The Poor, Agro-forestry Products, and the Market

A Feasibility Study on Market Access for Agricultural and Forestry Products of Local Communities in the Buffer Zone of Hang Kia Pa Co Nature Reserve, Hoa Binh Province

HANOI, 2007

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PanNature

PEOPLE AND NATURE RECONCILIATION

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Editors
Trinh Le Nguyen
Nguyen Viet Dung

Research Team
Doan Bong[1]
Le Thi Phi[2]
Tran Manh Chien[3]
Phung Tieu Yen[4]
Nguyen Danh Tinh, Nguyen Huyen Trang, Nguyen Anh Dao[5]

Address: No 3, Alley 55, Lane 61, Tran Duy Hung Street, Hanoi, Vietnam
PO Box 612, Hanoi GPO, Vietnam
Tel: ++84 4 556-4001 Fax: ++84 4 556-8941
Email: contact@nature.org.vn
Web: www.nature.org.vn

[1] Institute of Ecological Economy
[2] Non-timber Forest Products Research Centre
[3] International Center for Tropical Agriculture
[4] International Trachoma Initiative
[5] People and Nature Reconciliation

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Abbreviations

AFTA	ASEAN Free Trade Area
Agribank	Bank for Agriculture and Rural Development
APEC	Asia-Pacific Economic Cooperation
ASEAN	Association of South East Asia Nations
CEPT	Common Effective Preferential Tariff
FAO	Food and Agriculture Organization of the United Nations
FIPI	Forest Inventory and Planning Institute
FPD	Forest Protection Department
GAP	Good Agricultural Practices
GDP	Gross Domestic Product
ICARD	Information Centre for Agriculture and Rural Development
IFPRI	The International Food Policy Research Institute
MARD	Ministry of Agriculture and Rural Development
MONRE	Ministry of Natural Resources and Environment
MPDF	Mekong Private Sector Development Facility
MPDF	Mekong Private Sector Development Facility
NR	Nature Reserve
NTFP	Non-timber Forest Product
ODA	Official Development Assistance
PanNature	People and Nature Reconciliation
RECOFT	Regional Community Forestry Training Centre for Asia and the Pacific
SMEs	Small and Medium Enterprises
USD	US Dollar
VAT	Value Added Tax
VND	Vietnam Dong
WTO	World Trade Organization

Forewords

Over 85% of protected areas in Vietnam are located in rural and remote areas, where remain high rate of poverty (*Vietnam's State of the Environment Report 2005. MONRE*). In these areas, local communities have to depend heavily on natural resources for their daily livelihood. Pressure from local communities on biodiversity is still immense. Conservation of natural resources cannot be successful without appropriate measures for sustainable reduction of this dependency.

However, if sustainable livelihood for local communities is simply translated as food security and reduction of poverty rate then it's not sufficient. With the trend of global integration of Vietnam's economy, farmers in every region of the country have to confront with the competitive arena against farmers in other regions and even other countries. Therefore, it's necessary to drive the objective of any intervention to a higher level, which involves helping farmers and local communities to be able to supply products for the market needs. By having full access to the market, local communities can ensure their sustainable livelihoods and reduce their dependency on natural resources. In addition, there should be solutions to help local farmers to become professional producers so that they can maintain firm roles in the competitive market places.

With this approach in mind, People and Nature Reconciliation has carried out the feasibility study on market access for local agro-forestry products in local communities in the buffer zone of Hang Kia – Pa Co Nature Reserve. Through this study, we expect to design appropriate interventions and solutions to assist local communities in opening access to larger markets in order to help reduce current pressure on natural resources of the nature reserve. With contribution, consultation, and support from different stakeholders and experts in this study, we hope to reach a feasible approach in developing a project to support conservation of natural resources through assisting sustainable livelihood development for local communities.

People and Nature Reconciliation
August 2007

Acknowledgement

This report summarizes joint efforts and contribution of many stakeholders and individuals. Firstly, we would like to have special thanks to our technical consultants, including Mr. Doan Bong (agricultural economist), Dr. Le Thi Phi (market access specialist), Mr. Tran Manh Chien (market analyst), and Ms. Phung Tieu Yen (sociologist), for their great supports in field study missions. We also received valuable inputs and comments for this report from Engineer Vu Van Dung and Professor Le Trong Cuc.

We would like to acknowledge supportive contribution in field study arrangement and implementation of the Management Board of Hang Kia – Pa Co Nature Reserve and People Committees of three communes Tan Son, Bao La, and Pa Co. Their great efforts and shares in field work contributed a great part in the success of this study. We especially thank Mr. Nguyen Manh Dan (Director of Hang Kia – Pa Co Nature Reserve), Bui Quang Binh, Tran Quang Chung, Sung A Ky, and Nguyen Manh Hung (staff of Hang Kia – Pa Co Nature Reserve) for their involvement and support.

This study was not completed without active participation and support of local leaders and authorities in Po Liem, Pung, Xa Linh 1 villages. They helped us organize village meetings and household interviews. We deeply appreciate local people and households in these villages for their time and willingness in sharing information, self analyzing of their livelihood conditions, and proposing solutions with the field study team. Their warm hospitality and help give us much encouragement in carrying out this study.

We would like to thank university students and volunteers, who helped us carry out consumer interviews in super markets in Hanoi. Their enthusiasm, activeness, and responsibility contribute a great part in the completion of the consumer analysis section of this report.

Finally, this study would not have been completed without financial support and technical advice from our generous donor ICCO.

Introduction

Hang Kia – Pa Co Nature Reserve is located in Pa Co, Hang Kia, Bao La, Cun Pheo and Pieng Ve communes, Mai Chau district, Hoa Binh province. The nature reserve comprises an area of 7,091 hectares of limestone karst forest in the extreme west of Hoa Binh province, on the border with Thanh Hoa and Son La provinces. The site lies in the limestone range that extends south-east from the Son La plateau to Cuc Phuong National Park. The main physical feature within Pa Co-Hang Kia is a high ridge, which reaches 1,536 m in the north-west of the nature reserve, and gradually decreases in altitude to the east. Most of the nature reserve lies above 500 m. The reserve's biodiversity resources are relatively abundant with 1042 floral species, 47 mammals, 144 birds, and 60 reptile and amphibian species recorded. Many of them are listed as important or endangered species in the Vietnam Red Book (1996), including 30 floral species, 15 mammal species, 5 bird species, and 22 reptiles and amphibian species.

More than 10,000 people, mostly minority ethnics including Mong, Thai, Dao, and Muong, are living in and around the reserve and make the area culturally diversified. Hang Kia and Pa Co communes in the core zone of the reserve are home to the only Mong communities in Hoa Binh province. Thai and Dao people are dominant populations in the buffer zone communes: Bao La, Pieng Ve and Cun Pheo. All these communities, through their livelihoods, have strongly influenced forest resources in the Hang Kia – Pa Co Nature Reserve.

Slash-and-burn farming practice and heavy dependence on forest resources of local communities, especially Mong people are threatening the intactness of primary limestone forests in the area. While local products are very potential for generating much higher incomes, there is not yet any mechanism to get these products to the market. Research has proved that those like Dao people ever had a good will in market orientation. Lack of income incentives has discouraged local people to maintain their traditional crops and garden fruit species. In return, their livelihoods rely more on forest resources and unsustainable slash-and-burn farming.

Traditional agricultural products are the mainstreams of current local production systems in the area. Their grains, fruits, vegetables and husbandry products are well-known in good quality and tastes. Thought the temperate climate in the nature reserve is favorable to develop a variety of fruits and vegetable products. Attractively, these products all come from chemical-free farming practices of local communities.

From the communes in and around Hang Kia – Pa Co Nature Reserve, it just takes about three or four driving hours to Hanoi capital city. This is an advantage for opening access to a large market for local products of local communities. Clean traditional crops such as tea, corn, local sticky rice and husbandry products such as native pigs and poultries are favorite goods for city consumers. In recent years, the government also supported local people to grow several fruit trees, including French peaches, plums, apples, and persimmons. However, these products have never been turned into sources of incomes for local people due to lack of a systematic promotion and marketing strategy.

In addition, Hang Kia - Pa Co is also located in Mai Chau – a popular community-based tourism site operated by local minority ethnics for national and foreign visits departing

from Hanoi. This will add one more channel to market local products to a wide range of consumers.

To fill those gaps, and to support local communities to increase their incomes and reduce their forest dependence, PanNature carried out a comprehensive field research programme in three communes where Mong, Thai and Dao communities are living in and around the Hang Kia – Pa Co Nature Reserve to investigate potentials and opportunities for market access for local agricultural products and their derivatives.

Research Methodology

This research programme looks at potential links and opportunities in the market chains of agro-forestry products from their production sites to distribution channels and end consumers. Each "node" of the market chain was studied independently in order to get a broader picture of the situation. Major "nodes" include:

- Production sites and producers: including local socio-economic and cultural conditions that can influence the production process. Current and potential products are also examined and evaluated.
- Market channels: including local and external channels for delivering local products to the consumers.
- End markets with main focus on larger retailers in Hanoi
- Consumers: consumption patterns and behaviours of urban consumers towards products from rural and ethnic communities.
- Market bridging factors: cross-cutting factors that influence the market access of agro-forestry products from local communities to the end consumers.

1. Research Objectives

Long-term Objective

To assist ethnic communities living in and around Hang Kia – Pa Co Nature Reserve to create more profits and income sources from their products in order to alleviate poverty, improve their livelihoods and living standards, and reduce their dependency on forest resources.

Short-term Objectives

1. To identify current status and potentials for market access for agricultural products and their associates of local communities in the area

2. To identify opportunities for marketing those local agricultural products through consultations with possible business and commercial services and consumers

3. To develop a proposal for piloting models on market access and development for local agricultural products in a sustainable pattern.

2. Research Methods

The research critically focuses on existing situation of agricultural products, crop production, processing and diversification, marketing and business/commercial activities and skills/capability, income and poverty as well as ecological, social and cultural factors affecting market access of local agricultural products. Research tools used include Participatory Rural Appraisals, community interviews, semi-structured questionnaires, primary and secondary data collection, and field observations. Field surveys focus on issues of product quality, costs and prices, demands, trade-mark and registration, and sale networks. Analysis of consumption patterns and consumer behaviors is based on data collected from the consumer survey in selected major super markets and retailers in Hanoi.

2.1. Field Surveys of Local Products

A research team consisting of PanNature, an agricultural economist, a sociologist, and staff of Hang Kia – Pa Co Nature Reserve carries out in-depth surveys in three dominant minority communities (Mong, Thai and Dao) in Pa Co, Bao La, and Tan Son communes.

These field surveys focus on exploring the current status of local agricultural products, including availability of products, farming and production techniques, physical conditions of the area (soil, climate patterns, topography, etc.), related social and cultural aspects, and use of natural resources. The survey team also looks at the existing policies that influence production and market access of agricultural products. In addition, other issues such as local capacity, awareness, and household/micro economic management are included in these surveys.

2.2. Surveys of potential markets for local products

The research team, consisting of market access specialists and market analysts, carries out surveys both in local and external market channels to get a comprehensive picture of the current market for local agricultural products. Part of these surveys in Hanoi focus more on major distribution channels and large corporate vendors, including 13 super markets and trade centres, rather than fragments of small shops and sale points. These will ensure the longer term for market of local products. In addition to study the current status and trends of market channels, the research team also looks at the possibilities for building partnership between large corporate vendors with local communities for the future project.

These surveys also look at the current sources of supply of agricultural products in the market, market needs (current and future forecast), and preferences of vendors and retailers. Results from these surveys help define strengths and weaknesses as well as opportunities for local products in the research site.

2.3. Consumer survey

A semi-structured questionnaire survey is used to study consumers' needs, preferences, consumption patterns, and attitudes toward agricultural products. This survey is carried out in selected super markets in Hanoi, including small, medium and large ones, with appropriate balance interviewee samples in terms of gender and ages.

Data collected from the questionnaires is then processed and analyzed using computer software.

2.4. Study of market bridging factors

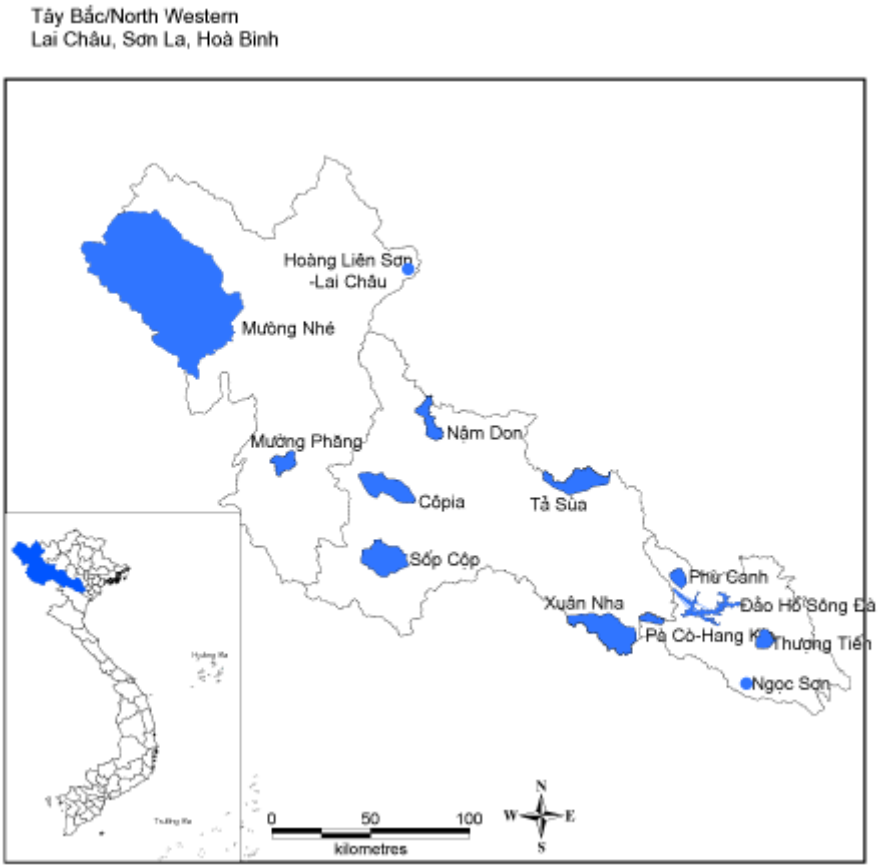
From the supply sources to the markets, there are many cross-cutting factors that decide the popularity, availability, price, and quality of a product. This study examines these factors in the current context in Vietnam. Different aspects of the study include sound farming production techniques, product processing and storage, packaging, product branding and trademark registration, marketing and promotion, distribution strategy, quality control, trade policies related to agricultural products, and other possible barriers that may influence access to the market.

Further more, the study also looks at other interlacing issues that may interfere in the process of bring a local product to the market such as access to good information for local farmers and willingness of business sector in building partnership with local communities.

Section I: Overview of Hang Kia – Pa Co Nature Reserve

Hang Kia - Pa Co Nature Reserve was established to conserve the remaining tropical forest on limestone on the upstream of Ma River and Da River. Before the Da River Hydro-power Resevoir was built, this area still remained intact forest with high biodiversity due to abrupt terrains and inaccessible paths for logging activities.

Figure 1: Location of Hang Kia - Pa Co Nature Reserve



Source: BirdLife Indochina

On the 9th of August 1986, the Chairman of the Ministers Council (now the Prime Minister) issued Decision 194/CT recognizing the system of special-use forests in Vietnam, which also listed Hang Kia - Pa Co Nature Reserve with a proposed area of 1,000 hectares. On the 15th of November 1990, the Office of Ministers Council (now the Government Office) released an announcement on the protection of forested areas along National Road 6.

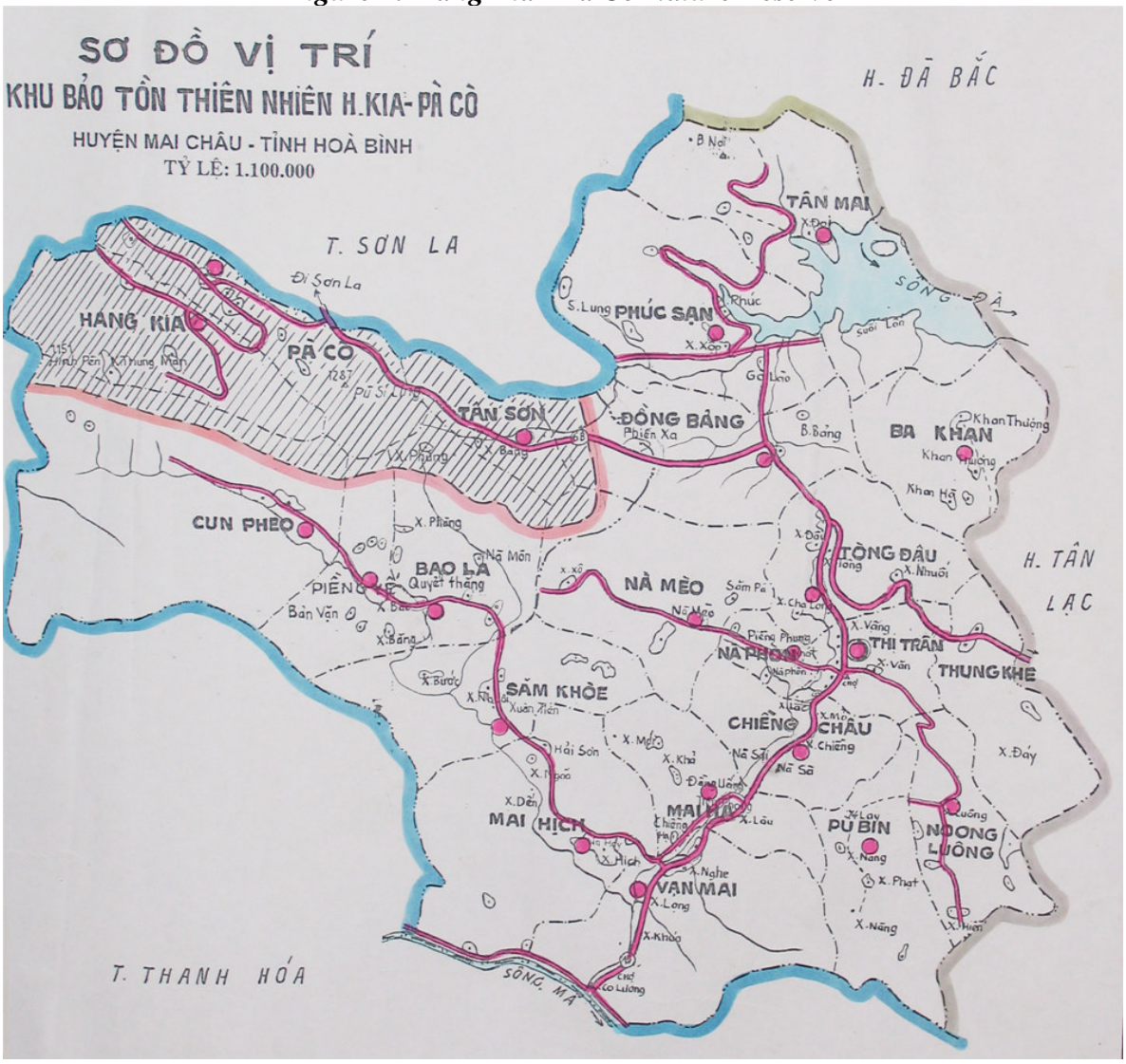
The Government assigned Ministry of Forestry (now Ministry of Agriculture and Rural Development - MARD) and People's Committees of relevant provinces to develop establishment and management proposal for Hang Kia - Pa Co Nature Reserve. In September 1993, completed the proposal for Hang Kia - Pa Co Nature Reserve was completed by the Forest Protection Department (FPD) of Hoa Binh province in coordination with Forest Inventory and Planning Institute (FIPI), and then appraised by the Ministry of Forestry. The Management Board of Hang Kia - Pa Co Nature Reserve was

established on the 23rd of May 2000 under Decision No.453/QD-UB by People's Committee of Hoa Binh province.

According to the planning map of the Management Board of Hang Kia - Pa Co Nature Reserve, Tan Son, Bao La, and Pa Co communes are located inside the core zone of the nature reserve. Pa Co commune and Bao La commune have part of their areas located in the "ecological restoration sub-zone". The remaining area of Bao La commune is in the buffer zone of the nature reserve.

Among three surveyed sites, Tan Son commune has better road access than Bao La commune and Pa Co commune. Tan Son is a newly established commune (1999), separated from the area of Bao La commune. The National Road 6 going through Tan Son commune is an advantage for local people in terms of transportation and trading activities. Pa Co commune is connected with the National Road 6 by a 3-kilomiter asphalted road. On the contrary, Bao La commune is far away from the district town and about 30 kilomiters from the National Road 6. The road connected Bao La with the National Road 6 is a aggregate road, which is dusty in the dry season and slippery in the rainy season. Differences in physical conditions and road access have significant influence on livelihoods of local communities in three communes.

Figure 2: Hang Kia - Pa Co Nature Reserve



Source: Management Board of Hang Kia – Pa Co Nature Reserve

1. Physical characteristics

Geographic co-ordinates of Hang Kia - Pa Co Nature Reserve are 20^0 41' to 20^0 46' N and 104^0 51' to 105^0 01' E. Its area covers Pa Co, Hang Kia, Bao La, Cun Pheo and Pieng Ve communes in Mai Chau district, Hoa Binh province. The nature reserve has an area of 7,091 hectares of limestone forest in the west of Hoa Binh province, contiguous to Thanh Hoa province and Son La province. Furthermore, there are 8,135 hectares of the buffer zone, which adds up to 15,226 hectares of the total area.

Table 1: Features of soil in Hang Kia – Pa Co Nature Reserve

No.	Type of soil	Area (hectares)	Thickness (cm)	Distribution area	Soil features
1	Feralit soil and mountain humus	25.4	> 100	Hang Kia, Pa Co	Rich nutrients, ratio of humus: 3-5%
2	Sloping soil	460.4 (core	> 100	Almost all	Flat terrain, rich

	converged to the foot of limestone mountains* in narrow valley	zone:300.4 hectares; buffer zone: 160 hectares)		commune	nutrients, ratio of humus: 1.5-2.5%
3	Sloping soil converged to the foot of clay rock mountains*	2,907 hectares (core zone: 1,628 hectares; buffer zone: 1,279 hectares)	< 100, thin	Almost all commune	Surface eroded, yellowish red, rock mixed with plaster 10-30%; ratio of humus 1-1.5%
4	Feralit grey soil on clay schist	5,578.3 hectares (core zone: 118,1 hectares; buffer zone: 5,460.2)	< 100, thin	Almost all commune	Loam soil ranging from average to heavy; difficult for farming; thin and clotted soil layer; mixed with rock 10-30%; ratio of humus 1-1.5%
5	Feralit white grey soil on sandstone	457.5 hectares in buffer zone	< 100, thin	Cun Pheo commune	Light loam soil and mixed with sand, easy for farming; vulnerable to erosion; mixed with rock 10-30%; ratio of humus 1-2%
Total	5 major types of soil	9,428.6 - Core zone: 2,048.5 - Buffer zone: 7,356.5			

* Of 7,091 hectares of the nature reserve, there are more than 2,000 hectares characterized as sloping soil converged to the foot of mountains (item 2 and 3). In fact, this area has been converted into residential land and agricultural land.

Source: Establishment and management proposal for Hang Kia - Pa Co Nature Reserve (1993).

A special feature of Hang Kia - Pa Co Nature Reserve is its location at the elevation of more than 1,500 m with a system of endlessly stretched limestone mountains. This is an area with typical sub-tropical climate characteristics.

2. Demographics of the buffer zone

2.1. Ethnicity

Tan Son commune is home to four ethnic groups, including Thai, Muong, Dao and Kinh. Dao people account for the largest proportion, followed by the Thai. The Muong and Kinh account for a small percentage. In Bao La commune, Thai people account for 80% of the population and the rest are Kinh people. In Pa Co, 100% of the population is Mong people. There are some Kinh households registered as temporary residence. In general, each commune has more than one ethnic group and they all live in harmony without any major conflict ever since.

2.2. Migration

In Tan Son commune, migrants from other places arrived very early in 1960s. Dao people came to Tan Son in 1990s. They migrated because of the construction of National Road 6 (14 km from the reservoir). There were only four households had to migrate due to the construction of reservoir.

In Bao La commune, Thai people from Tong Dau, Mai Ha, Van Mai, Mai Hich moved in before 1945. In the period of cooperative movement (1960s), the commune received a large number of Kinh migrants from former Nam Ha province. Furthermore, there was a flow of uncontrolled migration from Pa Co and Moc Chau in 1980s and 1990s. Particularly in Bao La, there were some households migrated to Moc Chau of Son La province. The number of migrant households has not been increased significantly since 2000 but migration happens every year (around 10 households each year).

Pa Co commune is mostly inhabited by Mong people for a long time. However, according to village patriarchs, they are native to the area. They moved in from other place but noone knows where is their original homeland. At the moment, we do not have accurate data to identify the origin of Mong people in Pa Co[6].

In general, the population in three communes are non-native residents. Different immigration and migration processes have led to the division of social strata in living standards among different ethnic groups.

2.3. Population growth

The most serious concern in the area is the pressure on the nature reserve from population growth. Within more than 10 years (1993-2005) total households in three surveyed communes have increased at a rocketing rate from 780 households in 1993 to 1179 households in 2005, which means an increase of 396 households and 1,012 inhabitants (equivalent to 25%) adding to labour surplus of over 1,000 people. The current rate continues to increase, putting significant pressure on natural resources of the nature reserve. The table below shows population growth rate in surveyed communes between 1993 - 2006.

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[6] Mong ethnic group is not native to Vietnam. They originated from China and moved to Vietnam over 300 years ago. To determine exact origin of Mong people in Pa Co, one can participate in worship and festival events. In their offerings to ancestors and ghosts, there would be information about addresses of the family clan chief's relatives and native place.

Table 2: Population growth in communes within Hang Kia – Pa Co Nature Reserve

Commune	Total households		Total inhabitants		Total labour	
	1993	2006	1993	2006	1993	2006
Pa Co	168	418	1,572	2,138	449	1,467
Po Tau / Tan Son	157	228	894	1030	376	520
Bao La	458	533	1,980	2,290	638	1,365
Total	783	1,179	4,446	5,458	1,463	3,352

3. Socio-economic conditions

Compared with the entire Mai Chau district, the economies of three surveyed communes are below average level. Tan Son and Bao La communes do not receive support from the Program 135[7].

Table 3: Overview of socio-economic conditions in three communes

	Tan Son	Bao La	Pa Co
Poverty rate [8] (%)	35.9	43.9	52.2
Average income/capita/year (thousand VND)	3,200	3,000	2,800
Ethnic groups	Dao, Thai, Muong, Kinh	Thai, Kinh	Mong, Kinh

Source: (1) Summary of socio-economic reports in 2005 and 2006 in three communes; (2) Chairmen of the commune People's Committees; (3) Commune officers of Labour, Invalids and Social Affairs.

3.1. Status of household economics

3.1.1. Strata division in living standard

In all three communes, there is a distinct division of social strata in living standards among different ethnic groups, between earlier immigrant groups and late-comer groups. In Tan Son commune, Thai and Dao people are better off than Muong people. Thai people in Bao La commune have better living standards than Thai people in Tan Son commune. Those Thai households settled before 1960s have better economic situations than Kinh and Mong people settled after 1960s or newly separated households.

One of the reasons leading to social strata division in living standard is the difference in access to land resource. Ownership and allocation of agricultural and forestry land are uneven among different ethnic groups living in the same area due to the arrival of immigrant population at different times. Typically in Tan Son commune, those households of early settled Muong and Thai people (before 1960s) own wet rice land. Those immigrant households settled after 1990s (Dao people) do not have wet rice land

[7] Government's poverty reduction programme in Vietnam

[8] The former national poverty standard had three levels: VND80,000/capita/month for mountainous areas, VND100,000/capital/month for rural areas, and VND150,000/capita/month for urban areas. On 29 June 2005, the Government approved the new poverty standard raised to VND200,000 /capita/month for the mountainous and rural areas and VND260,000 /capita/month for urban areas. Data in Table 3 are using the new poverty standard.

so they have to farm mainly in the area of special-use forests, which are prohibited from any encroachment. Kinh people moving to the commune in 2000s do not have farming land and have to live on incomes from services. Similarly, the group of newly separated households in Pa Co commune (Mong people) do not have rice and corn farming land. In order to maintain their subsistence, they have to encroach on the special-use forests for farming.

3.1.2. Low and uneven household economic management capacity

In general, household economic management capacity in the area is still inappropriate, represented by very high poverty rate as 28% in Tan Son commune and 50% in Pa Co commune. The number of households having savings is less than 50%. In Tan Son, there are only 27% of households having savings and the rate of hunger still remains at 30%. The table below collects data on monthly spending of households in three villages of three surveyed communes indicating the low living standard and inappropriate household economic management. In Bao La commune, although 46% of households have savings, poverty rate still remains high, proving that household economic management capacity is not even.

Table 4: Household spending patterns (Unit: Million VND)

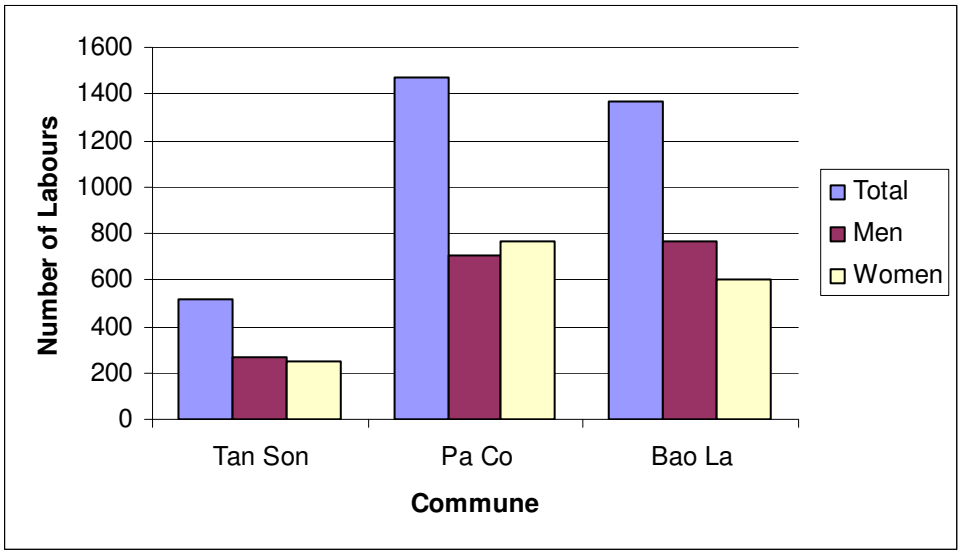
No	Items	Tan Son (Po Liem Village)	Pa Co (Xa Linh I Village)	Bao La (Pung Village)
1	Average monthly income	0,561	0,987	0,884
2	Monthly expenditure for food	0.432	0.393	0.546
3	Monthly medical expense	0.026	0.023	0.012
4	Monthly schooling expense	0.034	0.030	0.040
5	Monthly spending for funerals and weddings	0.027	0.050	0.040
6	Households having savings (%)	27	43	46
7	Hunger rate (%)	27	20	32
8	Poverty rate (%)	36	53	49

3.2. Production capacity and labour division

3.2.1. Production capacity

In comparison among three surveyed communes, Pa Co commune and Bao La commune have the most abundant source of labours.

Figure 3: Labour structure of three communes



All three communes have staff trained for agricultural extension, including veterinary work and plant protection. However, at the moment, these staff have limited knowledge and skills due to short period of training, low education level, thus putting some limitations on the agricultural extension, particularly in Tan Son and Pa Co.

Road and electricity have reached to all villages. However, inter-village and inter-commune roads in Bao La are more difficult to access than in Tan Son and Pa Co.

In terms of potentials of land resource in three communes, Bao La has the best production capacity, followed by Pa Co. Tan Son has limited capacity. The table below presents household survey results in these communes on land potentials.

Table 5: Average area of production land per household

No	Type of land	Tan Son (Po Liem Village)	Pa Co (Xa Linh I Village)	Bao La (Pung Village)
1	One-season field (m2)	443	677	206
2	Two-season field (m2)	18	0	1,332
3	Subsidy crop land	1,855	8,692	2,729
4	Plantation forests (hectares)	0.62	0.10	0.09
5	Natural forests	0.31	0.63	0.53
6	Gridline electricity	100%	100%	100%
7	Road access	Good	Good	Poor

3.2.2. Family structure

Nuclear family and extended family are two popular models in surveyed villages. Two-generation families account for 65%, three-generation families or more take up 27%. Average number of individuals in each family is 4.8 while average number of working persons is 2.6. There is even a family with 11 people living together (3-generation family). Most of Mong households in Xa Linh have more members than in Dao and Thai households in Po Liem and Pung villages. Extended family structure allows proper

coordination and labour division, optimal use of family resources such as land, ploughing power, and cattle.

Table 6: Family structure and labour

Criteria	Interview sample	Minimum	Maximum	Average
Number of members living together in a family	86	1	11	4.8
Female	86	0	7	2.5
Main labours	84	1	6	2.6
Main female labours	81	1	4	1.3

Source: Household questionnaires

However, extended family model has brought about great pressure. According to statistics of Tan Son, Bao La, and Pa Co communes, the average population growth rate in all villages is around 1.5 – 3% per year. Analysis from the survey in three villages shows that on average, of 4.8 people living toghether in a family, there are only of 2.6 main labours. Under the demographic and labour view, one agricultural worker has to support two dependents on average. Such great population pressure seems to indicate difficulties in ensuring food security due to large population size and limited land resource in the local contexts.

3.2.3. Labour division in the family

Inequality in work division among family members remains. Women take care most of in-house work while men are mainly in charge of community-related activities. If housework is divided into three categories as production, housewifery, and community relations, the inequality in work division between men and women is quite clear. In the first work category, men and women seem to share the burden. In the second category of housewifery, women take main responsibilities. Such work as cooking and washing, there's no role of husband. As for each individual work, the wife has to do more than the husband. Mong, Thai, and Dao men consider cooking and caring children as the specialized work of women (See table 7).

Table 7: Labour division in the family (Unit: %)

Work	Husband	Wife	Both	Son	Daughter	N/A
I. Production						
1. Forestry production	9.5	6.0	35.7	7.8	4.1	36.9
2. Rice farming	3.5	12.9	**50.6**	8.2	4.8	20.0
3. Subsidy crop farming and gardening	4.8	19.0	**58.3**	5.9	6.0	6.0
4. Raising poultry	2.4	33.7	42.2	5.4	6.6	9.7
5. Hired labour	16.3	9.3	23.3	4.7	4.7	**41.9**
II. Housework						
6. Cooking		**65.06**	24.096	4.8	4.8	1.2
7. Collecting firewood	11.8	34.0	34.1	8.1	7.3	4.7

8. Getting water	1.2	34.2	20.9	7.0	6.3	30.2
9. Washing		**67.4**	16.3	5.3	11.0	
10. Taking care of parents and children	2.3	**39.5**	26.7	3.5	3.5	24.4
11. Giving instruction for children in their study	14.0	14.0	30.2	4.0	2.8	**34.9**
III. Community relations						
12. Village meetings	**55.8**	**8.1**	18.6	2.8	1.7	12.8
13. Relatives meetings	**60.0**	**8.2**	18.8	2.4	1.2	9.4
14. Farmers meetings	**55.8**	**8.1**	18.6	1.2	1.2	15.1
15. Women's meetings		90.0			1.2	9.3

Source: Household interviews. December 2006.

Women have less participation in community activities than men. Similarly, community-related work is mainly managed by the husband. A small number of women interviewed affirmed that they would go to village meetings and relatives meetings on behalf of the husband in his absence. Many Thai women in Tan Son commune say they have not been to the market for 10 years and never been away from home beyond 10 km for 20 years although Tan Son commune is only 10 km away from the nearest market by asphalted road! (*Source: Women group discussion in Tan Son and Bao La*).

For non-farming work such as brocade embroidering, Mong men in Pa Co do not know how to do. None of those interviewed say they once help the wife with the embroidering work. They all consider this as a specialized work of women. This is completely different from Sa Pa where many men know how to embroider. Many men and boys in Sa Pa learn how to embroider while tending buffaloes. They do the embroidering work to increase family income. Similarly, in Tan Son, some men do the embroidering work during free time. Of course, men do this work only if they think it can help get more cash. Nevertheless, this is a new progress during the transitional process of gender role.

3.3. Employment structure

Major jobs of local people in three communes are farming, animal husbandry, and forest exploitation. Some new jobs emerging in recent years (since 2000) are garment, embroidering, trading and service, labour export to Malaysia, and hire labour inside and outside the district. A small number of households in Tan Son, Bao La, and particularly in Pa Co participated in illegal activities as drug trafficking and transport. However, we do not have accurate data of this issiue due its sensitive nature. In Tan Son commune, there are more than 10 households doing service work, including restaurants, car wash, and karaoke shops. These households live alongside the National Road 6 and are better off. They help create jobs for some labours in the neighbourhood. Former jobs no longer available or contributing less to the total income of local people in three communes include forest

exploitation (sawing timber, collecting non-timber forest products such as orchids, honey, firewood, rattan,…) due to the tight enforcement of forest protection law.

Agriculture is the largest source of income in Pa Co commune, followed by Bao La. In Tan Son, it accounts for 50% of total income compared to the other two communes. This is because of lower level of intensive farming than other two communes, in addition to low quality of soil in Tan Son.

Value of income from secondary jobs is similar in all communes. However, income from trading and services in Tan Son plays an important role. In Bao La commune, income from salary and social insurance makes up a higher ratio than in Tan Son and Pa Co communes.

Figure 4: Comparison of income structure in Tan Son, Bao La, and Pa Co

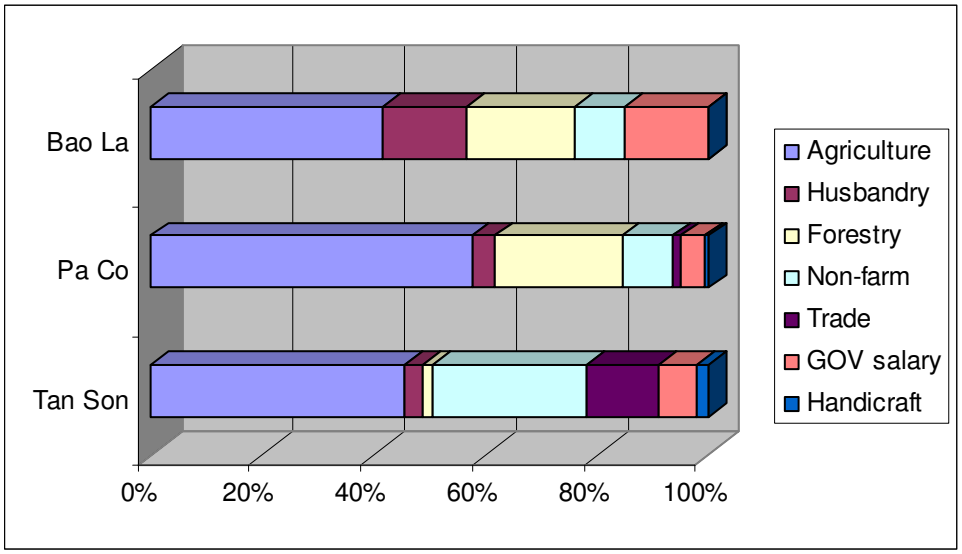


Table 8: Employment structure in surveyed communes (% of households involved)

No.	Type of jobs	Tan Son commune (Po Liem)	Pa Co commune (Xa Linh I)	Bao La commune (Pung)
1	Farming	91	93	96
2	Animal husbandry	14	40	79
3	Forestry	14	3	11
4	Handicraft	68	33	18
5	Worker and public servant	9	10	29
6	Services	14	7	0
7	Enterprise – Home industry	5	3	0

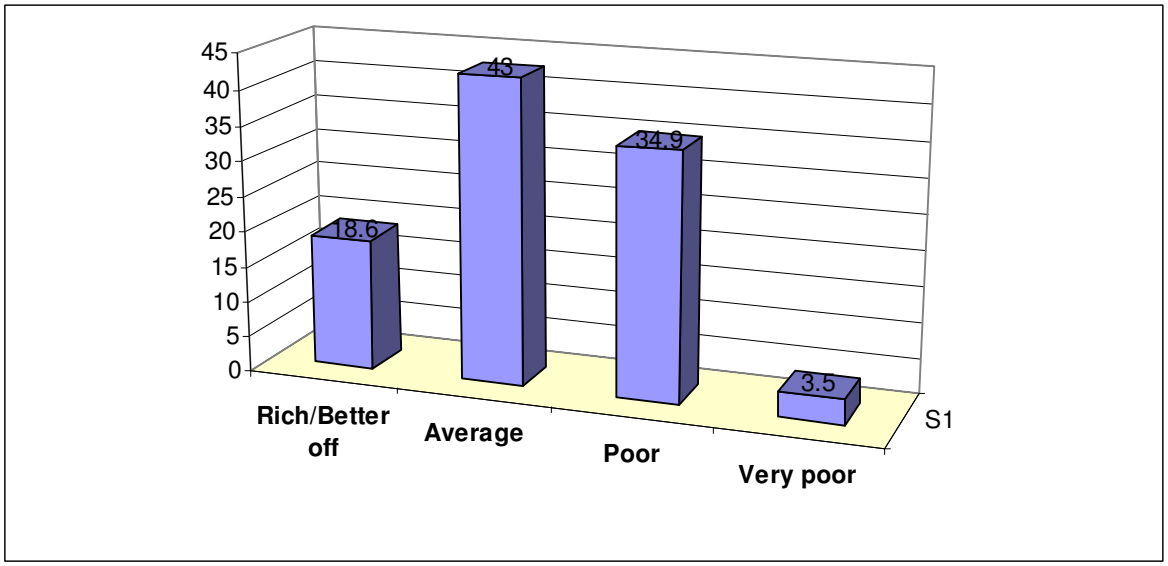
In general, in three communes surveyed, about 90% of households consider farming as their major employment (96% in Bao La). All communes and villages surveyed have animal husbandry (most in Bao La with 79% and least in Tan Son with 14%). Tan Son has highest number of households with secondary jobs (68%) while Pa Co has 33% and Bao La has only 18%. Tan Son has the largest number of households working in trade and services. In

Bao La commune, up to 29% of households have income from salary and social insurance, which are regarded as stable sources of income.

Employment structure in three communes can be summarized as follows:
Generally, Bao La is purely an agricultural commune
Tan Son combines agriculture, industry and commerce
Pa Co is of agriculture and industry

3.4. Food security

Figure 5: Household living standard



Result from the socio-economic survey in three villages: Po Liem (Tan Son), Pung (Bao La), and Xa Linh 1 (Pa Co) shows that one out of three households is in hunger (33%) according to the opinion of interviewed households. Among hunger households, 51.9% are hungry under three months, 41.4% are hungry from thee to six months, and 6.9% are hungry for above six months per year. Those households in hunger for more than six months per year are in Po Liem and Pung villages.

In contribution to settling hunger and increasing income, 24% of households have members going to work in other places outside their communes. In Tan Son, 50% of households have members going to work in other places, in Pa Co only 6.5%. Hired jobs include porter, carpenter, stone worker, sale assistant or corn collector for Mong people in Pa Co or Moc Chau of Son La province.

Among 86 households interviewed, only 10% say they themselves are better off than their neighbours, 43% say average, and 34% admit that they are poor or very poor (see the figure above).

3.5. Service provision capacity

3.5.1. Credit services

According household statistics, 75% of households have transactions with the banks. Currently, in three communes of Tan Son, Bao La, Pa Co, there are three credit channels for local people: 1) Bank (Agribank and Social Policy Bank). 2) Small credit provided by

Women's Union (in Bao La and Pa Co). 3) Funds from Program 120 for job creation in Tan Son. Current balance of official loan channels in three communes are as follows:

Table 9: Balance of loan programmes (million VND)

Credit	Tan Son	Bao La	Pa Co
Social policy bank	1,234	1,334	782
Agribank	N/A	4,000	8,905
Program 120	55	-	-
Credit provided by Women's Union	-	-	35

Source: Interview minutes with commune officials

Despite efforts made, we do not know exact balance of loan programmes in Tan Son which is known only by one staff of Agribank in the commune. At the time of the survey, this staff in charge was not present in Tan Son.

According to information from the official of Agribank, Bao La commune has more people borrowing from the bank than Tan Son and Pa Co. In five communes Mai Hich, Sam Khoe, Bao La, Pieng Ve, and Cun Pheo, current debt to Agribank is 14 billion VND. Outstanding debt in five communes is 150 million VND. In Bao La commune, there is 0.79% of outstanding debt. The rate of bad debt in Tan Son, Bao La, and Pa Co communes is below 1.2%. The largest loan in five communes is 50 million VND and smallest is 4 million VND. Avarage load is 10 million VND.

Such funds as Program 120 and small credit of Women's Union in Pa Co are very limited. Program 120 targets families receiving special welfare policy or having children studying at universities, colleges, or vocational training schools. The interest charged by Program 120 is 0.65% per month. The programme limits the loan for students. For a three-year course (college level), one can have a loan of maximum nine million VND. For two-year course, students can have 6 million VND loan. One-year course students can borrow one million VND. In fact, there are a lot of requests for loans from Program 120. However, due to funding limit, Women's Union has to review and approve loan requests based on priority.

In Pa Co, the Provincial Women's Union has facilitated a fund of 35 million dongs for women. The fund is managed by commune Women's Union and only available for their members. The maximum loan is one million VND. The fund is for supporting women to invest more in animal husbandry and farming. In addition, this fund also encourages women to participate in activities of the Women's Union and empower them in family and society.

In addition to loans in cash, 14% of households attain in-kind loans such as rice, corn seeds, fertilizers from relatives or sale agents.

Most of households have bank loans. Access to banks is now not a major problem for local households. According to household survey result, 75% of respondents are having bank loans. Whenever they need, they can borrow from the banks. However, some people complaint that they have difficulty in mortgage procedures, thus they can not borrow at the desired amount. At the moment, sources of loans for local communities mostly come from

Social Policy Bank (65%), Agribank (38%) and relatives (7%). The minimum loan from Agribank can be 500,000 VND and maximum can be 20 million VND. Those households in need of large loans often go to Agribank, and those in need of borrowing from three to five million VND often go to Social Policy Bank.

A small number of households having their members going to work abroad get direct loan from employment brokering companies if they do not have enough properties for mortage as required by Agribank. The survey team met such two cases during the site visit. With a loan of 25 million VND per household, this amount will be deducted over time from the salary of the worker.

More than 70% of households use loans for production but not a single household uses for business or agricultural product processing. In our survey samples, the main objective of household loans is to buy animal breeds and plant seeds (71%). 29% use loans for non-production purpose such as building houses, buying motorbikes, and paying expenses for their daughters' or sons' marriage. 10% buy food. Some households borrow to pay tuition fees for their children (2.3%). The need for loans for medical treatment is only 1.2%. Loans to pay other debt account for 2.3%. Non-production purpose loans are normally from three to four million VND on average borrowed from the Social Policy Bank. Particularly, there is no household borrowing loan to buy fertilizers or pesticides.

Consultancy capacity of credit institutions on market access for farmers is not strong. Moreover, farmers in three communes have small-scale production and do not yet have business capacity.

In reality, one loan is often used for different purposes other than claimed and that is a popular phenomenon.

Box 1. A poor household's loan in Po Liem village, Tan Son commune

Family of Ms. DTS in Po Liem village has been living in poverty for the last 10 years due to health problems. The couple does not have children. Their major income comes from hire labour and collection of firewood. Their average income is two million VND per year per two people.

In 2004, her family borrowed four million VND from the Social Policy Bank for a period of three years. They bought a buffalo, but the buffalo died after two years. In the third year, when the debt was due, her family had to borrow her younger brother three million VND and borrowed 10 million VND more from Agribank to pay both principal and interest for the Social Policy Bank. In 2006, she bought a couple of buffaloes with seven million VND. The remaining amount (two million VND) was spent on her medicine, corn seeds and some other family utensils.

Source: DTS, Dao ethnic people in Po Liem village

Taking loans and then being bogged down in debt affect household investment. Households complain that the loan period of Agribank is too short (one year), thus when their investment has not got enough time to yield profit, they have to think about paying back loans. Households often try to pay debt on schedule by all means to avoid losing other borrowing opportunities. Therefore, the 'temporary loans', loans from relatives or from other banks to pay back their due debts are quite popular. The case of Ms. DTS family in

Tan Son commune is an example. Temporary loans often do not have interest or low interest (1-2% per month). When bank loans have been paid off, they will continue to borrow another amount, which is even larger. In return, this loan will be used to pay off the 'temporary loan' from outside. This closed cycle happens in one year (or six months, depending on bank loan period), repeats for many times and continues in many households. 'Borrowing from this one to pay for another one', 'cycling debt', 'debt on debt', 'shifting debt'… are phrases to reflect the reality of debts of farmers. When asked about the number of times of taking loans, 50% of households surveyed responded that they have borrowed for too many times to remember. This reflects the fact that it is still challenging for farmers to make efficient use of loans.

3.5.2. Service provision for agricultural production

Service provision for agricultural production is often slow and of poor quality. The cooperative links farmers and plant seed companies. Before any crop season, those households in need of corn and rice seeds and fertilizers will register with the village head. A list of quantity and types of materials requested by farmers will be sent to the cooperative or People's Committee by the village head. Based on the quantity registered, materials will be delivered to farmers. However, these materials often arrive too late for the crop season. When asked about difficulties in agricultural and forestry production, 25% say it is the late provision of seeds. In Bao La, the seed provider comes after then corn crop season has started for two weeks. People in Pa Co think that it is not only because of late provision of plant seeds but also because of their poor quality, typically the tea variety provided by the Program 135.

Living in mountainous areas, farmers in three communes do not have to spend too much investment for seeds as they are entitled to charge and price subsidizing programme. However, the time delay in materials provision has made farmers to purchase on credit from private sale agents. They do not have to pay interest for the seeds or fertilizers purchase on credit from local sale agents. However, they normally have to sell harvested products to these sale agents at a lower price.

Farmers do not have many options for buying good animal breeds. For input materials for raising cattle and poultry, they also do not have many choices. In Bao La commune, farmers often buy pig breeds from traders from Thai Binh province or Nho Quan district of Ninh Binh province. In the commune, there is no good pig breeds. Mobile vendors are often active in the villages or at the market. Bao La's market is held once a week, thus sometimes farmers in need of buying animal breeds have to book with traders in advance. Remarkably, quality of animal breeds provided by private traders from the lowland is not guaranteed by quarantine measures. Some traders do not dare to display their products (breeding pigs, chickens and ducks) at the market openly because they fear that the commune People's Committee or veterinary agency will confiscate their unquarantined breeding animals.

The network of local agricultural extension has not got sufficient consulting capacity as well as market orientation for farmers. Farmers are not really satisfied with the local veterinary service. Veterinary staff or agricultural extension staff are not mentioned in the interviews with local people as all three communes do not have networks of agricultural extension staff and veterinary staff at village level. Agricultural extension staff at commune level are newly appointed or can not take care of the all villages due to difficult road access. Therefore, agricultural extension office can only provide limited information on farming and market data for farmers.

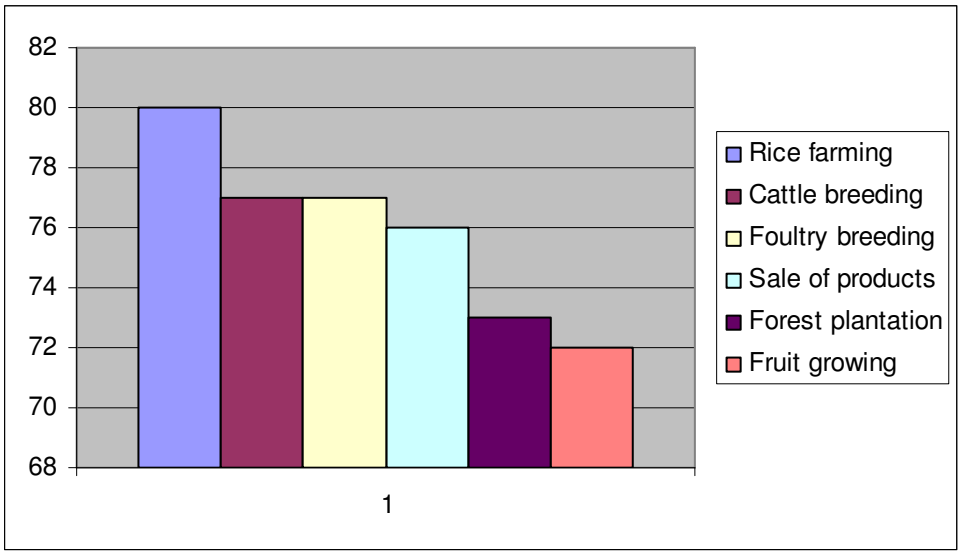
During the survey, local people proposed that there should be models for pig breeding or animal breed production at commune level to facilitate the development of animal husbandry. This proposal should be taken into account.

3.6. Access to information and services

3.6.1. Types of accessible information

Figure 6 below shows the level of information received in each agricultural production aspects of surveyed households.

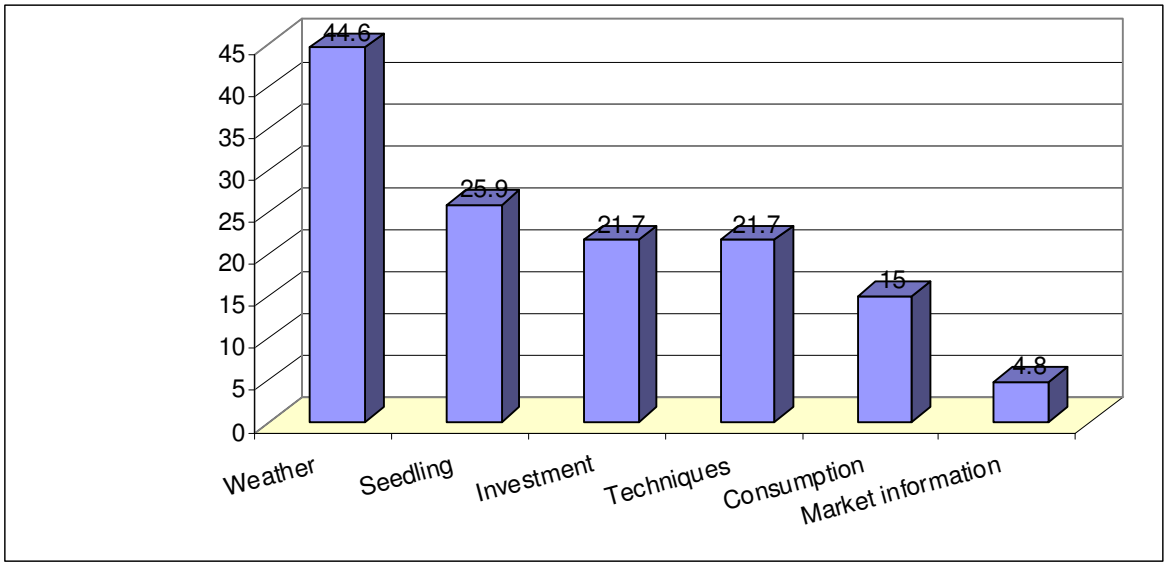
Figure 6: Types of agro-forestry production information received



Farmers mainly receive information on crops and farming techniques. They mostly receive information on crops and rice-growing techniques (80%). Information on techniques of growing fruit trees and forest trees is less (under 74%). Farmers receive the same amount of information about cattle and poultry raising techniques. 76% of respondents say they sometimes update market-related information such as farming products' price and where to sell products.

Farmers have not been aware of the needs for understanding market demands and seeking information for selling agricultural products. According to the respondents, grasping market demands is not a problem for them (95.2% confirm that they do not meet any difficulty) and 85% of respondents say selling agricultural products is easy. Only 4.8% recognize problems in grasping the market's demands and 15% think that they are facing difficulties in finding the outlets for product consumption (See figure below).

Figure 7: Difficulties in agro- forestry production

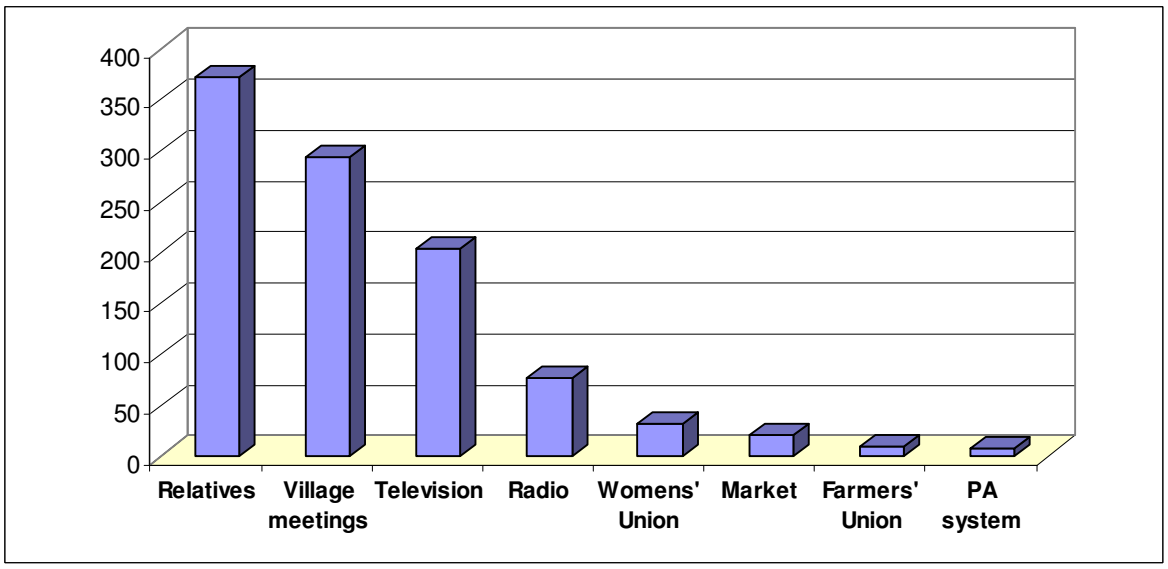


Does this feedback indicate that the agricultural output in the area is still small so that products can be consumed locally? However, for 'choosy' agricultural products like fruits, the outlet for consumption is a challenge for plum growers in Pa Co and longan growers in Bao La. Over the past 10 years, there has been no solution for fruit market. Consequently, plum growers are discouraged and stop investing in fruit trees.

3.6.2. Sources of information

There are two major sources of information for local people, including village meetings and words of mouth (see figure 8). Village meetings provide information related to the crop schedules and farming techniques. Information about product market is passed mainly by neighbours. This is a popular and common way in rural areas.

Figure 8: Source of information related to agro-forestry production



For Mong people in Pa Co, exchange of information through neighbours is more common. When we asked the women group: 'Who will you ask if you want to know the price of corn, cassava, plum, or chicken and pig?". The common answers are:

"Ask neighbours or relatives in the village …"
"Ask those went to the market to sell these products last time" or
"I don't ask. Just bring products to the market for sale and then I know the price"

Source: Women group in Xa Linh 1 and 2 villages, Pa Co commune (19 December 2006)

Capacity of local mass organisations in provision of technical information and market information for farmers is very limited. Data on household survey shows that rural mass organisations such as Women's Union and Farmers' Union rarely provide information related to farming production. Even for information related to growing fruit trees or raising cattle and poultry, few people expect any exchange of information with the Farmers' Union (under 2.5%). Participation in activities of Women's Union helps its members update more information than in Farmers' Union (under 7%). This feedback is on the contrary with the statement of commune officials that Women's Union and Farmers' Union play important roles at village level. In three surveyed communes, both Pa Co and Tan Son have markets but information exchange on agricultural products consumption or farming techniques through 'going to the market' is very low (under 7.1%).

Village chief is a major source of information for farmers. According to survey result, the village chief has a significant role in providing agricultural extension information for local farmers. Information from the village chief is considered most reliable.

"If I don't know, I will come to ask the village chief because he often goes to meetings in the commune".

Source: A 37-year-old Thai woman, Pung village, Bao La.

"For information about land use, I ask the village chief. If I want to borrow loans, I will ask the Women's Union or Farmers' Union as they manage funds from the Social Policy Bank..."

Source: A 45-year-old Dao woman, Po Liem village, Tan Son

Village meetings are held at the village chief's house. I also live next to the village chief's house. So I ask him about growing corn, collecting corn strains … He can even inject for chickens and pigs as there is no veterinary staff in the village".

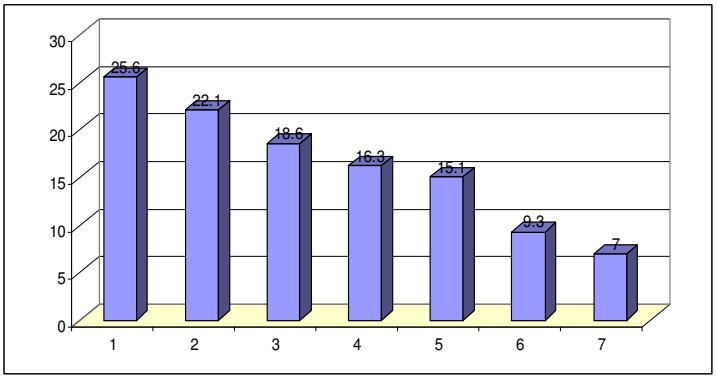
Source: A 35-year-old Mong man, Pa Co commune.

Therefore, in addition to information from village meetings or the village chief, there should be more attention on promoting oral communication among farmers about farming techniques and market information.

3.6.3. Difficulties in access to information

Although information on science and technology in agricultural production or information on market prices and outlet for consumption has reached local people, there are a lot of difficulties for people to apply them efficiently. 47% of respondents admitted that they have problems with getting access to information.

Figure 9: Difficulties in getting access to technical and scientific knowledge



Legends:
1. I do not understand much
2. I listen to, understand but I do not remember all.
3. I listen to, understand, but don't know how to apply
4. Loudspeakers do not reach the place
5. There are not much information I need
6. I don't know Vietnamese language
7. There are few meetings for exchange

The biggest obstacle for local people in information access is 'I do not understand much' (25.6%). If the people understand, they would be able to apply (rate of people not able to apply what have learnt is 15.2%). Therefore, reasons come from both sides: information providers and receivers. How to help people remember what they have heard and seen to apply into practice is very important (18.6% of respondents answer they "listen to, understand, but don't know how to apply").

In the area with diversity of ethnic minorities, ethnic languages are mostly used in daily life, in addition to Vietnamese. However, language barrier seems not an issue (only 7.3% report difficulties in receiving information because they do not understand Vietnamese). Some old Mong women have difficulty in communicating in Vietnamese.

4. Culture and community organisation

4.1. Forms of community organisation

4.1.1. Commune authority

The leadership boards in three communes are united and prestigious before people. For the past years, the leadership boads have been coordinating well with local social organisations to overcome difficulties in implementing programmes and projects for socio-economic development. According to assessment of the Management Board of Hang Kia – Pa Co Nature Reserve, the leadership board of Bao La commune is more responsive and enthusiastic at work than that of Pa Co and Tan Son. They have capable officials in the board, such as the chairman of the commune People's Committee and the secretary of the Party Committee.

Each commune has 19 full-time staff. Tan Son People's Committee has one staff studying at university, 80% of staff with upper secondary education (in-service education), and the remaining staff with primary and junior secondary education. In Bao La commune, 26% of commune staff have finished junior secondary education; and 73% finished upper secondary education. In Pa Co, 63% of staff finished junior secondary education and 36% finished in-service upper secondary education. Key leaders in three communes have at least five years of working experience, even one with 15 years in the position of chairman or Party Secretary like Mr. Sung A Sa – Chairman of Pa Co commune.

However, compared with lowland communes of Mai Chau district, officials in these three communes have a lot of limitations in terms of management capacity and expertise. In the

group discussion with the survey team, commune leaders admit their limitations in planning capacity.

Three communes still lack of technical staff such as extension and veterinary workers. At the time of our survey, Tan Son has not got any veterinary staff while the extension worker is away on study. In Pa Co commune, the extension staff just started the work only 7 months ago. Activities of extension and veterinary workers are not clear and not yet widely known by local people. Many people living in the village for over 20 years even do not know who is the extension staff and his/her role (Po Liem, Xa Linh).

4.1.2. Commune-level mass organisations

Based on such criteria as management skills, community mobilization ability, problem solving, background and working experience… the group of commune officials rank working competence of some authorities and mass organisations as follows:

Table 10: Competence of commune organisations (1 = best)

	Tan Son	**Bao La**	**Pa Co**
People's Council	**2**	**1**	4
Farmers Association	4	**2**	**1**
Women's Union	**1**	3	**2**
Youth Union	3	4	3
Fatherland Front	5	5	5
Veterans' Association	3	6	6

Source: Commune officials group discussion

The table above shows a picture of uneven competence of commune organisations in three communes. Women's Unions in Tan Son and Pa Co are ranked high in mobilization, information, education, and communication work. They also have good capacity in problem solving, management skills, and large membership. However, in Bao La, Women's Union ranks third after Farmers' Union. Particulary in Pa Co, People's Council is ranked 4th. Nevertheless, the ranking is relatively qualitative and reflects part of status of capacity of commune organisations.

4.1.3. Village management board

The network of community management most close to the people, or in the words of district officials as "extended hands of the commune authority to communities", consists of village heads. They are representatives of local people, as well as the "ears" and "eyes" of the commune authorities. Any community activity has to be implemented through this network. This is a special feature of mountainous villages in the North. In higher and more remote villages, the village heads have more power and important roles.

Almost all villages head in three communes finish continuous junior secondary education or higher. Bao La and Pa Co have half of their village heads working for over five years. Village heads in three surveyed communes seem very active and enthusiastic. In Bao La commune, four out of eight village heads receive good evaluation for good management, completion of tax and contribution collection on schedule, prompt problem solving, and being respected by their communities (in Pung, Long Sang, Quyet Thang, and Pao villages).

Considering surveyed villages only, head of Po Liem village in Tan Son has much less experience and poorer management capacity than those in Xa Linh 1 and Pung villages. He even can not remember the number of households and inhabitants in his village, which is very basic information of the village. The commune authorities say village head is a position that no one wants to take. To have a village head, *local people had to vote for many times and the commune authority had to convince that person* (chairman of Tan Son commune People's Committee). This is because this position has many responsibilities but very low compensation.

Poor information system in mountainous communes is one of major obstacles to community management at commune and village levels.

4.1.4. Family clan organisations

In traditional society, family clan was recognized as an important institution in decisions related to family and community. The Mong community in Pa Co, Thai and Dao communities in TanSon are immigrants, thus family clans are a very important part to them. Unity in the family clan helps individuals and families quickly adapt to the new homeland. The immigration situation promoted the important role of the clan chief. However, in the current market economy context, the role of family clan has undergone gradual changes, reducing its intervention in major family decisions or clan members. Due to time constraint, we did not conduct a survey in all villages in three communes and we only make comments on those surveyed villages.

Dao people in Po Liem has typical clans with family names such as Dang, Ly, Trieu, and Ban. Ly clan has largest members, followed by Trieu, Ban and Dang.

Thai people in Pung village are divided into 12 sub-clans, including family names Ha Van (three branches), Lo, Vi, Ngan (three branches), Ha Cong, Kha, Bui, and Lo. Bui family originated from Muong people living in the same area of Thai people and then assimilated to Thai group. Pung village has a majority of Ha clan, followed by Ngan.

Xa Linh village (Pa Co) is characterized by six clans of Mong: Sung, Mua A, Trang, Phang, Vang A and Hang. Mong people have tighter relationship among clan members than Thai people. History and origin of clans are often mentioned in special events such as offerings to the ancestors.

The Thai in Pung village have close brotherhood relationship. They often help each other in needy cases, for example, providing loans or rice in time of hunger.

The clan relationship of the Dao people seems to be the closest. Every three year, each Dao clan has a "family submit". The clan chief keeps the totem censer for offerings of the whole clan. Each year, Dao people have up to 6 offerings. The clan chief is the one to help families in the clan to have contact with the world-after-death, to plead for good crops, healthy children, and for forgiveness for bad things that they have been done. Perhaps that is why he has more power in daily life.

Nowadays, with the increasing trend of nuclear families, the family head has more independence and self-determination. The role of the clan chief has been reduced in decisions related to family business such as marriage and naming newborn child. At the

moment, in surveyed villages, there is no conflict among clans. They often live together in peace and unity.

4.1.5. Unofficial organisations and groups

There is almost no organisation, club or interest group related to farming production in surveyed communes. Only in Bao La, the pig raising club was established but then dissolved after one year due to lack of funding and poor organisation. Currently, there is not any small credit organisation at village level. The small credit scheme of the Women's Union in Pa Co is only organised at commune level and has no credit groups in participating villages.

4.2. Cultural transformation

Nowadays, under multi-facetted impacts, culture of ethnic groups has experienced a lot of changes. With practical experience of the survey site, we present a briefing on cultural transformation trend as a source of supplemental information for livelihood programmes that have been or will be implemented.

4.2.1. Cultural changes and causes in Mong, Thai, and Dao communities

There are clear changes in both tangible and intangible culture of ethnic communities in three communes. Cultural changes significantly affect lifestyle and production means of ethnic groups.

Change in rituals and customs: Some customs and practices of the Mong, Thai or Dao people now no longer exist and are replaced with other more modern and simple ones. For example, in dancing festival of Dao people, the sorcerer no longer has to wear special dress but normal costumes instead. We also observe that the costumes of Mong sorcerer on the New Year festival now look the same as other people. The offerings are more flexible. Straw wines can be replaced with normal home-made rice wine or bought from shops.

Changes of costumes: Thai people in Bao La commune and Dao people in Tan Son are vivid examples of the statement that 'costume is not always a good indicator for identifying ethnic identity'. In this context, we want to mention the changes in Thai and Dao communities in Tan Son and Bao La commune. Thai and Dao women now wear Kinh people's costumes bought from local markets. Some Mong women in Pa Co do not like embroidering and sewing, thus they buy Chinese dress made from artificial cloth instead of traditional cotton. In weddings, brides and grooms of Dao people in Tan Son now even wear Western-style dresses and suites.

Changes in architecture of houses: Traditional stilt houses of the Thai people are made of wood, roofed with thatch, alang grass and palm leaves. Now people begin to change to floored houses, cement-roofed stilt houses, or even multi-story houses. Wooden pillars are now replaced with concrete pillars. The house floor tends to be concretized. 60% of Mong people in Pa Co are now roofed with corrugated iron sheets instead of wood planks.

Changes in lifestyle and thinking: The traditional self-sufficient production approach in these areas is being gradually transferred more market-oriented with more active exchanges and trade. Mong, Thai or Dao people now prefer to use industrial products in their life. For examples, instead of traditional hand-made tools (trays and baskets made from rattan, bamboo, and wood), they use plastic products, which seem more convenient. The meal has been cut down on quantity and self-sufficiency. They use less self-grown vegetables but

buy more fruits (oranges and mandarin oranges) at the market. It is not rare to see electronic homewares (televisions, radios, video players) in local families. Young Mong people like playing billiard more than traditional games. In weddings, young Thai play and dance with foreign rock music. This means the quality of their life has changed and thus, their lifestyle has changed accordingly.

Changes in role of influential individuals in communities: In the past, the village patriarch had significant power and prestige over the village people. The clan chief also had an important role towards the clan and families, involving in major decisions such as marriage or naming newborn children. Nowadays, the power has been largely reduced. Instead, village heads become more prestigious as they represent their villages. With the trend of more nuclear families, the household heads take care of most family decisions. For example, they name their new born children by themselves instead of their clan chiefs.

4.2.2. Causes of cultural changes

There are three fundamental factors that influence the cultural changes of these ethnic groups:

(1) Impacts of agricultural and forestry policies, development programmes, and poverty reduction programmes.

(2) Convenient transportation links villages with cultural centres in districts and communes, accelerating the trade of goods, and pushing rapid changes in customs, practices and lifestyle of people. Daily trade and exchange of goods contribute to the change process from self-supply economy to market economy in these areas.

(3) The third factor is the strong process of cultural infiltration from other ethnic groups. Thai and Dao people live quite close to Kinh people. Hence, exchanges of languages, economies, and cultures take place every day, serving as an important agent to change the thinking, customs and practice of local people. And not only influenced by Kinh people's culture, here the rule of majority applies also.

5. Management and use of natural resources

5.1. Forest and land resouces

Through the assessment of land resources in three surveyed communes, each commune represents a typical type of soil in Hang Kia – Pa Co Nature Reserve. Pa Co commune is typical of soil deposited at the foot of mountains, which creates flat highland valleys with relatively large area. These valleys have thick soil layers that are suitable for intensive farming of fruit trees, industrial trees, and subsidy crops which require low temperature. Pa Co commune almost has no land for wet rice farming (only five hectares of one-season wet rice). Tan Son commune is situated on sloping terrain with small some valleys, thus soil is easily eroded and washed away. Soil layers are thin, infertile, and less productive. The farming land area is limited and only supports one-season rice crop. Although the rice farming area is larger than that of Pa Co, the one-season rice crop yields quite low productivity. However, this type of soil in Tan Son can be used for farming subsidy crops for commercial products. Bao La commune has larger land resource, particularly agricultural land. The area of two-season rice crops accounts for a high ratio with productivity from nine to 10 tons per hectare (not less than in the lowland areas). The irrigation system is good. Area of one-season rice land has been used in combination with subsidy crops, which contributes to higher productivity. Generally, in terms of

agricultural production, Bao La commune has higher level of intensive cultivation and better use of land resource than other two communes.

Most recent statistics show that forested area of strictly protected and ecological restoration sections of the nature reserve remains 3,000 hectares from 7,091 hectares in 1993. In terms of land area, there have been immense changes against initial planning data of the nature reserve. In particular, the area of farming land has increased five times due to the pressure of food production. This is an important indicator of encroachment of natural forests for farming purpose.

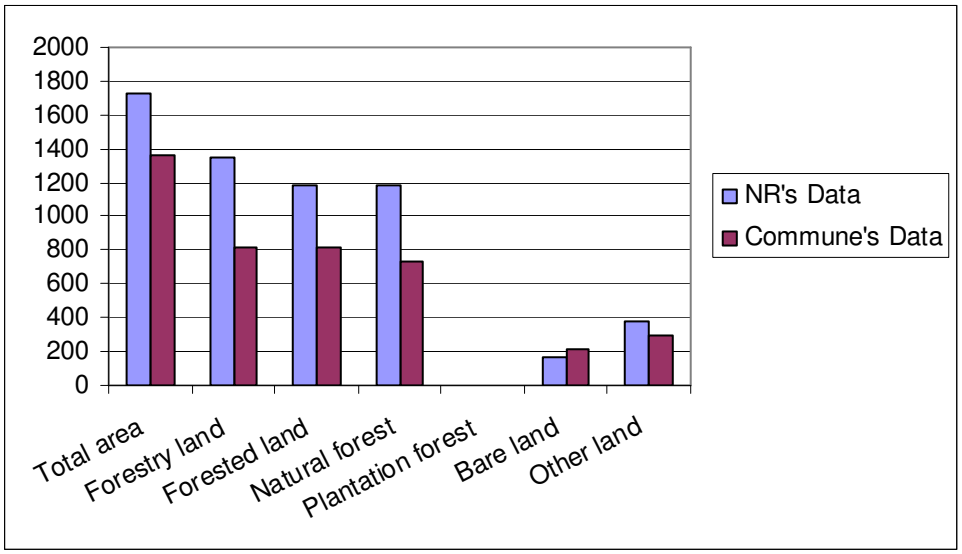
Table 11: Summary of area of forest types in Hang Kia – Pa Co Nature Reserve in 2005

Section	**Commune**	**Total natural area**	**Forest area**	**Of which**				**Other land**
				Forested area	**Natural forest**	**Plantation forest**	**Bare land**	
Ecological restoration and strict protection	Hang Kia	2,427	1,821.70	1,661.90	1.661,90	0	159.80	605.30
	Pa Co	1,733.30	1,350	1,186.80	1,183.70	3.10	163.20	383.30
	Tan Son (Bao La)*	895.60	750.80	606.80	603.60	3.20	144	144.80
	Total	**5,055 .90**	**3,922.50**	**3,454.50**	**3,448.20**	**6.30**	**467**	**1,133.40**
Buffer zone I	Dong Bang	249.30	240.30	195.50	185.50	10	44.80	9
	Na Meo	160.10	159.10	95.90	86.20	9.70	63.20	1
	Total	**409.40**	**399.40**	**291.40**	**271.70**	**19.70**	**108**	**10**
Buffer zone II	Bao La	1,146.40	1,139.90	808.20	808.20	0	331.70	6.50
	Pieng Ve	116.20	116.20	110.20	110.20	0	6	0
	Cun Pheo	366.60	366.60	337.30	337.30	0	28.80	0.50
	Sum	**1,629.20**	**1,622.70**	**1,255.70**	**1,255.70**	**0**	**366.50**	**7**
Total area	**Total of 8 communes**	**7,094.50**	**5,944.10**	**5,002**	**4,976.60**	**26**	**941.50**	**1,150.40**

*Source: Hang Kia – Pa Co Nature Reserve. * Part of Bao La commune falls in the core zone of the nature reserve.*

It's a concerning issue that public data on land resource is inconsistent. The area of farming land and plantation forest in the core zone published by the communes is much larger than that of the Management Board of the nature reserve. In addition, area of natural forest has been reduced by 50%.

Figure 10: Allocation of land use in Pa Co commune



Inconsistent data on land use between local authorities and the Management Board of the nature reserve indicates an urgent need for inventory and re-planning actions to specify and determine farming orientation and approach for local people living in the nature reserve.

5.2. Dependence on natural resources

Awareness of the majority of local people living in and around the nature reserve on conservation of natural resources is still inadequate. Local households still collect firewoods from forests and cutting down trees for house construction without paying attention to laws. This is one of reasons creating difficulties for forest protection.

Survey at the kitchens of Dao households in Tan Son commune reveals that all of firewood is collected from the forest. People prefer firewood logs of five to 20 cm in diameter. On average, one household (six people, four pigs, and a 3-liter alcohol cooking pot) consumes 20 kg of firewood everyday. During six months of the winter, the quantity of firewood may be doubled as the fire is kept burning all day long. In total, one household burns 10,800 kg or 10.8 tons of firewood each year. In the surveyed communes, over 1,000 households can consume at least 10,800,000 kg or 10,800 tons or 21,600 m3 of firewood per year. This quantity of firewood is equal to the capacity of 144 hectares of fast-growing plantation forest in seven years (provided that wood productivity reaches 20 m3 per year). For natural forests, it may take over 10 years for the forest to be grown up enough such quantity of firewood.

In addition to firewood collection, timber exploitation for house construction is very popular with Mong households in Pa Co and Hang Kia communes. A 60-m^2 wooden house needs from 10 to 12 m^3 of timber, excluding the wooden roof. Exploitation of timber for house construction leads to more forest destruction.

Firewood collection and timber exploitation are apparently threatening conservation and restoration of the nature reserve. Forest rangers do recognize these problems and try to reduce the threats by putting prohibition signs in the forest. However, after a short time, they have to pull down these signs because in the current conditions, prohibiting people from collecting firewood is unfeasible. Use of firewood for cooking or warming is not only a matter of living conditions but also the culture of ethnic groups.

In addition to the current indispensable needs for firewood and timber, food security is also a pressing issue. Dependence on forest resources does not only reflects in the needs for water supply, air, firewood, but also food for daily life. The government has decided to close access to forests while there have not been effective ways to compensate the need for food of local people. In the meantime, people still need farming land to grow corn and cassava for food, even the land is inside the protected areas.

Box 2. The need for farming land

"DTS: My husband and I separated from our parents three years ago. My husband's family lives in Son La province while my family lives here (in Tan Son). We have 1,500 m2 of farming land for growing corn and cassava. We have grown these crops since last year (2005) on burnt forest land. If we don't burn forest, we will not have land for growing corn. The forest rangers have warned us. But what can we live on if we don't do that way?

Question: Are there many people burning forest for farming land like you?

DTS: Yes, there are. Those who do not have farming land must do the same. We farm far from the ranger stations so it's difficult for forest rangers to find out."

Source: DTS, 25-year-old Dao woman in Po Liem village

Nevertheless, inadequate awareness on conservation of natural resources is not the only cause of forest degradation. Lack of comprehensive agro-forestry policy should also be taken into account. Most of policies and programmes so far have been aimed at changing the structure of agriculture without any effective market orientation for farming products. The negative status of plum gardens in Pa Co commune and longan gardens in Bao La commune is a typical example.

Level of dependence on natural resources of the nature reserve differs in each area as follows:

In Tan Son commune: Incomes are generated from agricultural production, including rice, corn, arrowroot (now arrowroot is not planted anymore due to low yield) and husbandry, which all rely on land reclaimed in the mountain feet and slash-and-burn areas. In addition, part of the population lives on exploitation of forest products such as bamboo, orchid and firewood, which are then sold along National Highway 6. Hunting is still common. However, we do not have exact statistics of hunting activities.

In Pa Co commune: Like Mong people in other provinces, Mong people in Pa Co commune farm in valleys in high elevation with lower temperature. Due to rapid population growth, the dependence on forest resources also increases significantly to meet the needs of timber products, firewood, and extension of farming land.

In Bao La commune: Unlike Tan Son and Pa Co communes, Bao La is located in the buffer zone, specializing in wet rice production. Its residents have settled in this area for a long time. However, due to lack of farming land, local people still have to live on the forest and forest land, including conversion of forest to farming land and exploitation of timber

and non-timber products. According to statistics of the commune, the area of subsidy crops has increased significantly due to exploitation and encroachment of natural forest.

6. Development Programs and Projects

6.1. Programs and projects implemented in the area

During the past four years, many poverty reduction and development programmes have been implemented in three surveyed communes. Tan Son commune has eight programmes and projects, nine in Bao La and 10 in Pa Co. The table below lists different programmes and projects in three communes since 2003.

Table 12: Summary of programmes and projects implemented in three communes

#	Programs/projects	Communes
1	Program 661	Tan Son, Bao La, Pa Co
2	Program 134 (housing for the poor)	Tan Son, Bao La, Pa Co
3	Program 135[9] - Phase II	Pa Co
4	Program on rural water supply	Bao La
5	Program on electricity supply	Tan Son, Bao La, Pa Co
6	Program 133[10] (two projects: human resettlement; agricultural extension for the poor)	Tan Son, Bao La, Pa Co
8	Regional programme on poverty reduction in six Northern mountain provinces (the World Bank)	Pa Co
9	Program 120 (loans for job creation)	Tan Son
10	Micro credit project (Women's Union)	Pa Co
11	Vietnam-Belgium brocade project (finished)	Tan Son
12	Brocade project (finished)	Pa Co
13	Project by Phuong Hien company (for two products: San Tuyen tea and Da Bac persimmon)	Pa Co
14	Project on growing cucumber, pumpkin and bitter melon	Bao La
15	Project on growing artemesia, basil, cabbage and rose (finished)	Tan Son

In addition to above-mentioned programmes and projects, these three communes also have benefited from other programmes by Ministry of Agriculture and Rural Development through mass organizations such as the " three sheds and four holes" campaign or the "three-increase and 3-decrease" programme in agriculture. There are also six target programmes of the Central Women's Union and the national target programme on health (Program 139). Credit channels of the Social Policy Bank and Agribank are very active in three communes.

In general, these programmes and projects have resulted in positive impacts on local communities. In terms of basic improvement of local economy (reducing poverty rate, improving household income and asset, enhancing infrastructure, building institutional capacity at commune level) in the past three years, main contributors include Program 135,

[9] Socio-economic development programme in most difficult communes in mountainous and remote areas (Decision 135/1998 QD - TTg)

[10] National taget programme on poverty reduction in the period of 1998 - 2000 (Decision No.133/1998/QD – TTg)

WB's regional poverty project (in Pa Co commune), Program 133 (in Tan Son commune), rural water supply programme (in Bao La commune), Program 661, and Program 06 (Removal of opium crop in 3 communes). Below is a comment from one commune official on positive impact of these programmes:

"In implementation of the poverty reduction project (WB-funded project), the commune People's Committee is the partner. Local people have benefited a lot from this project. We now have good roads, public water tanks and bathrooms. Clinics are better equipped for health care. The project has also provided training on participatory planning and project management to key staff at village level. The model of hybrid corn is very effective. The project has also helped increase grassroot democracy at different management levels"

Source: Male interviewee, Pa Co commune official

There communes have benefited from the project "Agricultural Extension for the Poor" under Program 133 implemented since 2004. The project provides IPM (Integrated Pest Management) training courses on hybrid rice and corn, Soya bean, and techniques for raising buffalo, cow and pig. Participants include village leaders and local people. So far, about 100 people in Tan Son commune, 120 in Bao La and 100 in Pa Co participated in training courses provided by this project. Rate of successful application of those trained ranges from 60% (for IPM courses) to 10% (for cattle raising courses). Low rate of successful application in cattle raising courses is attributed to short time of training (half a day) and lack of practice. Participants learn only theory without any practical application on live animals during the courses.

6.2. Some lessons learnt from finished and on-going projects

6.2.1. Positive impacts of some programmes and projects carried out by private companies

In addition to support from the government's programmes in agriculture, there have been some models to connect "three factors" in agricultural production in three surveyed communes. These include the producer (farmers), the business[11] (consumers), and the bank (capital providers). Dong Tay company invests in growing subsidy crops (cucumber, bitter melon and pumpkin) in Bao La commune. Phuong Hien company invests in planting Shan Tuyet tea and piloting Da Bac persimmon in Pa Co commune. These private companies have built up credibility to local people, as well as committed to support technical inputs. Technical support varies from supply of good quality tea seedlings, adequate quantity of fertilizer and chemicals, to training and technical supervision. These companies also sign contracts directly with farmers under confirmation of commune People's Committees. The presence of these private companies as buyers of agricultural and traditional embroidering products is an encouraging signal of the development process to market orientation.

Nevertheless, not all farming households get benefits from these projects. Only households having enough farming land are selected. For example, the project by Dong Tay company has just covered 5 hectares in six villages of Bao La commune.

[11] Companies invest in communes and commit to buy local products. They also act as "scientists" and technical support for producers.

6.2.2. Negative impacts of some programmes and projects carried out by private companies

Unlike Bao La and Pa Co, Tan Son commune has got four investment projects from private companies on growing subsidy crops but all of them did not yield good results. According to local authority, these companies has lost trust from local people due to their indecisive implementation approach in these projects.

These projects include the artemesia growing project, the basil growing pilot project, sesame project, and rose plantation project. By now, local people no longer remember project owners, only refer them as "some private companies". These projects started with a request for an area in the commune for planting subsidy crops. The commune authorities encouraged some households to give up farming land for these projects. However, even during the piloting phase, these projects did not ensure the quality of seedlings and farming techniques, which apparently led to project failures. In some successful piloting models, the investors did not foresee the market so that they could not by products from farmers when the harvest season comes. The artemesia project is an example.

Another example is the rose plantation project by Tan Van Thanh Joint Stock Company. A survey was conducted in the commune by experts from Ba Vi National Park in collaboration with the Agricultural Science Association. However, after carrying out the survey and completing the ground preparation, "the company didn't come back without any notice", said the commune chairman. He added "people in my commune are now very afraid of projects on growing subsidy crops. It's very hard to involve local people in any project now as previous companies did not take responsibilities, causing losses for lots of households …"

Those were negative consequences for both sides - investors and producers. There should be clear explanation from the investors to local authorities and people on why their projects are stopped or cancelled.

6.2.3. Negative impacts of some government's programmes and projects

In addition to negative impacts of programmes and projects by private companies, some government's programmes and projects in three communes also did not reach defined objectives. For example, Program 135 supported local people to replace plum trees by Shan Tuyet tea. This initiative was welcomed by local authorities as economic value of fruit trees (such as plum or peach) was on decreasing trend. But the tea variety provided by the project was not of good quality. "On average, 60 out of 100 Shan Tuyet tea seedlings provided to local people died" said Nam, a commune official in Pa Co. Project staff suggested local people to grow tea seedlings in high density as non-Shan Tuyet trees among seedlings would be found and removed later when they're grown up. This method is a waste of resource and also not practical. According to commune authorities, this issue could have been solved if tea seedlings were produced locally, not in Hoa Binh town. By doing so, the project could have been able to ensure quality of seedlings, as well as reduced the risk of weather difference and transportation costs. At present, Pa Co still maintains Shan Tuyet tea variety with some trees over 100 years, which can be used for producing seedling locally. Phuong Hien company is implementing their project this way and gains good support from local people.

In Bao La and Pa Co communes, local people report that corn seeds provided by Program 135 often come too late for the crop season. To solve this problem, some private agents in

Mai Chau town and Tan Son commune have agreed to sell corn seeds to local farmers. In compensation, when the harvest comes, farmers have to sell products to those agents at lower price than in the market. This is a disadvantage to farmers because in theory they get support from the Government for seeds but in practice they do not receive properly. Mean while, local authorities have not found any feasible solution.

Similar to the lessons learnt from farming products, the project on growing fruit trees (plum and peach) in Pa Co is an example for shortcomings in agriculture programmes. The fruit trees were grown in Pa Co as part of the Program 06 for removing opium trees. Each year, Pa Co commune harvests about 300 tons of plum. However, during the peak of harvest season, local people can not sell harvested plums. On average, local plum growers sell plums at 1,500 VND per kg at highest price and 300 VND per kg at lowest price. In some cases, "*no one would take plums even if we give them for free*" (Head of Xa Linh 1 village). A commune official said that: "*If the plums are in a bumper harvest, growers will cry. If the plum harvest fails, they will be happy.*"

In terms of culture, some development programmes and policies during the past decade have resulted in considerable impacts on cultural changes, including both positive and negative impacts against cultural identities. The policy on opium removal is an example. This is a sound policy but practical implementation is different from expectation. "*Following instructions of Program 06, local people have removed all opium trees. However, during the implementation, some officials uprooted all flax trees as they thought those were marijuana trees. That's why local women no longer weave because there's no more flax for fibres"* (Source: A Mong commune official in Pa Co). In fact, very few Mong women weave clothes themselves now. They often buy Chinese ready-tailored clothes or buy cloths in the market to make clothes.

In addition, some programmes have resulted in conflicts between the need for livelihood improvement and forest protection. For example, Program 134 provides housing for the poor. Mong people in Pa Co and Hang Kia communes prefer living in wooden houses according to their tradition[12]. This requires exploitation of timber, which means destroying the forest. The contradiction has not been solved by stakeholders of the programme.

In summary, apart from projects by two companies (Dong Tay company in Bao La commune and Phuong Hien company in Pa Co commune), there is not yet any appropriate investment in promoting market access for agricultural products, or at least consuming these products from local people.

[12] There is a traditional perception that drum beats produce less echo in wooden houses than in brick houses.

Part II: Agro-forestry Product System

1. Flour crop products

1.1. Tan Son commune

Of flour crops (including rice, common corn, sticky corn, cassava, sweet potato, taro, and arrowroot), corn is regarded as the most effective crop, especially sticky corn. In fact, sticky corn does not yield high productivity but it's easy to sell. Arrowroot used to be the main crop, which was provided to noodle producers. Due to degradation of soil quality and low yield, this crop is no longer grown in Tan Son. Cassava and taro cannot adapt well with soil condition. In addition, these crops need longer time for growing and yield low productivity.

In Po Liem village, cassava is regarded as one of the most effective crops by local people, just behind corn. However, cassava requires fertile soil and intensive cultivation. Extensive cassava farming just brings about high productivity and profit in some first years. Over time, when the soil quality degrades, productivity and crop efficiency will consequently decrease.

1.2. Pa Co commune

Of five flour crops grown in Pa Co, common corn, sticky corn and arrowroot are regarded as more effective than taro and sweet potato. Although Pa Co is quite similar to Tan Son in terms of natural conditions, arrowroot crop still plays an important role. Perhaps the terrain in this commune is less sloping so that degradation of soil quality occurs at a lower speed. Nevertheless, the degrading trend of soil quality and lower yield are inevitable if extensive cultivation is still applied. In order to maintain this crop, intensive cultivation and economic evaluation should be taken into account. In addition, taro is considered as not suitable to weather conditions. Sticky corn does not yield high. During the assessment, cassava was not mentioned probably because of its low price and modest productivity due to soil degradation.

In Xa Linh I village, corn is considered to be the most efficient crop, followed by arrowroot, rice, sweet potato and taro. Unlike Pung village, in Xa Linh I village, arrowroot and taro are regarded as suitable crops for growing in this area.

1.3 Bao La commune

Corn and rice are main crops in this commune. Arrowroot is also highly evaluated by local people. It is understandable as Bao La has a large area of farming land, including slash-and-burn farming area. New farming land conversed from natural forest is still fertile and supports high productivity. However, the lesson in Tan Son may reoccur if intensive cultivation is taken into account. It is noticeable that taro grown on slash-and-burn farms is regarded as a high value crop and easy to process. Although rice is the main crop, it is ranked the third after corn and cassava. Rice in Bao La has low productivity and often gets affected by pests.

In Pung village, cassava is on top rank for its high economic value. Although generally this crop is degrading, cassava in Pung village still has high productivity thanks to the new

farming land close to forest. Local people commented that arrowroot is not a suitable crop any more due to low yield and limited area for growing.

2. Vegetable products

2.1. Tan Son commune

Of vegetable crops, chayote, bambooshoot, green cabbage, squash, and pumpkin are evaluated as the most potential crops (chayote has recently acclimatized). Particularly, green cabbage and bambooshoot are regarded as profitable crops of the commune although green cabbage is often attacked by pests. It is quite challenging in transportation and preserve of these fresh vegetables.

Po Liem villagers also gave good evaluation for crops of chayote, squash and pumpkin. However, they regarded watercress as a very potential crop as it adapts well with local natural conditions and pests. The disadvantages of this crop are low productivity and difficulties in processing and preservation. For green cabbage and chayote, mass plantation of these crops will face significant difficulties if the market is slow in consumption.

2.2. Pa Co commune

In Pa Co, vegetables are quite diverse with eight main crops, including highly evaluated species such as green cabbage, bambooshoot, chayote and cucumber. Nevertheless, cucumber does not generate high income on daily basis. In addition, it's difficult for shipment to long distance. Pumpkin is also a potential crop compared to others.

Xa Linh villagers gave high scores to green cabbage, chayote, squash, pumpkins, and bambooshoot for their economic values. Pumpkin and chayote are regarded as the most potential crops.

2.3. Bao La commune

In Bao La, green cabbage and kohlrabi received low scores in the evaluation due to difficulties in processing, preservation, and low economic efficiency. Pumpkin and bitter melon (newly acclimatized crop grown in the expansion of an investment project by a private company) are regarded as highly potential. However, detailed evaluation shows that people in Bao La commune are still not confident with growing bitter melon. Chayote is regarded as unsuitable to the micro-climate and soil of the area.

In Pung village, bitter melon, squash and pumpkin are on top ranks. In this village, bitter melon has been piloted by a private company during for several years. Green cabbage and cabbage are considered less potential as they are often easily attacked by pests and yield low productivity.

3. Fruit products

3.1. Tan Son commune

Local people have grown various fruit trees, including most potential ones such as plum, apricot, kumquat, and fairy peach. The challenges local people often face with production of these fruits include consumption capacity, processing techniques, and transportation. In addition, ensuring the products' quality to meet the increasing need of consumers is also

challenging. Grape fruits, mandarins and longans are regarded as unsatisfactory in terms of quality.

Fruit production in Po Liem village in particular and all three communes in general is facing many difficulties in ensuring both quantity and quality of the products for the market. Furthermore, there are more challenges coming when the rules of WTO take effect. Once low tax rate or tax exemption is applied for imported fruits, these products from China and Thailand may be very competitive in the market.

Po Liem villagers gave high scores to banana and papaya, in addition to plum, lemon and kumquat. On the other hand, mandarin, grape fruit and longan were removed from the list of selected fruits.

3.2. Pa Co commune

There are four main fruit crops including plum, peach, persimmon and lemon. In Pa Co, plum and persimmon are the most suitable crops to the regional soil and climate conditions. Although plum is sold at a modest price, it brings about a remarkable income for poor households. Persimmon trees are fruitful and well-grown but the fruit can not be sold well due to poor quality. Although fruit trees can be strong products of the area with favourable climate, quality assurance is the issue that prevent them to get access to the market.

In Xa Linh I village, many people think that fruit growing is not feasible as fruits are difficult to sell, process, preserve and transport to the market. Although plums and persimmons grow well and bear abundant fruits, low product quality makes it difficult to sell in the market.

3.3. Bao La Commune

Out of nine species of fruit-trees grown in Bao La commune, papaya and banana receive highest scores in the evaluation as they are well adapted to climate conditions, quick growing, less affected by pests, and potential to turn into commercial products on large scale. Grapefruit and longan are also potential fruit trees but they have limitations in growing area and ability to against pests.

Aromatic banana, Musa banana, grapefruit, longan, litchi, mango, bachang mango, tamarind are considered profitable fruit-trees by many people in Pung village. Among those, banana is the most potential one and can turn into commercial goods on large scale.

4. Spice crop products

4.1 Tan Son and Bao La Communes

Spice crops have important role in the marketplace, especially those products which do not contain high percentage of pesticide, or can be eaten raw, or can be preserved for a long time. Ginger, chilli, galingale, and garlic are considered as potential crops in both Tan Son and Bao La communes. Among those, ginger is the most potential one and can become commercial goods on a large scale within the area. Species in ginger family can serve many purposes such as spice, medicine, oil, and ornamental plants. These species are share tolerant, which can grow well under forest canopy and along the edge of the nature reserve.

Ginger, garlic and chilli are considered as potentially profitable crops by many people in Po Liem village (Tan Son). Galingale is not highly rated due to low market demand. Other

spice plants such as sweet basil and eryngium are only grown for domestic use and selling in local market.

Chilli is not considered a profitable spice plant by many people in Pung village (Bao La) as it is not an effective crop due to low productivity and limited possibility for expanding to larger scale.

4.2. Pa Co Commune

There are seven spice crops grown in Pa Co. Ginger, onion and garlic are highly ranked as potentially commercial goods in the area. Among those, ginger is considered the most potential one.

Ginger, chilli, lemongrass, and eryngium are considered highly profitable crops by many people at Xa Linh I village.

With typical terrain and micro climate in Pa Co, it is suitable for growing different types of onion such as bulb-shaped onion. In addition, green pepper is another potential crop for turning into a market product.

5. Livestock products

Table 13: Potential livestock for commercial products (in priority order)

Type of livestock	Tan Son Commune	Pa Co Commune	Bao La Commune
Poultry	Chicken Duck - Goose	Chicken Duck - Goose	Chicken Duck - Goose
Small cattle	Pig Goat	Pig Goat	Pig
Big cattle	Cow Buffalo	Buffalo Cow	Cow Buffalo

Chicken is a potential livestock for turning into a commercial product, especially the local chicken breed with its high quality. In addition, local pig breed is also a favourite product in the market. Captive farming of cows is a feasible option for the area in conjunction with expansion of industrial grass.

5.1. Tan Son Commune

In Tan Son, commune officials gave high scores for goat, chicken, and pig as profitable livestock. Larger cattle such, such as buffalo and cow, are often affected by epidemic diseases and require considerable initial investment. Pig is not very well adapted with local weather conditions. Despite their low profitability, poultry is considered suitable to local conditions.

In Po Liem village, poultry is considered the most profitable livestock while goat is in lower ranking due to the unavailability of foodstuff, their harm to crops, and easy infection to diseases. According to local people, if buffalo and goat are kept in captivity, they will harm the environment and crops.

5. 2. Pa Co Commune

Livestock, especially buffalo and cow, are not highly ranked by the commune officials since there is not enough land for farming and grazing. Moreover, larger cattle require a large amount of investment, slow circulation of capital flow, and cause environmental pollution more than other livestock. Households, however, still borrow money from the bank to raise larger cattle for ploughing and selling when necessary as they can get a big amount of money at one.

Meanwhile, local people in Xa Linh 1 village give high scores for both big and smaller cattle. These livestock are suitable to the area and profitable. The only problem during the discussion is that no livestock is defined as potential for further development into market products. While pig and chicken are considered two most important livestock, they are not on the priority list since it is difficult to control diseases.

Horses have been used for transportation of goods. As road access is becoming easier for modern means of transportation, horses are not considered a commercial livestock anymore.

5.3. Bao La Commune

Officials of Bao La commune also consider smaller cattle and poultry as suitable livestock. Fish raising is rated as having more important role than buffalo and cow grazing. The explanation is that foodstuff for buffalo and cow is very limited and cattle easily catch diseases, as well as require a large amount of investment, in addition to causing environmental pollution. Poultry and fish are regarded as good choices for local conditions with large area of land and low terrain, which is suitable for digging ponds and has sufficient water supply. Pig is considered not suitable since it is difficult to raise, often dies because of incurable diseases, brings insufficient profitability, and causes environmental pollution due to non-caged raising practice.

On the contrary, many people in Pung village choose buffalo, cow and pig as good livestock to raise. It is reasonable as Pung village is situated next to the mountain foot, where there are big pastures providing enough foodstuff for raising these livestock than other villages of the commune.

6. Non-timber forest products

6.1. Tan Son Commune

Non-timber forest products (NTFPs) in Tan Son commune in general and in Po Liem village in particular are very rich and diverse. During the survey, different types of these products were found in natural forests, plantation forests, at markets, and in local shops. NTFPs can be divided into following groups:

6.1.1. Bamboo group (thorny bamboo, White bamboo, dullooa bamboo, giant bamboo)

In Tan Son, these NTFPs are exploited for selling at local markets or to factories as materials. Currently, only the white bamboo is planted under Program 327 and Program 661 on a small scale. If species in this group are not properly exploited and planted, they will be degraded and disappeared in the near future. These plants are also planted for harvesting shoots. However, current bamboo shoots in the market are mainly collected from the dullooa bamboo and giant bamboo in natural forest. Among the bamboo group in Tan Son, white bamboo, dragon bamboo, and giant bamboo are the most potential plants.

6.1.2. Ornamental plants
Orchids are openly sold in some shops in Tan Son commune. The price is about 50,000.00 – 60,000.00 VND per plant. If orchids are still exploited for sales like this, the natural genetic source will disappear from the wild very soon.

6.1.3. Resin plants
There used to be a lots of bodhi trees, a type of plant providing fragrant resin for food materials, in the area. Due to low price in the market, these resin plants are being forgotten by local people.

6.1.4. Medicinal plants
Chinese knotweed, rauwolfia, and homalonema are well adapted to physical conditions of the area. However, these medicinal plants are just for domestic use but not for sales as market products.

6.1.5. Rattans
These plants are found along garden fences in many local gardens. However, due to limitation of growing area, these are still not commercial goods. In the near future, rattan plantation can be expanded to larger area in gardens and in the forest for selling as commercial goods.

6.2. Pa Co Commune
6.2.1. Medicinal plants
Weather conditions in Pa Co provide favourable environment for medicinal plants to flourish, especially those species of cardamom, eucommia, and amomum. Due to limited time and limited knowledge of the respondents on traditional medicine, it is impossible to evaluate the strength of medicinal plants in the area. Under Programme 06 (replacing opium cultivation), some medicinal plants such as cardamom and eucommia were planted in a pilot project. However, the project has not yet yielded any result.

6.2.2. Industrial plants
There are seven species of industrial plants in Pa Co, including important ones such as giant bamboo, white bamboo, Shan Tuyet tea, and Buddha's belly bamboo. Shan Tuyet tea is the most potential crop. It’s not only suitable with the soil and weather in Pa Co but also having good access to the market.

Flaxes, a plant providing fibre for making brocade, are also found in Pa Co. However, according to local people, this plant has been removed as it’s thought to produce addictive drugs. This matter should be well studied and assessed; otherwise the valuable flax plant may be disappeared in the area.

6.3 Bao La Commune
6.3.1. Non-timber forest products for materials
Thorny bamboo and white bamboo are considered highly profitable plants while dullooa bamboo is not. Rattan bushes are commonly found in the area. However, rattans are not mentioned in the discussion with local people. Nevertheless, this rattan group can be potential products for Bao La that local people should be encouraged to pilot planting.

This area used to provide lac material for sellac production. However, due to price drop and changes in material use, lac production has stopped. Lac is no longer produced in some forest enterprises such as Mai Chau (Hoa Binh province), Song Ma (Son La province). During the survey, this product is not mentioned in the discussion with the local people and officials.

NTFPs are not only the potential of Bao La but in Tan Son as well. Unfortunately, these products are not fully studied, planted and expanded in plantations and in natural forests allocated to local people. While the bamboos are often highly rated by local people and authorities due to their multi-use purposes, quick growth and provision of products, the fact of rapid degeneration of these species seems to be ignored. In practice, in monoculture of bamboos, productivity will sharply reduce within three to five plant life circles (around 10-15 years). Many households in Bao La reported that white bamboo forests are degenerating while the soil becomes poorer resulting in smaller diameter of white bamboos. In order to solve this problem, polyculture of white bamboos should be applied to ensure the stability of productivity.

7. Handicrafts

Handicrafts are not well developed in three surveyed communes. There are just about five households in each commune doing handicrafts to earn their living while the others just do handicrafts as seasonal work.

7.1. Brocade and embroidering

Brocade and embroidering were introduced in Tan Son and Pa Co communes four years ago. The Vietnam-Belgium Project carried out training courses on brocade and embroidering for about 20 households in Tan Son. A similar project was implemented in Pa Co. However, both local people and authorities could not remember who the sponsor for such project was. After the project ended, some households (about five households in each commune) continue and find the market themselves. Products are made based on orders and transported to Hanoi to sell to tourists. Materials are imported from other provinces. Sometimes, materials are bought in Hanoi, Ha Dong province, or at Xa Linh market (Pa Co commune). Some tailors often hire local people to make the embroidery based on designs provided by customers. Average income of people making brocade is about 600,000.00 to one million VND per month. Income of those work for the tailors (embroidering work) is about 10,000.00 VND per day or 300,000.00 VND per month. Those households directly buy fibre and cloth to make brocade for Mong customers then sell their products at Pa Co market can earn approximately 20,000.00 VND per day or 600,000.00 per month. Local people often do embroidering work in their leisure time after harvest (about six months each year). In conclusion, part-time brocade and embroidering workers earn under one million VND per year. For those working full-time in this production work can earn about six to 10 million VND per year.

7.2. Blacksmith

Blacksmith is a traditional handicraft of Mong people. Nowadays, just few Mong people in Pa Co still maintain this tradition due to low market demand. There are just two households in this commune doing blacksmith and they can make different tools. Products are mainly tools with higher quality than those sold in the local markets, in many Mong people's opinion. Blacksmith's also repair and modify tools bought from markets such as knives and hoes to adapt to working in local terrain and improve their durability.

Materials bring about the prestige and quality of blacksmith's products. Iron for making knives are from car springs or bomb containers. Iron must be tempered in charcoal, not fossil coal, to ensure the durability of products. After being tempered, knives made from bomb containers must be dipped into cold water while those made from car springs must be chopped into banana stems.

Profit from blacksmith production is quite high. For example, cost for making a knife is about 10,000.00 VND while the selling price is 40,000.00 VND. Cost for making a hoe is 10,000.00 VND while the selling price is 70,000.00 VND. One blacksmith in Pa Co says that his average income is about 400,000.00 per month. In spite of good profit, blacksmith is still perishing.

There are many reasons for the declination of traditional handicraft. The most important one is the high competition of similar products in the market. Tools made in China and from other provinces are fairly cheaper and easier to buy although their quality is not as good as the products of Mong people. Only very healthy people can be blacksmiths. The tempering itself consumes quite a lot of firewood. Using other fuels in stead of firewood will result in bad quality of products. The problem is that exploitation of firewood for tempering will affect the forest protection. Moreover, prohibition of forest exploitation consequently results in decreasing demand of good quality blacksmith products.

In 2006, the Provincial Army of Hoa Binh helped organize a training course on blacksmith based on Mong techniques for local young people.

7.3. Rattan knitting

Thai people in Bao La are well-known of rattan knitting. Most of products from rattan knitting are for domestic use, such as wide baskets, closely-woven baskets, chairs, trays, seed baskets, and clothe baskets of Thai people. These products are made from bamboos and rattans. However, like blacksmith of Mong people, rattan knitting is perishing. There are just a few products at local markets. Local people often make themselves for domestic use or for relatives and neighbours.

Profit from knitting is quite high. For example, cost for making a rattan chair is 30,000.00 VND while the selling price is 70,000.00 VND. The profit from making baskets is from 15,000.00 to 20,000.00 VND per unit. Average income of people doing knitting as part-time job is under 500,000.00 per month. High durability is one of the advantages of knitting products. However, this handicraft still could not thrive well due to strong influence of booming plastic products available in local markets. Knitting products of Thai people could not find their own market. Local people think that because of the durability of their products, it takes a long time for customers to replace new ones. In addition, knitting techniques are not passed on to younger people. Another important reason is that knitting products of Thai people in Bao La are not diverse and attractive in styles. Most of their products are traditional tools for daily life of farmers.

There are one knitting specialist in Pung village (Bao La commune). Local people wish to have some training courses to pass on knitting techniques to next generations. They also expect some organization to help them find potential markets for their knitting products.

Part III: Agro-forestry Product Market

1. Value chains of agro-forestry products

1.1. Value chains of maize and cassava

1.1.1. Importance of maize and cassava

Cassava plays an important role in mountainous areas
Cassava is a traditional food crop, certainly playing an important role in Vietnam. Although it is often considered causing bad effects to the environment and sustainable farming. However, it has lower risks and gives good advantages to the poor and very poor people such as (i) growing well in different types of soil, including highland, lowland, infertile soil, sandy soil, and good resistance against pests; (ii) simple farming technique; (iii) short time for harvest, from six months to one year; (iv) requiring less investment in manpower and seedlings (using stems instead); (v) use as food for both human and livestock; (vi) cassava powder can be used to make different types of food and chemicals; and (vii) bringing extra income for farmers.

Despite being a less profitable product, cassasva productivity is on increasing trend due to stable domestic and export market. High quality cassava powder can potentially control the export market. Meanwhile products from cassava powder for consumption and cattle foodstuff of local producers are controlling the domestic market. The following table shows growth rate of cassava growing area up to 45% from 2001 to 2005. Among these, the growth rate in Mai Chau district is 36%, much higher then the avarage growth rate of 23% in the North of Vietnam.

Table 14: Growth trend of cassava area in Vietnam
Unit: hectare

	2001	2002	2003	2004	2005	Increase (%)
Nation-wide	292,300	337,000	371,860	388,676	423,800	45
The North	123,700	129,800	137,064	145,843	152,000	23
Northwest	32,000	35,600	37,520	40,513	42,500	33
Hoa Binh	8,900	8,600	9,735	10,202	10,700	20
Mai Chau	870	1,054	1,001	1,122	1,185	36

Source: ICARD, 2006.

Although local cassava variety has been grown for a long time, it's being replaced by higher yield industrial varieties. Decreasing use of cassava for food by local people is an advantage for replacing local cassava with industrial varieties.

Maize has quickly become a key food crop in hilly areas
Maize is a food crop increasingly expanding its role in Vietnam for livestock foodstuff. Maize output has doubled in Hoa Binh from less than 50 thousand tons in 2000 up to nearly 100 thousand tons in 2005 (Hoa Binh Statistics Office, 2005). Nevertheless, the growth rate of maize productivity in Mai Chau is just 30% during that period.

Local maize (local varieties) and hybrid maize (introduced varieties) are two main types in the area:

- Local varieties: These are traditional varieties with good quality (soft and fragrant) and strong resistance to pests. These varieties are suitable for food. However, they have low productivity and less profitability.
- Hybrid maize: These are introduced varieties such as Hybrid VN 10, CP 999, CP 888, and Bioeed 9698. These varieties yield high productivity, which are suitable for producing livestock foodstuff. Maize products are transported and sold in lowland areas for husbandry.

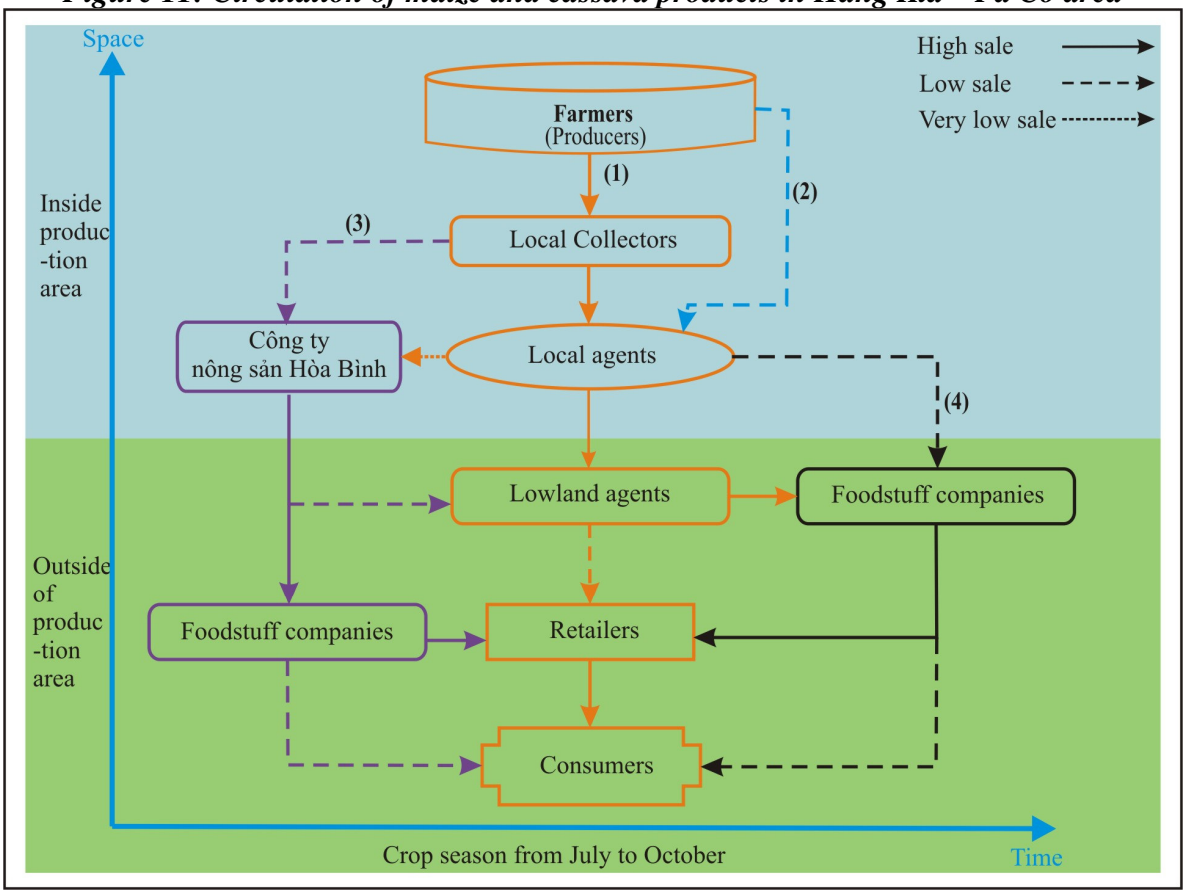
1.1.2. Circulation of maize and cassava products

Expanding production of maize and cassava is happening in different regions in Vietnam. Maize and cassava are grown in every provinces in the Northern Mountains. However, in the North East, these crops are grown mainly for domestic use while a small amount is supplied to livestock foodstuff manufacturers. Currently, maize products transported from the Northwestern provinces such as Son La and Hoa Binh to the Red River delta account for 80% and 10% of commercial maize products respectively (FSIU, 2006).

Results from the survey in Mai Chau show that there are five key influential factors in the commercialization of maize and cassava products: production factor (producers), collection factors at commune level and higher level (local agents), big collection factor in lowland areas (lowland agents), and retailers. These five key factors form the circulation network of maize and cassava products from producers to customers. In addition, there are other factors taking part in the consumption network of maize and cassava such as Hoa Binh Agricultural Products Company and livestock foodstuff processing companies. They form a chain from production to consumption and export.

In the circulation of maize and cassava from Mai Chau to lowland areas, local agencies and lowland agencies play important roles in regulating activities relating to the products. Lowland agents regulate the consumption while local agents influence supply sources.

Figure 11: Circulation of maize and cassava products in Hang Kia – Pa Co area



In addition, maize is often sold directly at local households or along the highways. Fresh or boiled corns are sold by local farmers to customers along Highway 6 with the price around 1,000.00 per ear.

1.1.3. Roles of influencing factors

Producers

Maize and cassava in Pa Co, Bao La and Tan Son commune have been grown on sloping farming land for a long time. There are two main types of land for cultivation, including paddy farming land and slash-and-burn farming land. The paddy land is used for rice farming while slash-and-burn land is used for growing maize and cassava.

Most local people have limited knowledge on market information. They only pay attention to production for sales to collection agents but do not know where their products are finally sold. To some extents, market demand is a new term for local people. Therefore, production does not promptly respond to the market demands on both quality and quantity. Moreover, due to lack of planning and financial difficulties, maize and cassava are often sold right after harvest or even sold in ears before the harvest.

Collection factor at local level

This factor always plays an important role in collecting farming products from individual households to sell to the market. This factor is extremely important in some mountainous areas in general and in local communities living in and around remote protected areas in particular.

Sales of maize and cassava products also depend much on collectors. They are not only the bridge between farmers and the market but also provide loans or flexible farming contracts with farmers. With these types of support, farmers have better access to farming materials such as seeds, fertilizers, and pesticides.

There are about 15 to 20 collectors in each commune. They work in different networks led by big dealers. These dealers give deposits and pay commissions to collectors. Sale agreements are often made based on mutual trust.

With cassava, the recent trend shows a number of farmer households taking part in the value chain by roughly drying their products before selling to collectors or agents. By doing so, they increase the cassava value to 1,800.00 – 2,000.00 VND per kg instead of 400 -500 VND per kg of fresh raw cassava. However, each drying batch (one ton of cassava) consumes from one to two cubic metres of firewood.

Table 15: Characteristics of collecting agents

Criteria	Characteristics
Operation characteristics	Collecting at certain villages Collect small to medium quantity Lack of heavy transportation means (trucks, vans)
Function	Collect, remove seeds, dry, wholesale (corn) Dry (cassava)
Purchasing method	At home (producers carry products to collector's house)
Profit	Commission of 50 VND per kg
Capital	Advance from agents
Buyers	Transporters Local agents

Major local agents
This is the factor that coordinates the trade of maize and cassava from the supplying side. There are about 10 - 15 agents involving in transporting goods to lowland areas. In addition to buying all products from farmers, they also make use of return trips to provide farmers with fertilizers, seeds, and plant protection chemicals.

Box 3. Mr Cao Huy Hao, a major local agent for maize and cassava

Starting business since 1990s, he has three 10-ton vans (two for collecting products locally and one for carrying goods to lowland areas) with total value of 900 million VND, which are operated by his son. The van for carrying goods to lowland areas are also used to carry cement, tiles, fertilizers, and seeds on the way back. He used to sell fresh maize and cassava but now he changes to sell dried products. Since 2001, he bought a drying kiln and built storage. He collects products through 30 collecting points in six villages. All of those colleting points are paid in advance. Payment is made in accordance with goods delivery. The total quantity of collected products is approximately 1,000 tons of both maize and cassava. Profit for each 10 tons is about 1.8 million VND (not including depreciation). During the harvest, 20 jobs are created for four to five months. Wages are paid in accordance with quantity of products.

Table 16: Characteristics of major local agents

Criteria	Characteristics

Time of operation	Throughout the year (depending on the market)
Venue	At district towns, near main roads
Capital	Private capital, loans Capital provided by livestock foodstuff factories
Function	Collect, transport, process, dry (corn) Dry, slice (cassava) Preserve or wholesale to factories
Sellers	Farmers Collectors
Buyers	Local transporters Lowland transporters Foodstuff companies Lowland wholesale agents

Table 17: Size of major local agents

Criteria	Characteristics
Goods struture (product values)	- Maize: 40% - 60% - Cassava and other farm products: 30%- 50% - Rice, fertilizer: 10%
Annual sale of maize	- From 500 – 2,000 tons per year
Operation capital	From150 to 300 million VND
Number of labours	3-5 permanent labours 10-15 seasonal labours
Income	From 100 to 250 million VND

Major lowland agents

These agents are mainly located at Km 29 in Ha Tay province. Some of these agents are in provinces with more developed husbandry such as Hung Yen and Nam Dinh. Their roles are to collect materials for foodstuff factories and coordinate supply of products. The average storage of these agents is from 500 to 1,000 tons of materials.

Table 18: Size of major lowland agents

Criteria	Characteristics
Function	Wholesale, retail
Time of operation	All year-round
Monthly sale quantity	80 - 500 tons (main seasons) 40 - 80 tons (secondary seasons)
Capital	150 - 300 million VND
Permanent labours	3 – 5
Establishment of relationship with input factors	Long-term relationship, mutual trust for capital support (purchase on credit)
Input factors	Local agents, transporters, foodstuff companies, contractors Lowland collectors
Number of input factors	4 -5 local agents 6 - 10 transporters 5 - 7 lowland collectors
Ouput factors	Small agents, retailers Farmers

Number of output factors	15 -20 small agents, retailers Farmers

Small lowland agents
Level of diversity in product types and quantity of products are two important factors in distinguishing this type of factors. They provide products and materials for small–scale farmers in the lowland with low and irregular demand.

Small agents and retailers operate throughout the year. Main product sold is popcorn flavour with average sale volume of eight to 10 tons per month during main crop season and three to five tons per month during non-crop season. They often have close relations with larger lowland agents for timely supply.

These agents often have low investment capital. They operate on capital of lowland dealers by getting supplies on credit but receive cash on direct sales. Due to this feature, these agents have less risk in trading maize.

Customers
At present, quick growth of livestock raising, including pigs and poultry, has resulted in development of specialized farming production areas.

Each husbandry farmer has relations with a certain sale agent because they often buy materials and foodstuff on credit, in addition to normal trading relations. This is the most important factor that forms close relations between farmers and agents. However, interest rate of credit purchase is an issue. In fact, farmers do not have to pay direct interest for their credit purchase. In stead, they have to buy materials and foodstuff at higher price than normal, depending on the time of payment.

Hoa Binh Agricultural Products Company
This company plays the role as a dealer and an important factor in maize reservation. However, the quantity of maize reservation by this company is not large enough due to their limitations of storage as well as capital. Customers of the company are lowland dealers and livestock raising companies.

Livestock foodstuff processing companies
Livestock foodstuff processing companies are important factors in determination of prices for maize in the market. Buying prices set by these companies, as well as prices of their processed products, influenced overall price of maize in the market. At present, CP. Group and Proconco Company are two biggest consumers of maize in North-eastern provinces.

1.1.4. Cost and benefit analysis
Transportation of maize and cassava from Mai Chau to the lowland markets is conducted by different factors and circulation channels. There are different divisions of benefits among product channels, even with the same factor. Therefore each business factor tries to avoid intermediary factors in order to ensure highest benefits in their operation. This feature forms different competitive capacities among product channels.

Channel of maize and cassavas is very complicated. In order to analyse in details about costs, prices and price formation, payment methods, etc., a separate diagnostic study for

this channel is necessary to provide accurate results. In this report, we can only provide information gathered in a narrow scope related to the research site.

Table 19: Buying and selling prices of maize

Factors	Buying (VND/kg)		Selling (VND/kg)	
	Fresh	***Dried***	***Fresh***	***Dried***
Producers			1,300	2,300
Local collectors	1,300	2,300	1,350	2,350
Local agents	1,350	2,350		2,500-2,700
Hoa Binh Agricultural Products Company		2,200-2,400		2,500-2,700
Lowland agents		2,500-2,700		2,700-3,000
Small/retailed stores		2,700-3,000		3,000-3,200
Foodstuff companies		3,000-3,200		

Source: Survey in December 2006

The above table reflects the differences of maize price among factors in the product channel. Causes of these differences can not be fully answered within this report. There should be a more detailed study on maize product channel in Mai Chau.

1.2. Value chains of fruits and vegetables

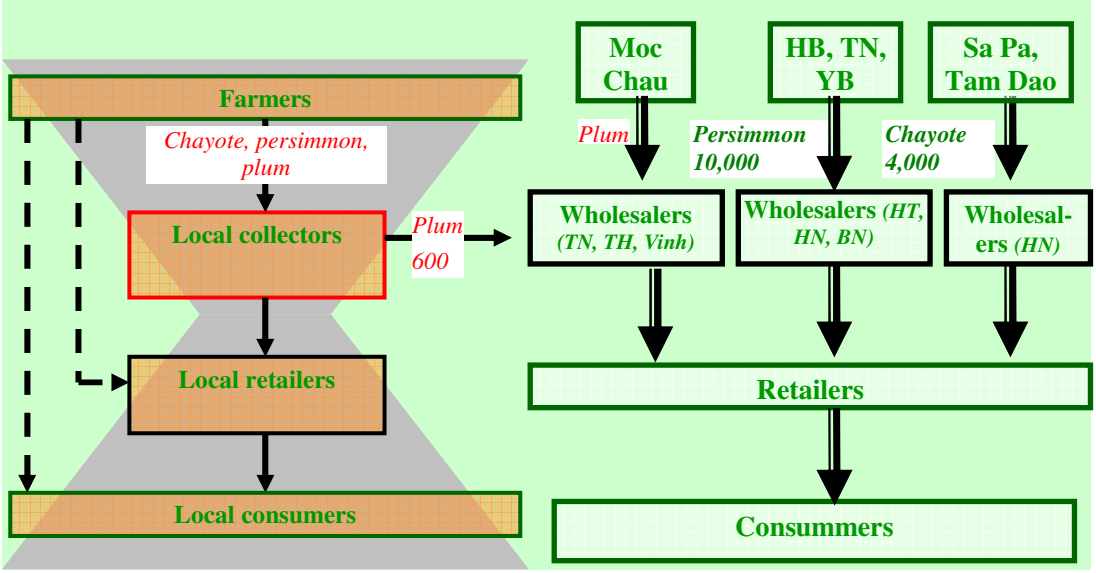
1.2.1. Overview of fruit and vegetable production areas

These fresh food products are facing greater requirements on quality and food safety from customers. Despite the advantage of temperate climate in Hang Kia - Pa Co area, local communities have not taken the opportunity to produce high quality products for urban customers. Except plums and persimmons, other fruit and vegetable products finish their market chains in Mai Chau town.

1.2.2. Market chains of some fruits and vegetables in Hang Kia – Pa Co area and their competitive regions

The market of fruits and vegetables divides into two main sections: within and outside of Mai Chau district. Figure 12 shows product channels of chayote, persimmons and plums in local market and competitive regions. Supply source of chayote is mainly from Sa Pa. Thach That persimmons (harvest in November and December) largely come from Hoa Binh, Thai Nguyen and Yen Bai. Plums are mainly supplied by producers in Moc Chau (Son La province).

Figure 12: Fruit and vegetable channels in Mai Chau and competitive regions



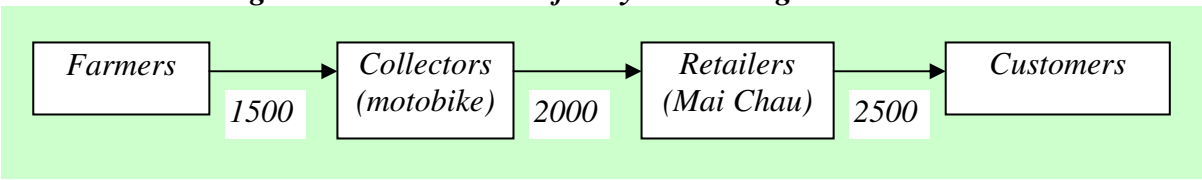
Note: HB: Hoa Binh province; TN: Thai Nguyen province; YB: Yen Bai province; TH: Thanh Hoa province; HT: Ha Tay province; BN: Bac Ninh province.

1.2.3. Chayote

Local markets

Chayote are planted in small scale with five to 10 plants each household. Local people mainly harvest fruits from chayote and earn an income of one to two million VND for each harvest. However, chayote browses are not yet harvested for sale. The market channel simply consists of local collectors using motorbikes to collect fruits by jute bags (100-200 kg per bag) and carry to Mai Chau town. These collectors earn from price differences of 500 VND per one kg. They usually spend half a day to collect an average of 150 kg of chayote fruits. After deducting travelling expenses (about 20,000 VND for 50 km), they earn 55,000 VND for each trip.

Figure 13: Value chain of chayote in Hang Kia – Pa Co



Competitiveness

In terms of agro-chemistry of soil, Mai Chau is quite suitable for chayote. However, local demand for vegetable products usually grows behind production. Therefore, local farmers should focus on supplying these products to customers with higher income. However, chayote is facing the problem of food safety. According to a research in Hanoi, 85% of customers consider chayote as on top in the list of three types of food that are most risky to health (Paule Moustier, 2003). In addition, the market of chayote in Hanoi is being controlled by products from Sa Pa and Tam Dao. In particular, Sa Pa takes a forward action by having quality check for their products in Hanoi before concluding a large contract for providing all clean vegetables for Thanh Xuan district.

On the other hand, vegetables are alternative products, which means that customers tend to use any types of vegetables with high quality and at reasonable prices, not necessary fixing some certain types of vegetables. Therefore, it's necessary to consider chayote in the overall picture of vegetable industry. According to IFPRI study (2002), development of vegetable consumption reached only less than half of GDP growth. Nevertheless, in the period of 2000 – 2006, the growing area of vegetables in the whole Vietnam increases 8.5% annually on average (ICARD, 2006), which is approximately equal to GDP growth. According to ICARD's estimation, the average vegetable output per person in Vietnam is 116 kg, 40% higher than the demand.

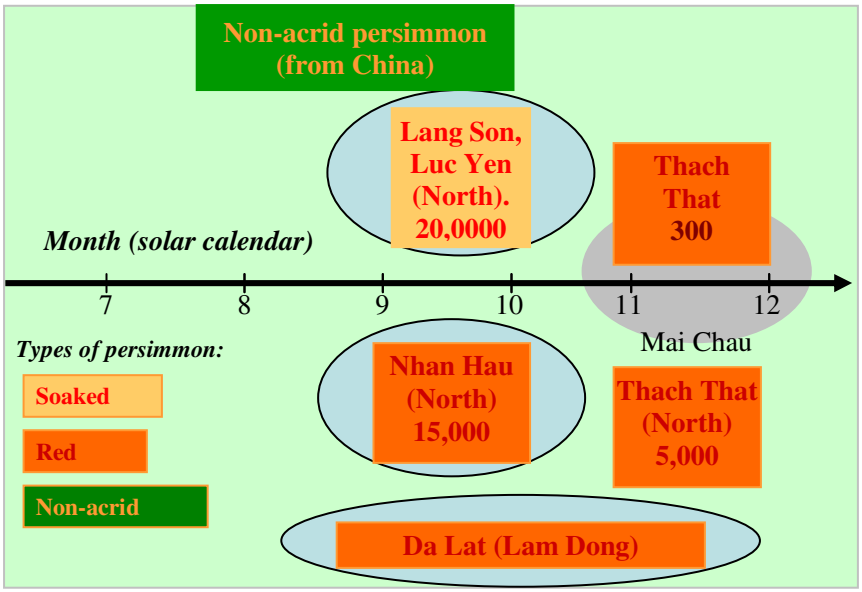
In summary, the development trend of vegetables in the future will not focus on quantity, but quality. Once vegetables are of high quality and good hygienic safety, many retailers in Hanoi will be willing to accept these products.

Potential partners
In order to grasp opportunities for taking over the market by quality, some companies have carried out research in remote areas to build up their own clean production zones. Typically, Dong Tay Seedling Company in Hoa Binh sent their technical staff to sign contracts with farmers. In addition, the Pacific Ltd. Company in Cham Mat (Hoa Binh) also committed to development of farming production in Mai Chau. However, there are some unreasonable terms in contracts between these companies and farmers that may need experienced mediators to settle. This is a gap for development organizations to contribute in stead of only supporting agricultural extension.

1.2.4. Persimmons
Overview of development trend of persimmons in Vietnam
Persimmon is a temperate fruit and usually planted in the elevation of over 500 meters in the North of Vietnam. In the South, Da Lat (Lam Dong province) takes up a significant proportion of persimmon market. Although widely planted, the native varieties are acrid persimmons, which need to be reduced acridity after harvest. The red persimmons account for more than 60% of persimmon growing area in the North (Tran Manh Chien, 2005). This type of persimmons was preferred by customers before 2000 due to (i) nice peel, suitable for offerings to temples and worship events; and (ii) there were no competitive fruits. However, development of high quality soaked persimmons and imported non-acrid persimmons from China are revealing disadvantages in quality of red persimmons in general and Thach That persimmons in particular.

Seasonal competition of persimmons in Vietnam
The main season of persimmons in Vietnam is in August of the lunar calendar. This is the time people use persimmons most for offerings to tempers and worship events. Nhan Hau persimmons and Lang Son soaked persimmons are major varieties in the market during this time. Harvest of Da Lat persimmons partly overlaps the harvest of Thach That persimmons. Since Thach That persimmons are less attractive and lower quality, the overlapping harvest strongly affects the sale of this fruit. However, after lunar November and especially during December, there is no such competition against Thach That persimmons. During this time, Thach That persimmons can enjoy the increase in prices, up to 4,000-5,000 VND per kg sold right in local gardens.

Figure 14: Harvest season of Mai Chau persimmons with the national market



Analysis of local persimmon market

Persimmons sold in October in the lunar calendar are mainly Thach That persimmons from Hoa Binh, Thai Nguyen and Yen Bai provinces. However, Thach That persimmons hardly gains a good position in the market any more. Poor quality in addition with the changes in consumption trend of young consumers leaving only older people using this fruit for special events (visiting temples and worship events) are major reasons of market loss in Hanoi of Thach That persimmons (Tran Manh Chien, 2005).

Pa Co persimmons are also a type of Thach That persimmons, which are not preferred by dealers any more. In the interviews by the research team with large fruit dealers in Dac So (Hoai Duc district, Ha Tay province) and some fruit stores, all of them show their disappointment when mentioning about Thach That persimmons. In big supermarkets in Hanoi (for instance Intimex, Big C) Thach That persimmons or even Nhan Hau persimmons are not on in the list of selling items. According to these sale establishments, only non-acrid persimmon or at least the soaked persimmon will survive on the market.

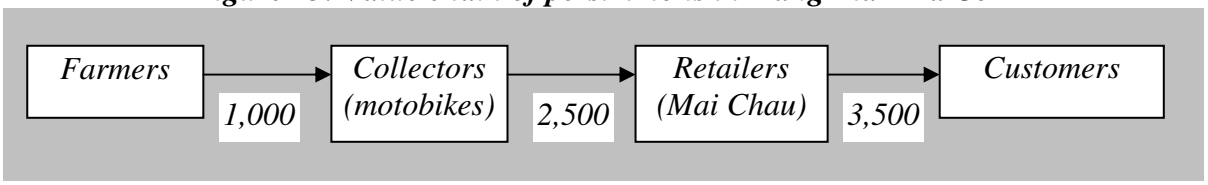
In conclusion, persimmons from Mai Chau have not yet entered Hanoi market. They are sold only in commune and town markets in surrounding areas through small dealers using motorbikes. They collect 150-200 kg each trip, bring it home and process it by themselves, then sell it to retailers.

Box 4. Plum business (Mr. Duoc)

Moving to the area from the lowland about 10 years ago, Mr. Duoc has worked in the trade of agricultural products, mainly maize and plum. He has his own 10-ton capacity van. In order to collect plums, he hires three local people at a wage of 50,000-200,000 VND per ton (depending on profits). The price at the time of collection is 1,000-4,000 VND per kg. Plums are gathered at his house, then selected, packed by hard boards and loaded on the van. Wages are paid on efficiency of workers throughout all phases. But in selection phase, he pays a daily wage of 40,000 VND.

Business contacts with other traders in Thai Nguyen, Thanh Hoa, and Vinh are made through the phone. In some cases, they don't even know each other by face. Trading agreements are paid in the form of commission as one million VND for 10 tons. Money is transferred to bank accounts or by cash through van drivers.

Figure 15: Value chain of persimmons in Hang Kia – Pa Co



1.2.5. Plums

Market channel of plums

Plums from Pa Co were once sold in Hanoi market. However, this fruit eventually lost the market as it did not keep up with high demand for quality of the city customers. Currently, plums are consumed through two main channels: (1) small dealers carrying to town markets nearby, and (2) bigger dealers to markets in urban towns in Thai Nguyen province, Thanh Hoa province, and Vinh (Nghe An province).

Competitive capacity

Mai Chau plums are not good as Moc Chau plums. Due to its high valuation of Hanoi market, big dealers often prefer Moc Chau plums. Therefore, the price at garden of the plums can reach up to 1,500 – 2,000 VND per kg. Why are Mai Chau plums less competitive? How to improve its attraction to the market? These questions need a more detailed and specific study on market chain of plums.

Benefits

Fruit trading is a high risk business. On the other hand, benefits from this business are very high. Analysis on benefits of plum dealers are presented in the below table. According to this table, each 10-ton van will bring about more than three million VND for the dealers. However, price risks and quick rottenness also cause complete loss to many dealers.

Table 20: Analysis on business expenses for plums

Buy quantity per van (kg)	**10,000**
Total expenses per kg	2,300
Total capital	23,000,000
Interest rate of loan	2%
Loan costs (VND)	460,000
Price (VND)	1,200
Market expenses	**1,100**
Collection	100
Local transport	500
Selection	10
Carrying and loading	40
Transport (400 km)	350
Commission	100
Income	**2,660**
Price (VND)	2,800
Loss	5%
Benefit per kg	**360**
Total benefits	3,600,000
Net profit	3,140,000

1.2.6. Bamboo shoots

From June to September is the time for collecting bamboo shoots from forests. It should be noted that not all bamboo shoots will grow into bamboo trees. Therefore, if there is no adequate plan for collection, this important resource will be wasted. White bamboos with good intensive cultivation, the productivity of bamboo shoots can reach 10 tons per hectare annually.

The current market of bamboo shoots in Mai Chau is still very small, mostly serving local demand and passengers on the highway. After collecting from the forest, local people sell shoots to restaurants nearby the highways or small processors to retail at local markets. For salted bamboo shoots, raw shoots are boiled and put into cold water before being salted.

Since the original plan of this research did not include bamboo shoots in the list of products, information on this product in this report is very limited.

1.3. Value chains of Shan Tuyet tea

1.3.1. Introduction of Shan Tuyet tea plants in Hang Kia - Pa Co

Shan Tuyet tea originated from India and was introduced into Vietnam hundreds of years ago. This is a type of ancient trees distributed in the mountainous areas in the North of Vietnam on high elevation with low temperature (Le Tat Khuong, 1998).

Shan Tuyet tea is actually a variety of Shan tea in India. On the top of tea buds there are several white lanugos, which look like snow when they are dried. That's why this tea is called Shan Tuyet ("tuyet" in Vietnamese means "snow"). In Pa Co commune, there are some Shan Tuyet tea trees of more than 100 years old. In the North of Vietnam, there are several places having this famous Shan Tuyet tea, including: (1) the Shan Tuyet tea zone in Moc Chau (Son La province), which was officially registered for geographical instruction; (2) the tea zone in Pa Co of Mai Chau district (Hoa Binh province); (3) the tea zone in Bang Phuc (Bac Kan province).

Before 1997, Shan Tuyet tea trees in Pa Co were planted without any serious investment and care, thus some of them died and some survived with low productivity. To solve this problem, during 1997-1999 the Agricultural Department of Hoa Binh province implemented the Project No. 119 *"Strengthening and transferring technical advances for production of Shan Tuyet tea in Pa Co Commune, Mai Chau district"*.

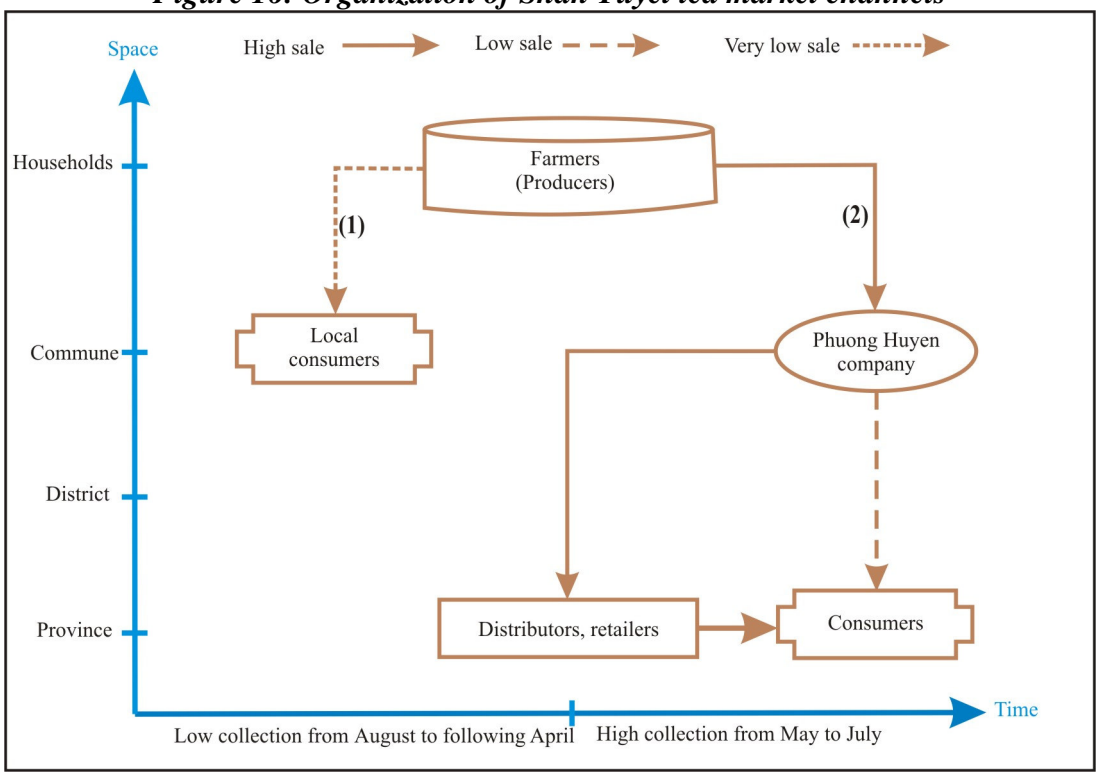
In 2006, in order to continue results of Project No. 119, Project No. 343 was initiated to link four stakeholders in tea production. This project is currently carried out by Phuong Huyen Company in cooperation with Department of Agriculture and Rural Development and Department of Science and Technology. At present, there are 7,000 Shan Tuyet tea trees in Pa Co (source: Department of Agriculture and Rural Development of Hoa Binh province). There are 50 hectares of Shan Tuyet tea plants grown in specialized areas.

Box 5. Phuong Huyen Company

This company was established in 2005 from the former Hoa Tam Nursery Garden. Phuong Huyen Company has 80 staff, including 10 managers and 70 workers. They have three nursery gardens: the garden in Hoa Binh city with 1.5 hectares, Cao Phong garden with 2 hectares and one garden with three hectares. The company can produce 200,000 seedlings of different plant species each year.

1.3.2. Organization of the tea market channels

Figure 16: Organization of Shan Tuyet tea market channels



The organization of Shan Tuyet tea market channels in Pa Co is very simple due to small productivity of tea. There are not many stakeholders participating in these channels. This reflects in the above figure.

1.3.3. Cooperation mechanism

Channel 1: Producers → Local customers

This is a very short channel from producers to customers. The products on sale are processed dry tea. After collecting the tea, producers dehydrate them. Some will be kept for home use and the remaining will be sold to the local customers.

Channel 2: Producers → Processing company → Distribution dealers → Customers

After collecting tea leaves, producers sell the fresh tea to processing company (the company has a factory in Pa Co). The leaves are divided into two types: leaves from ancient trees and leaves from newly grown trees. After the classification, the company carries out processing and packaging tea products then sells to dealers (wholesalers and retailers) and customers.

1.3.4. Price

Channel 1: Producers → Local customers

For local consumption, producers process and sell the dry tea at the price of 60,000 – 80,000 VND per kg.

Channel 2: Producers → Processing company → Distribution dealers → Customers

Producers sell Shan Tuyet tea leaves to Phuong Huyen company in two ways: (1) tea leaves from ancient trees at the price of 6,000VND per kg of fresh tea, (2) tea leaves from newly

grown trees at the price of 3,000VND per kg of fresh tea. To distinguish these two types of tea leaves, they compare thickness, length and amount of lanugos on the tea buds (tea leaves from ancient trees have bigger buds and more lanugos).

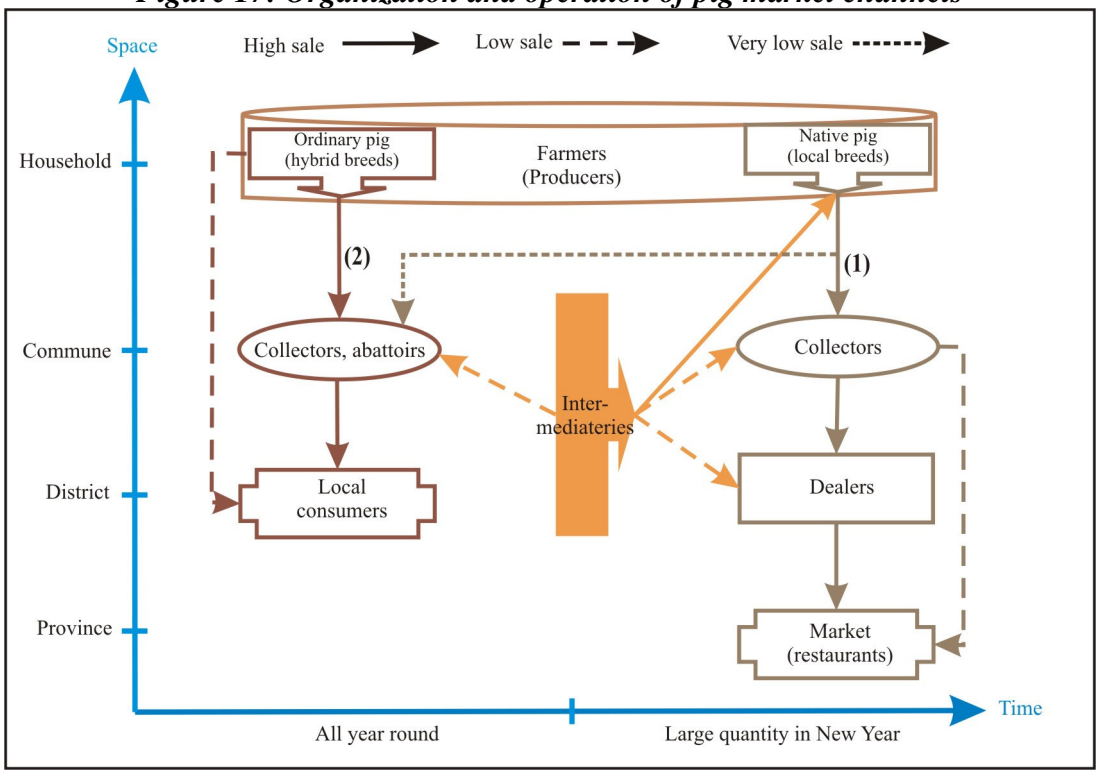
After the company buys fresh tea leaves from farmers, they carry out processing and packaging, then sell to customers at the price of 150,000 VND per kg of dry tea. Each 30 kg of fresh tea leaves produces six kg of dry tea, including four kg of good quality tea.

1.4. Value chains of pigs

1.4.1. Organization of market channels

Organization and operation of pig market channels in Pa Co, Tan Son and Bao La communes can be divided into two main types: Ordinary pigs (hybrid breeds) and native pigs (local breeds). There are certain differences between these two types of pigs, not only in production organization but also in consumption channels.

Figure 17: Organization and operation of pig market channels



Ordinary pig channel (hybrid breeds)

The organization and operation of this channel is quite simple. Activities ranging from production to consumption mainly take place within the commune and surrounding communes; where there are markets covering certain areas such as Bao La market (Bao La market is the regional market for Bao La, Pieng Ve and Cun Pheo communes). Pigs are mainly not transported out of the district. One of the reasons is that the scale of husbandry remains small. Farmer households commonly raise pigs without fixed cages and utilize leftovers from family foods to feed their animals. Pigs are sold throughout the year in small quantity, thus it's difficult to gather a large quantity of pigs to sell at a certain time. This is a major disadvantage for further development of pig husbandry.

In general, pig raising in these areas is still trying to meet the local demand within commune level. The market channel of ordinary pigs is currently quite simple.

Native pig channel
The organization and operation of this channel is more complicated in comparison with the ordinary pigs because this channel can reach farther market. However, native pigs just need very simple raising techniques. These native pigs are of local breeds of the Mong and Muong people. Pigs are not kept in cases and raised from one to even two years before they can be sold. Therefore, although native pigs can be sold at high price value, productivity and efficiency of native pig raising are undermined by the long period of production and low weight of sold pigs (from 30 - 60 kg for each full-size pig).

In addition, native pigs are often used in local festivals, lunar holidays, and family events. Therefore, the quantity sold outside of local communities is low. Those sold to outside market are gone through the channel of local collectors and external dealers.

1.4.2. Cooperation mechanism
Trading activities among factors of the two pig market channels are exchanged directly.

Ordinary pig market channel
Channel 1: Farmers → Local customers
This channel is very short, from producers directly to customers. Farmers butcher on their own or with other households. The meat is shared among participating households. The remaining meat will be sold to neighbours and others in their village.

Channel 2: Farmers → Collectors cum Butchers → Local customers
The collectors cum butchers consist of two types: Type 1) frequent collectors cum butchers and Type 2) infrequent collectors cum butchers. Frequent collectors cum butchers work full-time for living throughout the week. Infrequent collectors cum butchers are those who only work in market-days. In addition to providing meat in market days, those in Type 1 also collect pigs and sell meat daily along main roads, cross-sections, population centres, and even direct to home of local people. There are only about three to five people doing this type of work in each commune. Those of Type 2 are more common, even active in every village. They only butcher pigs and sell meat in market-days.

Both types of collectors cum butchers buy pigs from farmers and butcher at their houses. After butchering, pork is transported to markets by motorbikes and sold at markets in market-days or along main roads and population centres.

Native pig market channel
As described in Figure 17, there are two channels for native pig sale. In fact, native pigs are often sold before the lunar New Year due to high demand for pork at this time.

Channel 1: Farmers → Collectors → Dealers → Markets (restaurants)
Live pigs are sold to collectors. Collectors buy pigs directly from local farmers and then sell to dealers in Hoa Binh, Xuan Mai (Ha Tay province) and other lowland provinces.

Channel 2: Farmers → Collectors cum Butchers → Customers
This channel is similar to the channel 2 of the ordinary pig channel. These two channels have the same stakeholders and operation method.

1.4.3. Cost and benefit analysis

Ordinary pig channel

The average weight of live pigs sold is about 70-80 kg with the price of 14,000 VND per kg. Therefore, the buying cost for one pig is about 980,000 – 1,000,000VND. Total meat of butchered pig with full parts is approximately 49-56kg (around 70% of the live pig). Meat is sold at the average price of 22,000 VND per kg.

After deducting related expenses (such as transportation, market fees of about 30,000 VND each pig), the butchers receive a net profit of 95,000 VND a day. This work often requires two labours, thus each earns 47,500 VND a day for one butchered pig.

All activities in the market channel are conducted by cash transactions. Quality of pigs is quite high due to less use of gain-weight products in pig raising of local people.

Native pig market channels

Local consumption: The average weight of sold live pigs is around 40 - 60 kg with the price of 35,000 VND per kg. Cost for buying a live pig is from 1,400,000 – 2,100,000 VND. After butchering, meat products remain approximately 30 – 45 kg (around 75% of the live pig). Meat is sold at an average price of 55,000 VND per kg.

Earning from price differences is about 250,000VND. After deducting related expenses (such as transportation, market fee of about 50,000VND each pig due to far distance of transportation), collectors cum butchers get the profit of 200,000 VND a day. This work needs two labours, thus each earns 100,000 VND a day per one pig. Apparently, collectors and butchers can get good profits from buying and selling native pigs. However, it's not easy to buy native pigs due to two main reasons: (1) most of local people use native pigs for their family events, lunar holiday, etc.; (2) high competition with other collectors, who buy these pigs and bring to lowland provinces to sell to special-dishes restaurants.

External consumption: This channel is quite complicated. Prices, fluctuation of prices, as well as quality of products vary sharply.

Table 21: Buying and selling price by different factors

Price / Factors	Buying price (1,000 VND/kg)		Selling price (1,000 VND/kg)		Price difference (1,000 VND/kg)	
	Live	Meat	Live	Meat	Live	Meat
Local collectors	35- 40		40-50		5	
External collectors	40-50		50-60		10	
Hoa Binh restaurants	50-60		70-80	100-120	20	
Hanoi restaurants	70-80		100-110	150	30	
Hoa Binh customers		110-130				
Hanoi customers		160-180				

The table above reflects big differences in price. Results from the survey in special-dishes restaurants in Hanoi show major changes in fluctuation of prices.

Box 6. Price of native pig meat in a Hanoi restaurant
Price of Muong pigs is quite different over time. During high time, the price can reach

200,000 VND for one kg of butchered meat.

Mr. Chien, owner of **'Muong Pig Restaurant'** at 11/236 Au Co (Quang An, Ho Tay, Hanoi) said that the price of native pigs depends much on the quality and quantity of the supply. Some restaurants sell local pigs, which are not the real native pigs from ethnic communities but raised with industrial methods.

Therefore, questions arise here are the sources and quality of products in this industry are difficult to distinguish, fluctuation of prices change sharply, etc. Stable development of this industry should be implemented to create trade mark from breeders to restaurants of specialities and customers.

1.5. Market chains of cows and buffaloes

1.5.1. Overview of development of cows and buffaloes

Raising cows and buffaloes in Vietnam

Buffaloes or cows have certain advantages. Cows can stand low temperature better and reproduce faster in comparison with buffaloes. On the contrary, buffaloes need fewer foodstuffs, which is often one of major concerns for farmers. In mountainous areas, cows and buffaloes are grazed freely and not caged. In some highland and lowland areas where foodstuff is scarce, local people have to raise these cattle in captivity.

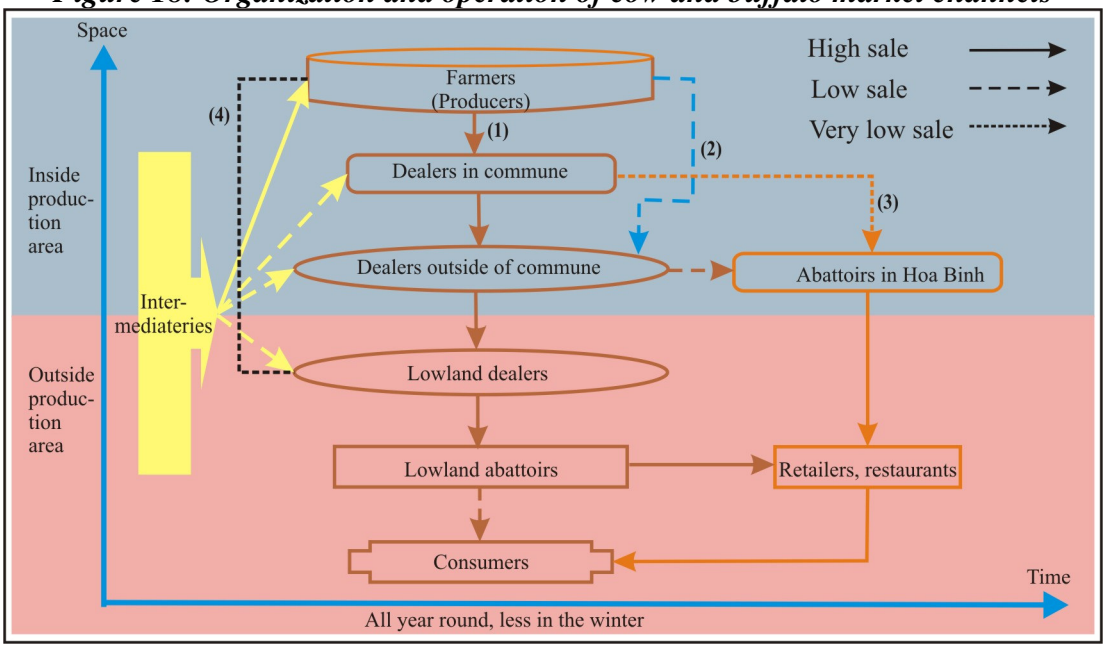
Policy for development of cows and buffaloes

Development of cow and buffalo husbandry is one of priorities in the economic strategies of Hoa Binh province. During recent years, the province has several development policies for improving production of cows and buffaloes. In particular, poor households are entitled to get low-interest loans for buying cows. Thanks to this policy, many poor households are able to invest in cow raising and become important supply sources for the markets in Hoa Binh province.

1.5.2. Organization of the market channels

Cattle grazing is very suitable with natural conditions in Pa Co, Bao La and Tan Son communes. It flourishes quite well in both higher and lower areas. Some households raise cattle in large quantity for sale and get significant income from grazing. Free cattle ranging is becoming less common while herding is getting more popular. This makes significant contribution to the development of cattle grazing in the area.

Figure 18: Organization and operation of cow and buffalo market channels



Organization and operation of the cattle market channels is very complicated. The above figure describes main channels in the circulation of live cattle from farmer households to other factors throughout the country. At present, cattle trade from farmers to the market mainly involves live cattle. A small portion of cattle is butchered and sold in local markets at commune and district levels. According to the field survey, there are only two cattle butchered daily in Mai Chau town. Therefore, market information in this report mainly focuses on live cattle.

1.5.3. Cooperation mechanism and market activities

Trading methods

Price for both cows and buffaloes are estimated on the basis of mutual agreement between sellers and buyers. In major markets, cattle farms, and commune markets, price is calculated per each animal. Sellers often propose price of their cattle based on previous price that their animals were sold. Therefore, there are some differences of price among markets in the area.

In cases of inter-commune markets and trading transactions with lowland dealers, price is estimated based on the potential meat sold from each cattle. This method is also called "blind buying" by local people. This method requires good skills in order to make accurate estimation on potential weight of meat, which will be sold to buyers in the lowland. New traders who lack of these skills are easily broken in the market. "Blind buying" method is influenced by certain factors, including:

- Weight and value of meat by-products;
- Quantity of meat that are not counted after butchery using "blind buying" method.

Distribution channels

Cattle in Pa Co, Bao La and Tan Son communes are circulated via four main channels. Number of factors and quantity of cattle of each channel are quite different.

Channel 1: Farmers → Commune traders → External traders → Lowland traders → Lowland abattoirs → Consumers

When farmers want to sell their cattle, they will inform local traders. After many bargains farmers will have a final agreement with a local trader. Local traders, after buying cattle, sell them to external traders from other areas. These traders collect animals from many commune traders in big quantities to sell to lowland traders. Lowland traders then sell the animals to abattoirs for making final products to consumers.

This is a long market channel, containing many factors, so that profit is splitted into many small amounts. Despite the fact that this channel does not bring about much profit, participating factors still keep it because of the long lasting relationship with other traders. Some factors in the channel, however, believe that this channel needs to be changed in order to increase profit for those involved.

Channel 2: Farmers → External traders → Lowland traders → Lowland abattoirs → Consumers

This is also a long market channel. However, it is shorter than the channel 1 as it cuts out commune traders.

Channel 3: Farmers → Lowland traders → Lowland abattoirs → Consumers

This channel doesn't contain local traders. Lowland traders buy animals directly from farmers. Although this channel reduces the intermediary factors, lowland traders have certain difficulties in buying cattle. It takes some days to collect enough animals to fill up the truck. This consequently reduces the efficiency and increases costs.

Channel 4: Farmers → Commune traders → Abattoirs in Hoa Binh → Consumers

This channel is the shortest and contains least participating factors. However, its economic efficiency is not high due to low local purchasing power.

Relationship among participating factors

Farmers: Farmers usually raise several cattle to earn extra cash and help with ploughing. Animals are usually sold at farmers' houses to local traders. Some households may have up to 10-20 cows or ten buffaloes.

Commune traders: Commune traders purchase cattle directly from farmers and sell them at local markets. Their competition efforts count mainly on towing cattle. Usually, each trader can tow about three to four animals in each trip to commune markets, which earns them a profit of about 50,000 to 500,000 VND.

Inter-commune traders: Inter-commune traders buy cattle from farmers and sell them to lowland traders. Sometimes, they receive credit support from lowland traders.

Each inter-commune trader can earn an average profit of 200,000 – 500,000 VND per animal bought directly from farmers then sold to other traders. They can earn on average from 100,000 – 200,000 VND per animal if bought from the commune traders. Some reports indicate high competition at this market level due to more new traders join the market. It reflects attraction from high price difference. Meanwhile, some traders fail and go bankrupt after several trades since they don't have enough capital to continue.

Hanoi and Ha Tay traders: These traders collect cattle not only in Mai Chau but also in other provinces such as Thanh Hoa, Son La, Cao Bang, and Bac Kan. They often buy cattle from local traders. They transport collected animals themselves or have local people do that for them.

Abattoirs in lowland areas: In Hanoi market, cattle for abattoirs are mainly from traders collecting from mountainous provinces. About 90 - 95% of animals are cows. On average, an abattoir slaughters 10 - 30 cattle daily, depending on orders of restaurants.

1.5.4. Market costs and price

Cost and benefit by factors

Because of the fact that cattle are traded live, identifying costs and benefits for each factor needs larger survey samples. This report cannot analyse in details this aspect due to time limitation of the field survey.

- Commune traders get a profit of 50,000 VND – 100,000 VND per cattle.
- Collecting traders at Mai Chau town earn an average of 200,000 VND – 300,000 VND per cattle.
- Traders in lowland areas get a medium profit.
- Abattoirs get a profit of 100,000 VND – 300,000 VND per cattle, depending on their experience in evaluating the cattle.

Annual fluctuation of prices

According to surveys in Pa Co, Bao La and Tan Son communes, the price of cattle since 2001 has been on increasing trend. This is a positive signal for local farmers.

Table 22: Annual fluctuation of prices at Mai Chau, Hoa Binh

Year	Million VND per each cattle
2001	4
2002	4.5
2003	5
2004	5
2005	5.5
2006	5.5

Source: Survey in December 2006

1.6. Value chains of bamboos

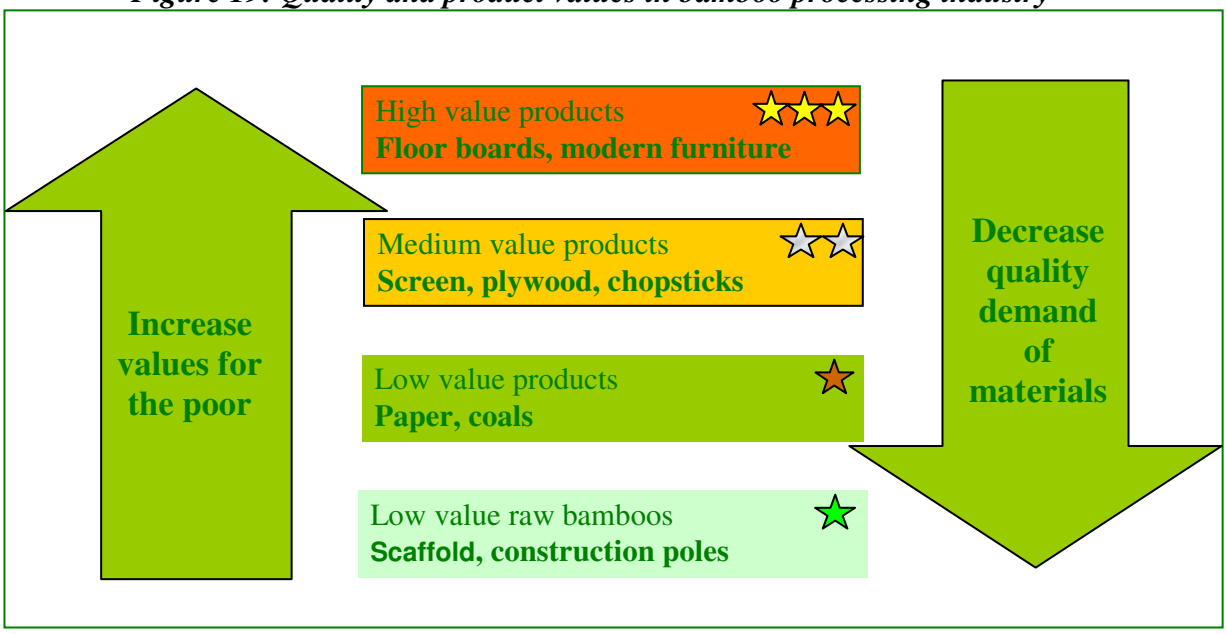
1.6.1. Value of bamboo market

During recent years, bamboos have become an important source of materials for construction (scaffold, floor boards), and home use (chopsticks, tables and chairs, wardrobe, etc), and especially boards for floor. A number of factories are being constructed in Thanh Hoa, Hoa Binh, Phu Tho provinces to collect these potential materials. In Mai Chau, the paper, chopsticks, floor boards and bamboo knitting industries are growing strongly. Local farmers in these areas are having good opportunities to get benefits from the increasing demand of natural materials. However, business costs, transportation costs,

quality and technology are deciding factors to level of participation and benefits of the poor in the value chains of bamboos.

According to a study of Oxfam Hongkong and MPDF (2006), one hectare of bamboos if fully exploited can bring about a value of 1,700 USD and create 2.3 jobs for the poor, including 50-60% of women. In fact, economic value and jobs brought about by bamboo value chains depend on the exploitation industry and market organization. According to Oxfam Hongkong and MPDF (2006), since used mainly for low value products, bamboos in Vietnam only value 179 USD per hectare in comparison with 1,600 USD per hectare in China. Of course, quality of bamboos is a prerequisite condition to evaluate the processing industry. The below figure shows the relations between producing high value products and increasing profits for the poor from bamboos.

Figure 19: Quality and product values in bamboo processing industry



All parts of bamboo trees, from foot to top, can be used to produce various products. The bamboo trunk, accounting for 40% of the whole tree value, is used for high-value floor board industry. The remaining parts of bamboo trees are used for producing chopsticks, toothpicks, paper, plywood, etc. In addition, bamboo shoots also account for 5-10% of the whole tree value.

1.6.2. Overview of the bamboo industry in Mai Chau.

Mai Chau accounts for approximately 4,000 hectares of 16,000 hectares of total bamboo area in Hoa Binh province. Generally, the bamboo processing industry in Hoa Binh is still in the starting phase. Even about 9,000 hectares of bamboo area in Da Bac district have not attracted investment for high-valued bamboo processing industry.

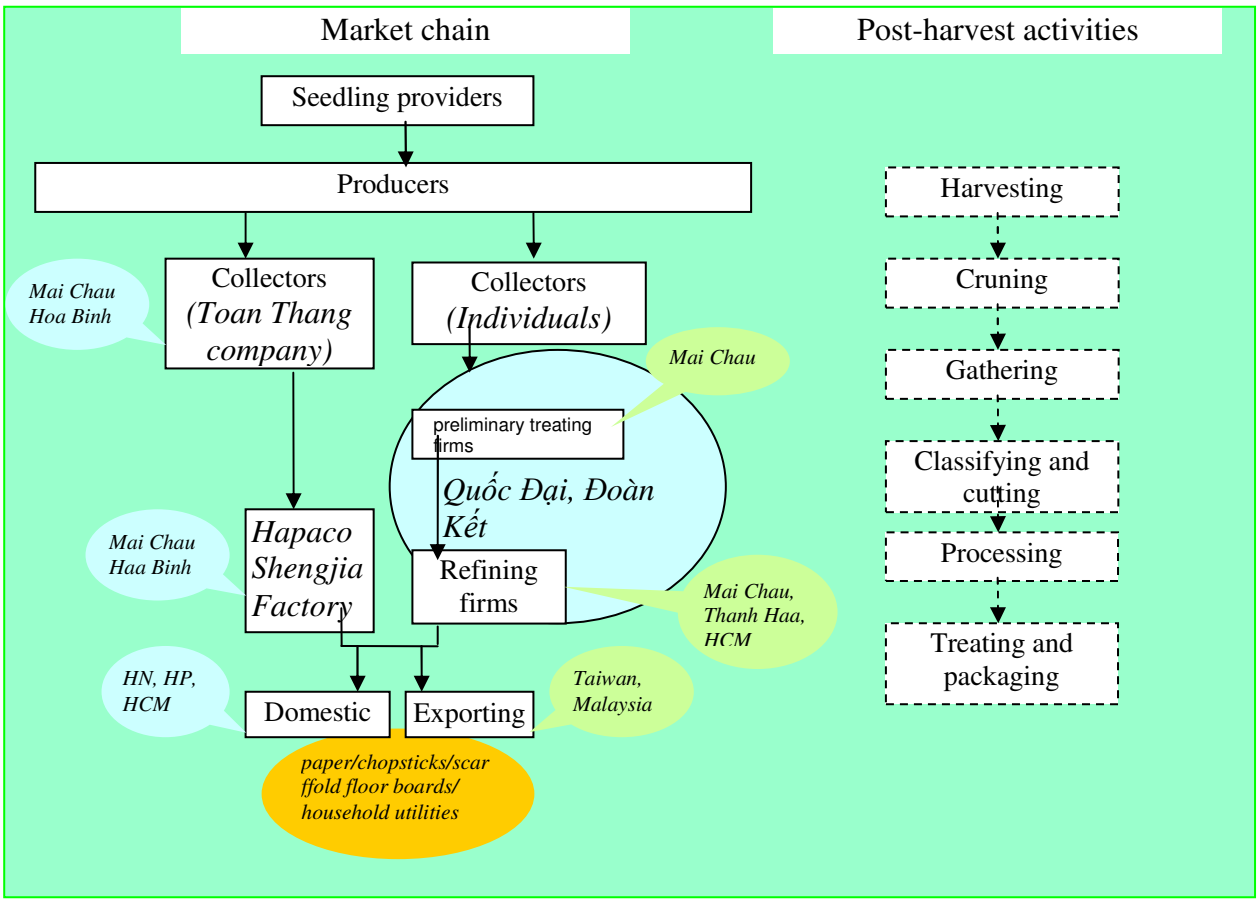
Bamboos in the buffer zone of Hang Kia- Pa Co Nature Reserve are of low and medium value types and are mainly used for paper and chopstick production. Hapaco is the largest bamboo collecting company in Mai Chau. They produce paper and chopsticks with more than 60% bamboos used for paper production. On average, direct buying price is 5,000

VND per kg. In total, one hectare of bamboos just brings about three million VND, which hasn't reached one eighth compared to the optimal value[13].

Nevertheless, a significant contribution of bamboo industry is creation of jobs for the poor. Hapaco Company and nine bamboo preliminary processing factories collect bamboos in Mai Chau and consequently create full-time jobs for nearly 600 laborers with the average salary of 600,000 - 1,000,000 VND.

1.6.3. Outlining the bamboo market chains

Figure 20: Description of bamboo market chains in Mai Chau



The bamboo market has two main channels. In the channel coordinated by Hapaco and Shengjia companies, all steps from classifying to completing products are carried out in their factories in Van Mai (Hoa Binh province) or in Hai Phong province. Collectors gather materials mainly at three locations: (1) Tan Mai and Phuc San; (2) Sam Khoe, Na Meo, Bao La and Cun Pheo; (3) Thanh Hoa. Materials are gathered at the factories in two ways: collectors carry materials to factories or factory's vans collect bamboos on the road.

The second channel is coordinated by Quoc Dai and Doan Ket companies. These companies build their preliminary processing firms near the material areas (in Tan Mai and Phuc San). Bamboos are carried to those firms to be preliminarily processed before being

[13] The estimation is calculated based on annual productivity surveys with the average: 2 tress per cluster x 300 clusters per hectare = 600 trees per hectare.

refined at the main factory. These firms collect materials very effectively due to flexible methods. They sign contracts with many collectors in different areas and pay three million VND as a deposit. In addition, the firm of Quoc Dai Company is located at the upstream of Da River to store materials more conveniently. Before bamboo shoot season and before Tet (lunar New Year), they collect a large amount of bamboos for reservation in order to avoid lack of materials due to prohibition of exploitation during this time. In addition, local people also benefit from selling bamboos to get cash for shopping for Tet holidays. The competitive price is strength of these two companies in comparison with Hapaco and Shenjia. According to Quoc Dai company, their factory always operates at its highest capacity!

1.6.4. Prices

Due to high market costs (mainly transportation cost), farmers earn less than 50% of first price of the firm or factory. Price of bamboos is counted by tree in case of materials for floor boards, counted by kilo in case of materials for paper production (mainly foot, top, and by-products of bamboos). Price of bamboos sold right at the plantation depends on two factors: quality and market costs. Price of type A bamboos at factory is normally 12,000 VND per tree (of about 25 kg). Meanwhile, price of bamboo by-products is just 300 VND per kg.

Table 23: Price at factory according to quality

Perimeter (cm)	>30 (A)	28-29 (B)	25-27 (C)
Price (VND/tree)	12,000	10,000	7,000

Table 24: Price of white bamboo type A (perimeter >30 cm) and market costs

Factory price	**Market costs**			**Price at plantation**
	Transportation	**Gathering**	**Trading**	
12,000	3,800	1,500	1,800	4,900
	7,100			

1.6.5. Competition

Low bamboo quality in the buffer zone of Hang Kia - Pa Co Nature Reserve

The competition capacity of bamboos in the buffer zone of Hang Kia - Pa Co depends largely on quality (maturity, thickness, hardness, and resistance to ants) and road access. According to comments of local firms and factories, the white bamboos in Mai Chau in particular and in Hoa Binh province in general have lower quality than those in Thanh Hoa province. White bamboos of type A in Mai Chau (with perimeter over 30cm) is of the same quality with white bamboos of type B in Thanh Hoa province. Moreover, the proportion of type A bamboos is low, which is less than 25% of the total. The low quality of bamboos is resulted from plantation techniques, quality of soil, and adaptation to weather conditions. Even in Mai Chau, there are considerable differences of white bamboos from Tan Mai and Phuc San in comparison with other areas due to higher proportion of type A trees. Bamboos from areas along the riverbanks of Da River are also preferred by bamboo collecting companies in Hoa Binh province (such as Toan Thang and Minh Nguyen). Meanwhile, bamboos in Bao La commune are ranked lowest among other communes in the area due to low quality as well as inconvenient transportation (long and rough roads).

Small market share

As the area close to the bamboo production area in Quan Hoa district (Thanh Hoa province), Hapaco Company collect and buy ¾ materials there and only ¼ from Mai Chau. However, due to severe competition of materials, the Hapoco's factory can only operate with 50% of its total capacity of 100 ton/day. It means that each month the factory consumes approximately 400 tons of bamboos for Mai Chau. According to total capacity of all factories in the area, Mai Chau provides about 1,000 tons of bamboos and earns an income of 500 million VND each month.

Market growing fast but still not yet reaching the potential
According to Oxfarm Hong Kong and MPDF (2006), with the development of bamboo industry in the Mekong area, potential value in Vietnam will increase from 250 millions USD to 1.2 billions USD by 2017 if the industry is oriented to production of high value products. However, many factories are being constructed in bamboo production areas to produce low and medium value products. Quoc Dai Ltd. Co is investing eight billions VND to build a factory for producing chopsticks and paper in Tong Dau cross-road. Doan Ket Bamboo and Rattan Company (in Km27 in Ha Tay province) has just signed a contract with Mai Chau district to build a processing factory in Bai Sang. However, their supply of materials is mostly collected from Cao Bang and Bac Can provinces.

In summary, market competition will be more severe for quality rather than for quantity. Areas with more qualified bamboos to attract investment in producing high value products will quickly add more value to bamboo production. The buffer zone of Hang Kia - Pa Co Nature Reserve is less competitive than other areas in both quantity and quality.

2. Characteristics of the market system in Hang Kia – Pa Co

2.1. Market system

The market system in Hang Kia – Pa Co area is generally small. Most of food products are self-sufficient and provided through local markets rarely meet once every week. In addition to these official markets, there are two more regular market sites in Thung Khe and Dong Bang. However, transactions in these two markets are concentrated at weekends.

Table 25: Market days in Mai Chau

Time	Mon	Wed	Thu	Fri	Sat	Sun
Market	Nong Luong	Mai Hich	Phuc San Sam Khoe	Tan Mai Bao La	Van Mai Ko Luong	Pa Co Mai Chau town

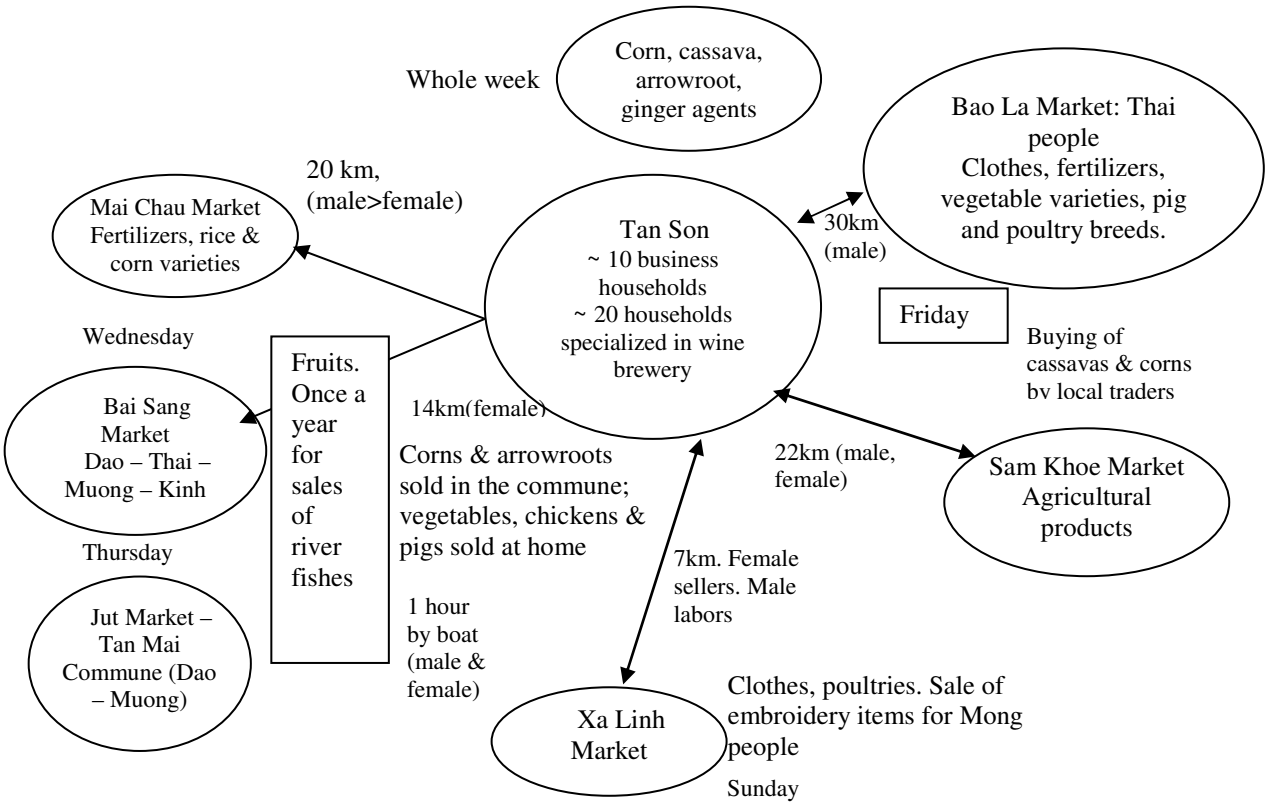
Imported products such as fertilizers, construction materials, rice and fruits from the lowland are transported in combination with daily buses and trucks of local companies. Other products from local areas such as bamboos, corn and cassava are processed or primarily processed before supplying to the market through sale points in Ha Tay province and Hanoi.

Most remarkably, almost all value-added post harvest activities in local areas are carried out by companies or people from the outside. Local people have not been benefited from these added values. Particularly, due to high transportation cost, especially in Bao La commune, agricultural products are sold at lower price while other products from the outside are more expensive.

2.2. Forms of product consumption

Within the past five years, sales and business network have been continually expanded as transportation has been improved thanks to a series of poverty alleviation programmes. Market places have increased within a radius of 60 km around Tan Son commune. Local markets are acting as cultural centres and small trading places for agricultural products. Below is the description of the local market system.

Figure 21: Currently available forms of product consumption



Source: Summary of male and female discussion groups

Through the above-mentioned market system, Dao and Thai women find new ways to obtain small earnings by selling their embroidery products to the Mong people in Pa Co and Hang Kia communes. Many agricultural products, which were only used for feeding livestock in the past (i.e. arrowroots), gradually become commercial goods thanks to the extension of this market network. Many Mong households begin to sell chickens and pigs at the markets. However, the trading mechanism in Xa Linh and Bao La markets is still very simple, such as bartering a chicken for some rice, or bartering vegetables for salt and/or fish sauce, etc…

In general, local people in three surveyed communes are still not very familiar with trading and exchanging of products. Private dealers and local agents often go directly to local households and even to their farms to purchase almost all farming products such as corns, arrowroots, cassavas, and bamboos. Farmers happily save the transportation costs even though the selling price is usually lower than the actual market price. The price of the same agricultural product varies among these three communes.

Table 26: Price of agricultural products

Products	Selling price (July – September)			Customers
	Tan Son	Bao La	Pa Co	
1. Corn				Nguyen Van Phuc (Kinh ethnicity) in Pieng Ve commune. Vi Xuan Hoa (Thai ethnicity) in Sam Khoe commune.
Dried corn seeds	from 1,100 to 2,200 VND/kg	from 1,100 to 2,200 VND/kg	From 1,200 to 1,500 VND/kg	
Ear corns	1,200 VND/kg	From 800 to 1,200 VND/kg	From 800 to 1,200 VND/kg	
2. Cassava and arrowroot				Mr. Duoc (Kinh ethnicity) in Co Trang village, Long Luong commune, Moc Chau district, Son La province.
Dried cassava	N/A	From 1,000 to 1,200 VND/kg		
Fresh cassava	N/A	500 VND/kg	From 300 to 450 VND/kg	
Arrowroot	N/A		From 400 to 500 VND/kg	
3. White bamboo		15,000 trees/year or 30 trucks/year		Mr. Phuc and Mr. Hoa
Category 1	9,000 VND per tree	6,000 VND per tree		
Category 2	7,000 to 8,000 VND per tree	4,000 VND per tree		
Category 3		2,500 VND per tree		
Small & bent bamboos		800 VND per 10kg		
4. Fruits				
Banana	N/A	600 VND/kg		Hawking traders (Kinh and Thai from other communes)
Plum	N/A	700 VND/kg	From 500 to 1,500 VND/kg	Traders and passers-by
Big peach	N/A	N/A	From 3,000 to 4,000 VND/kg	Traders and passers-by

Source: Group discussion and observation. December 2006.

3. End-user market in Hanoi

3.1. Development of supermarkets and corporate retailers

According to the Chairman of the Supermarket Association, Mr. Nguyen Phu Vinh, Hanoi is currently having 65 supermarkets but only 40% of which meet the Association's standard requirements. The remaining supermarkets only have narrow trading area and limited number of commodities. The annual growth rate is relatively high with about 10-15 new supermarkets brought into operation each year. However, unqualified supermarkets still exist, which should eventually be closed or change their business purposes. Several supermarkets and shopping centres mentioned in the report by Hoang Bang An *et al*[14] are in fact either already closed or having their names changed. For examples, Linh Dam Urban Complex used to have two supermarkets, but only ROSAMART (formerly Thanh Ha Supermarket) is still open.

Mr. Nguyen Phu Vinh reveals there are currently four major corporate retailers (Phu Thai, SATRA, HAPRO, and SAIGON CORP) and a series of smaller retailers of different sizes nationwide. HAPRO and Phu Thai are based in Hanoi, while the other two are located in Ho Chi Minh City.

Phu Thai and HAPRO corporations consist of chains of subsidiaries and distribution centres for cosmetics, beauty products, beverages, domestic beverages, sports stuffs, toys, industrial commodities, veterinary medicine, and safe foodstuffs. Their safe foodstuff mostly include seafood and instant processed food products. Agricultural products and fresh food are quite limited. Litchee, longan, and mango are among commonly seen in the suppermarkets. Distribution Center No.8 of Phu Thai Group is in charge of distributing lowland products and imported foodstuffs. This distribution centre has many smaller distributors, wholesalers, key stores, supermarkets, retailers, and direct customers (i.e. restaurants, hotels, and companies). The centre can sign contracts to buy agro-forestry products from smaller distributors if the following requirements are met:

- Large quantity and stable supply of products;
- Professionalism in business (good knowledge of contractual principles, proper business licence, and having VAT invoices);
- Quarantine certification;
- Quality commitment;
- Certificates for product testing;
- Having certification for clean production from the Department of Agricultural and Forestry Extension.

Phu Thai group does not buy clean vegetables but recommends providers to sell directly to supermarkets, companies, and restaurants.

Phu Thai Group has just established the Distribution Centre No.9 in 186 Truong Chinh Street (Hanoi) to be in charge of distributing products made by the disabled, such as bamboo toothpicks and weaving products. They are promoting products made by the disabled to export markets. Phu Thai has not got any distribution centre distributing brocades and handicraft made by ethnic minority people. However, if other organizations or

[14] Hoang Bang An and Nguyen Thi Loc.

cooperatives can supply these products in large quantity and high quality with competitive price, Phu Thai recommends to negotiate proposals with their Distribution Centre No. 9.

3.2. Consumption of agro-forestry products in major supermarkets and shopping centres

Market surveys show that products from mountainous areas in the North are very few in quantity and poor in quantity in supermarkets in Hanoi. Typical products being sold include rice (sticky rice, Dien Bien fragrant rice, violet sticky rice, and unpolished rice), bamboo shoots (dried, salted, and chilly-soaked shoots), anise, cardamom, cinnamon, cowa (*Garcinia cowa*), Mong apple, Shan Tuyet tea, bitter tea, and some other minor products. Sale of these products in supermarkets is relatively low compared to other agricultural products. In this section of the report, products are grouped in the following categories: fresh vegetables, fruits, cereals, meat (chicken and pork), bamboo shoot, dried items (anise, cardamom, cinnamon, cowa, bean varieties, peanut, sesame, mushroom, etc…), brocade and rattan knitting products. Fish and beef are not included due to following reasons: i) limited potential of fish supply in mountainous areas; ii) beef demand actually always exceeds supply and Vietnam often has to import beef.

3.2.1. Characteristics of agro-forestry products in supermarkets

Major agro-forestry products

Unprocessed or preliminarily processed products currently on sale in supermarkets in Hanoi include:

Vegetables: Only five in 14 surveyed supermarkets sell diverse varieties of vegetables similar to those available in open markets. Other supermarkets either do not sell or only offer major varieties, such as green mustard, kohlrabi, tomato, cauliflower, carrot, and several other items. Some supermarkets sell vegetables wrapped in plastic packages with labels and addresses of producers. Big C and Metro supermarkets just have a portion of vegetables sold with labelled packages. Sale volume of vegetables in most of supermarkets (excluding Big C and Metro) is quite low, from 10 - 100 kg per day, lower than or equal to sale of one certified greengrocery store in open markets. Sale staff of supermarkets report that vegetables are taken in early in the morning and will be trashed if not sold by the end of the day. However, the date stamped on packages shows that some vegetables are already displayed for three to four days.

The price in these supermarkets is generally from 20% to 50% higher than in certified greengrocery stores. According to salesclerks at a shop of VEGETEXCO (a certified greengrocery store next to the Hanoi Star and Unimart supermarkets), their sale volume is from 100-150 kg of vegetables daily, almost twice as much as the amount sold in Hanoi Star or Unimart. Consumers prefer buying from the store of VEGETEXCO because of fast transaction, lower price, and fresher products. Supermarkets sell vegetables at higher price due to inclusion of VAT and higher business expenses.

Table 27: Price comparison of vegetables in Kim Lien area

Products	Price (VND/kg)		
	Unimart supermarket, No. 8 Pham Ngoc Thach Street	Certified grocery store, No. 2 Pham Ngoc Thach Street	Kim Lien market

Chayote	5,800		3,500-4,000
Da Lat baby cabbage	7,000	6,000	5,000
Loosely rolled cabbage	5,500	5,000	4,000
Cucumber	10,000	8,000	5,000-6,000
Pumpkin	7,000-12,400		4,000

Note: Pumpkin in the supermarket is of three small sizes ranging from 0.5 - 2 kg. In the open markets, there is only one size for customers to buy in pieces.

A majority of clean vegetables sold in supermarkets and greengrocery stores comes from Van Noi (Dong Anh district, Hanoi), Linh Nam (Hoang Mai district, Hanoi), Chuong My (Ha Tay province), and some villages in Gia Lam district of Hanoi. Among these, Van Noi takes the biggest market share. Except Metro, each supermarket has from one to two vegetable suppliers.

Salesclerks in grocery stores and supermarkets comment that customers are gradually paying more attention to clean vegetables. The sale volume of these products has increased significantly during the past few years. Some supermarkets, who did not sell vegetables before such as Thach Kim, now have fresh vegetables on their lists of products.

Fruits: Fruits sold in supermarkets are often small in volume and limited in variety, except in Metro, Big C, Unimart, and Fivimart. The most common fruits are Vinh oranges and Doan Hung grapefruits. Some supermarkets do not sell any fruit. The quantity and variety of fruits sold in open markets are larger than in Big C, Unimart, and Fivimart.

Cereals: Supermarkets have the same varieties of rice as in open markets. Each supermarket contracts with one or two suppliers. Rice is usually packaged in a 1.2 kg or 5 kg plastic sack. Only a few supermarkets sell rice on quantity demand of customers.

The price of rice (of the same variety) varies among supermarkets and is usually 5-20% higher than that in open markets, depending on rice variety and quantity. For example, the price of sticky rice in open markets is 10,000 VND per kg, while that in Unimart is 11,600 VND per kg. Highland sticky rice is 1,000-2,000 VND per kg higher than lowland sticky rice.

Data collected from 12 smaller supermarkets indicate that there are only five frequent rice suppliers. Among which YAMADA takes up to 70-80% of market share. YAMADA provides a wide variety of highland rice, such as fragrant, sticky, unpolished, and Dien Bien violet sticky rice.

Table 28: Price comparison of Dien Bien special rice and lowland rice products in open market and supermarket in Kim Lien area

Name of products	Price (VND/kg)	
	Unimart supermarket at No. 8 Pham Ngoc Thach	Kim Lien market
Dien Bien highland sticky rice	15,000	12,000-13,000

Special large-grained sticky rice	12,000	11,000
Regular large-grained sticky rice		10,000-10,500
Dien Bien fragrant rice	12,700	8,500
Hai Hau high quality rice	11,000	8,500

Sweet corn: Almost all supermarkets sell sweet corn seeds. There are two types of sweet corns. Imported corns have almost triple price (28,000 VND/kg) of domestic ones. The consumption rate of sweet corn, however, is relatively low at some kilograms per day.

Only a few supermarkets, such as Big C, Unimart, and Fivimart, sell sweet ear corns. The consumption rate is also quite low. According to Unimart, in the past, when this product was still rare and only sold by a few greengrocery stores or supermarkets, Unimart's consumption rate reached 50-60 ears per day. However, now they can only sell from five to 20 ears a day as this product becomes more abundant in the market.

Dried items: This group consists of diverse products, including both NTFPs (cinnamon, anise, cardamom, etc...) and agricultural products (beans, peanut, sesame, dehydrated vegetables, etc.). These products are mostly supplied by small stores in the old quarter of Hanoi and many kiosks in the Dong Xuan market. Each supermarket normally has one to three suppliers. To be eligible as suppliers for supermarkets, these establishments must have official address, business licence, and financial invoices. Product labels only need to contain name and address of the supplier. Dried items are more expensive in supermarkets than in open market; thus, are slowly consumed. When asked about the consumption volume of any specific product of this group, the salesclerks cannot provide reasonable answers as they are only in charge of informing the suppliers in times of product shortage. The financial department of the supermarket takes care of all payment and consumption volume estimation.

Bamboo shoot: Although this is also a product in the NTFP group, bamboo shoot is mentioned separately because of the following reasons: i) it has diverse varieties (giant bamboo shoot, thorny bamboo shoot, dragon bamboo shoot, etc) and is exploited from different regions; ii) it is processed in different ways (dried, sliced, salted, or chilly-soaked); iii) it is consumed by many suppliers in Hanoi (for example, dried item kiosks in Dong Xuan market) and in other provinces. The total consumption volume of bamboo shoot in supermarkets, which ranges from two to 10 kg/month on a regular basis, significantly increases on special occasions or during the New Year.

The consumption volume of rice, dried items, and bamboo shoot is relatively low in the supermarkets because unlike fresh vegetables and meat, customers do not concern much about origin and cleanness of these products.

Honey: The major supplier of this product is the National Bee Joint-stock Company. This company produces royal jelly, pollen, royal jelly honey, pollen honey, etc. There are many different honey types, including wild honey. Even though wild honey is produced from wild pollens, it is semi-industrially produced by the National Bee Joint-stock Company, which is fully equipped with advanced technology. According to the Sales Manager of this company, the total consumption volume per month of honey in supermarkets is very low. Among the three forms of retail, specialized stores (only sell honey products) rank first in

terms of best selling, followed by pharmacy stores, and then supermarkets. Specialized stores and pharmacy stores are much better in terms of marketing products to consumers.

Poultry meat: Only a few supermarkets, including Big C and Metro, sell domestically-bred chicken, duck, and goose. These products are supplied by hygienically approved slaughters in Hanoi. Daily consumption volume of poultry meat only ranges from 10-20 kg a day. Smaller supermarkets such as Unimart, Hanoi Star, Hapro (Giang Vo District), and Fivimart on the other hands sell "Label" chicken of Proconco (a joint-venture project of Vietnam and France). The consumption volume of Unimart outweighs that in other supermarkets. On average, consumption volume of poultry meat in Unimart is approximately from 10-50 kg a day, depending upon weekday, weekend, or special occasions. Meanwhile, other supermarkets can only sell from two to 10 kg daily.

Pork: Pork, regardless of being domestically or industrially bred, is sold in several supermarkets. All suppliers are Hanoi-based. Some slaughters are hygienically certified.

Brocades and rattan knitting products: Only Thach Kim supermarket is currently selling handicraft and rattan knitting products, which are consigned by a handicraft company. The consumption volume is relatively low. Flower baskets of various designs are preferred because the supermarkets also offer artificial flowers.

Salesclerk at Big C supermarket reveals that they do not offer these products because of low consumption demands. These products are recommended to sell in specialized handicraft stores or through online stores.

During the APEC[15] Summit in 2006, Big C supermarket contracted with some suppliers to sell brocades to APEC delegates within two weeks. After the event, Big C returned the inventory to these suppliers.

Price and payment conditions

Product price offered by suppliers must be competitive and negotiable with the supermarkets. New suppliers, if wish to join the distribution chain of a supermarket that already has an adequate number of suppliers, must offer much lower price. In addition, their products must have better quality and more advantages. For example, Mr. Hung, a frequent supplier of vegetables for Metro, fails to sell his products to Big C because the buying price at Big C is too low.

Payment in almost all supermarkets is made once a month when commodities come into the warehouse. However, this is not always the case. According to clean vegetables suppliers from Van Noi, they receive payment (from Metro) four months behind schedule every now and then. These suppliers often complain about late payment by supermarkets while they have to pay producers within four to seven days after buying products. Greengrocery stores, however, usually complete their payment to suppliers within 10 days even though the buying price is lower compared to that of supermarkets. Nevertheless, suppliers can fix price and greengrocers only get certain commission levels based on specific products. For example, for one kilogram of cabbage at the price of 4,000 VND, the greengrocer gets 500 VND for commission. Product price is updated on a daily basis. Product losses are small because vegetables are often completely consumed during the day. However, if they work

[15] Asia-Pacific Economic Cooperation

with supermarkets, they have to share 50% loss if their products cannot be sold and have to be trashed.

Eligibilities of suppliers of supermarkets
Supermarkets only sign contracts with suppliers if the following conditions are met:

- Suppliers are registered business or cooperatives;
- Register supplying products with the supermarket;
- Have certification of hygienical standards or food safety and product origins;
- Stable supply, i.e. always available upon request;
- Packaging standards and specification meet the supermarkets' requirements.

3.2.2. Agro-forestry products in larger supermarkets
This section describes details of consumption of agro-forestry products in three supermarkets Metro, Big C, and Unimart, which have most diverse types and quantity of these products.

(1) Metro supermarket
Fresh vegetables: There are a wide variety of vegetables, including domestic and imported products. Some products only have labels with names and prices but not the origins and names of suppliers. Not all items are fresh. Some vegetables (lettuce and green mustards) are two or three days old. Chayote browses, which are not sold by other supermarkets, are offered at 16,500 VND per kg (while chayote fruit is 5,200 VND per kg). The consumption volume of chayote browses reaches 200 kg a day.

Total consumption volume of vegetables in Metro is from two to three tons a day. Suppliers for Metro include two from Van Noi, one from Ha Tay, and one from Hanoi. During the survey, salesclerks did not disclose the names of the suppliers. According to Van Noi suppliers, the one in Ha Tay is in charge of providing a variety of potato, pumpkin, onion, and garlic. Unlabeled vegetables (baby cabbage, lettuce, etc…) are provided by the supplier in Hanoi, who gathers products from all sources. Chayote sold in this supermarket comes from Hai Phong. Only products of two Van Noi suppliers are properly labelled with names and addresses of the suppliers.

Fruits: Metro offers a wide variety of both domestic and imported fruits, including apples, pears, grapes, kiwi fruits, oranges, mangoes, etc. The buying power is low because the selling price in Metro is much higher than in the open markets. Total consumption of all kinds of fruits is less than one ton a day. Metro also offers imported bananas in the summer. The average consumption volume is only 20 kg a day. However, the sales manager of this category confirms that Metro is willing to introduce distributors to the suppliers upon request. This product is currently of high demand in Hanoi.

Dried items: Dried items are supplied by two kiosks in Dong Xuan market. These products have the same variety as in the open markets but their price is a little higher in Metro. However, the consumption rate is low because these products are packaged in large quantity at 0.5 to one kg per pack. Frequent customers are mainly canteens of joint-venture companies and schools.

Rice: There are four rice suppliers. Two of them are specialized in providing rice from the South and the other two provide rice from the North. Bao Minh and YAMADA supply Dien Bien special fragrant rice. YAMADA provide the fragrant sticky rice and unpolished

rice. Similar to the case of dried items, rice in Metro is slowly consumed. Its frequent customers are also mainly canteens of joint-venture companies and schools.

Meats: Metro offers both domestic and imported meats, including poultry (chicken, duck, and goose), pork, and beef. The daily consumption volume of poultry meats is relatively low, ranging from 10 to 30 kg a day. Imported chicken from the United States, however, attracts more customers due to low price. Due to small consumption volume, there is only one supplier for poultry meats. Metro only gets meats from certified and hygienically approved slaughters.

According to the sales manager, payment to suppliers is made once a month. Price is adjusted in accordance with the market changes. Market survey is conducted on a regular basis of every three days to adjust the buying and selling prices. Metro places daily orders with suppliers once they receives requests from companies, firms, schools, and restaurants. Suppliers are responsible to immediately deliver the products upon receiving Metro's order through the phone.

According to Mr. Hung and Ms. Sang, two suppliers of vegetables to Metro from Minh Hiep and Ba Chu cooperatives in Van Noi, it's still quite difficult in working with Metro. The selling price to Metro is generally lower than to other supermarkets and greengrocery stores because Metro is a wholesaler. These two cooperatives supply a volume of 0.7 to one ton a day in the summer, and one to 1.5 tons a day in the winter. Yet, payment is not made once a month as promised. The suppliers will be warned if they fail to provide ordered products in time for the supermarket. The price of vegetables changes daily while Metro only adjusts its price every three days. Therefore, sometimes the suppliers have to bear the loss in order to keep the supply for Metro. The cooperatives must acquire financial invoices from the sales department of the local district in order to be a qualified supplier to the supermarket. For vegetables directly bought from the producers, 0.1% of tax is applied. A 0.5% of tax is applied if vegetables are purchased from other cooperatives. Vegetables sold to the supermarket must be packaged in separate bunches with plastic sacks, labelled with names and addresses of the suppliers. The suppliers have to buy these plastic sacks. If vegetables are not properly packaged, the supermarket will return the whole supply to the suppliers. In case vegetables cannot be sold, the suppliers have to 50% of the loss.

Retailed supermarkets, used to purchase vegetables from Metro, now change to purchase directly from the suppliers in order to reduce the buying price and to obtain fresher products. The selling price to small supermarkets is higher with smoother transaction and payment. However, the consumption volume in these supermarkets is relatively low, usually ranging from 30 to 100 kg a day.

(2) Big C supermarket

Vegetables: Big C offers a wide variety of vegetables. Products are placed in trays or spongy trays or wrapped in plastic sacks. Vegetables supplied by HADICO are packaged in plastic sacks, clearly labelled with name and address of the distributor. However, HADICO's products just take a small portion in both quantity and variety in comparison with other vegetables, which are displayed on the trays without any information but the price tags. When asked about the suppliers of these unlabelled products, the salesclerks respond that it is the business information they are not authorized to reveal. Meanwhile, Van Noi suppliers report that Big C gets these vegetables from two sources, including one

"clean" vegetable supplier and one "not clean" vegetable supplier (in the words of Van Noi suppliers).

In general, several products (onions, pumpkins, and squashes) are sold at the same price with those in the open markets. However, other products are 10-20% more expensive.

Fruits with many varieties sold in large quantity are not labelled with the names of distributors but just type of fruit and price per quantity. Regular bananas and aromatic bananas are sold at 6,900 VND a kg. Bananas are regularly consumed even though the volume is only from five to 10 kg a day.

Rice: Rice sold in Big C is not as diverse in variety as in Unimart. Rice is supplied by YAMADA and Bao Minh Agricultural Products Processing Enterprise. Products are packaged in clearly labelled plastic sacks. Price in supermarkets is not much different from the open market. For example, market price of sticky rice is 10,000 VND per kg while the price of a two-kilogram sack of Bao Minh is 21,000 VND (in Big C) and that of one-kilogram sack of YAMADA is 11,600 VND (in Hapro).

Dried items: Dried items are provided by two suppliers. The bigger supplier is Mrs. Dang Thi Hai in 50 Hang Cot, Hanoi. Hiep Long Ltd Company provides some products made from mushrooms. Dried bamboo shoot is of different types, packaged in plastic sacks or placed in large baskets for customers to choose. Mushrooms are also sold in the same way.

Meat products: Meat products include chicken, pork, beef, pigeon, and rabbit. These products are supplied by distributors in Hanoi. The names of distributors are clearly labelled on these products. Chicken, pork, and beef are grouped in different categories, including grinded pork (preliminarily processed) similar to that in the market. Chickens include domestically and industrially bred types. Domestic chicken meat is 81,000 VND per kg. However, price of the industrially bred chicken is 25-30% higher than in the open markets.

(3) Unimart supermarket

Among smaller supermarkets, Unimart (formerly Seiyu) is the most noticeable, which offers a wide variety of dried items (more than Big C and even Metro).

Vegetables: Unimart frequently sells from 30 to 40 varieties of fresh vegetables, not to mention potatoes, taros, and other roots. They are very competitive with those in big open markets. All products are packaged in plastic sacks of different weight, from 100-500 grams each sack, and are clearly labelled with suppliers' addresses and phone numbers, and product quality (chemical residuals, nitrate content, bacteria). They have two suppliers, which are Van Noi Cooperative and Linh Nam Cooperative.

The consumption volume of vegetables increases during the weekend. During typical days, the best selling type of vegetables in Unimart is at the rate of about 30 kg a day. Other types are sold at one to two kg a day. On average, total consumption volume of vegetables is approximately 50-100 kg a day.

Fruits: Unimart offers oranges, grapefruits, apples, bananas, pears, strawberries, grapes, and other kinds of fruits. Each of which has different varieties from various sources. For

examples, grapes include Da Lat grapes, black and red grapes imported from of the United States.

Bamboo shoots: Similar to Big C, Unimart sells bamboo shoots of different varieties supplied by various distributors. Dried bamboo shoots are supplied from dried item shops in Hanoi while salted and chilly-soaked shoots come from other regions.

Rice and dried items: Rice and dried items in Unimart are similar to those in Big C. However, Unimart has more diverse varieties of rice (highland sticky rice, different varieties of unpolished rice, and violet sticky rice). Dried items are slowly consumed.

Pork and beef: Beef sold in Unimart is imported from Australia. Pork is sold in similar types as in Big C.

Chicken: Unlike the other two supermarkets, Unimart offers garden chickens. This is a product of the Vietnamese-French joint-venture Proconco. This company supports farmers in Soc Son district (Hanoi) to raise chicken in local gardens. Breeds and foodstuffs are provided by the company. Farmers are also trained with breeding techniques. The joint venture purchases chicken, process, and deliver the products to supermarkets and hotels. There are currently 75 households raising chickens and 25 households raising geese. However, Unimart and several smaller supermarkets only consume chickens. Products from "Label" chickens (the trademark of chicken products of Proconco) are categorized into chicken legs, chicken wings, internal organs, bodies, and chicken in half or as a whole in different weight. A whole chicken costs 74,000 VND per kg.

On average, Unimart sells about 20 to 50 kg of pork, chicken, and beef everyday.

According to the supply manager of Unimart, distributors and producers are qualified to be suppliers if they meet the supermarket's standards (guaranteed quality, competitive prices, and stable supply). Fresh vegetables must be harvested and delivered in the morning and on a daily basis. Distributors must be able to provide VAT invoices. Special rice, corns (fresh Sweet corns), and summer bananas are potential products. The supermarket is willing to purchase bananas at a volume of 10 to 20 kg per batch.

3.3. Suppliers of supermarkets

This section focuses on rice and vegetable suppliers because these products are consumed at larger quantity and could be potential for mountainous areas in the North of Vietnam. Dried items such as cinnamon, anise, cardamom, and tea are mostly exported to foreign markets. They are consumed in the supermarkets at low rate. Currently, their domestic consumption is relatively small compared to the exported quantity.

3.3.1. Van Noi safe vegetable suppliers

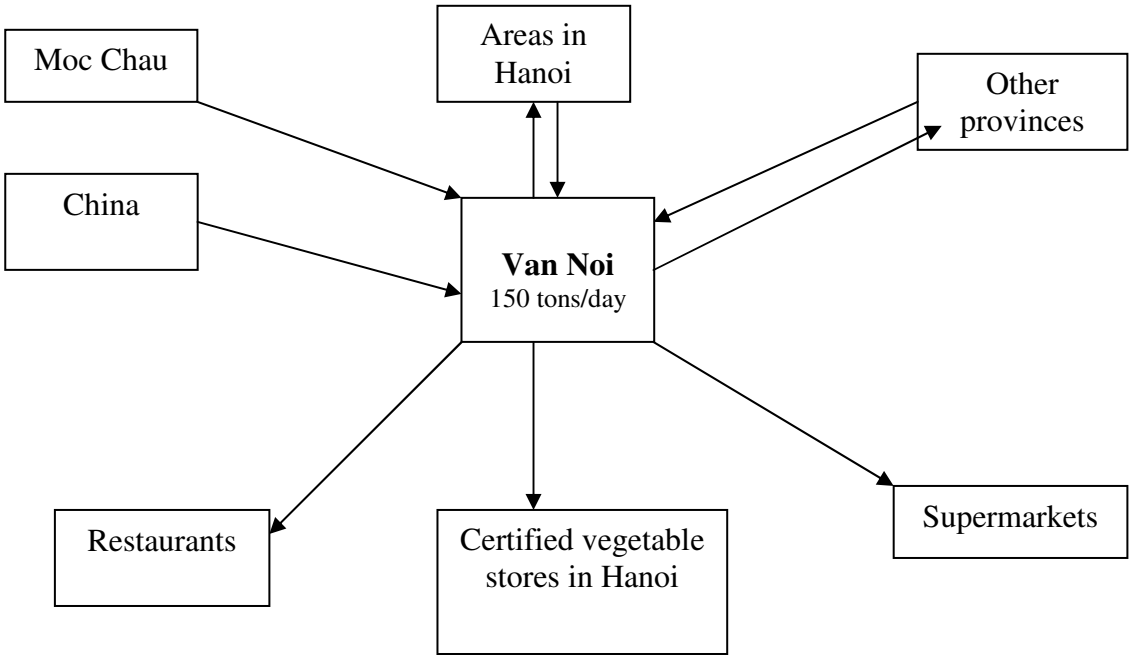
After the market survey of safe vegetables in supermarkets and certified greengrocery stores, the research team decided to focus on Van Noi area for two reasons: (i) safe vegetables in Van Noi take a greater market shares compared to other suppliers in Linh Nam, Gia Lam (Hanoi), and Chuong My (Ha Tay province); (ii) unseasonable vegetables are often transported from Moc Chau to Van Noi[16].

[16] Ho Thanh Son and *et al.*

All nine villages in Van Noi commune live on growing vegetables. This is the first specializing area of safe vegetables in Hanoi. There are 12 service cooperatives in the commune, 10 of which specialize in consuming safe vegetables. In addition, individual traders also purchase safe vegetables from producers and then resell or to supply to certified greengrocery stores in Hanoi. For examples, in Dam village, there are nine individual traders reselling vegetables to certified greengrocery stores, not including those who grow and sell their products directly.

According to Mr. Le Van Que, Chairman of the General Services Cooperative, Van Tri is the focal market for fresh vegetables and fruits. These products from surrounding areas, China, Hai Duong, Bac Ninh, and other provinces are transported to this market and then delivered to other markets in Hanoi and in other provinces. It is estimated that about 150 tons of vegetables are purchased everyday in Van Tri market, including 50 tons of safe vegetables.

Figure 22: Vegetable market channels in Van Noi



Mr. Tran Van Cuoi, a delivery man for three certified greengrocery stores in Hanoi, says that the consumption volume of each store is about 70 to 120 kg a day. Each supplier normally has two to five clients. The quantity delivered to a supermarket is not more than that to a store. Vegetables are sold to supermarkets at slightly higher prices but suppliers must prepare financial invoices, proving certificates, and must be patient with late payment (one month or even two to three months). Therefore, suppliers prefer regular certified greengrocery stores to supermarkets.

Mr. Bui Van Hung (Minh Hiep Cooperative) provides safe vegetables to not only Metro but also many restaurants. In the summer, market demands for Chinese pea, chayote fruit, chayote browse, squash, tomato, pumpkin, and cabbage always exceed supply. Therefore, he can sell approximately one ton of pumpkin, 700-800 kg of Chinese pea, one to two tons of chayote fruit, and 500-600 kg of chayote browse daily.

3.3.2. Unseasonable vegetable suppliers

Mr. Tran Van Thi came to Moc Chau in 2000 from Van Tri (Van Noi commune, Dong Anh, Hanoi) to sell vegetables. Thi estimates that this highland area, where is also home to Thai and Dao ethnic people, has about 4 square kilometres suitable for growing vegetables. He leased the land and contracted with local people to grow unseasonable vegetables, such as tomato, Chinese pea, cucumber, squash, cabbage, chayote, and corn. Recognizing the potentials of unseasonable vegetables and the increasing demands in Hanoi and other large cities, many households switch to produce these products. Total area for growing vegetables has increased to around 50 to 60 hectares. Thi switches to supply varieties, technical support, and consumption of products for a group of households for a total area of 10 hectares. Product prices are fixed when contracts are signed in the beginning of the growing season. Despite of changes of market price, both parties cannot adjust the price agreed in their contracts.

Vegetable growing season in Moc Chau begins in April and finishes in October. Everyday, Mr. Thi delivers about two to four tons of fresh vegetables of all varieties to Van Noi. These vegetables are sold to individual traders in the commune, who will then supply to supermarkets and greengrocery stores in Hanoi. Compared to vegetables from China (e.g. cabbage and tomato), vegetables from Moc Chau are less attractive; thus, a little cheaper.

It is estimated that domestic supply of unseasonable vegetables takes only 30% of the market share in Hanoi. The other 70% are vegetables imported from China. According to the salesman at the certified greengrocery store at No.2 Pham Ngoc Thach Street (Hanoi), his store usually runs out of unseasonable vegetables in the summer.

3.3.3. Rice suppliers

As mentioned above, there are only a few rice suppliers to supermarkets. YAMADA takes the most market share, especially with highland special rice. This section only focuses on the business activities of YAMADA.

According to Mr. Le Hong Son, Director of YAMADA, his company is currently buying fragrant, unpolished, violet sticky, and fragrant sticky rice from Dien Bien in order to supply to supermarkets, restaurants, and retailers in Hanoi. YAMADA supplies a total of 1,000 tons of rice to Hanoi market each year. Customers in Hanoi prefer field sticky, violet sticky, unpolished or fragrant rice, which are products from mountainous areas. YAMADA is willing to do business with individuals, households, and cooperatives as long as they can ensure stable supply sources and large quantity (per truckload). Product price is mutually negotiated based upon market price. YAMADA is interested in buying Seng Cu and Khau Nam Xit special rice in Bac Ha (Lao Cai province) but still not yet able to do so.

3.4. Flower market in Hanoi

Some areas in the Northern Mountains have started to grow and bring flowers to the large cities, including Hanoi. The research team surveyed Quang An flower market and interviewed some salespeople of VEGETEXCO.

Quang An flower market is one of focal markets. There are many flower dealers and wholesalers active in this market. High quality flowers currently available in the Hanoi market are mostly from China, Da Lat, Sa Pa, and Moc Chau. Flowers from Sa Pa have been sold in Hanoi for quite a long time, while those from Moc Chau have just entered the

market. In the summer, Moc Chau has red lily flower; while Sa Pa has both lily flower and roses of different colours. However, in the winter, these two areas can only produce lily flowers. The quality and variety of flowers from these two areas are inferior to those from China and Da Lat; thus product prices are always lower. For example, violet and green orchids, statice, and bouvardia are not yet available in Moc Chau and Sa Pa. In the 2006 season, the price of lily flower from Moc Chau was from 4,000 - 6,000 VND for a flower in the summer, and from 3,000 - 8,000 VND each in the winter (lily flower from Sa Pa was from 4,000 - 7,000 VND a flower in the summer, and 5,000 - 10,000 VND each in the winter); while the price of those from China and Da Lat ranged from 11,000 - 18,000 VND for a flower. Roses from Sa Pa are more expensive in the summer, often from 2,000 - 5,000 VND each.

Unlike vegetables, the price of flower fluctuates during the day with high potential loss (decayed or rotten), especially in the summer; thus, instant payment is often a popular method.

According to the estimate of wholesalers, the market share of lily flowers from Moc Chau is about 20%, Sa Pa – 30%, Da Lat – 20%, and China – 30% in the summer. In the winter, the market share of lily flowers from Moc Chau remains constant, while that from Sa Pa increases to 40%. The remaining 40% belongs to those from China and Da Lat.

Table 29: Price and market share of flowers from Moc Chau, Sa Pa, China, and Da Lat in Hanoi

Products & Market share	Price (VND/sprig or flower)			
	Moc Chau	Sa Pa	Da Lat	China
Lily (summer)	4,000 – 6,000	4,000-7,000	11,000 – 18,000	11,000 – 18,000
Lily (winter)	3,000 – 8,000	5,000-10,000	11,000 – 18,000	11,000 – 18,000
Roses (summer)		2,000-5,000		
Market share of lily (summer)	20%	30%	20%	30%
Market share of lily (winter)	20%	40%	40%	

According to the orchid store manager of VEGETEXCO, orchids are largely consumed during Tet holiday. Orchids prefer cold weather and require special care; thus, many households want to resell or consign their orchids to the store for care during the summer. In the summer of 2006, the store planned to rent a location in Sa Pa for this purpose but the plan was postponed due to the long distance and high transportation cost. If there were a temperate weather highland closer to Hanoi like Sa Pa, the plan would have been feasible. The care-taking cost is about 6,000 VND a month for a pot. Care-taking techniques are guaranteed by VEGETEXCO.

The director of the certified food store of VEGETEXCO, Mr. Nguyen Van Si, says that Moc Chau is currently piloting plantation of gladiolus flowers and orchids of different varieties.

4. Potential products for Hanoi market

4.1. Unseasonable vegetables

One of the most important criteria set by the supermarkets is that vegetables must come from certified sources and must be produced in accordance with certified techniques. The quantity of hygienically safe vegetables currently consumed in the supermarkets is much lower than regular vegetable products. The consumption rate is also much lower than vegetables on sale in certified greengrocery stores in open markets. Trust (hygienically approved vegetables), competitive price, smooth delivery and transaction, as well as product quality (fresh vegetables) are the utmost concerns of customers upon purchasing these goods. The latter three criteria are better in greengrocery stores in open markets. This is probably the main reason of lower consumption volume of safe vegetables in supermarkets than in other markets.

Consumers are paying more attention to food safety, resulting in an increase in the demand for hygienically safe vegetables. This is reflected by the increasing quantity and availability of safe vegetables in various residential areas and open markets. Many supermarkets begin to include these products in their sale items. The increase in demand encourages increase in supply. The growing area of safe vegetables is consequently expanding. Even though there is not yet any official statistics of the growth of safe vegetable supply or consumption in supermarkets and greengrocery stores, interviewers estimate the current annual growth is about 10 to 20%.

4.1.1. Supply and demand

Supply of winter vegetables in Hanoi is on the saturate trend. There have been many safe vegetable farming areas around Hanoi recently. All villages in Van Noi commune (Dong Anh district of Hanoi) now farm vegetables. In addition, there are other areas in Linh Nam (Hoang Mai district), Gia Lam, Soc Son, and Chuong My (Ha Tay). Yet, hygienically certified and uncertified vegetables are not clearly distinguished. In Van Tri focal market, only one third of the total vegetables consumed are from the Van Noi while the remaining is imported from other areas. It cannot be clarified whether all of these vegetables will then be mixed and supplied to greengrocery stores. Some sellers and suppliers report that some even take uncertified vegetables. However, such information has not been validated. For customers, when they decide to buy these products, they trust, or at least “try” to trust that they are given certified items. If supermarkets and certified greengrocery stores are serious in improving their credibility, the consumption volume of safe vegetables will definitely increase.

Each supermarket or greengrocery store often has a number of stable suppliers and a relatively stable group of frequent customers. In other words, business relationship has been already well established. Whenever a new store is open, suppliers will approach with business proposals right away. A new supplier, if wishes to join the market chain, must be able to offer much lower prices while ensuring stable supply of products, timely delivery, certified goods, and the ability to provide financial invoices (if working with supermarkets). In summary, the demand and supply of seasonal safe vegetables in Hanoi are balanced. A majority of suppliers are in the suburban areas or in the surrounding provinces of Hanoi.

4.1.2. Unseasonable vegetables

Hanoi is a very potential market for unseasonable vegetables. However, there is no clear differentiation between hygienically certified and uncertified vegetables. Market survey reveals that imported vegetables from China take 70% of the unseasonable vegetable

market share. The remaining 30% belongs to products from Moc Chau and Da Lat. The market share of vegetables from Moc Chau has increased rapidly and stably within the past five years, even though vegetables from this area are less attractive compared to those from China and Da Lat. In the summer, many greengrocery stores and larger supermarkets are unable to meet the demand of unseasonable vegetables. Many companies and suppliers (YAMADA, for example) are interested in Mai Chau for its favourable topography, climate, and related conditions, which are suitable for farming unseasonable products. YAMADA is currently investing in development of a safe vegetable growing area in Chuong My (Ha Tay province). Mr. Le Hong Son, Director of YAMADA, comments that Hang Kia – Pa Co possesses appropriate physical conditions for unseasonable vegetables, though water supply needs to be thoroughly examined. Suppliers in Van Noi also show their willingness to purchase the more unseasonable vegetables. Therefore, unseasonable vegetables can be potential for such places with suitable climate like Hang Kia – Pa Co to exploit.

4.1.3. Potential types of products

According to suppliers in Van Noi, the most potential product for Hanoi market is pumpkin, which is easy to cultivate, preserve, and having stable demand. The consumption volume could reach one ton a day. Pumpkins sold in Metro, Big C, Unimart, and Fivimart supermarkets are of smaller sizes compared to those available in open markets and imported ones.

Ha Giang orange is the only fruit from mountainous areas currently sold in Metro and Big C at the time of the survey, and is slowly consumed. As aforementioned, the salesman at Metro says that bananas are sold well in the summer. Market survey conducted in the Nghe commune (Mai Chau, Hoa Binh province) by Le Thi Phi (2004) reveals that bananas can be a potential product in several lowland areas in Mai Chau. Even though the market for bananas is relatively small, and incomparable to unseasonable vegetables, small but open and potential market deserves more attention in order to increase the earnings for local people.

4.2. Rice

Special rice varieties produced in mountainous areas, especially sticky, violet sticky rice, and unpolished rice, are of high demand and usually consumed at higher prices compared to lowland products (usually 10-20% higher). Rice produced in mountainous areas primarily serve local needs. A few areas, such as Dien Bien, having large area for wet rice farming can provide their surplus output to the market. These products are sold in rice stalls and in open markets. However, rice sellers often complain about a decrease in the quality of rice resulting in low credibility because rice is often mixed (low quality mixed with high quality rice). When purchasing rice, customers only care about the quality but not the safety of the products. Weaknesses in rice trading include scattered quantity and unstable supply. These special rice products have a wide market, ranging from supermarkets to open markets in big cities. They can be considered as potential products for mountainous areas to develop. Especially Mong communities own two important rice varieties, Xeng Cu and Khau Nam Xit[17], which are favourite choices of urban customers.

[17] E. Pinner *et al.*

4.3. Medicinal plants

NTFPs comprise a large number and diverse variety of medicinal plants, especially in the Northern Mountains, including nutrient-rich herbs such as lingzhi, water hyssop, and dioscorea. In addition, there are many kinds of herbal tea leaves used daily by ethnic people in stead of green tea, such as the blood-supporting tea of the Thai people in Mai Chau. However, the presence of these products in the supermarkets is relatively scarce. Supermarkets only sell products provided by certified pharmacies with attractive labels and handy usage, such as knotweed tea, artemisia tea, lingzhi tea, and colocynth tea. This apparently shows that marketing strategy for these products made by local communities is still weak. Many high quality products, such as natural lingzhi, are sold to China at low prices while supermarkets have to import similar artificial products with lower quality at 10 to 20 times higher price[18]. Improving the marketing strategy in potential markets (supermarkets, for example), where people with high income and care for qualified products are frequent customers, is an effective measure in helping farmers to increase their earnings.

Some medicinal plants, which are rich in nutrients and delicious in taste such as dioscorea, can be grown in local gardens. According to Mr. Nguyen Van Si of VEGETEXCO, dioscorea is currently farmed in That Khe (Lang Son province). VEGETEXCO's safe food store is looking into purchasing this product at 12,000 VND per kg.

4.4. Pork and poultry meats

Current policies of many supermarkets make it impossible for pork and poultry meats of mountainous areas to appear on their shelves. Such requirements as hygienically approved slaughters, certificates, timely and stable delivery, and high initial investment (long payment period, at least after one month) are difficult to be applied in these areas where product supply is still small in quantity and not enough to meet local demands. According to experienced salespeople, special-dishes restaurants, which are growing in both quantity and scale, could be the potential market for pork (Muong pork) and poultry meats from mountainous areas. In this market, the price is always higher than the average price offered in supermarkets, while certification and financial invoice are not required.

The chicken raising project by Proconco Company with a closed process (from breed supply, technical training, professional slaughtering house, consumption channel to supply to supermarkets and high-grade hotels) is a good model, although it requires long-term and large investment.

4.5. Unseasonable flowers

Like unseasonable vegetables, the market for lily flower, orchids, statice flower, and unseasonable roses is controlled by flowers imported from China and Da Lat. This is an opportunity for mountainous areas in the North, including Hang Kia - Pa Co. Currently, Moc Chau (Son La province), Sa Pa and Bac Ha (Lao Cai province) are exploiting this opportunity.

Growing flowers brings much higher profit than other farming activities, even higher than growing safe vegetables. However, flower growers need to have special skills and a great deal of diligence and effort. Moc Chau has just started growing flowers in recent years. Despite its limited varieties and low quality, the market share of Moc Chau flowers have

[18] Le Thi Phi *et al.*

increased significantly within a short period of time. In order for Hang Kia - Pa Co area to follow Moc Chau's model, such factors as rainfall, availability of land and irrigation system need to be investigated in details while seeking for experienced and supportive investors in this field. The idea to cooperate with orchid-care-taking establishments during the summer deserves more attention.

Section IV: Consumers

1. Characteristics of customers in supermarkets

1.1. Age groups, gender, and shopping frequency

1.1.1. Gender and age groups

Survey of 400 interview samples reveals that 75% of supermarket customers are female, while male customers only take the remaining 25%. Age distribution of customers is as follows:

- Below 25: 31%
- From 26 - 35: 31%
- From 36 - 55: 26%
- Above 55: 12%

1.1.2. Age groups and shopping frequency

Frequent customers only take 9% while a majority of customers do their shopping one to four times a month. 63% of these customers, who go shopping in supermarkets from one to four times, are of the age group of under 35. Young people are still not yet frequent supermarket customers. Most of these young customers do not earn high income. In addition, shopping in supermarkets is not yet of their needs.

Figure 23: Shopping frequency of supermarket customers

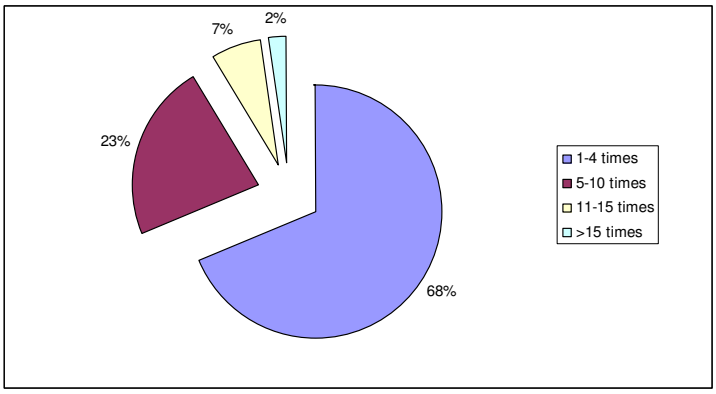
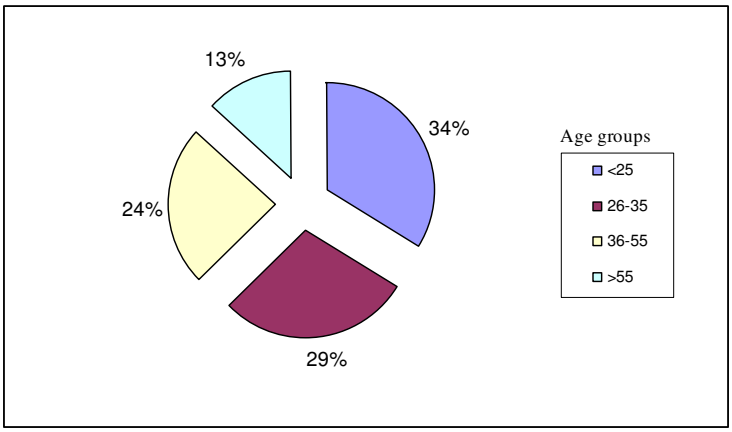
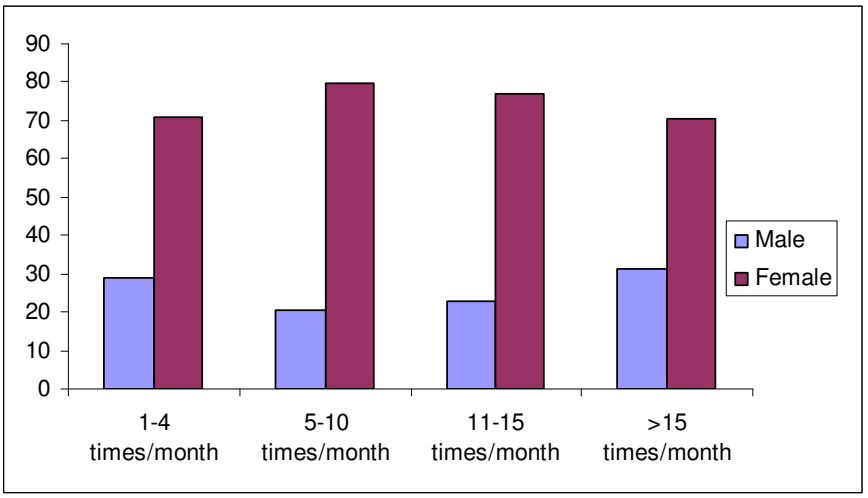


Figure 24: Distribution of age group of 1-4 times/month customers



1.1.3. Gender and shopping frequency

Figure 25: The relationship between gender and shopping frequency

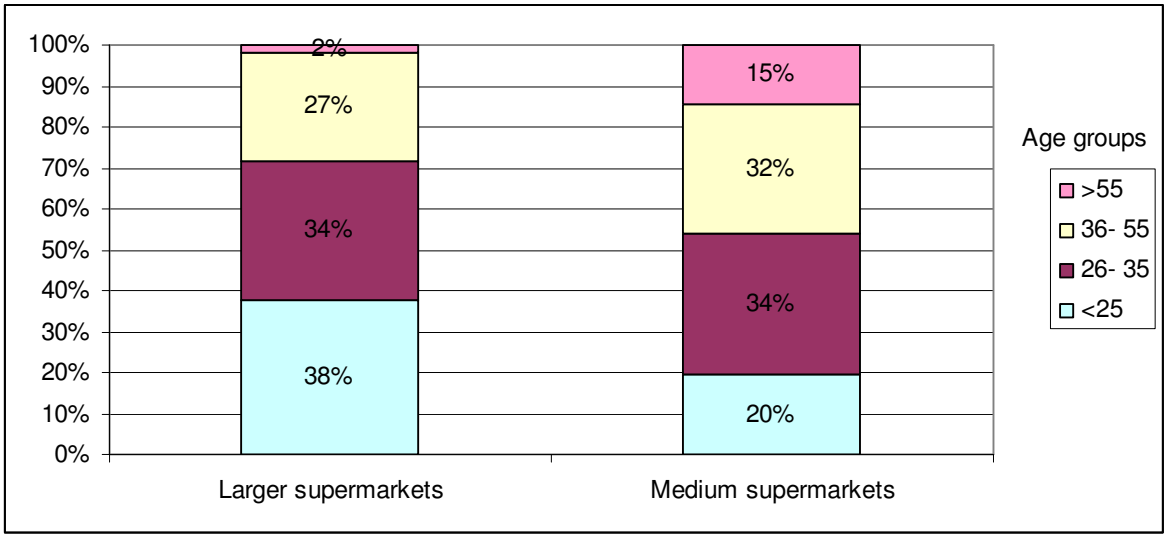


The figure above describes the relationship between gender and shopping frequency. Female customers always outweigh male customers (>69%) in each shopping frequency.

1.2. Customers' choices for supermarkets

There are different supermarkets of all sizes, from Big C and Metro (larger), to Fivimart, Unimart, and Intimex (medium), to chain supermarkets like Hapro. According to the survey, customers prefer larger supermarkets, such as Big C and Metro, which offer a wide variety of goods of attractive designs and reasonable prices.

Figure 26: Customers' age groups and size of supermarkets



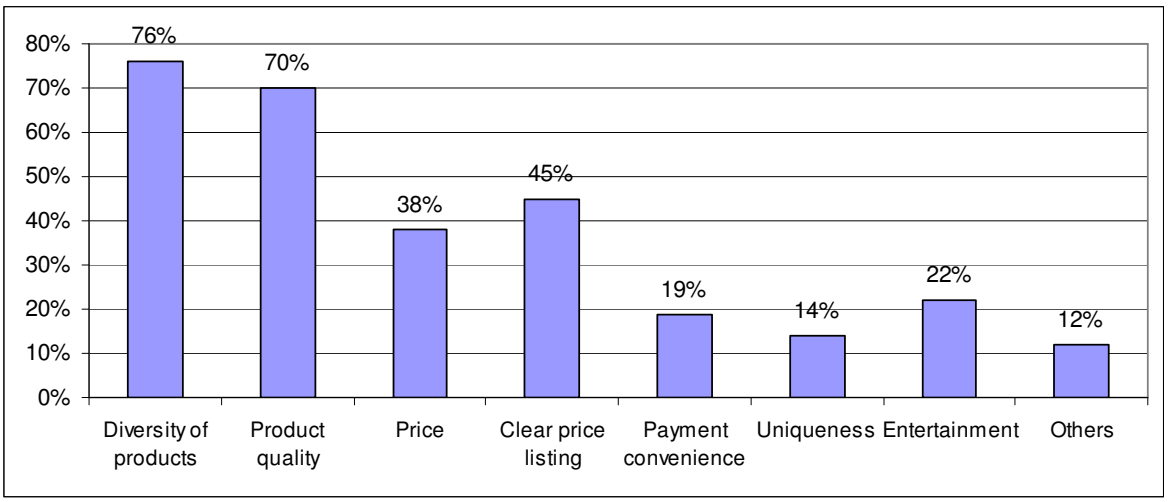
Most of young customers choose larger supermarkets (72%). These supermarkets are located quite far away from downtown. Therefore, they only attract 2% of customers of the age group over 55. There are 20% of customers under 25 and 47% of customers over 35 choose medium-sized supermarkets.

1.3. Reasons for shopping at supermarkets

1.3.1. Factors influencing shopping preferences

The most important factor that greatly influences customer preferences is the diversity of products. Consumers enjoy going to the supermarkets, browsing through different types of products, and making selection before deciding to purchase a product or a group of products. In addition to product quality, clear price listing is another factor highly appreciated by consumers. Only a few customers have special preference on the uniqueness of supermarket products.

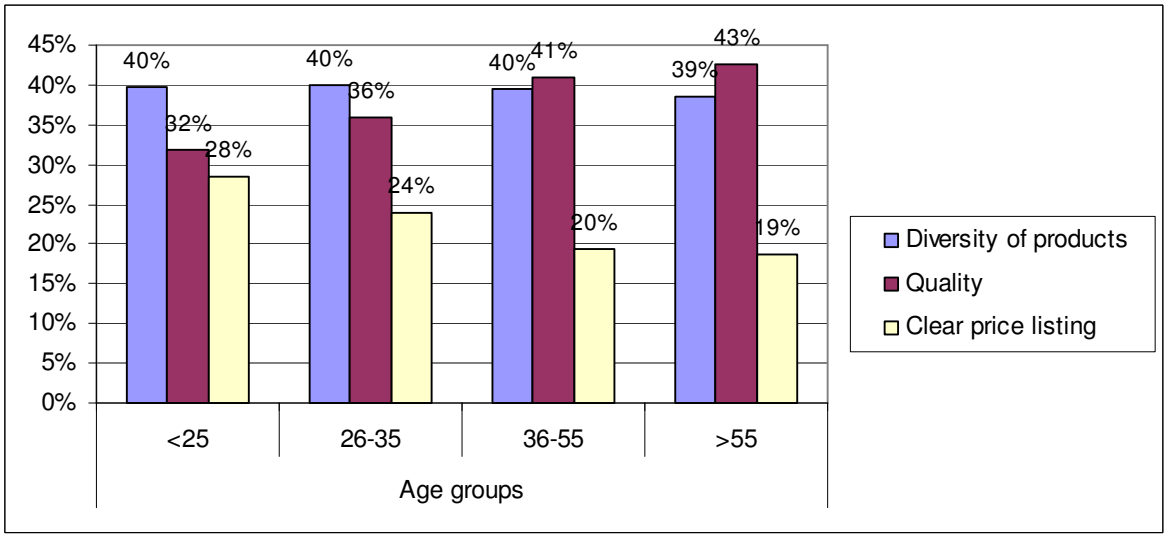
Figure 27: Factors influencing consumer preferences



1.3.2. Preferences and age groups

For consumers of age group under 35, the diversity of products is the determinant factor for their supermarket selection. A majority of this group of customers regard public price listing and non-bargain sale as not the determining factors. For customers of age group over 35, product quality is the utmost concern for buying decision.

Figure 28: Shopping preferences among age groups



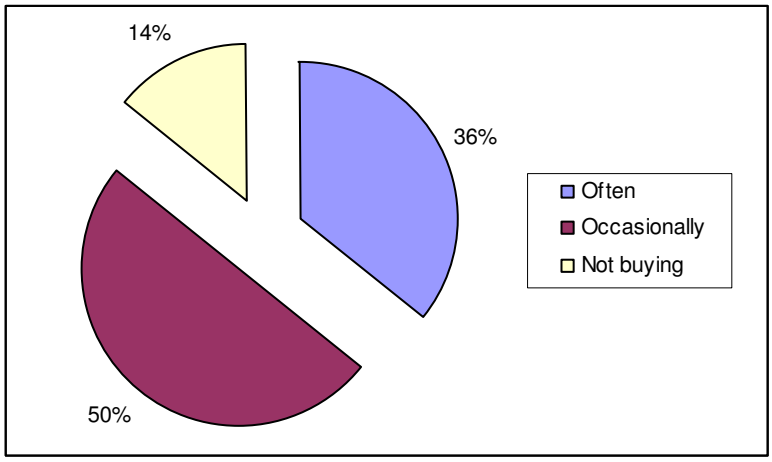
2. Consumer habits and demands

2.1. Consumer habits in purchasing agro-forestry products

2.1.1. Purchasing frequency of agro-forestry products in supermarkets

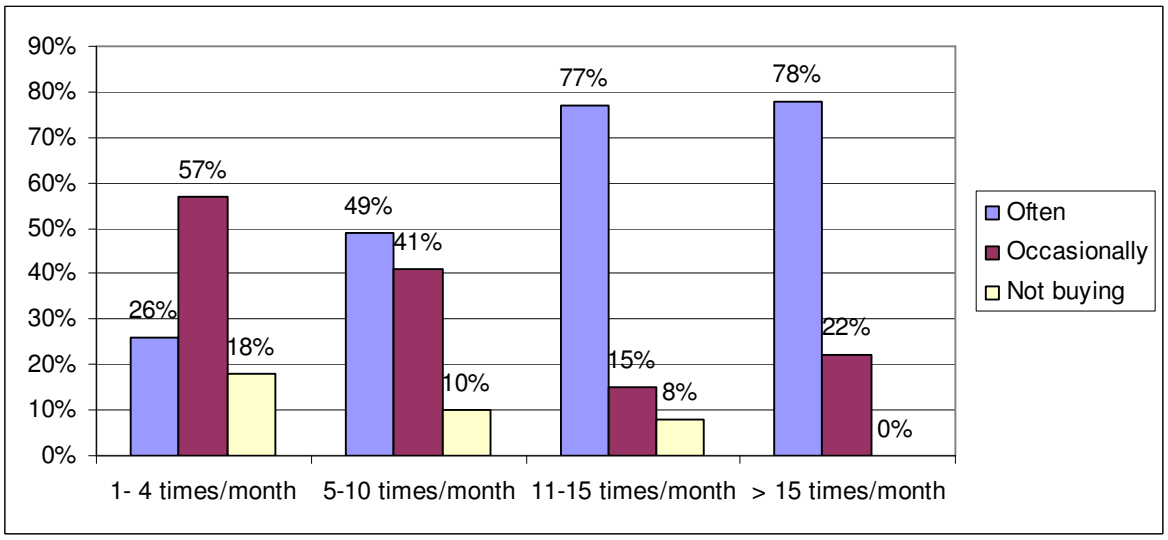
Only 36% of customers frequently purchase agro-forestry products in supermarkets. Of this group, half of them reveal that they only buy these products occasionally. From survey results on types and varieties of agro-forestry products in different supermarkets described in the previous section, it's clear that low diversity of products is one of main reasons for limited interests of customers.

Figure 29: Purchasing frequency of agro-forestry products in supermarkets



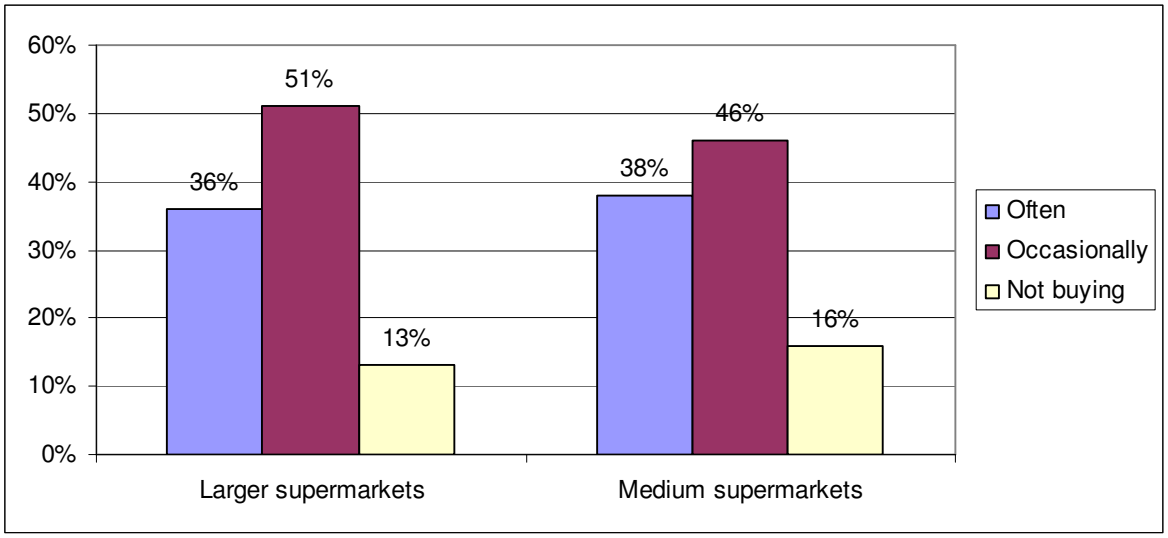
Comparing the above figure with the shopping frequency reveals that frequent supermarket customers are those who often buy agro-forestry products.

Figure 30: Purchasing frequency of agro-forestry products versus supermarket shopping frequency



In general, there is not much difference in purchasing frequency of agro-forestry products in larger and medium-sized supermarkets

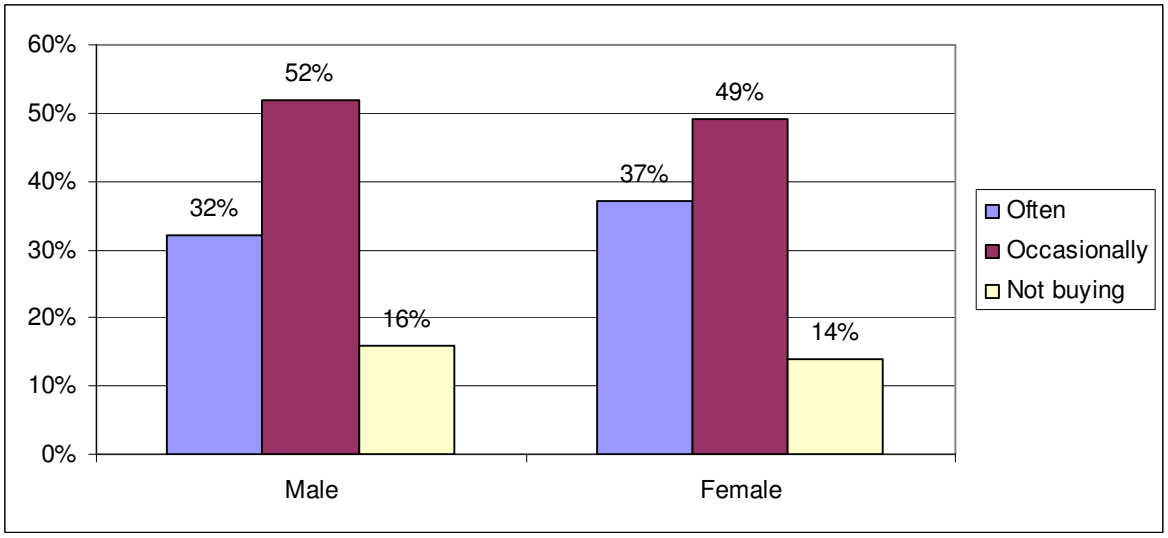
Figure 31: Purchasing frequency versus the size of supermarkets



2.1.2. Characteristics of customers of agro-forestry products

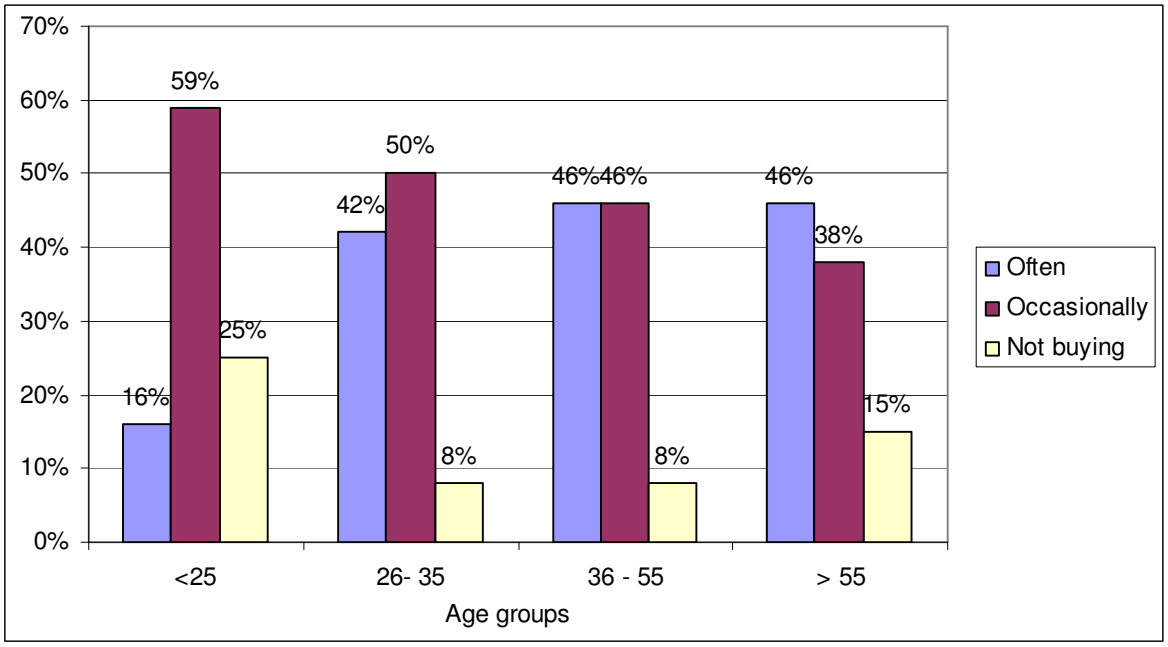
There is difference in the number of male and female customers of these products. However, if taking into account the fact that more female customers answering survey questionnaires (75% vs. 25%), female customers still outweigh male customers. This reflects well the family culture in Vietnam, in which women are more involved in housework and shopping.

Figure 32: Gender and purchasing frequency



Customers of age groups over 25 are the most frequent buyers. Only a small percentage of customers of the age group under 25 often purchases agro-forestry products.

Figure 33: Age groups versus purchasing frequency

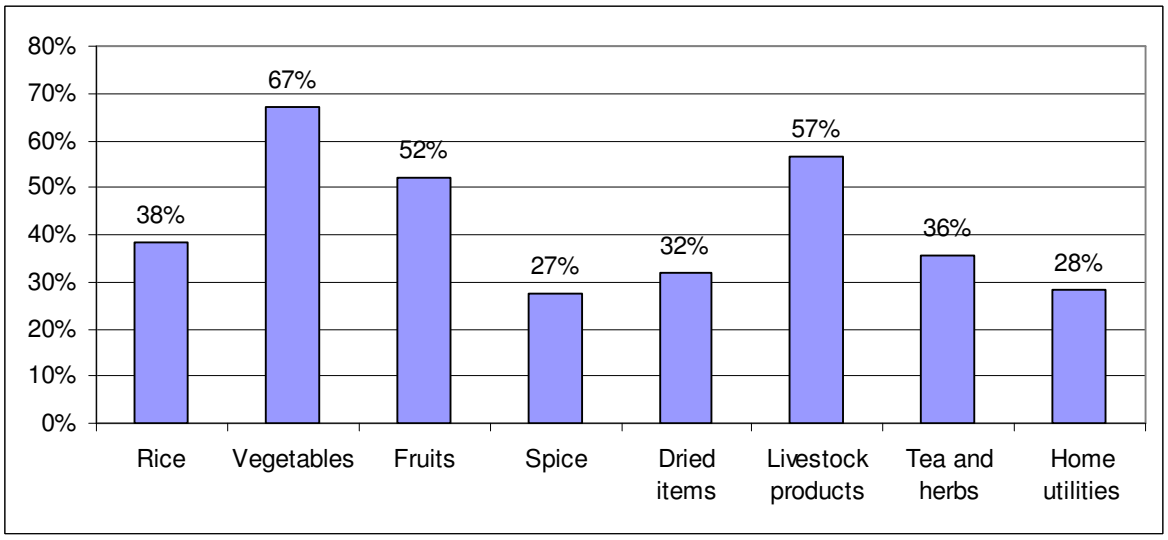


2.2. Purchasing motivation

2.2.1. Most frequently purchased products

The most frequently purchased types of agro-forestry products include: (i) vegetables, (ii) livestock products, and (iii) fruits. Only 38% of customers frequently purchase rice products despite their wide variety. The underlying reason might be that rice available everywhere, from residential areas, to open markets, to small-sized stores. Consumers could easily purchase high quality rice from home. Spice is the least purchased group of products. The assumption is that this group's quantity and variety in the supermarkets are limited.

Figure 34: Most frequently purchased agro-forestry products in supermarkets

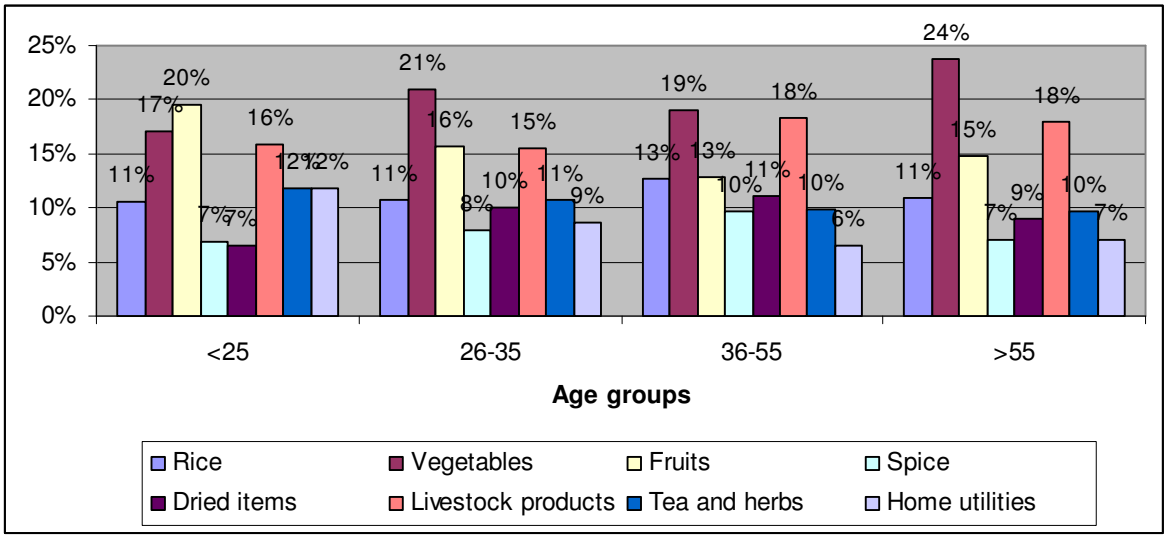


2.2.2. Age groups and agro-forestry products

For customers of the age group under 25, the most frequently purchased products are fruits, while the least purchased products include spice and dried items. For customers of the age group from 26 to 35, the most purchased products are vegetables, followed by fruits, and

livestock products. For the over-35 group, the most purchased products are vegetables and livestock products. Household utilities do not catch customer's attention.

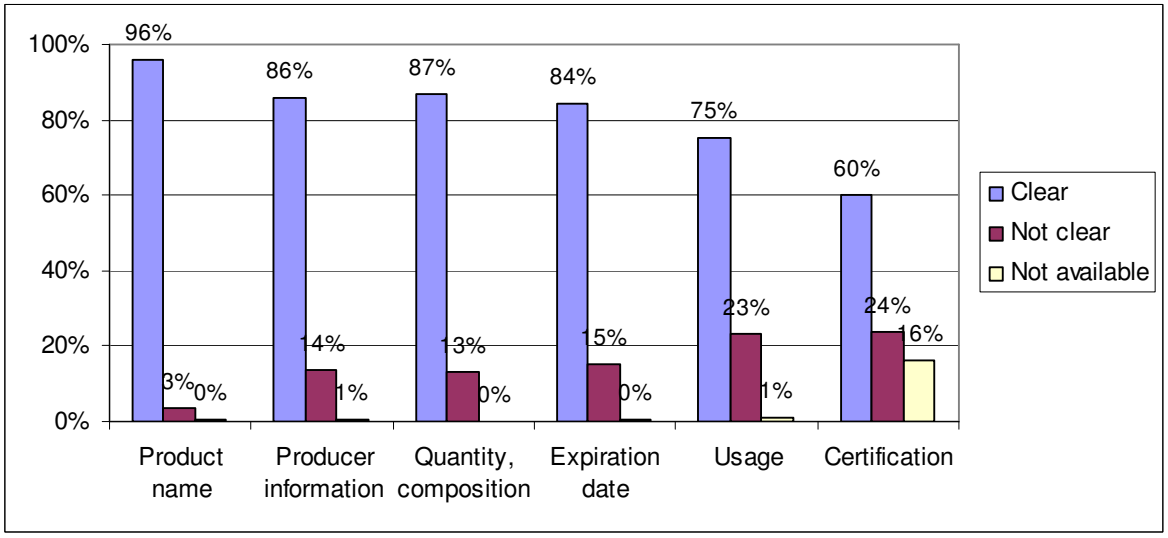
Figure 35: Most frequently purchased products versus age groups



2.2.3. Product information

Most of customers comment that product information in supermarkets is clearly described. However, 23% of customers state that usage instructions and certification stamps are not fully provided. 16% of customers share the opinion that some groups of products are not properly certified by relevant authorities.

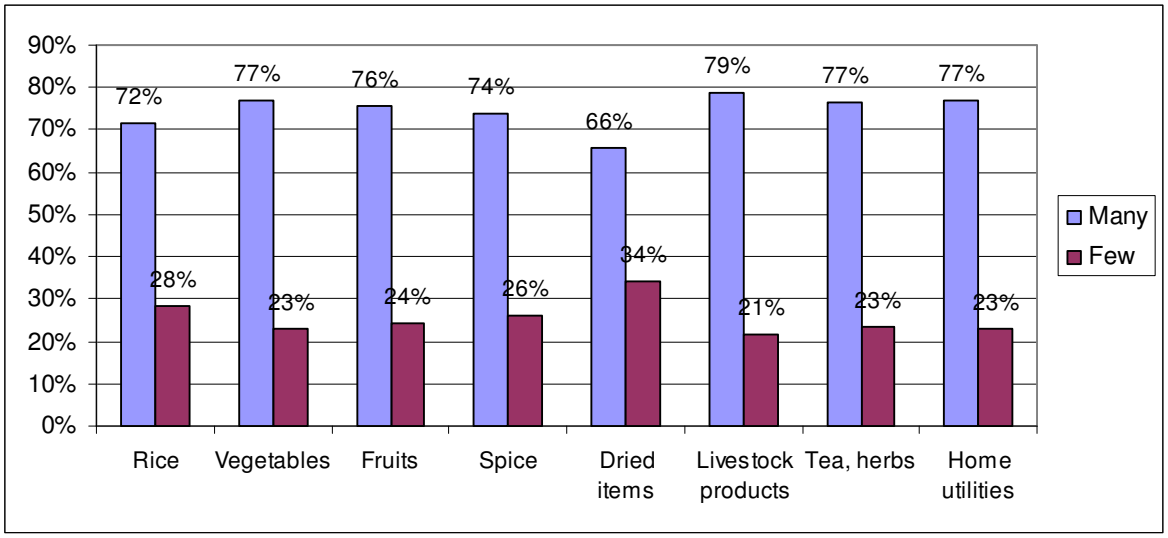
Figure 36: Evaluation of product information



2.2.4. Supply capacity of agro-forestry products in supermarkets

Most of supermarket customers highly appraise the supply capacity and diversity of agro-forestry products.

Figure 37: Supply capacity by groups of products

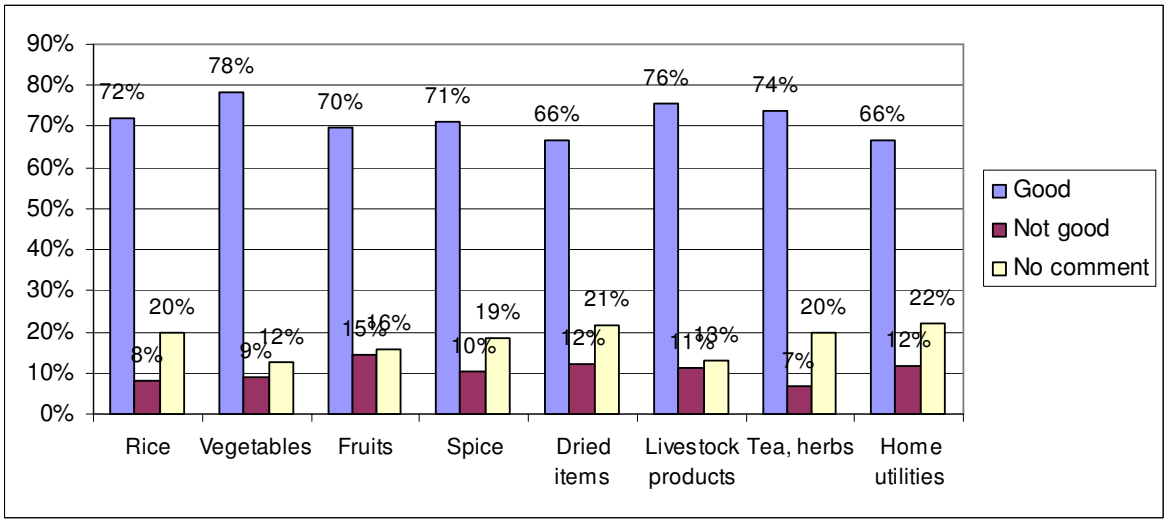


2.2.5. Quality of agro-forestry products in supermarkets

Agro-forestry products in supermarkets are regarded by customers as of high quality. Vegetables are ranked as the best group of products, which are also the most frequently purchased products because customers prefer vegetables from clearly identified sources to those unknown on sale in open markets.

Fruits, however, are ranked as lowest in terms of quality because only a few products in this group are clearly labelled. The majority of fruits are only marked with names but not sources of origin and information about producers.

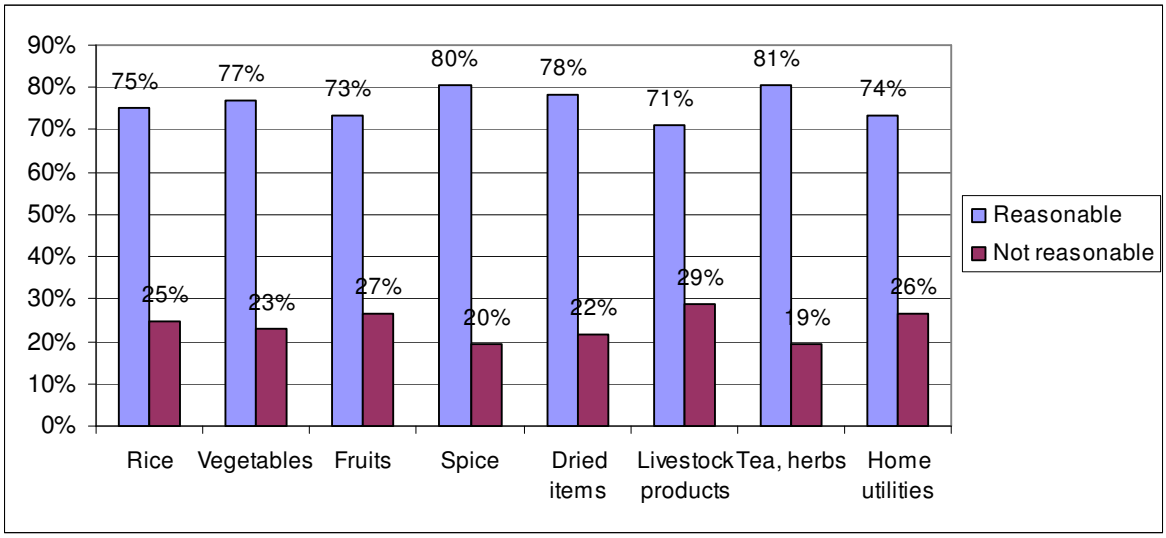
Figure 38: Customer evaluation of product quality



2.2.6. Prices of agro-forestry products in supermarkets

Most customers think that agro-forestry products are sold at reasonable price. Herbal tea products are rated as best value in terms of price.

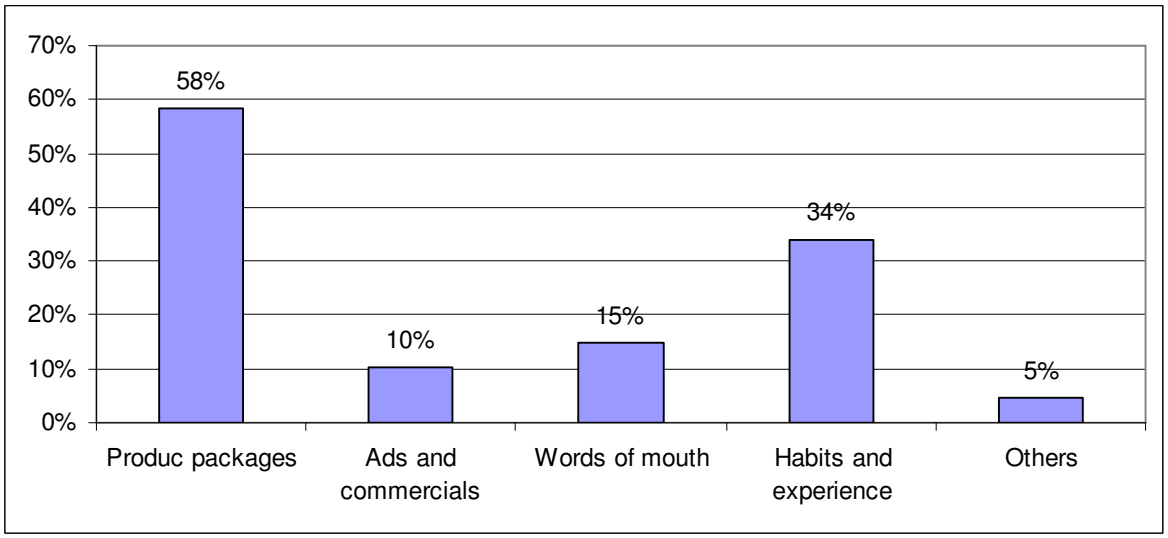
Figure 39: Price evaluation of agro-forestry products



2.2.7. Information of agro-forestry products

Product package labels are the main source of information for products sold in supermarkets. Habit and experience are also regarded as good sources of information for consumers upon purchasing agro-forestry products. Surprisingly, only 10% of customers get information about products from commercial advertisements while advertising industry is booming in every means of mass media. This can imply the fact that agro-forestry products have not been properly advertised and marketed.

Figure 40: Sources of information about agro-forestry products

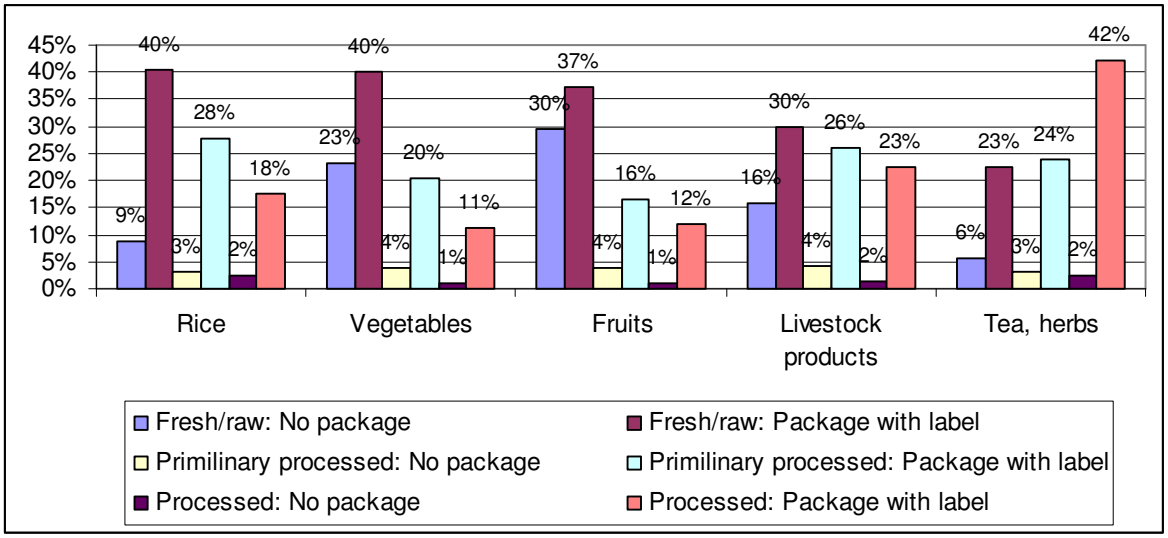


Most customers get to know about agro-forestry products produced in mountainous areas through package labels.

2.2.8. Packages and forms of agro-forestry products

Product designs and forms also influence customers' choices of agro-forestry products in supermarkets. Customers often choose to buy those products properly packaged and clearly labelled. Unpackaged products are generally not preferred.

Figure 41: Preferences on packages and forms of agro-forestry products



3. Expectation and preferences of customers for agro-forestry products from mountainous areas

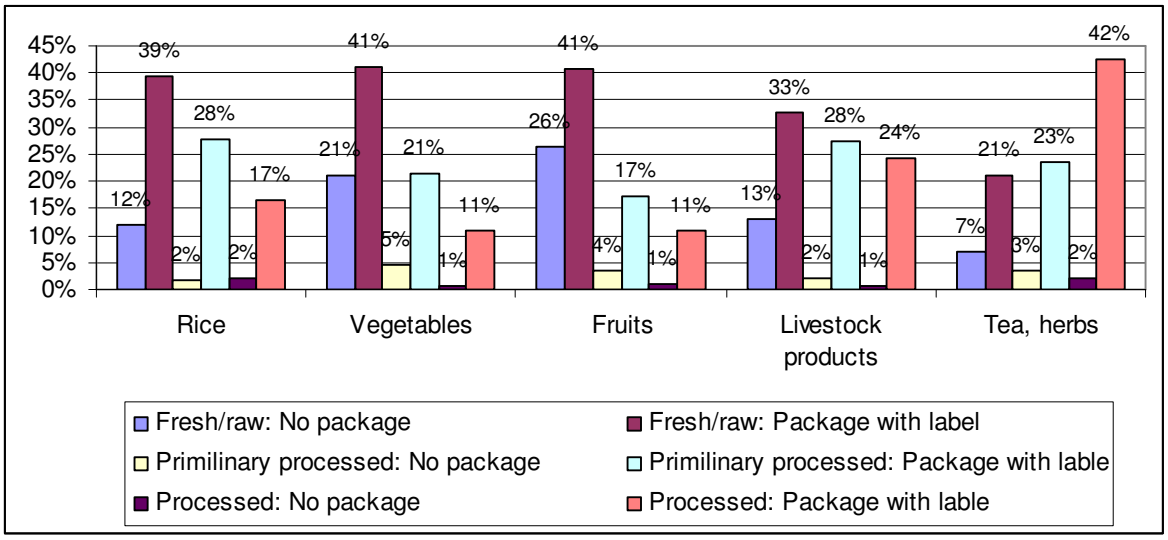
3.1. Forms of products

For fresh and raw food and vegetable products produced in mountainous areas, a large number of customers agree to purchase them unpackaged and unprocessed. However, for processed and preliminarily treated products, customers prefer to buy those with clearly labels and proper packages.

Most customers choose packaged fruits, and fresh or unprocessed livestock products. Only a few numbers of customers accept to buy preliminarily processed products without labels.

For herbal tea products, customers prefer processed and packaged products with proper labels.

Figure 42: Preferred forms of agro-forestry products

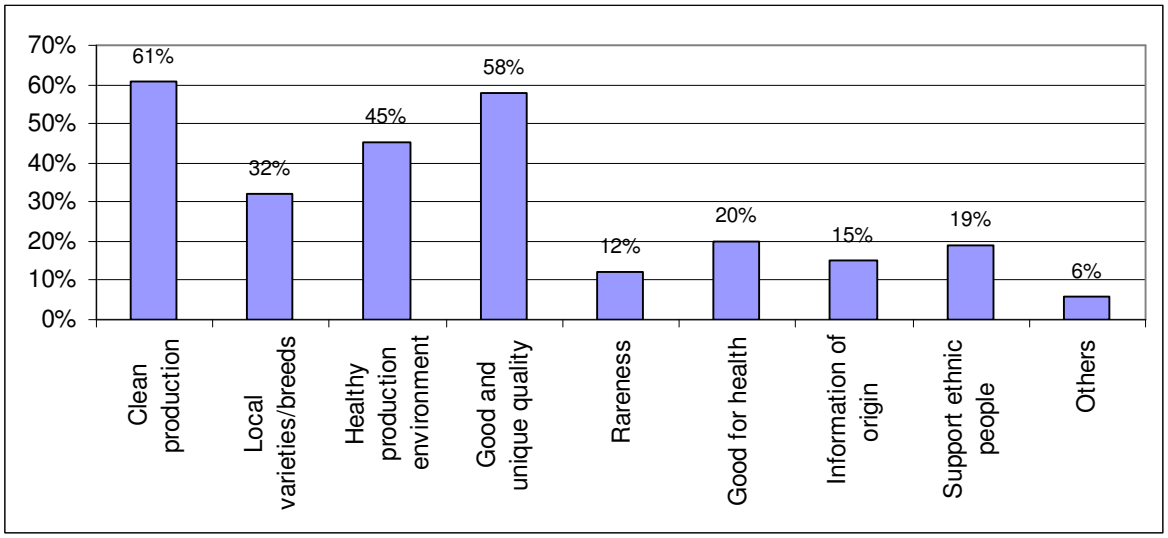


3.2. Customer preferences

Customers are interested most in three factors of agro-forestry products from mountainous areas: (i) clean production, (ii) high quality, deliciousness, and speciality, and (iii) uncontaminated environment for production.

Agricultural products currently on sale in the supermarkets are guaranteed to be of hygienic quality by producers and suppliers. Therefore, high quality, deliciousness, and speciality are most important factors that influence customers' choices.

Figure 43: Factors influencing customer preferences



4. Customer attitudes toward agro-forestry products

4.1. Level of interest in agro-forestry products

Agro-forestry products on sale in supermarkets are categorized into rice, vegetables, fruits, dried items, spice, fish, meats and livestock products, tea and medicinal plants.

Supermarket customers are gradually paying more attention to agro-forestry products. Survey reveals 36% of frequent customers and 50% of occasional customers. Only 14% of customers never purchase these products.

In summary, there are 86% of customers do buy agro-forestry products. 66% of these buyers are under 35 years old. This young group of customers will potentially contribute to the increasing demands.

4.2. Level of interest in agro-forestry products from mountainous areas

Only a few supermarket customers know about the origins of agro-forestry products from mountainous areas. Below statistics lists the percentage of customers aware of origins of these products:

- Food products: 29%
- Tea and medicinal plants: 20%
- Dried items: 15%
- Vegetables: 14%
- Fruits: 12 %

- Fish, meats and livestock products: 10%
- Spice: 3%
- Household utilities: 3%

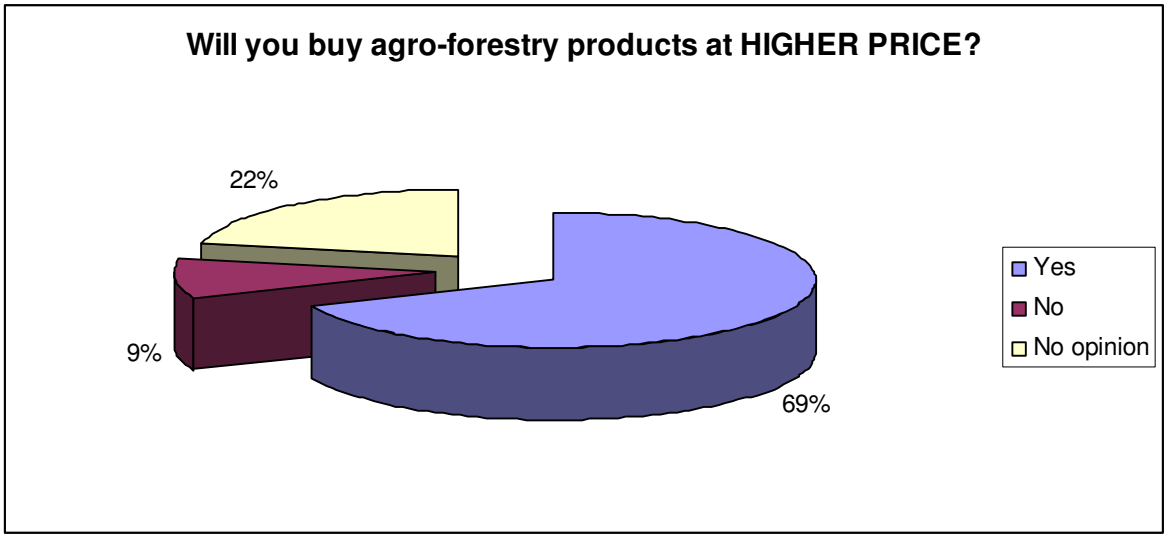
The best known group is food products. Most mentioned names include Dien Bien rice, Tay Bac rice, Thai Nguyen tea, Shan Tuyet tea, honey, lingzhi, and mushroom.

Spice and household utilities are the least known groups. A few customers are aware of cardamom, pepper, cinnamon, and brocade products.

4.3. Price of mountainous agro-forestry products

The following graph illustrates customers' willingness to purchase products from mountainous areas, assuming the price is 10-15% higher than regular products currently available in supermarkets:

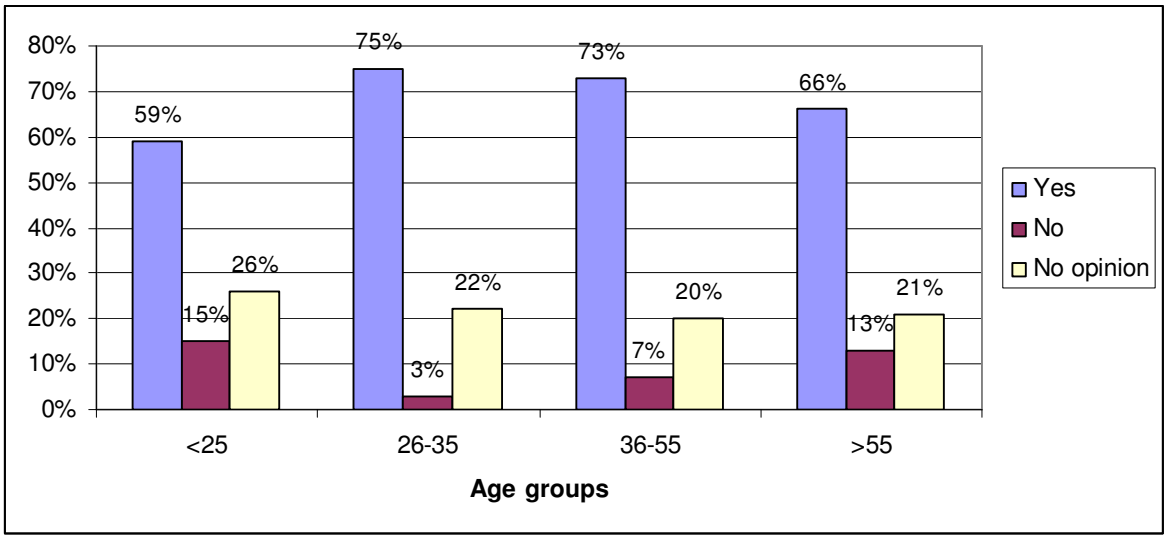
Figure 44: Willingness to purchase agro-forestry products at higher prices



The majority of customers are willing to purchase agro-forestry products from mountainous areas at higher prices, indicating a very good signal for these products.

The level of willingness varies among age groups. Customers of the age group from 26 to 55 are interested in the idea of selling these products at higher prices for supporting local communities.

Figure 45: Age groups and willingness to purchase agro-forestry products at higher prices



5. Trends and opportunities for mountainous agro-forestry products

5.1. Trend of agro-forestry products and those from mountainous areas in supermarkets

In order to meet the demands of the increasing number of customers (69% customers going to the supermarkets from one to four times a month, and 86% of frequent and occasional customers), agro-forestry products in general and those from mountainous areas in particular need to be improved in both quality and quantity.

Up to 58% of customers rely upon product information on package labels in order to make purchasing decisions at supermarkets. Therefore, improving packaging designs and labels should be taken into account in order to make information available to the consumers.

At present, level of interest of customers in mountainous agro-forestry products is still limited. However, this can be improved if there is a good strategy for advertising and promotion, as well as ensuring quality and uniqueness of products.

Box 7. Consumption trends of the middle class in Vietnam

Taylor Nelson Sofres Market Research Group (TNS) has released a summary report on 10 major consumption trends among Vietnamese people. The most significant trend is that Vietnamese people are more aware of health as one of most essential issues. Health is becoming the first priority factor in selecting and deciding to buy any product.

Other important trends include fashion and beauty (personal care products), diet and cooking style, desire to own valuable assets (real estates and vehicles), home entertainment equipments (DVD players, flat screen TVs, and personal computers).

In addition, Vietnamese people have changed preferences in their choices of public entertainment places (coming more to fast food restaurants, Internet café, etc.). They have changed their habits of using and managing money (using banking services), and are

willing to spend more. Their methods of communication are also changed thanks to advanced breakthrough in telecommunication and technology.

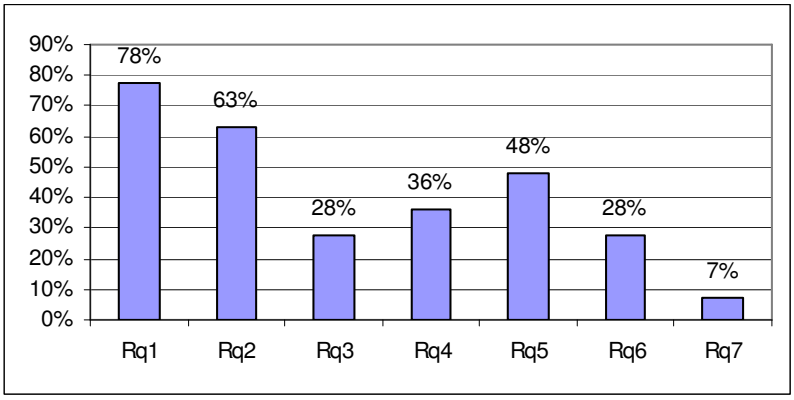
Finally, television commercials are considered as a reliable source of information, greatly influencing choices of consumers.

Source: www.tuoitre.com.vn (Article date: 13 June 2006)

5.2. Requirements of customers for agro-forestry products from mountainous areas

Increasing living standards lead to strict requirements for agro-forestry products from mountainous areas. Most concerns of customers for these products include (i) clear information and trademarks on product labels, (ii) having certification for quantity and usage, and (iii) ensuring clean production in accordance with traditional methods.

Figure 46: Customers' requirements (Rq) for mountainous agro-forestry products



- Rq1: Clear information on labels
- Rq2: Certification of quantity and usage
- Rq3: Widely advertised and publicized
- Rq4: Stable and frequent supply
- Rq5: Clean production in accordance with traditional methods
- Rq6: Supermarkets commit to support producers
- Rq7: Others.

5.3. Opportunities for agro-forestry products in Hang Kia – Pa Co to join the supermarket distribution channels in Hanoi

Mountainous areas, especially those with subtropical climate such as Hang Kia – Pa Co, have great potentials in developing unseasonable vegetables and fruits. This is a very competitive advantage of mountainous areas in comparison to lowland areas.

Frequent supermarket customers are often people having stable income from above average to relatively high[19]. Survey reveals that 69% of interviewed customers are willing to purchase products from mountainous areas at 10-15% higher prices. Mountainous agro-forestry products, if meeting the requirements of quality, preservation, and product information, will be able to join the supermarket distribution chain at higher prices compared to those products currently available in stores. However, marketing of these products must be closely associated with promoting social responsibility and community support of consumers.

Due to the contamination of the water supply and air pollution in big cities and their surrounding industrial zones, consumers tend to choose products originated from clean and uncontaminated environment with high hygienic quality.

[19] P.Maustier *et al.* (2005)

Mountainous agro-forestry products are often farmed and processed with traditional methods without heavy use of pesticides and chemicals. Local varieties, clean environment, and uncontaminated atmosphere are major advantages that bring the opportunities for these products to meet the customer demands in supermarkets.

However, requirements for processing and preservation of products pose great challenges for producers in mountainous areas, who wish to join the supermarket distribution chain. Farmers in these areas are farming in small-scale and on scattered areas. To meet those requirements and criteria set by supermarkets, farmers have to overcome great difficulties. These difficulties, however, could turn into opportunities for mountainous products to seize a stable market share in supermarkets if there are appropriate supporting policies to encourage other stakeholders in production and supply process.

Section V: Bridging products to the market

From the farmers' farming field to supermarkets' shelves, there are many other interlacing and determining factors that can influence the market access of agro-forestry products, in addition to players and stakeholders in the market chains. These, defined as "bridging factors" in this report, should be appropriately taken into account in order to promote mountainous products from areas like Hang Kia – Pa Co to the larger market in big cities. This section discusses major bridging factors that greatly influence market access of agro-forestry products.

In the context of global market integration, agro-forestry products are reaching out to bigger and farther markets other than just the local ones. However, farmers are generally still unfamiliar with market-oriented modern production methods, which are currently applied in agro-forestry production in more developed countries. Farmers are still relying traditional methods and experience in stead of technological processes in farming production.

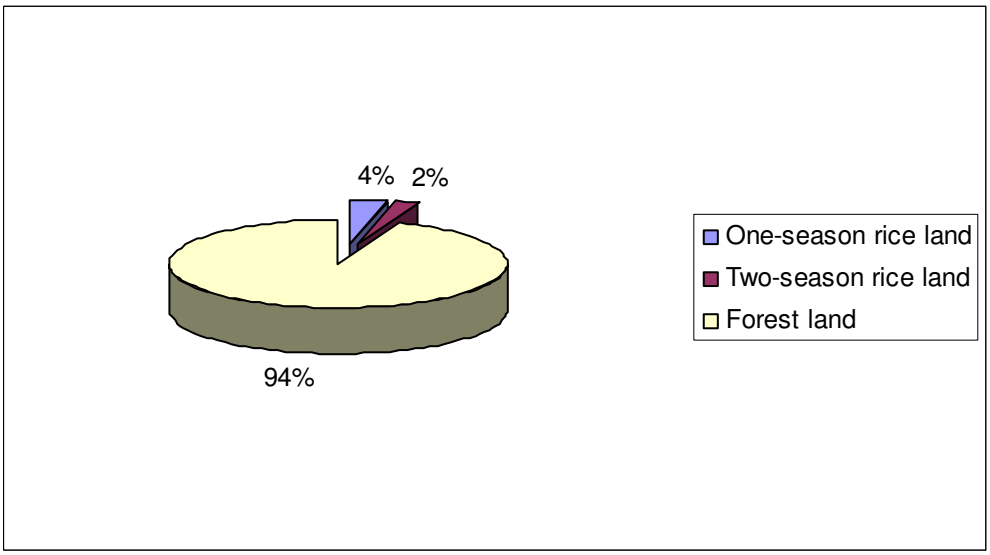
1. Land use planning

The agro-forestry production and processing industry has grown at significant rate within the recent few years, expanding to both regional and global markets. However, the stability of product supply has been addressed as a major weakness due to the fact that production zone is still decentralized, tattered, and too small in area.

For Hang Kia – Pa Co area, proper planning for land use is an important factor to ensure stable, frequent, and diverse supply of products for the market. Area of agricultural land in Mai Chau district only accounts for 10% of the total natural area and is unequally distributed among communes in the buffer zone of Hang Kia – Pa Co Nature Reserve. Therefore, land use planning should consider inter-commune approach. In addition, for providing stable supply for the market, crop types and husbandry breeds should be selected accordingly.

Slash-and-burn farming land takes up 45% of the agricultural land of Mai Chau district. According to statistics of the socio-economic survey in 2004, agricultural land in six communes in the buffer zone accounts for a much smaller percentage than forestry land (while slash-and-burn farming land and garden land are not included in the statistics). However, this survey reveals that local communities in the buffer zone heavily reply upon slash-and-burn farming and forestry production as the area of agricultural land is too limited. Moreover, traditional handicraft and non-farm services are not yet actual sources of income for local people.

Figure 47: Comparison of agricultural and forestry land in six communes in the buffer zone of Hang Kia – Pa Co Nature Reserve



Source: Statistics of socio-economic status in Mai Chau district, Hoa Binh province. October, 2004.

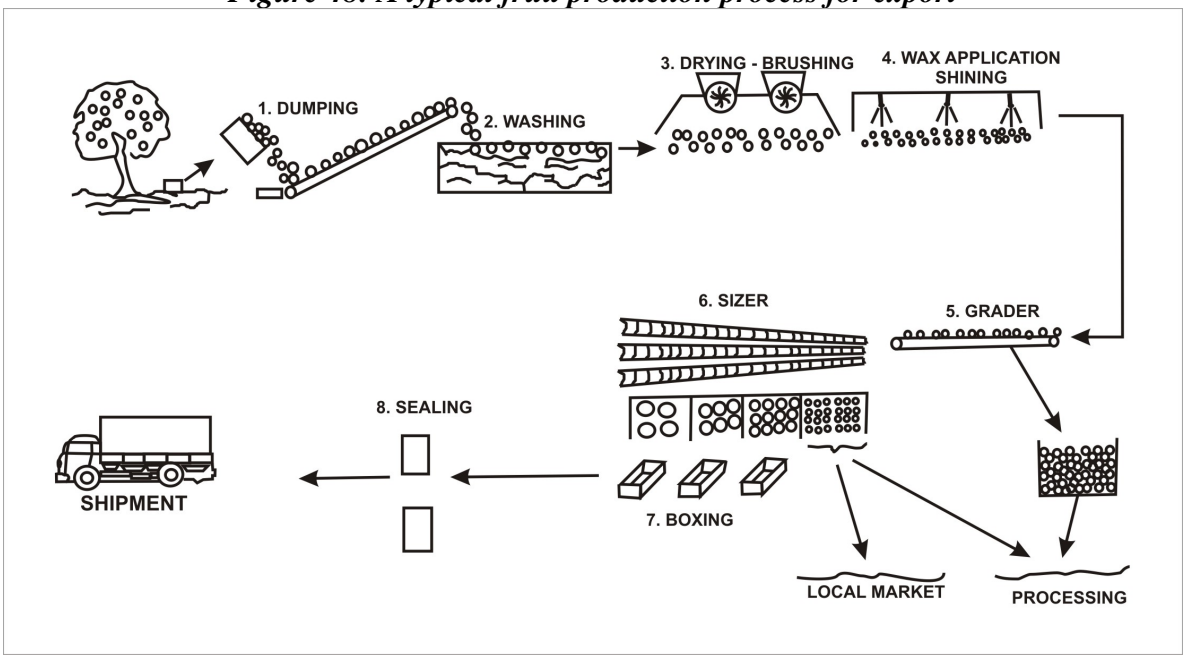
The question is how to properly plan land use for the area of slash-and-burn farms in order to reduce the impacts on the remaining forest area of the nature reserve. Applying upland farming techniques, ecological restoration measures, and diversification of slash-and-burn farming products can help improve productivity and quality of crops. There have been successful models of upland farming in the Northern Mountains. Experience and lessons learnt from these models can be adapted to areas in the buffer zone of Hang Kia – Pa Co Nature Reserve. However, in two communes with large population of Mong people, it may take a longer time to change their current farming practice in order to adapt to these models.

Traditional farming techniques and indigenous knowledge of local communities on crops and animal breeds should be carefully studied, selected, conserved and promoted. The traditional farming practice with non-chemical use is really an advantage for market products that need to be encouraged.

2. Harvesting and post-harvesting techniques

Most farmers are still unfamiliar with the application of technological processes in agriculture production. The practice of producing and selling raw products at low prices is a real challenge for turning agro-forestry products into commercial goods. A comprehensive production model (from the field to the end products) as follows could change traditional farmers into professional producers.

Figure 48: A typical fruit production process for export



Source: Post-harvest Technology Research and Information Centre, The University of California.

With the current context of household level and small-scale production in rural and mountainous areas, it is not feasible to invest in advanced technology for harvesting, processing, and preserving of products. However, there are simple, applicable, and low-cost processes that local farmers can use. These processes are being promoted in several development projects. Significantly, some companies have invested in capacity building and technical training for farmers. The "agricultural utility chains" project of Vinamit Corporation in the Central Highland is a typical example.

There are a plenty of resources, publications, and technical manuals on harvest and post-harvest techniques published by different programmes, projects, and relevant organizations. Nevertheless, not all of these resources could reach farmers due to limited access to information in rural and remote areas. Among these, a publication titled "Small-scale postharvest handling practices - A manual for horticultural crops" published by the Postharvest Technology Research and Information Centre of the University of California is found to be very useful and comprehensive. This publication was translated into Vietnamese by the Fruits and Vegetables Research Institute.

The Department of Agro-forestry Product Processing and Salt Industry under the Ministry of Agriculture and Rural Development (MARD) is responsible for state management in processing and preservation of agro-forestry products and salt products nationwide.

In Hang Kia – Pa Co area, almost all products are sold in the unprocessed or raw forms. Only a few products, such as tea, are actually undergone preliminary processing. Other products such as corns and cassavas are bought, processed, and preliminarily treated by private companies or dealers. Due to the high population of ethnic groups and limited production skills of farmers in this area, application of harvest and postharvest techniques requires a great deal of both technical and financial supports.

3. Quality control

In order to survive in strict market environment in big cities, agro-forestry products need to maintain stable quality. Producers have to meet specific requirements in order to be qualified suppliers in the distribution chain of supermarkets. The current problem in Vietnam is the lack of a particular Code of Standards in food safety in compliance with the Good Agricultural Practices (GAP). Several domestic agro-forestry product enterprises are encouraging farmers to participate in their projects, which apply specific standards from developed countries such as EUROGAP from Europe or Fresh Care of Australia. In the beginning of November 2006, ASEAN released its own GAP Code of Standards for applying in its member nations. ASEAN GAP could be applied in Vietnam in order to ensure the quality of agro-forestry products for the market.

Box 8. Quality of longans in the supermarkets

"How can consumers buy logans that are sweet today but not tomorrow? How could salesclerks response to the question of customers that how long longans could be kept?"

Mrs. Le Thi Minh Trang, Quality Control Manager of Metro Cash & Carry. Source: Agricultural product market newsletter, No.10. February, 2007.

Agro-forestry products in Hang Kia – Pa Co area enjoy such advantages as climate conditions and clean production practice. However, in order to fulfil requirements of distributors and consumers, these products should be subject to a certain Code of Standards, which will definitely enhance the market position and brand name of products.

4. Trademark and branding

Within the past few years, some agro-forestry products have been successful in building up their trademarks and registered with copyrighted brand names such as Nam Roi grapefruit, Dien Bien rice, Cat Ba honey, Bac Ha corn wine, and Thanh Van corn wine. In the trend that agro-forestry products have to face with severe competition, not only domestically but also regionally and globally, copyright protection of brand names is crucial. Building trademarks and brand names in conjunction with enhancing after-sales responsibility will foster the long-term credibility of products.

The National Office of Intellectual Property is currently carrying out a property development support programme for enterprises, organizations, and individuals. The Department of Agro-forestry Product Processing and Salt Industry (under MARD) has developed a system of legislation framework and legal instructions to assist with registration of high quality and commercially reliable agro-forestry products of Vietnam. These organizations also post detailed information and instructions on their websites.

Registration process of copyright and intellectual property is easier and more advantageous than in the past. Registration procedures and regulations are published on the websites of relevant government agencies. In addition, farmers or cooperative or local authorities can contract with laws consulting offices so they will handle all paperwork and registration submission on behalf of their clients.

5. Marketing and promotion

Customer survey indicates that there are only a few customers get information about agro-forestry products, especially those from mountainous areas, through advertising channels. This is inevitable since very few producers or distributors or dealers of these products actually invest in marketing and advertising. For farmers, the perception as "good wine needs no bush" still exists in their thoughts. Nevertheless, as local products are facing severe competition with similar agro-forestry products from neighbouring countries such as China and Thailand, costs for marketing and promotion of products should be included.

Together with trademark and intellectual property registration, investment in advertising and marketing will ensure a stable position for agro-forestry products in the domestic market. For those products from mountainous areas (i.e. Hang Kia – Pa Co), such strengths as product quality, clean production, and cultural values must be diffused while encouraging the participation of consumers in supporting local communities. With the development of the market and consumer awareness, issues such as social responsibility and environmental-friendly consumption culture will be strongly advocated in the future. These are advantages for marketing and promoting products from mountainous and remote areas in urban markets.

6. Market information

Information related to price fluctuation and market demand plays an important role in assisting farmers with investment decisions. However, farmers in mountainous and remote areas seem still unaware of the importance of market information. As analyzed in Section I of this report, local people in Hang Kia – Pa Co area do not recognize the demand for market information and ways to obtain information in order to sell their products. Although there are different and diverse sources of information available, local people in this area still heavily rely upon information from village meetings or from neighbours and relatives.

Relevant agencies and organizations involving in rural development have put a lot of efforts in making market information available to farmers. The Institute of Policy and Strategy for Agriculture and Rural Development (under MARD) periodically publishes the "Agricultural Product Market" newsletter in both print and electronic formats. In addition, there are many newspapers and magazines related to agriculture and rural development field such as Countryside Today, Vietnam's Agriculture, and Rural Economics Times. Together with growth of the Internet in Vietnam, various news websites have been developed and promoted information for farmers (*see the Appendix*). At present, access to online information is still limited, especially in mountainous areas. However, in the near future, this will be the most effective channel of market information for farmers.

Other mass media agencies, such as radio and television stations, also spend reasonable amount of time for broadcasting market information and farming extension programmes. VTV2 (Vietnam Television) is a channel specialized in providing scientific and educational information, most of which are for the benefit of farmers. Programs broadcasted by the Voice of Vietnam radio station are also very useful because they could reach a majority of farmers, even in rural and remote areas. The biggest obstacle for local people in Hang Kia – Pa Co is that they do not fully understand the information provided. Therefore, in certain areas with high population of ethnic minorities, information should be broadcasted in indigenous languages.

7. Policy and legal framework

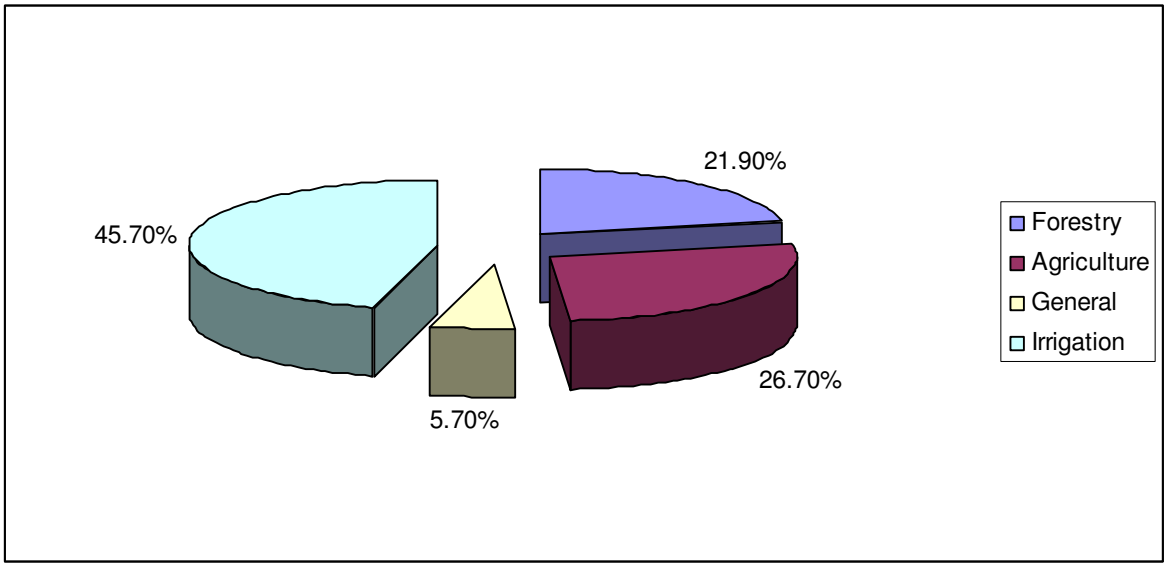
In an incomplete market economy, government policies have strong influence on the development and growth of the market. Different policies from state down to local levels could actually have significant impacts on the market access of agro-forestry products.

7.1. Government's investment policies

Currently, agriculture and forestry still heavily depend on the Government's budget. However, funding from this source is not yet effectively utilized as it is mainly funded state-owned enterprises, which utilize large amount of capital but do not create many jobs for the rural sector. Funding for extension activities in agriculture and forestry and for other agricultural services is still insufficient and has not yet met the demands.

The Government has spent significant efforts to encourage enterprises and investors to carry out agricultural and forestry projects in disadvantaged areas. Recent laws such as the Investment Law (2005), Corporate Income Tax Law, and Tax Administration Law provide favourable conditions for business sector to invest in these projects. In addition, the Government is trying to attract more ODA funding in order to invest in agricultural and forestry development.

Figure 49: Allocation of ODA funding for agriculture and rural development (1993 – 2005)



Source: International Support Group (Department of International Relations, MARD)

Mai Chau and other districts in Hoa Binh province are listed as areas eligible for investment incentives. Business establishments and investors enjoy preferential policies in tax, licensing procedure, land rental, and other resources.

7.2. Agro-forestry policies

The Government's orientation for agricultural policies in the early stage of participation in global competition is "to diversify rural economy with market orientation based upon relative advantages of each area, complying with the development of the industrialization and modernization process". Such orientation is strongly promoted and applied in local socio-economic development plans for each period and on an annual basis.

Together with the market economy orientation and open policy in global integration in economic aspects, the price of agricultural products is getting more comparable with that in international market. The price of materials for agricultural production also fluctuates accordingly with the global trend. As a member of AFTA (ASEAN Free Trade Area) and WTO, Vietnam has to push up further trade liberalization, including reducing tariff and abolishing non-tariff barriers. Vietnam's commitment to cut off taxes according to the CEPT (Common Effective Preferential Tariff) will place the domestic agro-forestry product processing industry in a more severe competition with ASEAN neighbouring countries.

7.3. Land use policies

Land Law is one of the most frequently revisited and amended laws in order to cope up with social changes. The 1988 Land Law is a breakthrough as it acknowledges the right of land use of individuals, which really motivates farmers to improve their economic conditions on they own land. The 1993 Amended Land Law allows citizens to transfer their land use rights, including the rights to donate, to lease, and to mortgage. The most recent 2003 Land Law strongly decentralizes the management of land use and reduces administrative procedures related to citizens' rights of land use.

Recent Land Law (2003) only regulates the limit of non-taxable agricultural land. For the area exceeds the allowed non-taxable land, farmers have to pay for rental, except land area previously rent, donated, or inherited. In order to ensure equality as well as encourage effective land use, the 2003 Land Law also regulates the limit of land allocated to households and/or individuals using different types of land (land for perennials, land for annual trees, production forest land, land for aquaculture, and land for salt-marshes).

However, in mountainous areas, enforcement of policies for allocation of forest land still needs proper solutions. Allocation of forest land should be in line with forestry extension micro-credit, and training programmes to support local farmers make use of land for their daily livelihood.

7.4. Policies for credit and financial services

Credit and financial services for rural areas are now available in various forms. In addition to two specialized banks (Bank for Agriculture and Rural Development - Agribank and Social Policy Bank), farmers could mobilize capitals through small credit schemes provided by the Women's Union, Farmers' Union, and other mass organizations, or from fund of the Rural Job Creation Program (Program 120). Survey reveals that 75% households in the buffer zone of Hang Kia – Pa Co have bank transactions.

Most recently, the Prime Minister issued Decision No. 31/2007/QD-TTg on 05 March 2007 on beneficiaries and loan limit for households to promote business and production in disadvantaged areas. According to this Decision, non-poor households are entitled to borrow up to 30 millions VND from the Social Policy Bank without capital guarantee. Noticeably, this favourable policy is applicable to all six communes in the buffer zone of Hang Kia – Pa Co Nature Reserve.

In the long term, credit and financial services for rural areas will be diversified with the participation of more micro-financed organizations, non-governmental organizations, and commercial banks once other markets reach saturation.

7.5. Market development policies

In recent years, the Government has shared special interests in facilitating policies and mechanisms for the development of agro-forestry product market. The Prime Minister released Decision No. 80/2002/QD-TTg regarding the policy to encourage consumption of agricultural products through contracts. This decision is detailed and realized by the Circular No. 04/2003/TT-BTC of the Ministry of Finance, which specifies supporting and preferential measures for producers and enterprises. In the field of production of fresh vegetables, fruits, and flowers, the Government has approved a strategic development project for the duration from 1999 – 2010, in addition to a series of favourable policies in VAT and agricultural land use tax in order to help farmers and enterprises reduce production costs for creating more competitive advantage in the market.

7.6. Development policies for small and medium enterprises

Development of small and medium enterprises (SMEs) has been considered as a motivation for job creation and poverty alleviation while ensuring social order and security. The Government's general orientation is to develop SMEs in relation to national target programmes and local and regional socio-economic development plans; encourage industrial development in rural areas and in traditional craft villages; focus on the development of SMEs in remote and disadvantaged areas; give high priority and support for SMEs established and operated by ethnic people, women, or the disabled; and provide preferential support for SMEs having highly competitive products. Together with this orientation, since 2001, the Government has been trying to strengthen and realize different policies and mechanisms to promote the development of SMEs.

Clear, favourable, and time-saving registration procedures have boosted the establishment of new SMEs. In 2000, there were only 14,457 newly registered enterprises nationwide. In 2004, this number increased to 37,230, and in 2006, the number of new enterprises reaches 46,663[20]. New enterprises now can authorize legal consultancy companies to handle all the paperwork for filing registration procedures.

7.7. Local socio-economic development plans and strategies

One of the major tasks of the socio-economic development strategy of Hoa Binh province for the period of 2001 – 2010 is to foster the growth of agriculture and forestry by promoting both farmstead projects and rural development. In details, the province's approach is to promote agricultural development in the orientation of commercial production for the market by changing the crop and livestock structure, giving more focus on fruit trees and short-term commercial plants, establishing centralized production zones specializing in sugarcane, tea and vegetables in ecological areas, and producing an adequate amount of commodities for the processing industry to provide products to the national and export markets.

Agro-forestry product processing is classified as one of the key industries in Hoa Binh province with the target growth rate of 10.6% for the period from 2001 – 2010.

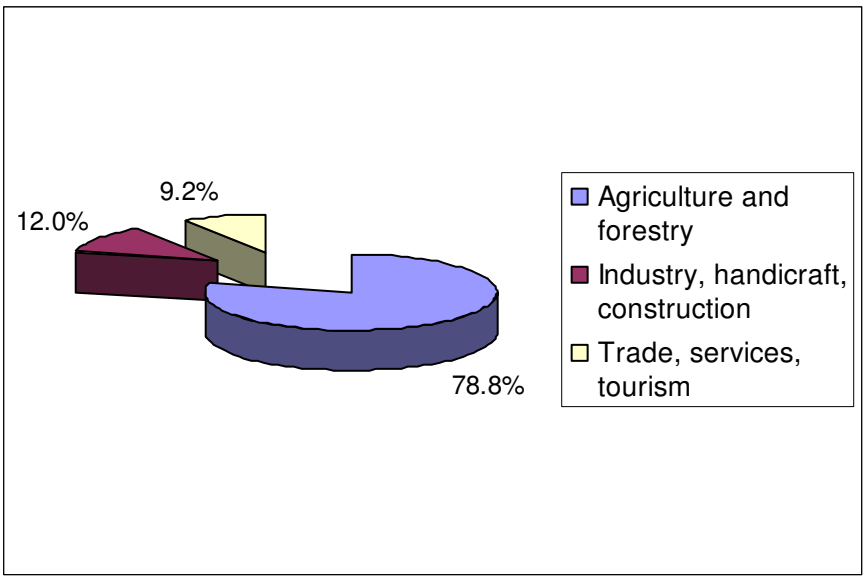
Hoa Binh has developed the project Strategic Planning for Commercial Development of Hoa Binh Province for the period from 2001 – 2010, including strong focus on market development measures, especially the market for agro-forestry products. This strategy also

[20] Source: Business Information Centre (The Ministry of Planning and Investment)

proposes measures to implement trade liberalization policy in order to meet the requirements of global integration and competitiveness. Linking with external markets that have strong influence on the provincial trade and commerce, such as Hanoi, Hai Phong, Son La, and Lai Chau, is considered one of the most important solutions to stabilize market for local products.

In a narrower context, in the comprehensive socio-economic planning of Mai Chau district (2001 – 2010), local authorities define the goal for their district economy by will be still agriculture-based by 2010. However, the district set the target for their agriculture to shift from current self-sufficient agriculture to the commodity production economy for serving the processing and exporting industries. The general orientation of Mai Chau district is to gradually reduce the proportion of food products while increasing the proportion of commodity plants, such as perennial plants, fruit plans, and tea.

Figure 50: GDP structure forecast of Mai Chau district by 2010



Source: Mai Chau district People's Committee.

In the development planning for agriculture in Mai Chau district, three communes Hang Kia, Pa Co, and Tan Son fall in the area specializing in corn production. Hang Kia and Pa Co communes are planned to be rice production area with total area of 200 hectares and jumbo ginger cultivation. Pa Co commune, thank to its advantage of road access, is in the growing area for development of safe vegetables. Bao La and Hang Kia are categorized as important sites for soybean plantation. Bao La is specified as the area for growing peanuts. Bao La, Hang Kia, Pa Co, and Tan Son communes are listed as potential for fruit growing.

Development priorities defined by authorities of Mai Chau district include services for agro-forestry production materials, seedling and livestock breeds, as well as plant protection and veterinary. For creating local market for agro-forestry products, the district authority plans to upgrade and expand network of retailers in highly populated residential areas, build new rural markets, and upgrade several focal markets in inter-commune centres.

7.8. Indigenous knowledge and the market

The market mechanism in economic development has fostered significant changes in thinking and lifestyle of ethnic communities in Mai Chau area. In their traditional mode of production, these farmers have practiced in one way or another market access activities even though it is still strongly affected by self-sufficient economy and the traditional mountainous culture.

The exchange of agricultural products for daily necessities in Mong and Dao communities is a good example (e.g. they exchange a chicken for soap or fish sauce). Until now, primitive barter is still maintained; yet, sometimes it differs in a way that products are sold and the cash is used to purchase daily necessities. They have realized that it is easier to purchase appropriate necessities with cash.

The Mong people seem to be more quickly adapted to the market, followed by the Dao people; while the Thai and the Muong people are more "hesitant". When tourism services in the Hang Kia – Pa Co area started to boom, many young Mong families realized the opportunity to do business. They collect traditional items, such as silver bracelets, rings, necklaces, and earrings at low prices and sell them to tourists at higher prices. When the consumption volume runs low, they bring these products to other locations (e.g. Son La province) or they sell to dealers in Mai Chau.

The Dao people, on the other hand, apply their indigenous knowledge to flexibly cultivating highly demanded crops, most typically sweet corns.

Sweet corns of the Dao people are tastier, sweeter, and more fragrant. Therefore, they can be sold at higher price compared to normal corns. Realizing the taste of consumers, especially of the King people, the Dao people in Tan Son grow sweet corns as their leading products. Sweet corns are grown in different periods. Each period is 10 – 20 days away. This intermittent cultivation is due to two reasons: (1) mass cultivation results in more difficulties in harvesting because the field is normally far away. They can only take one shoulder-pack home a day; (2) daily harvest will ensure fresh cobs, which is easier to sell. Sweet corncobs are sold to passers-by (in Highway 6) at 1,000 VND a cob. One ton of regular corn at its highest peak is only sold for two millions VND while one ton of sweet corn might bring about two to 2.4 millions VND. Sweet corn is consumed at much faster rate.

However, only a few households in Tan Son grow sweet corn because of the farming area and location of the household (proximal to the highway or not), and more importantly because of the flexibility of the producers' perception of the market. Most of the households grow sweet corn because of their fondness. Local authorities have not yet had any plan or strategy to expand the farming area of this product.

Conclusions and Recommendations

1. Conclusions

Hang Kia – Pa Co Nature Reserve is established to conserve one of rare remaining limestone forest ecosystems in the North of Vietnam. The area of primary forest in the nature reserve is relatively small compared to the forested area in lower elevation that has been converted to wet rice farming land. Forest on lower slopping area has also been cleared and turned into slash-and-burn farms.

Local communities living in and around the nature reserve cause significant impacts on biodiversity and natural resources of the nature reserve. Like many other protected areas in Vietnam, part of local population still heavily relies upon the available natural resources as their daily livelihood. Therefore, if there are not effective and sustainable solutions to deal with this fact, the conservation of forest ecosystems in Hang Kia – Pa Co cannot be fulfilled.

Livelihood solutions cannot be just to reduce poverty and ensure food security. With the integration into global economy, farmers in mountainous areas have to compete with those from other regions and even in other countries. Therefore, the orientation for livelihood interventions should target at helping local people to become market producers. By doing so, the future of sustainable development for local communities will be ensured and dependence upon natural resources will be reduced.

1.1. Foundation for development of commodity market

Hang Kia – Pa Co is an area with typical subtropical climate. Possessing favourable natural conditions, this area can potentially develop high value crops to serve the urban markets in big cities nearby. However, limited area of land and rapid population growth can be obstacles for expanding the scale of production. In addition, intensive cultivation in slash-and-burn farms consequently results in soil erosion and degradation of soil quality, which then strongly affects crop productivity.

1.1.1. Past and current programmes and projects

Within the past four years, different poverty reduction and development programmes and projects have been deployed in three surveyed communes. Tan Son has eight programmes and projects; Bao La has nine; and Pa Co has 10 projects. In Bao La and Pa Co, each commune has one private company contracting with local people to export vegetables and Shan Tuyet tea. These three communes receive investment for necessary infrastructures, including power grid, roads, schools, clinics, irrigation systems, and water supply systems.

Aside from positive impacts, such as improving living standards, reducing poverty, increasing local infrastructure, and improving local institutional capacity, the implementation of these programmes and projects faces several challenges and conflicts. These include the conflict between the need for farming land and requirement for conservation of the nature reserve, challenge in balancing the pro-poor development and forest protection.

1.1.2. Current status of commodity production and consumption

Although there are different types of available agricultural products in the area, the number of commodities is still limited. These current commodities include corn and cassava, bamboo, tea, and brocades. Market network has established but most of the farming products are sold to agents and dealers right in the production sites. Local agro-forestry products are highly evaluated in terms of safety due to less risk from pesticides and chemicals.

1.1.3. Difficulties in agricultural production

Five factors hindering local agro-forestry development include: (i) weather, (ii) unstable and low quality supply and consumption services, (iii) eroded and infertile soil, (iv) low water supply, and (v) lack of proper production techniques.

1.1.4. Labour division

Unbalance and inequality exist in labour division among family members. Women have to work harder and more intensively than amen.

1.1.5. Community organization and management

In total, 36% of commune staff in three communes have secondary education or higher. Key staffs of the People's Committees have more than five years of management experience. Most of village leaders are at least secondary school graduates. Women's' Union, People's Committee, and the Farmers Association are highly ranked in terms of community campaign capacity and problem solving. Other forms of community groups and clubs are not yet developed in these communes. Planning skills are identified as the area needs improving for key commune staffs n order to enhance the institutional capacity.

1.1.6. Access to information and services

Information about crop seasonal calendar, farming and breeding techniques is most concerned information for local people. Meanwhile, farmers have not received much information on forestry and fruit trees. There are two main sources of information, including village meetings and oral communication among local people. The biggest obstacle for local people to access information is the ability to digest information and practicality of information provided.

The quality of extension and veterinary services is relatively low. Farmers are not satisfied with these services due to low quality, inability to deliver in time, and limited choices of services.

Credit services are available to most of local people (75% of households take loans from the banks). In total, 71% of loans are used for investing in farming production and 29% are for non-production purposes.

1.1.7. Tradition and cultural changes

Four ethnic groups (Mong, Thai, Dao, and Muong) living in three communes make up an area of interlacing and diverse culture. Behaviours of local people towards nature are deeply influenced by their cultural and traditional insights. Slash-and-burn practice is an example. In each community, culture and tradition are changing rapidly. The trend is reflected in changes of rituals and customs, clothes and dressing, architecture and design of houses, lifestyle and the way of thinking (more sensitive to the market), forms of production and exploitation of resources, and role of influential

individuals in local communities. There are three major factors causing cultural changes, including (i) impacts from development programmes and policies, (ii) convenient transportation bringing market-styled relationships into villages, (iii) intensive penetration of outside cultures.

1.2. Product value chains: potentials and options

1.2.1. Bamboo value chain: practice far behind potentials

4,000 hectares of bamboos in Mai Chau only yield less than 800,000 USD while the potential could be 6.8 millions USD and 9,200 new jobs for local communities. Many companies specialized in floor planks and high quality utensils (i.e. TBF Hai Duong and Tien Dong) have high demand of bamboo laths. This is a very potential opportunity for poor farmers to take part in preliminary treatment process of these products. In fact, there is not yet any existing model for poor people to join the bamboo value chains.

1.2.2. Corn and cassava

Large factories with high demand of stable supply sources provide opportunities for the thriving of intermediate agents. This consequently adds more market costs and expands the gap between producers and the market. Collection of commodities in the first phase ignoring material quality (for example, the starch content of cassava, moisture level of corn) is a risk that may reduce the competitiveness of local products.

Commercialization of these products is closely linked to the development of husbandry. In terms of market perspectives, domestic market is a big one and of great potential. At present, the Government's policies and the increasing demand of the market are triggering these products to thrive. However, planning for cassava production should take into account soil quality over long-term.

1.2.3. Pigs

In the buffer zone of Hang Kia – Pa Co Nature Reserve, most local households raise pigs. However, the form of breeding is still obsolete, resulting in poor quality and low productivity.

The organization and operation of the market channel of this product is still very simple, only serving instant demands at local level. If the market scale cannot be expanded further, this product cannot be well developed. To support farmers improve pig raising for income generation, there should be initiatives to organize pig husbandry, establish market channels and consumption network, in addition to technical training for local farmers.

Hybrid pig raising in Mai Chau is of low potential due to (i) low ability of hybrid breeds to adapt to diseases and cold weather (compared to local breeds); and (ii) severe competition from lowland markets.

1.2.4. Cows and buffaloes

Domestic demand for beef keeps increasing, especially in urban areas. Market system has widely and effectively developed with significant participation of the private sectors. In Hang Kia – Pa Co area, cow and buffalo raising could be expanded and optimized for producing commercial products. Together with the change of

consumption trend, buffalo is raising for meat instead of their traditional use for ploughing.

1.2.5. Tea products

Shan Tuyet tea in Pa Co commune is a high value plant and also a specialty of the area. Production of Shan Tuyet tea will bring high profits, yet strictly require stable quality, good trademark and brand name, and safety assurance.

1.2.6. Vegetables and fruits

The buffer zone in the Hang Kia – Pa Co Nature Reserve has not yet been exploited for its potential of temperate vegetable and fruit products. Thach That persimmon grown in this area is losing its market due to oversupply from mass production of this fruit in many different areas in the Northern Mountains. The quality and productivity of persimmon and plum in Hang Kia – Pa Co area are way behind compared to these fruits of Moc Chau, Da Bac, and Luc Yen.

There are several special and typical types of vegetables in Hang Kia – Pa Co that can be developed as commercial products for the market. However, these vegetables are currently grown for local consumption only.

1.3. Perspectives of Hanoi market

Mountainous agro-forestry products currently on sale in supermarkets or retailers in Hanoi are poor in quantity and variety. Most significant products are Dien Bien special rice, bamboo shoot, unseasonable vegetables from Moc Chau, and Ha Giang oranges.

In order to join the supply chain of large distributors, suppliers must meet a series of requirements, such as large quantity, safe quality, stable supply, competitive price, and professionalism in business.

To join the distribution chain of supermarkets, suppliers must provide certificate of product origin, certificate of safe and clean production, financial invoices, warranty to deliver products in accordance with the contract, the ability to supply products in a timely manner, and last but not least competitive price.

With the current context in the Northern Mountains, it's still difficult for producers and businesses sector to be supply partners for large distributors or supermarkets. This means that they have to go through intermediary factors if they want to join the distribution chain.

Production of unseasonable vegetables and flowers is very potential for areas in high elevation with temperate climate. Sa Pa and Moc Chau have been successfully exploiting this advantage. Marketing of naturally exploited herbs can attract more attention of consumers and increase market demand, which consequently provides more income for local people in mountainous areas.

Fulfilling niche markets, no matter if they are small or large, is an appropriate strategy for mountainous areas, where there are diverse and unique products but small in quantity due to limited cultivation area.

1.4. Urban consumers and mountainous agro-forestry products

Survey reveals that the most of supermarket customers are of the under 35 age group with a major percentage of women. Most of customers do not go to the supermarket regularly, only one to four times a month.

Larger supermarkets are the most popular choice because their products have diverse varieties and large quantity, safe quality, and clearly labelled prices.

Most popular groups of product include vegetables, livestock products, and fruits. For agro-forestry products, customers prefer theme to be packaged with proper labels. Customers buy these agro-forestry products as these believed to be safely produced, of high quality, delicious, and unique. Most customers are willing to purchase these products at higher prices. There should be more improvement in terms of product labels, information about quantity and usage, and assurance of traditional and clean production.

Consumers pay most attention to food safety for such categories as vegetables, pork, and poultry meats. For other foods and products, competitive price and fresh quality are the most important criteria for buying decision of customers.

1.5. Bridging agro-forestry products to the market

In order for agro-forestry products to become market commodities, more needs to be done other than solving the supply-demand question. With the increasingly severe competition, farmers in remote and mountainous areas are often in a less advantageous position than other competitors. Market development interventions for local communities should take into account the local economic development strategy, production planning, application of harvest and post-harvest techniques, product quality control, product promotion and marketing, access to market information, trademark and brand name, local and national policies, as well as use of indigenous knowledge for adding values to local products.

In general, the Government and local authorities have spent lots of efforts in development of appropriate policies for supporting farmers, with priorities and incentives given to disadvantaged communities. The application and implementation of these policies, however, require flexibility at local levels. In addition, social and civil organizations should be encouraged to involve, especially to support institutional development and capacity building for local authorities and organizations at commune level.

Application of professional technical and production processes in rural and mountainous areas is still low. Advanced technology is only applied in small scale and individually, not comprehensively enough to meet the demand of creating qualified products for the market.

Together with the development of the national economy, consumers' awareness of social responsibility will be gradually improved. Integration of indigenous knowledge to add more values to local products will bring the uniqueness to agro-forestry products from mountainous areas like Hang Kia – Pa Co. Currently, part of urban consumers are already willing to purchase such types of products.

2. Recommendations

2.1. Improving community capacity

2.1.1. Enhancing institutional capacity

In order to ensure sustainability of development interventions, government staff at local levels need to be equipped with appropriate skills through training programmes, including management and planning competence. In addition, there should be more focus on communication and community mobilization training for local mass organizations so that they can deliver information to their members and local people more effectively.

2.1.2. Diversifying extension training

Only a small percentage of local households (5%) joined extension training courses provided by past and current development programmes and projects. Local people are interested in more training courses on farming and breeding techniques, which should be tailored for small groups of households. Poor people need detailed instructions and practical technical assistance. For better-off households, they need more information on technical instructions for new crop varieties, market price of production materials and services. Instructions and practical models for upland farming are proposed by farmers in Bao La and Pa Co communes. After carrying out training programmes or deployment of cultivation models, there should be more efforts for monitoring and technical support activities. This is currently a gap that development projects often leave.

2.1.3. Capacity building for market access

Capacity building for market access should focus on knowledge and skills to respond to market needs and changes, ability to diversify products and meet consumption demands in both quantity and quality. Short-term products, which are widely grown such as ginger, usually have regular price changes. Therefore, increasing market access capacity, improving market response ability, and good understanding of market risks are effective measures. The market analysis and development method developed by FAO and RECOFT are suitable for this purpose.

2.1.4. Household economic management

There should be certain types of direct training courses for local people in household economic management, with special focus on women. These training courses should focus on helping local people to analyze simple costs and benefits in their household investment in order to improve effectiveness of their farming production and better capital accumulation.

In addition, there should be training courses to help local households develop effective proposals to borrow loans from available credit sources, such as AgriBank and Social Policy Bank. With special incentives of the Government for local people in disadvantaged areas, access to these sources of capital will definitely help farmers learn practical investment and production planning skills in accordance with the market orientation.

2.2. Enhancing quality of services and information

2.2.1. Enhancing quality of input and output services for agro-forestry products

Extension and veterinary services should be more accessible for local people. There should be a network of community extension and veterinary workers in order to reduce the risks and improve the effectiveness of farming and animal husbandry. In addition, it's necessary to have a network of agricultural material supply (especially plant seedling and varieties, and livestock breeds).

2.2.2. Improving information access

Information should be diversified and enriched, not only for local people but also for local authorities. There should be more focus on delivering information on national and local policies. In reality, there are gaps between policies and practical application. Encouraging feedbacks from local people and local authorities on shortcomings and weaknesses of policies will help policy-makers to adjust accordingly.

Currently available information channels such as local radio and television could be utilized to bring information to more people by broadcasting programmes in ethnic languages. At commune level, information infrastructures should be improved in order for more people to be able to access to different sources of farming, extension, and market information.

2.2.3. Promoting cultural identities and culture conservation

Cultural transformation is the inevitable process in any ethnic group. What matters most is how and in what direction the change will be. However, some changes considered to be positive today might be negative tomorrow. Nevertheless, cultural acceptance or integration is not obligatory. Nevertheless, cultural acceptance o integration is not obligatory. The bottom line is that culture deserves special attention when implementing a programme or a policy. Possible consequences should be weighed in order to come to the right decisions.

However, many unique cultures of different ethnic groups could be the strengths for their sustainable community development. Cultural tourism activities could help increase the income of local people while encourage them to maintain their cultural identities and characteristics.

2.3. Increasing product value based on technology and the market

2.3.1. Increasing value of bamboo products

The value of these products could be improved by increasing bamboo quality through enhancing production methods, production management, and complete exploitation of bamboo plantation from shoots to industrial materials. There needs to have solutions for reducing the market costs by linking single and small-scale producers. Enhancing benefits of the poor can be done by facilitating development of preliminary treatment firms at commune and inter-commune levels. In addition, local government should have proper policies to attract high investors to invest in production of high value products, such as floor planks or interior appliances, and establish local trading channels for buying local bamboo products.

2.3.2. Improving corn and cassava products

There should be certain solutions to facilitate self collection of raw products in order to reduce the number of intermediary factors for increasing the value of these products. Market channels of corn and cassava should be reorganized with more close relationships among stakeholders in order to better adapt to changes when the

Government reduces level of support and subsidy. In addition, the service system for supplying seedlings, fertilizers, storage, and processing products needs to be strengthened in order to improve competitiveness.

Sustainable upland farming models can be applied in Hang Kia – Pa Co area based upon following principles:

- Stable land use planning for local households
- Growing corn and cassava on slash-and-burn farms with slope less than 25^0
- Farming on small-scale terraced fields
- Alternation and rotation of crops
- Using organic fertilizers, green manure, and micro-organic manure
- Developing a combined agricultural and forest plantation

Farming methods that help enhance productivity include use of high-yield industrial cassava varieties, working with seedling and plant providers to pilot and expand the area of extra-high productivity hybrid corns. On-site preliminary processing projects with appropriate use of alternative energy instead of charcoal should be promoted. Suitable preliminary processing methods for this area include simple drying oven (for both corn and cassava), cassava slicer, and corn shelling machine. These are simple tools of low price and suitable to local households.

2.3.3. Strengthening pig raising

As a potential livestock having favourable incentives from the Government for development, pig raising in Hang Kia – Pa Co area has many opportunities for faster growth. Proposed strategic development activities for pig raising are:

- Building and expanding effective models and raising processes suitable with local conditions
- Improving veterinary services
- Applying scientific and technical solutions in pig raising and breeding
- Establishing distribution channels to external markets
- Developing the specialty pig products

2.3.4. Improving cow and buffalo raising

Applicable technical solutions for improving cow and buffalo raising include piloting new cross-breeding techniques (especially for buffalo), removing smaller male cattle by emasculation, and using larger males for reproduction. Shortage of foodstuffs can be solved by planting high productivity grass such as elephant grass and Guinea grass, which have been widely piloted in the Northern Mountains. In addition, farmers can utilize provisioned and processed foodstuffs by keeping unprocessed greens from available materials (straws, corncobs, cassava's leaves, etc.) with urea.

2.3.5. Developing Shan Tuyet tea products

There should be plans and guidelines for poor households to meet strict requirements in high quality tea products. Tea farmers can involve in the value chains by processing tea products on-farm. Traditional tea processing methods, which significantly preserve the tea quality, should be promoted. In addition, it's necessary to plan and register geographical domain for Shan Tuyet tea in Pa Co.

2.3.6. Improving vegetables and fruits

Firstly, there should be solutions for improving quality and food safety for plums and persimmons. The Thach That persimmon in Pa Co should be grafted with high quality varieties.

Gardening techniques, such as care, proper trimming, and utilizing growth assisting substances should be used. Proper production processes should be developed for each type of vegetables and fruits. Moreover, farmers should apply harvest and postharvest techniques in order to ensure the similarity and quality of products.

Local authorities should plan to apply GAP standards in local production in order to ensure food safety and quality. Once the supply source of products is stable and large enough, local authorities can contract potential consultants and commercial dealers, such as Van Thanh or Freshstudio for advice in quality control.

Utilizing cheap but efficient small-scale techniques, such as preservation using PE/OTR/Wax package with freeze technique (if available) to maintain the freshness of fruits, can attract more business dealers.

2.4. Piloting potential products

2.4.1. Products for Hanoi market

Unseasonable vegetables such as cabbage, tomato, chayote, cucumber, and pea could be potential products to develop in communes in high elevation with temperate climate similar to Moc Chau and Sa Pa.

High grade flowers similar to those from Da Lat currently consumed in the Hanoi market are also of great potential.

Pumpkin is a product of stable demand all year round and could be kept for a long time. However, various factors such as varieties of pumpkin, production area, climate conditions, productivity, and market demand for each variety should be thoroughly studied before piloting this product.

Banana is a fruit suitable with areas of lower elevation. The demand of banana is relatively higher in the summer.

Sweet corn could be a special product of a certain region. However, in order for this product to be a well-known trademark and join the distribution chain, there should be more detailed market survey, production plan, as well as market access potentials.

2.4.2. Products for domestic and export markets

Ginger could be a potential product. However, details of ginger purchasing and exporting companies need to be investigated in order to confirm its potential.

Sticklac is suitable with physical conditions in Bao La commune. This is a potential product to develop in such typical climate in Hang Kia – Pa Co area.

White canarium is a perennial and multi-purpose tree, which is listed among 13 tree species for production forests by MARD. Its products include timber, fruits, and resin, which are always of high market demand and high value. Bao La commune has a

large forest land that is very suitable for canarium plantation. Moreover, this tree species can be grown with or replaced white bamboos or other bamboo varieties in order to maintain the fertility of the soil and generate stable income for farmers.

There should be a research on possibility to grow cardamom under the canopies of natural forest in Hang Kia – Pa Co. Cardamom has brought about high earnings for ethnic people in the Northern Mountains, especially Mong people in Lao Cai province.

2.5. Applying customer-oriented approach

2.5.1. Product branding and promotion

Currently, except for some famous trademarks such as Hai Hau fragrant rice and Dien Bien field sticky rice known to consumers by their shopping habits and experience, most of other agro-forestry products are known to consumers through package labels. This is a shortcoming of products from mountainous areas. Therefore, there should be appropriate marketing and promotion strategies for these products on different means of mass communication, such as radio or television.

2.5.2. Product trademark and information

Consumers are often interested in tea and herbal products with proper packages and labels. This is an advantage for this group of products to thrive by cooperating with product processing companies.

Most customers prefer clearly labelled packages. Packaging and labelling for fresh products could be done at the production sites in order to reduce the time and intermediary costs. This measure should be taken into account in order for agro-forestry products from mountainous areas to be able to compete with similar products from other locations.

2.6. Fostering community collaboration in farming production

Market chains in the surveyed area operate less effectively due to high market costs beginning from the production collection stage. On the other hand, quality assurance is a major obstacle for bringing products to the market. Fragmentation in production results in the ununiformity of quality and instability of product supply, which are two basic conditions determining whether commodities are qualified to join high level market, such as supermarkets and large distributors, or not. In order to overcome this problem, production organization is the most important solution for current status of small-scale and fragmented production in local communities.

There need to be plans to set up production cooperatives or groups at a reasonable scale in order to ensure stable supply of products at competitive price that can attract suppliers and distributors in Hanoi market. In addition, these cooperatives and groups should be supported with capacity building and networking activities.

2.7. Sustainable management of natural resources

In order to establish a commodity system satisfying the market demand, the farming land area needs to be well planned. Local authorities and the Management Board of Hang Kia – Pa Co Nature Reserve should work together to agree on land use planning and management in order to avoid possible conflicts.

The Nature Reserve needs to manage the current slash-and-burn farming land and minimize the expansion of slash-and-burn area for protecting the remaining natural forest. Those slash-and-burn farms no longer suitable for cultivation could be allocated to the ecological restoration section and put under strict monitoring. In addition, there should be a comprehensive inventory of current natural resources of the nature reserve for developing an appropriate management plan to better protect the forest and reduce impacts on biodiversity.

2.8. Additional solutions

2.8.1. Promoting energy saving initiatives

There should be an annual survey on consumption of timber and firewood in the core and buffer zones in order to develop alternative measures in for energy saving, which can reduce negative impacts on the forest. When animal husbandry is more developed, biogas models can be applicable for local households to use for cooking and product processing.

2.8.2. Developing community tourism models

With the cultural diversity and location close to the famous Mai Chau tourism site, local communities in Hang Kia – Pa Co can potentially develop community tourism models to diversify their sources of income. Currently, there are several tourist routes from Mai Chau to Bao La, Hang Kia, and Pa Co communes, which are operated by several tourism companies. With some initial support, local households can learn from Mai Chau model and turn tourism into an alternative for traditional farming.

APPENDIX

Appendix 1. List of agro-forestry products available in Hanoi supermarkets

No.	Name of product	No.	Name of product
I	**Vegetables**	42.	Dried garlic
1.	Watercress	43.	Onion
2.	Cauliflower	44.	Dried tea
3.	Domestic lettuce	**III**	**Fruits**
4.	Green onion	45.	Fresh pineapple
5.	Cabbage	46.	Baby longan
6.	(Green) field cabbage	47.	Jackfruit
7.	Baby bokchoy	48.	Mango
8.	Chinese eggplant	49.	Banana
9.	Kohlrabi	50.	Aromatic banana
10.	Pumpkin	51.	Thailand sweet tamarind
11.	Centella	52.	Tangerine (no seed)
12.	Chinese cabbage	53.	Persimmon
13.	Chinese broccoli	54.	Nam Roi grapefruit
14.	Celery		
15.	Turnip	**IV**	**Starch products**
16.	Carrot	55.	Taro
17.	Amaranth	56.	Sweet potato
18.	Water spinach	57.	Corn cob
19.	Da Lat green pepper	58.	Corn seeds
20.	Nappa	59.	Potato
21.	Ceylon spinach	60.	Tay Bac field sticky rice
22.	Pea	61.	Tu Le sticky rice
23.	Fresh mushroom	62.	Dien Bien fragrant rice
24.	Tomato		
25.	Chilli pepper	**V**	**Processed fruits**
26.	Sweet bamboo shoot	63.	Dried banana
27.	Whole bamboo shoot	64.	Fresh dracontomelum soaked with sugar
28.	Sliced bamboo shoot	65.	Salted plum
29.	Asparagus	66.	Apricot
30.	Cucumber		
31.	Squash	**VII**	**Herbal products**
32.	Pumpkin	67.	Artichoke tea
33.	Carrot	68.	Shan Tuyet tea
34.	Chayote	69.	Bitter tea
35.	Chayote browse		
36.	Tomato	**VII**	**Meat products**
II	**Dried products**	70.	Pork
37.	Dried mushroom	71.	Beef
38.	Dried thin-top mushroom	72.	Traditionally-bred chicken
39.	Dried bamboo shoot	73.	Buffalo meat

40.	Dried white bamboo shoot	74.	Rabbit meat
41.	Dried onion	75.	Salmon

Appendix 2. Development programmes and projects implemented in the buffer zone of Hang Kia – Pa Co Nature Reserve

Programs/projects	Donors	Duration	Area	Activities	Results
State target programme for poverty reduction in the period of 1998 - 2000 (Decision 133/1998/ QD-TTg)[21]	Government	1998-present	Tan Son	Two projects in Tan Son: 1) Human resettlement and settled agriculture. 2) Agricultural extension for the poor. Project 1 has completed several infrastructures, provided 70 bamboos for each household (who has forest land). Project 2 provided IPM training programmes on rice and corn.	100 households received bamboos. Five people in each village were trained. 66% of 100 trainees are male. 20 households growing bamboos
Program for socio-economic development in specially disadvantaged communes in remote mountainous areas (Decision 135/1998/QD-TTg)	Government	1998 – 2000 & 2000 - 2005	Pa Co	Household water system	Built village water tanks, currently only usable in rainy season
				Infrastructure (water supply, road, school, irrigation system)	16 water tanks, 1 primary school, 200m of concrete road, expanding & upgrading several dirt roads
				Agricultural extension (growing French plum, persimmon, and Shan Tuyet tea)	
Regional poverty reduction project in six provinces in the Northern Mountains (funded by	MPI, DPI & PPMUs	2002 - 2007	Pa Co	Project consists of six components: 1) rural roads and markets, 2) agriculture (training and models), 3) health care and basic education programmes, 4)	One hybrid corn model with an area of 1 hectare (Bioseed, 9698). 8 breeding pig models in 8 villages.

[21] This programme has nine projects: 1) Infrastructure construction, excluding clean water supply for rural area and population rearrangement. 2) Craft development support. 3) Micro credit for the poors. 4) Education support. 5) Health care support. 6) Agricultural extension for the poor. 7) Capacity building for poverty reduction workers. 8) Human resettlement, settled cultivation, and migration support. 9) Supporting poor ethnic people.

WB)				commune development budget programme, 5) project development and management, 6) institutional development at different levels	Training courses on corn cultivation and pig breeding. Training courses on project management for village leaders
					Build 5 tanks for running water. Construct asphalted road & intervillage/intercommune roads
Program 06	Government	1993	All three communes	Removing poppy field. Support plantation of French apple and plum.	
Program 134	Government	2005-present	Tan Son Bao La Pa Co	Build houses for the poor (4 households in Tan Son)	Replaced temporary houses, the poor are sheltered Leaving negative impacts on forest because woods are taken to build houses
Agro-forestry programmes					
New plantation of 5 million hectare of forest (Decision 661/1998/QD-TTg dated 29 July 1998)	Government	1998 - present	Tan Son	Each participating household is given 50,0000 VND per hectare per year	
			Bao La	Supplying the white bamboo variety (240 trees per hectare) and almondwood (700 trees per hectare)	Alternate plantation of white bamboo and almondwood yields low productivity
			Pa Co	Supplying Shan Tuyet tea for households	Quality of tea variety is not qualified.
Irrigation project	Government	2003-2010	Bao La	Improving irrigation system. Cements provided by the Government. Local people contribute sands and labours.	Constructed 6.5 km of irrigation ditch in 8 villages. Estimated fund: 650 millions

					VND
Fee and price subsidy programme (Decree 20/1998/ND-CP dated 31 March 1998 on price and transportation cost subsidy for requisites)	Government	1998 - present	Tan Son Bao La Pa Co	Price and fee subsidy for agricultural production materials	
Environmental sanitation					
Rural environmental and clean water programme	Government		Bao La	Construct water supply system Local people contribute one fourth of the total cost	Constructed 40 water tanks and many water wells in Quyet Thang, Bao, and Long Sang villages. The programme disbursed two billions VND Water sufficient all year round
The "three sties and four pits" programme	Government		Tan Son Bao La Pa Co	Launch the "three sties and four pits" programme	All villages participate in the programme 80% households apply the "three sties and four pits" programme
Power supply project	Provincial electricity company WB		Tan Son Bao La		98% of the population use electricity 98% of households use electricity. (Electricity is made available to 3 villages at 1.2 billion VND from provincial fund. In 2000, WB

			Pa Co		supported 5 other villages, with 2.3 billion VND)
Projects of private companies					
Agricultural product consumption (Shan Tuyet tea).	Phuong Hien Ltd. Co. - Hoa Binh		Pa Co	Construct a tea processing facility in Cha Day village. The company supplies materials and inputs (variety, fertilizers, and chemicals) and purchases tea from farmers. Pilot cultivation of Da Bac persimmon	Company signs contracts with farmers, certified by the commune The company provides good and pure variety (not hybrid).
Seed consumption project	Dong Tay Seed Joint venture Co. Hamlet 2, Xuyen Thoi, Hoc Mon, HCM City	2004 - present	Bao La	Cultivating bitter melon, cucumber, and pumpkin. The company purchase seeds from farmers. Supplying inputs (varieties, chemicals, and cash advance for buying covering materials). Providing training and technical supervision in accordance with growing cycles.	Bao La has 3 hectares. Buying price of the company: 150,000 VND per kg of bitter melon's seeds. 120,000VND per kg of cucumber seeds, 120,000VND per kg of pumpkin seeds
Basil plantation project	N/A	From 2001 – present	Tan Son	Growing basil	Unsuccessful
Artemesia plantation project				Growing artemesia	
Rose plantation				Growing roses	
Sesame and cabbage plantation				Growing sesame and cabbage	
Non-farm job creation					
Brocades project	Private company,	2004-2005	Pa Co	Invest sewing machines and embroidery designs. Provide technical training.	50 people from Cha Day and Pa Con villages were trained

	Hanoi				Supply 5 sewing machines, currently maintained. Several households sell products to Hanoi
	Viet-Belgium project	2004-2005	Tan Son	Invest sewing machines and embroidery designs. Provide technical training.	About 10 people were trained. The project already ended. Two households still produce brocades and directly sell products to Hanoi. 100% of women in Tam Hoa and Po Liem villages, and 50% of women in Po Tat participated in this programme.
Blacksmith training programme	Provincial Army of Hoa Binh	2006	Pa Co	Several young Mong people having blacksmith were invited to join the training for trainer programme	One person was invited to the training programme but did not go.
Credit programmes					
Loan programmes	Social Policy Bank	Unlimited	3 communes	Provide loans	Social Policy Bank's balance in Tan Son: 1,234 millions VND; Bao La: 1,334 millions VND; Pa Co: 782 millions VND AgriBank's balance in Bao La: 4 billions VND, Pa Co: 8,905 millions VND
	AgriBank		3 communes		
Program 120	Government	2006	Tan Son	This programme provides loans at the highest level of 1.5 millions VND with an interest rate of 0.65%.	
Micro credit programme	Women's Union	2005 - present	Pa Co	Commune Women's' Union has the fund of 35 millions VND. Loans given to its members at a highest amount of 1	

				million VND.	

Appendix 3. Reference websites

Farmers' stories
http://www.chuyennhanong.com.vn/

Information Portal of Ministry of Agriculture and Rural Development
http://www.agroviet.gov.vn

Department of Agro-forestry Product Processing and Salt Industry
http://www.chebien.gov.vn

Department of Cooperatives and Rural Development (MARD)
http://www.dcrd.gov.vn

Vietnam's Business Information Centre
http://www.business.gov.vn

Department of Cultivation (MARD)
http://www.cuctrongtrot.gov.vn/

SME Development Programme
http://www.sme-gtz.org.vn

Vietnam Tea Association
http://www.hiephoichevietnam.org

Vietnam Fruit Association
http://www.vinafruit.com

Food and Foodstuff Association of Ho Chi Minh City
http://www.ffa.com.vn/

Vietnam Farmers' Union
http://www.hoinongdan.org.vn

Greater Mekong Subregion Agricultural Information Network
http://vietnam.gms-ain.org/

Vegetables – Flowers – Fruits of Vietnam
http://rauhoaquavietnam.vn/

The World Vegetable Centre
http://www.arc-avrdc.org/

Agricultural Communication Research Centre
http://www.khoahocchonhanong.com.vn/

Centre for Agricultural Research and Ecological Studies
http://www.cares.org.vn/

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Over 85% of protected areas in Vietnam are located in rural and remote areas, where remain high rate of poverty. In these areas, local communities have to depend heavily on natural resources for their daily livelihood. Pressure from local communities on biodiversity is still immense. Conservation of natural resources cannot be successful without appropriate measures for sustainable reduction of this dependency.

However, if sustainable livelihood for local communities is simply translated as food security and reduction of poverty rate then it's not sufficient. With the trend of global integration of Vietnam's economy, farmers in every region of the country have to confront with the competitive arena against farmers in other regions and even other countries. Therefore, it's necessary to drive the objective of any intervention to a higher level, which involves helping farmers and local communities to be able to supply products for the market needs. By having full access to the market, local communities can ensure their sustainable livelihoods and reduce their dependency on natural resources. In addition, there should be solutions to help local farmers to become professional producers so that they can maintain firm roles in the competitive market places.

With this approach in mind, People and Nature Reconciliation has carried out the feasibility study on market access for local agro-forestry products in local communities in the buffer zone of Hang Kia Pa Co Nature Reserve. Through this study, we expect to design appropriate interventions and solutions to assist local communities in opening access to larger markets in order to help reduce current pressure on natural resources of the nature reserve. With contribution, consultation, and support from different stakeholders and experts in this study, we hope to reach a feasible approach in developing a project to support conservation of natural resources through assisting sustainable livelihood development for local communities.

The research programme was made possible by

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