

## Land tenure and natural resource management in northern Thailand—A case study from a Hmong village

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### Abstract

The Hmong of Mae Sa Mai established an administration system which coexists with traditional Hmong social structures and is oriented on the Thai administration system. Although the farmers are not able to get legal land titles they recognise local land ownership and use rights. They are practising a strongly cash oriented agricultural system nowadays. They are able to manage water resources themselves, though community irrigation schemes have not been established. Some villagers show strong interest in forest conservation and are engaged in reforestation activities. Opting for forest conservation, though, seems to be a strategy to deal with governmental agencies to ensure the village location in the national park.

**Keywords:** natural resource management; Hmong; northern Thailand

### Introduction

Global concern about environmental issues has been rising since the late 1960s. In the industrialised countries the growth of awareness has made environmental issues an active element of national policy. In the developing countries the focus lately has been on the role in providing natural resources for production as they rely predominantly on agricultural production. Nevertheless the necessity of development has been recognised lately. Therefore integrated approaches in land resource issues including conservation, management and development were initialised (Young, 1998).

Thailand, like the other bordering countries has a large proportion of inhabitants not being ethnic Thai people but ethnic minorities living in the north and south of the country. They are differentiated by language, culture and history. They account to more than 750,000 people (Tribal Research Institute, 1998). Most of the ethnic minorities live in northern Thailand and, as they used to settle on the lower and upper slopes of the mountains, are called "hill tribes", though they are not tribes, but ethnic groups. In this study the term ethnic group refers to those living in the mountainous areas of northern Thailand. Generally speaking, ethnic groups used to practise different forms of shifting cultivation, which require relocation of the settlement and clearing forest to produce new swiddens from time to time. Due to this practise they have been blamed for forest destruction.

Conflicts over agricultural land, water and forest resources, which all together are treated as natural resources, are one of the biggest problems in northern Thailand. Whereas conflicts about land and forest arise between administrating agencies such as the Royal Forest Department and the ethnic group farmers, water use conflicts occur between the "forest dwellers" and lowland farmers (Thailand Development Research Institute, 1994). Changes in governmental policies towards more power over forest land led to conflicts over natural resources. Resource scarcity caused by high land pressure is only a minor factor that enforces

these conflicts lately. A special situation arises because ethnic groups occupy national forest reserves including protected areas illegally or do not have access to legal titles as they are not Thai citizens. Concerning resource management 'it is becoming increasingly recognized that active participation of stakeholders in resource management at the local level is essential' (Wallace et al., 1998:83), whereas government agencies try to regulate resource allocation and management through policies and laws.

A village of one of the ethnic minorities, the Hmong, and the surrounding subcatchment were selected as a study site. The village of Mae Sa Mai is located about 35 km north of Chiang Mai in the Mae Sa Noi subcatchment. The aim of the study is to investigate the current state of land tenure and the management of natural resources land, forest and water under the influences of social structures.

### **Methodology**

The qualitative information about the village structure and framework were gained using participatory methods such as transect, wealth ranking and village history formulation. Quantitative data on the topic was collected by using a standardised questionnaire in a classical one-person interview. The Questionnaire is divided into six sections, each covering a separate part of the topic. The sections were (A) household data, (B) social relations, (C) land ownership, (D) agriculture, (E) water management and (F) conservation of natural resources. The sample size included one third of all households in the village. From the village headman a list of all households was obtained. Information about the approximate size of agricultural land and a wealth ranking was obtained from the village committee. The 186 households were divided into two groups according to wealth ranking and agricultural land size per household-member. Thirty households in each group were selected randomly to be included in the study.

### **Description of the study area**

#### Geography and climate

The Mae Sa Noi subcatchment area lies on the northern slopes of Doi Suthep-Pui mountain and builds a side valley of the Mae Sa River. The area covers altitudes between 700 and 1400 m above sea level. As for all mountainous regions of Northern Thailand there are three seasons. The rainy season lasts from April to October. The dry season can be divided into two phases, the cold season between October and January and the hot season lasting from February to April. The average annual rainfall is 1287.9 mm but high variations occur from year to year (Department of agriculture, Mae Rim, 1997).

#### Household economy

Besides the role of a household as social unit, the household is the functional economic unit of agricultural production (Cooper, 1984). Therefore the single household is the unit of all investigations made. The village is built of 186 households and has 1,537 inhabitants, whereof 809 are male and 728 are female. The average household consists of 1.8 families and 9.1 persons. It is composed of 1 to 5 families, or 1 to 20 persons.

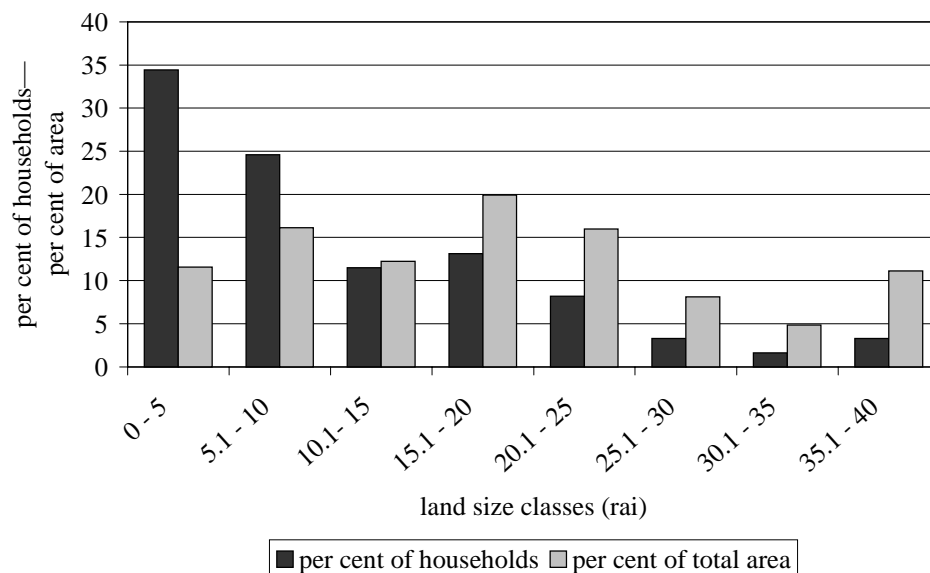
Evidence from the study shows that farming is no longer the main source of income for most of the interviewed households. Figure 1 shows that 41 per cent of the interviewed households still do not have any permanent extra income than farming. Another 41 per cent gain income through trading activities. Labour as a permanent source of income plays only a minor role as only six households fall into this category. However, the actual situation is more complex as villagers are very flexible.

Figure 1. Modes of income



The average farm size is 11.48 rai (1.78 ha) including land in and outside the subcatchment and all types of tenure (standard deviation 9.17). The Figure 2 visualises that more than 30 per cent of the investigated households own only about 12 per cent of the whole investigated area. About 25 per cent of the households use between 5.1 and 10 rai and own about 16 per cent of the total area altogether. The proportion of households is decreasing with higher land classes though proportion of the total area is increasing. The five investigated households (8.2 per cent) with the biggest farming area altogether own almost one quarter of the total area.

Figure 2. Distribution of land



**Land tenure and natural resource management under the influence of social organisations**

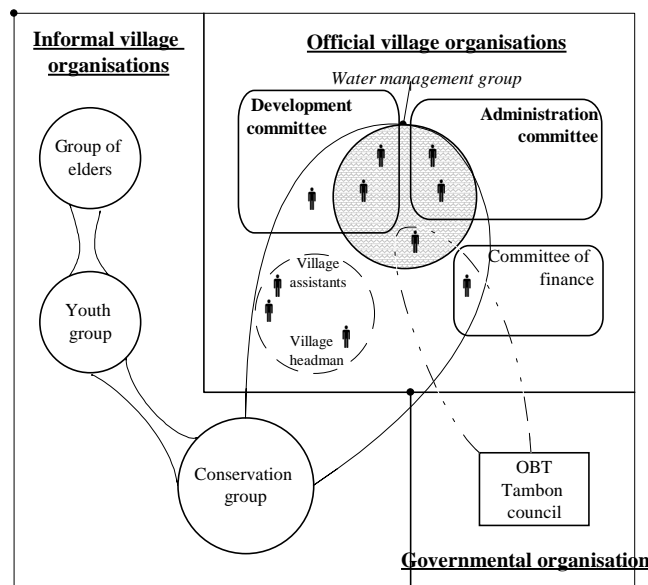
Social structures in Mae Sa Mai

The organisational structures in Mae Sa Mai can be roughly divided in the administrative and official village organisations, the informal village organisations and the influencing governmental agencies.

Since the foundation of Mae Sa Mai a village headman (called *poh luang*) undertook representing duties towards outsiders. Two village assistants support him. Soon after the election of the village headman the village committees constituted. Eight committees exist which are (1) administration, (2) development, (3) security, (4) education and culture, (5) health, (6) social service, (7) finance and (8) housewife. The committees have different duties and a self juridical function. Communication between the committees seems to work out well. The involvement of women in committee work is restricted to the housewife group which was established following governmental instruction. However, the housewife committee is only a forum to promote certain public projects concerning, for example, health issues or to educate the women in craft skills to generate income.

In the question of natural resource management within the village community two committees appear to be most important: the administration and the development committee (compare Figure 3). The development committee aims to improve the situation in the village. The members are especially involved in the field of agriculture, including the settlement of conflicts. The administration committee is concerned with formal tasks. Members have knowledge about all households and are able to carry through resolutions made by the committees. After many conflicts over irrigation water in former years the development and the administration committee formed a water management group. Other groups such as the conservation group and the water management group are responsible for and involved in conservation activities and water management as well. The Figure 3 shows the relations between groups within the village and the relationship of the Tambon (sub district) council members to those groups.

Figure 3. Organisational diagram of Mae Sa Mai

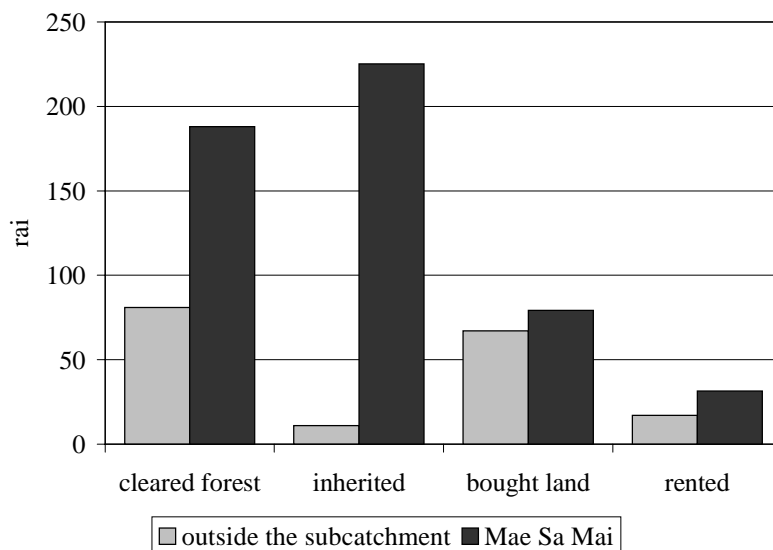


Apart for these there are other groups with certain interests in the village. The youth group members are mostly teenagers who have already finished school but have not married yet. They help in all social events in the village and especially prepare presentations for New Years Celebration. The group of elders is concerned about Hmong culture and wants to give their knowledge to the younger people.

**Land tenure and agricultural land use**

The whole subcatchment area covers 4,878 rai. Almost half of this area (2,408 rai) are considered as “forest and mountain”. 1,875 rai are under agricultural use, the village site and other living area cover about 85 rai and 510 rai are not classified (Agricultural Department, 1997). The subcatchment area is part of the Doi Suthep-Pui National Park which was set up in 1981 under the Royal Forest Department (RFD). Therefore no legal titles are available in general. The northeastern corner now belongs to the Queen Sirikit Botanical Garden, which has been established in 1994. Despite the fact that no legal titles are available, the villagers know individual ownership rights which are not recognised through the government. The local ownership rights enable the owner to mortgage, sell and lend the land to other members of the community (see Figure 4). The two competing tenure systems result in conflicts between village farmers and official organisations. Those are mainly caused by land claims through the Royal Forest Department, Royal Project and Queen Sirikit Botanical Gardens. About one third of the households have once or more often experienced land losses.

Figure 4. Land claim in and outside the subcatchment area



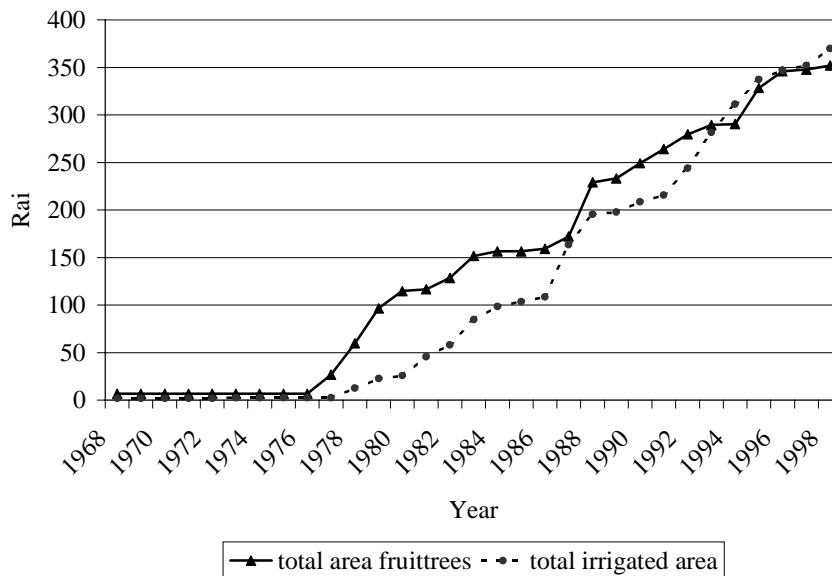
Conflicts over land with other villagers are rare even though land is a scarce resource. Conflicts over the borders of land were one problem and were solved through an equation with the support of the village headman or others not directly involved. The agricultural economy of the village in Mae Sa Noi subcatchment area cannot be seen as independent from other areas. Land tenure outside is quite common and the farmers are active in land markets all over the region. Nineteen of the studied 61 household are using land outside the subcatchment (176 rai), mostly owned by the farmers. The demand of land in the

subcatchment area is much higher than the offer, therefore the farmer tends to look for land outside.

### Agriculture

The total agricultural area under production more than doubled in size between 1974 and 1998. The area of upland rice decreased drastically. On the other hand the production of the so-called fieldcrops, assuming that those are all kind of vegetables and root crops increased dramatically, due to promotion activities of the Royal Project and rising market value of those crops. However, the major changes are set in fruit orchards lay out. The first trees were planted in 1974 but the total area increased to more than 1.100 rai by 1998 (Figure 5). This trend seem to be restricted to lychee as only a very small area is covered by Mango, Chinese Peach or Coffee plantations. The Figure 5 gives an idea about tree planting activities during the past 30 years. From 1977 the total area of planted fruit tree increased steadily with a big jump in the late eighties. Flower growing was promoted by the Royal Project as well but lately given up by most of the farmers because it was too input-intensive (too much pesticide use is necessary) (Tribal Research Centre, 1974).

Figure 5. Increase of irrigated area and fruit tree area since 1968



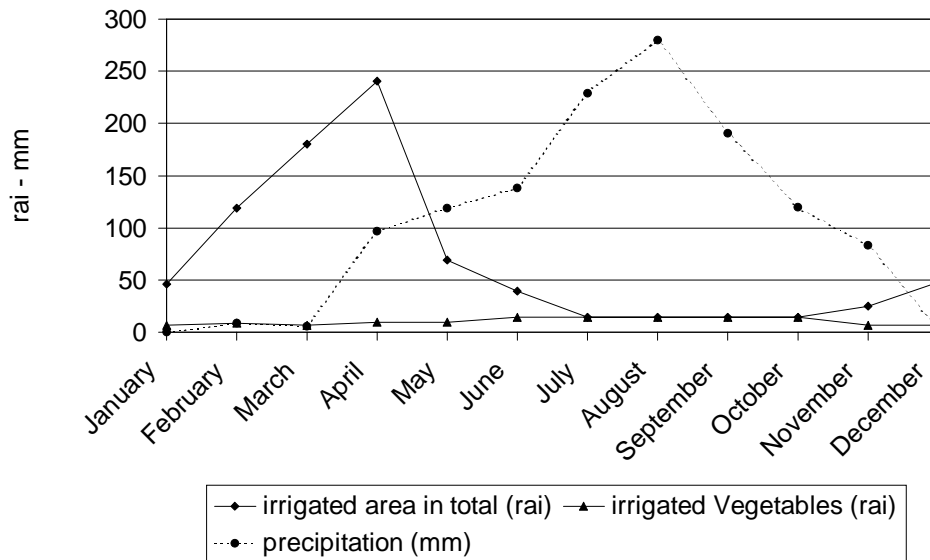
Many factors have to be examined to understand this change rather than a simple model. Land insecurity might only take a minor role in the decision making progress, more important seem to be high market prices and water efficiency. I doubt that conservation thoughts or sustainability questions were taken into account by the farmers at any time. Anyway, it cannot be assumed that fruit orchards have similar watershed functions as forest (Turkelboom, 1996) It has to be taken into account that the kind of ownership has an influence on cropping pattern. It has to be distinguished between tenure and rent. On borrowed land in general only annual crops are grown.

### Water management

The valley is basically formed of the Mae Sa Noi stream that flows into the Mae Sa stream in the same called valley. Several smaller streams form the Mae Sa Noi and some of them are just seasonal streams. No other settlements are sited below the village.

Water for irrigation is used for lychee, the main irrigation period lasting from February to May (see Figure 6). Vegetable production needs an irrigation water supply all year round but takes only a small part of all irrigated area.

Figure 6. Distribution of irrigated area over the seasons



Irrigation systems in the subcatchment area are individual system and no common use water storage facilities are built, neither common canals or pipes are in use. The only exception is the Department of Irrigation pipe, which was built together with a reservoir in 1975. The pipe supports the Royal Project although other farmers may also use it. Anyway, the farmers have no influence on the management of the water in this pipe. Most of the farmers get their water directly from the streams connecting their own pipes. For lychee and vegetable production sprinklers are used, the paddy fields are connected to the watercourse by a channel.

Within the subcatchment area 90 plots do have access to irrigation (79 per cent of the area) including owned and borrowed land, though irrigation on borrowed land hardly occurs. Some of the pipes are laid underground a couple of centimetres deep, some pipes are laid out on surface. The length of a pipe can exceed 1.5 km from the source to the irrigated plot (Graff 1999). Those can be uninstalled during the dry season and are mobile to use somewhere else. Most people tend to have their own pipes but still people share pipes, mainly with relatives (13 plots, whereof two share the pipe with two relatives, 6 share their pipe with three related farmers). During the past decade more people started to build ponds in their plots in order to collect water during night-time and irrigate during daytime. Almost one third of the plots have a pond or share a pond with relatives or other villagers. Problems concerning the irrigation system at present is the ongoing trend to plant lychee, which does not produce any harvest if not irrigated. If young seedlings are dying because of the lack of water, farmers will replant again.

In the past conflicts between upstream and downstream users of water arose on a regular base. Those holding land titles were arguing that they have the more evident right to use water, as

they are legal owners<sup>1</sup>. Wealthier farmers are able to connect their pipes from further up the stream or use bigger pipes as they can afford to buy the quantity or more expensive ones. As it got worse from year to year the village committee members set up a group for water management. This group has to be involved in any conflicts and tries to find a justifiable solution. Usually those decisions set up fixed irrigation days for quarrelling parties.

Two years ago a major decision was made after severe problems between users of one of the streams occurred. Below the fourth farmer who takes water from the stream to irrigate the fields, few others could irrigate their fields due to the lack of water. The upstream farmers used pipes with a wide radius. Agreements on timetables did not seem to work out well. The decision made was that every farmer should only use pipes with a width of one inch or smaller. All farmers had to install a barrel or small pond to which he connects the one inch pipe. Following that water reservoir any size of pipe can be used. Every farmer is allowed to connect one pipe per plot independent from the size of the plot. This ensures there is no inequality although richer farmers with bigger plots may complain that they get only the same amount of water as poor farmers with a small plot. This regulation deals with all streams but was mainly set up for the „big tree near the bridge“ stream. The committee controls trespassing which hardly occurs. Some people also use a second source for irrigation, which definitely favours wealthy farmers.

#### Forest conservation

The forest area of the Mae Sa Noi subcatchment covers about 2,408 rai. Most part of the remaining forest covers the ridges and the steep slopes adjacent streams. No part of the forest can be considered as primary forest. Rather, secondary forest in form of deciduous dipterocarp, oak and pine or tertiary forest which is degraded grass and bush land. Some areas on the western slopes have been reforested with pine, some ridges in the east are covered with *Eucalyptus* sp..

The villagers have been practising agriculture despite strong pressure of the Royal Forest Department, which sees them as encroachers on the remaining forest in the subcatchment area. A protected forest area has been established by the villagers themselves in the south east corner. Only a few farmers keep growing their lychee trees there, the rest is left for reforestation activities. This area is where the main headwaters of the valley form. Tree cutting is fined by the villagers with 300-500 baht<sup>2</sup> and hunting activities with 5,000 baht. Despite this quite a few people have been observed walking in the forest carrying a gun. Different organisations are involved in forest conservation and restoring activities including officials and community groups. Their co-operation is not very strong, in some cases even opposite objectives are followed up. Officially the Royal Forest Department is responsible for administering this area. Other groups operating in the village are the Forest Restoration Research Unit and the conservation group. They are described in the following paragraphs. The Royal Forest Department is interested in keeping the forest undisturbed and claiming land back from the villagers. Especially in the upper southern slopes land claims through the RFD are occurring on a regular base. Anyway, those fields hardly have access to irrigation water and are therefore not highly valued by the farmers. The RFD conducts tree planting actions between June and August every year, though relations between villagers and RFD staff is rather antipathetic.

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<sup>1</sup> Six paddy farmers have legal titles for a total of about 100 rai on the lower banks of the Mae Sa Noi stream. This are the only plots with legal land titles in the subcatchment area.

<sup>2</sup> baht: Thai currency, approximately 40 baht = 1 US\$ (December 1998)



The Forest Restoration Research Unit (FORRU) was established in 1994 with the aim of solving some of the technical problems of re-establishing natural forest ecosystems on degraded sites. It is a joint initiative between Chiang Mai University and Doi Suthep–Pui National Park (Forest Restoration Research Unit 1998). During the study period in 1998 closest relationship exists between FORRU and the youth group. The villagers brought up the idea of establishing their own tree nursery in 1995. On the initial agenda the tree nursery is now doing well and has produced most of the seedlings for the trials. The FORRU-project pays for tree planting and monitoring activities. It has to be understood that the aim is research and not large scale reforestation. The project obtains the land for the trials from the RFD, but borders and the exact location of the plots remain unclear.

Some villagers founded the conservation group in 1996. The aim of the group is to rise awareness of the importance of forests in subcatchment areas. They are involved in reforestation activities but seldom work together with the Royal Forest Department. They meet about four times a year and try to promote their idea through key persons that are also members of the village committees. They work closely with the youth group. The main problem is obtaining land for reforestation activities. As the FC-Group are hardly able to pay compensation to those losing their land they are searching for alternative jobs to agriculture production.

Those villagers who share ideas about conservation and reforestation are mostly younger people and at the moment part of them form the village committee and have other important functions in the village. Most of them have a basic education and want to build alternatives to agriculture in the village, for example an Eco-Tourism Project. During the period of the field study those with conservation ideas are powerful as they are involved in the village administration.

Of the studied households 15 (24.6 per cent) are members of the conservation group, 35 (57.4 per cent) participated in reforestation activities but are not members of the conservation group and the remaining eleven (18 per cent) did not take part in any activities so far.

The villagers set up a protection zone, some of them founded a conservation group to engage in reforestation activities, they promoted the establishment of the FORRU tree nursery in the village. Other villagers at least participate in the reforestation activities of the RFD. Those activities are for sure not taking place out of nature conservation motivation only. Although the farmers face water scarcity this is not a direct effect of watershed degradation rather caused by the excessive irrigation water use. Some farmers might have realised the vanishing wild life and plants used as medicine, building material or nutrition though their main complain about living in the subcatchment are the repeated land losses to the RFD. Lately those conservation activities of the villagers are a strategy to secure their village location and land ownership. They are aware of their dependency on the RFD and try to show their good will and at the same time ensure the ability to use their land in the future.

## **Conclusion**

The Hmong of Mae Sa Mai established an administration system which coexists with traditional Hmong social structures and is oriented on the Thai administration system. They are practising a strongly cash oriented agricultural system nowadays. Sustainability of agricultural practises is not a focus interest of the farmers. Although the farmers are not able to get legal land titles they recognise local land ownership and use rights. They are able to manage water resources themselves, though community irrigation schemes have not been established. Some villagers show strong interest in forest conservation and are engaged in reforesting activities. Opting for forest conservation seems to be a strategy to deal with governmental agencies to ensure the village location in the national park. Though it has been

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widely accepted that community involvement is necessary in resource management, prejudices against ethnic minorities are still common and prevent cooperation between the ethnic groups and official organisations. Some farmers are searching for alternatives to agriculture to cover their livelihood, as they have been facing problems such as land losses.

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