


REPORT



Study on impact of fruit tree growing and forest plantation on changes of land use and household life in Hung Tien village, Hung An commune, Bac Quang district, Ha Giang province





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*Vietnam - Sweden Mountain
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Forest Resources and
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ABBREVIATION ON THE REPORT

FCP	Forestry Cooperation Programme
MRDP	Vietnam Sweden Mountain Rural Development Programme
FREC	Forestry Resource and Environment Center
FIPI	Forest Inventory and Planning Institute
PRA	Participatory Rural Appraisal
SIDA	Sweden International Development Agency
CT-327	Programme 327
CT-661	Programme 661
CT-135	Programme 135
VND	Vietnamese dong

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I- BACKGROUND

From 1991 up to now mountain areas of Northern Vietnam supported by Swedish Government have carried out two cooperation programmes: Forestry Cooperation Programme (1991-1996) and Vietnam Sweden Mountain Rural Development Programme (1996-2001).

MRDP programme is an integrated programme hesitated from experience from FCP, operating in 259 villages of 74 communes in 18 districts of 5 provinces with objectives: “The Programme should contribute to the re-establishment of green productive uplands that are managed in a sustainable way by healthy farmers having secured land tenure, maintaining the ecological, economical, social and cultural diversity of the area”.

This is an integrated programme on mountain rural development with the focus on creating an environment in which poor households in Programme mountain communities (pilot areas) are able to benefit from sustainable and diversified economic activities, such as primary production, processing, services, trade and employment in the context of an emerging market economy

In order to obtain the objectives, MRDP has carried out many supporting activities like: Land use planning, forest land contract and allocation, credit and savings, Agriculture and forest extension, Human resource development, etc., especially, Management information and learning system (MILS) for providing two way information and feedback on achievements in both quantities and quality.

After 5 years in operation, MRDP have assisted local areas in terms of social-economics and environment development. One of the biggest successes of MRDP is to contribute to increase forest cover, reestablish sustainable and productive mountain areas done by local people. They have land use right and plan to use their land effectively and make products for their household use and sell out to the market with a view to increasing living standard, technology and business skills. Therefore during MRDP’s operation, changes in land use have been occurred at household level as well as project level. The most important changes in land use are to transfer barren areas to plantation forest and from mixed garden to intensive orchard under the form of commodity production that have made changes in socio-economics and environment in mountainous areas.

After the Government issued policy on land allocation and contract to households combined with Programme 327, MRDP, Programme 661, forest cover has increased quickly. Through study results by FIPI in 1998, rate of forest cover in the province has increased remarkably.

From 1976 to 1990 forest areas of 5 provinces decreased 2.4%/year. 60% natural forest disappeared in this time and only 22% forest areas have been rehabilitated from barren areas.

From 1989 to 1998, forest cover of 5 provinces increased from 17.7% to 27%. Especially from 1993-1998 forest area increased remarkably about 2%/year. That increase is the result from forest plantation and natural regeneration.

Through study results in project and non-project communes, the active roles of FCP/MRDP can be realized as follows:

- . Forest cover of project communes increased more quickly than other non-project communes. In project communes forest area increased about 3%/year and only 2.3% increase in non-project communes.
- . In 1989 paddy area accounted from 15% of the total area. But in 1998 that area decreased down to half and especially much more in project communes.
- . The most important changes were forest rehabilitation and regeneration from barren areas. In 1998 barren areas decreased from 32% in 1989 to 10% due to forest rehabilitation and the speed of rehabilitation of project communes was faster than non project communes.

Above forest regeneration resulted from the following elements:

- . Change from forest management under the form of subsidy concentration to market economy.
- . Positive influence of the Government's new policies such as: Land and forest allocation, close natural forest.
- . The Government's investment in mountain and rural areas: Programme 327, Programme 135 and Programme 661...
- . Effective support from FCP/MRDP

Influence study is a component in mountain rural development programme carried out during the project's operation including village study based on PRA and some in-depth studies with various topics. In the year 2000, using PRA at village level was completed with specific objectives as follows:

- Poverty alleviation
- Gender balance
- Drinking water system
- Land use changes
- Market development and opportunity
- Biodiversity
- Enhance and develop institution at commune and village levels.

Year 2001 is the last year in the operation programme of MRDP with the main focus of subjectively studying strong and weak points during 6 years of operation with a view to documenting specific experiences during project process.

Study on influence of fruit tree growing on living standard and land use of households in project areas is one of MILS activities to amend experience lessons to the follow up programmes.

This study will contribute to deeply understand changes in land use and influence of that change on socio-economic life of households. It will also find out strong and weak facets to propose appropriate activities in poverty alleviation and mountain rural development.

II- OBJECTIVES AND STUDY CONTENTS

-Objectives

End-results of study on influence of fruit tree growing and forest plantation on changes of land use and socio-economic life of households are:

- . Having better understanding of level and tendency of changes in use of forest and garden land as well as local people's desire in using those types of land.
- . Evaluating influence of forest plantation and fruit tree growing on household economic development.
- . Drawing experience lessons on land use and investment on forest plantation and fruit tree growing of households and then propose solutions to improve conditions to encourage developing trees in the following years.

-Study contents

- . Investigating current reality of nature-socio-economic, land use and situation of fruit tree growing and forest plantation in villages from 1996 to 2001.
- . Evaluating changes on land use and trees of villages and households.
- . Evaluating changes of socio-economics of villages and households.
- . Evaluating changes on environment landscape.
- . Evaluating roles of MRDP and the Government's policies.
- . Proposing solutions to maintain and develop fruit tree growing and forest plantation of households.

III- STUDY METHODS

-Method of sample selection

-Selecting provinces:

3 provinces were selected: One province close to market of timber and fruit (Phu Tho); one province in the middle (Tuyen Quang) and one province in remote area (Ha Giang).

-Selecting communes:

- Communes have had supporting activities of MRDP for fruit tree growing and forest plantation from 1996.
- Communes have activities of forest plantation and fruit tree growing represented for provinces.
- Communes have study results on changes of forest cover from 1989 to 1998 done by FIPI.
- According to those above criteria, Hung An commune was selected as representative for Ha Giang province.

-Selecting villages:

Selection of villages for survey and interview is based on the following criteria:

- . Each commune selects one village.
- . Having different types of trees and different methods of management.
- . Having areas of fruit tree growing and forest plantation represented for commune's villages.
- . Having inventory results of PRA before 1996 and recent PRA.
- . Having experienced staff in the programme's activities.
- . Having good socio-economic conditions in the whole commune.
- . According to those criteria, Hung Tien village was selected represented for Hung An commune.

-Selecting households for study:

- Households were selected for study depending on different categories:

Category I- select 5-8 HHs;

Category IV: select 5-8 HHs

Newly upgraded households: select 5-8 HHs

- Households selected randomly from each Category and based on the household list from the latest PRA results. After looking at the village social economic maps, households were selected randomly from the map (located fragmentally in the villages). Then villagers may have comments on the selection. E.g. Households selected but not currently present at village and then they have to select another households for replacement.

- Desk study

Material, map collected for study in the villages include:

- Reports, commune forest and land use maps in 1989 and 1998 done by FIPI.

- Village PRA results from the first and the last cycle in the project.
- Commune and village statistic data on land and production.
- Land allocation records, forest protection and plantation contracts.
- Material, information and records for supports from MRDP and other organizations.
 - . Design questionnaires for household interview: in order to have information suitable with study objectives and situation of villages, questionnaires for household interview have been compiled by the researchers of Gothenburg and FIPI following the steps:
 - Identifying study objectives
 - Meeting with village staff to collect general information of main issues of villages to design questionnaire frame.
 - Compiling draft questionnaires.
 - Trying interview some questionnaires in some groups of households.
 - The study team discussed to adjust questionnaire table accordingly.
 - Conducting interview with the remaining households and villages using the amended questionnaire table.

Sample of questionnaires is shown in table 1.

- Field study

- . Observing field, drawing and describing types of land use, compartments' areas, distance to compartments of households.
- . Describing current system of trees, structure of layers, diameter, and height of trees, cover, and managementon which environmental impact of tree structure will be evaluated.
- . Discussing with relevant organizations, institutes and individuals.
- . Using some tools of RRA (Rapid Rural Appraisal) and PRA (Participatory Rural Appraisal).
- . Conducting interview using the ready-made questionnaires and additional questionnaires.
- Drawing history transect of land use
- Scoring matrix to identify priority, advantages and difficulties
- Drawing community diagram
- Group discussion: done with women and men groups to gather different ideas on gender and household production.
- Market survey: to supply information on demand and price of different forest products and market impact on development of fruit tree and forest in local area.
- Collecting information on management regulations, land use, received investment resources, changes on cultivation methods, changes on trees leading to level and tendency of changes in land use in local area.
- Collecting socio-economic information about elements influencing on fruit tree and forest plantation such as: cultivation experience, labour input, cost for tree growing and forest plantation, market opportunity, income from trees...

- Policies and support from the Government to tree growing and maintaining forest cover.

IV- RESULTS OF STUDY

1- CURRENT REALITY

1.1 Background information of Hung Tien Village

From results of survey of the study group and reference of results of recently PRA, some background information about villages and households participating in the study are summarized in the below table:

Table 1: Background information of Hung Tien village
(in the bracket [...] is change)

Information	Hung Tien
<i>Total area (ha)</i>	384.42
<i>Year of establishment</i>	1945
<i>Zone according to Committee for Ethnic Minorities and Mountain Areas</i>	1
<i>Ethnic Minorities</i>	Tay, H'mong, Dao
<i>Number of HHs year 2000</i>	190
<i>Population</i>	881
<i>Number of laborers</i>	382
<i>Number of inventoried HHs:</i>	15
-Category (Rich)	5
-Category II(Average)	5
-Category III(Poor)	5
-Category IV(Hungry)	
<i>Number of ethnic minorities/number of inventoried HHs</i>	15/15
<i>Number of family member/HHs</i>	[3-7] 5
<i>Average land use (m²/HH)</i>	[5.200-60.000] 21.108
<i>Average income /year(million VND/HH/year)</i>	[7,6-18,9] 13,57
<i>Distance from the district center (Km)</i>	8
<i>Condition of traffic</i>	Good

Table 1: Background information of inventoried villages (continued)

Information \ Village	Hung Tien
<i>Climate:</i>	

+Average rainfall(mm/year)	1874mm
+Average temperature (°C)	22°C
Average life span of husband/wife	44/44
Number of women headed households (%)	13%
Household owner's education level (grade)	[4-University] 8
Educational level of wife (grade)	[4-9] 6

Hung Tien village (Hung An commune – Bac Quang district – Ha Giang province) located in mountain area of Northern Center of Vietnam with the total area of 384.42 ha accounting for 10.6% of the total area of the commune with the population of 881 persons. This is a potential area and the living place of ethnic minority groups such as Tay, Dao, Kinh, H'mong...Hung Tien is one of 259 villages who has been supported by Swedish Government with two forestry cooperation programmes: FCP (1991-1995) and MRDP (1996-2001)

Hung Tien village was established on June 8, 1945 named Tien village with 25 households and 185 family members.

In 1958 village management changed to Tien village's cooperative. In 1960 the commune established primary cooperatives in every village and in 1961 they changed to advanced cooperatives.

In 1963, Kinh people who come up and developed mountain area's economy established Tan Tien cooperative. In 1965 three small cooperatives of Tan Tien, Tien village and Giuoc village were merged to Hung Tien cooperative. During this period, assets like cows, buffaloes and land of cooperative members contributing to the cooperative were publicized.

From 1966 to 1978 the cooperative was still consolidated and the cooperative carried out to contract to farmers, the more they worked the more they enjoyed. In 1979 Decree No.318 of Ministerial Council was issued, farmers were allowed to take advantage of land for production. In 1981 Instruction No.10/CP regulating contract to groups and farmers.

In 1989 there was a transition from centralized subsidizing economic mechanism to household economics under the form of market economy with the orientation of the Government. Former cooperatives changed to new cooperative system providing services for household members on the basic of contract and volunteer for mutual benefit.

By 1991 cooperative management was transferred to village management led by village head in Hung Tien nowadays. Due to the pressure of the population growth, demand increasing therefore farmers have to move closer to

the forest that means they have to slash and burn for life. But from 1996, MRDP started supporting Hung Tien village in term of seedlings, fund, models, especially, technical training for villagers. As the result, knowledge of local people have been increased, no more forest destruction or slash and burn in the village areas.

Since the issuance of land allocation policy for farmers and the effort of FCP/MRDP, agricultural production seem to be more positive, living standard has been improved a lot, and now there are no more hungry households, number of poor household decrease 3.7%, average households account for 79.5% and the rest 16.8% are well-off families in the village.

In village most of houses are made from wood round 52%, brick houses 31% and temporary houses 16%. Households have either not much or not valuable assets. Only some well-off households have motors, color televisions and tables and chairs.

Due to the fragmental population distribution, constructions of village roads faced a lot of difficulties. Although local people upgraded village roads themselves but travel is still difficult. Some roads crossing streams have no concrete bridges but only bamboo bridges so during raining days it is no favorable for people to cross by. However in Hung An commune in general and in Hung Tien village in particular, national road No. 2 from Tuyen Quang to Ha Giang cut across so it is very advantageous to access to market. So the consumption of agriculture forestry and fishery products is very easy.

Regarding health care, although this system was upgraded and more equipment has been purchased and more health staff have been trained but up to now the facilities are still in the poor conditions and medicines are still needed more at the same time professional doctors and nurses are in badly demand. Therefore some common diseases still occurred in villages like malaria fever is subjected to 2 - 5% of patients.

Regarding education, village has primary schools, secondary schools and kindergartens whose classrooms are leaking, tables and chairs and other equipment are out of order. In village there is a big number of illiterate children, a few continue to study in high school. Through interview with children, we find that their parents pay little attention to their children' study and further more schools are far away from their home.

Regarding livelihoods, households largely use well water and water from stream. In village there is no clean water system. About 90% of households in village have access to electricity. However power cut often occurs. One issue worth paid attention to is social evils such as: superstition, addiction, prostitution which have been big obstacles to village's development.

1.2 Overview of main land use type

Results from survey in Hung Tien village shown in the table below:

Table 2: Main land use types

Land types \ village	Hung Tien
<i>Total land areas (ha)</i>	384.42
<i>In which:</i>	
+Agricultural land (ha)	125.53
+ Forestry land: of which (ha)	217.65
-Natural forest	14.72
-Plantation	71.8
-Rehabilitation forest	112.4
-Barren land	5.6
-Rocky mountains	13.13
+Residential land+home gardens (ha)	24.64
+Other lands(ha)	16.6

1.2.1 Agriculture land

In Hung Tien village agriculture land accounts for 125.53 ha (33%). Agriculture land consists of land for one rice crop, two rice crop and land for cash crop, hill land, ponds, land for tea growing and fruit trees. Among those types of agriculture land, rice land has the most important role to farmers in studied villages.

- *Rice land:* with the area of 62.46 ha. This type of land is lying in flatter areas and easy to irrigate. Irrigating to these areas is done by carrying water from mountains with bamboo pipes into paddy areas in higher place and running down to paddy areas in lower place or by irrigation system. This is the type that local people highly appreciate because it is the main place to produce rice. Growing in this land are high yield rice varieties originating from China and some indigenous varieties with high quality. Apart from that after the harvest in October every year, local people grow winter maize crop. Maize is

sowed in other places and after the harvest, soil will be prepared and maize will be moved in so it will save a lot of time and increase output of land use.

- *Land for cash crop (Maize, potato, cassava, ground nut etc) land for cash crop is 7.92 ha.* This type of land is lying on low hills or in knolls. This land is not flooded so cash crop like cassava, maize and sweet potato...are grown. The economic effectiveness of these trees is usually low so recently these areas have been used to grow fruit trees or tea.
- *Terrace fields:* Before land was not allocated to households shifting cultivation was applied on terrace fields. These areas were formed from nature forest or barren areas with bushes. Some common types of crops like hill rice, cassava, and maize...were grown on these areas. Due to the thin surface soil has been washing out quickly. As a result after 3 -4 years of cultivation, this land will be left fallow and local people will move to another place to continue slash and burn. This is one reason to cause the decline in nature forest areas. After policy of land allocation was applied, terrace fields have been properly managed by households. Terrace fields have been transferred to grow tea or plant forest which help to protect environment better and ensure the sustainability of hill ecology.
- *Land for growing tea and long-term fruit trees:* Tea, orange, mandarin, litchi and persimmon etc are often grown in household gardens or at the foots of low hills. In Hung Tien village, fruit trees and tea are grown in both household gardens and hill land. The method of using land like this will bring the income to households. Now areas for tea and fruit trees in Hung Tien village is 41.2ha and have tendency to expand further

- **1.2.2- Forestry land**

Forestry land consists of nature forest, barren land with scatted timber trees and grass. Among of them some barren areas with regenerated trees are zoned for protection.

-*Nature forest:*

In Hung Tien village there are only 14.72 ha of nature forest but mainly rehabilitated forest. Former rare species of timber disappears. Timber trees in rehabilitated forest consists of rapid grown species with low economic value.

-*Areas of nature rehabilitation:* they are barren areas with potential regenerated trees (1.5m in height and not straight and non diseases) from 300 trees/ha upwards. This nature regenerating method is applied to protection forest because it will be the solution to create protection forest with the low cost and still maintain the diversity of tropical forest ecology but the economic effectiveness of nature regenerated forest is very low. Only 50,000VND/year was paid during 5 years of protection. If combining regeneration with growing more, it will be paid 1,000,000VND/ha. This work will be based on contract to households or communities. In Hung Tien village 112.4 ha has been regenerated.

-Plantation forest: consisting of some types such as Glacia, Acacia, Styrax, Lim, Canarium, Lát hoa, Giỗ i... mainly grown in barren areas or land for cassava growing before. In Hung Tien village there are 71.8ha of plantation forest in which there are only 14.3ha of forest grown with the support from MRDP.

Plantation forest is classified based on its function of protection forest and production forest. Protection forest was contracted to households for 3 year tending based on contract (forest owner is Government, farmers will be paid for growing and tending). In the following years, households will pay for protection activities and will enjoy benefit from thinning. Now protection forest areas are used to grow some valuable kinds of trees such as Lat Hoa, Canarium, Gioi and Dinh together with some rapid growing trees like Acacia Magium. Until forest develops, local people will be allowed to thin Acacia Magium to take fire wood or sell to Paper Mill. Because the benefit from protection forest of local people is not clear so after 3 year growing and tending they often get support from the Government or project, and after that they do not have money to continue their protection and tending activities, forest trees are often left without proper tending.

In Hung Tien village production forest is often grown with rapid growing trees like Styrax, Acacium Magalium. Use right of production forest areas are often transferred to households. Households will use their own capital to plant forest and enjoy products from forest. During the last few years MRDP has supported with varieties and money to production forest areas which were planted. Because local people can enjoy direct benefit from forest so they pay more attention to invest more and the economic effectiveness of production forest has proven clearer than protection forest.

-Barren areas: It consists of hill land with the steep of over 15⁰ with bushes, grass or scatted timber. Before these areas were nature forests but due to the destroy they have been turned to barren hills. In Hung Tien village, 112.4 ha of barren areas with enough number of necessary regenerated trees were regenerated and rehabilitated. The remaining barren areas which can not be rehabilitated under the nature regeneration are used to plant forest. At present, in Hung Tien village there are only 5.6 ha of barren areas.

-Rocky mountain: Now in Hung Tien village, rocky mountain consists of lime mountain, granite mountain with thin soil surface layer, steep slopping land which are unproductive. However, in some rocky mountain areas there are small timber trees, bushes which supply fire wood and keep the environment landscape. Therefore they are zoned for protection.

1.2.3 Residential land and household garden

Residential land was divided to households for building houses, yards, farms, fish ponds and household gardens...Areas of residential land of Hung Tien village accounts for 6% of the total of village areas. This area is small but keeps a

very important role to household economy. Former household gardens were used to grow vegetable such as sweet potato, cassava, banana, orange etc. Now these gardens are developed into orchards, tea gardens with the high economic value and remarkably contributing to households' income.

1.2.4 Other types of land

Other types of land such as roads, market, school....ditches, dunes, commentary...are publicly owned and directly managed by commune authority.

1.3.-Areas of land owned by households

In Hung Tien village, households own from 5,200m²-60,000m², on average each household owns 21,108m²(2.1 ha-). Areas own by households in Hung Tien village are rather lower than other places in Ha Giang province.

Among types of land, paddy land is considered the most important type because it is their resource for their life. Production forest is not highly appreciated because newly planted forest has not been harvested so farmers do not realize the benefit from it.

1.4- Forest situation

1.4.1-Forest areas

Table 3: Current forest areas

<i>Village</i>	<i>Plantation areas (ha)</i>	<i>Natural forest areas (ha)</i>	<i>Forest cover (%)</i>
<i>Hung Tien</i>	<i>71,8</i>	<i>14,72</i>	<i>22,5%</i>

Forest cover of Hung Tien village is still very low. Plantation forest was grown under Programme 327, MRDP and Programme 661. Presently there are 113 ha of land for nature forest rehabilitation. If successful, forest cover will remarkably increase.

1.4.2- Tree varieties

There were a lot of forest trees found in Hung Tien village but only styrax, maglacia, acacia and cinammon were grown as forest. Other types were separately grown in forest gardens or household gardens.

Table 4: List of forest trees found in Hung Tien village

Availability: 1-very few; 2-few; 3-some; 4-many; 5-plenty

Vietnamese names	Latin names	Availability
-Bồ đề	-Styrax tonkinensis	4
-Mỡ	-Mangletia glauca	3
-Keo	-Acacia mangium	3
-Trám	-Canarium spp.	2
-Lát hoa	-Chukhrasia tabularis	1
-Quế	-Cinamomum cassia	3
-Luồng	Bambusa spp.	2
-Đinh	-Markhamia Stipulata	2
-Xoan	-Melia azedrach	1
-Sấu	-Dracontomelon duperreanum	1
-Giổi	-Michelia sp.	1

Source: interview village heads

1.4.3- Market of forestry products

For products from plantation forest, timber was mainly sold to Paper Mill in Phu Tho province. In Bac Quang district there are 3 workshops processing long fiber (mainly from bamboo) with the productivity 15000tons paper pulp/year. So products from bamboo are processed at the farm level so it facilitated households' forest plantation.

Table 5: Price of products from forest and forest gardens

Products Price	Fresh tea (VND/kg)	Fresh cinnamon (VND/kg)	Bamboo Vau (đ /tree)	Styrax (VND/st e)	Acacia (VND/ste)	Manglesia (VND/stre)	Bamboo Luong (đ /tree)
Highest price	2000	4000	6000	80.000	80.000	120.000	8.000
Lowest price	1800	2500	4000	60.000	60.000	80.000	5.000
Economic effectiveness	Very good	Good	Good	Good	Good	Medium	Good

Through evaluation of district Agriculture Section, Luong bamboo proves to be effective in terms of economics and it has been grown as forest in the recent years.

1.5-Situation of fruit tree growing

1.5.1- Area and varieties of fruit trees

Bac Quang district has tradition to grow orange. Before this areas of orange was strongly expanded. Some areas which were not suitable such as slopping land were used to grow orange. As a result, many orange trees grow poorly at the same time face with disease. According to data reports from the district agriculture section, some 40% of total orange areas have been infected with disease and have to cut down.

Orchards in Hung Tien village experienced the same situation. Therefore from 1996 to 2001 areas of fruit trees of the village decreased from 22.3ha to 15.27ha (accounting 66% compared with the previous years).

Through interview with heads of villages, there were a lot of varieties of fruit trees but some of them were used as commodities.

Table 6: List of fruit tree varieties grown in Hung Tien village

Availability level:0- Non; 1-very few; 2-few; 3-some; 4-many; 5-plenty

Vietnamese names	Latin names	Availability
-Chuối	-Mus parradisiaca	4
-Dứa	-Ananas comosus	2
-Đu đủ	-Carica papaya	1
-Vải	-Litchi sinensis	3
-Nhãn	-Nephelium euphoria	3
-Mận	-Prunus sp.	2
-Mơ	-Prunus armeniaca	1
-Cam	-Citrus sinensis	5
-Quýt	-Citrus reticulata	3
-Chanh	-Citrus limon	2
-Ổi	-Psidium guajava	1
-B ởi	-Citrus grandis	2
-Táo ta	- Zizyphus jujuba	1
-Hồng	-Diospyros kaki	2
-Khế	-Averrhoa carambola	1
-Hồng xiêm	-Lucuma mammosa	1
-Na	-annona Squamora	1
- Mít	-Artocarpus heterophylus	2
- Xoài	-Mangifera Indica	1

Source: interview village heads

- The table shows banana growing very common in home gardens, because it is a short-term fruit trees, easy to sell and its stall is used as food for animals. Beside orange, litchi and longan are long-term fruit trees with high value which local people grow with a large volume.

1.5.2- Some models of fruit trees

Household fruit tree models are often interlacing with industrial, agricultural crops or other trees at the very first years when fruit trees are still young:

- Model of fruit tree + tea;
- Fruit tree + cash crop
- Model of fruit tree + coffee tree

In general households did not intensify a specific variety of fruit tree but intercropped with other varieties on the same plots to avoid risk. This method prevented diseases and better took advantage of light and land. If there was risk in price change of some certain product, other products will be in position. In Hung Tien village coffee tree and apricot will intercrop with other fruit trees but the price of coffee and hybrid apricot was low so farmers had to cut down them. Intercropping limited bad effect of tree cutting because cutting down some trees will help other trees to develop.

1.5.3- Consumption market of fruit

Among fruit trees grown by households, only hybrid apricot brings the low benefit due to the cheap price. Beside coffee tree is not suitable in terms of natural conditions as well as consumption market. Both of them are being replaced with more valuable varieties.

Table 7: Changes of price of fruit sold in studied areas

Product	Longan	Litchi	Orange	Plum	Apricot	Mandar in	Persimmon	Custard Apple
Highest price	6.000	6.500	4500	1000	800	5000	4000	7000
Lowest price	4.000	3.000	2500	200	300	4000	2000	4000
Marketable	Easy	Easy	Easy	medium	Difficult	Easy	Medium	medium
Economic effectiveness	Good	Good	Good	Medium	Poor	Good	Medium	Medium

Fruit tree market price is changing up and down over the years, months or even days in a month. Most of fruits have their own season during 1-2 months. In the middle of the season supply often surpasses demand that leads to low price and fruits like plum, apricot become rotten. In the other hand, at off- season time there are no fruits to sell. Therefore, it is important to research and find out the way to control fruit trees bearing in the off-season to balance production during this time. Nowadays, to avoid the surpass of supply to demand in orange, farmers started using preservation method in Polyethylene wrapping and placing in cold and humid places. By this way, orange can be kept for several months, however, the quality reduces and it is easy to get decayed.

1.5.4- Technical evaluation on some varieties of fruit trees

Hung Tien village – a place is very experienced in fruit tree growing, local people evaluated some fruit trees in the following table:

Table 8: Technical evaluation on some varieties of fruit trees in commodity driven in Hung Tien village : 0-disadvantaged, not good; 10-advantaged, good

Indicator	Grow easily	Productivity	Sell easily	Economic	Low investment	Less disease	Variety	Next steps
Mandarin	8	7	9	8	5	5	8	9
Persimmon	5	5	6	5	7	5	5	5
Litchi	2	5	9	8	8	5	5	8
Longan	8	8	9	8	6	5	5	8
Custard apple	5	8	10	9	9	6	7	8
Plum	8	6	8	8	5	5	8	7
Apricot	8	7	3	2	4	8	9	0
Mango	7	7	8	8	5	7	6	7

Among new varieties supported by project, there are some varieties that are not suitable with local natural conditions or no market therefore bad impact have been placed on the growers. In the case of coffee that was introduced to households as at that time coffee price was very high in the markets. In addition, natural conditions was not favorable for coffee plantation, low production and many disease, coffee price is falling down quickly, the product here can not compete with coffee from other areas. Now local people start cutting down coffee trees and replacing with other higher production trees like longan, litchi etc.

Apart from Ha Giang coffee, hybrid apricot was introduced in almost project households. This kind of tree grows very quickly and completely suited with the natural land and climate conditions of local areas. However, no market for hybrid apricot, people still prefer local variety which has smaller fruit but higher quality. Price for hybrid apricot is very low as it has lower quality. Moreover, consumption value is low for this type of fruit and now farmers are removing this variety.

1.6- Investment folio of local people in the future

Through interview on investment folio of households in the future, the investment folio is shown in the table as follows:

Table 9: Prior investment folio of Hung Tien villagers

<i>Investment folio</i>	<i>Men (%)</i>	<i>Women (%)</i>
<i>Livestock</i>	25	29
<i>Agriculture</i>	20	15
<i>Fruit trees</i>	11	8
<i>Children's study</i>	7	11
<i>Intensive rice</i>	7	11
<i>Services</i>	5	0
<i>Forest trees</i>	2	0
<i>Tea growing</i>	23	26

Through interview on demand of investment in the coming years, local people gave priority on investment for livestock, tea growing and agriculture, buying varieties of fruit trees and expanding area of tea trees. All show that local people have been paying much attention for fruit trees. Many households want to buy new varieties to replace old and low production varieties. Needs for forestry trees were not high as forest land areas have been covered more or less. Very little areas for replanting after harvest (most of forest areas were planted in 1995, so not old enough for logging).

2-SOME CHANGES IN VILLAGE AND HOUSEHOLDS FROM 1996 -2001

2.1- Changes in land use

2.1.1-Changes in land use of Hung Tien village

Changes in land use of Hung Tien village from 1996-2001 are shown in table 10

Table 10: Changes in land use of Hung Tien village

Type of land	1996 (ha)	2000 (ha)	2001/ 1996	Reason for changes
<i>Total</i>	384.42	384.42	1	
<i>Paddy field</i>	62.46	62.46	1	
<i>Cash areas</i>	7.92	7.92	1	
<i>Orchard</i>	22.93	15.27	0.66	<i>Cutting down old and diseased trees</i>
<i>Tea area</i>	5.96	25.93	4.35	
<i>Plantation forest</i>	61.80	71.8	1.16	<i>Prgramme 327, MRDP, Programme 661</i>
<i>Natural forest</i>	14.72	14.72	1	
<i>Forest regenerated areas</i>	77.4	112.4	1.45	<i>Ch ơng trì nh 327, MRDP, 661</i>

<i>Rocky mountain</i>	<i>13.13</i>	<i>13.13</i>	<i>1</i>	
<i>Barren areas</i>	<i>64.97</i>	<i>5.6</i>	<i>0.09</i>	<i>Planting forest, regenerating and growing tea.</i>
<i>Others</i>	<i>53.13</i>	<i>55.19</i>	<i>1.04</i>	

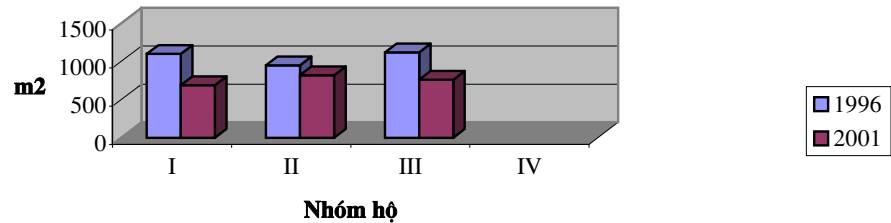
Orchard areas of Hung An commune was rather large ((22.93ha=6.01%) because this area has tradition to grow orange in Ha Giang province. Before orange was grown in household gardens, when the project supported, some households expanded areas including hill land. Areas of orange in Bac Quang district in general and in Hung An commune in particular faced with disease so trees died 40% due to the selection of varieties, therefore however MRDP supported to orchards but orchard areas still decreased because some orange trees were cut down. Therefore orchard areas of village is only 15.27 ha (67% compared with the previous years). This is the general situation of orchard in Bac Quang district.

2.1.2 Changes in land use of households

Table 11: Changes in land use of households (m²/HH)

	HH	I	II	III	IV
<i>Orchard</i>	<i>Area of 1996</i>	<i>1100</i>	<i>950</i>	<i>1120</i>	<i>-</i>
	<i>Area of 2001</i>	<i>690</i>	<i>820</i>	<i>760</i>	<i>-</i>
	<i>2001/1995</i>	<i>0.63</i>	<i>0.86</i>	<i>0.68</i>	<i>-</i>
<i>Areas of tea</i>	<i>Area of 1995</i>	<i>1850</i>	<i>1730</i>	<i>1370</i>	<i>-</i>
	<i>Area of 2001</i>	<i>3200</i>	<i>2750</i>	<i>1800</i>	<i>-</i>
	<i>2001/1995</i>	<i>1.7</i>	<i>1.6</i>	<i>1.3</i>	<i>-</i>
<i>Plantation forest</i>	<i>Area of 1995</i>	<i>2,167</i>	<i>3,014</i>	<i>1,000</i>	
	<i>Area of 2001</i>	<i>6,650</i>	<i>9,587</i>	<i>13,667</i>	
	<i>2001/1995</i>	<i>3.1</i>	<i>3.2</i>	<i>13.7</i>	

Biểu đồ thay đổi diện tích cây ăn quả các nhóm hộ-thôn Hùng Tiến



- *Orchard areas:* In Hung Tien village orchard areas decreased due to the cutting down of diseased orange trees. Types of fruit trees grown by households are more plentiful than before thanks to new varieties supplied by MRDP. Orchard areas among households are not equal because fruit tree growing activity was very common long time ago.
- *Tea areas:* Together with fruit trees and plantation forest, households have tendency to grow tea. During the last few years, tea processing industry has been developed and market for tea consumption was easy and price was stable. So local people invested a lot in growing tea.
- *Plantation forest:* Through figures and charts we find that plantation forest among households are unequal but not as much as other areas. Poor households own more forest areas than rich households because the

latter invested more in growing fruit trees and tea These plantation forest areas have gradually supplied fire wood for households from thinning.

- *Nature forest:* In Hung Tien village – Bac Quang – Ha Giang up to 1995 nature forest had a lot. From 1956-1965 forest were strongly exploited to get timber for house construction. In 1971 Vinh Hao SFE was established and forest continued to be exploited, barren areas continued to increase. From 1975-1980 some barren areas were used to plant forest and tea for Hung An Tea Mill. From 1980-1993 barren areas continued to increase because the Government stopped subsidy to forest plantation so forest areas decreased a lot. After carrying out the project of MRDP, barren areas were transferred land use right to households for long term use. As a result, 112.4 ha of barren areas are not being able to plant forest. The remaining barren areas were able to rehabilitate forest and contracted to households. Therefore, landscape of village has changed, barren land has been covered with forest and nature regenerated forest.

2.2- Changes in crop structure

2.2.1-Changes in varieties of households

Table 12: Changes in varieties of surveyed households

Village	Before	Present	Number of changed HH
<i>Household garden</i>	<i>Cassava (3HH)Orange(2HH) Apricot, cash crops, palm, mixed gardens</i>	<i>Apricot (7hh)tea(5hh)Orange (3hh)Cinnamon (3hh)longan(2hh),Plum (2hh),coffee</i>	13/15
<i>Orchard</i>	<i>Orange, cassava</i>	<i>Longan, litchi, plum, apricot, tea</i>	6/9
<i>Production forest</i>	<i>Cassava(4hh)bushes (4hh) Styrax, grass</i>	<i>Mã(10hh)Acacia Manglium, Styrax</i>	10/10
<i>Protection forest</i>	<i>Bushes, Nature forest</i>	<i>Regenerated timber, nature forest</i>	4/4 hh
<i>Forest garden</i>	<i>Cassava(4hh)bush, Styrax, Ràng ràng, Palm, Tea, Vau Bamboo</i>	<i>Cinnammon(4hh)Tea(4h) Vau bamboo, Acacia, Palm, Ràng ràng, Trám</i>	10/10

- *Changes in types of fruit trees:* Before in Hung Tien village orange was grown to sell, other types of fruit trees were not so many just for use.

From 1996-2001, MRDP has supported households with new varieties. But now orange trees are facing diseases so local people have to start growing other types such as longan, litchi, persimmon etc whose varieties were supported by MRDP.

-Changes in forest trees: In general quantity of timber grown by households does not change. Almost households plant forest with some common types such as Acacia, Styrax, Glacia, and Canarium. Other types are grown in forest gardens with the small areas.

2.2.2- New varieties are applied in local areas from 1996-2001

Table 13: System of new varieties from 1996-2001

Types	New varieties compared with 1996
Rice	7 (Bao thai, CR 203, San u 63, Bắ c u 903, Khang dã n 18 ,IR64, OM576)
Maize	3 (Bioseed, S8, Q2)
Fruit tree	4(Longan, litchi, hybrid apricot, coffee)
Plantation forest	6(Luông, Trám, Ràng ràng, Đinh, Giổ i, Lát hoa,)

Source: Interview with village head

2.3- Socio-economic changes

2.3.1- Changes in well-being through PRA

Results of household classification of Hung Tien village through PRA as follows:

Table 14: Changes in socio-economics in Hung Tien village

HH	1995		2001	
	Number of HH	%	Number of HH	%
<i>Category I</i>	21	19.1	32	16.8
<i>Category II</i>	42	38.1	151	79.5
<i>Category III</i>	40	36.3	7	3.7
<i>Category IV</i>	4	6.4	0	-
<i>Total</i>	107		190	

Through the above figures we can find that

Number of households in category II increased remarkably but other categories did not increase much. In general households in category I and II have tendency to increase and households in category III and IV decreased compared with the previous years.

2.3.2 – Changes in decentralization indicators

Indicators for household classification were set forth by village. These indicators will change depending on each PRA.

Table 15 : Changes in indicators of household classification from 1996 to 2001 in Hung Tien village

HH	Main changes in indicators
<i>I</i>	<ul style="list-style-type: none"> -Increasing knowledge and experience in production, livestock, management and planning. -Having income not from rice from 5 millions upwards -Average income is 3 millions VND/person/year -Having conditions to buy rich appliances, nice and brick houses
<i>II</i>	<ul style="list-style-type: none"> -Know how to carry out production properly -Having income not from rice from 3-4 millions VND/year -Average income from 1.5 to 1.8 millions VND/person/year -Be able to buy rich appliances
<i>III</i>	<ul style="list-style-type: none"> -Knowledge and experience in production -Allow to get loans for livestock development -Enough food (Category III before lack of food from 1-3 months) -Having income not from rice from 2-2,5 millions VND/year -Average income per capita from 500.000-800.000VND/year
<i>IV</i>	No households category IV (Before HH category V lacked for food from 3-6 months)

Through comparison of changes in indicators for household classification, we find that households' living standard has been improved. The living standard of the current household category II, III and IV has been improved like the previous households category I, II, and III.

2.3.3- Improvement of food security and income

In order to clearly understand about improvement of food security, economic development of household groups, and increase in living standard of local people in project village, we will consider and make a comparison of indicators of food of households through PRA.

Table 16: Comparison of changes of food security in Hung Tien village

HH	1996	2001
1	Food surplus 3-4 months	Food surplus 5-8 months
2	Enough food	Food surplus 2-4 months
3	Lack of food 1-3 months	Enough food
4	Lack of food 3-6 months	

The previous household category III, IV faced the lack of food from 1-6 months/year. But now they can self-support food. It resulted from application of new and high yield varieties and improvement of irrigation system.

Income from fruit tree and tea contributed to household's income. Total income from fruit tree and tea accounts from 13.7%-16.3% of the total income of households (table 17).

Table 17: Average income from fruit trees of households

HH Category	Tea		Forestry product		Fruit tree	
	AVG (VND/HH/Year)	% total income	AVG (VND/HH/Year)	%total income	AVG (VND/H H/year)	% total income
Category I	1,135,000đ	7.7%	0	0	887,000đ	6%
Category II, III	1,472,000đ	11.9%	190,000đ	1.5%	545,000đ	4.4%

+Example of some households:

-In Hung Tien village: Some households have income from 5 millions VND/year. Some households have income from fruit trees accounting for 31% of the total income of households like Mr. Linh Dinh That's family in Hung Tien village, Mr. Linh Ngoc Tuy's family (category I), the income they get from selling orange is 2.5 millions VND/year (13.5% of the total income of households), Mrs. Hoang Thi Ung's family (category II) gets 1.5 millions VND/year from selling fruit (accounting for 13.5% of the total income). However, income from fruit has decreased due to the cutting down of some diseased orange trees.

3- MRDP SUPPORT TO DEVELOP FRUIT TREES AND FOREST TREE PLANTATION

3.1- Support in fruit tree plantation

Table 18: Description of support in fruit tree plantation in MRDP

Village	Total fruit tree areas (ha)	Number of seedlings supported	% of areas supported	Main form of support
<i>Hùng Tiến</i>	<i>15,27</i>	<i>2800</i>	<i>30%</i>	<i>80% budget for seedlings and training</i>

MRDP has a lot of supporting activities in Hung Tien village in various fields among of which is support for fruit tree growing and forest plantation as follows.

- Supplying** 8558 various seedling (*Local people contributed 20%*)
- Supplying 30.4 tons of fertilizer*
- Supporting in getting loans (total of loans in the village is 72.8 millions VND; 9/16 interviewed hh received loans with the average 1.25 millions VND/hh)*
- Giving technical instructions, visiting models of other localities.*
- Building models in the local area : (10 all-sided economic models;43 household models, 19 agriculture models, 8 models of SALT, 10 agro-forestry models)*

In Hung Tien village, fruit trees were bought from Experimental Station No. 1 in Hai Hung province and varieties created by Mrs. Trinh Thi Nga, Mrs. Nguyen Thi Kiem etc and supplied to households depending on each household's demand. Households who grew persimmon complained that they received variety of seedless persimmon from the project but now they have seeds and bad quality and can not be sold. Hybrid apricot and coffee supplied by the project also did not bring benefit to households so their trust in project become less.

3.2- Support for forest plantation

According to Mr. Gillusson R. Ha Giang increased forest cover from 29% in 1989 to 36% in 1999. MRDP has office integrating with Department of Agriculture and Rural Development. The field activities were done by local people with the support of project staff in Agriculture Section. The working programme in 4 districts Bac Quang, Vi Xuyen, Hoang Su Phi and Quan Ba, there are 35 villages supported by the programme. The project supported for forest plantation in forest garden land and forest protection. Supporting model is similar to Programme 661.

Table 19: Description of MRDP support for forest plantation

Village	Total of area for fruit tree (ha)	Number of trees supported	% areas supported	Type of support
<i>Hung Tien</i>	72.8	14.1	19.4	<i>100% varieties + cost for 3 year growing and tender</i>

Apart from support for 14.1 ha plantation forest, MRDP supported to regenerate 37.4 ha in 199 and 1997 and 100ha in 1999. Every year the regenerating activity was supported 50,000VND/ha according to the programme cost norm. These areas have been rehabilitated for 5 years. The following years local forestry section will take over with fund from Programme.

-Design for forest plantation: Programme contracted with the Inventory and Design Company (Department of Agriculture and Rural Development). Staff of SFEs and forestry staff of district designed to plant forest on areas allocated to households. The design consists of description of area, species of tree, method of growing and tending for the first 3 years. The cost for designing will be 50,000VND /ha and will be approved by Department of Agriculture and Rural Development in Bac Quang district, Forestry Development Department, DARD in Ha Giang province and designing company.

-Forest plantation: Agriculture Section of Bac Quang commune contracted with households and tendered forest on allocated areas. Local people were paid in accordance with Programme 661. District supplied seedlings to households. The main types are Mo, Keo, Tram, Cinammon.

Signing contract with households, village representatives, Agriculture Section and Commune People's Committee. Local people will be tending and protecting for the first 4 years and then Agriculture Section will check and pay provided that the survival rate is higher than 85%. Average investment size for forest protection and plantation is 2,885,000VND/ha during a cycle.

4-IMPACT OF POLICIES AND PROGRAMMES OF THE GOVERNMENT

Changes in land use and socio-economic life of households in mountain and upland areas in the North of Vietnam resulted from programmes, projects of the Government, support from international organizations as well as the effort of local people. The supporting activities have been done through organizations, programmes and projects as follows:

- Agro-forestry extension activities**, activities of garden association
- Project to upgrade rural infrastructure
- Subsidy policy of the Government for food production in mountain areas
- Resettlement policy, programme 327
- Programme V06 on crossing out poppy fields
- Programme 135 on poverty alleviation
- Policy for land and forest allocation
- Programme FCP/MRDP
- Policy for management, utilization and consumption of products from plantation forest
- Changes in management structure of the Government from subsidy to market orientation economics.
- Orientation of province on goods production

Each support has its specific impact and they link with each other in a lot of fields. Regarding forest plantation and protection, Programme 327 and 661 have supported 80% of the area, the remaining areas received support from MRDP. For fruit trees, local people with their own investment and support from MRDP diversified fruit tree in household gardens.

V. CONCLUSION - RECOMMENDATION

5.1-Main changes in villages and households from 1996-2001:

From 1996-2001 in studied villages and households there are some changes as follows:

. Changes in land use

- Households' plantation forest has been developed from 1996-2001. Plantation forest has received the 80% support from Programme 327, 661, and 20% from MRDP

-Barren areas and hills have been covered with forest

-Orchard areas have decreased due to the cutting down of some diseased orange trees. However types of fruit trees in household gardens have been more plentiful than before.

. Changes in socio-economic

-Legally owing forestry land.

-Living standard of households have been improved compared with the previous years.

-There were more 20% jobs from planting forest and growing fruit trees.

-Food security has been improved. Poor households reduced the lack of food to 1-3 months (before 5-6 months), average and rich households have surplus of food from 1-6 months.

-Improving the situation of fire wood for households from thinning plantation forest.

. Changes in landscape and environment

-Barren areas have been covered, reduced the erosion and degradation of soil

-Maintaining ecological diversity: High yield varieties have been applied and valuable indigenous ones have been grown in forest

. Improvement of knowledge in technology of local people

-Local people know how to choose hybrid varieties, grafting. They get knowledge in using organic and chemical fertilizers to prevent disease for trees through training courses, visiting models of fruit tree growing and forest plantation organized by MRDP and learning experience from the real situation.

-Improvement of awareness of local people in forest plantation and environment protection.

- Local people started to actively participate in commodity market.
- Local people have planned to use land and cost accounting better before they only relied on the Government and cooperatives.

5.2- Reason and success:

Gained advancement in land use and socio-economic life of households resulted from correct policies of the Government, support from projects and effort of local people.

The policies of the Government have the most important impact in MRDP project areas as follows:

- Policy of land and forest allocation
- Programmes 327, 661, and 135
- Support from FCP/MRDP
- Activities of agriculture and forestry extension...

5.3- Some problems :

There are some problems in development of fruit tree and forest plantation in households in MRDP supported areas and other relevant issues as follow

- Support of fruit trees has not done well, some fruit varieties were diseased and the productivity was very low or has little economic effectiveness (such as coffee, hybrid apricot etc).
- Information on market is not updated so local people are still lack of information so their fruit and forestry products were often bought with cheap price by middle men.

5.4- Some recommendations

In order to help fruit trees have higher economic effectiveness, contributing to property alleviation for households, it is necessary to carry out the following activities:

- Enhancing information, training, building models in supporting activities.
- Studying carefully new varieties before supporting to avoid the cutting down of some unsuitable trees as it happened in the past.
- For protection forest, it should find some multi-function trees to be able to supply products to encourage local people to well protect and develop forest to avoid the bad situation of plantation as it has been in the last 3 years.
- Need to have in-depth research on market of forestry products to increase the business effectiveness. To identify the potentiality of fruit trees and forest trees which are suitable with market, condition and management methods of local areas.

-Need to have in-depth study on encouraging methods and obstacles in development of tree. This study should focus on institution, organization, ownership as well as the market tendency.

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ANNEX

1- LIST OF INDIVIDUAL INVOLVED IN INTERVIEW

No	HA GIANG PROVINCE	
1	-Ms. Ban Thị Vi	Head of Ha Giang Forest Protection Department
2	-Mr. Phạm Trung Kiên	Forest Protection Department
3	-Ms. Hoàng Thị Chung	Vice head of Bac quang agriculture section
4	-Mr. Nông Quang Thiệu	Hùng an commune chairman
5	-Ms. Hoàng Thị TỰ	Head of Hung An Women's Association
6	-Mr. Ma Văn Hàm	Hùng Tiến VMG
7	-Mr. Ma Văn Bình	Head of Hùng Tiến village
8	-Mr. Hoàng Minh Thuộc	Hung Tien villager
9	-Mr. Hoàng Đức Luyện	- same
10	-Mr. Phạm Văn Đăng	- same
11	-Mr. Hoàng Minh Túc	- same
12	-Mr. Linh Ngọc Tuy	- same
13	-Mr. Linh Ngọc Tác	- same
14	-Mr. Hoàng Văn Nhiên	- same
15	-Ms. Hoàng Thị Ứng	- same
16	-Ms. Nguyễn Thị Khoa	- same
17	-Mr. Hoàng Minh Luyện	- same
18	-Mr. Linh Bình Tuấn	- same
19	-Mr. Hoàng Tiến Sinh	- same
20	-Mr. Nguyễn Văn Cận	- same
21	-Ms. Nguyễn Thị Khoa	- same
22	-Ms. Hoàng Thị Việt	- same
23	-Mr. Hoàng Bình Châm	- same
24	-Ms. Ma Thị Đông	- same
25	-Ms. Linh Thị Oanh	- same
26	-Ms. Hoàng Thị Hồi	- same
27	-Ms. Linh Thị Diệp	- same
28	-Ms. Ma Thị Nhung	- same

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