FOREST UTILIZATION BY LOCAL PEOPLE IN SANG THONG DISTRICT

Khamvieng Xayabouth*

1. Introduction

Lao People's Democratic Republic is a landlocked country in Southeast Asia, occupying the northern section of the Indochinese peninsula. It is surrounded by China, Vietnam, Cambodia and Myanmar. Laos is mountainous country, particularly in the north where the peaks rise to 2,500 meters. The high mountains along the eastern border which separate Laos from Vietnam are the source of east-west rivers which cross the country emptying into the Mekong river which flows through the country for almost 500 kilometers and defines the boundary between Laos and both Thailand and Myanmar.

The population of Laos is approximately 4.5 million (1996). The majority of this population lives on the fertile plains along the Mekong River. The population growth is estimated to be approximately 2.9 percent a year. Although still a minority, the percent of population living in urban areas is growing steadily and the labor force is estimated to be about 1.5 million.

The economy of the country is dominated by agriculture. Agriculture products constitute 60 percent of the gross national product (GNP) with 85-90 percent of the total labor force employed in agricultural activities. The principle agriculture products are rice, wheat, potatoes, and fruits.

Industry accounts for about 16 percent of the GNP. The major industrial products are tin, timber, tobacco, textiles and electric power.

Laos is divided into 16 provinces, one prefecture and one special region which are further divided into districts. There are totally 112 districts and 11,424 villages (1988).

Forest resource is one of the important natural resources of the nation. It was estimated in 1989, 11.7 million hectares, or about 47 percent of the total land area, was covered by forest (Del noye 1993). The major forest types were:

- Mixed deciduous forest (75 %)
- Dry evergreen and dry dipterocarps (11%)
- Coniferous and mixed coniferous (about 3%).

The forests produce a multitude of timber and non-timber products. In addition to industrial timber and local construction material, forest products include Sticklac, Benzoin, Cardamom, rattan, bamboo and pine resin. Forest product exports are a significant part of total exports. In 1991, approximately 54 percent of the foreign exchange earnings were derived from forest product exports (World Bank 1993). Forest is also a source of timber for local construction and fuel wood. Approximately 100,000 cubic meters are cut each year to meet the non fuel timber needs of local community within or adjacent to the forest areas. Timber harvested for fuel wood is approximately 4 million cubic meters a year. However, these additional harvests are concentrated in scattered stands, the under-storey and natural mortality (World Bank 1993). The national reconnaissance survey, completed in 1994, shows that between 1982 and 1989, the forest area had decreased from 11.64 million hectares to 11.17 million hectares (47,000 ha / year). The major causes of degradation are the failure of forest land to regenerate after harvests, shifting cultivation and fire. Shifting cultivation clears between 100,000 ha and 300,000 ha / year.

2. Location of study site

* Forestry Department, National University of Laos, Vientiane, Lao.P.D.R.

Out of three villages proposed to be a research site, Ban Khuai, Ban Xo, and Ban Vangma, only Ban Vangma was selected to be the study site, referred to criterion given.

Ban Vangma is situated at the north of Sangthong district, about 30 km by ferry boat in the north-west part of Vientiane Prefecture, in the middle of the country with its total area of 6,150 ha, It shares the border with:

- Ban Paksang, Ban Nampaed and Ban Phonsen (Mouang fueng district) at the north.
- Ban Xo (Sangthong district) at the south.
- Ban Kua, Ban Taohai (Sangthong district) at the east.
- Ban Namchan, Ban Nammuad (Salakham district) at the west.

Ban Vangma lies at an 18° 23' 16'' north latitude and 102° 06'28'' east latitude. Generally, the area is undulating and mountainous with an average slope of 15 percent and altitude ranges from 300 m to over 500 m, above mean sea level.

Table 1: Altitude

Altitude (m)	Area (ha)	Percent
300	138	2.23
300-400	4,338	70.56
400-500	1,432	23.28
>500	242	3.93

Source: Thesis on land use planning in BanVangma of 1996 students (unpublished).

The main river is Nam Sang which plays an important role in the standard of living of local people; not only for communication but also for other purposes. Nam Sang flows year-round through the village. It is also a tributary of the Mekong River.

2-1. Back ground of village

Ban Vangma was established about 100 years ago. Originally, nine families migrated from other places to find out suitable paddy field area where it was fertile. Ban Vangma was named in 1990, before that its name was Ban Veunthat (pagoda), because there was a small pagoda at the village, but now it is in ruins. The name of Ban Vangma was firstly coined by Thao Hom (Mr Hom). When he was catching fishes, he saw a sculpture of two horses in the Nam Sang river, about 70 meters to the north of the village. From that event, people started calling it Ban Vangma (meaning horse village) up to today.

2-2. Climate

It is a subtropical type of climate with two distinct rainy and dry seasons. The rainy season begins in the month of April and ends in the month of September. According to the information recorded at Vientiane province Meteorological Station, the mean monthly temperature in this season ranges between 20 and 40 degrees C. May and June are the hottest months when the mean monthly temperature scales up to 40 degrees c. The rainy season is fairly hot. The dry season begins in October, ends in March, and is characterized by mild temperatures. The average monthly temperature ranges between 15 and 19 degrees C. December and January are the coldest months with mean monthly temperatures of about 15 degrees C.

The area comes under the influence of monsoon rain, which mainly occurs during the rainy season. The annual average rainfall does not exceed 2,200 mm. The highest amount of rainfall occurs in the months of May and June when the mean monthly rainfall is recorded up to 400 mm/month. In the dry season, the mean monthly rainfall amounts to less than 50 mm/month.

2-3. Soil

Soil is different from place to place according to the altitude, which can be categorized as the following:

- Altitude 300-400 m, the soil texture is very fine and fertile. By a depth of 0.5-2 m, pH ranges from 6-7.
- Altitude 400-500 m, the soil texture is also fine. By a depth of 1.8-2 m, pH is from 6.5-7.5.
- Altitude above 500 m, the soil is still fertile because of the dense forest cover. By a depth of 0.5-1 m, pH is 5-6.

(Thesis 1996 on Land use planning in Ban Vangma).

Generally, the soil is fertile compared to the agricultural production of the people, 1 hectare of land can produce 1.5-3 tonnes of rice a year. (Baseline survey 1998).

2-4. Accessibility

Ban Vangma is a very remote village in Sangthong district. The road condition is very poor. Therefore, people mostly get about the village by the ferry boats and their own boats along the Nam Sang River. It takes about four to five hours. Communication in both seasons is very difficult.

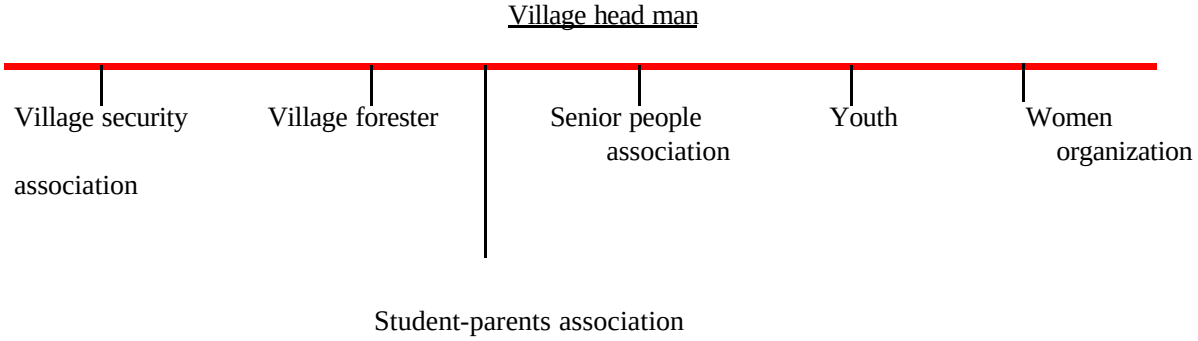
2-5. Population

According to the census in 1996, the total population was 178 and the number of women was 89. There were 28 families. Presently, population has increased to a total number of 200 with 110 women, comprised of three ethnic groups: Lao Lum, Lao khang, and Thaidam.

Each group has slightly different customs and dialect but the official language is Lao for communicating with other groups. People have followed two belief systems: Buddhism and Superstition. The education of people is still low and some are illiterate. There is one primary school, having four classes and three teachers. After class 4, the students have to go to study further at other villages nearby where there are facilities available, but students mostly drop out of school after class 4 because the condition of their families does not permit them to continue. The population growth rate is approximately 2.8 percent, while the mortality rate is about 0.56 percent over the past three years of 1993-1996.

People are mainly employed in shifting cultivation. Besides shifting cultivation, livestock raising is also practiced. Farmers have raised cattle, buffalo, pig and poultry to supplement their earnings from field crop cultivation and for domestic consumption.

2-6. Administrative Organization



3. Forest situation

The forest is a main resource supporting the living conditions of the local people who depend on it. Forest covers approximately 97.85 percent of the total village area. Virtually all forest types are mixed with bamboo. Besides bamboo, the typical species commonly found are *Largestroemia angustifolia, Peltaphorum rasyrachis, Cratoxylon spp, Afzelia xylocarpa, Irvingia harmandiana* and other species. The dry evergreen forest accounts for only 23.79 percent of the total 6.018 ha of real forest.

Table 2: Forest area

Forest type	Area (ha)	Percent of cover
- Secondary forest	242	4.02
- Bamboo	4.262	70.82
- Mixed deciduous	82	1.37
- Dry evergreen	1.432	23.79
Total	6.018	100

According to the 1998 survey, the main species found in this area are:

3-1.Tree species

- *Gmeliana arborea*
- *Peltaphorum rasyrachis*
- *Afzelia xylocarpa*
- *Hopea ferrae*
- *Hopea odorata*
- *Largestroemia angustifolia*
- *Irvingia harmandiana*
- *Dalbergia spp*
- *Pterocarpus macrocarpus*
- *Dipterocarpus spp*
- *Bombax spp*
- *Alstonia scholaris*
- *Adina cordifolia*
- *Albizia spp*
- *Diospyros spp*
- *Garunga pinnata*
- *Teminalia chebula*
- *Tetramelis nudifolia*
- *Toona febrifuga*
- *Vitex spp*

3-2. Bamboo species

A considerable part of village is covered by bamboo of different species, approximately 70.82 percent of the entire area is stocked with bamboo. The main species found are:

- *Cephalostachyum virgatum*
- *Dendrocalamus spp*
- *Oxytenanthera alboceliata*
- *Chimonobambusa griffithiana*

3-3. Non timber forest products

- Palm heart
- Rattan
- Dipterocarp oil
- Agar wood
- Pentace
- Wild vegetable

4. Customary forest (or land) management system

The land is the source of crop production for the livelihood of the village. Though the average land holding size is less than 2 ha per family, the major proportion of land accounts for low land and upland, which are primarily utilized for rice cultivation, normally at an interval of four years. Officially, the upland cultivation system is designated as shifting cultivation, as the basic method of land clearing and crop cultivation are common to it. People have land plots at four or five different fixed locations not very far from each other, each plot is cultivated with rice at an interval of four or five years. Although farmers want to cultivate these plots annually, owing to labor shortage they can not do so. Virtually all plots of land are owned by farmers. The land category recognized as superior by farmers is plain low land which is more fertile than upland and has a shorter interval of cultivation, some patches may even be cultivated annually.

By customary law, which considers all natural resources within a village boundary as village property, all villagers are allowed to utilize the resource. This is sensible, as people have practiced hunting, felling, gathering and shifting cultivation since time immemorial. The land tenure is, therefore, based on the preference of villagers as to where plots are suitable and easy for cropping. When they found appropriate land for agriculture, they would inform the village head man to recognize and declare to the other villagers this land title. The other villagers would agree if the land were not owned by someone else. To prevent ownership of land from subsequent encroachers, they have to tell the others to recognize where the land is located. The right of land holding can pass to surviving heirs upon death and can be transferred to their parties. This system has been followed since the initial stage of settlement.

Besides the land tenure given, the traditional right to use forest resources has also been given within their village boundary. Individuals and families have recognized this right to use the forest to fulfill their requirements for building materials, medicine, fuel wood and food foraging. The right given is quite equitable within the community. The difference in utilization of forest and land is dependent on the ability and labor force available to each family.

Being aware of resource depletion, the village head men together with villagers have conserved a few patches of forest for the protection of water catchment, the prevention of soil erosion and the maintenance of cemeteries. Banning of illicit felling has been made for outsiders - at least they must pay a royalty and resource tax to the village head man at the rate of 5-10 kips per culm in the case of bamboo, (for woody plant the rate is not recorded since there is less pressure of felling). For the utilization of the forest by Vangma villagers, the royalty is not paid since people believe that the forest resource within their boundary is the property of the village. This kind of thought has stimulated them to pave the way for communal forest usage and management for perpetuity.

As mentioned above, the forest resource within the boundary of the village is the property of the whole community, but actually, the forest and degraded forest are owned by the state, meaning the government can allocate and utilize forest as it wishes. The government is the owner and manager of

forests in principle. This seems to be some what contrary to the customary law which considers forests as community property.

To avoid possible conflict arising from this, the government has allowed people to use forest for fulfilling their subsistence requirements including wood fuel, food, fodder and timber. Due partly to "open access" status of forests, and due partly to the competing demand for them arising from the ever increasing population and immigration of outsiders, there are conflicts over the use of land and forest, but the conflicts seem to be less serious if compared to those between villages in the vicinity. Illegal felling has been the primary cause of community conflict.

Despite claiming the entire forest area within village boundaries as their forests, villagers have been designated two areas of forest, one on the hill and the other along the Nam Sang river as communal forests. Reportedly, villagers are not allowed to cut trees in these forests. Although there are no rules and regulations made by them in regard to the use of these types of forest, villagers affirmed that these communal forests are very useful to them.

5. Present state of utilization of forest products

Forest products are a main source of well being for the people, not only in Ban Vangma, but over the entire country in the form of material for construction, fuel wood, food, fodder and medicine. Since time immemorial, people looked to the forest to fulfill their basic needs. The present state of forest utilization is more actively involved in the so-called civilization process. Despite being a remote village and the road condition being very poor, people still practice illicit felling and smuggle forest products to sell into the black market, building up their economic status in order to catch up with vicinity villagers. The base line survey in 1998 found that things that they want to have are: ploughing tractors, power boats, rice mills, televisions, radios and other commodities. These are, of course, necessary for higher living conditions, but these things take over from old traditions inherited from the ancestors and effect the attitudes towards traditions; seen as unsophisticated, many traditions are ignored unnecessarily. The more population increased, the more the requirement of utilization of resources increased. As a result, the forests became degraded with the failure of natural regeneration, particularly in the patches near the village. Forest products are gradually made scarcer. Some kinds of products are very difficult to find today with some even given rare status. The difference of forest utilization of each family depends upon the labor force therein.

The forest products found in this area are:

A. Timber:

Name of species	**Usage**
- *Gmelina arborea*	- construction material - boat making - fuel wood
- *Peltaphorum rasyrachis*	- construction material - fuel wood
- *Largestroemia spp*	- construction material - fuel wood
- *Afzelia xylocarpa*	- construction material - furniture
- *Hopea ferrae*	- construction material - boat making
- *Pterocarpus macrocarpus*	- construction material

	- furniture
- *Cytoxylon spp*	- fuel wood
	- charcoal making
- *Teminalia chebula*	- edible fruit, medicine
	- fuel wood
- *Irvingia harmandiana*	- fuel wood
	- charcoal making
- *Dipterocarpus spp*	- construction material
	- fuel wood
	- oil

B. Non-timber forest products:

- Rattan	- handicraft, furniture, food (sprout)
- Bamboo	- construction material, handicraft, fuel wood, food (shoot), fruit and medicine (rhizome)
- Palm heart	- food
- Agar wood	- selling
- *Artocarpus hirsuta*	- pal chewing (bark)
- Pentace	- pal chewing (bark)
- Dipterocarp oil	- light
- *Dioscorea hispida*	- food
- *Colocasia indica*	- medicine
- Wild vegetable	- food

C. Wild animals:

- Bamboo rat	- food (common)
- Wild rat	- food (common)
- Squirrel	- food (common)
- Barking deer	- food (rare)
- Birds	- food (common)
- Fishes	- food (common)

Because of the village being surrounded by bamboo forest, the use of bamboo is very well known. People make use of the bamboo in the following different ways:
- The leaves are used in boiling water instead of tea.
- The fruit is eaten.
- The culm is used for thatching, flooring, post, fencing, fuel wood and other building materials. Thin sliced bamboo is used as rope, plait, basket making, and making tools for catching birds and animals.
- Bamboo shoot is used for food.
- Rhizome is used for medicine.

6. Changes in forest utilization:

As mentioned above, agriculture is the mainstay of household economies of the village. In spite of working hard on their land to meet basic food requirements and gain some savings to fulfill other basic needs, villagers can not achieve these objectives. This is due to low food production arising from

the small amount of paddy lands, lack of irrigation water and application of fertilizers, and the destruction of crops by wild animals, along with the increase in population. Faced with these problems, people have to turn to the forest to find out what forest products will fill the gap of poverty. As demand on forest utilization increases, the forest condition is gradually degraded. The community is aware of the difficulty of finding forest products. People have to compete with each other in seeking out forest products for their well being.

Previously, this area was very rich in forest products and people could use the forest as they wished. Without proper management of forests, the forest surrounding has been unstocked, and occupied by bamboo. The scarcity of products is well visualized if compared to the last decade. The requirement of bamboo and fuel wood for each family is:

- Bamboo about 1,000 culms / year.
- Fuel wood about 20 m^3/ year.

(Base line survey 1998)

Referring to the above figures, we can calculate the total bamboo needed in the village is 28,000 culms / year and fuel wood is about 560 m^3 / year. If we compared this to the past when there were 9 families in the initial stage, the use of bamboo was only 9,000 culms / year and fuel wood about 120 m^3/ year. These figures have scaled up step by step. Mostly people use bamboo as building material. Out of 28 families, only one family has a house constructed with lumber and thatched with corrugated iron.

7. Evaluation of forest utilization in the view point of sustainability:

The “open access” status of natural resources, state-sanctioned commercial logging, the expansion of agriculture lands caused by population growth and in-migration of population, free grazing of livestock, and forest fire have all taken a toll on forests, unstocked forests and wildlife in the Sangthong district. The depletion of forests and un-stocked forests specifically has seemingly accelerated the pace of soil erosion, thereby reducing the volume of water in streams and rivers. In the past, most primary forests were converted into un-stocked and secondary forests due to large scale logging operations. Although the government has banned such activity for the time being, the remaining secondary forests and un-stocked forest are likely to undergo accelerated degradation due primarily to expansion of agriculture lands caused by the ever increasing population. This entails constant attention to the conservation of natural resources through the formulation and implementation of a natural resource management strategy. The focus of such strategy should be on participatory natural resource management, integrated rural development, monitoring and evaluation of natural resources and socio-economic conditions, strengthening natural resource management planning capacity, and land and forest allocation.

Participatory natural resource management is an approach in preventing natural resources from depletion. The proven efficacy of decentralized management systems in many developing countries has led to an increasing emphasis on active public participation in management. People are living in association with natural resources which have become integral components of their socio-economic system. Sustainable and effective natural resource management is, therefore, impossible without local support. Public awareness creation is an important factor to bring people into the managerial system. Villagers are aware of the economic significance of natural resources. They, however, do not seem to be much concerned about their management due to the open access status of natural resources. There is a need to create the awareness of consequences of abuse of natural resources and apprise them of management methods. Besides serving as a foundation of prospective management systems, this will facilitate the negotiation on ownership and use of natural resources.

Land and forest allocation should be given emphasis to control the over harvesting of forest as effectively as possible, and delimit the size of landholdings for each family to use, manage and protect, however, the size of landholdings should be sufficient to produce crop yields for each family which will support both present and future generations.

Forest which has been allocated to villages for utilization should be well managed for use in a sustainable way. Forest can produce a variety of goods and services, singly or in combination, depending upon the type and intensity of management to which they are subjected. Forest management involves the organized application of any particular silvicultural procedure to regulate and control yield and to ensure restocking of harvested areas to achieve pre-determined objectives. Management is thus an interaction between societal and forest characteristics. The adaptation of silvicultural systems over this area should be appropriated to the forest condition, topography and local requirements, referring to societal characteristics. Tree planting on degraded lands and agro-forestry practices should be backstopped so as to keep the village self-sufficient in fuel wood and construction materials. The encroachers and in-migration peoples should be minimized to match the steady state of community dwelling.

The technique of evaluating forest utilization by local people is brought about by their acquaintance with the forest in seeking required resources as they are difficult to be found and sometimes very far from the village. The following self-imposed disciplines are an example:

- People would collect firewood only from dead stands and dry branches. They cut the green trees in their lands only and very seldom felling outside their lands.
- People would not fell trees with diameters less than 40 cm and 60 cm according to the species and purpose of usage.
- In clearance of agricultural land, they leave some trees in for firewood and shade purposes.
- In gathering forest products, they would not take all but left some behind such as: Bamboo shoots, rattan shoots and others.
- People would not go into the forest during Buddhist days, twice a month.

The management of communal forest by villagers is said to be good if nobody enters into such forests, neither villagers nor domestic animals, and the sense of awareness created by themselves to save those forests is high. Thus the technique of evaluation is based on the restriction not to touch the forests.

Therefore, the conclusion can be drawn that the utilization of forests by local people is sustainable.

References

1. Robert B. Forster: Report of Consultant on Forest Project Planning and Management in Lao P.D.R. pa. 4-7.
2. Dr. Gopal B. Thapa, Ms. Siriluck Sirisup, Mr. Vitoon Nil-ubon: Mission Report on Sustainable Natural Resource Management in Sangthong District, Vientiane Municipality, Lao PDR. p. 7-44.
3. 1996 students: Land Use Planning in Ban Vangma , p. 7-17.