

The Role of Non-Timber Forest Products (NTFPs) in Livelihood Strategies and Household Economies in a Remote Upland Village in the Upper Ca River Basin, Nghe An, Vietnam

(Pages: 176 - 194, PROCEEDINGS OF REGIONAL CONFERENCE ON ENVIRONMENTAL PLANNING AND MANAGEMENT ISSUES IN SOUTHEAST ASIAN COUNTRIES.)

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Abstract

Tha Lang Hamlet, a community of the Kho Mu ethnic minority is located in Bao Thang Commune, Ky Son District, Nghe An Province, a remote area with difficult access to markets. In 1993, the growing of opium, Tha Lang's main market crop, was banned. The objective of this research is to provide an overview of the role that non-timber forest products (NTFPs), extracted from primary- and secondary-forest and fallow areas, play in livelihood strategies and household economic activities in this village in the remote upland region of the Upper Ca River Basin, Nghe An, Vietnam.

Our research found that after stopping opium cultivation, the village's farmers have primarily practiced subsistence agriculture. NTFPs play a relatively important role in households in terms of consumption and selling and bartering. NTFPs were considered a gap-filling supplement, especially during the agricultural season and used as diverse sources of income. The main reason for NTFPs' limited economic role appeared to be the high costs and difficulties associated with transporting them from the hamlet to the province's main road, Highway 7A. In contrast, a comparison of the role of NTFPs in Que, a hamlet in the Con Cuong District with easier access to markets, was carried out and showed that NTFPs generated considerably higher income in comparison to that in Tha Lang and the role of NTFPs was considerably different from that in Tha Lang. The research also showed that NTFPs were not the main or only source of cash income in Tha Lang; instead, people earned most of their income from animal husbandry. This suggests that animal husbandry development is a way to improve the economy of Tha Lang specifically and mountainous areas in Vietnam in general because of its lack of need for access to market.

Key Words: household economy, livelihood strategies, NTFPs, Upper Ca River Basin, Nghe An

I. INTRODUCTION

Forest areas play a very important role for human beings in terms of economy, society and environment. Rural people, especially people living in or near forests, depend on forest products as sources of food, fodder, medicines, construction materials and as a source of income.

According to CIFOR's¹ research, "More than 240 million people around the world live in forested regions. Many are poor and depend on forests for income. Forest-based activities in developing countries provide an equivalent of 17 million full-time jobs in the formal sector and another 30 million in the informal sector, as well as 13-35% of all rural non-farm employment" (Forests and Livelihoods (LIV) Program Strategy). In Vietnam, an estimated 24 million of the country's 82 million inhabitants live near forests or are dependent on forests, and nearly 8 million ethnic minority people spend much of their time hunting and gathering forest resources (Poffenberger et al. 1998).

Forest products can be divided into timber and non-timber forest products (NTFPs). NTFPs have been studied by researchers from many different academic fields and each field uses a slightly different definition of NTFPs. According to the definition of NTFPs provided by CIFOR in 2004, "Non-timber forest products are any product or service other than timber that is produced in a forest. They include fruits, nuts, vegetables, fish and game, medicinal plants, resins, essences, and a range of barks and fibers such as bamboo, rattans, and a host of other palms and grasses". NTFPs are an indispensable part of the livelihood strategy of communities living in and near forests, especially tropical areas which have much bio-diversity.

Because the "harvest of NTFPs usually has a lower impact on the forest ecosystem than timber harvesting and can provide an array of social and economic benefits, particularly to community operations, and can therefore be an important component of forest ecosystem management" (The Forest Stewardship Council - FSC 2002), NTFPs have been of interest to many researchers, and have been the focus of research on bio-diversity management, conservation, and poverty alleviation.

Since 1993, the government has carried out Program 06 in Tha Lang in order to stop opium cultivation and many of the local farmers have lost their main source of income. Additionally, other programs, projects and policies from government and non-government organizations (NGOs) such as Program 135, the Community-Based Rural Infrastructure Project (CBRIP), and Decree 02 have also been conducted in order to help people improve their lives. These activities have considerably impacted household economies in Tha Lang. In our report, we also examine the role of NTFPs in the livelihood strategies and household economies more than ten years after the outlawing of opium cultivation. This will help policy makers have an accurate view about the livelihood strategies, household economies and role of NTFPs in a poor mountain community with poor access to markets in the upper Ca River Basin—allowing them to better manage natural resources. This report also compares the role of NTFPs between Tha Lang and Que (another hamlet in the Ca River Basin with better access to markets). Since the research of the Center for Agricultural Research and Ecological Studies (CARES) focuses on the environment and resource management, the research on NTFPs is also in accordance with CARES's research objectives.

In this paper, we use a method similar to the one Jakobsen (2005) used in his research in Que Village in the Ca River Basin in order to analyze livelihood strategies in Tha Lang hamlet. Tha

¹ CIFOR: Center for International Forestry Research

Lang hamlet was selected as our research site on the basis of its geographic and socio-economic conditions, including location, accessibility, ethnic make-up, and prevalence of government / NGO aid programs.

An explanation of key concepts is followed by a brief description of the case study location and our methods. The report continues by giving the results of our analysis of the role of NTFPs in household economics and livelihood strategies in Tha Lang hamlet and household strategies in relation to NTFP management. The final section presents a discussion about the findings of this paper, the role of NTFPs in the livelihood strategies and household economic activities in Tha Lang hamlet in comparison with that in Que hamlet, the limitations of this research, and our conclusion.

II. CONCEPTS

Before analyzing the findings of this paper, it is important to define the key concepts that will be used throughout the study. The following terms describe the common livelihood strategies that are pursued by rural households.

Livelihood Strategies

Livelihood strategies are defined as those activities undertaken by smallholder households to provide a means of living. A key goal of livelihood strategies is to ensure household economic and social security (Koczberski, G., Curry, G.N. & Gibson, K. 2001).

To classify livelihood strategies which households pursue, Jakobsen (2005) looked at their livelihood context and the combination of their available assets. In general households can be divided into one or more of the three following livelihood strategy groupings: Agricultural Intensification or Extension, Livelihood Diversification and Migration.

- Agricultural Intensification or Extension

Netting (1993) defines agricultural intensification as: “a process of increasing the utilization or productivity of land currently under production, and it contrasts with expansion, that is, the extension of land under cultivation.” In a swidden cultivation system, farmers practice intensification when they increase the cultivation period and reduce the fallow period on their land. Alternatively, farmers can also practice intensification when they change from swidden cultivation to paddy rice cultivation - resulting in two crops per year and higher productivity. However, attempting intensification requires farmers to have access to a large labor force, fertilizer, pesticide, herbicide, and more advanced farming techniques.

- Livelihood Diversification

According to Elliss (1998) livelihood diversification can be defined as, “the process by which rural families construct a diverse portfolio of activities and assets in their struggle for survival and improving standards of living.” Activities that create livelihood diversification include swidden cultivation, paddy rice cultivation, home gardens, forest product extraction, handicrafts, and livestock production. In remote areas, characterized in part by poor market access and

subsistence economies, livelihood diversification helps to minimize risks to household economies and ensure food security in the households.

- Migration

According to Jakobsen (2005) a migration strategy is also seen at work in Vietnam. Urban areas and peri-urban areas in Vietnam are currently undergoing a process of industrialization, characterized by high economic growth and labor demand. Meanwhile in the rural areas of the country, people's lives are becoming more difficult, due in part to a decline in natural resources. Moreover, Vietnam's infrastructure and communication networks are improving, making it easier for people to move from rural areas to urban areas and vice versa.

As a result, many farmers aspire to switch from traditional agriculture work, characterized by low wages and manual labor, to non-agricultural activities that promise better pay and require less physical effort. However, such people are limited by a lack of skills and information, and often move to urban areas only to end up working as manual laborers for limited periods of time under informal contracts. Despite this migrants are still often able to earn more income in these positions than they do in rural areas with traditional agricultural systems.

Each of the above strategies can also be divided it into smaller strategies depending on the specific situation.

Household strategies in relation to NTFPs management

Household strategies in relation to NTFP management have been analyzed by Belcher and Kusters (2004) in their research of 61 sites in Africa, Asia and Latin America. Their research has identified four strategies in relation to NTFP management in households, which they classify as coping, supplementing, integrating and specialized strategies.

- Coping Strategy

Households using the coping strategy tend to invest very little effort into NTFP management since products are harvested from natural forest or fallows. In some cases, NTFPs are managed by traditional rules, but often these resources have open access and face eventual depletion. Households using this strategy tend to be located in relatively remote areas – characterized in part by low prices of land and NTFPs. The harvest and sale of NTFPs by households using the coping strategy are often the main or the only source of cash, and help make ends meet. Collecting and trading NTFPs supplement these households' agricultural incomes and lift them out of near-famine conditions. The products collected may include palm fibers, wood for woodcarving, fuel wood, rattan and medicinal plants.

- Supplementary Strategy

For households following the supplementary strategy, NTFP production is generally considered a gap-filling activity during the agricultural season that creates a diverse source of income. Households using this strategy harvest and sell NTFP's during times when other agricultural responsibilities are low, providing a supplementary source of income before the season's harvest.

Like the coping strategy, NTFPs in this strategy are harvested from wild resources with little or no management.

- *Integrated Strategy*

Households following the integrated strategy earn a large portion of their household income in cash, but NTFPs are not the main source of income. Instead, these households often combine NTFP production with other off-farm activities such as selling at the market, driving a motorbike taxi, distilling alcohol, etc. This group tends to have the highest labor and technology inputs per ha (though on a smaller area than the specialized group), and NTFPs are intensively cultivated and managed. In terms of geography, households following this strategy are often located in areas where land prices tend to be higher and the transportation system better than those using other strategies. The NTFPs harvested by this group are used as a raw material in well-developed processing industries.

- *Specialized Strategy*

Households that follow the specialized strategy are well-integrated into a cash economy, tend to have higher incomes than their neighbors and derive the majority of their total income from the selling of NTFPs.

NTFPs under this strategy are managed relatively intensively through a mixture of cultivation and natural or regenerated forest area management. These characteristics make the value of forest-product production per ha for this strategy higher than the other three strategies mentioned. Accessibility and land values in these areas tend to be relatively high (though not as high as in the integrated case), which makes NTFP production economically attractive.

Households following the specialized strategy tend to use a more limited number of NTFPs for their own consumption than households pursuing other strategies.

III. STUDY SITE

Our research was conducted in Tha Lang, a poor hamlet in Bao Thang Commune, Ky Son District, Nghe An Province. The hamlet was located in a valley in the Ca River Basin (CRB), at an altitude of 230m above sea level, and surrounded by mountains ranging in height from 400m to 905m above sea level. The first people arrived here and claimed land between 1956 and 1957. At that time, almost all productive activities were carried out by households without the intervention of local authorities. Tha Lang hamlet was officially established in 1975, with an initial count of 58 households. According to a 2004 census, Tha Lang had 44 households, with a total population of 307 (146 men (47.5% of the population) and 161 women (52.5%)). Tha Lang hamlet was dominated by the Kho Mu ethnic minority, but also included some Thai people that had spousal relationships with Kho Mu, as well as some Kinh people that taught in the hamlet.

Tha Lang hamlet is about 30 km from the Highway 7A and about 47 km from Muong Xen, the main town in Ky Son district. From Highway 7A to the hamlet, 27 km of the road is motorcycle-accessible—the rest of the journey has to be made by foot. Compared to other hamlets in Bao Thang, Tha Lang is considered the most difficult hamlet to access from outside the area.

In addition to poor accessibility, the infrastructure of Tha Lang hamlet is underdeveloped. Since there is no running water, farmers mainly use water from Com Stream and Hay Stream. In addition, most households use paraffin lamps and firewood for light, though some households have small generators. From 2000 to 2004, Government Program 135 supported the households with free food and goods, such as blankets, mosquito nets, saucepans, oil and salt. This support was very significant for the hamlet's households, as it contributed greatly to improving residents' lives. In addition to government programs, some policies were also enacted in Tha Lang such as the 64/CP Agricultural Land Allocation Decree (27/09/1993) and the 163/CP Forest Land Allocation Decree (16/11/1999). These policies helped the local authorities and farmers manage forest resources better and stabilize production activities. However, the hamlet's remoteness and poor infrastructure prevent the local people from communicating and trading extensively with outsiders. Shifting cultivation characterizes the agriculture found here. In addition, animal husbandry and NTFP collection contribute significantly to household strategies and economic activities.

IV. METHODOLOGY

4.1. Data Collection

- Secondary Data

To start, we collected data and documents related to Tha Lang hamlet at the district, commune, and hamlet levels which contain information such as hamlet history, traditions and culture, ethnic groups, population, programs, policies, infrastructure, and forest management. Then, we gathered previously written reports related to resource management and livelihoods in the CRB. Finally, we studied references related to the role of NTFPs in livelihood strategies and household economic activities in Vietnam and around the world.

- Primary Data

To collect primary data, we randomly selected and interviewed 30 households from the 44 total households of Tha Lang hamlet. The data included: cultivation (rice, maize, cassava, and other crops), animal husbandry, NTFP collection, kinds of NTFPs, places for collecting NTFPs, purpose of collecting NTFPs (such as: cash income from NTFPs, etc). Group discussions were carried out to collect information about the farmers' activities in the forest, the fallow land and the active swidden, especially regarding NTFPs. In addition to our observations, we also cross-checked information already collected from the farmers and the local authorities.

4.2. Data Analysis.

We analyzed household production activities in Tha Lang hamlet, including: agriculture, forest product collection, hired labor, and others in order to determine which ones play main roles in household economic activities. Next, we determined the current livelihood strategies employed by the 30 surveyed households. To do this, four indicators were chosen: size of swidden field/capita, number of livestock, cash income from NTFP collection, and cash income from wage labor (these indicators are the same ones chosen to analyze livelihood strategies in Que hamlet in Jakobsen's unpublished report from 2004). The focus of this analysis was on the

natural capital of households, as farmers in Tha Lang hamlet mainly practice subsistence agriculture. We only chose the selling (for cash) of NTFPs to classify different livelihood strategies without mentioning total income from NTFPs because all households in Tha Lang participated in subsistence NTFP collection. Based on the values of the four indicators among the 30 households, a hierarchical cluster analysis was carried out, using SPSS (Statistical Package for the Social Sciences) software in order to identify homogeneous clusters of households following a specific livelihood strategy. Households having the same or similar indicators would stay in the same cluster. Based on clusters and the indicators, we determined the livelihood strategies pursued by households. From the results of the livelihood strategy analysis, we analyzed the role of NTFPs in the strategies and household economic activities. The indicators surveyed among the 30 households and their values are presented in Appendix 1.

V. RESULTS

5.1. Household Production Activities in Tha Lang Hamlet and roles of NTFPs in household economies

The production system in Tha Lang is primarily subsistence agriculture. Main production activities are swidden cultivation, NTFP collection, and animal husbandry. Some other sources, such as hired labor, salary and pension, and timber also create household income. In 2000, the agricultural extension station in the district helped local people make 3 ha of paddy fields and cultivate paddy rice. However, lack of water and experience meant that the areas were subsequently abandoned or cultivated with traditional swidden plants. The following section describes in detail the main production activities in Tha Lang.

- Swidden cultivation:

Like other ethnic minorities in Vietnam, the Kho Mu community traditionally practices upland cultivation (e.g. swidden or shifting cultivation). Primary crops are swidden rice, maize and cassava. According to the 2005 survey data shown in table 1, the average swidden rice area was 1559 m²/capita²; the average swidden rice yield was 214 kg/capita and the average swidden rice productivity was 1.37 tons/ha. For maize, the average area was 383 m²/capita but the average yield was very low, 20 kg/capita and the average productivity was also very low, 0.52 tons/ha. This low yield is attributed to the growing of the unimproved, local variety. Farmers reported that they cultivate swidden rice and maize for 1 – 2 years and then fallow the field for 2 – 3 years. For cassava, the average area was 222 m²/capita; the average yield was 530 kg/capita and the average productivity was rather high, 23.84 tons/ha because the farmers cultivate the field once, plant the cassava and harvest it slowly, over a period of from 1 – 5 years. This allows the cassava to grow to a large size. They then fallow the field for 2 – 3 years. Some other local plants in the swidden fields, like sweet potato, green bean, tobacco, squash, pumpkin, melon, and pineapple were intercropped with rice and maize or cultivated in small areas. In recent years, the district agricultural extension station brought the farmers some plants such as tea, coffee, plum,

² Areas of swidden rice, maize and cassava were transferred from the number of kilograms of planted rice, planted maize and the number of cassava plants (50 kilos of planted rice = 1 hectare, 1 kilo of planted maize = 1500 square meter and 1 planted cassava = 1 square meter)

paddy rice, orange, mandarin orange, pineapple, and sugar cane. However, these plants were cultivated in small areas and had low productivity. In general, swidden cultivation of rice, maize, and cassava is integral to the farmers in Tha Lang because it provides the main food source. However, the productivity of plants and the yield/capita are quite low and some households in the hamlet lack food for 1 – 4 months each year.

Table 1: Main crops in Tha Lang, in 2005

Indicators	Crops	Swidden rice	Maize	Cassava
Area (m ² /capita)		1559	383	222
Yield (kg/capita)		214	20	530
Productivity (tons/ha)		1.37	0.52	23.84

Source: Tha Lang Household Interviews, 2005

- Animal husbandry:

Animal husbandry activities play an important role in the production system in Tha Lang. Although the income from this activity was not high, it was the biggest source of cash income in most households in Tha Lang. Because cows and buffaloes are mainly free-range fed, and are walked to the market, the cost of raising them and transporting them to market is relatively low. Animals, especially cows, buffalo, and pigs are also considered as a reserve resource in households and sold only for large events, including weddings, funerals, and other festivals. Domestic animals consist of livestock (cattle, buffalo, and pigs), poultry and fish. The main types of livestock are cows (1.7 head/hh) and the local variety of pigs (2.9 head/hh). Some households in the hamlet raised other livestock like goats (0.3 head/hh) and buffalo (0.1 head/hh). The Hong Kong Oxfam project supported some of the poorest households in the hamlet with 6 cows and 20 goats. Chickens are the main type of poultry (23.2 head/hh) and some households also raise ducks on a small scale (1 head/hh). Some households in Tha Lang maintained ponds with a small amount of fish. In recent years, the district agricultural station instructed farmers how to raise animals more effectively, but the farmers have not applied the new methods. All of the animals are allowed to wander (free range). Cows and buffalo were free to wander in forests and fallow lands while pigs, goats, chickens and ducks wander around the owners' homes. Chickens and pigs often die because of epidemic diseases. In general, animal husbandry was considered a good opportunity to develop household economies in Tha Lang. However, the households must develop better methods of animal raising in an effort to avoid the outbreak of diseases and increase financial gain.

- NTFP collection:

Besides swidden cultivation and animal husbandry, NTFP collection also provided households a significant source of income. According to the household survey, households took part in gathering a diverse range of NTFPs available in the area. While some products were only collected from either forest or fallow land, others were collected from both forest and fallow land, and even from swidden fields. Some products were collected all year round, while others

were only collected in a specific season or month. These products were used mainly for household consumption and occasionally for selling and exchanging with outsiders. The local people could spend all day collecting NTFPs or collect them while they were working in the swidden fields. Information regarding NTFPs, including their harvesting location and season, purpose, and level of importance is shown in Appendix 3.

Among the different NTFPs collected, the farmers considered medicinal plants the most important product; since there are no medical stations nearby, these are the main source of medicine in the hamlet. A diverse array of medicinal plants is gathered year round, and most households also used medicinal plants to purify daily drinking water.

Firewood, rattan and bamboo were collectively ranked as the second most important type of NTFP in the hamlet. Firewood was collected year-round and was vital, as it was not only used for cooking and heat, but also had spiritual significance, as the village continuously keeps a fire going in order to “keep deceased ancestors and spirits warm.” Additionally, rattan and bamboo made up the biggest portion of cash income when compared to other NTFPs. Some households use rattan and bamboo to make trays, low chairs, baskets, and papooses (baby carriers). Bamboo was used for house construction, fencing, cooking, torches, and holding water.

NTFPs that were gathered from fields, fallow lands, and near streams, such as wild vegetables, bamboo shoots, and yams, were ranked third most-important. Most of the households did not have vegetable gardens, they did collect some vegetables planted in swidden fields (squash, pumpkin), but mainly collect wild vegetables and bamboo shoots for daily meals. Yam was used as a supplemental food source for the local people, especially for the households that suffered from hunger for 1 – 4 months each year.

Some other NTFPs were also gathered for the use by and consumption of local people, including imperata cylindrica grass and palm leaves, fish from the streams, honey bees, canna leaf, wild animals, and cat’s ear mushrooms. However, these products were less important than the products mentioned above.

NTFPs from forest and fallow land also played an important role in livestock production, as most food for cattle was from forest and fallow areas. After leaving swidden fields to fallow for one, two or three years, vegetation appears that is useful for cattle raising, including imperata cylindrica grass, bamboo shoots, broom grass, and banana trees.

Combined together, the above-mentioned production activities all contribute to the household economies in Tha Lang. Though most products were produced for use or consumption within households, some were sold for cash and can be seen in Table 2.

Table 2: Cash Income per Household from Different Sources

Categories	Average (1000 VND)	Percentage (%)	Std deviation (1000 VND)	Percentage of households (%)
Agricultural products	20	0.9	66	13.8
Livestock	1141	50.3	1752	69.0
Timber	138	6.1	742	3.4
NTFPs	286	12.6	414	82.8

Wages	62	2.7	129	24.1
Salary & Pension	444	19.6	1480	10.3
Others	178	7.8	552	27.6
Total	2269	100.0	2831	96.6

Note: The household that earned the most from NTFPs (42.5 million VND in cash income) was not included in this analysis because it is an outlier. It is considered in the discussion section.

Source: Tha Lang Household Interviews of 29 Households, 2005

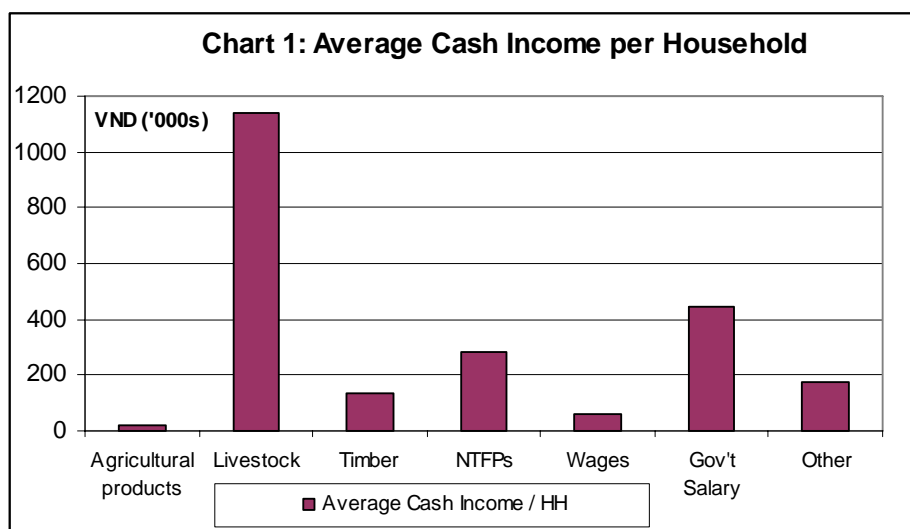


Table 2 shows that the average cash income per household was very low, at approximately 2.3 million VND/hh (or 324,000 VND/capita). Livestock earned the highest cash income for local people (1.14 million VND/hh), and made up the highest proportion (50.3%) of total cash income. In general, the reason for low total cash income, and specifically low cash income from NTFPs, was the hamlet's poor access to markets. However, the sale of livestock, mainly cattle, was easier than the sale of other products since it was not as affected by transportation costs. Other resources such as NTFPs, salary & pension, timber, and agricultural products were very low and accounted for a small proportion. Table 2 also shows that the fluctuation of cash income between households was quite high. Moreover, the results show that households depend upon different sources for their cash income. Most households receive cash income from NTFPs, while a few households gain cash income from timber and agricultural products. In brief, cash income did not contribute to household economies much and it fluctuates widely between households because of the hamlet's poor access to markets. However, the households can increase cash income by investing in livestock breeding (if they have the initial cash required to purchase the initial animals or if they can obtain the initial animals through some other means) due mainly to the low overhead associated with this activity (e.g. low cost of caring for and transporting to market).

5.2. Livelihood Strategies of Households in Tha Lang Hamlet

In this analysis, livestock raising was chosen as a key indicator of the intensification strategy, since this activity often needs an initial large input of money, which not every household could supply. Cattle were considered the most valuable asset of households in Tha Lang, and served as

a type of long-term investment that could be sold when money was needed for large or emergency expenditures (construction, weddings, funerals, etc). According to Jakobsen (2005), a great reliance on shifting cultivation and the selling of NTFPs represents a more extensive strategy. If the household is dependent on wage labor for its survival, migration could be the prevailing strategy. Finally, if a household chose to invest its labor force and capital in a number of these components, the strategy could be classified as a diversification strategy.

Before dividing the 30 households into strategy groups in SPSS, we removed one household from our analysis due to its extreme characteristics. Household Number 30 (seen in Appendix 1), which was taken out of the sample, had 2328 m² of swidden per capita, owned 23 head of livestock, and had high cash income from NTFPs in comparison with other households (1,500,000 VND). This household had income from government salary and also from its members who work as hired labor (600,000 VND). The total cash income of this household was the highest of all the households, at 42,500,000 VND/hh. In addition, the labor capacity of this household was very large, with 7 people of labor age, resulting in an extremely low dependent ratio³ of 0.7. As a result of these many advantages, the household was able to pursue a diversification strategy (seen in table 3).

The result of the hierarchical cluster analysis running SPSS software is shown in Appendix 2. From Appendix 1 and Appendix 2 we can divide the 29 remaining households into four clusters. The indicators in clusters show that all of these households seem to follow the extensive livelihood strategy. However, the clusters still have specific differences, so the extensive strategy can be divided into four smaller strategies. The four small livelihood strategies classified from the Extensive Livelihood Strategy are: Progressive Extensive Strategy, Extensive Strategy towards Hired Labor, Extensive Strategy towards Handicrafts made from NTFPs and Extensive Strategy towards Swidden Cultivation (seen table 3).

- *Progressive Extensive Strategy:*

All of these thirteen households were engaged in shifting cultivation and harvesting NTFPs. In this strategy, the swidden area per capita was 1731 m² and the cash income from NTFPs was 181,000 VND/hh. Two of the 13 households within this strategy (15.4%) suffered from hunger. None of the households received income from hired labor, but all of the households had invested money in animal husbandry, with between 1 – 4 animals/hh. Although the number of cattle in this strategy was the highest of the four strategies, it was not large enough to classify these households as following an intensification strategy. However, the households that followed this strategy seemed to nurture an expectation of further developing cattle production in the future. Therefore, the strategy followed by this group of households was considered as a progressive extensive strategy. The average number of laborers per household was relatively high (3.5 laborers/hh), while the dependent ratio was quite small (1.3). Thus, these households had opportunities to develop their economies and follow other livelihood strategies.

³ Dependent ratio = number of people younger than or past labor age in a household/ a number of people of labor age in the household. In mountainous areas in Vietnam, labor age for men is 15 – 60 years old and women 15 – 55 years old

- Extensive Strategy towards Hired Labor:

The results of our analysis showed that the second most common livelihood strategy in the hamlet was regarded as an extensive strategy towards hired labor, because of characteristics of this group. Swidden cultivation and NTFP collection still largely contributed to the livelihoods of these households, but cash income from NTFPs was low, at 52,000 VND/hh. Four of the 8 households in this group suffered from hunger and no households received a government salary. Cash income among these households was the lowest of all groups, and they did not have the ability to invest in livestock or to follow another strategy. Instead, they accepted work as employees to gain additional income. Seven of the 8 households, comprising 87.5% of the group, took part in hired labor. However, the value from hired labor was not high (223,000 VND/hh). Moreover, no household appeared to follow a migration strategy, as laborers only worked for employers around the commune, building roads and carrying goods from the commune to the hamlet. If the hamlet's infrastructure and accessibility were to improve, these laborers would probably be able to adopt a more profitable migration strategy.

- Extensive Strategy towards Handicrafts made from NTFPs:

This cluster consisted of three households and still belonged to the extensive strategy. All of the households in this group cultivated swidden fields, though the average area/capita was the lowest of any group, at 1523m²/capita. One of the 3 households in this strategy suffered from hunger. Moreover, the average income per household from NTFPs and mainly making handicraft from NTFPs was higher than most of the households in the other strategies (948,000VND/hh, 36.5% of total cash income), though the average household's total cash income was quite low, at 2,598,000 VND/hh. Consequently, we considered the strategy pursued by these households as an extensive strategy towards handicrafts made from NTFPs. In addition, this group averaged two laborers per household, but had the highest average number of dependents of any group, at 2.3. Thus, the households following this strategy did not have the required capacity to practice other activities such as livestock production or manual labor.

- Extensive Strategy towards Swidden Cultivation:

Although all the households took part in swidden cultivation and NTFP collection, the swidden area of this household group was the largest of any strategy group, at 3207 m²/capita. Cash income from NTFPs was 540,000 VND/hh. Additionally, only two of the five households participated in raising large animals and no households had income from hired labor. From these results, we thought that this household group followed the extensive strategy towards swidden cultivation. In addition, we also noted that in this livelihood strategy, the number of labors was not high, at 2.2 labors/household, and the average dependent ratio was 1.5. Moreover, in the group, the total cash income was low, at 3,019,000 VND/hh, and two of the 5 households in this group suffered from hunger. As a result, these households did not appear to have much choice to pursue other strategies.

Table 3: Characteristics of Livelihood Strategies

Strategy	T ₁	T ₂	T ₃	T ₄	T ₅
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Indicator	(n = 13)	(n = 8)	(n = 3)	(n = 5)	(n = 1)
Swidden area/capita (m ²)	1731	2269	1523	3207	2328
Cattle: Households	13	2	1	2	1
(%)	100	25	33.3	40.0	100.0
Head/hh	1.8	0.4	0.3	0.6	23.0
Cash income of NTFPs/hh (1000 VND)	181	52	948	540	1500
% Households	84.6	62.5	100.0	100.0	100.0
Hired labor: Households	0	7	0	0	1
(%)	0.0	87.5	0	0	100.0
Wage (1000 VND/hh)	0	223	0	0	600
Labors/hh	3.5	2.5	2.0	2.2	7
Dependent ratio	1.3	1.5	2.3	1.5	0.7
Hunger: Households	2	4	1	2	0
(%)	15.4	50.0	33.3	40.0	0.0
Salary: Households	1	0	0	2	1
%	7.7	0.0	0.0	40.0	100
Total cash income/hh (1000 VND)	2,724	935	2,598	3,019	42,500

Source: *The Lang Household Interviews, 2005*

Note: T_1 = Progressive Extensive Strategy; T_2 = Extensive Strategy towards Hired Labor; T_3 = Extensive Strategy towards Handicrafts made from NTFPs; T_4 = Extensive Strategy toward Swidden Cultivation; T_5 = Diversification Strategy.

5.3. Household Strategies in Relation to NTFPs management and the Role of NTFPs in Livelihood Strategies.

Tha Lang was located in a remote area with difficult access to markets, which resulted in it having low integration into the cash economy and meant that production in the hamlet was primarily geared towards subsistence agriculture. The NTFPs, harvested from wild sources such as natural forests and fallow fields, were mainly collected for household consumption and occasionally for selling or trading, thus supplementing the households' agricultural income. Though some NTFPs, such as rattan, bamboo shoots, medicinal plants and wild animals could be sold, their prices were generally low.

Although there are laws aimed at regulating the use of the forest near the hamlet, local people continued to unrestrictedly harvest of NTFPs. As a result of the local people's increasing needs, the degradation of forest land, and harvesting by outsiders, forest resources are reported to be being gradually depleted.

Through our research of the study site and the NTFPs mentioned above, we determined that the household NTFP management strategies practiced in Tha Lang hamlet were primarily the coping strategy and the supplemental strategy. The households following livelihood strategies T_1 , T_2 , T_3 and T_4 pursue the coping strategy, while the household following the diversification livelihood strategy (T_5) pursues the supplementary strategy of NTFP management. None of the households practice a specialized strategy.

In the households following the coping strategy, NTFPs play an important role. Firstly, NTFPs could be considered a reserve food source during times of natural disaster or economic crisis. Moreover, along with swidden cultivation and animal raising, NTFPs also supplement the households' income, especially in months in which the farmers lacked food. Some NTFPs like yam, wild animals, fish, bamboo shoots, palm fruit, and vegetables were collected to replace rice

in the local diet. Additionally, the households also collected rattan, bamboo shoots, and medicinal plants to sell so that they could have money to buy food. In livelihood strategies T₁, T₂, T₃ and T₄, NTFPs were mainly collected for the households' own consumption rather than for sale (see Appendix 4) and the cash income from NTFPs was rather low (seen Table 2). However, among the four livelihood strategies, the average cash income from NTFPs among households in T₃ was the highest (948,000 VND, 36.5% total cash income), thanks to the sale of processed NTFPs. In the household following the supplemental strategy in NTFP management, NTFP production supplemented and diversified the household's income. The household's main income came from livestock raising, government salary, and swidden cultivation. Not only did the household gather NTFPs for consumption, but also for processing and selling, for which it received a relatively high cash income of 1.5 million VND. A summary of household NTFP management characteristics by strategy type is shown in Table 3.

Table 3: Household NTFP Management Characteristics by Strategy Type

Characteristic	Coping Strategy	Supplemental Strategy
Location	- Remote area	- Remote area
Household Economy	- Low integration into the cash economy (low cash income) - NTFPs make up low proportion of cash income in household. However, NTFPs can supplement the income and is a reservoir of food for hungry months and emergencies.	- Better integration into the cash economy (higher cash income) - NTFPs make up low proportion of cash income in household. NTFPs can be used as supplement for diversifying sources of income.
NTFP management	- Low investment in NTFP management (NTFPs can be accessed for free)	- Low investment in NTFP management (NTFPs can be accessed for free)
Collected NTFPs	Firewood, rattan, bamboo shoot, medicinal plants, wild animals, etc.	Firewood, rattan, bamboo shoot, medicinal plants, wild animals, etc.
Markets	- Local people, outside traders - Low NTFP prices	- Local people, outside traders - Low NTFP prices

5.4. The role of NTFPs in the livelihood strategies in Que hamlet

In our research, we found that differences in location appeared to have an effect on the occurrence of different livelihood strategies. Contrary to Tha Lang, Que hamlet (reported by Jakobsen 2005), also located in CRB, has easier access to markets, it is located only 24 km from Highway 7A, is between Con Cuong District town and Binh Chuan Commune center, and accessible by vehicles in good weather. However, household economies were mainly based on the subsistence agricultural production. In Jakobsen's study (2005), in addition to the four indicators mentioned above, size of paddy field was also used for analyzing livelihood strategies. The result of his study showed that livelihood strategies pursued by the households in Que were the Extensive Strategy (3.3% of households), the Diversification Strategy (73.3%), and the

Intensive Livelihood Strategy (23.3%). The roles of NTFPs in the livelihood strategies were considered a gap-filling supplement during the agricultural season and for diversifying sources of income. The roles of NTFPs in Que seemed less important than those in Tha Lang, although cash income from NTFPs in Que was much higher. The reason for this was the better access to the transportation system, which allowed farmers in Que hamlet to pursue a greater variety of livelihood options and have a greater variety of sources of income. Besides swidden cultivation, forest collection and hired labor, many households in Que hamlet raised a larger number of cattle and concentrated on paddy rice cultivation.

5.5. Discussions

From these results, we can see the livelihood strategies pursued within the village, the trend of household economic development, and the roles of NTFPs in the livelihood strategies and the household economies in Tha Lang hamlet. NTFPs have an important role in household economies, mainly for their consumption, some for selling and exchanging for other goods. The households in Tha Lang hamlet follow two main livelihood strategies: the Extensive Strategy and the Diversification Strategy. Nearly all of the households follow the Extensive Strategy, which can be divided into smaller strategies such as: Progressive-Extensive Strategy, Extensive Strategy toward Hired Labor, Extensive Strategy toward Handicrafts made from NTFPs, and the Extensive Strategy toward Swidden Cultivation. The income of the households in Tha Lang comes mainly from swidden cultivation, animal husbandry and forest product collection. Among households that pursue the Extensive Strategy, NTFPs were mainly collected for household consumption, emergency food supplies, and as a supplement to income. Among households that follow the Diversification Strategy, the role of NTFPs is mainly to help supplement and diversify the household's income.

In Belcher, Puiz-Perez and Achdiawan's 2004 research, the Coping Strategy in NTFP management, NTFPs contributed a relatively low proportion of total household income (less than 50%), but it was the main or the only source of cash income. However, these findings seem to be different from our research in Tha Lang, where household cash income is mainly from animal husbandry. The hamlet's remote location does not appear to affect the selling of cattle, but does restrict the selling of NTFPs, which keeps their prices low. As a result, NTFPs in Tha Lang hamlet only accounted for a small proportion of total cash income.

Although our report shows the roles of NTFPs in the livelihood strategies and household economic activities in Tha Lang hamlet, it also has some limitations. First of all, the role of NTFPs in household consumption has not been adequately researched to fully explain the role they play in daily consumption patterns. Moreover, the report is focused only at the hamlet level, and does not generalize the role of NTFPs in the livelihood strategies and household economic activities to different areas in the CRB.

VII. CONCLUSION

The life in Tha Lang hamlet is still fraught with many difficulties. These include its poor access to markets, and the failure of the production system to diversify and grow after the cessation of opium cultivation in 1993. It remains a subsistence economy, despite some government and

non-government organizations (NGOs) policies, programs and projects that aim to assist the hamlet with the development of the local economy, society and environment. Consequently the local people have not been able to improve their household economies, and they still are dependent on extracting NTFPs, mainly following four sub-types of an extensive livelihood strategy, while one household, with an unusually low dependency ratio and having a government salary, has been able too pursue a diversification livelihood strategy. 13 of the remaining 29 households follow a progressive extensive livelihood strategy, which includes NTFP management and shows indications of the households moving into livestock raising and possibly to a more diversified livelihood strategy. The remaining households consider NTFPs as a necessary part of their livelihood strategy (whether it is the extensive strategy towards hired labor, handicrafts, or swidden cultivation) and need them to survive. This dependency, tied with the issue of outsiders coming to harvest NTFPs seems to be gradually exhausting the supply.

When comparing the situation in Tha Lang with that of Que hamlet (also found in the CRB), the evidence predicts that if/when market access improves, as at Que hamlet, household livelihood strategies will evolve and the role of NTFPs within Tha Lang will change.

ACKNOWLEDGEMENTS

This paper would never have been possible without the help of a number of people. We are grateful to all participants who attended the USEPAM⁴ Writing Workshop and those who have contributed either directly or indirectly to this paper. We are particularly grateful to Prof. Kjeld Rasmussen, Prof. Michael Schultz Rasmussen, and Advisor Stephen J. Leisz from the Institute of Geography, University of Copenhagen (IGUC), for their valuable comments and suggestions. We would like to extend our gratitude to Assoc. Prof. Tran Duc Vien, Dr. Nguyen Thanh Lam, and MSc. Nguyen Thi Thu Ha for their enthusiastic assistance. We wish to thank Ms. Do My Linh (Master in EU Environmental Policy, University of Wisconsin, US), Ms. Amanda Allbritton (Master in Economics, University of Purdue, US) and Mr. Tyler McKinley (BSB in Finance, University of Minnesota, US) for their comments and editing. We also give thanks to all our colleagues at the Center for Agricultural Research and Ecological Studies (CARES) at Hanoi Agricultural University (HAU) for their encouragement during the writing of this paper. Finally, we are grateful for the financial support provided by the Danish International Development Agency (DANIDA).

⁴ The University Support to Environmental Planning and Management

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