



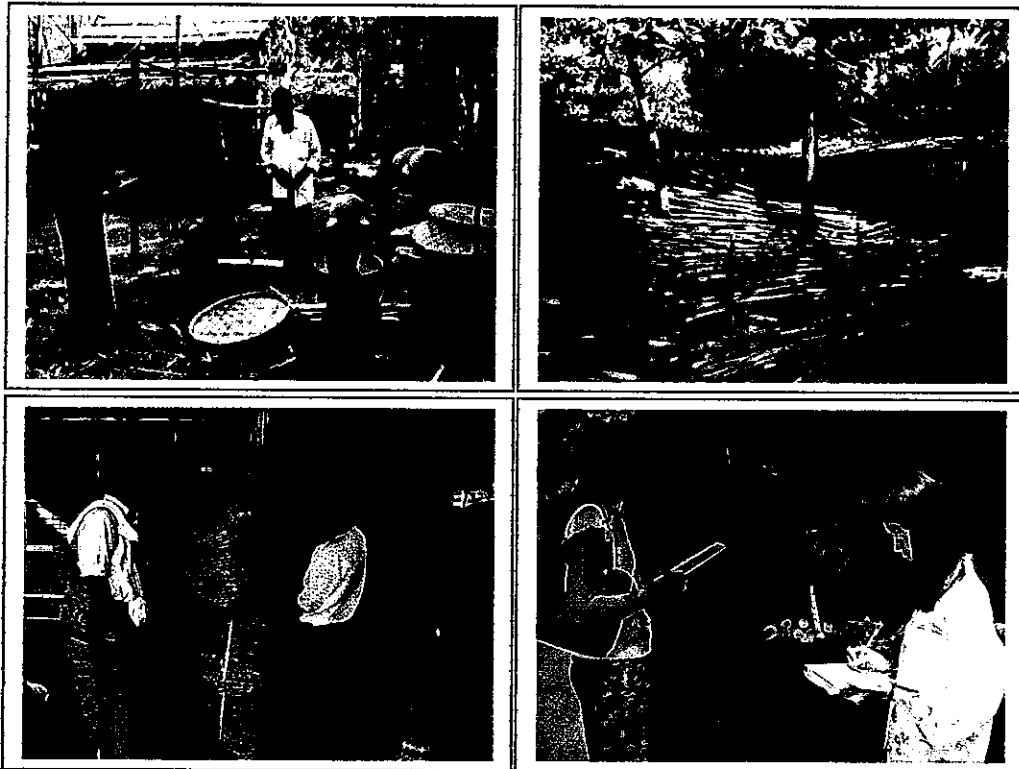
FOREST DEPARTMENT

**"Promoting Sustainable Utilization of Bamboo through
Community Participation in Sustainable Forest Management"**

ITTO Project PD 146/02 Rev. 1(I)



**Study on socio-economic characteristics of rural people
in Paukkaung and Kawhmu Townships**



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1. Introduction

Bamboo is one of the fastest growing plant species. It is extremely versatile and has been traditionally put to a large number of uses. The life of about 1/3 of the world population is closely related with bamboo (Danren, 2003). In a recent assessment, over 1500 distinct uses of bamboo have been recorded and this number is growing rapidly with new development initiatives taking place around the world. Some governments have evinced considerable interest at government level on the importance of bamboo as an economic and ecological sustainable resource.

Nowadays, bamboo is used as wood substitute in various fields such as construction material and bamboo board. It is also an important raw material for pulp and paper. It is estimated that the use of bamboo amounts to a value of US\$ 7 billion per year. Many countries, mostly in Asia, are involved in bamboo trade and according to INBAR, its products was worth more than US\$ 2.7 billion in 1999.

Traditional use of bamboo extends to several thousands of years. More than 1 billion people live in bamboo houses and 2.5 billion people depend on this resource for their livelihood (FAO, 2005). Apart from eating the bamboo shoots, bamboo is also utilized in the production of household goods, handicrafts, musical instruments and domestic utensils such as baskets and mat.

Besides the traditional and modern uses, bamboo is an essential element for rural people in their livelihood. Their housing materials and also their income mainly come from bamboo. About 70% of the total population of Myanmar lives in rural areas and they mainly depend on the bamboo resources especially near the forested areas. Bamboo is never regarded as an exhaustible plant in the past since the country is covered with vast and diverse forests. However, the quantity and quality of bamboo becomes limited along with the degradation and depletion of natural forests due to various reasons.

Sustainable management of natural bamboo stocks plays an important role in achieving sustainable development of forests as well as in poverty alleviation. Since the rural people mainly depend on bamboo and bamboo related products, their socioeconomic conditions should be studied in order to formulate the management systems for existing bamboo stocks and to enhance the productivity of the natural forests.

This study is one of the activities on the assessment of the economic and social characteristics of the project sites of the ITTO Project named "Promoting Sustainable Utilization of Bamboo through Community Participation in Sustainable Forest Management". The results on socio-economic conditions of the surveyed sites in this study will provide useful information for finding the methods and strategies in getting active participation of the rural people in sustainable utilization of bamboo as well as in sustainable forest management.

2. Objectives

This study aims to formulate the management strategies for promoting people's participation in the sustainable utilization of bamboo. The specific objectives of this study are:

- (1) to analyze the socio-economic characteristics of rural people in the project area,
- (2) to evaluate the importance of bamboo in the rural communities, and
- (3) to find out the ways and methods to increase income generation of the rural people in the project area.

3. Study areas

Questionnaire surveys are conducted in two different localities viz. Paukkaung Township and Kawhmu Township. Both are within the ITTO project areas. Two villages are selected in Paukkaung Township viz. Ledi and Nyaungwun which are situated near the well-known Bago Yoma natural forests. The selected sites are 14 miles and 18 miles respectively away from the nearest town. Forest products and bamboo are considerably available in the area. The local people depend on agriculture (mainly shifting cultivation) and forest-related works such as forest plantations, fuel-wood collection, bamboo cutting etc.

Four villages were selected in Kawhmu Township viz. Kawchan, Taunggyaung, Yedashe and Kyaikthalay which are 3 miles, 1 1/2 miles, 3 miles and 8 miles respectively away from Kawhmu. The local people totally depend on agriculture (paddy fields) and

home gardens. Since there is no natural forest cover in this area, forest products and bamboo such as Kyathaung and Tin-wa have to be imported. Some local people have traditionally planted bamboo such as Waya, Wanet, Wabo, etc. in their own lands and those domestic bamboo stocks contribute to their incomes to some extent.

4. Methodology

This study was based on the primary source of data which were collected by stratified random sampling with structured interview. The questionnaire composed of 47 questions to fulfill the objectives of the study. Only the household heads were interviewed. The conducted survey included demographic data, household income, expenditure, production of bamboo-related goods, attitudes of the respondents concerning the participation of rural people in sustainable forest management.

In each village, the heads of the village or community were interviewed to stratify the socio-economic groups according to their major employment such as agriculture, traders, wage labors, bamboo-related employee, etc. Afterwards, the names of the household heads were listed and stratified by their major employment. For each stratum, the names of the household heads were written in the cards and the respondents were randomly selected by drawing.

The survey works were conducted during 1st to 15th October 2004. The survey covered about 25 % of the total households in each village. The numbers of surveyed households are shown in Table 1. The collected data were analyzed by using SPSS (Statistical Package for Social Sciences) program.

Table 1
Number of Respondents in Each Surveyed Village

Township	Village	No. of Total Household	No. of Respondent	Percent to Total Household
Paukkaung	Ledi	61	15	25%
	Nyaungwun	135	34	25%
Kawhmu	Kawchan	72	18	25%
	Taunggyaung	110	26	24%
	Yedashe	113	28	25%
	Kyaikthalay	150	45	30%

5. Results and Discussions

5.1 Demographic characteristics of the respondents

5.1.1 Age distribution

Majority of the respondents were in the middle age class group (31-50 years). Ledi village had the majority of respondents above 60 year-age class. However there was no young generation under 30 year-age (Table 2).

Table 2
Age Distribution of the Sampled Households (Percent to Total Respondents)

Age classes	Kawhmu Township				Paukkaung Township	
	Kawchan	Taunggyaung	Yedashe	Kyaikthalay	Ledi	Nyaungwun
< 30	11.1	14.3	14.3	8.9	-	14.7
31 – 40	44.4	46.4	21.4	24.4	20.0	38.2
41 - 50	22.2	25.0	35.7	44.4	26.7	8.8
51 – 60	22.2	7.1	14.3	11.1	20.0	23.5
> 60	-	-	14.3	11.1	33.3	14.7

5.1.2 Educational status

As many other rural communities, the surveyed sites had low educational status as shown in Table 3. Most of the respondents in all sites rarely finished primary schools. The respondents during their childhood had to struggle for their livelihood and couldn't finish schools although there were some high schools and teaching staffs.

Table 3
Educational Status of the Respondents (Percent to Total Respondents)

Level of Education	Kawhmu Township				Paukkaung Township	
	Kawchan	Taunggyaung	Yedashe	Kyaikthalay	Ledi	Nyaungwun
illiterate	-	-	-	-	-	5.9
able to read and write	22.2	3.6	50.0	13.3	40.0	23.5
up to primary	33.3	53.6	46.4	55.5	53.3	41.2
up to secondary	33.3	28.6	3.6	24.4	6.7	17.6
up to high school	11.1	7.1	-	2.2	-	11.8
up to universities	-	-	-	4.4	-	-

5.1.3 Household members

The household sizes of all the surveyed sites were observed as small (>5 members) to medium (6 to 10 members). Large-size families were found in Taunggyaung, Kyaikthalay and Ledi villages (Table 4).

Table 4
Household Members of the Respondents (Percent to Total Respondents)

Household Members	Kawhmu Township				Paukkaung Township	
	Kawchan	Taunggyaung	Yedashe	Kyaikthalay	Ledi	Nyaungwun
< 5	72.2	39.3	85.7	60.1	66.7	61.8
6 - 10	27.8	46.4	14.3	35.5	26.7	38.2
11 - 15	-	3.6	-	2.2	6.6	-
> 16	-	-	-	2.2	-	-

5.1.4 Workers in a family

Although the family sizes were observed as small to medium, the number of workers in a family indicated 1 to 2 per family in all four villages of Kawhmu Township (Table 5). One reason is that the local people totally depend on agriculture and home gardens and the head of the family has to take care of the field. All other family members have to help him only in the crop-planting season and harvesting period. Almost all the women (93% to 100% of the respondents) in each household were doing house keeping, meaning unemployed to other works outside.

In Ledi village, Paukkaung Township more family members have to work for their daily income. About half of the women (53.3% of the respondents) are employed outside as wage labors and in cultivation. Nyaungwun village showed the largest number of workers in a family. About one third of the women (30% of the respondents) work outside for cultivation and as wage labors.

Table 5
Workers in a Family (Percent to Total Respondents)

No. of Workers	Kawhmu Township				Paukkaung Township	
	Kawchan	Taunggyaung	Yedashe	Kyaikthalay	Ledi	Nyaungwun
1-2	100	92.9	100	85.9	46.7	79.4
3-4	-	7.1	-	11.9	46.7	17.6
5-6	-	-	-	-	-	2.9
7-8	-	-	-	-	-	-
9-10	-	-	-	2.2	6.6	-

5.1.5 Students in a family

Ledi, Nyaungwun and Yedashe have the higher percentage of family with no students in compared to other villages in the study areas (Table 6). In analyzing the township wise data, the percentage of family with no student is higher in Paukkaung Township: more than 45 percent of total respondents.

Table 6
Students in a Family (Percent to Total Respondents)

No. of Students	Kawhmu Township				Paukkaung Township	
	Kawchan	Taunggyaung	Yedashe	Kyaikthalay	Ledi	Nyaungwun
No Student	28	23	46	24	47	50
1 to 2	61	62	39	62	47	41
3 to 4	11	15	14	13	7	9

5.2 Type of employment in the study sites

The types of employment in the surveyed sites varied depending upon the environmental conditions of the villages. Agriculture in Paukkaung Township mainly includes shifting cultivation, and paddy fields, and home gardens in Kawhmu Township. As the natural forest resources are scarce in Kawhmu Township, bamboo cutting is rare among the types of employment while, it is the main portion of employment in Paukkaung Township.

Bamboo-related products include collecting bamboo shoots, making sieves, mat, walls, etc. Based on the planted bamboo stocks and imported bamboo, bamboo cottage industry occupied the major part of the employment in Taunggyaung and Kyaikthalay villages in Kawhmu Township. The demand for bamboo-related products seemed to influence those village economies.

Bamboo shoot collection in Paukkaung Township can generate substantial income to the respondents. Bamboo shoots are collected at the start of and during the rainy season in those areas where natural bamboo stands are abundant. Table 7 shows the major types of employment in the surveyed sites.

Table 7
Type of Employment (Percent to Total Respondents)

Major Employment	Paukkaung Township		Kawhmu Township			
	Ledi	Nyaungwun	Taunggyaung	Yedashe	Kawchan	Kyaikthalay
Bamboo related products	-	5	73	-	6	71
Agriculture and Bamboo related products	-	2	-	-	-	11
Bamboo cutting	-	18	-	-	6	-
Bamboo cutting and Agriculture	6	19	-	-	-	-
Bamboo Cutting and Wage Labour	-	3	-	-	-	-
Agriculture	87	21	15	83	88	5
Wage Labour	7	12	12	3	-	4
Agriculture, Wage Labour and Others	-	17	-	-	-	-
Others	-	3	-	14	-	9

5.3 Average income and expenditure

Kyaikthalay and Taunggyaung villages show the highest average income per household per annum among the surveyed sites (Table 8). The income from bamboo in those two villages contributes a remarkable portion to the total income: 82 percent in Kyaikthalay and 52 percent in Taunggyaung. Significantly, the lower average income per household per annum is found in the villages of Paukkaung Township, where income from bamboo is relatively low.

Table 8
Average Income per Household per Annum of the Surveyed Sites

(in Kyat)

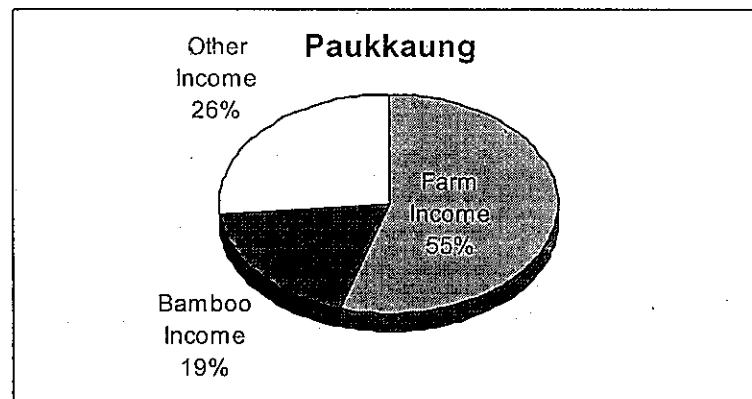
Township	Village	Farm Income		Bamboo Income		Other Income		Total Income
		Income	%	Income	%	Income	%	Income
Paukkaung	Ledi	245,800	86	11,600	4	27,733	10	285,133
	Nyaung Won	83,904	27	102,882	32	131,558	41	318,345
Kawhmu	Taunggyaung	151,932	31	260,173	52	86,538	17	498,643
	Yedashe	243,621	57	72,857	17	113,250	26	429,802
	Kawchan	222,244	45	153,611	31	117,588	24	493,519
	Kyaikthalay	33,888	5	567,755	82	87,711	13	689,355

In analyzing the surveyed villages in Paukkaung Township, income from bamboo is only 19 percent of the total income (Table.9 and Chart).

Table 9
Total Income of Paukkaung Township

(in kyat)

Farm Income		Bamboo Income		Other Income		Total Income
Income	%	Income	%	Income	%	Income
329,704	55	114,482	19	159,291	26	603,478

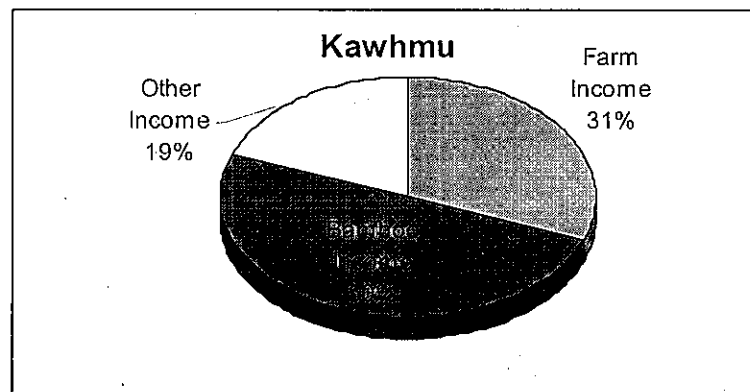


In Kawhmu Township, the income from bamboo is the highest compared to other income based on the figures of the surveyed villages (Table 10. and Chart)

Table 10
Total Income of Kawhmu Township

(in Kyat)

Farm Income		Bamboo Income		Other Income		Total Income
Income	%	Income	%	Income	%	Income
651,685	31	1,054,396.00	50	405,087.00	19	2,111,318.82



Among the six surveyed sites in this study, only 20 percent of the respondents replied that their income and expenditure are in balance. The remaining – 80 percent – answered that they had deficit income (Chart and Table11).

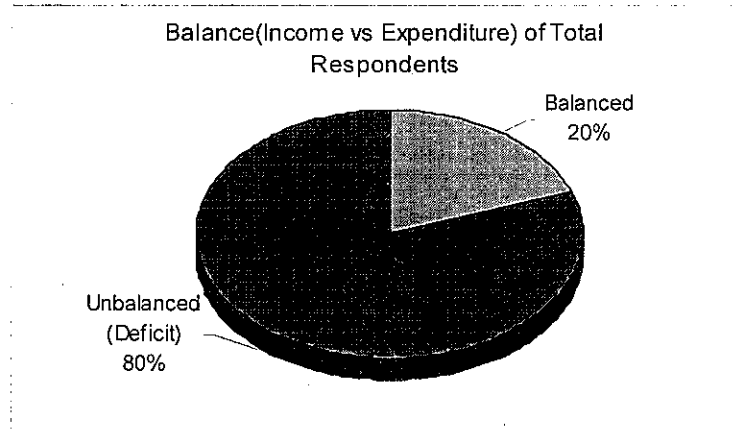


Table 11
Balance (Income and Expenditure) by Township

		Percentage	
Township	Village	Balanced	Unbalanced(Deficit)
Paukkaung	Ledi	7	93
	Nyaungwun	26	74
Kawhmu	Kawchan	33	67
	Kyaikthalay	13	87
	Taunggyaung	15	85
	Yedashe	23	77

Some 80 percent of the total respondents answered that they had unbalanced (deficit) income, nearly 70 percent of the respondents replied that they had debts. The percentage of household with loan is generally higher in the villages in Kawhmu Township (Table.12).

Table 12
Loan Condition of the Respondents

	Village	Percentage	
		With Loan	Without Loan
Paukkaung	Ledi	67	33
	Nyaungwun	44	56
Kawhmu	Kawchan	78	22
	Kyaikthalay	71	29
	Taunggyaung	81	19
	Yedashe	81	19

5.4 Contribution of bamboo culms cutting, bamboo shoot collecting and bamboo-related products to the economy of the community

5.4.1 Bamboo culms cutting

The bamboo can be cut throughout the year. Generally one year-old bamboo culms are collected for sliced bamboo. Three year-old bamboo culms are cut for various uses such as for housing purposes and for further production of bamboo products (sieves, baskets, mat, walls, etc). The most preferable and abundant bamboo species near Ledi and Nyaungwun villages are Kyathaung Wa (*Bambusa polymorpha*), Tin Wa (*Cephalostachyum pergracile*) and Hmyin Wa (*Dendrocalmus strictus*).

The price of the collected bamboo depends upon the season, the size, the species, and the accessibility to the market. The local prices for each bamboo culm (5m long) vary from 60 Kyats for big one (diameter 9 cm) to 25 Kyats for small one (diameter 5 cm). A bamboo cutter can collect 20-40 culms per day and average income ranges from 850 Kyats to 2450 Kyats.

In Nyaungwun village of Paukkaung Township, bamboo cutting is the major source of income and the respondents have 1 year to 25 years experience in cutting bamboos. According to questionnaire surveys, the respondents realize that the forests are degraded and good quality bamboo resources are scarce at present time. They have to walk more than three miles from the nearest accessible road to get good quality bamboo culms and carry them back. Due to the scarcity of the bamboo resources, the respondents have to face low productivity and income.

The constraints for bamboo harvesting are accessibility to bamboo resources, risks to injury, difficulty to extract the cut culms from the clumps, and weather conditions. The accessibility to market is also a problem for respondents. Since there is difficulty in transporting the collected bamboo culms to the market directly, bamboo culms are inevitably sold to the agents with relatively low price.

5.4.2 Bamboo shoot collection

Bamboo shoots can be collected annually in rainy seasons. In two villages of Paukkaung Township, they are available just near the village and the excess bamboo shoots from local consumption are exported to other localities. The price of the bamboo shoots are, however, very low in rainy season since the production is higher than the market demand. Local people expect to process the excess bamboo shoots to pickled bamboo shoot and sell them at a relevant price at any time of the year. The initial investment for such processing needs substantial amount of money and some technologies are also necessary for mass production.

However, unsustainable way of collecting bamboo shoots can reduce the quality and quantity of the new generation of bamboo. As a consequence, the local people have to go longer distance for cutting good quality bamboo culms.

5.4.3 Production of bamboo-related products

Bamboo-based cottage industries occupy the major portion of the employment of Taunggyaung and Kyaikthalay villages of Kawhmu Township. The products include bamboo trays or sieves which are widely used for rice production process, bamboo mats and walls. In both villages, most of the households are dependent on the income from bamboo related products. Local price per bamboo sieve is 250 Kyats. The expenditure for buying raw materials (bamboo and rattan) cost 600 Kyats for 10 bamboo sieves and that the net income for a household is 1,900 Kyats for every 10 sieves produced.

6 General perception of rural communities

Local people now realize that their bamboo resources are depleting and they want to conserve or maintain those valuable resources especially near the village. By conserving the bamboo resources, the local people can extract bamboo shoots and also good quality bamboo culms. The leaders of Ledi village community are preparing how

to apply for the establishment of community forest near the village. At the same time they are willing to learn how to make value added bamboo products.

Most of the respondents showed their intentions to participate in the income generation activities and training programs on harvesting, processing and effective utilization of natural bamboo resources. The respondents from four villages of Kawhmu Township are interested in establishing bamboo plantations in communal lands since they have limited private land.

The local people from Kawchan and Yedashe villages of Kawhmu Township realize that the income from agriculture alone cannot fulfill their basic needs and exhibit their interest in learning the technologies for producing value added bamboo products.

7 Recommendations and conclusions

Bamboo resources in two villages of Paukkaung Township are still abundant for local use. However, the quality and quantity of the bamboos for daily income of the local people declined to some extent due to the excessive exploitation and lack of systematic management. Systematic management to natural bamboo resources is urgently needed to maintain or promote the income of the local people as well as the socio-economic conditions of the rural peoples.

The potential labor in Ledi village is low and the average income is found to be the lowest among the surveyed sites. Along with the introduction of natural bamboo forest management, income generation strategies should be provided to this village e.g. transfer of technologies for making value added products from raw bamboo such as mats, sieves, walls etc., providing techniques and initial investment for pickled bamboo shoot production, and facilitating market, that is necessary to export the bamboo related products to the main market directly.

Bamboo resources in all four villages of Kawhmu Township are scarce and establishment of the bamboo plantations should be initiated in those areas. According to the results of the survey, the income from agriculture alone cannot fulfill the livelihood of the local people in Kawchan and Yedashe villages of Kawhmu Township. Both the establishment of the bamboo plantations in communal lands for local consumption and

the introduction of technologies for making value added bamboo products are strongly recommended.

Taunggyaung and Kyaikthalay villages of Kawhmu Township have already practiced production of bamboo value added products. In the case of Kyaikthalay village, the production cost particularly for buying raw bamboo is found to be relatively high and consequently the profit made by the respondents was very low. Importing the raw bamboo with low price or getting raw bamboo by establishing bamboo plantations will be the best solution to the village.

As a general recommendation, natural bamboo forest management systems should be practiced in areas where bamboo resources are still available. Establishment of bamboo plantations should be established in areas where bamboo resources are scarce. In both areas, promoting technologies for value added products and market facilities are essential for increasing income generation of the rural people.

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