

Chapter IV

Natural, Demographic and Socio-economic

Conditions of Study Area

4.1 General description of the area

4.1.1 Physical characteristics

Geographical location

Located between $18^{\circ}55'N$ and $19^{\circ}05'N$ and $104^{\circ}40'E$ and $104^{\circ}50'E$ Tat hamlet is one of ten hamlets that make up Tan Minh village, which is one of the 21 villages in Da Bac district, in Hoa Binh province in the North-west of Vietnam (Figure 4). It is situated in the mountains of the most remote part of Hoa Binh, about 120 km from Hanoi City. Da Bac is part of the Da River watershed, which feeds into the reservoir of the huge Hoa Binh hydropower project, which provides most of the country's electricity.

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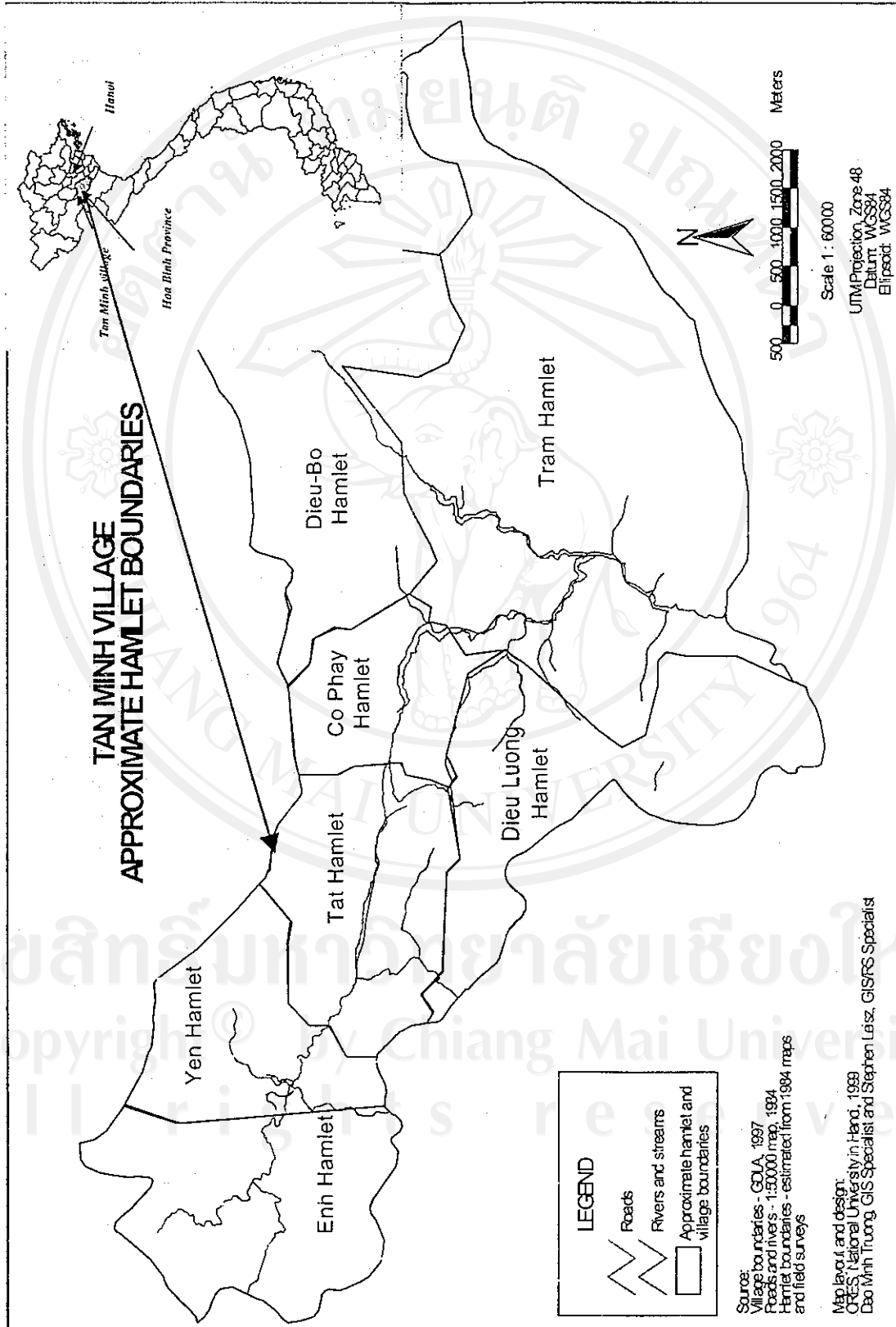


Figure 4: Location of the study area

Topography

The region is characterized by narrow valleys cut by rivers through steep mountains, with consequently little flat land. Tat hamlet has a surface area of 743 ha, most of which is hill slopes and mountains. Less than 20 percent of the land surface has a slope less than 25 degrees. The elevation of the valley floor is at approximately 360 MSL with surrounding peaks reaching up to 950 m. The highest peak (Nui Hen) reaches 1176 m. Slopes of the mountains surrounding the settlement are quite steep (frequently exceeding 60 degrees). Numerous smaller streams flow down from small valleys cut into the slopes surrounding the village and join the northward flowing Muong River, which runs through the main valley.

Climate

The climate of Tan Minh village has the common characteristics of the region: Typical tropical monsoon with a cold winter season. The mean temperature is 23.2°C, with an average summer high of 29.2°C and a winter low of 15°C. Summer temperatures can reach as high as 40°C and winter temperatures fall as low as 2 or 3 degrees. Humidity is high year round. Total annual rainfall averages 1962mm per year, divided into two seasons. The rainy season extends from late May until October in which eighty-five percent of the annual rainfall occurs during this period. The dry season, from November to April accounts for only 15 percent of total precipitation.

Soil

Soils are complex and varied. Soils on hill slopes are generally highly acidic and poor in nutrients. There is a great deal of site-specific variability in soils because of differing parent material. Sandstone and schist are common, with areas of quartz and mica-bearing granite. Soils are deeply weathered with depths of up to 5m observed in road cuts. Soil color varies from light grayish-brown to yellowish-brown to reddish-orange, suggesting varying stages in the weathering process and varying contents of iron and aluminum oxides. Upland soils have a fairly high clay content which is evident by their shiny surfaces and high degree of slickness when wet. These soils are extremely hard when dry, but soften considerably and can be cultivated easily when wet. Paddy soils in the valleys are of fine silty texture and very dark in color, presumably resulting from a long period of cultivation (Rambo and Vien, 2000).

Natural vegetation and wildlife

Most of the territory of Tat hamlet was covered by primary forest up until the 1960s. Today only tiny remnant patches survive on extremely steep and inaccessible peaks. Hilltops and ridgelines are covered with mature secondary forest with a slight degree of canopy differentiation. Most slopes are covered with swiddens or recently fallowed plots covered with grasses, herbs, and scattered patches of bamboo and small trees. Valley crotches and storm drainage courses have largely been left surrounded by woody vegetation and secondary forest. Near-slopes and non-protected areas surrounding the hamlet have mostly been cleared for the planting of cassava swiddens

or tree gardens, with very little fallow land. In some areas, *Imperata cylindrica* covers lower and some distant hillslopes. The valley bottom is covered with wet rice fields (Rambo and Le Trong Cuc, 2000).

The species of wild animals in the forest area of Tat hamlet have not been investigated yet. However, the local people say that until about ten years ago wild animals were still quite abundant in the forest. Wild animals such as wild pig, several species of deer, and porcupines were seen. Nowadays, these wild animal population have decreased because of excessive hunting and probably also because of habitat loss, in particular the fragmentation of the forest into scattered islands atop the hills. Although the total area still under forest cover is quite large, it is entirely in scattered bits and pieces of only a few hectares each (Rambo and Cuc, 2000).

4.1.2 Social- economic characteristics

Demographic and ethnic features

Da Bac district has a total of 48,775 inhabitants. The Tay Da Bac, a distinct subgroup of the Tay ethnic minority, number 19,805 persons, making up 40.6% of the district population; the Muong account for 34.1%, the Dao 12.9%, the Kinh 11.9% and 0.5 are Thai (Figure 5).

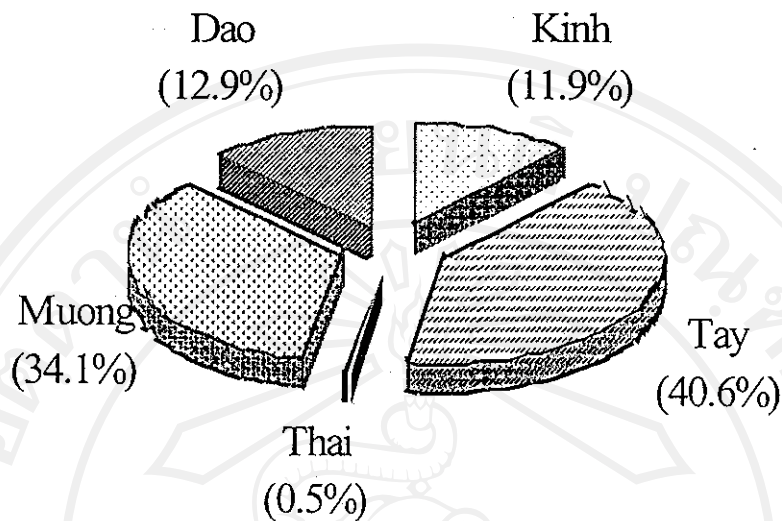


Figure 5: Ethnic composition of Da Bac district

Source: Hoa Binh Statistical Office (2001)

Most of the population in the Tat hamlet belongs to the Tay ethnic group. The population numbers 467 individuals living in 105 households. On the average, there are 4.5 persons per household. The population density of 63 persons per km² is high in the village and district context (Table 1). The population growth rate of the hamlet is high (estimated at 2.7 percent), comparing with the growth rate of the district, and is the main threat to sustainable natural resources management in the area.

Table 1: Demographic condition at study site.

Administrative Units	Area (km ²)	Population (person)	Population density (person/km ²)	Population growth rate (%)
Hoa Binh province	4,662	765,713	164.3	1.9
Da Bac district	820	48,775	59.5	1.7
Tan Minh village	78	3,180	40.8	1.9
Tat hamlet	7.4	467	62.9	2.7

Source: Hoa Binh Statistical Office, 2001; Tan Minh Peoples' Committee, 2001

Education and health care

Education and health services have improved in recent years. The commune has primary and middle schools. However, the illiteracy rate is still high (28%). More than 30% of children of school age do not go to school. The long distance to the high school in the district makes many pupils drop out of school after finishing middle school. Therefore, the education level in the hamlet is still low. Only 8.4% of adults have completed high school and no one has professional training (Table 2). This low education status is negatively influencing the potential for agricultural development or to diversify their livelihood. Thus people would rely more on forests resources.

Table 2: Demographic structure and education levels of people in Tat hamlet.

Age levels	≤18			19 - ≤60			≥60			Total (%)	
	Sex	F	M (%)	F	M (%)	F	M (%)	M (%)			
Education level											
Illiterate		21	20	30.8	34	22	23.2	12	4	55.2	28.0
Primary		18	42	45.1	68	58	52.3	8	5	44.8	49.4
Middle		14	6	15.0	16	21	15.4	0	0	0	14.1
High school		12	0	9.0	8	14	9.1	0	0	0	8.4

Source: Tan Minh People' Committee (2001)

There is one health care clinic in the commune center, which serves all 10 hamlets in the commune, covering a total of 644 households, or 3,180 people. In the clinic, several kinds of medicine such as anti-malaria and anti-goiter pills are distributed free of charge, but other medicines must be purchased. The clinic is accessible to all, but people suffering from common illnesses usually do not come here because it is either too far from their homes or because they cannot afford to pay for the medicine. Instead they rely on traditional medicinal herbs from the forests to prevent and treat common health problems. Thus they come to the clinic only when plant remedies have not worked or problem is more serious. Especially, in the treatment of postpartum ailments, all Tay women still follow traditional practices by using medicinal plants. The Tay in the study by Sarah Miller (2001) reported that they find no alternative in modern medicine to the traditional plant remedies and other practice which they consistently use and follow, to restore their strength and health for nursing their baby.

The economy

Although the economy of Tat hamlet remains largely subsistence oriented, the situation is changing recently with an increasing need and desire for a cash income for paying government taxes, supplementing the diet and for consumer items. Most households now have electricity powered by the small hydro-powered generators or very recently by the national grid. It is quite common to see the television set and radio in their house and several households now have motorbikes.

In the households, men earn cash principally from logging, and women tend to collect NTFPs. Both men and women together engage in crop and livestock production. Economic opportunities from the sale of forest products have increased as a result of recent improvements of the road, providing connections with nearest markets in Cao Son (about 12 km away), and Tu Ly, the district capital. A new daily bus service runs between Tan Minh and Ha Dong (just outside Hanoi city), and logging trucks that pass through the settlement are usually laden with forest products, notably bamboo poles and shoots, fern root- Culy (*Cibotium barometz*) and Khuc Khac (*Smilax glabra*). Chinese traders also come to the village on occasion to purchase a variety of medicinal plants. In general, local people depend on outside traders demanding the goods before they go to collect them. A number of small shops set up along the road, sell a limited range of goods, such as: Instant noodles, detergent, cigarettes, peanuts, alcohol, candies and rice. The shopkeepers will often act as middlemen for the traders who ask them to spread the word about their needs to the villagers, who will in turn collect the plants demanded and sell to the shopkeepers, and so on. Agricultural products like cassava, arrowroot, ginger and

corn are sold in bulk either to local middlemen or to traders from outside the village. Cattle and buffalo are sold to Kinh traders who come to the mountains to purchase animals for use in the delta where traction animals are always in short supply.

4.2 Land use classification and land tenure

There are five main types of land use in the study area. They are agricultural land, forestry land, and rural residential land, land for specialized use and unused land.

The different categories of land in Tan Minh village are shown in table 3. Of which unused land occupied large area (61.55%) while the area under agriculture land is small, only 1,71% and the forestry land is account for about 35.98%, of which most of the natural forestland (more than 97%) is classified as protected forest. The area under afforestation accounts for only about 3% of the forestland.

Table 3: Land use profile of Tan Minh village

	Area (ha)	Percentage (%)
Total area	7,793.00	
1. Agriculture land	132.50	1.69
2. Forestry land	2803.70	35.98
a. Natural forest	2,777.60	35.64
* Production forest	76.00	2.74
* Protected forest	2701.60	97.26
b. Planted forest	26.10	0.34
3. Special use land	59.30	0.76
4. Residential land	24.60	0.32
5. Unusable land & others	4,772.90	61.25
Land area per capita	2.45	
Agricultural land per capita	0.042	

Source: Tan Minh People' Committee (2001)

On per capita basis, the total land area represents about 2.45 hectare, of which only about 0.042 hectare being agriculture land per capita. In brief, these are not enough agricultural lands for agricultural production. The forest areas are very important to the local people for shifting cultivation plots, non-timber forest product extraction, and timber as well.

The total area of Tat Hamlet is 743 hectares. Agricultural land covers 29.9 hectares (4.02% of the total area of Tat hamlet) which is broadly classified into paddy land and swidden land or dry land.

Paddy land is located in the valley near the stream. Two crops a year are grown in irrigated fields but only a single crop on rain-fed fields. Household survey

shows that 81% of the households cultivate paddy in fall and about 74% cultivate spring crop. Since people realize that cultivation of wet rice would provide them a higher production in comparison to swidden rice, they have looked for new land to build new paddy fields. Most of these fields are allocated in the Co Nom and Suoi Muong area, about half an hour to an hour walking from their hamlet. However, the steep terrain limits the area available for new paddy fields.

In 1989, the wet rice fields that had been managed by the cooperative were allocated to individual households. The amount of paddy land that each household received varied according to their family size and their fields or parents' fields. Newly formed couples and newcomers to the hamlet found it hard to gain paddy land. Probably, the parents have to share their areas with their children when they get married and move to live in the separate house. Some households have tried to open their new paddy fields by making terrace fields in a small valley or along streams located not too far from their quarters both before and after land allocation. Household survey in this study shows that 14% of households gained more paddy land in recent years, mostly by reclaiming waste swamp along the streams. Most paddy land users reported that they had been given a land use certificate (Red Books). Only a small area of paddy land which they reclaimed recently is not covered by long-term use right certificates.

Result of household survey shows that wet rice area is about 183 m² per capita on the average. About 8% of households (5 households) have no wet rice land. They are newcomers or young couples who have just separated from their parents. The

largest size of paddy land per household is 1800 m² while the smallest is 100m². The average wet rice landholding per capita in Tat hamlet is quite low in comparison with other hamlets and areas in Hoa Binh province. This is because a large extent of the surface area of Tat hamlet is steep mountains which limits the area available for expanding agricultural land particularly paddy land and because the population is gradually increasing over the years.

It is important to note that there is a highly uneven distribution of paddy landholding among Tat hamlet households. As shown in table 4, the better-off and medium households owned a large amount of land (1,177-1,426.5m² per households on the average) which is three or four times the size of holdings by the poor households. Meanwhile, the poor households in Tat hamlet owned only 394.5m² on the average. It can be explained that besides land allocated by the cooperative, the better-off households use their available labor force or financial resources to hire labor to open new paddy land. By contrast, some new couples and poor households who lack sufficiency of both human power and financial resources are not able to reclaim more land.

Table 4: Paddy land holding by different household economic groups

Household	Area of paddy land per household (m ²)
Worse-off households	394.5
Medium households	1,177.0
Better-off households	1,426.5

Source: Survey, 2002

Land with slopes greater than 25° are commonly used as swidden fields. Swidden areas consist of cultivated and fallow fields, in which secondary forest is regenerating. The area used for swiddening is thus variable, depending on how much of the forestland is used for food crops in any one year. It normally amounts to 81%-86% of the total agricultural land. In Tat hamlet, swidden areas can be found on the top, middle and foot of the hills. Forty six percent of swidden fields lies on slopes over 40%. Recently, government agencies have been attempting to assert control over the management of land and other natural resources and have attempted to restrict clearance of swiddens. In Tat hamlet, there are three areas for swidden cultivation. Each year, the local authorities define the places where it can be cultivated, as well as the area to be used for each household.

Forest is cut down and burned during the dry season and planted in the second week after the beginning of the rainy season. Swidden fields are normally planted for 3-5 years according to their slopes and soil quality and left fallow for a period of 3-4 years. Swidden fields are used to cultivate mainly upland rice, cassava, maize, arrowroot, and ginger (Table 5).

Table 5: Average swidden holding area by different HH economic groups (m²)

Household	Average area of all types of swiddens	Upland Rice	Cassava	Arrowroot	Ginger
Worse-off households	4,310	1,455	1,240	1,390	225
Medium households	7,090	2,695	1,920	2,190	285
Better-off households	5,750	2,380	1,160	2,040	195

Source: Survey, 2002

Unlike paddy land, all of Tat hamlet households own swidden fields, but not all have swidden planted to rice. Because the rice yield is gradually decreasing due to land degradation, the area used for swidden rice cultivation has decreased while area of other swidden cash crops, especially cassava and arrowroot, has increased in recent years.

By and large, most households own a large area of swidden fields. The size of their swidden landholding does not depend on their economic status. On the average, each household owned from 4,310 to 7,090 m² of swidden land. According to Vien (1999), in 1996 the largest swidden area owned by any household in this village did not exceed 2 hectares, but this area has increased since then. Thus, some households owned up to 3.82 hectares of swidden land in 2002. Of their swidden land, 2500m² was allocated by the district authorities. The remaining swidden fields were opened by the Tat hamlet farmers on their own. The villagers could open their swidden fields in the common area, in the forest or in other areas outside of the boundaries of their hamlet, with some clearing fields across the border inside Phu Tho province. However, since Phu Tho province carried out its land allocation programme, people who received land which had formerly been cultivated by people from Tat hamlet have tried to protect strictly their allocated land, so that Tat hamlet swidders therefore found it difficult to practice shifting cultivation in this area.

Consequently, Tat hamlet households have two types of swidden fields. One type is legally recognized by the authorities and the other is illegally practiced. The legal swidden fields are located inside the area designated for swiddening and some

are located in the barren hill areas. In fact, these swidden fields have not yet been given Red Book. The illegal swidden fields are normally located in the protected forest area.

Homegardens are located around houses. Each household in Tat hamlet owned a small homegarden of 170m² on the average with a maximum size of 600m² and minimum of 50m². They grow various kinds of fruit trees and vegetables mainly for their own consumption. A small number of households sell products from gardening.

Some households in Tat also developed fishponds nearby their houses or in their homegardens. According to statistical data, fishponds in Tat hamlet accounted for just 0.6 ha. About two-thirds of the households have fishponds with an area of 30m² to 100m².

Forest land is the land designated primarily for use in silviculture production, including land with natural forest, land under afforestation, and land used for forestry purposes such as afforestation, forest nursery, protection for natural rehabilitation, forest enrichment and experimental research on silviculture (NASRV, 1993). However, in the study site, forestry land is mainly divided into two types, natural forest and planted forest.

Forest can be found on the top part of the hills, the lower part of the hill above the house with swidden fields on the top, and the middle of the hills with swidden fields at both sides. According to the purposes of use, most of forest area in Tat

hamlet is defined as protected forests in order to preserve watershed and prevent soil erosion.

Tenureship of forestland in Tat hamlet is very complicated because forest is under the control of different actors, such as the cooperative and households. The Ban Tat cooperative retains control of 55 hectares of forestland, which is divided into four tracts. Bush and grass cover two plots and another two plots are secondary forests. Under decree No. 02/CP, dated January 15, 1994, forestland area has been allocated to farm households in Tat hamlet. However, only about 80% of households have received forestland. The households who have not received forestland are newcomers, new couples, or people who do not want to receive the land for some reason. Those households still either go to the hamlet forest land that is considered common land for swiddening, protected forest lands, or forest lands that belong to other villages (many people report that they had swidden fields in Phu Tho province).

Recently, farmers also have received a certificate for their allocated forestland. However, the use right is different from agricultural land in that farmers are responsible for managing and enriching their forestland but do not have the right to sell the land. Farmers, moreover, are allowed to clear swiddens on their allocated forest land but only in a limited area not exceeding 2000m². In practice, the area for swidden is much larger than that as farmers still clear the forest for swiddening in order to satisfy their needs.

The production forestland has been allocated and Red Book issued to households. Protected forest has not been allocated to individual households, but

instead has been allocated to groups of households who share the same areas of forest. Each group has its leader who is advised by village leaders.

Forest resources make an important contribution to the household economy. The villagers collect forest products both for their own consumption and market exchange. All households collect many products from forest. Most households reported that they were given a “Red Book” which affirmed their right in managing the forestland. The land allocated to households was mostly their old land where households have been using for several years and also where they have been collecting fuel wood, bamboo shoot, planted trees or bamboo. Villagers therefore consider this forest land as their private land and they have rights to collect NTFPs in their own forestland. Moreover, they also freely collect NTFPs in forest areas under the control of commune and State agencies, except the protected forest area. The commune authorities and State agencies attempt to limit the collection of NTFPs by the villagers in order to allow the forest to regenerate. In practice, however, the villagers try to reap as much as possible to meet their demand for both consumption and market exchange. Moreover, villagers also go to collect NTFPs in other areas outside the boundaries of their administrative village.

Logging and hunting are considered illegal activities by the authorities but are still widely practiced by the villagers, who still come to the forests and freely cut trees and trap wild animals. They do this because the enforcement of the regulations is not strict and because the low income from farming is not sufficient to support their families.

Changes in size of landholdings: With regard to recent changes in size of landholding among households, in the past 5 years, most households (79%) reported that their size of landholding has been stabilized while only 14% of households asserted that they gained more land, mainly terraced paddy fields which were constructed. However, all households have lost their swidden fields, they complained about increasing restriction of free access to swidden land as a result of land allocation and certainly demarcating boundaries of protected forest. Moreover, Tat hamlet villagers have been limited not to clear more forest land for shifting cultivation in Phu Tho province because after land allocation people there also try to control strictly their allocated forest lands.