

A Study of Changes in Livelihoods and Forest Management in Namo District, Oudomxay Province, Laos

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Abstract: This report was generated as part of the IGES Forest Conservation Project in Laos, which aims to develop a strategy for sustainable forest management and poverty alleviation using participatory approaches. It examines the livelihood systems of target villages in slash-and-burn cultivation areas in northern Laos and analyzes the changes in livelihoods and forest management brought about by various development interventions.

The participatory action research (PAR) method is applied to investigate selected aspects of slash-and-burn communities, including their livelihoods, forest use and management, and institutions. Dynamic analysis of these aspects highlights the impacts of development interventions and, specifically, land and forest allocation on people's livelihoods and forest management systems.

The study concludes that the impacts of development interventions are felt differently among different groups within a village and between villages. Participatory and demand-driven approach to community development has positively affected the livelihoods, while limited consideration for villagers' needs has provided little incentive for them to engage in livelihood-enhancing activities. The experience with the land forest allocation program is mixed; it has achieved its policy goal of stabilizing slash-and-burn cultivation, but negative impacts were felt by villagers in the form of limited land availability, shortened rotations of slash-and-burn cultivation, and restricted land ownership. Institutions have played a critical role in making these changes in livelihoods and natural resource management.

keywords: sustainable forest management, livelihoods, institutions, land and forest allocation program, Laos.

1. Introduction

1.1 Purpose of the research in the district of Namo

This report was developed as part of the IGES Forest Conservation Project in Laos, whose aim is to develop a strategy for sustainable forest management and poverty alleviation using participatory approaches. The objective of the study was to examine the livelihood systems of target villages in slash-and-burn cultivation areas in northern Laos and analyze the changes in livelihoods and forest management that were brought about by various development interventions, especially the program of land and forest allocation.

Due to the limited scope of the study, the research focused on the district of Namo in Oudomxay Province, the focal point for rural development and slash-and-burn stabilization designated by the government of Laos. Nevertheless, the study is expected to offer insight into the potential impacts of development interventions in other slash-and-burn areas with similar environmental and socio-economic conditions.

1.2 Methodology

This study consists of basic data collection in the field and an analysis of livelihood systems. Field research was conducted in two target villages in Namo District in the province of Oudomxay in northern Laos in 2002.

The field research applied the participatory action research (PAR) method, which emphasizes local knowledge and enables local people to make their own appraisal, analysis, and plans (World Bank, 1996). The agriculture and forestry offices at the district and provincial levels (DAFO and PAFO, respectively) also participated. Basic data were collected through interviews with households as well as village meetings using participatory tools such as community mapping and wealth ranking. An emphasis of the analysis was placed on selected aspects of slash-and-burn communities—their livelihoods, forest use and management, and institutions. Dynamic analysis was facilitated by using existing research results from past projects in the target villages.¹

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¹ Dynamic analysis was made possible by the research results from the IUCN's Non-Timber Forest Product Project (1996–1999) in the village of Nampheng as well as the Community Development Project (1994–1997) in the village of Huaiohn, conducted by Quaker Service Laos. In addition, collaborative research was conducted in September 2002 between the authors and the IUCN Team, who had conducted the participatory socio-economic survey in Nampheng in 1996.

1.3 Reasons for selecting the target villages

This study was carried out in the district of Namo in Oudomxay Province as part of the IGES Forest Conservation Project in Laos. The area is designated as the Lao government's focal point for rural development, and thus various development initiatives are being undertaken. Among them are attempts to rehabilitate forests degraded by unsustainable slash-and-burn cultivation and to develop sustainable land-use systems (e.g. government-led land and forest allocation). The IGES Forest Conservation Project aims to contribute to such efforts by developing guidelines for sustainable forest management through participatory approaches.

At the initial stage, basic surveys were conducted in a number of villages in the district of Namo, and the survey data were analyzed. As a result, Nampheng and Huaiohn were selected as representative villages in degraded forest areas for the following reasons:

1. both have relied on slash-and-burn cultivation as their main economic activity,
2. both have faced or still face land use and forest management problems,
3. development activities have been initiated by the government and various development agencies (donors, non-governmental organizations, United Nations agencies, etc.) to address forest degradation and poverty.

A program of land and forest allocation (LFA) has already been conducted in the village of Nampheng, but not in Huaiohn, which enables a comparative study on its impacts (see Figure 1).

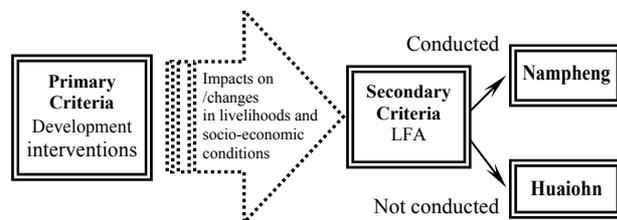


Figure 1. Village selection criteria
(prepared by the authors).

2. Namo District

2.1 Background

The district of Namo is situated in the northern part of Oudomxay Province and shares borders with the province of Luang Namtha to the west and China to the north. It is located 52 kilometers from the provincial center along the national road, No.13 North. Road conditions are good in the dry season but can get rough in the rainy season. It is a mountainous district, where the elevation ranges from 700 to 1,050 meters. The total area is 379,000 hectares, of which 259,046 hectares (68%) are covered with forest.

There are three main ethnic groups in the district—the lowland Lao (*Lao Loum*), midland Lao (*Lao Thuen*), and upland Lao (*Lao Seung*)—which include the following twelve ethnic minority groups:

- *Taidum* (lowland Lao)
- *Taignang* (lowland Lao)
- *Kamou-ou* (midland Lao)
- *Kongsad* (midland Lao)
- *Hmong Dang* (upland Lao)
- *Landtand* (upland Lao)
- *Tailue* (lowland Lao)
- *Kamou-lue* (midland Lao)
- *Phounoy* (midland Lao)
- *Hmong Lai* (upland Lao)
- *Ekor* (upland Lao)
- *Phouxang* (upland Lao)

There are 93 villages in the area, and the majority of the people belong to the *Kamou-Lue* ethnic group. They rely on crop production and livestock raising for their livelihood. About 75 percent of the population practices slash-and-burn cultivation, using more than 3,000 hectares annually, and a fraction of these slash-and-burn communities also produce lowland rice. The remaining 25 percent grows other crops such as chilli, sesame, and *mak kha* (*Alpinia malaccensis*).²

2.2 Forestry-related projects conducted in Namo District

Many communities in Namo District rely on forest resources for their livelihoods, specifically non-timber forest products (NTFPs), and thus have attracted the interest of the government (forestry authorities at the central and provincial levels) as well as other development agencies that provide support to community development and sustainable forest management (Table 1).

² Interview with Somechanh THAVIVANHAK, Head, Office of Planning, Namo District, 17 June 2002.

Table 1. Forestry-related projects implemented in Namu District (1994–present).

No.	Project name	Duration	Activities
1	Quaker Service Laos (QSL)	1994–1997	<ul style="list-style-type: none"> ●Irrigation construction ●Community development activities ●Livestock raising extension ●Tree planting for fuelwood ●Land and forest allocation
2	IUCN	1996–1999	<ul style="list-style-type: none"> ●Conservation and NTFPs extension ●Social infrastructure (clean water, schools) ●Rice bank ●Land and forest allocation ●Training in harvesting and marketing of NTFPs
3	FIAT	1998–2000	<ul style="list-style-type: none"> ●Farmer training in irrigation development
4	GAA	2000–2002	<ul style="list-style-type: none"> ●Conservation and NTFP (cardamom) extension
5	SIDA	2001–2005	<ul style="list-style-type: none"> ●Research and experimentation on NTFPs, agricultural crops, and raising livestock ●Support for extension activities
6	IUCN	2002	<ul style="list-style-type: none"> ●Follow-up data collection ●Project impact assessment

Source: Interview with Sykham SYPHAKHOUN, Acting chief of DAFO, Namu District, 24 September 2002.

3. The village of Nampheng

3.1 Background

3.1.1 Demographic data

The total population of Nampheng is 288 (of which 147 are female), comprising 51 households. With the improved sanitary and nutritional conditions, the infant mortality rate has decreased, leading to an increase in population. Continuous flow of immigrants has also added to the increase in the village population.

3.1.2 Village history

The village of Nampheng was established in 1973. Initially, there were about 13 households, and most of them were *Kamou*, who are animist. Between 1991 and 1993, the population slowly increased through immigration from other villages, attracted by the village forests that are rich in natural resources. Immigrants came from the village of Houaychang in Paktha District, Oudomxay Province (now belonging to Bokeo Province), the villages of Huaiohn and Nathong in Namu District (*Kamou-Lue*), and the village of Kongsavy in Xaisomphan District, Phongsaly Province (*Hok* ethnic group). In 1996, the IUCN (The World Conservation Union) conducted a baseline survey, and at the end of 1997 the project organized an NTFP marketing group. Although it ended in 2000, the villagers have continued to manage and harvest NTFPs, mainly bamboo shoots and cardamom, through the marketing group.

3.1.3 Accessibility

The village of Nampheng is located in the northern part of Namu District, 22 kilometers along the national road from the district center. It is situated near the Laos-China border and shares borders with the province of Luang Namtha to the west. Nampheng is accessible by the national road, No. 13 North, in both dry and rainy seasons. Public transportation and commercial trucks pass through the village, which facilitates communication and NTFP trading.

3.1.4 Infrastructure

As a result of various development initiatives from the government and other development agencies, the infrastructure of the village has largely improved, and currently includes one school for grades one to three, one electric generator, one village meeting hall, three water taps, and a rice bank.

3.1.5 Land forms

The Nampheng River flows through the village, and north of the river are dense forests growing on steep slopes. Large tracts of land are demarcated as conservation forest, while cardamom is planted in the remaining areas. The southern part of the village is covered with mixed deciduous forests on gentle slopes, which are used for slash-and-burn cultivation as well as for collecting NTFPs. Parts of the riverbanks are used for paddy-rice cultivation.

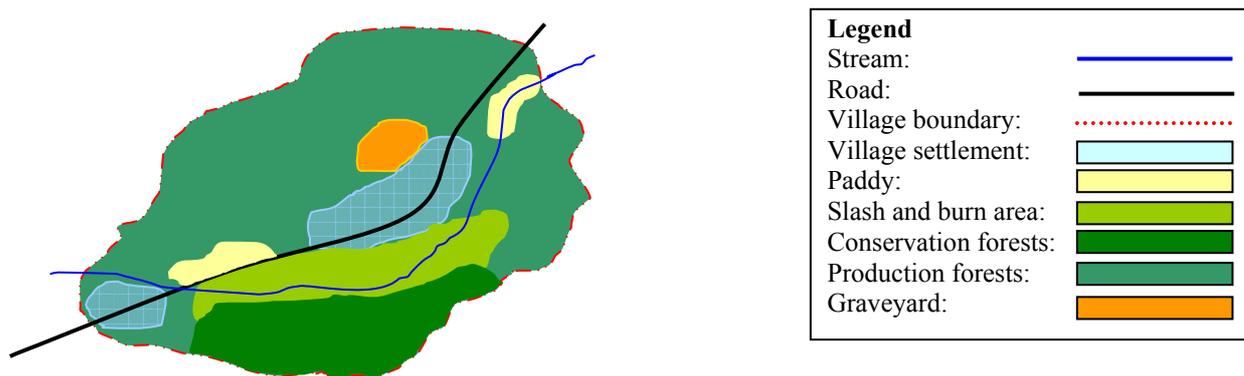


Figure 2. Map of the village of Nampheng, Namo District, Oudomxay Province.

Source: Social mapping with villagers of Nampheng (September 2002).

3.2 Development projects

Nampheng is an exemplary village in the district in terms of the many varied development initiatives that

have been implemented there since 1997, as shown in the following table:

Table 2. Development projects implemented in the village of Nampheng (1997–present).

No.	Project name	Duration	Activities
1	IUCN NTFP marketing project	1996–2002	<ul style="list-style-type: none"> • Bamboo shoots marketing group • Conservation and NTFPs extension • Cardamom plantation • Land and forest allocation • Rice bank
2	Red Cross project	1999 to present	<ul style="list-style-type: none"> • Distribution of free medicine
3	UNFPA ³ health improvement project	2002 to present	<ul style="list-style-type: none"> • Health care services • Family planning education
4	ADB-WFP ⁴ school meal project	2002–2005	<ul style="list-style-type: none"> • Provision of free school meals • Promotion of female students' enrollment

³ United Nations Population Fund

⁴ Asian Development Bank and World Food Programme of the United Nations

3.3 Livelihood systems

3.3.1 Economic activities

The villagers rely on NTFP collection for domestic consumption and generating income. NTFPs harvested for income generation include the following:

- Bitter bamboo shoots (*Indosasa sinica*), or *no mai khom* in Laos
- Cardamom (*Ammonium* spp.), or *mak naeng* in Laos
- Red mushroom, or *hed daeng*
- Rattan (*Calamus* spp.)
- *Mak kha* (*Alpinia malaccensis*)
- *Nya bai lay* (*Sansevieria Zeylanica*)
- *Peuakmeuak* (*Debregeasia hypoleuca*)

Individual collectors first sell their products to the village NTFP marketing group, and then the group sells to traders from other villages in the district and from China at slightly higher prices than those paid by individual collectors. The collective marketing through the group helps to enhance the bargaining power of the NTFP collectors and achieve fair prices. For instance, in the harvesting season of 2001 and 2002, the group bought bamboo shoots from individual collectors for 2,200 kip per kilogram and sold them to outside traders for 2,500 kip per kilogram.⁵ During the season, the villagers gathered 57.2 tonnes of bamboo shoots and the group generated 18.2 million kip. The group also bought cardamom for 17,000 kip per kilogram and sold it for 17,500 kip per kilogram, resulting in profits of 600,000 kip in one season.

In addition to the income from NTFPs, livestock is another important income source, and with the money generated the villagers purchase necessities of life such as rice, clothes, and medicine.

3.3.2 Traditional farming system

Since the establishment of the village in 1973, the villagers have practiced slash-and-burn cultivation (called *hai* in the local language) to grow upland rice (sticky rice) on gently sloping land. Both men and women are engaged in *hai* throughout the year; they slash

and burn bush during January and March, sow seeds in May, and continue weeding until the harvest season in November and December. On average, each household uses one hectare for slash-and-burn cultivation in seven-to ten-year rotations.⁶ This produces 1.2 tonnes of rice per hectare, but this yield is not sufficient enough for the villagers to feed themselves throughout the year.

Only two families in the village have engaged in both upland and lowland rice farming. Due to the limited availability of flat areas, lowland rice is only grown in rain-fed paddy fields along the Nampheng River. Other families supplement their incomes by raising livestock, farming crops, and collecting NTFPs.

3.3.3 Modern farming system

A modern farming system has yet to be developed in the village; the present practice of growing lowland rice relies on rainfall, and no chemical fertilizer is used. One exception is the domestication of cardamom, which was made possible through training in the domestication technique provided by the IUCN's NTFP project. A cardamom plantation was set up next to the wild cardamom forests in the northern part of the village.

3.4 Village organizational structure

The head of the village is the administrative chief who leads the decision-making in village meetings (Figure 3). He also serves as the chief of the NTFP marketing group, and receives a monthly salary of 18,000 kip (about US\$2) from the District and some income as financial incentives from the village NTFP marketing group. There are two deputy chief positions; one is responsible for economic issues, while the other deals with social issues. They each receive a monthly salary of 17,000 kip from the District. The elder's group assumes the responsibilities of preserving village customs and assisting the village leaders. The village finance officer collects taxes on various kinds of land such as gardens, paddy, fallow, and construction fields. The village police maintain security within and around the village.

⁵ The kip is the local currency used in Laos (US\$1 was equal to 9,000 kip in 2001).

⁶ Note that the rotation periods have been shortened to three years since the land and forest allocation program was conducted in the village in 1997. For further details, please refer to Section 3.7.3 below, "Impacts of land and forest allocation (LFA) on resource management."

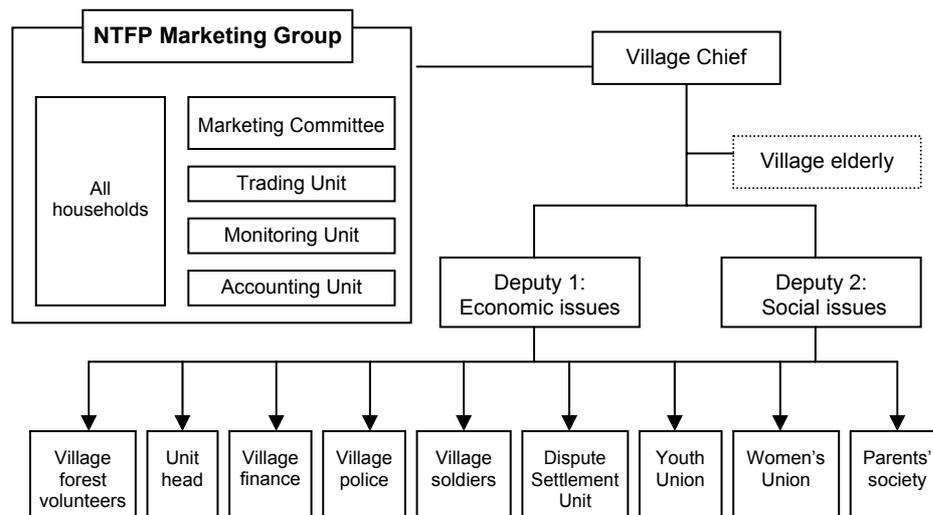


Figure 3. Organizational structure of the village of Nampheng (prepared by the authors).

The dispute settlement unit serves as a problem solving organization within the village and between villages. Most of them are elders who are familiar with village rules and norms, and thus are trusted by the villagers. The Youth Union is composed of both married and single youth between 14 and 30 years of age. It raises its budget through membership fees of 500 kip per person, and organizes various social activities for the village youth. The Women's Union assists women in various aspects of their lives, and organizes social activities for women. The Parents' Society deals with school activities and overall education issues.

There is one forest volunteer in the village, whose responsibilities include the administration of forestry issues, monitoring protected forest areas from wildlife hunting and illegal logging, and providing advice on forest management. The village forest volunteer serves as a liaison between the village and the District Agriculture and Forestry Office (DAFO), which provides training.

The NTFP marketing group was created based on villagers' needs through a participatory approach under the IUCN's NTFP project. The objectives of the marketing group include improving the villagers' bargaining power with traders, establishing a sustainable management system for bitter bamboo shoots (*no mai khom*), increasing the incomes of the villagers, and promoting a village-based development fund.

The group consists of a marketing group committee, monitoring unit, accounting unit, and trading unit, and all the village households are members (IUCN 2000). One person from each household attends group meetings, where decisions and regulations are made collectively. Through this body, every household participates in marketing and management activities. Moreover, the participants can bring any issues concerning the village to the meeting, thus the group provides disadvantaged villagers with an

opportunity to voice their needs and opinions.

A village development fund was established to channel the income from NTFPs into various activities for poverty reduction. Part of the profits from NTFP marketing is pooled in the fund and used for village development, including a village-run loan scheme to support agriculture and livestock development.

3.5 Forest use

The village of Nampheng is surrounded by forests rich in NTFPs, especially bitter bamboo, cardamom, rattan, and broom grass. The villagers are largely dependent on the natural forest for their livelihoods and as their main source of protein. They gather bamboo and rattan shoots and wildlife for their own consumption and cardamom for sale. Wood is used for the construction of houses and fences. Raw materials for handicrafts for daily use are also harvested in the natural forest. In addition to wild cardamom, a cardamom plantation was established to increase the efficiency of collection.

Village forests are also used for *hai*, or slash-and-burn cultivation, which villagers practice throughout the year. Before the land and forest allocation process, there was no perception of ownership of the forest because the village lands were abundant, and hence there were no restrictions on where to clear land for *hai*. But villagers believe that a spirit dwells in a certain part of their forest, which has since been placed under protection as conservation forest. Collecting NTFPs is allowed in this protected area, while practicing *hai* is prohibited.

3.6 Land and forest allocation (LFA)

Land and forest allocation was conducted in 1997 with support from the IUCN as part of the NTFP project. The IUCN field team and staff from Provincial Agriculture and

Forestry Office (PAFO) and DAFO spent 20 days conducting LFA activities according to the steps specified by the Ministry of Agriculture and Forestry (MAF).⁷ The LFA consisted of two activities: demarcation of village forests, and allocation of land to each household. The demarcation activity clarified the village boundaries and classified the total village area of 2,559 hectares as conservation forest (158 hectares), protection forest (1,579 hectares), production forest (123 hectares), regeneration forest (291 hectares), agricultural land (398 hectares), and cemetery forest and others (10 hectares) (IUCN 1997). Each household received three parcels of land to be used for any sort of production activities (e.g. slash-and-burn [*hai*], paddy [*na*], crop cultivation [*suan*],⁸ and NTFPs). The size of the parcels varied depending on the capacities of family and labor availability. Formal authority for using and managing the allocated land was transferred to each household from the State, although it is limited in the sense that passing it on by inheritance is recognized by law, but selling it is prohibited.⁹

The NTFP project-led LFA applied a participatory approach; a village land allocation committee was established, and village meetings were organized with representatives from each household to reflect their needs and concerns about the LFA process. Through social mapping and land-use planning, the villagers decided how their forests and land would be used, with the field team providing technical assistance and serving as facilitators. Moreover, the neighboring village chiefs were also involved in the discussions on boundaries, which helped resolve border conflicts.

3.7 Changes in livelihoods

Since the NTFP project conducted a socio-economic survey in 1997 through the methods of rapid rural appraisal (RRA) and participatory rural appraisal (PRA),¹⁰ the village of Nampheng, with the support of the project, carried out various activities to reduce poverty and conserve natural resources, including the establishment of a village rice bank, a water supply system, and a marketing group and management regulations for bitter bamboo shoots (*no mai khom*) and wild cardamom (*mak naeng*), a village development fund, domestication trials for cardamom, as well as construction of a school.

⁷ MAF Instruction No. 822 on the Allocation of Land and Forest for Management and Use, August 1996.

⁸ A type of cereal crop.

⁹ In practice, allocated parcels of land are exchanged between villagers under an agreement as well as with permission from the village chief.

¹⁰ RRA is a qualitative, participatory research methodology which uses a variety of tools and techniques to gather and analyze information in rural communities. In RRA, multidisciplinary teams of researchers from different backgrounds conduct studies of carefully defined issues, generally in short, intensive field studies (Freudenberger 1995). PRA, on the other hand, is a family of approaches, methods, and tools that enable people to formulate and analyze their situation in order to plan, act, monitor, and evaluate their actions. The underlying concept is that local people are capable of analyzing their own realities and that the outsiders should have the role of "mere" facilitators of the development process (cited from the "Participation" website provided by FAO <http://www.fao.org/Participation/ft_show.jsp?ID=3781>).

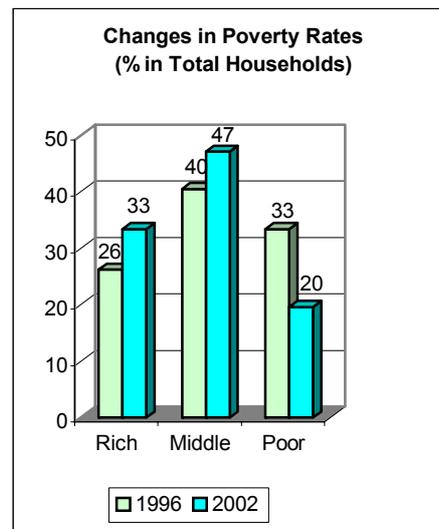


Figure 4.
Changes in poverty rates between 1996 and 2002, village of Nampheng (prepared by the authors).

3.7.1 Changes in economic activities

The activities conducted under the IUCN initiative have brought about significant changes to the socio-economic conditions of the village over the past five years. With the introduction of organized NTFP harvesting and marketing, the main economic activity has shifted from *hai* to NTFP collection. Among 51 households, five have abandoned *hai* practices and the rest reduced their *hai* areas.

Their main income source at present is from the sales of NTFPs, and gross household incomes have increased on average. According to the wealth ranking exercise conducted in 1996 and 2002 (before and after the NTFP project intervention), the poverty rate—defined here as the share of poor households in the total households as perceived by the villagers—decreased from 33 percent to 20 percent due to an increase in incomes from selling NTFPs and other project-supported activities (see Figure 4).¹¹

With the increased cash incomes, villagers can now afford a wider variety of products and services that they could not in 1996 (see Table 3). Now that their basic needs are met, i.e. improved food security, nutritional status, basic education, and access to medicine and medical services, both men and women enjoy spending more on non-essential items such as condiments, cosmetics (women), and tobacco (men). It should also be noted that villagers, especially women, have become interested in animal husbandry, as they can invest surplus cash into livestock as savings, which can then be redeemed in times of financial difficulties.

¹¹ The main criteria used for the wealth ranking exercise in 1996 and 2002 include housing materials, food security (e.g. rice sufficiency, livestock), and labor. These criteria were chosen by the villagers themselves based on their perception about what constitutes wealth in their lives.

Table 3. Changes in family cash expenditure ranking during 1996 and 2002, Village of Nampheng,

No.	Category	Women, 1996		Men, 1996		Women, 2002		Men, 2002	
		Share%	Ranking	Share%	Ranking	Share%	Ranking	Share%	Ranking
1	Clothes	40	1	35	1	12	2	10	3
2	Medicine	25	2	30	2	6	7	16	2
3	Foodstuffs	25	2	25	3	24	1	26	1
4	Farming tools	10	4	10	4	8	4	6	6
6	Condiments	x	x	x	x	10	3	8	4
7	Transportation	x	x	x	x	8	4	6	6
8	Livestock	x	x	x	x	8	4	6	6
9	Tobacco	x	x	x	x	x	x	8	4
10	Education (schooling)	x	x	x	x	6	7	4	9

Sources: Table IV in *Changes in Family Cash Incomes Ranking in 1996 and 2002, Ban Nampheng, Namo District, (IUCN 1996)*, and *Wealth Ranking Exercise, conducted by the author in September 2002*.

An increase in incomes, however, does not necessarily mean an increase in profits per labor input. Villagers reported that labor input (working hours and amount of work) has increased since they started collective NTFP marketing. Labor calendars produced through the participatory rural appraisal method in 1996 and 2002 show the increase in working hours, especially in NTFPs harvesting seasons; before organized NTFP marketing was introduced in 1996, villagers collected NTFPs in their free time when there was not much work for *hai*, whereas they now spend a certain amount of time every day collecting and managing NTFPs throughout the year. Nevertheless, the villagers claim that they prefer to spend more time on collecting NTFPs, and purchase rice from markets, rather than *hai* farming. This is because they perceive that *hai* requires more backbreaking labor than NTFPs collection and harvesting. Thus, as long as cash incomes from NTFPs are enough to ensure food security, villagers opt to engage more in NTFP collection by decreasing or even abandoning *hai* production. The shift from *hai* cultivation to NTFP collection was prompted by not only economic benefits but also the villagers' preference of work conditions.

The downside of this shift in economic activities is the widening gap in living standards between the rich and the poor within the village. The comparison of the wealth rankings in 1996 and 2002 reveals that the poor households in 2002 are either newly established households or the ones with sick or old householders. This means that the poor households cannot benefit from NTFP collection mainly due to a lack of labor and remain poor and food insecure, while rich and middle-class households are better-off, using their additional incomes for new economic activities to further improve their livelihoods (e.g. investing in opening paddy fields, purchasing a small truck for transportation services and a TV for paid viewing by other villagers). Currently poor farmers have the option of working as hired labor for weeding *hai* land and opening paddy fields for wealthier families, but these opportunities are limited to less than

ten days per year and do not generate enough income for the poor to escape from poverty.

3.7.2 Changes in forest management

There have been significant changes in the way that villagers manage their forests and forest resources. The village forests used to be open-access, and villagers could open up new *hai* land and collect NTFPs anywhere within the village territory. This loose management sometimes led to land disputes between the villagers of Nampheng and neighboring villages. With the support from the NTFP project, however, the villagers organized an NTFP marketing group and established management rules for collecting and selling bamboo shoots and cardamom. The marketing group serves as a participatory decision-making body, where a representative from each household attends and can voice their concerns and needs.

Once the villagers perceived the tangible benefits of organizing (e.g. effective marketing, better and more stable prices for NTFPs, increased incomes, etc.), they started actively participating in development activities for mutual benefits and were willing to engage in broader village issues. The leadership of the village chief contributed greatly to the successful consolidation of the group and implementation of the management rules.

Even after the completion of the NTFP project in 2000, voluntary rule-making still took place. Examples include the rules made about the lease of cardamom seedlings between the village marketing group and those interested in planting cardamom, and the sanctions against NTFP collection by outsiders without permission from the village chief. Rules for gathering red mushrooms (*het daeng*) are another example. Unlike bamboo shoots and cardamom, there were no management rules for red mushroom, although it has recently become one of the most important cash income sources (see Table 4). The lack of rules prompted harvesting in a prohibited area and immature- or over-harvesting—a typical collective action problem regarding the use of common-pool resources. To cope with the situation, the villagers started to establish

Table 4. Changes in sources of family cash incomes and ranking in 1996 and 2002, Village of Nampheng.

No.	Category	Women, 1996		Men, 1996		Women, 2002		Men, 2002	
		Share%	Ranking	Share%	Ranking	Share%	Ranking	Share%	Ranking
1	Bitter bamboo shoots	20	1	35	1	18	1	28	1
2	Cardamom	15	3	25	2	12	3	14	4
3	Rattan	X	X	20	3	4	6	X	X
4	Mushrooms	X	X	X	X	16	2	16	3
5	<i>Peuakmeuak (Debregeasia hypoleuca)</i>	X	X	15	4	X	X	X	X
6	<i>Nya bai lay (Sansevieria Zeylanica)</i>	10	5	X	X	8	4	10	5
7	Foum (fuelwood)	X	X	X	X	6	5	18	2
8	Rice	15	3	X	X	X	X	X	X
9	Wildlife	20	1	X	X	X	X	X	X
10	Livestock	5	7	X	X	12	3	X	X
11	Sesame seeds	10	5	X	X	X	X	10	5

Sources: Table IV in *Changes in Family Cash Incomes Ranking in 1996 and 2002, Ban Nampheng, Nam District (IUCN 1996)*, and *Wealth Ranking Exercise conducted by the author in September 2002*.

regulations for harvesting red mushrooms, which included setting opening and closing dates for collecting red mushrooms and patrolling to ensure sustainable harvesting. This evolving system of forest management is one of the institutions that the villagers created by themselves for better coordination of collective forest management.

Besides these benefits, the villagers reported that illegal logging is no longer observed. While some of them used to log illegally and earned money from selling timber to a logging company, the increased incomes from NTFPs and better food security have enticed them away from the destructive practice.

3.7.3 Impacts of land and forest allocation (LFA) on resource management

In Nampheng, LFA was conducted as part of the NTFP project in 1997. Although the scope of the present study did not allow for substantive analysis of the impacts of LFA on resource management, it is observed that land use and forest management were affected to a certain degree.

The most noticeable impact on land use has been the shortened rotation periods of *hai*. They used to be seven to ten years before the LFA, but since each household received only three parcels of land in the process, they have been shortened to three years. This has increased the pressure on land, leading to declining soil fertility as well as an increased incidence of pests. Another noticeable change has been the reduction in *hai* areas from 45 hectares in 1997 to 30 hectares in 2002. One of the objectives of the LFA process in Nampheng was to promote sustainable forest management by limiting *hai*. Thus it is now restricted to allocated parcels, and the traditional practice of open-access forest use had to be abandoned. The expansion of *hai* areas is allowed only when new land is obtained from other households with

surplus land or from the reserve land of the village.

It is a common perception among the villagers that the demarcation of village forests and the establishment of management rules have contributed to better use of the forest and reduced land disputes with neighboring villages, while land allocation to each household has not generated noticeable benefits. Although LFA aims to provide farmers with formal authority to use and manage allocated land as an incentive to invest in more productive activities, the villagers of Nampheng suggested that ownership did not bring them any tangible benefits. This is partly because the allocated land requires considerable labor and money to clear for more productive use, which villagers usually cannot afford, and partly because land sale is not allowed and land left uncultivated has to be simply transferred to the district authority through the village chief.

There is also a concern that the allocated land is too small to be divided up and distributed to the next generation upon inheritance. At the time of LFA, some forest areas were demarcated as reserve lands for future generations. While, in principle, whoever wants to obtain land for their descendants can do so by simply making a request to the village chief, in practice, reserved land is transferred to only those with the capacity and financial resources to open it up for productive activities. This implies that those who wish to obtain more land for their offspring but do not have enough finance or an economically active labor force cannot request new land to be set aside as an asset.

4. The village of Huaiohn

4.1 General description

4.1.1 Demographic data

The total population of Huaiohn is 664 (of which 330 are female), comprising 100 households (132 families).

High number of birth (20 per year) and low mortality rate (2.5 persons per year) has contributed to a rapid increase in population.

4.1.2 History of establishment

The village of Huaiohn, established in 1974, was populated by villagers who came from the following different areas of the district:

- Nam Xae sub-district (*Kamou-Lue*)
- Phoutan sub-district (*Kamou-Lue*)
- Houayho sub-district (*Kamou-Lue*)
- Nathong village of Nam District (*Lue*)
- Houay Ey village of Nam District (*Lue*)
- Kuang village of Nam District (*Lue*)

The establishment of this new village was prompted partly by the government's policy of resettling isolated upland communities to district centers and partly by communities' desire to obtain new land for upland rice production and crop farming. Since the improvement of the national road, No. 13 North, in 1995, there has been an increase in the number of immigrants to the village, which has made it one of the most densely populated villages in the district.

4.1.3 Accessibility

Huaiohn is located 55 kilometers from the provincial center and two kilometers from the district center along the national road, No. 13 North. It is easily accessible both in the rainy and dry seasons.

4.1.4 Infrastructure

Located very close to the district center, the village of Huaiohn enjoys basic infrastructure such as water taps, a primary school, power lines,¹² and a water pump provided by the government.

4.1.5 Land forms

The village area ranges from low, flat land along the national road to densely forested mountains in the north. It is surrounded on three sides by mountains and shares borders with the villages of Nathong and Nam Veantai to the south, Nanoy to the east, and Phouthong and Laow to the west.¹³ The Nam Xae River flows along the north side of the village and provides water for crops and lowland rice production. South of the village is a watershed forest which is protected for conservation purposes.

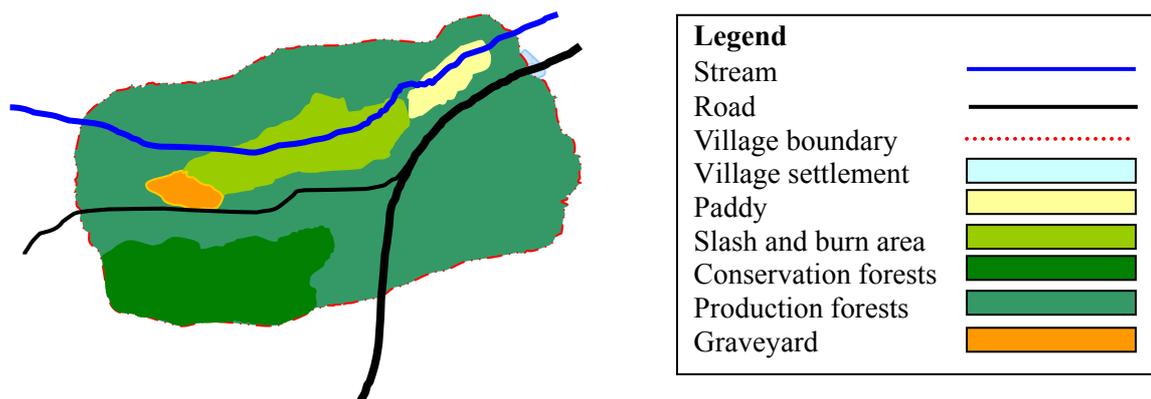


Figure 5. Map of the village of Huaiohn, Nam District, Oudomxay Province.

Source: Social mapping with villagers of Huaiohn (September 2002).

¹² Although power lines were extended to the village, the villagers still go without electricity because they can't afford the electricity bills.

¹³ Community mapping by Huaiohn villagers reveals that they have a traditional perception of the village boundary with Nanoy village but not of the administrative boundary, as land and forest allocation has yet to be conducted in the village.

4.2 Development projects

With the easy access from the district center, Huaiohn Village has attracted various development projects supported by United Nations (UN) agencies, NGOs, and the government.

Table 5. Development projects implemented in the village of Huaiohn (1993–present).

No.	Project Name	Duration	Activities
1	Quaker Service Laos (QSL) community development project	1993–1996	<ul style="list-style-type: none"> •Rice mill construction •Water taps •Neem plantation for fuelwood •Threshing machine
2	ADB girls’ education promotion project	2001–2006	<ul style="list-style-type: none"> •School construction •Financial support of \$150/year for girls
3	WFP school meals project	2002–2005	<ul style="list-style-type: none"> •Provision of free school meals •Free rice to school girls (15 kg/month)

4.3 Livelihood systems

4.3.1 Economic activities

Villagers are mainly engaged in slash-and-burn (*hai*) cultivation as the main economic activity. Five out of 100 households also produce lowland rice and vegetables along the Nam Xae River. Due to the limited arable land available (i.e. 44 hectares of *hai* area, 14 hectares of *na* area, and 10 hectares of *suam* for 100 households), more than half of the households cannot produce enough rice for themselves, and thus remain food insecure for over six months of the year. In times of rice deficit, these households sell livestock, wild animals, and NTFPs to purchase rice from local markets.

In addition to subsistence farming, the good location of the village allows relatively wealthy villagers to run businesses such as small grocery shops, a gas station, and furniture factories.

4.3.2 Traditional farming system

Most households have practiced slash-and-burn cultivation since the settlement was created in 1974. Lowland rice and crop farming has also been practiced, but productivity has been low because villagers rely largely on rainfall and water from the Nam Xae River without any fertilizer input.

4.3.3 Modern farming system

DAFO provided a water pump for lowland rice and crop production along the Nam Xae River, but despite the introduction of modern tools, productivity has not improved due to the lack of skills to properly use and maintain them.

4.4 Village organizations

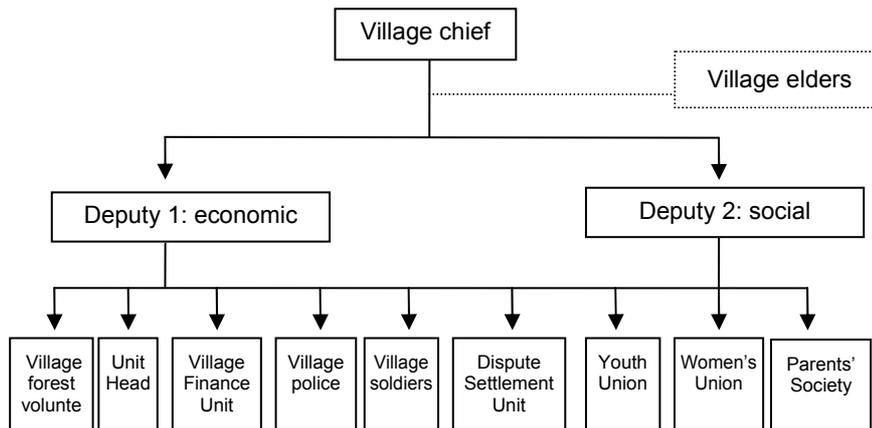


Figure 6. Organizational structure of the village of Huaiohn (prepared by DOUANGPHOSY Boonthavy).

4.5 Forest use

Villagers are largely dependent on the surrounding forests and forest products for their livelihood. As the village's forests have not been demarcated under LFA yet, the villagers still use the forests according to their traditional rules. *Hai* areas used to be open-access, but as the population increased, there has not been much room for expansion. Thus an arrangement was made within the village that immigrants to the village would obtain land from households with surplus land. Another arrangement was made with three neighboring villages in 1998 to allow Huaiohn villagers to borrow the production forests in neighboring villages for *hai* cultivation free of charge, if given permission from the chief of the neighboring villages.¹⁴

A large portion of the village's forest is used for *hai*; the only area where it is prohibited is in the watershed area, which was designated in 1993 as a conservation forest by the village chief with a view to conserving water and the large trees in the area.

NTFPs are not abundant in Huaiohn, but even so, they are collected by both men and women, while wood is collected mainly by men for house construction materials, fences, handicrafts, and fuelwood.

4.6 Land and forest allocation (LFA)

LFA has not been conducted yet in the village of Huaiohn. It is now one of the few villages that have good access to major national roads but have not conducted LFA, and the villagers have not been informed by the district authority whether LFA will be ever carried out there in the future.

In order to avoid border disputes, the village chief participated in identifying village boundaries and agreed to a boundary agreement with all the adjacent villages, except Nanoy, during the LFA processes in these other villages. No major boundary disputes have since been reported between Huaiohn and the adjacent villages, except for one conflict with the village of Nanoy over shared *hai* areas in which the village boundary was drawn during the LFA process in Nanoy without any consultation with the village chief of Huaiohn. According to the villagers in Huaiohn, there used to be only a "loose boundary" (in the sense that it is the perceived boundary and not the administrative one) between the villages, and thus some landless farmers from Nanoy were practicing *hai* in Huaiohn's area. The boundary dispute has intensified since the LFA process in Nanoy because the landless farmers have continued *hai* cultivation outside their newly established boundary.

4.7 Changes in livelihoods

Huaiohn is a relatively new village, established in 1974 when people from five villages migrated from remote areas of the district. The main reasons for the migration were because the area has easy road access and more arable land for slash-and-burn (*hai*) and lowland rice (*na*) cultivation and crop farming (*suan*). With the better road access, the village has attracted immigrants as well as various development projects over the past decade.

4.7.1 Changes in economic activities

Since their migration in 1974, the main economic activity of people in Huaiohn has been *hai*. Only in 1990 did the villagers start opening up new land for cultivating *na* and *suan* alongside a stream. The average annual yield of upland rice is two tonnes per hectare, although it can range from 0.5 to three tonnes per hectare, depending on annual rainfall and pest incidence. An increase in pests has been reported as intensive use of *hai* land has exhausted the soil.

The Community Development Project, supported by Quaker Service Lao (1993–1996), provided a grain threshing machine as well as rice mills, and the government provided a water pump for lowland rice production. However, these efforts failed to affect the production of rice, as there was no follow-up activity and no management or maintenance of the equipment.

Villagers used to collect NTFPs for household consumption only, but with the increase in trade with Chinese traders, they have recently started collecting and processing NTFPs to generate income. These include sesame seeds, *peuakmeuak* (*Debregalesia hypoleuca*) and *mak kha* (*Alpinia malaccensis*). Wild animals are also sold to local markets to earn additional income.

4.7.2 Changes in forest management

Since settling in 1974, villagers have largely depended on forested areas for *hai* and NTFPs such as bamboo shoots and wild animals. Due to the limited arable land available, *hai* has been practiced in three-year rotations. With the population increasing at the rate of over 2 percent per year, the pressure on land has increased significantly. As a result, soil fertility has declined and pest incidence has increased.

The villagers of Huaiohn have abided by communal rules on forest use ever since they migrated. Such rules include one that newly arrived migrant farmers could obtain *hai* land from villagers with surplus land free of charge. This rule has changed, also due to the population increase. Instead of borrowing land from other members of the village, three households in Huaiohn began, since 1998, to borrow land from three adjacent villages that had set it aside as reserve land. Another village rule concerns the use of the watershed forest. Realizing the population pressure on their forests, the village chief demarcated the watershed forest as a protected area in 1993 and imposed a restriction on the use of the

¹⁴ Borrowers in Huaiohn do not incur any use fees, but they have an obligation to pay an annual land tax (8,400 kip per hectare) to the district tax office, as they would for their own land. On the other hand, the authors found during the preliminary survey that the village of Nasai, located close to Huaiohn in the district, has a similar land lease arrangement with the adjacent village of Nathong, but pays an annual use fee of 4,000 kip per hectare to Nathong in addition to the land tax.

watershed area, and despite the increasing population pressure, the protected area has since remained intact.

Another development in forest use is the establishment of a tree plantation. Fuelwood collection was regarded as time-consuming, backbreaking labor for women and children, and thus QSL's Community Development Project (1993–1996) supported the creation of a tree plantation for fuelwood. Some trees in the plantation have grown up to three meters high, and are now ready to be used for purposes other than for fuelwood. But the villagers have made little effort in managing the trees since the termination of the project, and no specific plan has been made regarding their use.

5. Discussion

The participatory action research (PAR) activities in the villages of Nampheng and Huaiohn focused on livelihoods, land and forest use and management, and institutions in slash-and-burn areas. The PAR activities found that the villager's experiences with development interventions are mixed within each village and between the two villages. The NTFP project and other interventions in Nampheng have generated tangible benefits and improved livelihoods, and consequently have provided an incentive for sustainable forest management, while the community development initiatives in Huaiohn had limited impact on the villagers' forest use and livelihoods, and thus they still lack the means to shift to more productive and sustainable farming systems.

The next section analyzes more in detail the changes in livelihoods, forest use and management, and institutions that have been brought about by development interventions during the past five years.

5.1 Livelihoods

Both villages, Huaiohn and Nampheng, received support for improving various aspects of their livelihoods over the past decade, i.e. food security, health, education, and alternative economic activities to slash-and-burn cultivation (see Table 2 and Table 5). Both began in dire poverty but were affected differently by these interventions.

The villagers in Nampheng witnessed noticeable improvements in their livelihoods through various development activities supported by the NTFP project. The organized marketing of NTFPs contributed to strengthening their negotiating power and increasing the prices they get for bamboo shoots, which raised the incomes of individual villagers as well as the village as a whole (through the Village Development Fund). The increased incomes have enabled the villagers to diversify their investments and attain an improved quality of life and increased livelihood opportunities. Considerable improvements have been made, specifically, in terms of food security, basic infrastructure, education, and financial security. The study of cash expenditures before

and after the inception of the NTFP project (in 1996 and 2002) indicates the diversification of the range of expenses and the consequent increase in opportunities for individuals (see Table 3). Moreover, the village as a whole benefited from the project through directing the profits from NTFP marketing to village development such as infrastructure (e.g. meeting room) and a loan scheme.

Although these improvements in livelihoods can be attributed to various factors, researchers found through the PAR activities that the villagers perceive the organized NTFP marketing as having played a major role in lifting them out of poverty, and other activities, supported by the IUCN (e.g. training in harvesting, accounting, and marketing), empowered them to participate in broader village administration. IUCN's NTFP project was participatory in approach and demand-driven in the sense that its objectives and the priorities of organized marketing were identified by villagers through the methods of rapid rural appraisal and participatory rural appraisal (IUCN 2000). Moreover, the project supported not only marketing activities but also various livelihood-enhancing activities (e.g. rice bank, schooling) that brought tangible benefits to the village, and thus served as an incentive for more active and voluntary involvement of villagers.

In the village of Huaiohn, on the other hand, little impact has been felt by the villagers in regard to interventions for community development. The Community Development Project supported by QSL aimed mainly at reducing the workload of women and children by setting up water taps and a tree plantation to replace their long walk to get water from the Nam Xae River or fuelwood from the village forests. Rice mills and a grain-threshing machine were also provided. After five years since the termination of the project, however, some of the water taps and the threshing machine are unusable, and the trees planted are not being used for fuelwood, thus having contributed little to achieving the original purpose of the project. The same applies to the water pump provided by the government for increasing the productivity of crops, including lowland rice.

These outcomes of the interventions could be attributed to the fact that they were neither demand-driven nor based on the needs of the village. Unlike Nampheng, the interventions in Huaiohn were not participatory in nature. Little incentive was provided for the community to engage in livelihood-enhancing activities by themselves, hence the lack of voluntary follow-up activities. Moreover, the interventions did not directly aim at income-generation activities based on their geographical advantages (proximity to the district market, easy access to the provincial center) and needs (more productive activities in lowland areas such as fish farming and lowland rice production).

Although various factors interacted and produced differences in outcomes between Huaiohn and Nampheng, the difference in the approaches is one of the deciding

factors that affected the livelihoods of people in the two villages. It is notable that the intervention in Nampheng, which was demand-driven and participatory, integrated a livelihood aspect into a forest resource management project and succeeded in providing incentives for the villagers to actively participate in both collective natural resource management and village development activities. This was made possible by empowering them through organizing and training.

5.2 Forest use and management

The province of Oudomxay was designated by the government as its focal point for rural development and the stabilization of slash-and-burn cultivation (*hai*), because the widespread impacts of *hai* have been felt throughout the province, and Namo District is not an exception. More than three-quarters of all the households in the district are engaged in *hai* in forests as their main economic activity, and the intensive use of forests has often contributed to degradation of forests and decreased soil fertility. The government, therefore, provided support for better use of land and more sustainable production through their land and forest allocation (LFA) program and extension activities.

The villagers in both Nampheng and Huaiohn have used forests and forest resources for *hai*, NTFP collection, house materials, handicrafts, and fuelwood. The noticeable changes observed recently in the two villages is that more and more farmers in Nampheng prefer to earn cash from NTFPs and buy rice, rather than practicing *hai* cultivation, while Huaiohn villagers have become increasingly interested in lowland rice cultivation (*na*) and riverside crop cultivation (*suan*). *Hai* in both villages, therefore, has been either stabilized or reduced in the past five years, but the reasons for the changes are different.

In Huaiohn, LFA has not been conducted, and thus there has been no intervention directly aimed at the stabilization of slash-and-burn cultivation or more sustainable use of forests. Instead, the limited availability of *hai* land and the reduced productivity of *hai* served as the driving forces behind the shift in forest use. Historically, Huaiohn villagers practiced *hai* in three-year rotations, because their small *hai* areas had to be divided among a large number of households engaged in *hai* cultivation. The short rotations of *hai*, coupled with high dependency on *hai* cultivation due to a lack of other income-generation opportunities, prompted intensive use of *hai* land, and consequently resulted in reduced soil fertility and declining productivity. To break this vicious cycle, the villagers want to engage in alternative economic activities, such as *na* and *suan*, and possibly NTFP marketing, but such changes in economic activities have not taken place yet because they lack the labor and finances to do so.

As of 2002, there was no plan to conduct LFA in the village. If it is to be conducted, special attention should be paid to the relationship between land use and food security so that villagers are allocated enough land to

produce sufficient amounts of rice and also engage in other on-farm activities for additional income. Expansion of *hai* area may be possible, but this entails effective facilitation by the authority in addressing boundary issues between Huaiohn and neighboring villages.

In Nampheng, on the other hand, LFA and the economic benefits brought about by organized NTFP marketing have prompted the shift from *hai* to NTFPs collection and other forest uses, including a cardamom plantation and *na*. LFA was originally introduced with a view to achieving natural resource conservation and sustainable use of forests by transferring to village communities the formal authority for managing land and forests (MAF Instruction No. 822). It has also been instrumental in reducing unsustainable forms of *hai* cultivation and promoting more sedentary forms of agriculture. These policy purposes were well communicated to and understood by the villagers of Nampheng throughout the LFA activities. The villagers suggested, however, that the reduction in *hai* cultivation was prompted mainly by the economic benefits from organized NTFP marketing, and the difficulties in practicing *hai* cultivation on only three parcels of allocated land, rather than the sense of secure title to the allocated land. Since the LFA in 1997, villagers have had to practice *hai* cultivation in three-year rotations on three plots of allocated land, while the rotations used to be seven to ten years when they were free to expand *hai* areas to maintain soil fertility. Then, the newly introduced collective NTFP marketing increased their awareness of the value of NTFPs and the cash income they were able to produce, enabling them to purchase rice from the market. Given the constraints (limited *hai* land, declining soil fertility) and opportunities (cash incomes, more productive ways of forest use), villagers have started to weigh the benefits between *hai* cultivation and other economic activities (e.g. NTFP plantation, *na*) and change their land and forest use based on their calculations and preferences.

Although one of the objectives of LFA, i.e. to stabilize and reduce *hai* areas, has been achieved, the villagers in Nampheng suggested that the negative impacts of LFA are felt strongly among them. While, on one hand, the common perception among villagers is that demarcation of village forests and the establishment of management rules through LFA has contributed to better forest use and reduced land disputes with neighboring villages, they suggested that the allocation of land did not provide them with any tangible benefits. Transferring ownership to village communities was expected to establish secure property rights and provide incentives for more productive use of land, but in reality the transfer of ownership has failed to encourage investment in productive activities because the ownership is restricted (i.e. the rights to possess, use, transfer, and inherit are recognized by law but the right to sell is not) and it is not a permanent right (i.e. the allocated land, if kept idle for three years, is supposed to be returned to the State to be re-allocated for use by others [MAF Instruction No.822]). Another reason that villagers did not see benefits in obtaining land is that the allocated land, often degraded

forest, requires significant amount of labor and money to clear for productive use that they usually cannot afford.

Even in Huaiohn, where LFA has not been conducted, it is perceived negatively; no consultation was held with the village's chief on village boundaries during the LFA process in the neighboring village of Nanoy, leaving boundary conflicts unsolved. As the village area has not been officially demarcated through LFA in Huaiohn, the villagers have no legal basis to defend their territory against intrusion by other villages.

5.3 Institutions

Growing evidence shows that institutions, defined here as formal and informal organizations, norms, rules, and other mechanisms for collective actions, are essential for development to be sustainable, both economically and environmentally. The PAR activities found that institutions played an important role in making changes in livelihoods and natural resource management in both Huaiohn and Nampheng.

Both villages have traditionally had some sort of rules and mechanisms for village administration and natural resource management in the form of a decision-making organization and rules for village administration, rules for forest use (e.g. village conservation forest where *hai* is prohibited), and specific rules on clearing land and ownership. In addition, the village of Nampheng, with support from the NTFP project, established an NTFP marketing group and rules and sanctions on harvesting, management, and marketing of NTFPs. A series of village meetings to familiarize villagers with the concepts and rules of the marketing group, along with the leadership of the village chief, have greatly facilitated the villagers' understanding and implementation of organizational rules. Empowered by their experience with organized NTFP marketing, villagers have voluntarily established their own rules for managing red mushroom collection, which has recently become one of the most important sources of cash income (see section 3.7.2). Voluntary rule-making has also occurred in Huaiohn. Concerns over the limited availability of land for *hai* prompted three households to engage in lease contracts with neighboring villages in 1998 (see section 4.7.2).

These evolving institutions for natural resource use and management at the village level reflect the villagers' increased awareness about the value of collective action and mutual support in natural resource management. Villagers suggested that they were motivated to participate in collective actions in natural resource management only when they saw tangible benefits from them. In Nampheng, for instance, more villagers started actively taking part in organized NTFP marketing and acquiring harvesting skills after they saw benefits in the form of higher and stable prices for bamboo shoots.

In addition to this tangibility, the reciprocity of benefits is also critical. A village rule on access to the rice bank in Nampheng is a case in point. In principle, any households suffering from a shortage of rice can borrow some from the

rice bank as long as there is stock available. But some poor villagers, regarded by other villagers as being inveterate, lazy idlers, are not allowed to borrow rice because other villagers cannot expect reciprocal help from them. The same is true of the village's financial scheme. The villagers have traditionally helped each other in time of financial difficulties through an informal loan scheme (the Village Development Fund most recently), but there are restrictions on the use of such schemes when those wishing to borrow do not contribute to other kinds of economic activities (e.g. working for other households as hired labor), indicating that community institutions for collective action function on the basis of tangible and mutual benefits, and there are restrictions on use when reciprocal help is not expected.

6. Conclusions

This study attempted to examine the livelihood systems of slash-and-burn cultivation areas in northern Laos through participatory action research (PAR) and to analyze the changes in livelihoods, and forest use and management that were brought about by various development interventions. Emphasis was placed on examining selected aspects of slash-and-burn communities—their livelihoods, forest use and management, and institutions.

The PAR activities found that the impacts of development interventions are felt differently among different groups within a village (women/men, the wealthy, and the poor) and between villages. Development interventions in the village of Nampheng, especially the NTFP marketing project, have contributed to improving livelihoods by bringing increased incomes to individual villagers as well as the village as a whole through the Village Development Fund. The tangible benefits from NTFP marketing, in turn, motivated villagers to use and manage forest resources in a more sustainable way, based on rules of their own making. The participatory and demand-driven approach of the intervention as well as the focus on the livelihood aspect are considered critical for encouraging active and voluntary involvement of villagers in collective actions for forest management and village development. It should also be noted that the benefits of collective action should be tangible and mutual, and that access to such benefits of some village members can be restricted if reciprocal help cannot be expected.

On the other hand, the interventions in the village of Huaiohn have had limited impacts on livelihoods and forest use, and thus they still lack the means to shift to more productive and sustainable farming systems and forest use. Unlike Nampheng, the interventions in Huaiohn were not participatory in nature and provided little incentive for the community to engage in livelihood-enhancing activities by themselves. Moreover, interventions did not take into consideration the village's geographical advantages (proximity to the district market, easy access to the provincial center) and needs (more productive activities in the lowlands such as fish farming and lowland rice production), and thus failed to provide alternative income-

generating opportunities to reduce the dependency on *hai* cultivation.

Land and forest allocation (LFA) has had mixed impacts on forest use and management in the slash-and-burn villages. Villagers suggested that they had either reduced or abandoned slash-and-burn cultivation and had greater awareness about the values of forest resources after the LFA process, testifying to the achievement of some of the policy goals of LFA. But negative impacts were also felt by villagers in the form of limited land availability, shortened rotations of *hai* cultivation and consequent decrease in soil fertility, and restricted land ownership.

Lastly, through the participatory rural appraisal activities, it was found that institutions played a critical role in making changes in livelihoods and natural resource management in both Huaiohn and Nampheng. The evolving institutions for natural resource use and management reflect the villagers' increased awareness about the value of collective action in natural resource management and mutual assistance. Villagers suggested that the tangibility and the reciprocity of benefits from collective action are a key to promoting active and voluntary participation in collective action.

Due to the limited scope of this study, the research was focused on selected aspects of the communities in slash-

and-burn cultivation areas in northern Laos. Nevertheless, the study may offer insight into the potential impacts of development interventions in other slash-and-burn areas with similar environmental and socio-economic conditions.

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