Forest Policy and Swidden Agriculture in Laos

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Introduction

In Laos, more than 70 percent of the country area is mountainous. Most of the land in the mountainous areas is so unsuitable in terms of geographical features for developing paddy fields that swidden agriculture is the primary method of producing rice there. In addition to rice, farmers plant a variety of crops for subsistence and gather various kinds of non-timber forest products (NTFPs) from the swidden fallows. Moreover, NTFPs are being used for food, traditional medicine and as materials for building houses, and some of these are greatly contributing to farmers' cash income (Foops & Ketphanh, 2005; Yokoyama, 2004). Consequently, it can be said that swidden agriculture plays an important role in both food security and cash income.

However, conventional land use for subsistence agriculture in Laos, mainly dominated by swidden agriculture which has lasted for centuries, is rapidly being replaced by other forms of land use such as continuous sedentary farming or tree plantations. Swidden farmers have experienced this kind of land use change in recent decades, and it has generally been caused not only voluntarily but also compulsorily by external pressures including the forest policy of the government of Laos (GOL).

Forests in Laos are certainly decreasing. Although forest cover in the 1950s was estimated at 70% (Chape, 2002, p.162), according to the latest study in late 2002 and early 2003, the forest cover is only about 41.5% (MAF, 2005, p.2). The reason for this forest destruction is caused by not only swidden agriculture and a rapid population increase, but also by multiple factors including illegal logging, wide-spread poverty and weak law enforcement (MAF, 2005, p.12-14). Considering such a situation, the GOL has implemented the Land and Forest Allocation Program (LFAP) for forest conservation and poverty eradication as well as a clarification of property rights since 1996.

In some upland areas in Laos, however, the LFAP has had a major impact on the livelihood of farmers (e.g. ADB, 2001; SPC, 2000). In order to stabilize[(1)] swidden agriculture, the LFAP encourages local communities to improve their conventional swidden agriculture by introducing more profitable export-oriented crops, or by establishing more intensive cropping systems at some allocated agricultural fields. However, this is not such an easy task under the present socio-economic conditions of the mountainous areas because of their poor infrastructure, lack of market access and insufficient human resources for agricultural extension works (Lao Consulting Group, 2002). As a result of the LFAP implementation, some areas where people have been greatly dependent on conventional swidden agriculture were even more marginalized than before, due to the decrease in accessible land (Ducourtieux, Laffort & Sacklokham, 2005).

It is yet uncertain as to what extent the LFAP has been implemented over the region, and to what extent the LFAP has given positive effects on the stabilization of swidden agriculture. Added to these are how the economic, social and agrarian conditions have been changed by the present forest policy, especially by the LFAP implementation. To answer these questions, this paper attempts to clarify the relationship between forest policy and swidden agriculture and to discuss the future of upland farmers' livelihoods

(1) In documents issued by official authorities, the word "stabilize" is now in common use instead of "eliminate" and "stop." Specifically it means not to be extended to or impinged on new forest tracts.

under difficult circumstances surrounding swidden agriculture based on survey results of villages where the LFAP was implemented in northern Laos.

Forest Policy concerning Swidden Agriculture in Laos

Forest Policy Development

The New Economic Mechanism was adopted by the fourth Party Congress of the GOL in 1986. To stabilize swidden agriculture was set as a second priority program of the Second Socio-economic Development Plan 1986-1990 (MAF, 2005, p.3). In May 1989, the National Forestry Conference was held to establish new forest policy directions. One of the main adopted strategies in this conference was to stabilize swidden agriculture and to allocate land to swidden farmers (UNDP, 2001, p.50). Shortly thereafter, in October, 1989, the CM Decree No.117 (No.117/CM) on the Management and Use of Forest and Forest Land was promulgated. According to this decree, villagers are allocated 2-5 hectares of forest and forest land per household and some 100-500 ha per community as community forests. Since community forestry was officially rationalized by the GOL in this decree, allocated areas are inadequate to maintain the conventional swidden agriculture. This was the first decree which presented the concept of land allocation to individual households.

No.117/CM was later replaced by the Prime Minister's (PM) Decree No.169 (No.169/PM), which was enacted in 1993 (MAF 2005, p.5). No.169/PM provided a basic framework for forest operation and management with provisions on forest definition, ownership, categorization and contract management. In this decree, forest lands were classified into five categories: protection forests, conservation forests, production forests, regeneration forests and degraded forests. Any development and forestry activity in the protection forests and the conservation forests were prohibited, and swidden fallows were regarded as the regeneration forests to recover its forest cover. Regarding the ownership of forest and forest land, villagers can own, use, transfer and inherit it for tree plantation, but on the other hand, the decree states that forest and forest land are defined as national heritage and controlled under the MAF. At this moment, boundaries of forest lands were set in village areas.

In 1994, the PM Decree No.186 (No.186/PM) on the Allocation of Land and Forest Land for Tree Plantation and Forest Protection were promulgated. No.186/PM provides a basic framework for the allocation of land and forest land. More specifically, households, companies, national organizations and public organizations allocated the degraded forests for tree plantation. This is regarded as a prototype of the present LFAP. However, the criteria and the procedures of allocating land were not described in the decree. In terms of the allocation process at the working-level, the MAF developed Instruction No.822 (No.822/PM) on Land and Forest Allocation for Management and Use in June 1996.

In November 1996, the Forest Law was finally promulgated. The articles of the Forest Law adhered fundamentally to No.169/PM and No.186/PM, but the Forest Law further emphasized he allocation of forest and forest land to individuals and organizations for management and use (Tsechalicha and Xiong, 2000). As the Forest Law went into effect, the two previous decrees were no longer into effect.

In addition to the Forest Law, the GOL issued the Land Law in April 1997, and land in Laos to be classified into eight categories: agricultural land, forest land, water-area land, industrial land, communication land, cultural land, land for national and security defense, and construction land. Village lands in mountainous areas have generally been divided into agricultural land and forest land. Agricultural land in the mountainous areas is commonly meant to be swidden fields, and thereby swidden fields and the degraded forests were allocated to individual households by the LFAP. The land user is guaranteed rights of use, transfer and inheritance, but must use the land according to the appropriate land use plans formulated by the local government.

In Laos, decrees regarding forest and its management, the Forest Law and the Land Law are organically combined with each other, and some of decrees are later replaced by the Forest Laws. Therefore, it is hard to grasp the big picture of the governmental forest policy. However, at least it is definite that establishment of these legal systems in the middle 1990s has officially paved the way for the implementation of the LFAP.

The LFAP Implementation

According to the Forestry Strategy to the Year 2020 (FS2020) issued in 2005, the MAF described that the objectives of the LFAP were to promote crop production to replace swidden agriculture, to protect forest, and to utilize the allocated forests on a sustainable basis (MAF, 2005, p.5-6). In the meantime, Resolution of Nation-wide Review Conference on Land Management and Land-forest Allocation, held on July 19, 1996, stated that the objectives were to prompt a reduction and gradual elimination of swidden agriculture and to enhance the promotion of commercial production (ADB, 2001, p.77). While the FS2020 highlights aspects of forestry, it was originally emphasized aspects of agriculture. These examples are shown that interpretations of the LFAP are numerous and vary depending on the organizations. However, whatever the case may be, authorities concerned about the LFAP places the issue of stabilizing swidden agriculture as one of the top objectives for the implementation.

The LFAP was legally started by enacting the Forest Law and No.822/MAF in 1996, but actually, the pilot implementation was carried out in two northern provinces, Luang Phabang province and Sayaboury province, from 1990 to 1996 through the support of ADB, FAO and Swedish International Development Cooperation Agency (SIDA) (Thattamanivong, 2003; Ducourtieux, Laffort & Sacklokham, 2005). In particular, SIDA has supported the development of its implementation manual with the Department of Forestry, the MAF (Thongphanh, 2004). Based on the result of the pilot implementation by SIDA, instruction No.822/MAF which shows the eight-step participatory procedure for allocating land and forest land was created.

The eight-step procedure described in No.822/MAF are: 1) preparation, 2) initial discussion with villagers to reach understanding, 3) collection of actual village data, 4) a general meeting to agree on land use, forest and forest land categories and the village boundary, 5) measurement of land in group based on production units or commodity groups, 6) land use planning and land allocation completion activities, 7) extension, and 8) monitoring and evaluation. With the progress in the LFAP implementing, however, various problems, especially technical issues including participatory planning and communication, data analysis, mapping and surveying, land use zoning, preparation of

land and forest land management agreements, monitoring, and evaluation, were manifested by Lao-Swedish Forestry Program (Sysomvang et al., 1997). Among them, the most serious problem was that the last step of the process, monitoring and evaluation, has not often been completed (Thattamanivong, 2003; Thomas, 2003, p.5).

In order to recognize problems in the LFAP, monitoring and evaluation after implementation are inevitable and imperative. Moreover, to understand what problems farmers or villages are facing, monitoring and evaluation are the most important last step of the implementation process. Since little attention has been devoted to monitoring after implementing the LFAP, little has been known as to what agriculture the farmers have switched from their current upland rice farming in swidden fields, and thereby what effect and impact farmers and communities have had. In fact, there are remarkably few studies comparing the land use before and after implementing the LFAP (e.g. Ducourtieux, Laffort & Sacklokham, 2005). Taking such a situation into consideration, in-depth surveys at the family level were conducted in two villages of northern Laos in 2003 and 2004[(2)] to monitor after the LFAP implementation. In the next chapter, some results obtained by monitoring actual land use after the land and forest land allocation will be presented.

Land Use after the LFAP

Study Areas and Study Methods

The study villages were Na Xao village in Luang Phabang district of Luang Phabang province and Kone Kean village in Xay district of Oudomxay province (Fig. 1). Na Xao village is situated alongside well-maintained paved road and located about 12 km southwest of Luang Phabang. Kone Kean village is located 15 km southwest of Muang Xay and situated along national highway No. 2. Although a market is not established in either surveyed villages, they have good access to the provincial capital using public transportation. In both villages, wet-rice cultivation has been practiced to some extent in paddy fields distributed in the basins.

Basic information on both villages is shown in Table 1. The ethnic group of the villages is different from each other. Na Xao village is ethnic Lao and Kone Kean village is Khum. Their village sizes are almost the same.

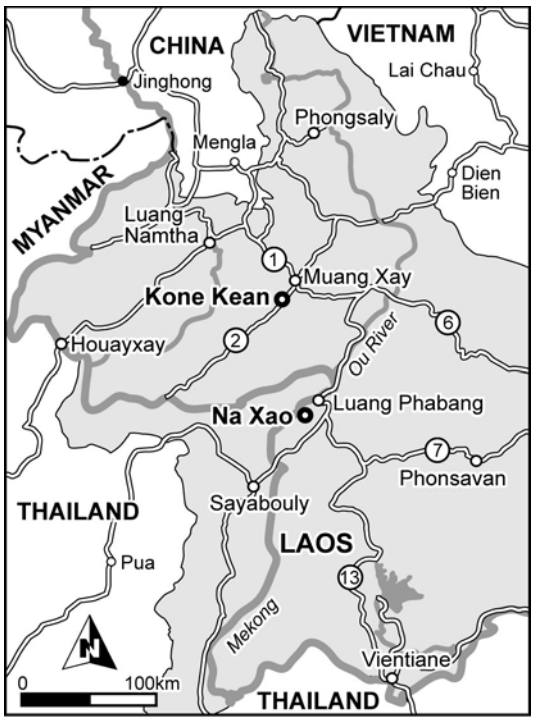


Fig.1 Study area

[(2)] The research was conducted under the joint study project on Macroeconomic Policy Support for Socio-Economic Development in Lao PDR organized by Japan International Cooperation Agency (JICA) and Committee for Planning and Cooperation (CPC) of Lao PDR (CPC and JICA, 2005).

The LFAP was implemented in Na Xao village in 1999 and Kone Kean village in 2003[3].

The survey was mainly based on interviews with all families in the village, and collected data were family structure, agricultural land use before and after the LFAP and markets to sell crops. Additionally, in the case of Kone Kean village, the District Agriculture and Forestry Office (DAFO) has a cadastral map, so that a more detailed land use survey and analysis on land use change using GIS was carried out.

Table 1 Basic information of surveyed villages, 2003

Village	Na Xao	Kone Kean
Ethnic group	Ethnic Lao	Khmu
No. of household	74	56
No. of family	60	60
Population	365	372
LFAP implementation	1999	2003
Allocated area*	192.23 ha	201.43 ha
Paddy field	34.6 ha	24.4 ha

* Including the area of paddy field

Na Xao Village: Introduction to New Rotational Cultivation

The total land area of Na Xao village is 884 ha, of which 545 ha consisting of protection forest, conservation forest, production forest and settlement area is the land unusable for agricultural purposes (Fig. 2). The rest, about 300 hectares, are defined as agricultural lands, of which 192.23 hectares were allocated to the villagers following the LFAP. Paddy fields, 34.6 hectares in total, are distributed in the lowlands along the Houay Sing River. The paddy fields had already been held by individual families as private properties before the LFAP implementation and were excluded from the object of the LFAP. Therefore, the LFAP was conducted by making the mountain slopes its main object of allocation, where the villagers had carried out swidden agriculture.

Land use of the allocated lands in Na Xao village is summarized in Table 2.

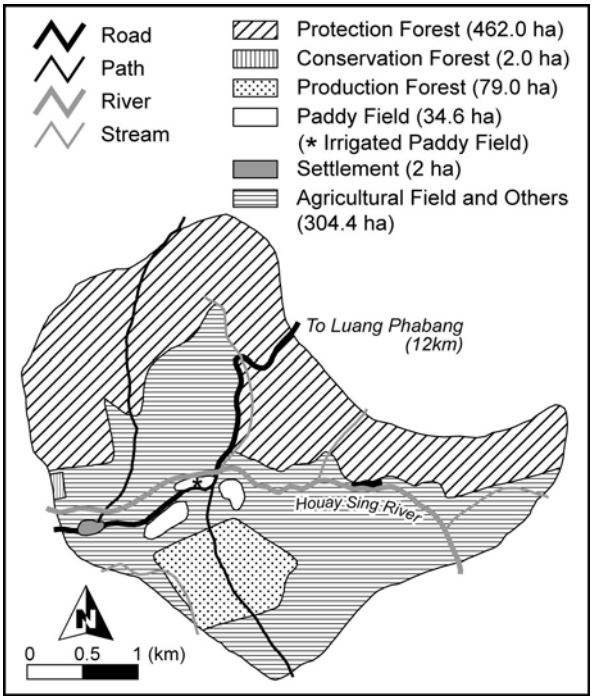


Fig. 2 Land use of Na Xao village, 2003

Table 2 Land use after implementation of land allocation program in Na Xao village, 2003

Landuse	Area (ha)	No. of family	No. of plot	Average area per family (ha)	Average area per plot (ha)
Paddy	34.60	38	N/A	N/A	N/A
Job's tears	41.84	43	52	0.97	0.81
Fallow	78.04	49	82	1.59	0.95
No data*	3.15	2	4	1.58	0.79
Total	157.63	132**			

* 'No data' indicates the lands on which no information was available: they are remained unused because the holders had not utilized the allocated field plots or had left the village.

** This does not correspond with total number of family.

[3] In the case of Na Xao and Kone Kean villages, land and forest land were allocated to not a unit of household but a unit of family.

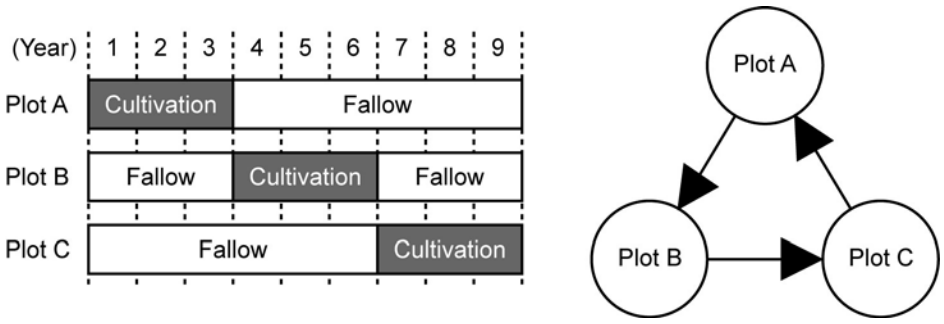


Fig.3 Job's tears cultivation system with 3 years cultivation period and 6 years fallow period

Upland farming in the allocated plots underwent an immense change in its main crop from upland rice to Job's tears (*Coix lacryma-jobi*). Upland fields were commonly used for growing Job's tears or allowed to lay fallow, and it is noticeable that the spatial ratio between the land used for growing Job's tears and the fallows was roughly one to two. Job's tears is continuously cultivated for three years in a plot and then the plot is allowed to lay fallow for the following six years (Fig.3). Even after the LFAP implementation, the individual families practiced the similar form of swidden agriculture with the method of slashing and burning the fields to grow Job's tears. In other words, the villagers have established another type of new rotational cultivation with a nine-year rotation cycle by using a set of three allocated plots.

The average number of field plots actually allocated to 56 families in Na Xao village was 2.3 plots. This indicates that a certain number of families did not receive enough numbers of field plots with which they could practice the new rotational cultivation. According to the surveys, 17 families were provided with two plots and seven families with just one plot, and all of them were paddy field holders. Therefore, it is obvious that paddy fiel d holding was taken into account when the LFAP decided the number of field plots to be allocated to individual families. The paddy field holders have a notable advantage that they can continuously grow rice in paddy fields. However, if they try to continue the upland cultivation with the limited number of field plots, they have to shorten the fallow period, or they have to stop growing Job's tears for a certain period, for example, three years for the two-plot holders and six years for the one-plot holders.

Job's tears was first introduced in the village in 1999 when the LFAP was completed in this village. Among 58 families to whom the land was allocated, 24 families began to grow it on a trial basis, and could obtain an average yield much higher than that of upland rice; 3 t/ha, which was surprisingly about four times higher than the yield of upland rice. In addition, since the selling price in 1999 was also surprisingly high, 4,000 kip/kg, which was eight times as much as the price of unhulled rice, the pioneer families could obtain large benefits to save money even after purchasing rice for their own consumption. As a result, in order to seek the same benefits, all the families in Na Xao village began to grow Job's tears in the following year.

Kone Kean Village: Diversification of Crop Variation

In Kone Kean village, the LFAP was implemented in 2003. The average allocated lands per family were about 2.9 plots in 3.3 ha. Roughly translated, a family was allocated

three separated plots of one hectare. However, it depends on labor force in the family and whether or not the family holds the paddy field. The total land allocated to the villagers was 201.43 hectares, of which 123.57 hectares (61.4%) completely laid fallow in the first year after the LFAP when the survey was conducted (Table 3; Fig. 4). Including fallows in which fruit trees or other crops were partially planted, the total fallow lands accounted for 65.2 % (131.07 hectares), and this indicates that a considerable amount of the allocated lands were not used for cultivation in the first year. Unlike Na Xao village, paddy fields were also allocated on paper to villagers. However, since paddy fields of 24.43 hectares in total have been individually owned by the villagers, they were allocated to the former owners. Including lands to be reclaimed for new paddy fields, the total area of paddy fields amounted to 30.98 ha.

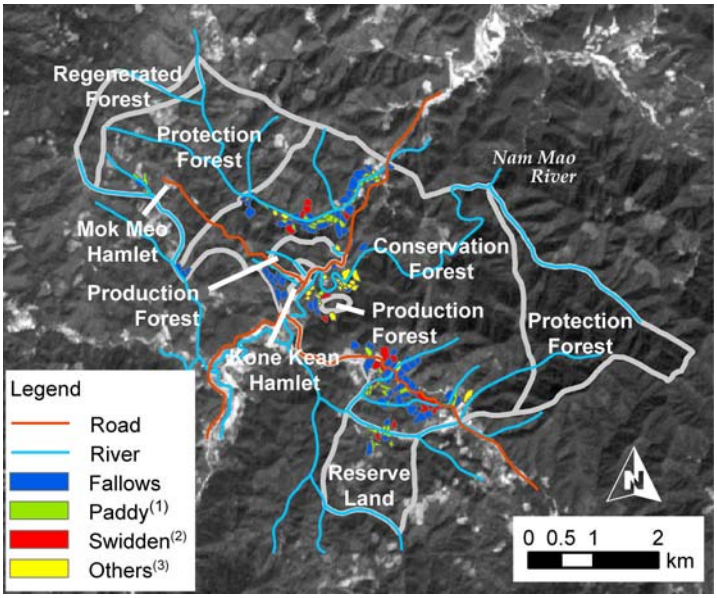
Table 3 Land use change between 2003 and 2004 in Kone Kean village

Land use	2003			2004		
	Area (ha)	[%]	Plot	Area (ha)	[%]	Plot
Paddy	24.43	[12.1]	42	21.92	[10.9]	41
Paddy/Fallows	2.42	[1.2]	3	6.13	[3.0]	5
Paddy/Mix cropping	1.04	[0.5]	2	2.04	[1.0]	3
Paddy/Swidden	1.70	[0.8]	2	2.16	[1.1]	1
Paddy under developing	1.39	[0.7]	2	1.39	[0.7]	2
Swidden	24.25	[12.0]	15	23.54	[11.7]	15
Swidden/Fallows	1.81	[0.9]	1	1.81	[0.9]	1
Swidden/Fruits trees	1.03	[0.5]	1	1.35	[0.7]	1
Swidden/Maize	1.19	[0.6]	1	5.19	[2.6]	5
Maize	3.92	[2.0]	3	2.00	[1.0]	3
Maize/Fallows	0	[0.0]	0	1.93	[1.0]	1
Maize/Fruits trees	0	[0.0]	0	3.22	[1.6]	2
Maize/Mix cropping	1.29	[0.6]	2	2.90	[1.4]	2
Fish pond	1.22	[0.6]	1	1.22	[0.6]	1
Fish pond/Fallows	0.13	[0.1]	1	0	[0.0]	0
Fish pond/Swidden	0	[0.0]	0	0.13	[0.1]	1
Fallows	123.57	[61.4]	80	101.14	[50.2]	67
Fruits trees	6.63	[3.3]	14	7.83	[3.9]	14
Fruits trees/Fallows	1.35	[0.7]	1	1.03	[0.5]	1
Mix cropping	0.88	[0.4]	1	2.34	[1.1]	2
Others	0.26	[0.1]	1	0.91	[0.4]	2
Others/Fallows	1.79	[0.9]	1	10.12	[5.0]	4
Relocation site for Mok Meo hamlet	1.13	[0.6]	1	1.13	[0.6]	1
Total	201.43	[100.0]	175	201.43	[100.0]	175

The Kone Kean villagers still continued swidden agriculture even after the implementation of the LFAP. The allocated land used for growing upland crops, mainly for upland rice, in swidden fields accounted for 12 % (24.25 ha) total land used. According to the DAFO, as about 50 hectares was used as swidden fields before the LFAP implementation, it might be a noticeable achievement that the total area of swidden fields was halved within the first year. However, at the same time, it might also be said that as many as 12 % of allocated lands were still used as swidden fields.

One major issue is how to provide the villagers with appropriate alternative ways for utilizing the allocated lands and what those ways are. In this regard, it might be useful to focus on one half of the former swidden fields, in which the farming practices had switched from swidden agriculture to sedentary form of crop growing of fruit trees, maize, leaf vegetables and/or a mixture. Including multi-purpose land use types, such as a combination of upland agriculture and fishponds, the total area of such newly introduced land use patterns amounted to 21.5 ha. This figure essentially corresponds to the decrease in swidden fields after the LFAP implementation.

As shown in Fig. 4, the village consists of two hamlets: Kone Kean hamlet, which is called Kone Kean village in this paper, and Mok Meo hamlet, which consists of 12 families and is located on a mountainside within a 30 to 40 minutes walk from the Kone Kean village. At the moment of our research in 2003, none the families in Mok Meo hamlet did not utilize the allocated lands, but practiced swidden agriculture in the protection forests surrounding the hamlet. The allocated lands for people in Mok Meo hamlet are mostly near the main road, and they are too far for them to commute.



(1) Including mixed land use with maize, fruits trees and fallow
(2) Including mixed land use with swidden, mix cropping, fallow
(3) Mix cropping, maize, fruits trees, fish pond and other various mixed land uses

Fig.4 Land Use of Kone Kean Village in Oudomxay Prov., 2003

When the LFAP was implemented in Kone Kean village in 2003, the DAFO was planning to force all residents in Mok Meo hamlet into moving to the reserved resettlement site of 1.13 hectares located along the main road by the year 2004. Only two families, however, had moved to the lowlands at the time of the research in 2004[(4)]. The rest of 10 families still remained on the mountainside and continued to practice swidden agriculture in the protection forests.

Our consecutive surveys in Kone Kean village revealed that the land use pattern was quickly changing even within a year, from 2003 to 2004 (Table 3). The biggest change was a decrease in the area of fallows from 123.57 ha in 2003 to 101.14 ha in 2004. Out of 80 plots which had lain fallow in 2003, 30 plots were converted to sedentary crop growing lands in 2004 (Fig. 5). Swidden agriculture was also practiced in 15 plots, yet it occupied one half of the total number of field plots which were converted from the fallows. As this figure indicates, even after the LFAP implementation, the villagers seemed to still grope for appropriate and possible ways for utilizing their allocated lands, and continued their conventional swidden agriculture.

Another remarkable change observed between 2003 and 2004 was the increase in land use patterns categorized as ‘others’ (Table 3). Although only teak and cardamom plantations comprised the case for ‘others’ in 2003, this category increased from two plots (2.05 ha) to six plots (11.03 ha) in 2004. They were planted with various fruit crops such as banana and pineapple, commercial upland crops such as sugarcane and sesame, and *puack muack* (*Urticaceae* sp.), which used to be a kind of NTFPs. Moreover, the crops which used to be grown in swidden field, such as cucumber, melon and chili, were newly introduced into the sedentary farming systems. Based on these changes, it can be

(4) They had moved not to the reserved resettlement site prepared by the DAFO but to Kone Kean hamlet. The reserved resettlement area has still been vacant lot.

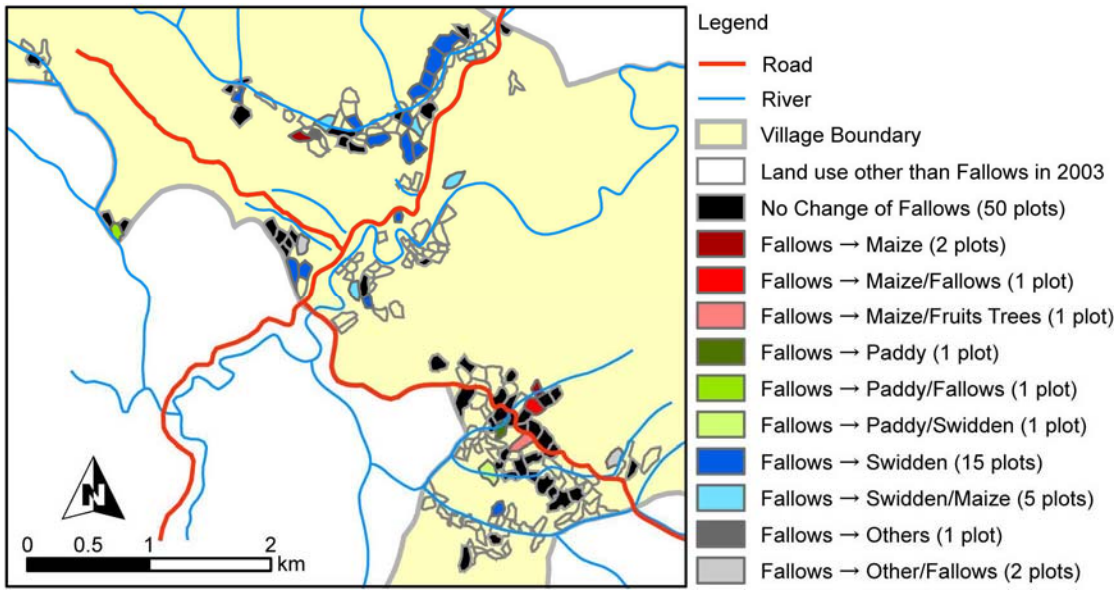


Fig. 5 Land use changes of follows in Kone Kean village between 2003 and 2004

said that village agriculture has an obvious tendency towards crop diversification in terms of its composition and variation. However, it also illustrates the backside of the coin that the current diversification is merely the reflection of villagers' trials and errors.

Reclamation of the paddy field has been proposed as one of possible alternatives to swidden agriculture. In Kone Kean village, however, an increase in the number of paddy fields had not been materialized yet. German Argo Action (GAA), a German NGO, has financially supported the LFAP implementation in Kone Kean village by providing the villagers with fruit-tree seedlings and a ration of rice, in particular, to the families who expect to be engaged in reclaiming paddy fields. Since the reclamation of paddy fields needs considerable labor input, the rice has been rationed as a compensation for the labor allocation to the task of reclaiming paddy fields. However, despite the provision of rice, which is scheduled to terminate in 2005, many planned sites for paddy fields were still under development. It was questionable whether the reclamation of paddy fields would be completed just by the efforts of individual villagers.

The LFAP Implementation and Livelihood Change

Lack of the Market Information of Agricultural Products

Marketability of agricultural products remains problematic for both villages. In the case of Kone Kean village, despite the existence of easy access to the Muang Xay market, no families regularly sold their agricultural products, excepting rice, to the market. No middlemen had come to buy their products. As this illustrates, the lack of both marketing experience and information renders it difficult for them to choose appropriate crops to be grown in their allocated plots. Therefore, it is still a major question for the villagers as to which crops should be grown within their limited number of field plots.

In the case of Na Xao village, all the production of Job's tears is sold to middlemen dealing with agricultural and forest products in Luang Phabang, and every farmer in the village individually has an exclusive sales contract with a certain

middleman. In 2002, farmers signed a sales contract with a minimum price of 700 kip/kg, but the actual price of delivery went up to 1,500 kip/kg. As Table 4 indicates, the price of Job's tears noticeably fluctuates. The lowest price was 500 kips/kg in 2000, which was only 12.5% of the price of the previous year. However, as this price was just slightly lower than the price of upland rice, the farmers do not perceive this as a big problem because the yield of the Job's tears is always higher than that of upland rice.

Table 4 Variation in the price of Job's tears

Year	Price (kip/kg)
1999	4,000
2000	500
2001	3,000
2002	1,500
Average	2,250

Unlike upland rice, however, demand and price of export-oriented cash crops such as Job's tears are still unclear and very unstable. Since almost all the products of Job's tears are exported to Thailand, it is also a difficult question as to what extent the government to intervene in order to stabilize the market price of Job's tears. In addition, growers in the village and most of the middlemen do not know what it is even being used for. Such kinds of market issues are not only seen in studied villages but also in many villages that are introducing newly export-oriented cash crops instead of traditional crop varieties (Raintree, 2005).

Stabilizing Swidden Agriculture

In Kone Kean village, when the LFAP was implemented in 1993, most of the long fallowed forests are classified as protection forests, conservation forests and regeneration forests, which cannot be used for agricultural purposes. Therefore, degraded forests which are mostly three- to one-year-old fallows and swidden field were allocated to villagers. Since short fallow forests are of course unsuitable for swidden agriculture, some families have shifted their farming forms from swidden agriculture to continuous sedentary farming. Meanwhile, some families hesitate to change their farming methods and are still greatly dependent on upland-rice cultivation practiced under swidden agriculture because sedentary forms of crop growing could not produce cash income as much as expected.

Kone Kean farmers still let a considerable number of allocated lands lie fallow as shown in Table 3 and Fig. 5. It remains to be seen whether these should lie fallow for future swidden agriculture or not. If these are used for swidden agriculture, farmers would have to practice it by rotating the allocated lands within allocated three plots of farmlands in maximum. The actual decline in the number of swidden fields shows in appearance a partial achievement of the aims of the LFAP, stabilization of swidden agriculture, however, it is suspicious whether this system would be sustainable within the three allocated plots. Moreover, how farmers produce sufficient quantities of rice under practicing swidden agriculture using such a short fallow system.

As the case of Na Xao village indicates, the major crop grown in the village has changed from upland rice to Job's tears after the LFAP implementation. This change seems to provide the economic advantages to the villagers. In fact, the villagers have succeeded in increasing cash income through this change. In addition, it can be said that the swidden agriculture have been stabilized. However, this is just a matter of probability with the expectation that swidden agriculture will be sustained by a rotational cultivation consisting of a three-year growing and a six-year fallowing cycle within three plots. How

to keep the soil fertility within such a short period of fallowing is another problem in relation to the sustainability of this rotational cultivation.

Settlement Relocation and Livelihood Change

The excessive and quick implementation of the LFAP seems to have made it more problematic. As the case of Kone Kean village shows, the LFAP implementation has forced the Mok Meo people living in the mountainous area to move to the lowland notwithstanding their inexperience of sedentary farming. When the interview survey was carried out at Mok Meo humlet, a villager said the highly impressive line that "I have engaged in swidden agriculture all my life. I've never worked on a lowland field, and I don't know how to do it. I am a swidden farmer."

The concerned local officials have not prepared any recommendable crops or technical support for them. Here, it is also expected that the GOL should be more positive in providing alternative technologies, such as a comprehensive package of measures to manage sedentary agriculture, and market information to the villages located in remote areas away from local markets.

Conclusion

The forest policy of the GOL formulated within the context of the forest rehabilitation after the New Economic Mechanism. Its overall direction was developed in the National Forestry Conference held in 1989. Although the policy direction covered a broad range of areas from an increase in forest biodiversity to the improvement of economic benefit from forest resources, the core strategies in the conference were to recover lost forest cover in recent decades. In order to put into practice what the conference has elaborated, a series of legislative moves regarding swidden agriculture stabilization and land and forest land allocation were promulgated since the mid-1990s. However, many studies have reported that the LFAP have made an impact on upland farmers in mountainous areas where people heavily dependent on swidden agriculture.

Through the case studies conducted at the two villages in Oudomxay and Luang Phabang provinces in 2003 and 2004, we could also observe both negative and positive aspects of the LFAP implementation. In the case of Na Xao village, the market factor is an important issue in relation to sustainability. As our survey demonstrates, the local price of Job's tears was very unstable and the only advantage was its higher price and higher yield compared to that of upland rice. Insofar as the current fallow system continues, it is inevitable for the government to provide the locals with alternative crops to Job's tears.

Regarding Kon Kean village, villagers still remained uncertain about the direction of continuous sedentary farming due to the various constraints. They tried to introduce new crops and establish more diversified land use patterns; yet, despite their efforts, it is also the reality that they could not earn much cash income because of the lack of market information. In addition to such difficulties, it was revealed that the resettlement program associated with the LFAP was not an effective tool as expected for prohibiting shifting cultivation in the protected forests. To make the Mok Meo people move to the resettlement site and cease swidden agriculture were complicated and controversial issues. As local people, especially the Mok Meo people, seemed to have a tendency to place a priority on stability, rather than productivity, of their production systems, they were

reluctant to totally replace their conventional swidden agriculture with uncertain sedentary systems within a few years.

Regarding the LFAP implementation, the authorities concerned did not adequately provide follow-up services or support for developing agricultural production and improving agrarian conditions. In order to achieve the targets or goals manifested in the forest strategies and plans, a more integrated and location-specific approach is necessary. As the case studies indicate, geographic locations such as accessibility to local markets and availability of intermediate merchants might be more influential than the LFAP itself. The villagers in the mountainous area, such as those in Kone Kean village, have not been successful yet in identifying the appropriate commercial crops to be grown on the allocated farm lands. If they reached a negative conclusion that LFAP would not bring about positive development but poverty, then they might easily return to swidden agriculture. Therefore, it is very necessary to understand that many villages located in the mountainous regions still remain in the premature condition to accept the LFAP which implemented with the standardized and uniformed manuals.

As Tanaka (1993, p.139-140) pointed out, "Harmonization of the *thammasat*[(5)] nature of Laotian agriculture with various schemes for promoting the modernization of rice-based farming systems is the key issue, so that Laos will not follow [the] earlier example," methods of farming must have a unique way based on custom, culture and physical environment. In particular, in order to stabilize swidden agriculture in mountainous regions, more flexible and location-specific implementations should be taken into consideration instead of mechanical and uniform implementations. The authorities concerned including the local government, international organizations, NGOs and researchers, need a lot of attention and careful monitoring of land use changes by the LFAP implementation in the uplands.

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(5) Laotian word *thammasat* commonly means "nature" as noun and "native" as adjective in English. In the context of agriculture in Laos, on one hand it is positively interrupted as environment-friendly agriculture based on traditional technology, but on the other it is often construed as meaning primitive because of extensive way of agriculture.

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