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Agrarian Land Use Transformation in Northern Laos: from Swidden to Rubber

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Abstract

Land use and farmers' livelihoods in mountainous regions of northern Laos are rapidly moving away from subsistence to market based agricultural systems, changing farmers' relationship with land and natural resources. The current study examines patterns of land use change in northern Laos, especially focusing on the expansion of agricultural land in upland areas. It also examines factors that influence local farmers' livelihood and their decisions on land use. A series of government policies that were implemented since the 1980s restricted upland farmers' access to upland fields and fallow forests, and led to the relocation of upland communities. The opening of regional borders for trade in the early 1990s, which brought new economic opportunities for local farmers, further accelerated the demand for agricultural land and led to a concentration of population in settlements along the road. A combination of both external and internal factors are influencing households in rural areas to actively seek new economic opportunities and adapt their livelihood basis, as well as altering their relationship with land and resources. This rapid transformation also questions the effectiveness of the government's resource management policy that developed during the 1990s aiming to control expansion of upland shifting cultivation practices through delineation of resource boundaries.

Keywords: northern Laos, upland, land use, livelihood change, rubber

I Introduction

Recent studies on land use change point out a complex relationship between direct and indirect factors that influence deforestation [Geist and Lambin 2002; Lambin *et al.* 2003]. In order to better understand the cause and process of deforestation, it is not only necessary to observe the physical patterns of change but also examine local contexts, and factors that influence different stakeholders' relationship with resources. Case studies on land use change in Southeast Asia indicate mounting political and eco-

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conomic pressure on commercially valuable natural resources and upland agricultural systems as leading causes of forest degradation [Fox and Vogler 2005; Kummer and Turner 2007].

The current study in northern Laos brings focus to local transformation of land use and livelihoods in Luang Namtha province bordering southwest China where a network of new roads are being developed and improved as part of the Greater Mekong Sub-region's Economic Corridor supported by the Asian Development Bank (ADB).¹⁾ Upland swidden and fallow forests in this region are rapidly being converted into commercial agricultural lands as rural farmers become increasingly engaged in cash crop production [Thongmanivong and Fujita 2006]. The study not only assesses changing land use patterns, but also examines different factors that influence stakeholders' decisions on resource use and management.

In order to examine changing patterns of land use, we have applied a spatial analysis in selected districts of Luang Namtha province. Our study also incorporates interviews with key local stakeholders (i.e. district authorities, farmers and investors) on agricultural production and land use. We also analyzed local stakeholders' narratives on land use to understand complex factors that influence their decisions to regulate what each stakeholder perceived to be external resource users or "others,"²⁾ while justifying ones own cause for claiming land, and expanding commercial agricultural land use. Finally, our study examines the effectiveness of the government's resource management policy that aims to regulate deforestation in the uplands.

II Research Site and Method

II.1 *Research Site*

Luang Namtha province lies northwest of Laos bordering China and Burma. It's landscape is predominantly mountainous with elevation ranging between 560 to 2,094 m above sea level. The average

1) ADB supports development of Economic Corridors across the Greater Mekong Sub-region, which only includes countries of mainland Southeast Asia and Yunnan Province of China. Three main corridors include North-South, East-West and Southern, while there are numbers of road projects within each proposed corridor (See <http://www.adb.org/GMS/>). See also Thomas Fuller's article on the implications of the road on regional economies in the New York Times (21 March 2008).

The current research is part of a regional multidisciplinary project funded by the National Science Foundation, and carried out by researchers from the Chiang Mai University of Thailand, the Kunming Institute of Botany of China (Yunnan province), the National University of Laos, the World Agroforestry Centre (ICRAF Chiang Mai) and the East West Center (Honolulu, Hawai'i, U.S.A.). The overall goal of the regional research project is to understand dynamic patterns and drivers of land use and livelihood change across the Mountainous Mainland Southeast Asia (MMSEA). A group of researchers from the Faculty of Forestry of the National University of Laos and the Environmental Program of the East West Center jointly conducted the current study.

2) Often villagers used Lao words like *kachao* and *phum* which is referred to as "them" to distinguish "others" from the villagers themselves or *hao* or *peuak hao* which refers to "us."

annual rainfall is 1,340 mm/year reaching a maximum of 1,800 mm during the rainy season (between April and September). We selected Sing and Viengphoukha districts for our study considering the historical significance of the region as a crossroads for trade, and its mountainous landscape traditionally dominated by forest and upland swidden farming (Fig. 1).

Sing district borders present day Xishuangbanna prefecture of Yunnan province and Burma. Sing district was historically known as a principality³⁾ of *Xieng Kheng* (which later changed its name to *Muang Sing*) that stretched along the Mekong River and was ruled by ethnic Tai Lue people [Grabowsky 1999]. Yunnanese traders caravanned through *Muang Sing* to and from China, Burma and Siam. Izikowitz [2001], a Swedish ethnographer that reached *Muang Sing* in 1937 illustrated colourful and lively local markets in *Muang Sing* filled with people of different ethnic groups. While the region prospered from trade during the colonial period, trade and livelihoods were disrupted during the Indochina wars, as it became a major battlefield [Mirsky and Stonefield 1970]. Viengphoukha also played an important role in pre-colonial trade as the Yunnanese caravan travelled to and from China and Siam [Walker 1999].

The trade through Viengphoukha and Sing districts persisted during the French colonial administration much to its dismay, and continued until the late 1940s when the Communist took over China and restricted cross border trade. In the period that followed, the Indochina war decimated the population of the region and inhibited regional trade with Thailand.⁴⁾ After 1975 when Laos became a socialist country, the region was repopulated. However, regional trade was inhibited due to mounting political tension between Laos, China and Thailand. In 1990, Luang Namtha regained political and economic significance as regional political tensions with neighbouring countries relaxed. The mining and tourism sectors grew as the road networks improved and regional borders were reopened in the early 1990s. Chinese investments in agriculture especially sugarcane and rubber also increased, accelerating conversion of upland swidden and fallow into permanent agricultural land. Concurrently, international and bilateral agencies' supported food security and livelihood improvement programmes in the uplands in an effort to promote sustainable resource management.

II.2 *Research Method*

In order to understand the land use and livelihood changes in northern Laos, the current study incorporates different methods. Spatial analysis was used to assess forest and agricultural land use change in the study sites. Time series satellite images of two districts were analyzed by using a supervised

3) Region ruled by Tai Lue (a branch of Tai-Kadai ethnolinguistic group) prince.

4) According to Evrard and Goudineau [2004], more than 50 percent of the population in Luang Namtha was displaced during the period between 1960s and 1970s.



Fig. 1 Map of Northwest Laos and Research Site (Sing and Viengphoukha Districts)

Source: by Phanvilay

classification method. Based on the interpretation of satellite images and observations in the field, we classified land use into five main categories, which include dense forest, secondary forest, grass and shrub, upland agricultural land, and lowland agricultural land (see Table 1 and Appendix for definition of land use categories).

From the spatial analysis, we can identify land use change patterns such as deforestation, and expansion of agricultural land use in two districts. The results of our spatial analysis were compared with information on agricultural production collected in each district. We also interviewed staff at the District Agriculture and Forestry Office (DAFO)⁵⁾ and villagers in the district to understand the causes of land use changes and resource management practices.

Information from 1995 and 2005 Population Census was also spatially analyzed in the current study

5) In August 2005 District Agriculture and Forestry Office (DAFO) was renamed as District Agriculture and Forestry Extension Office (DAFEO) and placed under the supervision of Provincial Agriculture and Forestry Service Centre (PAFESC) to emphasize its role as a provider of extension services. In 2008 PAFESC was reorganized as a division within the Provincial Agricultural and Forestry Office (PAFO). In 2009, DAFEO reverted back to DAFO. In the current paper, we will use DAFO to refer to this line agency of the Ministry of Agriculture and Forestry at district level.

to understand the movement of villages, and distribution of population in two districts over a decade. This allows us to assess areas of population concentration, as well as the mobility of ethnic groups and villages. In order to understand the reasons for population movement in each district, we interviewed local stakeholders including district administrative offices (i.e. District Planning Office, DAFO) and village organizations (i.e. village leaders, village elders).

We also analyzed the narratives of stakeholders in the current study to understand factors that affected their decisions on land use, and actions that they took which influenced the existing land and resource management practice. We interviewed local stakeholders including local government authorities and the development agency (German Technical Cooperation Agency, GTZ), as well as private investors and local farmers to understand their perceptions and reasons for land use change. The narratives of different stakeholders are analyzed in order to examine the effectiveness of government policies that aim to control upland shifting cultivation.

III Land Use and Demographic Changes

III.1 Land Use Change

From the spatial analysis of satellite images, land use change in the study districts are summarized in Table 1. Analysis indicates a greater loss of dense forest area in Sing district from 60 to 40 percent between 1991 and 2004, compared with a less dramatic decline of dense forest in Viengphoukha, which remains at approximately 70 percent of land area. Steady decline of primary forest area in Sing district is replaced by expansion of secondary forest and upland agricultural land. Upland agricultural land in particular has increased from three to seven percent in Sing district between 2000 and 2004. In contrast, both dense and secondary forest declined in Viengphoukha while grass and shrub area increased significantly. During our fieldwork, we found that areas classified as grass and shrub included areas of

Table 1 Landcover and Land Use Changes in Sing and Viengphoukha Districts

Land Use Categories*	Sing			Viengphoukha	
	1991	2000	2004	1997	2007
Dense forest	60%	52%	42%	74%	69%
Secondary forest	23%	36%	35%	21%	12%
Grass and shrub	8%	2%	5%	3%	15%
Upland agriculture	3%	3%	7%	2%	3%
Lowland agriculture	7%	8%	11%	1%	1%

Source: Based on spatial analysis using data from Landsat TM [2007]

Note: * See appendix for definition of each categories.

newly established rubber field suggesting a landscape in transition: from a landscape dominated by forest and long fallow cycle swidden landscape to intensive monoculture.

The results of the spatial analysis questions the effectiveness of government policies during the 1990s that aimed to control deforestation, especially efforts to regulate expansion of shifting cultivation in the upland areas. Provincial and district agriculture and forestry offices led programmes that delineated state conservation forests throughout the 1990s with the support of international donors [See also Fujita and Phengsopha 2008]. Land and Forest Allocation (LFA) policy was among these policies that developed during the early 1990s, and was implemented throughout the 1990s to delineate village boundary and promote forest conservation at the village level.⁶⁾ While LFA recognized the customary rights of villagers to access and manage resources, the main goal of the policy was to increase forest conservation by restricting villagers' access to upland swidden fields and fallow forests by converting these lands into different categories of conservation forests.

In both districts, DAFO led the delineation of resource boundaries in villages throughout the 1990s and the early 2000s. It also collaborated with provincial agricultural offices to manage national conservation forest including the Nam Ha National Biodiversity Conservation Area (NBCA), as well as areas designated as provincial conservation forests.⁷⁾ However, as Table 1 suggests, that the implementation of policies such as LFA and the introduction of national and provincial forest areas, were far from protecting or increasing dense forest areas.

In contrast to the results from the spatial analysis, agricultural statistics of Luang Namtha province indicate an overall decline of upland rice production area from over 14,000 ha to 6,000 ha between 1990 and 2005 [MAF 2006]. District statistics in Sing district also show a dramatic decline of upland rice production area from over 1,500 ha to 500 ha between 1999 and 2005 [DAFO 2005]. While there is political pressure upon local government agencies to minimize the area of shifting cultivation, we also learnt during the field interviews that an increasing numbers of farmers were converting swidden and fallow forests into permanent agricultural land. In Sing district, farmers converted swidden and fallow forests especially along the road into sugarcane and rubber plantations. In Viengphoukha, farmers are increasingly clearing fallow forests into agarwood and rubber plantations.

The conversion of swidden and fallow forests into permanent agricultural land began early in Sing district, as the formal opening of the regional border with China brought investors from China who

6) LFA is led by local authorities such as DAFO. There is numerous literature which discusses problems of LFA including Vandergeest [2003]; Evrard and Goudineau [2004]; Ducourtieux *et al.* [2005]; Fujita and Phanvilay [2008]; Fujita and Phengsopha [2008].

7) Nam Ha NBCA particularly became a model for eco-tourism, as it provided economic benefits to local communities as well as to the local government in order to maintain forest conservation [Schipani 2007].

provided inputs for local farmers. Land conversion was especially prominent in areas along the road. An increasing number of farmers began to cultivate rubber since 2000, as groups of pioneer farmers that planted rubber during the early 1990s began to sell dried latex to Chinese traders and make profits given the appreciating price of rubber. By 2003, local authorities including the DAFO and District Planning Office (DPO) in Sing District expressed the view that the widespread expansion of rubber, and clearance of forest areas in the upland region, especially along the road, was “out of control.”

In Viengphoukha, the conversion of upland swidden and fallow forests into permanent agricultural land is still a new phenomenon. However, since the mid 2000, an increasing numbers of investors from outside of the district are approaching provincial and district authorities to seek land concessions and opportunities to engage local villagers into contract farming. The influx of new agricultural investment in Viengphoukha in the last few years has resulted in the rapid clearance of old fallow forests into permanent agricultural land. Encroachment and clearing of forest is also becoming a critical issue in Nam Ha NBCA [Schipani 2007].

III.2 *Demographic Change*

Based on the 2005 Population Census, the total population in Sing district and Viengphoukha is 30,548 and 18,800 respectively. The average annual growth rate of the population between 1995 and 2005 in two districts was 3.6 and 5.3 percent respectively, higher than the national average of 2.3 percent [NSC 1995; 2005]. Fig. 2 spatially represents census data from two districts to understand demographic changes. We crosschecked village names with local authorities and corrected locations during the fieldwork. In both districts, population became highly concentrated along the road over time.

Table 2 also shows that the number of registered villages declined in the two districts between the two census periods. The decline of villages are due to both government policy encouraging relocation, and due to spontaneous relocation. During the 1990s, the government encouraged the consolidation (*kan taohom*) of small upland communities to areas along the road where district government can provide public services such as schools and health care. The effort was often supported both directly and indirectly by international donors to develop “focal sites” for rural development [Baird and Shoemaker 2007]. Both Table 2 and Fig. 3 indicate that consolidation particularly affected upland minority villages: Akha people in Sing district, and Khmu people in Viengphoukha.

Although we observe “consolidation” of upland villages and the relocation of upland communities to areas along the road, Cohen [2000] claims that in Sing district, the district governor abandoned plans to relocate upland communities in the mid 1990s. This was based on considerations to curtail any emerging ethnic tensions over access to resources in the lowland and its periphery where productive

Table 2 Numbers of Villages by Ethnicity

Sing			Viengphoukha		
Ethnic Groups	1995	2005	Ethnic Groups	1995	2005
Tai Lu, Nua, Dam	28	25	Tai Lu, Yang	3	3
Khmu	1	1	Khmu	44	26
Akha	69	55	Akha, Kui	7	9
Hmong, Mien	9	9	Hmong	2	2
Mix	3	4	Mix	9	6
Total	110	94	Total	65	46

Source: Based on National Census of 1995 and 2005

agricultural land was increasingly becoming scarce. Representatives from DAFO also confirmed during the interview that the “district no longer supported relocation” since 2000 but that the problem persisted: “more (upland) people wanted to come down.” This indicated that movement of the upland population was not only directly influenced by the government’s consolidation policy but triggered due to the emerging economic opportunities especially in areas with road access.⁸⁾

In their studies, Evrard and Goudineau [2004] as well as Vandergeest [2003] claim that more recent cases of displacement in Laos are being induced by development projects and government policies. For example, policies that restrict upland farmers’ access to agricultural land, such as LFA, have led to shorter periods of fallow and loss of agricultural productivity [Lestrelin and Giordano 2007]. As a result, farmers are forced to seek new economic opportunities for family survival including the option of relocation [Vandergeest 2003]. Cohen [2000] and Lyttleton *et al.* [2004] claim that government policies regulating shifting cultivation and opium production in Sing district led many upland Akha people to become more dependent on agricultural wage labour outside of their own villages. Based on our fieldwork, we also found that government policies pressured households to adapt their land and resource use practices. However, at the same time household responses to political and economic pressures were variable. Households with capital and social assets adopted new agricultural practices (i.e. lowland paddy rice cultivation) and commercial crops (i.e. rubber, sugarcane). Their adaptation to emerging economic opportunities involves early migration to new territory, as well as the transformation of old swidden and fallow fields into permanent agricultural land, excluding “other” users. On the other hand, households with less capital and social assets are becoming dependent on wage labour and economic opportunities outside of their villages while losing access to communal land and resources [See also Thongmanivong and Vongvisouk 2006].

8) Based on interviews with villagers, as well as personal communications with staffs from GTZ, and DAFO.

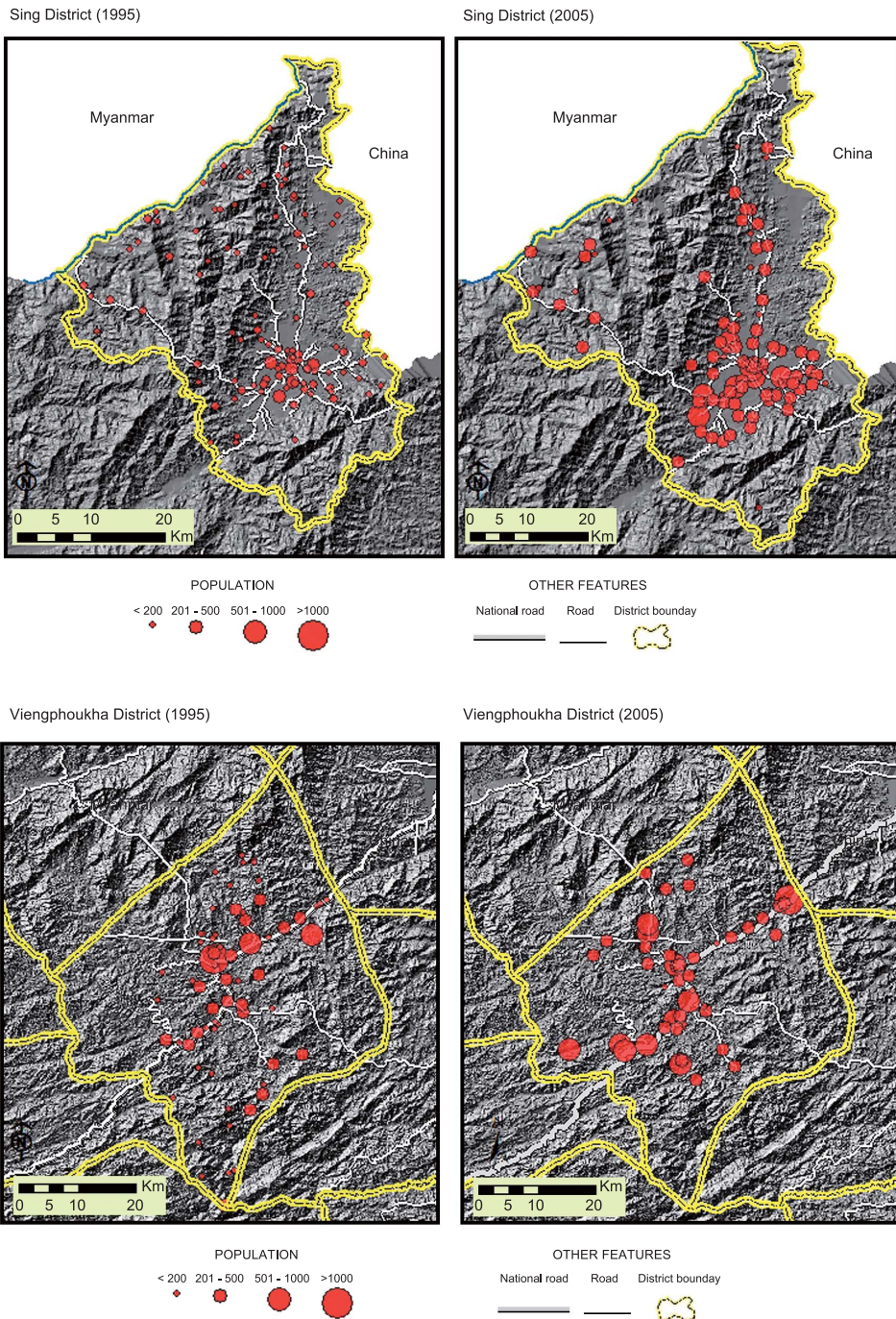


Fig. 2 Population Distribution in Sing and Viengphoukha (1995–2005)

Source: Based on National Census of 1995 and 2005

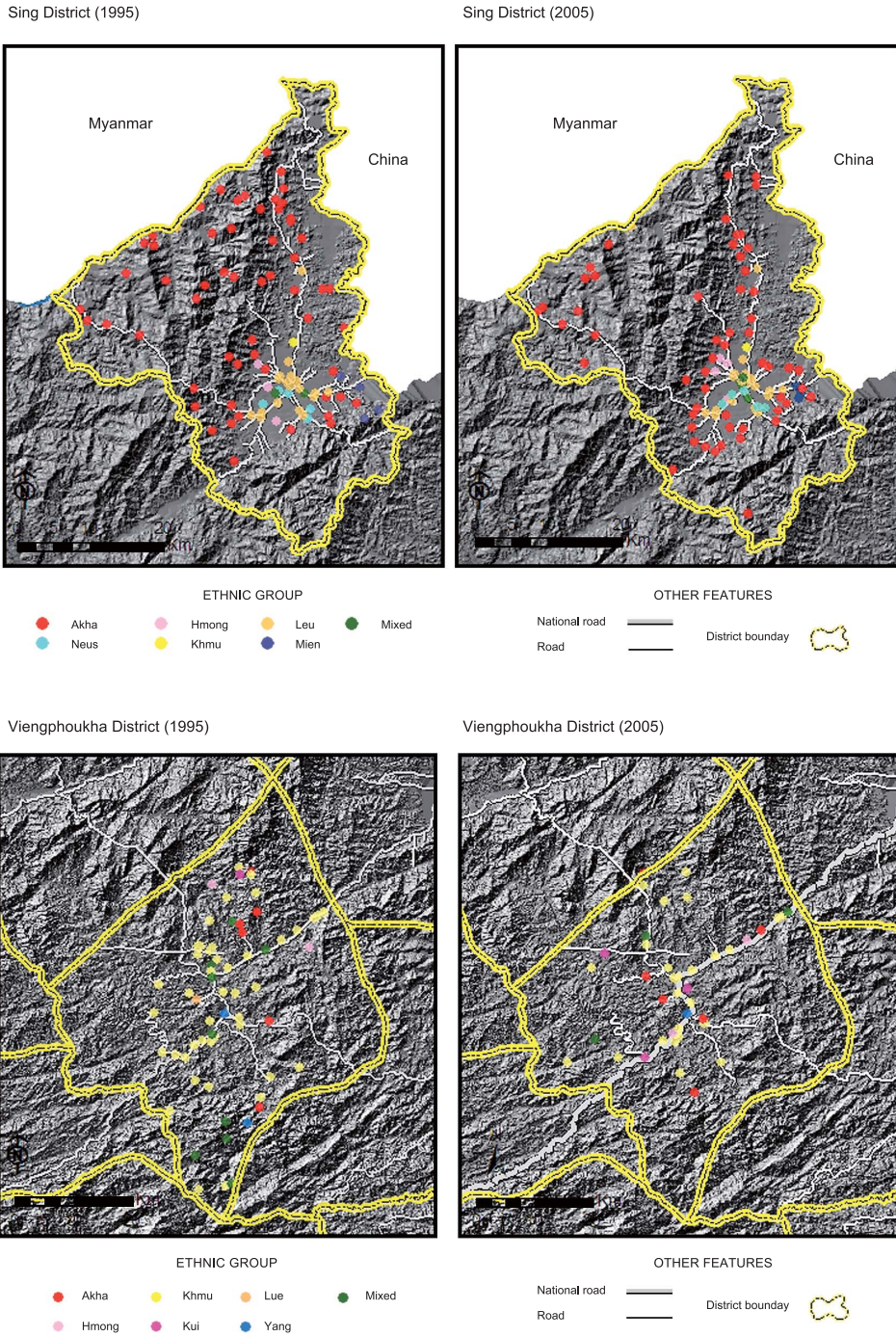


Fig. 3 Ethnic Distribution in Sing and Viengphoukha District (1995–2005)
 Source: Based on National Census of 1995 and 2005

IV Narratives of Stakeholders

In this section, we examine the narratives of local farmers in Sing district to understand the causes of land use and livelihood change. We also examine the narratives of investors that support the expansion of rubber cultivation in Sing district, as well as the narratives of local authorities on development and management of resources in the upland region.

IV.1 *Farmers*

The first Akha farmers that planted rubber in Sing district included a village leader and his family from a village located in Mom sub-district along the national border with China. The family's biggest motivation for planting rubber was its profitability. Since the opening of the border with China, it became easier for villagers to visit their relatives on the other side of the border. "Our relatives in China were poor like us before. Now they are rich because they plant rubber. They live in a nice house, they have motorcycles."⁹⁾ Village leader's family already accumulated wealth from livestock and sugarcane. Village leader considered rubber as a long-term investment for his family.¹⁰⁾ He was the first in his village to claim and convert areas of swidden and fallow land into a rubber field. He was also the first to convert areas of sacred forest into smallholder rubber. He claims "people used to be afraid of spirits in the past, but now the spirits are afraid of people," indicating a change in customary rule for managing sacred forest.

In a neighbouring lowland Lu village, villagers also began to cross the border into China when the road was improved in the early 1990s. Starting in the same period, villagers also began to cultivate sugarcane for a Chinese sugar factory. They used old swidden and fallow fields surrounding their village, as this was the customary territory of the village. It was traditionally reserved as an agricultural land during difficult times, especially when the yield from rice paddy was low. It was also a communal resource where villagers collected forest products, and grazed cattle. Access for this land by other villagers were loosely recognized until 2000 when the villagers began to cultivate rubber. By then the population in the areas surrounding the village also became denser as upland Akha people relocated to the area. Although the newly introduced LFA defined village boundaries, demand for agricultural land grew and pressures on forest areas increased as the farmers' production shifted from subsistence-based

9) Akha or Hani farmers on the other side of the border in Xishuangbanna prefecture in China began to plant rubber during the mid 1980s (1982–85) after the Chinese government allocated agricultural lands to households for smallholder production of rubber. See also Chapman [1991] and Sturgeon [2004].

10) Sugarcane was considered as less of a long-term investment, as it required capital for replanting every three to five years.

to market-based agricultural production system focused on crops such as rubber. Furthermore, pressure on forest areas was aggravated as the provincial governor of Luang Namtha granted rights to local military unit to clear forests in the village along the Chinese border to plant rubber, encroaching into the village conservation forest. This created resentment and anxiety among the villagers and accelerated their efforts to make claims to existing land prior to “others,” including neighbouring villagers and state agencies.

According to a representative of DAFO in Sing district, incidences of encroachment, and overlapping claims to agricultural land became rampant from 2000, as increasing numbers of farmers began to engage in commercial farming. “Most of the villages in our district now plant rubber.” DAFO was one of the district authorities where village leaders reported complaints of “others” encroaching into their village territory. This notion of “others” often included neighbouring villagers that encroached into one’s village, as well as state agencies such as the local military unit, as well as relatives and traders from China, and local politicians that supported few villagers to plant rubber. Increased competition over resources caused conflicts among villagers and “others.” The competition was not only externally induced. In some of the villages, farmers reported incidences where young seedlings were stolen from the fields by village members indicating a persisting conflict within the village.

IV.2 *Investors*

Since 2000, there are a total of 16 Chinese and four Lao companies registered to promote rubber plantations in Luang Namtha [PCIP 2008]. The majority of these investors registered officially after 2005. Chinese investors promoting rubber favour Luang Namtha for its proximity to Xishuangbanna and its similar climatic and environmental setting. Many of the investors from China that officially registered their business in Luang Namtha also justified their cause claiming that land is abundant and “under utilized” in northern Laos, and that rubber would bring “development and progress” to the region and alleviate the backward ethnic minorities from rural poverty. Other Chinese investors emphasized the importance of rubber as “an alternative to opium production” and that their investment will help to “industrialize” the agricultural sector in Laos. Chinese investors also claimed that they were equipped with “experience,” and “scientific knowledge” to promote rubber in Laos. These positions and perspectives taken by Chinese investors reflect politicized motivation of their investment activities in Laos. There is also an economic motivation for investment in Laos, as one Chinese investor claims, “it is cheaper to set up a rubber plantation in Laos compared to China.” This is due to a lower cost of labour and land in Laos.

On the other hand, numerous other small-scale investments operate locally without official regis-

tration [See also Shi 2008]. For instance, an owner of a small agriculture trading company based in Sing district is an ethnic Han born in China near the Lao border. He moved to Sing district in the late 1980s and started a small furniture business. He then built a guesthouse catering to Chinese business persons and labourers in the early 1990s as the regional border was re-opened for trade. As he made connections with representatives of the State Seed Company in Xishuangbanna, he began to sell agricultural inputs supplied through the State Seed Company to local farmers in Laos. He provided high-yielding rice varieties and vegetable seeds as well as other inputs such as fertilizers and pesticides to Lao farmers on credit. The trader then purchased products after harvest and sold them in China.

In the late 1990s, the trader began to invest in rubber. His company first rented land from local farmers in Sing district and produced rubber seedlings. Then, the company approached local farmers that wanted to plant rubber, and offered to provide inputs and a service to plant rubber for them in exchange for sharing 50 percent of planted trees on farmers' land. He explained his operation as such that "villagers kept their land and trees while I maintained my share of trees." This arrangement allowed the trader to maintain rubber with his own company workers. In other words, the Chinese trader did not have legal access to rubber fields but by negotiating directly with local farmers he gained *de facto* access to land. The arrangement is beneficial for the Chinese trader from three main perspectives. First, he gained access to land without formal land registration. Secondly, his company can manage plantation with skilled labour from China and maintain productivity of rubber trees, ensuring a steady supply of latex. Thirdly, by directly negotiating and agreeing on the terms and conditions of investment with villagers, his company did not register their new investment activities. Instead, local villagers reported rubber planting as their own agricultural investment to DAFO.

Such small-scale investment practice is not only limited to the Chinese. Similarly, relatively well-off local individuals in Laos are acquiring land outside of their own village to plant rubber. In one Lu village, an entrepreneurial farmer provides inputs on credit to Akha farmers in a neighbouring village. In return, Akha farmers agreed with the Lu farmer-investor to share 50 percent of their profits from sales of latex. However, many Akha farmers lost their rubber trees prior to tapping as they continued to borrow money and rice on credit from the Lu villager-investor. The accumulating debt is settled by giving away the right to own the rubber trees. As the Akha farmers gave their rights away, the Lu investor regained access to upland agricultural land, which was once part of his village but was allocated to Akha migrants during the 1990s following the LFA. Although the land still officially belonged to Akha farmers, the rubber trees belonged to the Lu investor giving him *de facto* tenure to land. The Lu investor says that he needs to "train and hire Akha people" when the tapping begins.

The narratives of small-scale investments in Sing district indicate a high success of informal invest-

ment arrangement to set up a rubber plantation involving local traders and farmers. Officially registered investors on the other hand are struggling with local bureaucracy to find land and setting up their activities in Luang Namtha. A representative of a registered Chinese company based in Sing district is frustrated with the reluctance of district authorities to assist his company's investment project through the Provincial Committee Investment and Planning (PCIP) after it was approved by the provincial governor. The company registered investment activity to plant rubber and develop a processing factory in the northern areas of Sing district. According to the representative of the company, delay is largely caused by DAFO, which is authorized to identify 500 ha of land for the company to promote contract farming with local farmers. The representative of the company complained about the frequent "changes" and "lack of consistency" in government policy in Laos.

IV.3 *Local Policy Makers*

As part of the national effort to decentralize the decision-making process, and to expedite screening process, PCIP is authorized to screen investment under a million US dollar and seek approval from the provincial governor. In Luang Namtha, the governor encourages foreign investment, but he declared in 2005 that rubber should not be promoted as a concession but instead involve farmers without taking away their rights to land. Following the governor's decision, PCIP also encouraged smallholder rubber investment in Luang Namtha. Representatives of PCIP consider that smallholder rubber can create economic opportunities for rural households and alleviate poverty. However, under the current process of screening and approving investment proposals, neither the availability nor suitability of land for rubber is fully considered by a joint investment committee led by PCIP prior to the investment approval. There is hardly any consideration on whether local farmers are willing to participate in the proposed investment activity. Instead, PCIP authorizes PAFO and DAFO to define the land area for investors after the governor approves investment proposal.

Luang Namtha's PAFO supports rubber as one of the potential cash crops that farmers can introduce to their upland agricultural system in order to minimize their dependence on shifting cultivation. Both PAFO and DAFO take a position that shifting cultivation (*tang pa het hai*) is a cause of deforestation. However, foresters at PAFO that led forest conservation activities and LFA in the province during the 1990s are concerned about the increasing conflicts over land, particularly as interest in rubber became widespread. "In the past, land was abundant and cheap, people traded and transferred (land) without payment. Now with increased interest in rubber, the land value has increased. Poor households are often disadvantaged in making claims to land. Communal land areas are lost." This suggested a breakdown of communal resource management practices due to changing livelihood and agricultural system

in rural communities. Members of PAFO felt that the encroachment into conservation forests was threatening the management framework introduced during the 1990s. Members of PAFO especially emphasized the need for the “scientific assessment considering the suitability for rubber” prior to the investment decision and reconsidering the existing resource management framework including LFA to accommodate the growing demand for agricultural land use. This implied a criticism of current investment approval process that disregarded the existing resource management framework.

At the district level, DAFO is faced with mounting pressures to resolve conflicts over access to land and resources as investors and government agencies demand land and labour for rubber, and also at the same time as local villagers and small-scale investors clear upland forests for rubber. The widespread interest in rubber among multiple stakeholders makes it difficult for members of DAFO to mediate and resolve conflicts effectively using the existing resource management framework. The premise of existing resource management framework, such as LFA assumes a subsistence livelihood basis of upland farmers, and prioritizes forest conservation. It has not adapted quickly to accommodate to the growing demand for agricultural land use. Furthermore, a lack of clear legal tenure for customary land further resulted in open-access resource problems compounded by a rising numbers of people accessing resources and a high demand for agricultural commodities such as rubber.

V Conclusion

Our case study in northwest Laos indicates an increasing expansion of upland agricultural land at the expense of forest loss and degradation. The conversion of swidden and fallow forest into commercial agricultural land is especially rampant in areas along the road where population is concentrated. In both Sing and Viengphoukha, ethnic minority groups such as Akha and Khmu whose livelihood once was dependent on upland agricultural system are significantly affected by this change. The movement of population is not only due to government policy to consolidate rural villages, but also a combination of responses to government policies that regulate upland farmers’ access to land and resources (induced migration), and a response to new economic opportunities (spontaneous migration).

As our study showed, tracts of old upland swidden and fallow forests that were classified as conservation forest during the 1990s are especially under pressure of being converted into rubber plantations. The limited capacity of local agencies including PAFO and DAFO, as well as village communities, to regulate overlapping claims to resources means that clearing and planting rubber is a direct means to exclude “others” and justify one’s own claim to land. As we have seen in the narratives of farmers and investors, the planting of rubber, a long-term crop is often a direct way of acquiring exclu-

sive rights to land regardless of the ambiguous legal status of land ownership. The expansion of rubber thus, commoditizes the upland swidden and fallow forests, which had been a part of the customary resources of the past. This not only magnifies the weakness of current resource management institutions such as LFA by questioning its basic assumption and premises, but also leads to a break down of communal resource use and management practices.

Farmers' narratives provide an insight into factors that influenced their decision to introduce new commercial crops like rubber in their upland agricultural system. Many farmers were influenced through knowledge about rubber conveyed through their sometimes transboundary social networks more so than through the government extension programs. The success of farmers in China and in Laos that adopted rubber earlier stirred farmers' interest in the new crop. Information about the increasing price of rubber also attracted upland farmers that were already growing sugarcane on swidden and fallow lands. Regardless of the drop in the price of rubber during 2007 and 2008, farmers continue to indicate an interest in rubber as a long-term investment. As we have seen in the narratives of farmers, some are anxious of losing access to land and potential economic opportunities to "others." The breakdown of resource management framework also implies that planting rubber is a means to secure one's claim to land. The narratives of investors also highlight different ways in which investors approach local farmers in order to access land. Our study highlights that small-scale investors based on existing family and business ties are more successful in making claims to land and operating their investment as they directly negotiate with farmers.

Our study also elucidates the presence of pioneer farmers, or farmers that are able to quickly transform their existing asset such as livestock, or profit from other commercial crops (i.e. sugarcane, maize, watermelon, etc.) in order to capture emerging economic opportunities. By planting a long-term crop like rubber on swidden and fallow forests, which had been a communal resource but is now becoming an open-access resource, pioneer farmers legitimize their claims to land, while excluding other resource users. Competition for agricultural land is increasingly intensifying in our case study site, especially as farmers find different ways to work with investors. Other than formal contract farming, there are other small-scale investors including relatives, and local traders, wealthy local individuals and politician that provide inputs for farmers quickly and more flexibly based on informal arrangements.

Finally, our study suggests the need to consider the effects of the market economy on different groups of households. While there are farmers that can quickly mobilize assets and adapt their production system to the market economy, others are losing their land-based assets and becoming increasingly dependent on wage-labour. Widespread conversion of swidden and fallow forests into rubber particularly affects the latter group of farmers, as buffer resources from swidden and fallow forests for

food and income are lost. Another pressing issue for the latter group of farmers is the limited livelihood option as they begin to lose access to land and resources, forcing them to relocate as the only option for their survival.

Appendix

Definition of land use classification categories

Dense forest	Land cover dominated by trees and has crown cover density of 20 percent or higher. Trees have DBH (Diameter, Breast, and Height) measurement of more than 10 cm and height is more than 10 m tall. These land cover are usually classified as protection forest, conservation forest and are found on steep terrain that are difficult to access.
Secondary forest	No presence of large trees but mostly dominated by bamboo. Trees have DBH of less than 10 cm and are shorter than 10 m. Most of this area is old swidden fallow forests. This category is found throughout the district, and often is adjacent to active swidden fields.
Grass and shrub	This type of land cover is often a young fallow field where the vegetation is predominantly bushes and grass. However, in some instances this includes recently established rubber plantations.
Upland agriculture	All agricultural lands with slopes greater than 8 percent. This includes active shifting cultivation area, and areas that were newly cleared for agricultural purpose (i.e. rubber, sugarcane production).
Lowland agriculture	All agricultural lands with slope equal to or less than 8 percent. This category is mainly lowland paddy field, pasture for cattle grazing and other clear lands.

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