,15
a.Katu	4.423,08	1.953,34	1.790,84	162,50	2.632,24
b.Pacä	5.173,75	2.131,48	1.958,35	173,13	3.215,40
c.Taäi	3.060,00	1.337,92	1.230,82	107,10	1.829,13
d.Pahy	3.450,00	1.728,08	1.607,33	120,75	1.842,67

Source: The survey data of the projects in 1999

According to the survey of 60 planting sugar cane households in 1999, the incomes of farmers from sugar canes were quite high.

Searching on ethnic groups, the incomes from sugar canes of the Paco were the highest with 3.2 million dong, then the one of Katu ethnic; the incomes of Taoi and Pahy were the lowest (1.8 million dong). The main reason was the lands conditions. Besides, it was because of the people' different customs in the process of assimilating the new methods.

Searching on the level of incomes from sugar cane productions, the better-off households were the highest, and the poor ones were the lowest. It denoted that the producing materials and labors conditions played important meanings in developing sugar canes in farmers' households. In general, the better-off households had more advantages of producing conditions and especially of capitals and the capacity for assimilating new techniques.

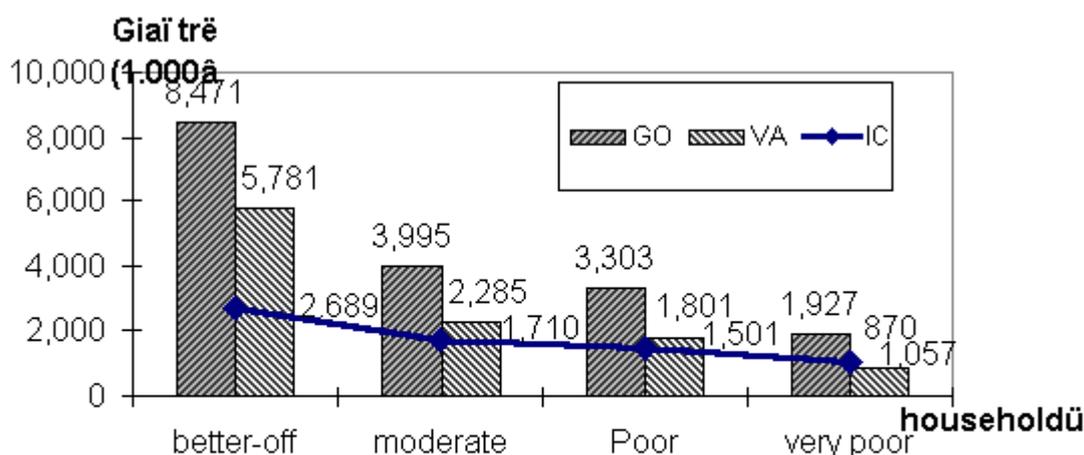


Diagram 2 : the production value and income from planting sugar cane of eachhouseholds

In comparison the producing results of each plants mainly of villagers in Hong Ha, it was the sugar canes that brought the highest results. The value added per one hectare of sugar canes was five times higher than the one of corns, nine times higher than the one of cassava and 1.7 times higher than the one of rice. However, the expenses of one hectare of sugar canes were very high, approximately 14 times higher than the one of rice, meanwhile the producing capital conditions of the villagers in the Commune were limited, which was the main problem in the process of developing planting sugar canes in specific and in changing plants structures in the local areas in general.

However, when the sugar cane factory stopped working at the end of 1999, the sugar cane productivity at Hong Ha was stagnant, causing many difficulties to the villagers who planted sugar canes.

Table 9: Comparing the effects of sugar cane productivity and other (account on 1 ha)

Unit: 1.000^a

Kinds of plants	Value output	Total expenses	IC	Value added (VA)
Sugar cane	17.695,21	7.580,10	6.957,50	10.737,74
Rice	6.426,96	514,09	411,67	6.015,23
Cassava	1.272,86	0,00	0,00	1.272,86
Corns	2.333,79	0,00	0,00	2.333,79
Average	6.932,21	2.023,55	1.842,29	5.089,90

Source: the survey data in 1999

The difficulties to villagers planting sugar canes in Hong Ha.

Firstly, destroying sugar canes while the investment in sugar canes had not been finished their producing cycles caused the economic damages. Especially, most of households could not be able to repay the capital loans of planting sugar canes.

Secondly, there were some surfaces leaved fallow for not having changed other kinds of plants or to planting ones less effectively

Thirdly, being changed to new plants, it faced to many difficulties in lacking of seeds, techniques, fertilizer, insecticide and capital investment.

Fourthly, the failure of planting sugar canes made villagers lack of producing belief, leading to unsafe feelings of investing in replanting new kind of plants.

4. The projects influences on developing social-economic situation and natural resource management in Hong Ha

The influences on cultivating lands

The influences of projects and programs created profound changes in developing productivity and human lives, firstly in the structure of cultivating lands.

Table 10: the Structure of cultivating lands in Hong Ha in the period of 1992-1998.

Objectives	1992		1998		Comparison 98/92 (%)
	Amount (ha)	Scale (%)	Amount (ha)	Scale (%)	
I. Agricultural lands	126,1	0,68	148,2	0,78	117,5
1. Short-term crops	114,0	0,61	117,4	0,62	103,0
- Wetland rice	10,5	0,06	13,4	0,07	127,6
- Upland rice	79,0	0,42	40,0	0,21	50,6
- Other crops	24,5	0,13	64,0	0,34	261,2
2. Long-term trees	3,4	0,02	19,6	0,10	576,5
3. Grassland	8,5	0,05	10,0	0,05	117,6
4. Lakes	0,2	0,00	1,2	0,01	600,0
II. Forestry lands	7.674,0	41,26	8.565,6	45,20	111,6
1. Natural forests	7.674,0	41,26	7.853,0	41,44	102,3
- Products from forests	-	-	3.071,0	16,21	-
- Protective Forests	-	-	4.782,0	25,23	-
2. Planting Forests	-	-	712,6	3,76	-
3. Protective Forests	-	-	712,6	3,76	-
III. Cultivating lands	14,5	0,08	16,8	0,09	115,9
IV. Home garden lands	13,1	0,07	14,1	0,08	107,6

Source: The reports of People's Committee in Hong Ha

The data in Table 10 clarified that the structure of cultivating lands in Hong Ha in the period of 1992-1998 had been changed considerable.

- During previous years, even the total agricultural areas have not changed much (approx 17.5%), its structures have changed a lot. In the structure of agricultural lands, the burn-over lands were decreasing much (approx 49.4%), the surfaces of risk soil were increasing quickly (161.2%). It denoted together with the general developing tendency of the local area and the influences of the projects, setting a forest on fire were prevented thanks to the increasing of sustainable rich soil areas, which contributed to improve villagers' lives.
- The structure of forestry lands had also changed. Before 1992, there was not a forest classification; the target of using each kind of land had not been defined,

which cause bad influences to land usage. After having been influenced by the projects, natural forests were classified from which brought effects in the forest utilization and management.

- Besides, planted forest areas have been increasing. At the point of departure till 1998, the planted forest areas reached 712.6 ha. Therefore, the surface of empty lands and bare hills were narrowed.

The influences on economic development

Together with the general development, owing to the influences of many policies, programs, projects, the economy in Hong Ha had changed tremendously.

- + The producing value of many branches increased, especially in planting, livestock breeding, planting and protecting forests.

- + The other product exploration from forests did not increase like before but had the tendency of decreasing and being replaced by planting and protecting forests.

- + The producing value of services was in a small scale but it increased three times higher in 1998 in comparison with the one in 1992.

- + The villagers' lives were being improved noticeably. Being suffered from the interminable starvation with cassava as the main foods; in 1998, many households had enough cereals for living. The famine months had been limited gradually.

As the results, the villagers' incomes had been changed exceptionally after six years the projects were expanded in the local areas. The farmers' incomes from all productivities increased, especially the income distributions were more reasonable. The incomes from forestry had changed positively.

The influences of the programs on management, protection and development Natural resources & environment

Natural resources and environment protection and management were one of important objectives of the projects.

Tables 11: Natural resources management, protection and development in Hong Ha in the period of 1992-1998

Unit: ha

<i>Objectives</i>	1992	1998	Comparison	
			±	%
1. Natural Forests	7674,0	7853,0	179	102,3
2. Planted forests	-	712,6	712,6	-
3. Managing and protecting planted forests	-	573,5	573,5	-
4. Planted forests maintain	-	659,4	659,4	-

Source: the data collected in available reports in Hong Ha

The projects were carried on replanting, taking care, protecting and managing forests in a large scale: replanting of 812.6 ha, taking care of 659.4 ha. With the number of approximately 200 households of the whole commune, the well-done work mentioned above was the big efforts of the local areas. Another important factor here was that the activities of the projects as well as the rules of policies and laws helped in reducing remarkable the illegal exploitation of natural resources and other forestry products. In 1992, the value output of these activities occupied 23.4% of the total output of the commune, and in 1998, it was only 10%.

Besides, the developing and protecting forests helped villagers use effectively and sustainable other natural resources such as water source and agricultural lands. The burnt-over lands decreased 50%, but the wetland rice and other crops' areas increased 27% and 161%, which created good conditions to 65 households using fresh water, occupying one-third of the total households in the commune.

In general, natural resources and environment management, protection and development of the commune gained good results. They had created a safety sustainable protective watershed environment.

5. Some experiences drew out from the implementing process of the projects in Hong Ha.

1. It was very important that the organizing and implementing projects had to be cooperated closely with the provincial committee leaders, other involving offices, and the project leaders to ensure the schedule and the process. The well-organized project implementation were not staggered, all were going well and vice versa.
2. The social-economic benefits of the villagers had to be linked with protecting and developing natural resources, which denoted clearly in planting, protecting and managing forests. During some periods, the Program 327 was only interested in enhancing the level covered-forest without paying attention to the villagers' benefits. As the results, forests were exploited constantly
3. In reality, the investing capital in productivity had a considerable meanings. However, if the social welfares such as electricity, transports, schools, stations and fresh water were linked harmony with guidance, advisory, technology examination, the effects would be higher than ones from social-economic fields, natural resources and environment.
4. Using new seeds and technology in producing and protecting natural resources and environments gained good results, and then they would be propagated for using popularly. Especially, in order to bring good results to these activities, it required the techniques guidance of project officers. Because of lacking the management and technology project officers, their activities were not taken place constantly. As the results, the project activities were not implemented satisfactorily and on schedule.
5. Before applying new methods drawn out from a program, a project, and a model of producing, or new planting or animal seeds to produce in a large scale, they had to be checked carefully in technology and economic effects, especially their outputs and the sustainable system relatives. They had to be applied in producing experiment before produced them to on a large scale for not affecting and disappointing villagers in taking part in new activities by the previous failures. These actual experiences were drawn out from sugar cane programs causing tens of hectares of lands left to fallow or changed ponderously and costly in order to plant other kinds of plants.
6. Some economic households models

Based on the producing situations in the local areas together with other similar ones, some economic households models could be selected to apply in Hong Ha.

- The model of Agriculture-Forestry Combination was used in the households, which were near the producing forest areas. Beside agricultural productivity and livestock, those households could be in charge of planting and taking care of one or two hectares forests, of delineating and protecting 10-15 ha of natural forests.
- The model of Forestry-Agriculture Combination was used in the households, which had a abundant labor source. Those kinds of households were in charge of planting and taking care of 5-10 ha of forests, of delineating and protecting 40-60 ha of natural forests and of livestock breeding in a large scale.
- The model of Agriculture-Forestry Home Industry and Service Combination was used in the households that labors had high-technology levels, traditional professions and trading knowledge near the center of the province. Furthermore, agricultural productivity, these households could take part in planting 0.5-1 ha forest/year as well as developing home industry and service.

6. Some proposals to increasing the effects of Project activities in Hong Ha

➤ The organizing and implementing projects had to be cooperated closely with the provincial committee leaders, other involving offices, and the project leaders to ensure the schedule and the process, strengthening the guiding roles, in monitoring and in solving problems in time during the process of implementing.

➤ Strengthening the exchanged information between projects carried on the same areas in order to share information and experiences in the process of implementing projects without being staggered.

➤ Establishing the project management staff with juridical personality and in charge of expanding transferred contents and of managing the capital effectively. It was necessary to arrange the management officials satisfactorily who were in charge of their own work. It was necessary to equip with means and management devices such as motorcycles, cooperating closely between the project officers and local staffs; sending the encourage agriculture officials to the local areas to monitor directly the producing techniques, and the methods of planting cereals and crops.

➤ Having plan of distributing and implementing the projects satisfactorily to the locations , natural conditions and believes and customs as well as schedule and carrying process.

➤ In the process of capital management and investment, the plan of providing capital had to be noticed in order to implementing the specific objectives of the projects. The non-interest loans served in agriculture had to be increased and privileged for the slow developing areas. Besides, the loan had to be given satisfactorily to the right targets, and objects with right quantities and inquired scales in order not to affect to the project objectives.

➤ In the process of investment, especially in building infrastructure, it was necessary to invest absolutely. Once having invested a selected category, it needed to be

concentrated absolutely to bring it to producing in reality. It was necessary to avoid of long lasting investment causing waste and capital lost.

➤ To define the selected investigated categories suitably, paying attention to invest in developing productivity, avoiding the incorporation between different projects all carried on a specific area.

➤ It was necessary to examine the investing capitals to each households whether they were used on right purposes and how their effects were in order to advance the right solutions, avoiding the state of using capitals in wrong purposes

➤ Organizing on farm workshops, exchanging knowledge and technology by means of saying and practicing in reality. It was necessary to organize excursions for farmers in order to let them chances to see the specific models and individuals of agriculture and forestry production at the local areas.

➤ In the tasks of moving inhabitants to the widely spaced areas, firstly, it was necessary to talk and stabilize thinking to the villagers then to have privileged policies to these groups of households, linking with the tasks of assigning to villagers lands and forests to cultivating and developing economic home gardens without influencing to forests.

➤ It was necessary to supplement the high-tech trained officials to the management staff and the local areas. The groups of production households needed to be established to exchange experiences, improving knowledge of producing to one another.

➤ Investigating frequently the real situations, evaluating and helping households in improving and recycling soils, building satisfactorily plants and livestock structures in order to exploiting absolutely sources, increasing the economic effects and protecting the balance the ecological conditions and solving social problems in the mountains areas.

FORESTS AND NATURAL FOREST RESOURCES

In Vietnam, the mountainous areas cover more than 70% of the total surfaces and occupying one third of populations of the whole country (Chu Huu Quy, 1995). Managing effectively lands, forests and other natural resources in these areas play an important role not only for local communities but also for the sustainable development of the country.

However, the complicated environments of ecological, economic, and social conditions in these areas have created a great number of challenges in economic and social development. They were the separated and isolated state with other developing centers of the country, the fragile ecological environment, the high-diversified ecological conditions and social culture. By the way, the pressing population increase caused negative changes such as the decrease of forest natural resources, land degradation, and unbalance of hydrograph. As the results, there were many difficulties of poverty alleviation and mountainous economic development of the Government.

The Roles of Forests and Forest Lands to Hong Ha Villagers' lives

Long-ago, natural forests have been an essential important living source to the minorities in Hong Ha. The natural forests' functions to people's lives were described in those fields mentioned below:

- Supplying foods through animal and plant products such as: yams, palm wine, palm fruits, fish from steams, and wild animals. Hunting and fishing were protein-supplying activities, which were very limited from livestock to households. The foods from natural products were very important to the local villagers once storms and floods damaged the crops.
- Supplying materials for building houses: palm leaves covered roofs and woods.

Building a house in Hong Ha needs 6.5 m³ woods at average. Those households need to build their own house have to write a request to the People's Committee to confirm and submit the Forestry Office for permission. As being permitted, they have to go to the forest themselves, then cutting and carrying woods out of the forests. Cutting and transporting woods as well as building houses need the

Supplying the supporting forest products such as palm leaves, honey and wild animals, which brought the households and the poor a source of cash in their agricultural leisure.

Non-timber forestry products play main roles in Community' lives at Hong Haû.

<i>Kinds of forestry products</i>	<i>Exploiting frequency</i>	<i>Usage</i>
<i>Woods</i>	<i>Rarely</i>	<i>Building houses</i>
<i>Fire woods</i>	<i>Frequently (everyday)</i>	<i>Daily cooking</i>
<i>Canes</i>	<i>Rarely</i>	<i>House devices</i>
<i>P a l m leaves</i>	<i>Rarely (yearly)</i>	<i>Covering roofs</i>
<i>C o r y p h a</i>	<i>Rarely (yearly)</i>	<i>Selling</i>
<i>Saribus</i>		
<i>B a m b o o sprout</i>	<i>Rarely (yearly)</i>	<i>Home foods</i>
<i>Wild taro</i>	<i>Sometimes (every three months)</i>	<i>Pigs' foods</i>
<i>Medicine plants</i>	<i>Rarely</i>	<i>Medical treatment</i>
<i>Honey</i>	<i>Rarely</i>	<i>Foods, medical treatment, selling</i>

- Supplying medicine: although not having been surveyed in details, there were indirect proofs that Hong Ha villagers have treated themselves by their own methods.

Actuality of using natural forests of Hong Ha villagers, according to traditional ways, they take advantage of using satisfactorily non-timber products, which showed the diversified values of natural forest to the minorities' lives. By the way, they themselves did not cause the serious decrease of the present natural forest.

The process of natural forests though years

- Planting forests, mainly Acacia forests, increased with the speed of 100 ha/year from 1993 to 1997. However, in the next future, potentiality of increasing planting forests was not considerable due to the decreasing of the covered green surfaces and far away the residential areas day by day.
- The surfaces of *imperata* areas were decreasing remarkable. Delineating for breeding and protecting forests of the Program 327 had helped changing remarkable the surfaces of *impetata* forests (regenerative potential) to state of bush being restored. The natural forest surfaces have not changed much for ten years, and have tendency of increasing slowly in next years with the conditions of putting in force the Law of protecting and developing forests.
- The quality of natural forest has been decreasing much in comparison with one of 30 years before. Fortunately, they are being restored gradually.

Table 1: The areas of soil utilization in Hong Ha from 1992-1998.

<i>Kinds of lands</i>	(Unit: ha)							
	<i>1992</i>	<i>1993</i>	<i>1994</i>	<i>1995</i>	<i>1996</i>	<i>1997</i>	<i>1998</i>	<i>CV (%)</i>
1.Agriculture areas	164	152	135	130	138	143	148	8,0
2.Lands covered with trees	7870	7887	7916	7896	8197	8566	8566	3,9
2.a. Natural Forest	7870	7865	7857	7853	7853	7853	7853	0,1

2.b. Planting Forest	0	16	53	239	344	712	713	104,6
3. Lands without trees	10757	10751	10737	10759	10450	10074	10067	3,1
3.a. Lands covered with <i>Imparata</i> and cane (Ia)	-	-	-	-	-	-	-	4832
3.b. Lands covered with bushes (Ib)	-	-	-	-	-	-	-	101
3.c. Lands covered with scattered trees (Ic)	-	-	-	-	-	-	-	5235
4. Other kinds of lands	159	160	162	164	165	167	169	2,3
Total (1) + (2) + (3) +(4)	18950							

Sources: 1995 - 1998: Land office of Aluoi Province, Hong Ha People's Committee.
1992 - 1994: Häöng Haû According to the figure of the active members of the Hong Ha Commune.

Note: CV: changing coefficient (%)

- The factors that influenced to the natural forest dynamic such as policies, regulations and population and so on had been changed a lot. The changing of Forest Management policies from the objective of exploiting round woods in the first ten years after the liberation to the one of protecting riverhead has decreased directly much the negative impacts to natural resources. The main forestry management offices have changed from a forestation yards to the ones of protecting forests such as Forestry protecting offices and the Staff of riverhead protection. However, although the forestry management policies were changed much for years but some important objectives of forestry management were not changed correlatively. Take for examples, there were not the forestry classification systems and set-up lands conditions of forestry riverhead management as well as the riverhead management offices with their right general functions.
- Together with promulgating determined regimes of protecting riverhead forests, the budget management office of protecting and developing forests and the specialized and responsible forestry offices were the forestry owners while the community's roles were minor. As the results, the pressure of the local community to the forestry natural resources were still remained, causing the forestry management work passive and depending on the budget of the Government.

Limited factors of Forest management and forestlands in Hong Ha:

- The involving parts lacked of information and knowledge for forest management. Most of this information was necessary for the process of forest management.

Table 2: The limitation of information to the involving parts of forest management in Hong Ha.

The mainly involving part	Limited information/knowledge
The Song Bo watershed management Staff and Aluoi Forestry state enterprise offices.	<ul style="list-style-type: none"> - The principles of managing riverhead and riverhead forests. - Social-economic information in Community. - In formation and knowledge of the technique of restoring forests by local trees. - The detailed present conditions of

	establishing and the general states natural forests.
Hong Ha villagers	<ul style="list-style-type: none"> - Unclear concept of the administrative borders and the exact distribution space of natural resource. - Scheme of using lands of the authorities - The detailed factors of the forestry management of the Government.

- Forest management had not been based on the foundation of scheme of land use satisfactorily. The target of macroscopic of the Government defined clearly that it was necessary to manage sustainable forestry riverhead. However, in reality, there was not a criterion system of scheme of riverhead, and of course, there was not a scheme of riverhead. The most contrary was the unbalance between using lands for agricultural cultivating, planting, delineating and protecting forests
- Lacking of the responsible office of general forestry management.
- Lacking of the active and equal participatory to the process of forestry management. The roles of paricipatory were at the level of paid or noticed participations. It was not active aspects such as: partner - relatives or taking part in the process of planning, etc.
- Lacking of the necessary technical foundation of riverhead forestry management: the system of riverhead forestry classification, the system of various levels of set-up lands conditions for riverhead management and other formal experiment of restoring riverhead forestry techniques.

The system of land tenure and forest trees management in Hong Ha

In the recent years, The Vietnam Government have exerted all their strength to reach two strategies of protecting natural recourses and upland economic development by the major programs such as: The Program 327 and 661 (5million hectares of forests), the program of settlement, etc. However, there came many arisen problems during the process of expanding and implementing these programs and projects. Among these, the rights of land use and forest trees tenure were always the main factors deciding the stability, efficiency and equality in the protection and development of natural resources and forestlands.

There had been many arisen problems involving closely to the rights of land use and trees, such as (a) inadequacy between the planner of the Governmental Projects and the customs/needs of lands and typical tree management at the local areas. (b) The uncertainty and of land and of forest tenure, and (c) the short of knowledge of the nature of the tenure systems in the conditions of the policy changes rapidly (Hoang Huu Cai, 1999). As the results, setting a better knowledge of the nature of the tenure systems of the Government and the local was very necessary to many partners involving to upland management and development including the administrators, project managers, compulsory officials, researchers and even the local community.

Hong Ha is in the important watershed areas in the mountainous areas in Thua Thien Hue Province. There are many diversified characteristics of ecology, culture, and society and being influenced of many external factors as forest programs 327 & 661, the settlement program, the program of new economic settlement areas and the policies of watershed forest protection. These relationships that are certainly involved to the

systems of the rights of land use and complex trees that was very necessary to understand clearly in order to managing the natural resources in the commune.

The concept of 'tenure' in conditions of Vietnam

The right of natural resources tenure in Vietnam was known by two factors: the ownership and the right of use. According to Vietnamese Government law, land resources belong to ownership of Vietnamese people and are managed by the State. The state allocates the right of use to organizations, households, and individuals who are called land users - right of land use for a long time and stability (article 1, Laws on land issued on 14 July 1993). Therefore, on the angle of law, land ownership in Vietnam was the unique and unmixed by time. The different factors with the dynamic by time and the land objects and human beings were the rights of land use of the Government to the different object groups. As the results, in conditions of Vietnam, study on "land tenure" often concentrates on " the right of land use " of different objects on different types of lands protected by the Government. The right of forestry land use was changed by three elements:

- (1) Changes on Government policies by time
- (2) Types of different forestry lands
- (3) Different land use groups

These were expressed in Laws of Forest resource protection and development (issued on 12 August 1991) and under-law legal documents.

Different to land resources, in Vietnam, timber resource can be belonged to ownership of organizations, households and individuals as private property on the condition of the facts that they invested their capital for planting forests (article 3 of Law of Forest Protection and development, 1991). As the results, the timber tenure was examined completely on all their rights.

Process of enlarging forestry management areas of government organizations

- Land with forest are the priority regions of State Forestry management after 1975 and forest management policies are oriented to timber production in the period 1975-1985
- Enlarging forestry management sub-areas from land with forest to barren land after 1986
- The forest and forest land management division of Government: The systems of sub-areas, plots, lot; and the division of forest and forest land management units was based on face of territory.

Table 2: Sub-area forestry management on the scale of Hong Ha and legal installation of management in the period of 1991-1999

Sub-area	Area		Government management agencies	Legal installation of management
TK1028	175		A Luoi Department of Forestry Inspection	<ul style="list-style-type: none"> Laws of forest protection and development (1991) - Regulations to protective forests
TK1029	770			
TK1030	503			
TK1031	774			
TK1032	869			
TK1033	240			
TK1046	(*)			
TK1050	910	Important		
TK1064	1176			
TK1043	1764	Important	Management Board of Watershed Bo River	<ul style="list-style-type: none"> Laws of forest protection and development (1991): Regulations to protective forests. Program 327: Period of 1993 - 1998 Program 661: Period of 1998
TK1044	803	Important		
TK1045	498	Important		
TK1047	510	Very important		
TK1048	1197	Very important		
TK1049	834	Important		
TK1056	918	Very important		
TK948	350	Very important		
TK1067a	(*)	Very important		<ul style="list-style-type: none"> Laws of forest protection and development (1991): Regulations to protective forest. Program 327 and 661

(*) Sub-areas have not yet identified their area

Sources: The Management Board of Watershed Bo River, The Division of Forestry Development of Thua Thien hue province (1999)

Therefore, the division of forest and forestland management units was based on the surface of territory, not relied on the specific real situation of vegetation. The advantage of this division was that it was very stable in the condition of forest state that was always changing. As the results, it was very convenient for land administrative management. However, its disadvantage was that the management objectives in each unit were diversified due to including many different types of forest and forestlands, causing difficulties for forest technological management.

The tenure process of households

The tenure process of households in Hong Ha was started at the flat lands areas, relating to the settlement process after 1975. Villager heads and villager, commune organizations play an important role in allowing the land tenure of households. Common activities in reclaiming and dividing wetland rice fields in the beginning of settlement. Institution of village had ensured the equality in land tenure for wetland rice cultivation of households. Cultivating land tenure was decreasing due to the influence of forest planting development and protective forest protection policies as well as the projects of supporting for intensive agriculture.

Shifting cultivation (1975-1986)

- On forest land (moderate and poor), large land resource
- Good soil, rather high yields
- Long fallow duration (7 years)

Pressures for change:

- The policies on protective forest protection and development
- Government policies on settlement
- Degradation of forestland resource.

Shifting cultivation in short fallow time

(1993 - 1999)

- On *imperata* and bush, limited land resource

Figure 1: Changes on shifting cultivation in Hong Haû

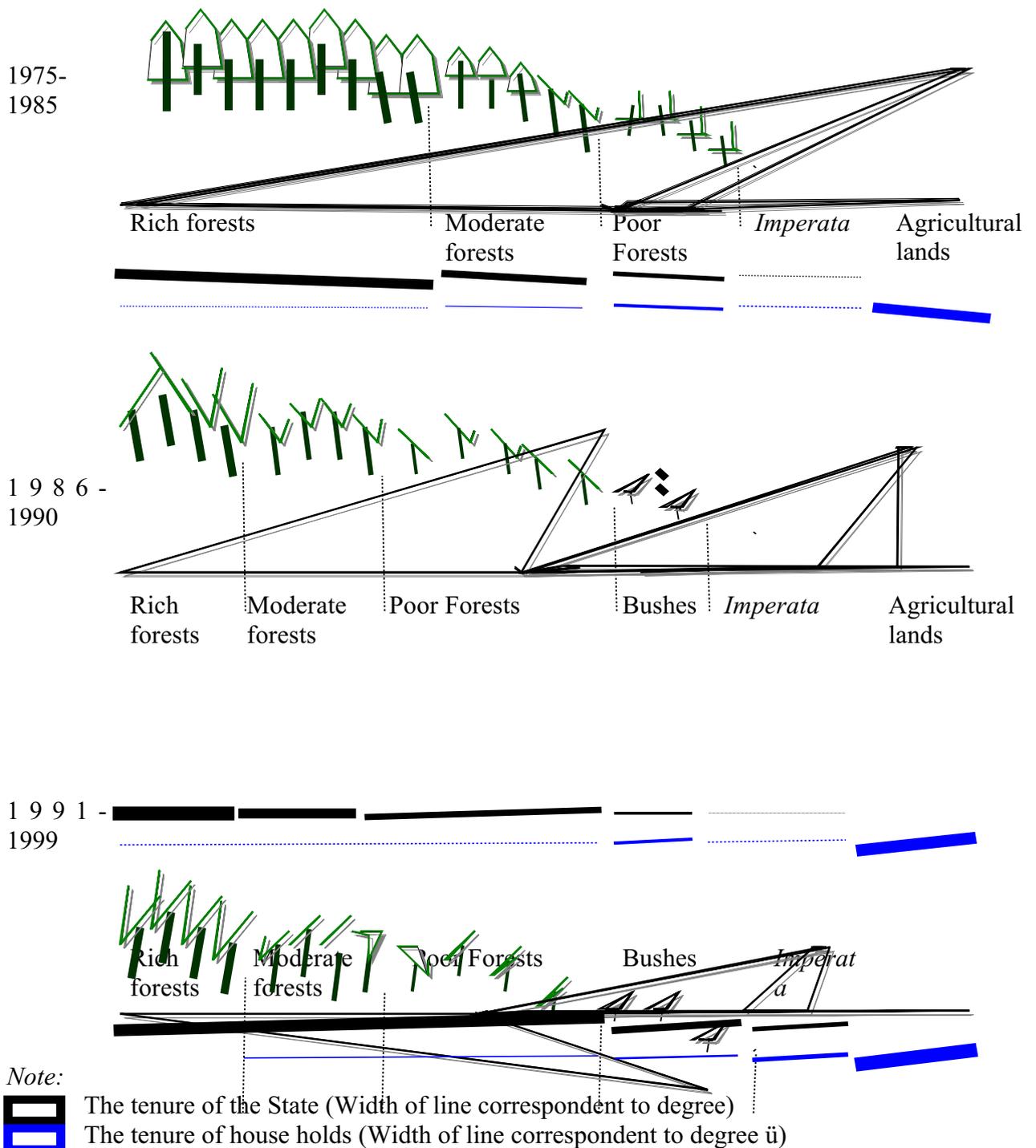


Figure 6: Diagram of time direction express the change of land and tree tenure of different periods on different types of land and trees. Source: Synthesizing from the result of marking of 5 farmers

Essence of "unused" or "not clear in management" of Imperata:

In reality, at Hong Ha, *Imperata* is often mentioned as "unused land", "fallow land" or "not clear in management" (LeQuang Bao, 1999). In this research, the analysis process of 2-land tenure system development of both Government and Community has been made clear

- (1) Due to slow using value of *Imperata* and a part of consequence of unsustainable exploitation and use in the past, *Imperata* grassland is an area of "be thought finally" or "end of hand in management and use" of both forestry management organizations and the local community in former days. Using *Imperata* requires a lot of materials as well as human forces. Therefore, *Imperata*

grassland tenure of State organizations and households in general must be going on with the support and investment from the Government. Besides the planted forest areas (occupying a low scale), the characteristics of "unclear and uncertain" of the right of *Imperata* grass land use was shown as below:

- (a) Villagers can appropriate *Imperata* lands for agricultural cultivation but not popular because of human force limitation; time for land tenure is also temporary related to their own present crops.
 - (b) The State Forestry management Agencies express their roles through the right of planning forest planting land, but still allow farmers using it for cultivating in their capacity, as they have not had any projects yet.
- (7) The *Imperara* land is a type of much degraded one of hill land, so the right of preventing and protecting from illegal exploitation in these areas does not attach much important as other forestry lands. The role of state organizations mainly expresses through the right of planning regions and zoning for planting forests as annual budgets. Through planting forests, these agencies gradually re-establish their management right on *Imperata* lands. Due to the area of annual planting forests is still low, compared to the present total *Imperata* areas. As the results, in reality, many *Imperata* areas are still out of State management.

The present characteristics of the right of land use systems in Hong Ha.

Table 4. The Ownership, Use Right of Trees & Lands, and the Rules over Institutional Factors of Households and State Agencies in Hong Ha

Types of Lands	The rights	Households	The Management Board of Watershed Bo River	A luoi Forestry Inspection
Natural forests with big canopies	Use	Woods for making houses, non-timber products (NN+CD)		
	Transfer			
	Prevention	Illegal exploitation (NN_CD)	Illegal exploitation (NN)	Illegal Exploitation (NN)
	Administration		Contracting villagers on some areas (NN) Zoning for protection (NN)	Zoning for protection (NN)
Poor natural forest, just regenerated	Use	Non-timber products (NN+CD)		
	Transfer			
	Prevention	Burning fields + cutting firework (NN)	Illegal exploitation (NN)	Illegal Exploitation (NN)

	Administration		Contracting some areas for villagers (NN) Zoning for protection (NN)	Zoning for protection (NN)
Planted forests	Use	Planting crops in the first or second year (NN); planting forest and receiving labor force according to regulation of state (NN); not clear in enjoying benefit from forest products	Draw up facts on extraction and prune submit to provincial level agencies	
	Transfer	Giving for relatives (CD)		
	Prevention	Illegal exploitation (NN+CD)	Illegal cutting	Illegal exploitation (NN)
	Administration		Contracting some households with planting, caring and protection (NN) Technical inspection (NN)	
Bushes and burnt-over lands	Use	Cultivating on some limited regions (CD+NN)	Zoning for generation	
	Transfer	Giving to relatives (CD)		
	Prevention	Cultivating and destroying crops of others	Illegal burning and cultivating (NN)	Illegal exploitation (NN)
	Administration		Contracting villagers on zoning for regeneration and forest fire-control (NN)	
<i>Imperata</i> grass land	Use	Pasturing cattle, making brooms and burnt-over cultivation (CD+NN)		
	Transfer			

	Prevention	Arbitrarily firing (NN+CD)	Arbitrarily firing (NN)	Arbitrarily firing (NN)
	Administration		Contracting villagers on zoning for regeneration and forest fire control (NN)	
Home garden paddy field and crops	Use	Planting according to the needs, the favorites and owning all products (NN+CA)		
	Transfer	Giving lands to relatives and neighbors with legitimate reasons (CA)		
	Prevention	Preventing all violating behaviors from others (NN+CA)		
	Administration			

Note:

NN: regulated by State Institution

CD: regulated by Community Institutions (village and commune)

According to results of Table 2, the system of land resource in the scale of Hong Ha can be divided into 4 groups correspondent to institutional factors and subjects:

Household lands: Land groups managed mainly by households

Based on guarantee level of the right of land use and tree ownership, we could divided this group into 2 small groups:

- 1.a) long stable household land: including home gardens, paddy fields and crop production areas in flat land regions or in valleys
- 1.b) Temporary household land: burnt -over land in transition regions between agricultural land and forestry land have changed for years on total areas and space distribution due to shifting

The Community institutions (commune and village) in guaranteeing stability on agricultural land use right while households have not yet received agricultural land use certificates

United forestland management: Being under the united management between households and state agencies, including with planted forest regions.

State forestland: being under the management of the State, including natural forests with different quality levels.

Public land: Land groups with temporary unlimited tenure right including the *imperata* areas

Commune and village institutions in ensuring equality during land tenure of paddy fields, crop fertilizing land and forest planting areas.

Forest tree tenure and ownership

Different to land tenure, forest tree tenure in Hong Ha was rather diversified with the admitting of society on tree ownership in many situations. Survey results showed that tree tenure of households in Hong Ha was ruled over by following factors:

- vii. Origin
- viii. Species
- ix. Tree size
- x. Parts of product extraction
- xi. Types of land tenure

The local institutions (district, commune and village level agencies) let households use natural forest timbers for ensuring their minimum demands.

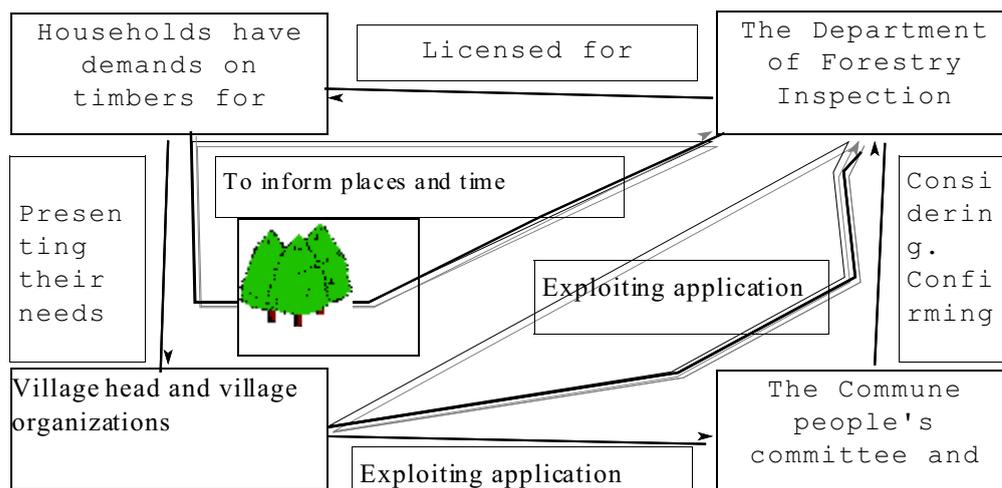


Table 8. The diagram of the process for households' permissions of exploiting making-house woods

The right of planting forest tree exploitation and use:

The State forestry agencies play major roles in giving decision on harvesting and dividing products according to the mechanism of protective watershed forest management

Planted forests under the PAM Program

1. Planting year: 1993
2. Area: 8 ha
3. Belonged to production forests
4. Managed by households as forest owners.
5. Rate of dividing profits: (the whole exploitation)
 7. State: 30%
 8. Households: 70%
9. State management (Forestry Inspection) zoning planting areas, selecting plant seeds, designing technology and defining exploitation age

Planted forests under the Program 327

1. Planting year: 1994-1997
2. Area " about 500 ha
3. Belonged to protective forests
4. Managed by households as contractors. The Management Board of Watershed Bo River was the owner.
5. Rate of dividing profits:
 9. State: 70% (kept for long-term protective forests)
 10. Households: 30% (for exploitation)
11. The State Management: zoning for planting areas, selecting types of tree, designing on planting forest and defining age and species for exploiting

Permanent land use right of households ensuring for planting forest tree ownership on household lands. *Cinamomum sp* is one of the value forest tree species planted mainly in home gardens in Hong Ha by the budget source of the program 327. Although it was invested entirely by the State capital, but because it was planted on the fixed permanent household land, so it belonged to the ownership of households. Farmers decided entirely on the position for planting, density and time for cutting and selling it.

Tree ownership has great effect to the safety of land use

In Hong Ha, planted trees, especially timbers have great effected to the safety of land use right. This was expressed clearly in the process of land tenure of households and the State agencies.

On types of household lands where their use rights had not affirmed surely such as slash and burnt-over lands and planted forest lands, planted trees property on these lands played the decision role to time of that land use right on both community and Government. For slash and burnt-over cultivation lands, time of crop appearance was also the time that their land use rights were most ensured. Before the rapid development of the Government forest planting programs, the slash and burn-over cultivated areas during the fallow time - without value crops - were easy to be riskiest on land use right. Majority of planted forest areas of 1993, 1994 in Pahy, Can Sam and Pa Ring were planted on the slash and burnt-over cultivation land areas during their fallow time.

For planted forests, the rights of land use and management of households have only been ensured in the condition of having the coverage of forest trees. In case of planted forest lands changed to land tenure or cultivating lands like in 8 ha of Con Tom village. After having exploitive-planted forests completely, their rights of land use came to an end. These lands belonged to the Commune People's Committee to be given to others. However, according to the Commune leaders, those households had planted forests before were possible to be given back their land tenure and cultivating ones.

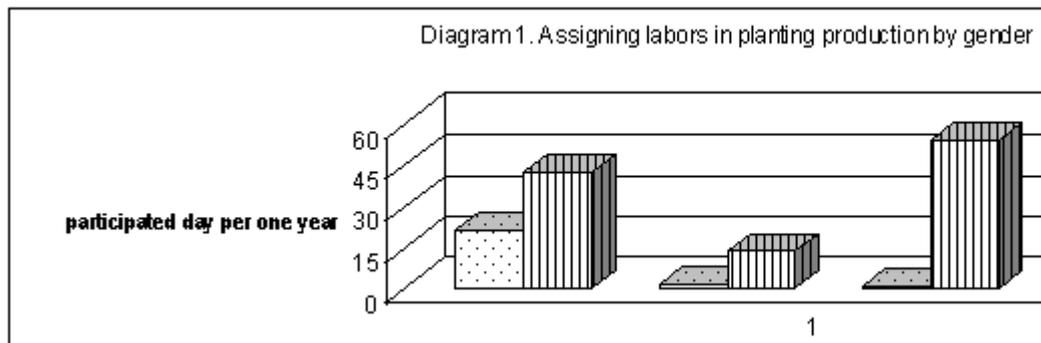
It was also proved by the fact that during the process of expanding the management areas of The Management Board of Watershed Bo River through the expanding, they expanded planted areas on the *Imperata* areas. On the legal aspect, the Management Board of Watershed only had the right in managing the forest and vegetation cover without as the land users. However, *Imperata* and slash and burnt-over lands in the fallow time were covered by perennial trees by the State capital with the orientation on maintaining and developing the protective forests of Government in walleyes, the role of management agencies on *Imperata* use enhanced more and more stably.

Hong Ha Commune is located in the mountainous area of Thua Thien Hue province, Vietnam. Degradation of natural resource is one of the serious problems in the area. Managing natural resources and developing agricultural and forestry production for the region are issues that needed to be solved. Therefore, to sustain community based-on natural resource management, it is necessary to investigate gender roles in production activities, in the work of sustainable natural resource management, and community life.

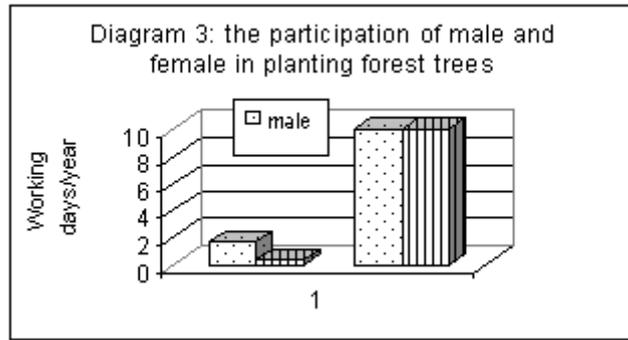
I. The roles of gender in agricultural and forestry activities

1 Labor use pattern for crop production activities by gender

In the crop production activities (weeding, sowing, harvesting crops), women play more important roles than ones of men. Young female children also participated actively in cultivating crops. Due to the traditional conceptions that women were responsibility in ensure the meals of all members in their families and repaid for the expenses that the grooms' families gave to the brides' families on their wedding. As the results, every morning, the women and their female children had to carry bags on their back then went to the fields while men and male children gathered together, drinking wine and singing karaoke.



2 Labor use pattern for animal production activities by gender



Source: The Survey in 2000.

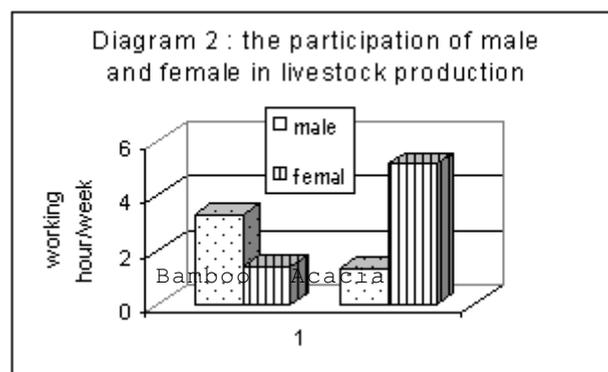
Men spent more time than women in breeding castles; male children also often took part in this activity. In the contrary, women and female children spent more time than men in breeding pigs and chickens. In some households, sometimes, men participated in this activity but only when their wives or daughters are absent in the house.

3. Labors' pattern on planted forest production activities by gender

Both men and women in Hong Ha participated in forestry production activities. However, their contribution depended on the species of forest trees.

- Lo O bamboo was regarded as a tree of men to construct the house or make traps for hunting. Therefore, the men often undertake all activities in the cultivation of this tree.

-In the case of Acacia production, the contribution of the male and female farmers to Acacia nursing activity is nearly equal. Men like to plant this kind of tree because Acacia is a new introduced tree species by the state enterprises and the compensation for the labor days is in cash.

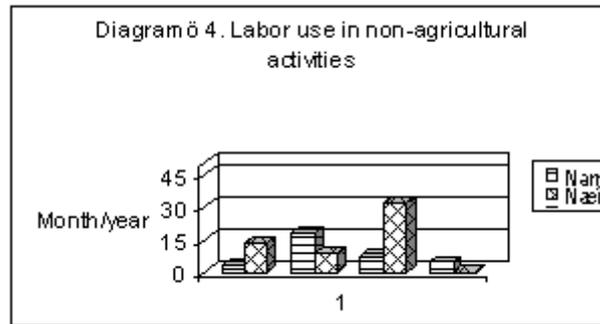


Source: The survey on 2000.

4 Labor use pattern for off-farm activities by gender

Unlike the plain area, off-farm occupations were popular and they played important roles in generating income for the farmers in upland areas in general and in Hong Ha Commune in particular. Both men and women participated actively in this

activity. However, their concern was depended on different activities.



Source: the Survey in 2000.

Normally, men often spent more time than women on collecting rattan in the natural forests. However, some poor women often took part in this activity even though this was a hard work. The reason was that this activity could help them earning more for living, so they had to try their best to ensure their families' food.

Cutting rattan
Collecting fire palm
Hunting

- It was found that the female farmers spent more time than men did in collecting fuel wood. Carry fuel wood from the forest to the house is a very hard work because the terrain in Hong Ha is with many slopes due to strong division of river and stream network. However, men assumed that fuel wood collection is a simple work, so they did not have a concern over it. The female children had to participate in taking this responsibility while male children had not.

- Only women also attract Corypha saribus cutting because this work required patience.

- Hunting is men's jobs because of the requirement of family traditional experiences and bringing them high earnings.

2. Gender division in housework by women and men

The women spent more time in all housework than men. The women's time spent in doing housework is 5 times higher than one of men.

3 The roles of gender in making decisions

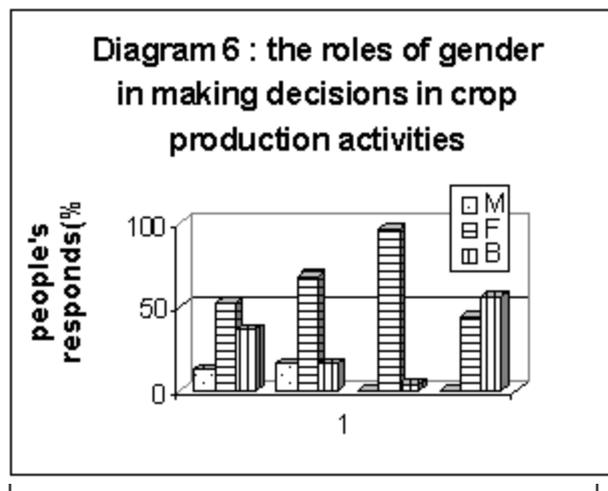
3.1 Making decisions in crop production activities

Both men and women participated in decision making on crop production. However, their roles depended on the kind of production activities

Decisions on when to sow the seeds and to weed were made mainly by the women. According to the farmers in the region, the women involved more in this activity of crop production so they accumulated more experience in the suitable time to sow the seeds.

Therefore they could give decisions themselves. However, the decision on when to harvest was often by both the women and men. Perhaps both men and women often carried out this activity.

3.2 Making decisions on animal production



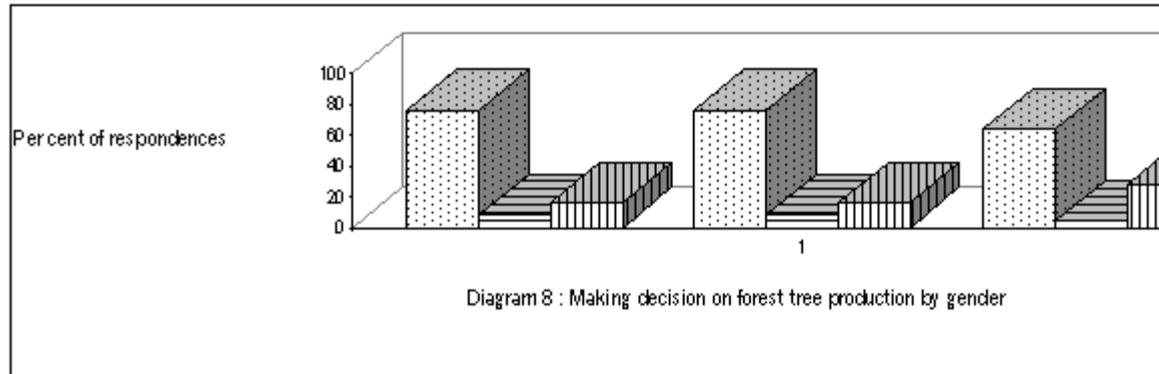
The percentage of women's participation in giving decision on animal production is 5 times high than one on crop production.

Note: M: Male; F: Female; B: Both

Source: *The survey in 2000.*

Women often make decisions on pig breeding while men often make decisions on cattle breeding.

3.3 Making decision on forest tree production



Male farmers mainly made the decision on tree production.

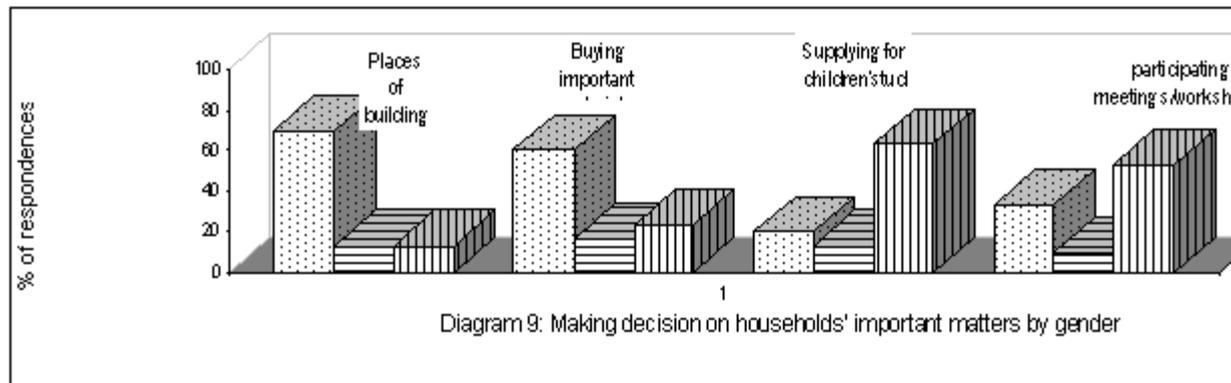
Note: M: Male; F: Female; B: Both

Source: The survey in 2000.

About giving decision when to nurse the trees, the scale of women's participation is often higher than one of men, but men often give the last decision. According to the researched areas, due to the concerns about house building and big income resources, the men often make the decisions on forest trees and long-term ones.

3.4 Making decision on household s' important matters

The survey indicated that both men and women participated in making decisions about households' activities. (Diagram 9)



Note: M: Male; F: Female; B: Both.

Source: The survey in 2000.

Men made most decisions on households' important matters. Even though, the women play more important roles than men in producing activities, they rarely have rights in making decisions in their families, especially managing communication and training important factors of producing development.

4 Access to labor sources and benefits

However, there remains the thought of preferring boys to girls in giving them a chance to go to secondary or high schools. Especially, in poor households, many girls were

illiterate because they had to work on the farms to support food their families while their brothers were sent to schools. It is clear that there is still gender discrimination in access to education.

Table 1. Access to labor sources and benefits by gender in Hong Ha

Items	Unit	Male	Female
Educational level of households' heads	Year	4,0	1,3
Illiterate rate of households' heads	%	16,6	66,7
Names in the land use certificates	% Responds	83,4	16,6
Representation in social organizations at Commune Levels	% Responds	85,0	15,0
Access to credit	% Responds	44,0	26,0
Access to information	% Responds	84,6	61,7
Training participation	% Responds	88,0	46,6

Source: *The survey on 2000.*

The survey indicated that most of people who are entitled to land use certificates are all men. In reality, to a divorced couple, it is very difficult for the woman to take her assets as the certificate of land use right was in her husband' s name.

The survey indicated that there was also gender discrimination in credit access. The rate of men who had access to credit is nearly twice one of women due to the involving of the names of the households' headers. It was only those who were entitled as the households' headers in the land use certificates that could take loans. In families with conflicts due to the men often are drunk, it is very difficult for the women to invest in producing. Although there was a credit program for poor women, but it was too small. Moreover, there were some problems of implementation procedure; many poor women could not get access to this program.

The survey also shows that the rate of male farmers who attended training activities in Hong Ha was nearly twice higher than that of female farmers. The gender discrimination was shown in the participation of social organizations at the Commune. Those who work in the People' s Committee and the People's Council and other administrations are all men. It was clear that the right of making decisions in society and community as well as in households were belonged to men. It showed that the positions of women are always lower than men both in families and in society.

5. The concerns of Female and Male farmers in Hong Ha

The group interview showed that the women firstly concerned over improving and developing cereal production to ensure food security for the family while the first priority of the men was to develop fruit trees to sell for higher cash (Table 3)

Table 3: The fields concerned by men and women in Hong Ha

Rank of concerned fields	Concerned fields by gender	
	Male	Female
1	Developing fruit tree planting	Improving food crop production
2	Developing pig raising	Developing vegetable planting
3	Developing fish raising	Developing chicken raising
4	Developing pepper planting	Developing pig raising
5	Developing bamboo planting	Developing fish raising

Source: Focus group discussion.

Besides the wish of improving cereals production, the female farmers in Hong Ha want to expand vegetable areas to supply the daily need of their family. Moreover, the male farmers concern with developing black pepper and bamboo planting for selling to get higher cash but the women did not. It is clear that, due to different responsibility, Hong Ha Women and men have different concerns.

TECHNICAL INTERVENTION ACTIVITIES

1. Wetland rice production

2. Experimenting with new rice seeds

Applying the new rice seeds and new technology in cultivating is one of main technical intervention activities of the researching groups in order to improve the security cereals to the local villagers as well as to contribute to the natural resource management sustainable in the areas.

The results of experimenting rice seed TH30 among 100 farmer households.

Comparison between new rice seed TH30 with the local one IR38

Villages	Capacity of TH30 (ton/ha)	Capacity of IR38 (ton/ha)
Kon tãm	4.15	2.25
Pahy	3.78	2.03
Kon sám	4.24	2.75
Parinh	3.81	2.51
Arom	3.72	2.60

The data of the table 4 shows that:

+ The capacity of the new rice seed TH30 in five villages was higher than one of the large- scaled rice seed IR 38

+ The average capacity in five villages: TH30 got the capacity 1, 62 times higher than one of IR38.

Experimenting on fertilizing TH30 intensive cultivation

Five households took part in the experimentation: Kãn Xæång, Kãn Læûu, Kãn Thảìi, Kãn Væa, Kãn Cæång

The results: The rice capacity of five households was higher than one of unfertilized crops. The rate of fertilizer was not so high: animal manure: 4 bags (equivalent to 4 tons of animal manure/ha); Urea: 160kg/ha, divided into twice.

Table 5: the compared results of fertilized and non-fertilized rice TH30 fields

Name of households	Capacity (ton/ha)		Difference
	Fertilized	Non-fertilized	
Kãn Xæång	4.50	3.10	+ 1.4
Kãn Læûu	4.80	3.30	+ 1.5
Kãn Thảìi	4.25	3.96	+ 0.29
Kãn Væa	3.50	2.50	+ 1.0
Kãn Cæång	4.00	2.98	+ 1.02

The comparison of five new rice seeds with the local one IR38.

Comparing experimenting five fertilized seeds and non-fertilized ones.

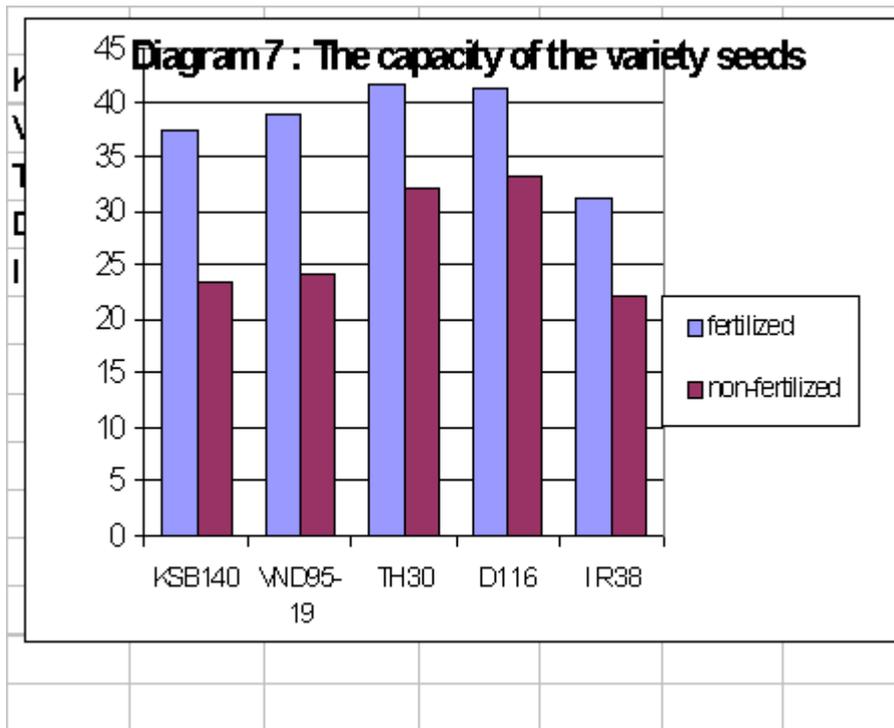
Arranging the experiments by accident, repeating three times. The surface of plot:15 m².

The amount of fertilize at the plots as follows:

- Animal manure: 4 tons/ha
- Nitrogenous fertilizer - urea: 200 kg/ ha - Phosphate fertilizer: 400 kg/ ha

- Kali: 120kg/ ha
- Lime: 400kg/ ha

The capacity results of the two rice seed experimentations shown on the seventh diagram



3. Organizing technical cultivating trainings

- Training on the process of producing TH30 and of rice plant protection techniques
- Training the new cultivating techniques such as sowing directly, using insecticide, and herbicide.
- Training on identification some kinds of normal insects and its prevention.

Upland rice

In Hong Ha, the upland rice were sown on May and harvested on November. It is the time of rains and floods, causing lots of damages and low capacity. The villagers often use the local rice seeds with the long-term growing (about 6 months). Their cultivation is rarely invested and depending mainly on nature. In order to overcome the rice damaged during the flood season, the researching groups had experimented some kinds of upland rice with short-term growing (about 3 months) such as NL131, CH5, and KLN39-1 in comparison with the local ones about the capacity, quality and time for harvesting.

Results

The process of growing of KLN 39-1 is much shorter than one of the local rice seeds without being attacked much by insects. Moreover, their capacity is much higher than other kinds of rice.

The capacity:

- The local rice seeds: 18,5 quintal/ha
- CH5: 17,5 quintal/ha
- KLN 39-1: 25,5 quintal/ha

Home Gardening

The project expanded gardening activities in order to help Hong Ha villagers to build and to develop home gardens, gradually changing from burnt-over lands to home gardens cultivation. It contributed to stabilized production, to improve standards of living and to protect natural resources.

At first, 17 households were chosen to participating in different gardening activities according to each specific household. With the methodology of farmers to farmers, those who were the most active members would transfer producing experiences to others in the Community. As the results, the participating households had increased remarkable. After three years of the projects, the gardening households increased the number of 54.

Gardening activities:

1. Planting pepper trees:

The project supplied 1000 pepper trees to the local households.

After one year of planting, the rate of living trees were quite high, approximately 80-100% and the pepper trees grew up well. Many households applied the technical methods of increasing the productivity from the pepper trees. Since the first result till now, many households could take the initiative in seeking seeds and expanding the scale, for example, Mr Quyet 's households (A Rom village), Mr Quynh's one (Con Tom village) and Mr Thuc's one (Arom village).

2. Planting new pineapple trees (Cayen):

Pineapple trees bring high benefits to the gardeners. They are not selective about soil, so the local villagers like to plant them. After one year, the pineapple trees could supply products, so the villagers could have benefits at the moment. The kind of pineapple trees, which the villager often plant, brings small unequal fruits. We realized that it is the Cayen with its high merchant characteristic that has been growing up well in many places. Therefore, we supplied 2000 pineapple trees of Cayen to some households for experimenting with the target of multiplication of the plant seeds for the next few years and creating the incomes to the local villagers.

After one year, the pineapple trees grew up well and supply fruits (approximately 80%). The household of Mr Quynh Vuong (Con Tom) harvested fruits with the average weight of 1.5-2 kg/fruit in comparison with 0.7-1 kg/fruit of the local ones.

It is worth paying attention here that after one year of experiment, many households have had self-sufficient the new kind of pineapple trees to replace gradually the ones with low capacity at present.

Table5: the Number of participants of planting pine trees - Cayen:

Villagers	The number of participants		
	The first year	After three years	The average number of shoots/households
Con Täm	3	11	129

A Rom	4	16	332
Cản Sám	4	5	28
Pahy	5	8	86
Paring	1	18	194
Total	17	58	

In Paring and Arom, many households have planted more than 1000 shoots of pineapple trees of Cayen (Kon han, Kon Toi - Con Tom Village; Kon Phuong, Kon Thuc, Kon Hanh, Kon Ham - Arom village; Nguyen Van Hoang, Kan Lieu- Con Sam village). There was a family who planted more than 2000 shoots of pineapple trees.

3. Other supporting gardening activities:

In order to help the villagers improve the daily meals and to earn more for living in the first period of not having long-term trees giving products, the project groups had supplied 10 kg variant kinds of vegetable seeds, and many kinds of legume (beans, red beans etc.) to the villagers for planting in their gardens. The family who plant vegetable and legumes would be guided carefully in technology and supported fertilizer and watering and spraying insecticide devices.

Thanks to the supports of the project on seeds and planting techniques in how gardens, many households could plant mixed legumes in their gardens and harvesting tens of kilograms of products. Then the villagers sold them and buy supplemental cereals. The number of households planting legumes to improve their daily meals is getting higher. The species of legumes are very diversified gradually (legume forages, cucurbits, fiber melons, bitter melons and egg-plants)

Organizing the studying excursions in Nam Dong and Aluoi district that the conditions of terrains, customs and ways of cultivating are quite similar to their local regions. These activities helped them learning experiences and selecting the suitable production models to each household.

Cassava:

The cassava, which the villagers are planting at present, has low capacity. As the results, the productivity is not high enough to supply to the needs of community. Moreover, due to the development of livestock breeding, their needs of food are higher and higher. Therefore, the problems that needed to be solved were to improve the cassava in order to feed the mentioned needs.

We carried out five researching objectives on cassava: comparison of different kinds, mixed planting, using fertilizer (N: P: K) and eroding prevention

1. Comparison varieties:

Introducing some new kinds of cassava such as: KM 98-1, SM 1447-7, KM 99-2, KM 99-3, KM 99-4, KM 99-5, CMR 20-75-18, CMR 36-08-1, and Xanh Phu Tho and comparing with the local ones

Results:

The Hong Ha villagers divided cassava into three groups according to their interests and usage:

+ Group 1: Used for food including the local variety and Xanh Phu Tho.

+ Group 2: Used for livestock breeding or selling including the variety of high productivity and less bitterness KM 98-1; SM 1447-7; KM99-5.

+ Group 3: even the productivity is very high but they are not selected because of its bitterness KM 94; KM99-3

Conclusion:

- The Hong Ha local cassava variety is very delicious. At present, it is used as the main foods. The villagers like them very much, so it should be maintained. However, it needs to be cultivated intensively in order to improve its capacity and preventing erosion of the cassava cultivating lands for long-term use. It is necessary to increasing the Xanh Phu Tho cassava.

- Encouraging agriculture gradually with the purpose of livestock breeding including the varieties of KM 98-1, SM 1447-7 and KM 99-5

2. Intercrop planting

Intercrop planting aimed at changing the cassava cultivating systems according to increase the villagers' economic benefits and to improve the nutrition of lands. We did not use fertilizer on the experiment of intercrop planting.

The experiments of intercrop planting as following:

- Only cassava
- Cassava and brown beans
- Cassava and peanuts
- Cassava and green beans
- Cassava and black beans

Results:

+ About productivity:

- Cassava x black bean plants (8.84 tons of manioc/ha); Cassava x brown beans (8.80 tons/ha); cassava x peanuts (8.77 tons/ha); cassava x green bean plants (8.73 tons/ha); only cassava (7.64 tons .ha)
- The cassava productivity with the formula of Cassava x forage legumes is one tons per hectare higher than one of only cassava.

+ About the planned cassava flour:

The rates of flour in all formulas are quite high

+ The harvesting indices: At the experiment formulas, the harvesting indices vary from: 0.55-0.66. The formulas of cassava x brown beans; and peanuts x green beans have the highest harvesting indices.

3. Density

Study on the different cassava density, we realized that:

At the density of 1.7 ten thousand of cassava cuttings/ ha: the cassava bodies are overgrown leading to be cut down with the strong winds. The rate of sunlight was not ensured, leading to the fact that the leaf age is shorter, falling down soon, and low capacity at the widely spaced areas.

At the density of 1.5 ten thousands of cassava cuttings/ha: The farmers did not agree with this formula due to the low economical benefits.

Table: SOME GROWING, CAPACITY AND ECONOMICAL BENEFITS OBJECTIVES OF DIFFERENT PLANTING DENSITY

<i>Formula (Density)</i>	<i>Length of root (cm)</i>	<i>Capacity (tons/ha)</i>	<i>Gross income (million dong)</i>	<i>Total costs (million dong)</i>	<i>Interest (million dong)</i>	<i>Farmers' selection (%)</i>	<i>Selected options</i>
<i>17.000 cuttings/ha (Comparison)</i>	294,7	9,63	4,82	3,02	1,80	0,00	-Low interest - Overgrow cassava, high scale of fall-down plants
<i>15.000 cuttings/ha</i>	275,6	10,88	5,44	2,81	2,63	0,00	-Low interests
<i>12.000 cuttings/ha</i>	253,3	13,44	6,72	2,69	4,03	73,22	-Highest interests
<i>10.000 cutting/ha</i>	253,7	12,67	6,34	2,59	3,75	26,78	-Low labors -Quite high interests

- The density of 1.2 ten thousands of plants, the productivity and the economical benefits are highest, thus most of farmers (73.22%) accepted it. It was showed by the fact that: in the upland areas, the local cassava variety should not be planted densely as the present customs. However, it should not be planted sparsely for avoiding wasting lands.

- However, some of households (26.78%) said that their households are lacking of labors but redundant of lands, they accepted the formula of scattered-planting with the rate of 1.0 ten thousand plants/ha.

4. Fertilizer

The experiments were carried out with three formulas, arranging into blocks at random and repeating three times.

Due to investing fertilizer to cassava, the productivity has been increasing remarkable. However, the minority people have not been used to fertilizer to the crops. Moreover, the villagers were still in poor conditions, and the cultivating only depends mainly on the fertility of the soils.

Through the experiment, the Hong Ha villagers have started to concern over the use of fertilizer to improve the productivity.

+ In the poor conditions, farmers (66,1%) have chosen the low formulas of fertilizing (N: P: K=30:30:90).

+ However, some farmers (33,9%) have chosen the higher one of fertilizing (N: P: K=60:60:120).

5. Eroding prevention

The experiment of eroding prevention by Hedgerow according to five formulas:

- Vertiver + Paspallum grass + Pineapple trees
- Thanh grass + pineapples
- Muãông ba lai +Pineapples
- Căút khô + pineapples

- *Âáûu nho nhe* + pineapples

The results indicated that: the two formulas of Vertiver grass + paspallum grass + Pineapples bring both high cassava productivity and effective eroding prevention.

Livestock breeding

*** Sows**

The project supplied 10 sows to the villagers. Unfortunately, during the transportation, one sow died. Its first weight was 10-12 kg. After 6 months, the average weight reached 37 kg, which was lower than one of flat areas (45 kg). The reason was that the sows were raised with low quality feeds (less than one kilogram of dry feed/day) and lacking of nutrition, mainly protein because the main feed source were potato leaves, taro, banana bodies, cassava, a few of mash, rice without protein (fish starch, shrimps, and small fish)

The giving birth rate of Mong Cai pigs raised at Hong Ha was often lower than common one. The main reason was the villagers did not know when they are in rut to breed in time. They could not take the initiate of masculine genders. In case of artificial breeding, it took time for transporting sperms due to the long distance. Moreover, they did not know how to care the baby pigs.

At present, the sow herd remained was 3 because of many difficulties in breeding for not having masculine pigs. The villagers wanted to have the external masculine pig but they have no experience how to care and to feed them. Take for example, they did not know who would raise the pig and pay money to them and how much the salary was.

*** Pig raised for food**

20 farmers were selected in taking part in the activity of raising pigs for food, in which:

¶ There were 11 households, each household raised 2 pigs including one of F1 of flat area x MC and one of F1 grass x MC. Both varieties were started breeding at the age of 2 months. The foods were included the available products at the local areas such as: mash, cassava, potato leaves, banana bodies and the remained food after households' meals (if they had). All pigs had an inoculation against an epidemic and being erased intestinal fat worm before the experiment.

¶ The nine remained households raised crossbred hogs - F1 of flat area x MC. Each household raised one pig first in order to evaluate how many pigs they could raise at the same time according to their living conditions of the mountainous areas and of the minority.

According to the investigation, the raising pig experiences and the conditions of breeding facilities of households were equal.

The investigated results of the weight gain ability of experimented pigs indicated that:

- Pigs gained weight slower than usual due to lacking of foods. The investigation showed that pigs only ate 1-1.3 kg of foods with the rate of protein of 7-9% from mash, rice, wild forage and MON.
- There was no difference of the gain weight ability between the households groups that raised 2 pigs and one pig. It showed that the number of animals did not limit the breeding capacity of households.
- In the same conditions of raising and caring, the gain weight of crossbred pigs was much better than the local ones (gaining 250g compared 150g/day). The rate of

death was too high (27-45%) due to lacking of foods and not discovering disease in time. The dead rate of the local pigs was higher than one of the crossbred pigs F1 (45% compared with 30%). Perhaps, it was the fact that the local ones bought at the local areas might catch diseases and died after 4-5 months of breeding.

The benefits of pig breeding

Sows: the total income from sow breeding was 1.001.300 VND/litter at average (The highest one was 1.750.000 VND, and the lowest one was 500.000 VND). The expenses of raising sows could not be defined exactly but it was said that the cost was not over 50% of the total income. Therefore, a sow rank (if villagers raised well, they could have two ranks/year) could bring 500.000 VND equivalent to 400 kg of rice (collecting from 2.000 m² of the wetland rice cultivating surface)

The pigs for food: the total income was 607.000 VND/ head (The highest one was 1.300.000 VND and the lowest one was 250.000 VND/head). The expenses of pigs including the breeding pigs, added foods, rice occupied 70% of the total income. Thus, raising pigs for food supplied 180.000 VND of interests. Even though the benefits were not so high, but people still like raising pigs because they could have a total sum of incomes enough to buy expensive things, which they could not buy with the money, collected from other agricultural activities.

Raising fishes

In order to increase the standard of living in the local areas through which contributed to limit exhaustedly exploiting the natural resources, the study on developing production investment was one of the intervention activities of the researching group. The intervention activities of raising fishes were:

- Supplying fish seeds: At first, the project staff supplied 10.000 fingerlings for 10 households (each households received 500-1500 fingerlings). At the first time, they grew well. However, due to the devastating flood in November 1999, most of fishes in ponds were swept away by floodwater. In order to maintaining the plan of fish culture, the project continuously supplied 2000 fingerlings for the damaged households.
- Establishing the fishery groups; the members of these groups were the farmers in the households received the investment capital of the projects and those who were interested in these activities. Every month, the members have a meeting for exchanging experiences and helping one another overcome difficulties.
- Organizing the technique training courses of breeding, caring and catching fish and the household training courses of raising fish spawn.

Results: After one year, the raising fish households had fish products. Most of raised fish were used for daily diet (80%) and the remained one (20%) for selling to neighbors. After three years of carrying out the projects, the number of raising households, of fishponds and the surfaces has been changing

Nº	Contents	1998	1999	2000
1	Households	34	19	52
2	Fish ponds (unit)	46	28	72
3	Areas (m ²)	12.700	5.880	12.990

- Although being damaged seriously in the historic flood in 1999, the number of households that had the raising fish needs increased 152% in comparison with the early years of the projects and 273.6% compared with the year before the flood.

-The number of fishponds increased quickly. It was understood that the villagers were very interested in raising fish.

- The total areas between the first and the third year were not much different, but the scale of each pond was very different. In the last few years, the areas of ponds were narrowed. This was suitable with the natural conditions and the technical raising fish methods in the running ponds.

In the tendency of development in the previous time, we hope if being invested in capital, the raising fish activities at the local areas would get better results in a recent future.

ENHANCING THE HUMAN CAPACITY

1 ENHANCING THE COMMUNITY' S CAPACITY

i. Technical Training

The project organized many training courses of many different subjects in order to help the villagers take the initiative and have the understanding in the process of carrying out the work.

The organized technical training courses on:

- Pepper culture: reserving the seeds, planting and caring pepper and pineapples.
- Vegetation planting: legumes planting, techniques of intercroops, of rotation crops in home gardens.
- Building the standard roads, planting trees along the standard roads.
- Planting high-yield cassava.
- Rice intensive cultivation and the technique of sowing.
- Raising sows and processing food for pigs. Monitoring the process of raising and caring pigs for food through each period.
- Breeding, caring and catching fish and raising fish spawn to the local villagers.

ii. Training the encouraging agriculture at the local

Training the encouraging agriculture at the local aimed to build the key staff in the process of transferring the scientific technology to the community.

- + Selecting 2 persons to attending the short-term courses of planting and protecting vegetation.
- + Training 5 persons of selecting seeds.
- + Training 4 technicians of encouraging agriculture of plant growing.

iii. On-farm discussions for evaluating the results of experiments and production

- + The on-farm discussions for evaluating the experiments on rice seeds, caring technology, fertilizing and the model showing the new rice seeds.
- + The on-farm discussion for evaluating the experiments on cassava, the technology of cultivating on sloping lands, erosion prevention and the intercrop between cassava and legumes.

iv. Study excursions

- Organizing the study excursions for the villagers to Nam Dong. Aluoi District.
- Organizing the travel to Chinese for the Community' s Leader.
- Organizing the exchange cultural and sports relations between Hong Ha Villager and the Hue University of Agriculture and Forestry Staff.

ii. Establishing the interest groups

In the community, those who had the same interests would be in one group. The project had got supporting activities such as production techniques guiding, credit funds, monthly meetings in order to help these groups work better.

- The Pigs Raising Groups of the Women's Association including with 20 women.
- The Fishing Group
- The Gardening Groups
- The Planting Groups
- The Forestry Groups

6. Increasing people's awareness

- Strengthening the belief in people, especially in women who are in charge of making plans in family and in community.
- To help the villagers understand more about the markets, applying the producing technology, using the new seeds and animal varieties.
- Analysis the villagers understand clearly the harm of some backward customs and habits in community's life as well as in productivity such as wandering raising cattle, health for human and animals

B. Increasing the researchers' capacity

- To organize the short-term training courses to the project officers.
- To organize the study excursions and joining to the international workshops.
- To organize the monthly and annually meetings to learning and sharing experiences.
- To organize the evaluation meetings of preliminary wrap-up report situation and summarizing the work at the local areas and the Hue University of Agriculture and Forestry.
- To evaluating the annual activities with the help of the experts of CIAT, IDRC, The Science of Industrial Environmental Department and many local agencies.

C. Increasing the capacity in cooperating with other organizations.

The natural resources in Hong Ha are being used by many different agencies. Moreover, the natural recourses management of the agencies are very different. Therefore, establishing well the relationship between the local community and the researching groups will increase the standard of living of the local villagers and as well as enhancing the sustainment of the natural resources at the valley.

The activities aimed to establish the relationship and to enhance the capacity of the organization for last three years were:

- To organize the visits to explore the objectives, functions and activities of involving agencies of the management of the Watershed Bo River.
- To share the working methodology and experiments and to organize the training courses.
- To organize the meetings, workshops with the participation of many relevant agencies at the local areas such as the Management Board of the Watershed Bo River, The Aluoi Department of Forestry Inspection, the Department of Agriculture and Rural Development, the Aluoi A forestation yards, the Science of Industrial Environmental Department, Department of Settlement, Department of Upland

Ethnic Minority People, the A Luoi Agricultural Department, The Aluoi People's Committee. Hong Ha People's Committee. The Forestry Development Agency in order to help them have a chance to understanding the plans and activities of one another, and to sharing experiences.

MONITORING AND EVALUATING THE IMPACTS

1. On the social-economic aspects

Due to the programs and projects' impacts, there were some invested aspects leading to encouraging results. At present, there were 150 households of the whole commune using electricity, more than 100 households using clean water. The number of poor households was increasing of 80. The cultivating customs and habits have been changing progressively.

In 1998, the very poor households occupied 90.8% and the poor one was 38.8%. In 2000 the very poor one decreased 5.4% and the poor one was 20.3%

The income of the Hong Ha villagers was based on agriculture production and forestry exploitation. During the period of 1998-2001, the income structures of the villagers have been changed a lot, the villagers paid much attention to agricultural production. Due to the investment and the technical guidance of the projects in cooperated with the well-management natural resource of the State, the villagers have changed from exploiting forests to planting, caring, and protecting forests and agricultural production.

The economy of the Hong Ha farmer households through three years carrying out the project 1998-2000

The household economy is very important in this period. The impacts of developing household economy to the changing of villagers' lives were very profound, especially in the mountainous areas.

The production capacity of the surveyed farmer households

Households objectives	Labors (at average)		The value of production materials (1000 ^a)			Capital loan (1000VND)		'98/'00 (%)
	1998	2000	1998	2000	'98/'00 (%)	1998	2000	
1. Better-off	3,37	3,00	1.506	1.716	114	1.042	1481	142
2. Moderate	3,08	3,16	950	1053	111	1.135	1263	111
3. Poor	2,64	2,71	920	966	105	1.411	434	0,31
4. Very poor	2,10	2,18	80	86	106	1.057	280	0,27
Average	2,9	3,00	964	1.060	102	1.201	932	0,77

Source: the data from the project survey in 1998-2000

The survey of 60 households on behalf of the peoples, the better-off households, the moderate ones, the poor and the very poor in Hong Ha in 1998-2000 indicated that:

+ The average number of the labors in different households had the tendency of increasing but not being remarkable., in which the better-off occupied a great number. It was understood that the labor source was very important in developing production.

+ The production materials had increased remarkable (9.8%) in the period of 1998-2000. However, this increasing level was not worth of the potential and developing needs. The very poor households had low-equipped with production materials of only 86.000VDN/household, tens times less than the better off. Moreover, the speed of increasing the value of production materials of the very poor households was very slow, on the contrary one of the better off increased rapidly. It was one of the results why they hardly escaped from the poor conditions.

+ The production capital: To the villagers in Hong Ha, the main production capital was the loan, in which was mainly from the non-interest loan of the projects. The average loan of each household was 1.201.000 VND in 1998 and decreasing to 932.000 VND in 2000. The number of the borrowing households was increasing in the better-off and the average ones, occupying 42% and 11%, but being decreasing in the poor one with approximately 70%. The reason was that the poor one dared not to borrow money because they did not know in what they should invest the capital. Moreover, some projects, which did not focus on eliminating hunger and reducing poverty, did not let the poor borrow capital because they hardly repaid the loan timely.

+ Lands: being agricultural areas, lands were very important to farmer households.

The Table 6 shows that the lands of households increase remarkable, especially the surface of upland home gardens, crop fields and rice fields. The reason partly was that the villagers changed the customs of upland cultivation, impulsion the round of land use, reclaiming the virgin soils. However, the main reason was the changing of the planting sugar cane surface to other varieties ones.

Table 10: The agricultural land use and its changing to farmer households in the period of 1998-2000

Households divisions	Wetland rice			Upland rice			Home garden			Hills			Crops			Ponds			Total		
	1998	2000	'00/98 (±)	1998	2000	'00/98 (±)	1998	2000	'00/98 (±)	1998	2000	'00/98 (±)	1998	2000	'00/98 (±)	1998	2000	'00/98 (±)	1998	2000	'00/98 (±)
1. Better-off	750	906,3	156,3	208	869,5	661,2	1116	1453,0	336,3	1250	4627,4	3377,4	975	1426,0	451,0	133	256,7	123,4	4.433	9538,9	5105,6
2. Moderate	711	862,0	150,4	443	1259,7	816,5	1077	1668,6	591,3	150	2203,2	1385,5	941	2225,6	1516,5	194	302,8	108,7	3.953	8522,0	4568,8
3. Poor	335	764,0	229,0	435	1024,6	589,6	923	1205,3	281,8	0	1190,7	1040,7	5	1526,5	1111,5	116	6,0	6,1	38	59	33
4. Very poor	675	145,0	-53,0	0	500,0	500,0	50	433,0	-70,3	0	675,0	675,0	12	26,0	111,5	6	0,0	-11,6,7	1423	37,2	98,7
Average	656	718,8	628	349	1021,4	672,2	976	1354,7	1046,4	599	1652,6	1046,4	606	1652,7	1046,5	136	241,7	105,5	3324	6641,9	3317,3

Source: The survey in 1998-2000

The production situations and the production structures of the farmer households

The changing of production structure of farmer households at Hong Ha

With the impacts of many programs and projects, especially the project of “ The natural resource upland management”, the labor use situation, especially the natural resource management have changed a lot, leading to the changing of the value and structure production and the villager’s income.

The production value (GO) of the researching households increased from 5.021.000 VND in 1998 to 7.946.000 VND in 2000, occupying 57%. The structure and its changing was showed in the below Table:

Table: The production structure (GO) of the households and the kinds of households in 1998-2000.

(The total production value was equivalent to 100%)

Households ‘distribution	Unit: %							
	Agriculture		Forestry		Services		Others	
	1998	2000	1998	2000	1998	2000	1998	2000
1. Households’ levels								
a. Better-off	50,80	56,35	18,10	10,61	23,50	21,38	7,60	11,66
b. Moderated	52,80	70,6	30,80	14,83	6,20	5,70	10,20	8,87
c. Poor	50,10	68,89	37,70	15,14	0,00	1,99	12,20	14,00
d. Very poor	44,00	52,63	44,50	30,62	0,00	0,00	11,50	16,75
2. Ethnic groups								
a. Katu	56,10	70,81	31,70	11,55	0,00	6,55	12,20	11,09
b. Paco	57,20	76,78	31,40	11,30	0,00	0,28	11,40	11,64
c. Tai äi	56,00	49,87	34,40	31,51	0,00	0,00	10,60	16,82
d. Pahy	57,50	40,42	34,00	31,36	0,00	22,00	8,50	6,22
e. Kinh	14,80	11,21	3,00	9,92	82,20	76,71	0,00	2,16
The average households	51,20	64,63	28,30	13,4	10,40	11,22	10,10	10,75

Source: The survey data in 1998-2000

The Table 17 indicated that:

+ The structure GO of the farmer households has the tendency of decreasing in forestry productions from 28.3% in 1998 to 13.4% in 2000. The main reason was that the exploiting forest activities were changed to the planting and caring forests. At the same time, in 1998, the developing forest projects were being invested and in 2000 some projects was finished.

+ The structure GO of agricultural production increased rapidly from 51.2% in 1998 to 64.6% in 2000, which showed that there were the changing in production methods in the local areas. The villagers paid much attention to developing agriculture.

+The service activities changed slowly, farm product commerce has not been developed, and trade was still very poor even though there is a national road N.49 passing across the commune.

+ To the poor and the very poor households, the scale of GO from forestry was higher than one in the moderated and better-off households. On the contrary, the scale of Go from agriculture of the moderated and better-off households was much higher. It showed that the poor households were still depended on exploiting forestry products without investing much in agricultural production.

+ To the ethnic groups, the King people live on trading and service, occupying 76.7% while the minority do not. However, these activities of knitting bags for selling at the local areas or

other places and small trading were changing active from 0% in 1998 to 6.5% of Katu, 0.28% of Paco and 22% of Pahy

The changed incomes and its structure of the farmer households during the period of 1998-2000

The changed value of production activities led the farmer households' incomes increasing.

The changed income and its structure according to the ethnic groups

The income of the King people was the highest, 8.6% per households at average in 2000, 7.3% of the Pahy and 7% of the Katu, and the Taoi was the lowest. The reason was the difference between their production conditions and customs. The King has income from trading and services (7.5%), while the Taoi have no income from these activities. However, due to the characteristics of the local areas, each people lives in each villager that the soil conditions are very different from others. According to the structures of the production activities, the income of the Katu and Paco were from agriculture, mainly occupying 70% of the total income, and the Pahy and Taoi's incomes are from forestry, occupying 33% of the total income. Especially, the incomes from forestry of Pahy and Taoi were decreasing with the numbers of 31.6% and 31.2% in 1998 to 11.6% and 11.1% in 2000, but ones of the Taoi and Pahy were kept intact.

The analysis showed that it was necessary to encourage the minority take part in the services such as trading, knitting bags, and to help the Taoi develop agricultural production.

Incomes and its structure in each household

The different levels of income between the very poor, the poor, the moderate and the better-off households were very high, the annual income of the poor households was only 1.874.000 VND, the one of better-off was 9.493.000 VND which was 5 times higher than the very poor one. Moreover, the risk of differentia between the better off and the poor was very high. It was shown by the increasing incomes in the period of 1998-2000 such as 17.9% of the better off, 49.9% of the moderate and 7.8% of the very poor. In general, the income from agriculture was the highest and had the tendency of increasing from 53% in 1998 to 66.6 % in 2000 in which the very poor had the lowest income, occupying 52.9%. Their main incomes were still based on exploiting forests and from the external supports mainly of the Government and the projects. The income from other sources only occupied 10% in 1998 to 16% in 2000. It indicated that the standard of living was still very poor and unstable.

In conclusion, it was not only the different levels of income between households, but the difference has the tendencies of increasing. The impacts of the projects were very high, but the poor and the very poor households still received their benefits at the low levels. As the results, it was necessary to continuous the research and have a concern over the low-income households.

The changed income and its income according to their production activities

The commune is in the backward mountainous areas; the income of Hong Ha villagers was mainly based on agriculture and forestry. During the period of 1998-2000, the income of each household had been changed a lot. The income of each households have been increasing 58.6% for three years in which the agricultural one increased 99% and the forestry one decreased 27.5% and the services increased 70. This indicated that the villagers have more concern about agricultural production. The investment such as transferring technologies, applying new seeds to production of the programs and projects in cooperation with the Governments' management of exploiting forests have made the villagers decrease the forest exploitation activities and change to replanting, caring and protecting forests. However, in reality, the planting and caring forests have not brought back high and sustainable incomes to the local households.

The incomes from production activities were different between different households. The better off and the moderate households have got high incomes from agriculture and trading rapidly. As

the results, the income structures of the households have been changed to these activities' incomes. Meanwhile, the very poor households still have low incomes as well as poor structure of these activities.

Table 18: The incomes and its structure of the researched households in the period of 1998-2000

The rate of classifying households	Agriculture		Forestry		Other services		Others		Total		2000/1998											
	1998	2000	1998	2000	1998	2000	1998	2000	1998	2000												
	Amount	Structure (%)	Amount	Structure (%)	Amount	Structure (%)	Amount	Structure (%)	Amount	Structure (%)	Amount	Structure (%)										
1.Kinds of households	2440	53,0	4869	66,6	1311	28,4	950	13,0	440	9,6	751	10,3	414	9,0	737	10,9	4606	100	7308	100	2702	158,6
a. Better-off	4242	52,7	5541	58,4	1493	18,5	1034	11,0	1743	21,7	1840	19,8	575	7,1	1039	10,9	8052	100	9494	100	1442	117,9
b. Moderate	2774	54,7	5454	72,1	1561	30,8	1035	13,7	250	5,0	407	5,4	483	9,5	671	8,9	5068	100	7567	100	2499	149,3
c. Poor	1490	51,6	3558	72,8	1088	37,7	750	15,3	0	0,0	79	1,0	310	10,7	503	10,3	2888	100	4889	100	2061	169,3
d. Very poor	785	45,1	1220	64,9	770	44,2	481	25,0	0	0,0	0	0,0	187	10,7	250	13,3	1742	100	1878	100	136	107,8
2.Groups of households	2440	53,0	4869	66,6	1311	28,4	950	13,0	440	9,6	751	10,3	414	9,0	737	10,9	4606	100	7308	100	2702	158,6
a. Katu		57,6	5144	73,2		31,6	816	11,6		0,0	367	5,2		10,8	704	10,0		100	7631	100		
b. Paco			4988	78,3		31,2	711	11,2		0,0	15	0,2		10,1	658	10,3		100	6372	100		
c. Ta oi		57,6	1927	53,8		33,3	1133	31,6		0,0	0	0,0		9,1	524	14,6		100	3583	100		
d. Pahy		59,3	3146	42,9		33,7	2383	32,5		0,0	1425	99,4		7,0	385	5,2		100	7339	100		
e. Kinh		15,8	1045	12,1		3,5	918	10,6		80,7	6500	75,3		0,0	173	2,0		100	8636	100		

Source: the data from the survey in 1998-2000

The changing incomes in the production systems

Animal Breeding: The Hong Ha incomes are mainly based on agriculture. The agricultural production occupied 66.6% of the incomes, in which planting activity occupied 60% and planting activity occupied 30% of the amount. However, the animal breeding has not been developed equally between households. The very poor households have the lowest incomes with 151.000 VND per household in 2000. At the same time, the moderate and the poor households have a well tendency of developing animal breeding. The income from animal breeding of the moderated households was from 743.000VND in 1998 to 2.062.000 VND in 2000, and one the poor houses was from 391.000 to 1.002.000 VND, which means three times higher. It was thanks to the investment of the project “ natural resource management” by the activities of the breeding pigs, breeding fishes, technology transfers, and supporting animal medicine to the local developing officers. It indicated that the potential of animal breeding was very high, especially in raising pigs, livestock, fishes (to those who have their own ponds) and even raising cattle in order to develop the households’ economy in Hong Ha.

* **Cultivating:** Cultivating is a very important activity to the households’ economy in Hong Ha. It occupies more than 40% of the households’ incomes. It includes many modes of special cultivation involving to the natural resource management and the characteristics of the local areas.

Incomes and the effects of each process of cultivation

The incomes from the different ways of cultivation became differentiated from the better off to the poor households.

- Wetland rice cultivation: Although it was not the traditional cultivation, it played a very important role to the production systems at the local. The income from this way of cultivation was not high, with 578.000 VND per households at average in 1998. However, it increased to 1.088.000 in 2000, occupying 85.4%, in which one of the very poor increased the most quickly with 126% and the moderate households was 71%. These good results was thanks to the external concerns of the programs, the projects and thanks to the concern of the local authorities that have encouraged in developing wetland rice by investing seeds, technical supports and infrastructure especially in irrigation. However, the cultivating levels were still low, depending much on nature.

-Due to the characteristics of the terrain, the areas of home gardens of the villagers in Hong Ha are very large. They are very diversified in planting such as bananas, vegetation, cassavas, maize and variety of legumes, fruit trees and making fishponds. However, in general, they all are in the situations of “planting and caring available trees” without having any plan to use thoroughly home gardens to planting high-capacity trees. As the results, the incomes from these activities are very low with 347.000 VND in 2000, and they are increasing with the lowest speed.

Table 19: The income and the effects of production of many kinds of cultivating

Objectives	1998			2000			Comparison VA (%)
	Income		VA/IC (rate)	VA		VA/IC (rate)	
	Amount)	Structure (%)		Amount)	Structure (%)		
I. Better-off households							
1. Rice	956	33,5	30,6	1275	33,2	29,8	133,4
2. Burnt-over lands	1527	52,0	55,9	2020	52,6	57,2	132,3
3. Home gardens	456	15,5	16,6	545	14,2	13,0	119,5
II. Moderate households							
1. Rice	686	33,8	28,3	1174	34,6	26,9	171,1
2. Burnt-over land	1089	53,6	51,9	1845	54,4	62,1	169,4
3. Home gardens	255	12,6	13,5	373	11,0	11,0	146,3
III. Poor households							
1. Rice	368	33,5	23,0	835	32,7	23,1	226,9
2. Burnt-over lands	368	58,1	49,1	1520	59,6	66,2	238,2
3. Home-gardens	93	8,4	11,3	199	7,8	10,7	213,9
IV. Very poor households							
1. Rice	212	32,1	20,2	216	23,2	21,6	101,9
2. Burnt-over lands	388	58,8	45,1	401	60,1	68,9	103,4
3. Home gardens	60	9,1	10,0	51	7,6	9,5	85,0
* Average							
1. Rice	587	33,2	27,3	1088	33,2	27,6	185,4
2. Burnt-over lands	956	54,2	52,0	1760	54,2	61,0	184,1
3. Home gardens	222	12,6	14,0	374	12,6	11,7	168,5

Source: the data from the survey in 1998 - 2000

The impacts of some main activities of the project to the local communities by gender

During the period of three years (1998-2001), the research groups of the Hue University of Agriculture and Forestry with the financial aids of IDRC and the technical supports of CIAT have carried out many activities to help the local communities improve their standards of living and distributing to the natural resource sustainable management at the local areas. These activities also influenced to the social groups at the local areas including men and women. Due to the roles, the responsibilities and the difficulties of each gender, the project activities have different influences on

them. In order to implement the following project activities aimed to bring benefits to both men and women, a survey on the impacts of the project activities to the community by gender is very necessary.

1. Water-supplying activities

At the beginning stage of the project, the results of PRA indicated that the community was in difficulty with the clean water. All households in the minority community in Hong Ha had used water from the nearby streams for daily activities. Women and female children were responsibility in carrying water to their own houses. The sloping terrain (especially in Arom village) together with the low levels of water in the streams took much time and labors of the women.

With the financial supports of IDRC, the project has carried out the linking water network to each household. Due to the lack of labors, this activity was only carried out at Arom villager. According to the comments of the local villagers, building the linking water network has improved the living conditions at the local areas. The water resource is cleaner because of taking from the watershed. The human health care (especially to women) is much better for not taking a bath in streams at nights (especially in cold weather) and for not carrying water on their back to their houses everyday. Especially, it reduced the heavy housework for women because they were responsibility in doing daily housework (table 4).

Table 4: The impacts of water supplying activities on time spent on doing housework of women

Kinds of housework	Spent-time everyday (hours)	
	Before implementing project	After implementing project
Taking drinking water	1.25 hours	20 minutes
Washing clothes	1 hour	30 minutes
Taking children a bath	25 minutes	10 minutes
Total	2.50 minutes	1 hour

Source: The survey in 2001

Formerly, everyday, it took 2hours and fifty minutes for women to take water for daily activities, washing clothes and take children a bath. After having the linking water network, it took only 1 hour to do this work. It was clear that the water supplying activities have reduced 1hour and a half of implementing housework. The results of the investigation showed that all members of the water supplied households have the same chance to use water resource. It indicated that both men and women were equal in accessing the benefits of these activities. Therefore, the water supplying activity has met the real needs of both genders.

Realizing the benefits of these activities, some State agencies have supported to build the linking water network at other villages in the Commune. Therefore, the water supplying activities of the project have improved the living conditions of the commune (especially for the women) not only in Arom but also in most remained villages in the commune by its indirect impacts.

2. Using new seeds and new technology in production.

The survey on the households using new seeds and new cultivating technology, both men and women take part in these activities. However, the rate of female participants in the technical training courses was often lower than men (40%-60%). The technical methods have increased the rice yields that played an important role in improving the cereals security. The products from wetland rice

cultivation are used as the main foods for the whole family. Therefore, both men and women have chances to access to the activities' benefits in spite of the fact that there were still a gender gap in the. However, the technical training courses have contributed to enhance knowledge to both men and women. Especially, applying the methods of sowing and transplanting directly wetland rice at the community has changed the division of labors. About all interviewed households, men and women are in charge of sowing and transplanting directly wetland rice that were different from the former transplanting wetland rice done by only women. Besides, sowing and transplanting directly needed to be used herbicide. Men all were responsibility in spraying herbicide to crops unlike weed-killer by hands done by most women. It was clear that applying new seeds and new technology to the wet land rice production have changed the division of labors and reduced work' s pressure to the women.

3. Raising fish activities:

To improve the nutrient and food security to the local villagers, besides the technical intervention to crop cultivation, the project also supplied young fish and raising fish technical training course to the interest household group at the commune. At present, these activities were expanded in other households at the local areas. The fishing groups were established for men, therefore, only men took part in the training course and monthly meetings. However, cutting leaves and grasses for fish are work of women. Everyday, it takes 1 to 1,5 hours to carry out this work. Fishes are used partly as families' foods as well as for selling. Due to the knowledge of technology and the participation in groups, husbands decided all matters of raising and selling fish. Therefore, the raising fish has increased the producing time of women. However, they rarely have chance to access to the benefits of these activities. The raising fish have contributed to improve the nutrients to all the members in all households, meeting the needs of both genders.

4. Raising pigs

Raising fish groups have been established for women in order to create more benefits for them. The projects have given them loans to buy stud animals, technical training courses and supplying the mixture foods in the early time. These activities were carried out effectively. The increasing weight speed of pigs was rather quick (10-15kg/month). Their selling weight of pigs was 80-100 kg (for 6-8 months). There were some families getting millions dongs from selling pigs. Like raising fish, before giving pigs to the experimented households, the project had carried out the technical training courses to these households. During the time for breeding, every month, all the members of these groups joined together to share experiences. However, unlike the raising fish activities (100% of members who took part in the meetings or training courses were men), although the pigs breeding reserved for women, however, there were some households that the husband took part in these meetings and training courses. The money for selling pigs would be repaid to the groups with the money of 100.000 dongs to transfer to other households. The remained money was set aside for buying other pigs for raising, repairing houses, spending for daily activities. Therefore, both men and women had chances to access to these benefits of these activities. Pigs breeding met the real needs of both genders.

In all households groups, women were in charge of assuming all activities such as cutting vegetation, cooking mash, and feeding and cleaning cages. Everyday, it takes 2-2.5 hours to take care the pigs. Therefore, these activities increased the working time of women. However, these kinds of activities brought them a remarkable benefits. Moreover, due to mastering technology through the training courses as well as in the monthly meetings of exchanging experiences, the self -confidence has

been created in women. Thanks to directly implementing these activities, the capacity and the self-confidence have been improved. Therefore, the wife had the rights in deciding the money from selling raised pigs. Although, they all used these sum of money for daily activities, they all thought that “it was very comfortable to use the income done by themselves, they could decide to spend money in certain needs (A women in Paring village said that”.

It was clear that although pigs breeding made the women busy, they helped women improve the roles in their own family. It indicated that establishing raising pigs groups for women met the real needs as well as the strategic ones. All interviewed women said that even if it was a hard work, but they all liked raising pigs because it helped them collect a sum of money by themselves to improve the daily life. They also said that if they could take part in the training courses, they would know more about technology of pigs breeding and increasing the productivity. During the process of their investigation, it indicated that most of the women who took part in the raising pigs groups belonged to the better-off and moderate households (selected by the community). As the results, as establishing the created-income women’s groups, the research groups should supervise the process of implementing in order to create good conditions and encouraging poor women take part in the project activities.

CONCLUSION

In the past three years of implementing the project “Community-based natural resource management in Hong Ha, Hue. Vietnam”, together with the specialists, the research groups of Hue University of Agriculture and Forestry and the Economic Department of Hue University have received good results. The project objectives have been followed closely and implemented effectively. The Hong Ha villagers, the local authorities and other stakeholders have good comments on the researching groups, especially on what the researching groups brought to the poor minority in Hong Ha village. The projects contributed important roles in increasing social welfare, creating new modes of production, establishing the belief and the enthusiasm of producing activities in the community. The project has carried out successfully the researching methods with farmer participatory. However, during the process of implementing the project in Hong Ha, there are many arisen problems needed to be solved, which require a continuous research of all the project members in order to gain the general objectives of improving the standard of living, enhancing knowledge and managing well the natural resources on the fragile upland like Hong Ha.

