
**Marketing Study
for
Non-Timber Forest Products (NTFPs)
in Tanintharyi Nature Reserve (TNR)
Myanmar
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Executive summary

There is a considerable amount of published studies describing the role of Non-Timber Forest Products (NTFPs). Throughout the developing world many rural households depend in some ways on NTFPs for their living. NTFPs are the basic for much local needs and serve as an important role in source of income. The local community lives in and around Taninthayi Nature Reserve (TNR) depend on not only horticulture crops but also traditional shifting cultivation, hunting, timber and bamboo extraction, and production NTFPs for their daily livelihood and income generation.

The study villages were selected based on location in or around TNR areas and other potential products production places.

This paper aims to show the marketing study for Non-Timber Forest Products (NTFPs) which will be taken by decision makers and donors from the study results of participatory methods and questionnaire survey. A key requirement is to produce results from a representative data, which can be analyzed in order to reach conclusions for local community interests and recommendation for appropriate community development program. The focus of this paper is an approach that the study on which it is based worked with participants from local communities and different actors related to NTFPs marketing strategy.

The community needs assessment by participatory approach examined that information about strengthen and weakness of NTFPs production and market opportunities. The focus groups participated in decision making process of need assessment for gap analysis.

The applied questionnaire survey was widely brought into play for data analyzing of different kinds of NTFPs, market value chain, production cost and constraints. Furthermore, the questionnaire data were taken into account for market mapping and involvement of different actors.

The study used secondary data of report made in socioeconomic baseline study to conclude five capitals assess for livelihood development program.

The recommendations of this report contribute to make a plan for sustainable rural livelihood framework. The following are some of key finding from this study.

- The key to success with the market system approach for an organization is to facilitate change, not to force it.
- The market also needs a set of rules and norms that everyone follows.

- They also cannot get regular income because there is no regular market to sell and to buy. Hence, people do not have a place to sell the goods they produce and cannot buy the things they need. Thus, the broker is crucial to local market.
- Local people mainly rely on forest products or resources, they collect non-timber forest products for their living but they still have a difficulty of business issues that is market access.
- Another important point should be considered that is value added products to be produced for local, regional and national needs.
- For the sustainable point of view, income generation practices should be exercised systematically including individual benefit sharing and common profits for sustainable development.
- The main idea is to avoid creating dependency among local businesses, households and system and to keep the people their own initiative and capacity to develop market system.
- The potential products contribute to local economy development. At the present condition, local people mainly rely on only natural products. Thus, we should encourage them to cultivate multi layer structure in their own land and land permitted by government.
- Small business training should be taken for NTFPs user groups so that they can understand market strategy, market access and know consumers demands.
- Skill trainings for plantation establishment should be taken for their implementation of livelihood development strategy.
- Post harvesting technology is very important for livelihood strategy improvement. The price of Wa-U (Round Yam) and Cardamom Seed is highest in late season in previous mentioned. In this case, if the local community is able to store the products for selling in higher price condition, their economic condition may be increased.

1. Introduction

1.1. TNR and its Nature

The Taninthayi Nature Reserve (TNR) is primarily pristine tropical evergreen forest and some mixed deciduous forest. It is located between Latitudes 14° 20' 50'' and 14° 57' 55'' North and Longitudes 98° 5' 10'' and 98° 31' 32'' East. It occupies total area is approximately 1700 square kilometers (Taninthayi Nature Reserve Operational Management Plan, 2009).

Climatic condition of TNR is categorized by seasonal and tropical monsoon type. The site is one of the most significantly abundant rainfall areas in Myanmar. The rate of average annual rainfall is 6674 mm from 2001 to 2008 with about 145 rainy days from May to October. The range of average temperature is 25-28° C with the hottest month is normally in March and the coldest in January (Taninthayi Nature Reserve Operational Management Plan, 2009).

In topological point of view, a wide range of altitude varies from 15m the flat lands above sea level to the highest zenith reaches 1400m at the ridge of Thai border. The range of the steep slope is greater than 37% of the most parts of the area. The mountain range runs from the north to the south while the slope rises from the west to the east towards the ridge top and is oriented to the western aspect (Taninthayi Nature Reserve Operational Management Plan, 2009).

Geologically, it consists of granite intrusions and weathering of granite gives rise to gravelly soil on which giant evergreen forest is found. The formation of soil type in TNR falls into the yellow and red brown forest soil zone.

1.2. Socio economic condition in the study areas

The local communities mainly depend on horticulture crops for their economy. Moreover, the marketable cash crops which are betel nut, cashew nut, citrus species and rubber trees contribute to their livelihood. The marginal farmers rely on traditional shifting cultivation for their living and some are solving their livelihood problem through harvesting forest resources, such as timber and bamboo cutting, and hunting for wildlife trade (Ngwe Thee, 2008). In addition,

economic benefits that can be derived from non-timber forest products (NTFPs). However, at the present time, local people gather natural NTFPs with unsustainable ways from the forest.

Another important challenge is to have access markets information for local people. Hence, the species should be identified as the potential products for livelihood development program through community based NTFPs cultivation in suitable land areas.

2. Objectives

The main purpose of study is to provide useful information about Non-Timber Forest Products (NTFPs) market system and value chain to enhance livelihood activities on local beneficiary. The objectives of this survey are

- To study the potential markets for available Non-Timber Forest Products (NTFPs) resources other than bamboo, cane, betel nut shells, medicinal plants, Wa-U (round yam), and cardamom seeds, etc.
- To study the current market situation, demand and supply of NTFPs and its trend around the Taninthayi Nature Reserve
- To study the past situation of harvesting NTFPs and Forest Gross Domestic Product
- To give recommendation for appropriate community development program by using NTFPs based on gap analysis

3. Literature Review

3.1. Role of NTFPs

There is a considerable amount of published studies describing the role of Non-Timber Forest Products (NTFPs). Throughout the developing world many rural households depend in some ways on NTFPs for their living. NTFPs are the basic for much local needs and serve as an important role in source of income. Basic information regarding NTFPs is important for communities to make the best possible use of their natural resource (Greene, 1998). In 2007, Adepoju and Salau published a paper in which they described that NTFPs are as important as

wood based products and up to 80 percent of the population in developing countries depends on NTFPs for subsistence, economics and nutrition. NTFPs are especially important to women in developing countries from Latin America to Asia and Africa.

Non timber forest products (NTFPs) play an important role in the livelihood strategy of rural community in the tropical countries. At the household level, they are used mainly for food, medicine, income, etc. Moreover, some products are often of economic importance as they are traded locally, nationally and even internationally. Besides that, NTFPs have potential role to contribute to the conservation of tropical rainforests and participatory forest management. Some literatures mention that the value of NTFPs for livelihood development program and for the cultural and spiritual (FAO, 2002). Production of NTFPs possibly gives important benefits for local communities, such as goods (food, fodder, fuel, medicine, construction material and small wood for tools and handicrafts), alternative income and employment opportunities. Compared to timber exploitation, the harvesting of NTFPs seemed to be possible less major damage to the forest and its environmental services and biological diversity (Ros-Tonen, *et al.*, 2003). However Ticktin (2004) indicated that harvesting of NTFPs can change forest structure, composition and regeneration. For example, bark ringing of trees in South Africa caused the formation of canopy gaps, changing forest structure and allowing an influx of invasive species. Similarly, areas of dry deciduous forest in India that were subject to high-intensity NTFPs harvest had lower species richness, basal area and tree mortality, as well as lower numbers of individuals in the smaller size classes, than comparable areas of forest with lower intensity NTFPs harvest.

The production of NTFPs has some constraints to be considered for livelihood enhancement. The problems are declining natural stocks, policies uncondutive to environmental protection and poor access to fair market (FAO, 2002).

Ros-Tonen (2003) described that various socio-economic conditions affect the role of NTFPs for people's livelihoods, create alternative employment opportunities, access to markets, the availability of products with established markets, increase agricultural development and the degree of linkages with other areas, and rate of labor migration.

3.2. NTFPs and Livelihood Enhancement

Collection and marketing of NTFPs are traditional sources of household income and sustenance in rural areas. In most tropical countries, Non-Timber Forest Products (NTFPs) are important in the daily lives of the local people, contribute to the fulfillment of basic needs and provide employment opportunities. In particular rural and poor people depend on NTFPs as sources of food, fodder, medicines, gums, resins and construction material for their livelihood. In addition to local consumption, NTFPs are also important in not only local market traded commodities but also regional, national as well as international markets. NTFPs contribute to as a part of socioeconomic condition of local community (Banjade & Paudel, 2008). FAO (2002) mentioned in the report that in Myanmar, rural communities depending on NTFPs for their subsistence and for trade and the NTFPs are probably more important than timber or other forest products. NTFPs provide as raw materials large scale industrial processing and some are also important for export market.

In Myanmar, forest products are divided into two main products, namely, commercial products and minor forest product or Non-Timber Forest Products including animals, vegetables and mineral products (FAO, 2002). According to their nature and uses, Myanmar NTFPs can be divided into the main group, bamboo; cane (rattan); tanning bark; straw (bast); scented wood and bark; gum, resin and oleoresin; spice; roofing material; dyeing material; animal products; medicinal plants; edible products; other miscellaneous products (FAO, 2002). NTFPs production also contributes revenue to the country. However, even NTFPs provide income-generation opportunities for forest dwellers, they still have a low economic profile (FAO, 2002). CIFOR (1997) also mentioned that NTFPs contribute in different ways to household self sufficiency, food security, income generation, accumulation of savings and risk minimization. Seasonal NTFPs-based activities can be important in filling income gaps of local people.

Although, the production and processing of (NTFPs) may considerably increase the incomes of local community, there are relatively few successful examples of NTFP enterprise development combining profitability, equity, sustainable production and suitable technology used (CIFOR, 1997).

3.3. NTFPs Production and Technology

Technical knowhow for enterprise development includes equipments, tools, processes, products, materials, skills, and systems for converting inputs into outputs and marketing strategy, distributing and using the final products for consumption. When the technology distribution to the implementation, it can be noticed that it is usually easier to improve the existing technologies than to introduce new approaches because existing process of firms have some investment in place. Moreover, the entrepreneurs and employees have demonstrated business point of view and technical skills for production, processing and marketing. The sustainable production can be achieved by working with the private sector and creating market-based production and using more productive technologies (CIFOR, 1997). On the other hand, NTFP gatherers can also be organized into co-operative system for marketing unprocessed commodities to take advantage of economies of scale and improve their market information and develop bargaining power with buyers (Feto, 2009).

Development of local skills is one of the most important factors to contribute the potential of technological assistance to help small scale-production and to achieve increased capacity for further innovation, enhanced ability to enter new product lines or markets and creation of new possibilities for local manufacturing. Small scale producers to take the benefits by using appropriate technology may be needed in organizational production, semi-processing, processing and marketing. Mostly, local poor people gather seasonal NTFPs to get additional income for their lives. Men, women and even children play a major role in collecting and processing the natural NTFPs (CIFOR, 1997).

Adepoju and Salau, 2007 concluded that value added NTFPs at the local level are not well known in the market economy. However, the NTFPs traded is rapidly growing, perhaps faster than the timber industry and it is expected to grow more in the future. For example, the market for forest products other than trees has mushroom by nearly 20% annually over the past years. Lim, 1992 also pointed to NTFPs are as worth as, or more important than some other forest products.

3.4. Market system and Livelihood strategy

Marketable NTFPs can contribute to local community economies and household income generation. Local, regional, national and international NTFPs market can also provide the

economic growth well (Greene, 1998). Several studies described the NTFP market chains that marketing chains are the skeleton or flow of marketing systems. A marketing chain consist of various levels of different actors, local collectors, village traders, road-head traders, large traders, wholesale and commission agents, and national industrial units (Greene, *et al.*, 2000). Murthy, *et al.*, (2005) also described that NTFPs are fundamental of development and survival of people living in and around forests. However, the challenge of NTFPs utilization or marketing is to assess and quantify the value of these products.

A market approach to be sustainable, the system maintains improving prices to producers, adding value locally, and organizing people to achieve the aim, while increasing people's interest in conserving forests and resources. This approach can also lead to the long-term securing economic growth and political rights goal (Perez and Byron, 1999).

The following model livelihood strategy of local communities will provide the action plan for NTFPs user groups formation in TNRP.

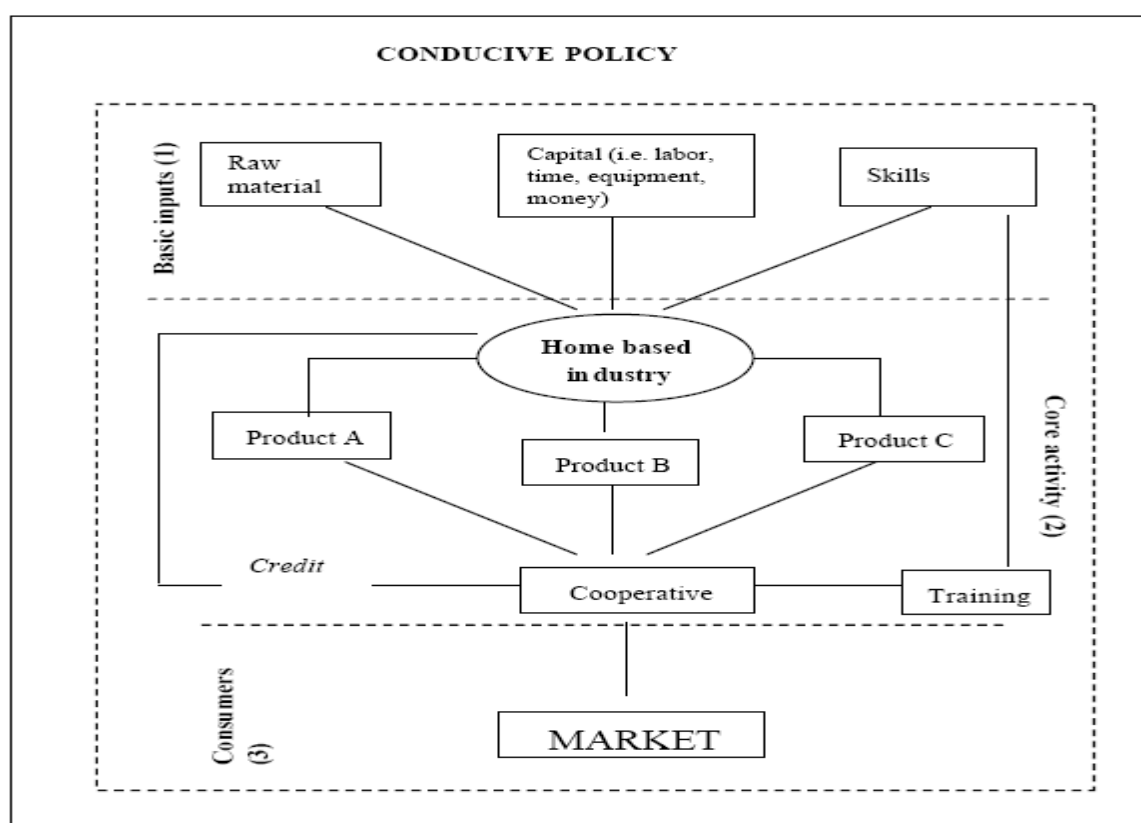


Figure (3.1). Source of data from the Role of NTFPs in the Livelihood Strategy of Rural Communities: An overview by *Nguyen Trung Thanh*

The model described the home based industry that is small scale based on NTFPs production. However, this kind of industry is seasonal activities due to the fact that products are seasonal based and less agricultural operation period. Another challenge is the lack of markets access. Most rural communities have little access to market and they are usually highly dependent upon retailers or collectors who have better connections with urban areas. The development of small-scale enterprises has some problem caused by rural communities lack capital to enhance their production capacity.

In order to encourage the development of such industry, several factors need to be taken into account. Here, a model of home-based industry development is proposed (see Figure).

This model proposes three stages for achieving well-established small-scale enterprises. First is the initial requirement. They are a continuous supply of the raw material from the forests or domesticated sources, capital to run the enterprises such as labor, money, time and equipment necessary in production, and the skills of the rural community to produce good quality products according to marked demand.

The second is the productive activity that response to the demand of the market and quality standard products needs to be ensured. It is recommended that households produce should be multiple products rather than single so that the results will come out less vulnerable to market saturation. However, this may require more labor and investment too.

The model also suggests that to establish a cooperative system to support the marketing of the products. The model points out the situation in the absence of a cooperative, retailers will normally get most of the benefit, because in such situations, producers (on the rural community) will have less power in defining the price because they are price takers while the retailer is a price maker. In order to find out to overcome this unfavorable situation, cooperative system is the one will offer a promising alternative. If all producers gather the products into a cooperative, they become a single entity that can sell their products to many consumers. In this circumstance, they will become more powerful price maker in determining price. Moreover, cooperatives may give some advantages for small credit to their members. Another advantage is that it can offer skills training to improve capacity of members to produce quality products with sustainable ways.

Finally, the reporter mentioned that policy in both at the local and national level. It needs to provide the development of small-scale NTFP home-based industry. Government must

encourage and ensure the existence of this kind of enterprises. In this way, it may contribute to reducing poverty and increasing livelihood development of rural community.

4. Methodology

The study villages were selected based on locations in and round Tanintharyi Nature Reserve (TNR). That assessment was done in 18 villages for local market level, 1 for Township market and another for 1 for city market. The total study places were 20 sites. A total of 70 respondents accounting for 40 male and 30 female was participated in focused group discussion for capturing the qualitative assessment of the marketing of the local products. Altogether there were 70 households interviewed by household questionnaire. Selection of these survey villages was based on difference in NTFPs production and horticulture crops.

The study was conducted using appropriate Participatory Rural Appraisal (PRA) tools and techniques. The PRA method or participatory approach will identify the factors (needs assessment and, efficiency and constraints) that will contribute to commercialization of local communities. The quantitative data will illustrate the number of potential NTFPs and the price trend of products. The tools of data collection included in briefly explanation hereunder given:

- Semi-structure interview
- Market mapping
- Fish-Bone for grower constraints
- Focused group interview and discussion
- Direct observation
- Historical time line for price trend
- Cost benefit analysis for potential products
- Gaps analysis
- Secondary data reviewing

Semi-structure interview, it was employed during discussions with individual NTFPs users, villagers, collectors, processors and brokers. The people involved in their harvesting, processing methods, production cost, selling and market centers.

Market mapping was used with the various user groups to see the flow of various marketing channel and identify the different actors. As the data collection for the value chain,

the species must be potential NTFPs such as Wa-U, cardamom, broom, bamboo, bamboo shoot and some marketable horticulture crops such as lemon, coconut and cashew nut.

Fish-Bone method was employed on focus groups to specify the constraints in each phase and visualized in the flip-chart. This tool made the discussant easier for handling complex nature of constraints in potential NTFPs cultivation.

Focus groups were interviewed to get information on the potential of NTFPs from villagers, collector, and buyers in and out of the zone. Data was gathered from focus groups, concern with Non-Timber Forest Products (NTFPs) in each village. The data would provide the value chain analysis and market mapping and 5 capital assessment for livelihood development program.

Direct observation, field visits were made to the different market centers to assess through direct observation to conclude which products are potential marketable products.

Historical time line for price trend, the data was collected to predict the price fluctuation of products.

Cost benefit analysis was used to predict cost and benefits for potential products. The calculation focused on the data from individual respondent and group discussion. Net marketing margin will be included in this analysis (Abebe. A 2009).

$$NMM = \frac{\text{Gross margin} - \text{Marketing Cost}}{\text{Price paid by the consumer}} \times 100$$

Gap analysis was identified to determine strength and weakness of community based NTFPs marketing and to clarify the locally required resources and skills and current gaps.

Secondary data also were used for five capital analysis to contribute livelihood development program and for trends of NTFPs GDP in study area.

5. Results and Discussions

5.1. Study areas

The NTFPs marketing survey was done in 18 villages for local market assessment and 2 places, Yephyu and Dawei for Township and City markets respectively. A total of 70 key informants accounting for 40 male and 30 female was participated in focused group discussion

and semi-structural interview for capturing the qualitative assessment of the marketing of the local potential NTFPs. Selection of these survey villages was based on the sources of NTFPs production in and around TNR. The villages were selected based on different in products to get information for not only NTFPs but also potential horticulture crops.

Table (5.1.1). Assessment villages in TNRP (NTFPs and Horticulture Crops)

No	Village	Township	No of Respondent		Total Respondent	Percentage of Respondent
			Male	Female		
1	Mi Chaung laung (old)	Kaleinaung	3	0	3	4%
2	Mi Chaung laung (New)	Kaleinaung	2	0	2	3%
3	Yafu	Kaleinaung	9	2	11	16%
4	Zinba	Kaleinaung	1	3	4	6%
5	Kyaukshat	Kaleinaung	1	3	4	6%
6	Hnankye	Kaleinaung	5	2	7	10%
7	Heinze	Kaleinaung	2	2	4	6%
8	Yebon	Kaleinaung	3	2	5	7%
9	Mayanchaung,	Kaleinaung	1	3	4	6%
10	Khawhlaing	Kaleinaung	1	1	2	3%
11	Kaleinaung	Kaleinaung	2	4	6	9%
12	Gantkawtaung	Yephyu	0	1	1	1%
13	Zardi	Yephyu	1	0	1	1%
14	Eidayazar	Yephyu	1	0	1	1%
15	Michaungai	Yephyu	1	0	1	1%
16	Faungtaw	Yephyu	1	0	1	1%
17	Kanbauk	Yephyu	2	0	2	3%
18	Kalonehtar	Yephyu	3	4	7	10%
19	Yephyu	Yephyu	0	2	2	3%
20	Dawei	Dawei	1	1	2	3%
	Total		40	30	70	100%

Table (5.1.2). Distribution of Respondent in survey period

Type of Respondent	Kaleinaung	Yephyu	Dawei	Total Respondent	Total Percentage
Male respondent	30	9	1	40	57%
Female respondent	22	7	1	30	43%
Total	52	16	2	70	100%

From the analysis of table (5.1.1) shows that both male and female involved in different production levels; harvesting NTFPs from the natural forest, collection, processing and doing value added products and marketing. With respect to the number of involvement, male was higher than female in production level. This is attributed to the fact that the local community mainly rely of NTFPs collection from the forest areas. Thus men usually go to the natural forest areas to gather the seasonal products in local level. However, women also participated in collection and processing level.

It can be concluded that local community only still emphasized on natural NTFPs. Many reporters also described that in developing countries, local people gather the NTFPs from the natural forest. Moreover, they collect the products in unsustainable ways, the size of products is not marketable and they don't consider for natural regeneration stage. However, they noticed that the depletion of potential NTFPs year by year. When they go to the forest to collect the products, they observed that the places in current year are more farther than that of last year. Natural NTFPs that were collected by men in higher percentage than by women, since, it is the product of natural forest area which needs going far from the villages, that is usually or easily by man.

5.2. Different NTFPs by Respondents

No	Product	Respondent (N = 70 hh)	
		number of products by respondent (N=91)	%
1	Wa-U (Round Yam)	26	29%
2	Cardamom seed	23	25%
3	Bamboo	8	9%
4	Bamboo Shoot	1	1%
5	Broom	3	3%
6	Lime	2	2%
7	Betel Nut	8	9%
8	Coconut	2	2%
9	Wood Bark	4	4%
10	Rattan	4	4%
11	Jungle Bean	5	5%
12	Cashew Nut	3	3%
13	Lemon	2	2%

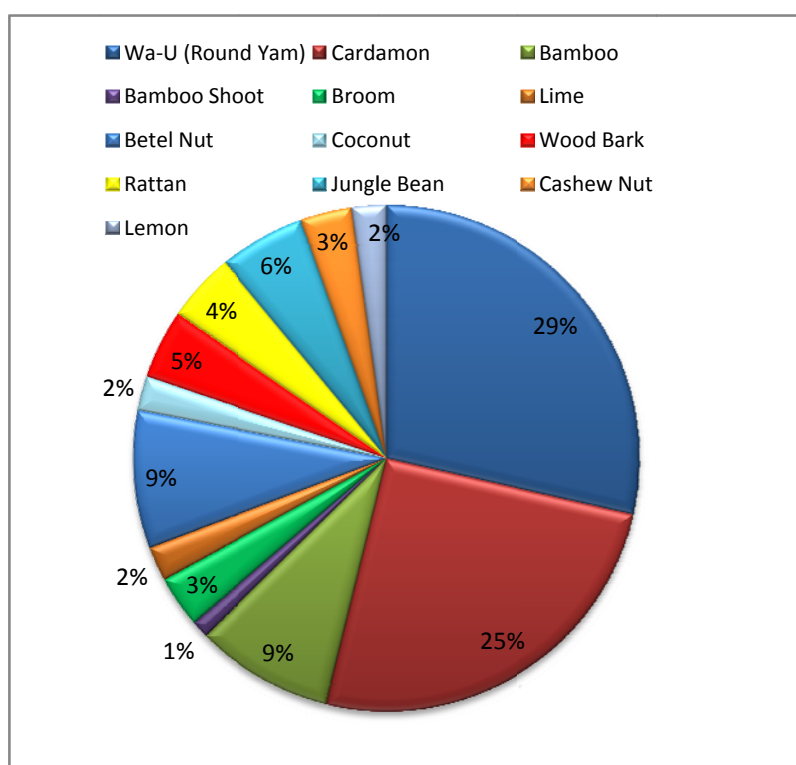


Figure (5.2). Percentage of Respondents on different products

From the results of field assessments, both NTFPs and horticulture crops data were collected during study period. The results based on the total number of products by doing respondents. Some people involved in more than one product production. The respondents contributed in information about that Wa-U (round yam) was the highest percentage and Cardamom was the second highest among different products. However, the lowest percentage contributed to bamboo shoot processing. It can be assumed that during survey period was more favorable for capturing information about seasonal products, Wa-U (round yam) and Cardamom seed. Most of the NTFPs are seasonal products and provide as seasonal income for local community. The figure illustrates the lower percentage respondent for value added products such as dried coconut, broom brush making and preserved lemon.

5.3. Seasonal Calendar of some NTFPs

Table (3.1). Collection seasonal calendar of some NTFPs

Product	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Wa-U (Round Yam)												
Cardamom												
Bamboo												
Bamboo shoot												
Broom grass												
Rattan												
Jungle Bean												

The table (3.1) shows that seasonal production of NTFPs in TNRP. Most dominant species in study period, Wa-U and Cardamom seed are available between mid-Aug and Mid-Oct. Broom stick can be harvesting during summer season between Jan and April. The broom sticks can be stored for processing in the year round. Bamboo cutting activities by local people can be done for a year round. However, the price of bamboo is different in season. Normally, the price is higher in summer season than rainy season because of mainly in buildings renovation, repairing and construction uses. Bamboo shoot can be harvested during raining season and preserved for longer uses for food. Local people collect the rattan from December to May.

Most of the local people said Jungle bean can be collected Jun and July. One of the problems of harvesting is that they cut the branches and even plant to pick up the jungle bean. They don't consider for sustainable use.

5.4. Number of Respondents on NTFPs

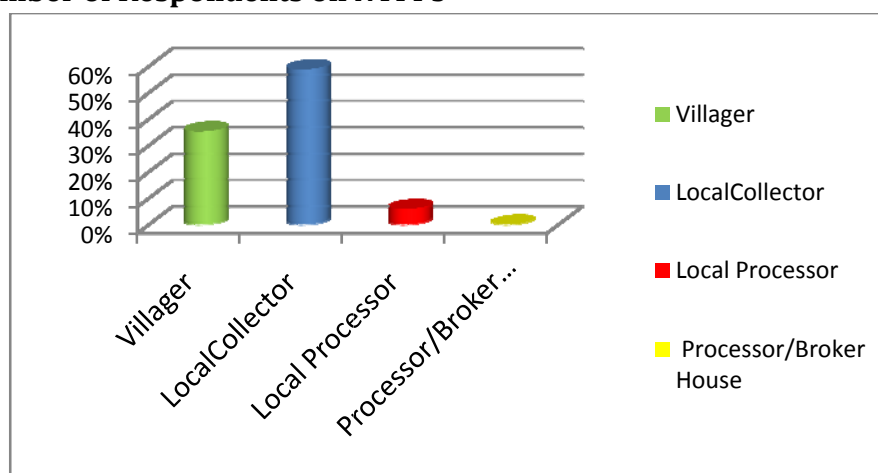


Figure (5.4.1). Percentage number of respondents on NTFPs

From the figure above shows the percentage contribution of respondents in different marketing level. The villagers gather the products from the forests and they sell the products to mostly local collectors in each village. Some local collectors also gather the products under the control of local processors, lender and broker house. The collectors are major player for this marketing process. The figure also shows that the lower percentage of processing in local level. They have some constraints which can be low initial investment for storage and processing cost, lack of processing techniques and difficulty of market access. In here, local processing level must be encouraged to produce value added products.

Table (5.4.1) Different amount of income from different products by Villager (Director Harvester)

Wa-U (Direct Harvester)	Volume (Viss) per season	Price/Viss	Total income
Respondent R 1	300	300	90000
R2	100	300	30000
R3	280	400	112000
R4	140	350	49000
R5	50	350	17500
R6	100	300	30000
Average Income			54750

Cardamom Seeds (Direct Harvester)	Volume (Viss) per season	Price/ Viss	Total Income
Respondent R 1	30	3000	90000
R2	100	5000	500000
R3	35	3000	105000
Average Income			231667

Bamboo Cutter	Number per year	Price/Number	Total Income
Respondent R1	3000	250	750000
R2	4000	180	720000
R3	3000	160	480000
	3000	180	540000
			1020000
R4	3500	150	525000
	1500	120	180000
			705000
R5	7000	180	1260000
	5000	120	600000
			1860000
R6	4500	250	1125000
Average Income			1030000

Broom Grass Harvester	Number per season	Price	Total Income
Respondent R1	250000	1	250000

Bamboo shoot Processor	Volume (Viss)	Price	Total Income
Respondent R 1	600	700	420000

Rattan	Number per season	Price/number	Total Income
Respondent R1	4000	10	40000
R2	2000	25	50000
Average			45000

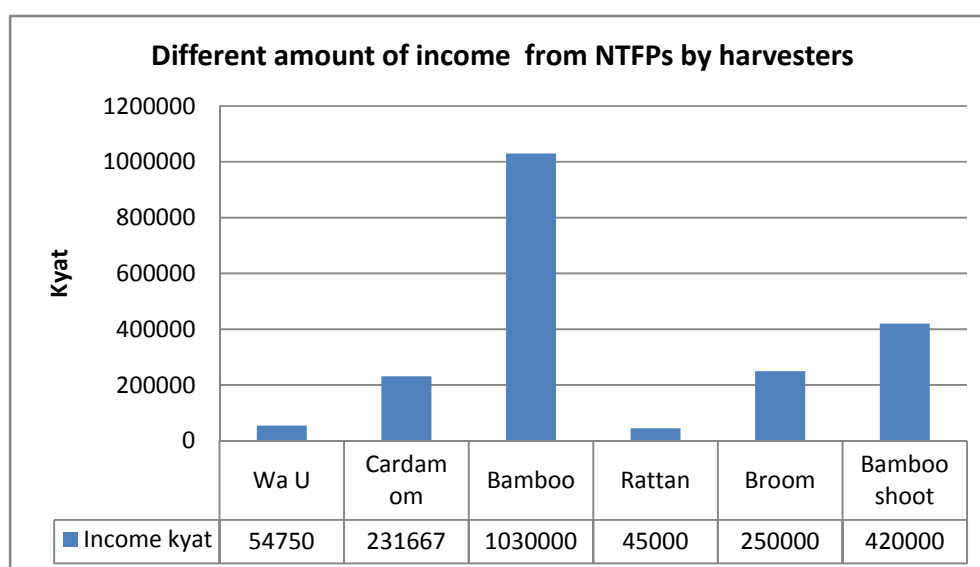


Figure (5.4.2). Total different amount of income from NTFPs by harvester

The data came from the analyzing of questionnaire interview survey. The NTFPs direct harvesters responded that the amount of income from NTFPs selling. Bamboo cutters mentioned that one person can cut 50 number of bamboo for one day. The production season of bamboo is all year round but the price in rainy season is lower than summer. The average income from bamboo cutting shows the highest 1030000 Kyat per year. The bamboo shoot processor can get 600 viss per year, the whole sale price is 700 Kyat, and thus, the total annual income is 420000 Kyat. Mostly woman makes the processing of bamboo shoot.

The broom grass collector can gather 2500 broom grass per day. The total collection days are 100 days per year, the price is 1 Kyat for one. Hence the harvester can get 250000 Kyat for their income.

The cardamom harvesters indicated that it is difficult to find them this year, they could gather the minimum amount 35 viss and maximum 100 viss. The local maximum price is 5000 Kyat. There is a most serious problem that is forest fire. It can affect on the amount of available of cardamom seeds.

They mentioned the collection of Wa-U (round-yam) that is limited available from the wild. Some could have only 50 viss and some have 300 viss for a year. The price is 300 Kyat in

minimum and 400 Kyat in maximum in local market. They received the income is average 54750 Kyat per year.

6. Marketing Channel of some NTFPs

There are different marketing channel depend on different kind of products. In here, only flows of some common NTFPs will be mentioned to see various channels of marketing and important discussion points.

6.1. Wa-U (Round- Yam) Marketing Channel

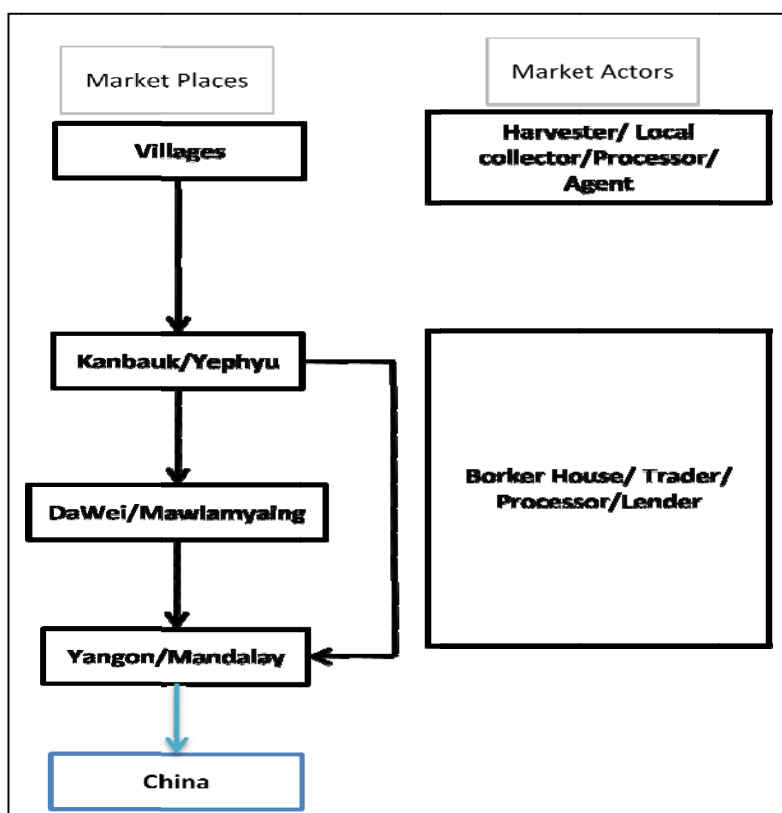


Figure (6.1). Market Mapping of Wa-U (Round Yam)

The above figure illustrates the trade of Wa-U (round yam) is fragmented with various beneficiaries along the trade chain. The products are moved from the village to various market centers (Kanbauk, Yephyu, Dawei, Mawlamyaing, Yangon, Mandalay and China). The middle men, collectors are one of the most important contribution actors of marketing. The villagers are

basic market actor of trade. However, collectors make the price under the control of traders or broker house or lender. The villagers work for NTFPs collection individually without doing association work. Thus they have low power of bargaining. They don't have enough investment for processing and technology. They only rely on the natural NTFPs. The low involvement of indigenes in the NTFP clearly shows a low level of benefit they derived from the trade. In order to reduce the market chain to get more benefit for local people, the capacity of villagers should be built up to processing level or semi value added production level.

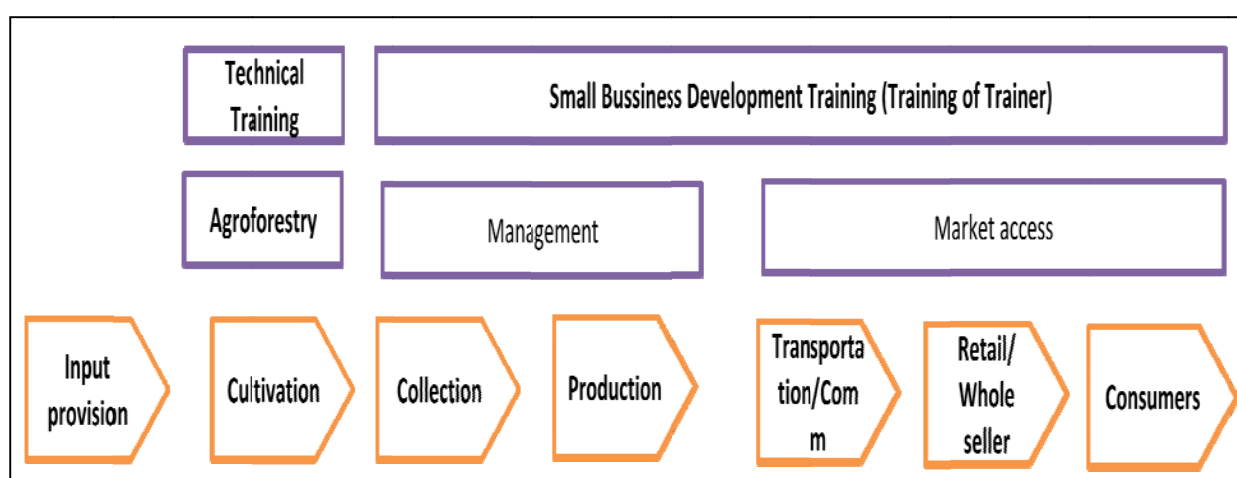


Figure (6.1.1). Proposed Model for Wa-U (Round Ram) cultivation and production

The local communities usually rely on only natural NTFPs collection for the supplement to their livelihood. In this case, the rate of amount of NTFPs production is decreasing year by year and the product quality is falling also. Some of the respondent pointed out that "the villagers gathered the small size of Wa-U (Round Yam) and they don't have any idea about natural reproduction or natural generation. They destroyed the life cycle of Wa-U (Round Yam). Although the villagers know about natural reproduction condition, they have to solve their daily livelihood problem".

Due to the fact that decreasing production of natural products, the villagers should be encourage planting the potential NTFPs species in their garden or permitted land by government. The capacity development program should be taken into account for sustainable livelihood activities. The program must include in not only skill training but also community based organization (CBO) strengthen training. Agro-forestry training, horticulture development training and small enterprise development are the example of skill training.

6.2. Broom grass Marketing Channel

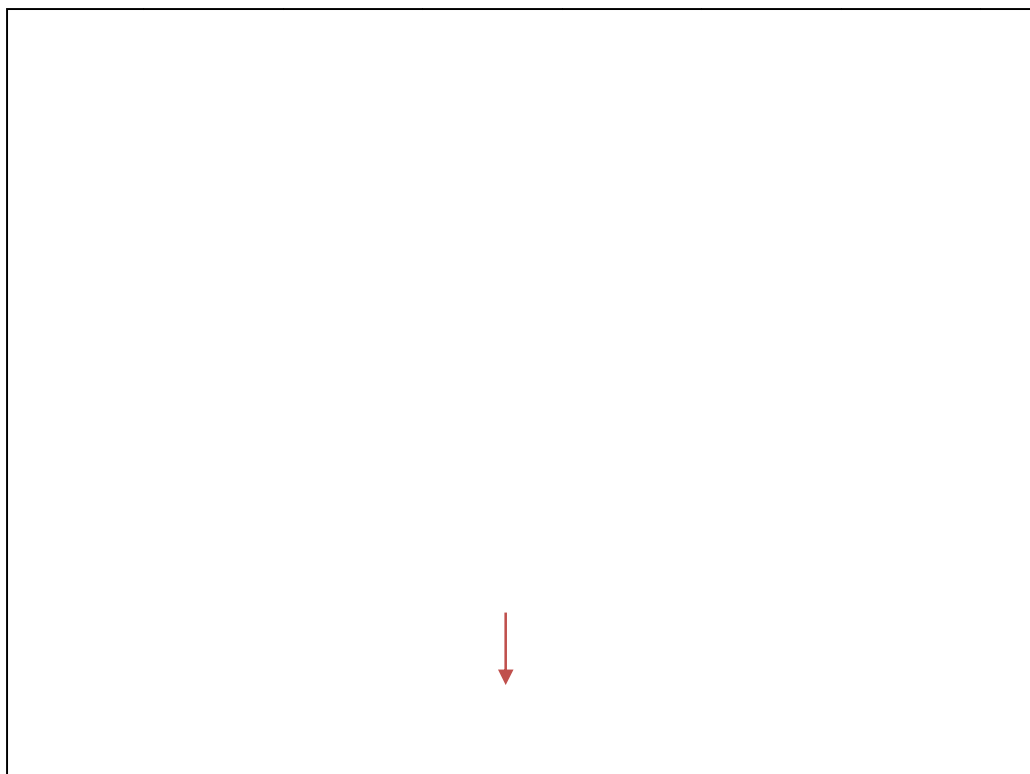


Figure (6.2.1). Market mapping of Broom Brush

The market mapping shows the channel of broom market. Harvesting takes place in summer season, from January to April. Local villager gathers the broom grass in degraded forest land in TNRP. They usually sell the raw products to collectors. The collectors send the materials to market cities (Dawei, Theinzayet) for doing value added. The city market takes the advantage of collection broom grass and produces the value added product. This value added product goes to national market (Yangon), export market (Malaysia) and back to local market as well. In terms of direct observation to city market, broom market channel could be observed that the trader from Yangon makes an investment for broom making in Dawei and exports handmade brooms to Malaysia. About total number of 40 labors work for that broom making regularly. Local broom grass market depends on the broom makers and traders. They create the price of broom grass in local level. The income of local community generate from sale of raw broom grass harvesting only. There is a significantly low number of local broom makers. During survey period, only two

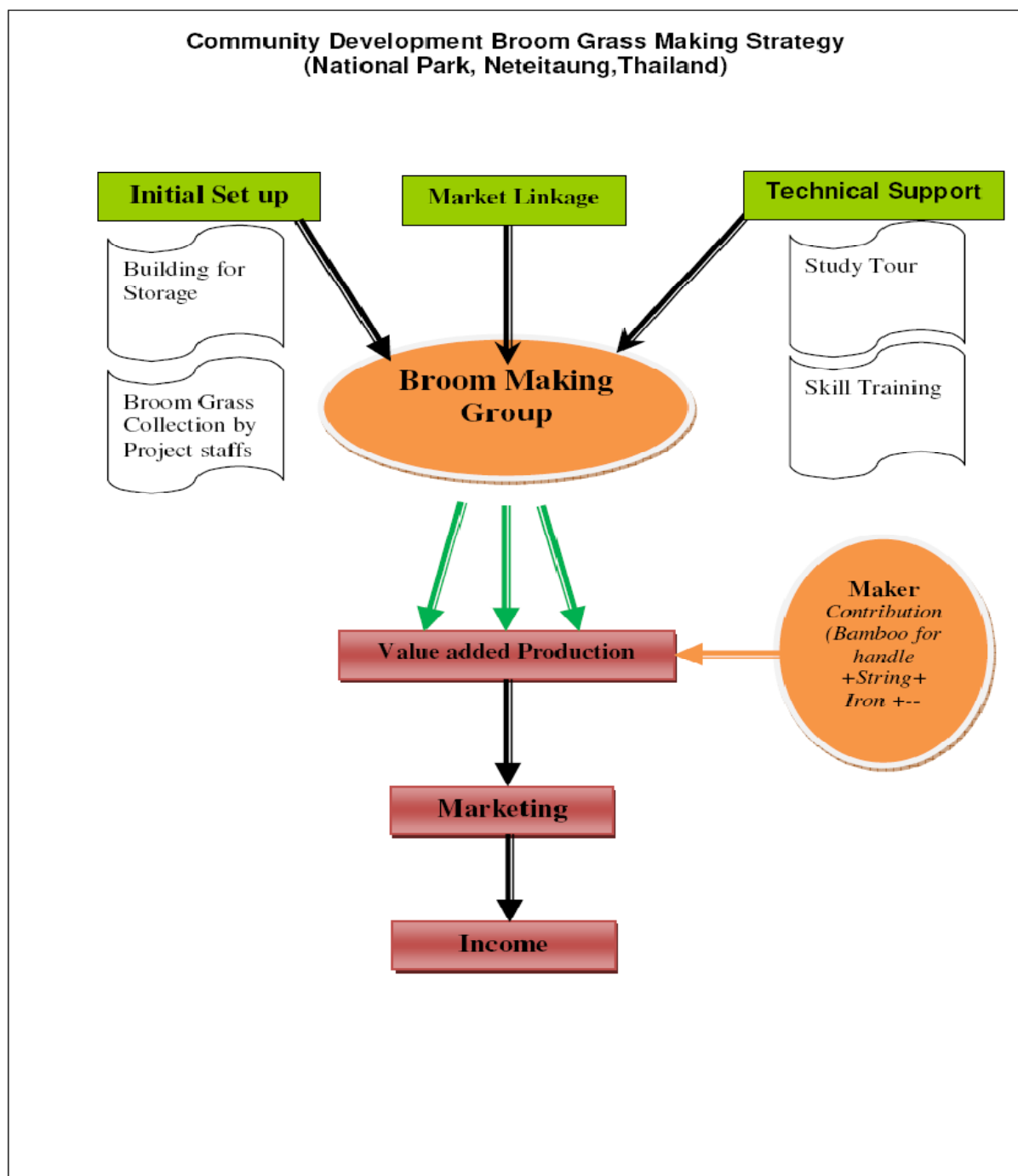
people make small skill broom production and sell the local market. One lives in Michaungai Village near Kanbauk and another settles in Mayaungchaung village.

In Vietnam, Schmidt, 2005 described that there are promising local initiatives such as community based small-scale NTFP processing initiatives (broom and hat production), cultivation of well-growing NTFPs in home gardens and fields near the villages (bamboo shoot production) and enrichment plantation in natural forest which prove the potential to develop niche markets.



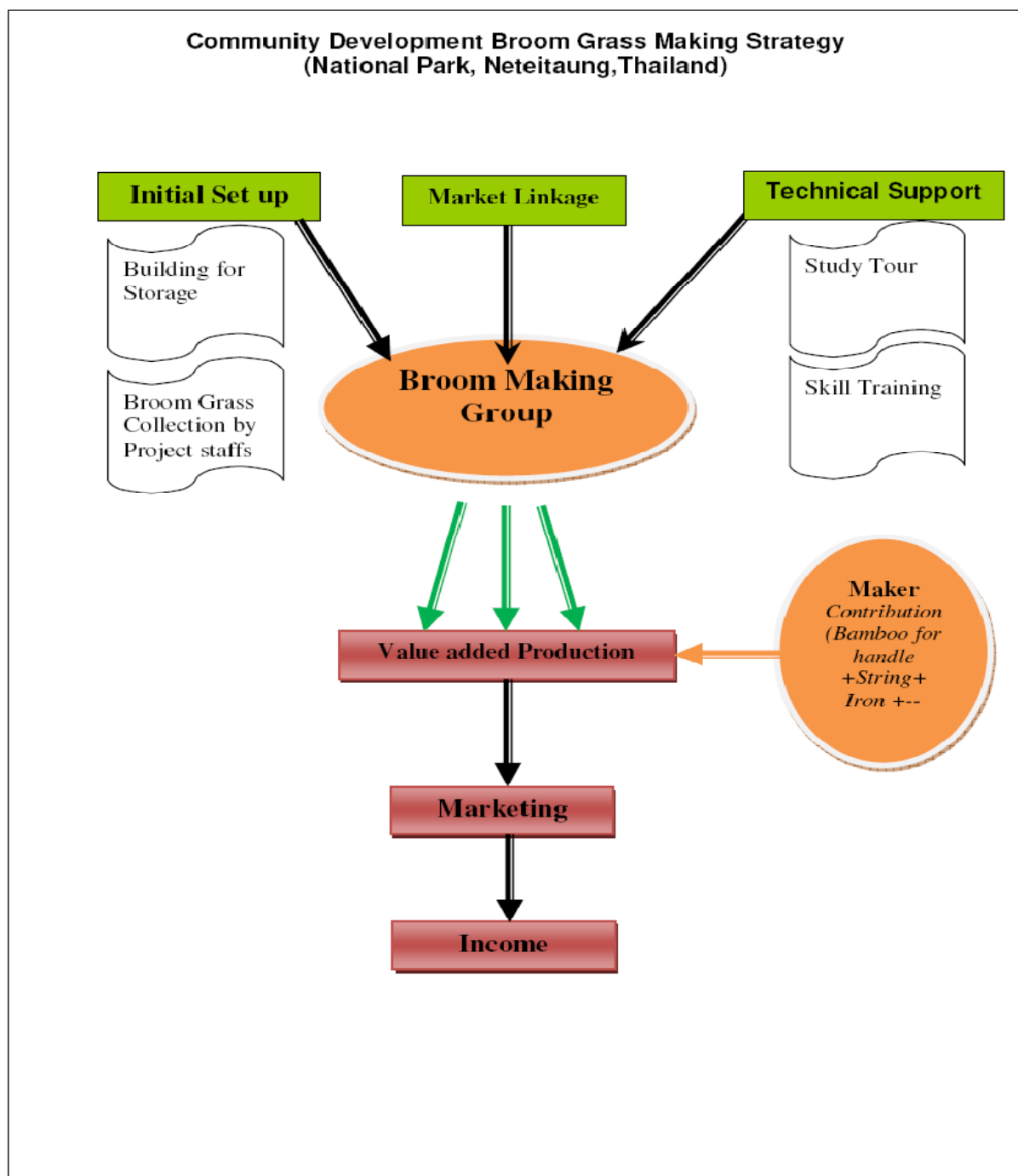
Photo (6.2.1). Source from Non-Timber Forest Products between Poverty Alleviation and Market Forces.

A proposed model is to fulfill the broom gross value added making strategy in local level. The basic actors called villagers should be trained how to make value added product, marketable broom. Thus, broom making should be support to local people to grasp the export market level by creating market access.



3-12-2010, observation trip to Neteitaung, Thailand

Figure (6.2.3). Community Based Broom making and marketing strategy in Thailand



3-12-2010, observation trip to Neteitaung, Thailand

Figure (6.2.4). Community Based Broom making and marketing strategy in Thailand

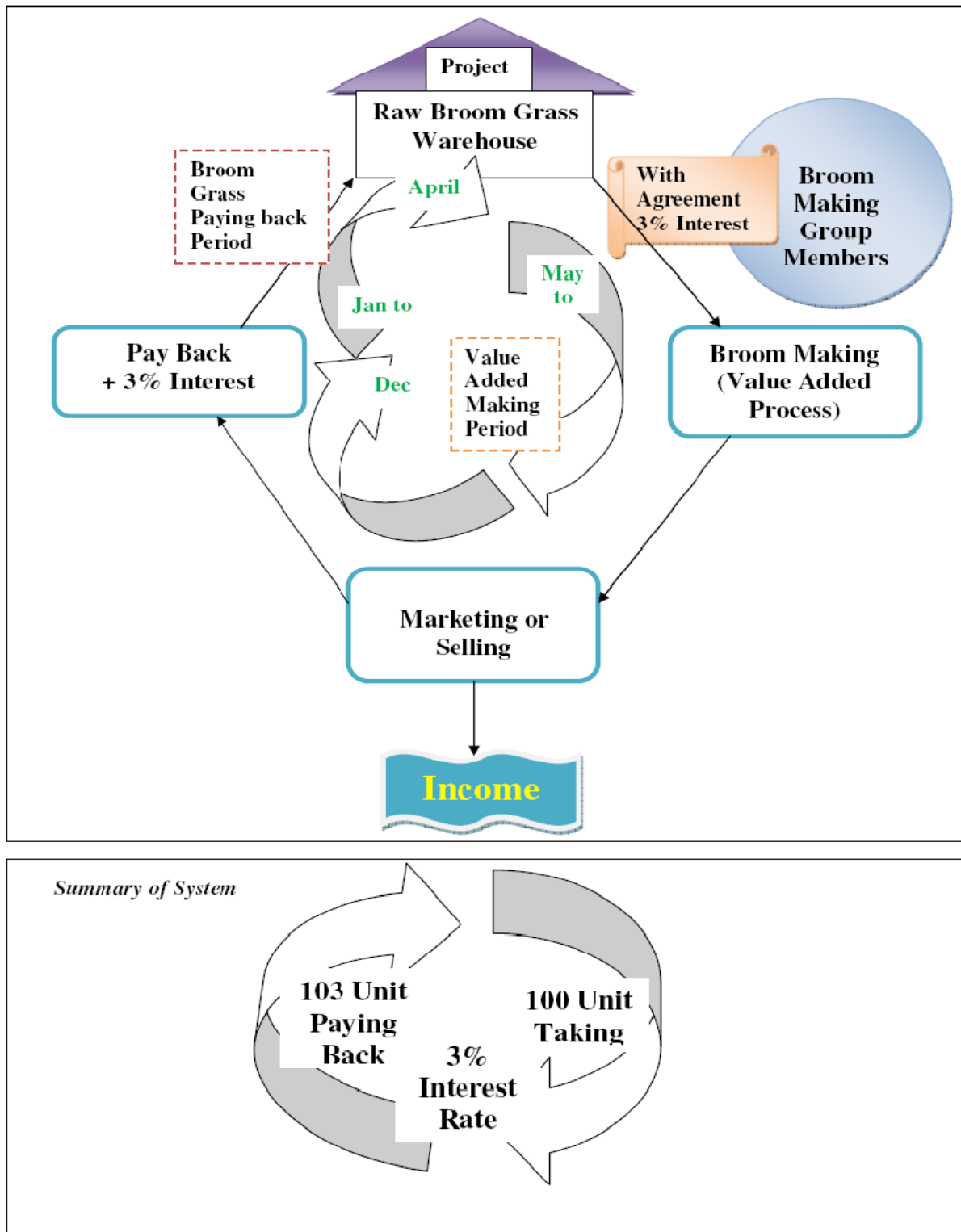


Figure (6.2.5). Livelihood strategy on Broom making in Thailand

Above diagram shows the strategy of value-added broom making by Community Based Organization (CBO). The Park Warden (Thailand) explained the detail procedure of livelihood development program through broom making. Before this project, local people individually collected the broom grass from the wilds to sell them to the traders from the city with the price made by traders. As a result, villagers got low price and no bargaining power. The rural developer considered how to change that system in order to increase their income. He initiated the system that based on local community. That system was started from last year April. The concept of CBO broom making is to increase income by selling value added product with decent price and to improve the bargaining power.

In initial set up, the project built warehouse, contributed raw broom grass and created market access. The warehouse or store was built by project near village. The size of the building is approximately 25 feet length, 20 feet width and 25 feet high. It is the place for storing broom grass. The warehouse is under the control of project.

In order to provide the raw broom grasses, the local staff gathered the broom grass from the forest and kept them into the store. Carrying capacity of the warehouse is about 3000 kilo. The reasons for storing are to create employment opportunities all year around. When the broom grasses are stored, the upper part of the grass like long narrow stick should be cut and only the left lower part are kept on the shelves in the warehouse. If the whole part of the broom grass is stored more than two months, the upper part the stick becomes dry and fragile. The whole stalk could not to be stored beyond that point. One of the important things is that keep the rice husk on the ground of the store to reduce moisture content inside particularly in rainy season.

The next step is that a member of founded a broom making group can take the raw broom grasses from the store in accordance with the agreement made with the project. The agreement includes the pay back system in 3% interested rate on what they took from the store. It means that a member takes the 100 Kilo broom grasses and he or she has to pay back 103 Kilo at the time of next collection (Jan to April). The maker has other responsibility that is to sell the finished broom in spite of broom grass. The broom grass makers can sell the value added product freely, without any control.

He also mentioned the production and marketing situation. One Kilo of broom grasses can be produced 5 pieces of broom. One maker can make 20 brooms per day. The wholesale price of normal handle broom grass is 20Bath and retail price is 25 Bath. The handle can be

made a color by using fire. The price of colored handle broom grass is 30 Bath in current price. At present, it has domestic market only. Anyway, that system can contribute to the growth of the local economy.

In community development program of TNRP in Myanmar, that system should be introduced in order to create more employment opportunities and to get advantages of cooperative system. Otherwise local community can get for their income by collecting and selling raw broom grasses to big traders from other cities. Due to the individual sale practice of products and low bargaining power, still they get insufficient amount of income.

The natural broom grasses are found to be abundant in TNR. A number of forest users' groups already have been formed in project areas. Family members of those FUGs can involve in this system. If necessary, a new group should be established as broom making group based on active participation of local people. In this regard, women should be paid more attention to be members of broom making group.



Photo (6.2.2) A local broom maker is making brooms at home in Michaungei village

It is interesting to note that entire process of broom making is located in the home. The broom maker can produce approximately 25 to 30 brooms per day. However, the production was not continuous everyday in all year round. The main reason is obvious that there is lack of storage power for year around production. Nevertheless, the maker stated that the net benefit per

broom was significantly high. The average production cost is 120 Kyat for one, not including labor cost. The consumer price of one broom was 500 Kyat. He sold the brooms directly to the consumers but could not sell them in higher numbers. His broom market only depends on local consumers. This is not to say that there is no any other market opportunity for large scale production.

Estimated production cost for one Broom with bamboo handle

<i>Cost Items</i>	<i>Unit Price (Kyat)</i>
<i>Broom grass 50 number</i>	50
<i>Bamboo for handle</i>	25
<i>String</i>	35
<i>Iron</i>	10
<i>Labor cost</i>	-
<i>Other</i>	-
<i>Total Production cost</i>	120
<i>Consumer Price</i>	500
<i>Net Benefit</i>	380

It was observed that the broom production and marketing during study period. The big traders from the cities gather the broom grasses from the local collectors. The local collectors collect the broom grasses from the villagers who are harvesters. The traders pay for 1 one broom grass of 1 Kyat and collection fee of 0.02 Kyat to local collector. After that the traders bring back the broom grasses to their production areas. Next step is that they produce in various types of broom depending on market demand. Finally they export them to international market and send them to national and local market as well.

Estimated production cost for one Broom without bamboo handle

<i>Cost Items</i>	<i>Unit Price (Kyat)</i>
<i>Broom grass 50 number</i>	50
<i>Bamboo for handle</i>	
<i>String</i>	35
<i>Iron</i>	-
<i>Labor cost</i>	-
<i>Other</i>	-
<i>Total Production cost</i>	85
<i>Production No. per day</i>	20 - 25
<i>Retail Price</i>	300
<i>Whole sale price</i>	250

Another broom maker responded the production of broom and local market condition. The production cost is quiet low due to without using bamboo handle, approximately 85 Kyat for one production cost. The retail price of broom is 300 Kyat and whole sale price is 250 Kyat in local market in Kabauk region. Around 20 to 25 number brooms can be produced in one day. Normally, the maker sells 250 to 350 numbers per month. The production period may be assumed that at least 6 months and minimum production number is 250 per month. It can be estimated for annual income with minimum price 250 Kyat for one. Therefore, the maker can receive the gross return is at least 375000 Kyat per year.

In conclusion, the existing market system has to be developed by rising production number and expending market strategy. The other advantages will be creation of employment opportunities by doing group work. For sustainable ways, rotation harvesting ground should be identified and quantified.

6.3. Cardamom seeds Marketing Channel

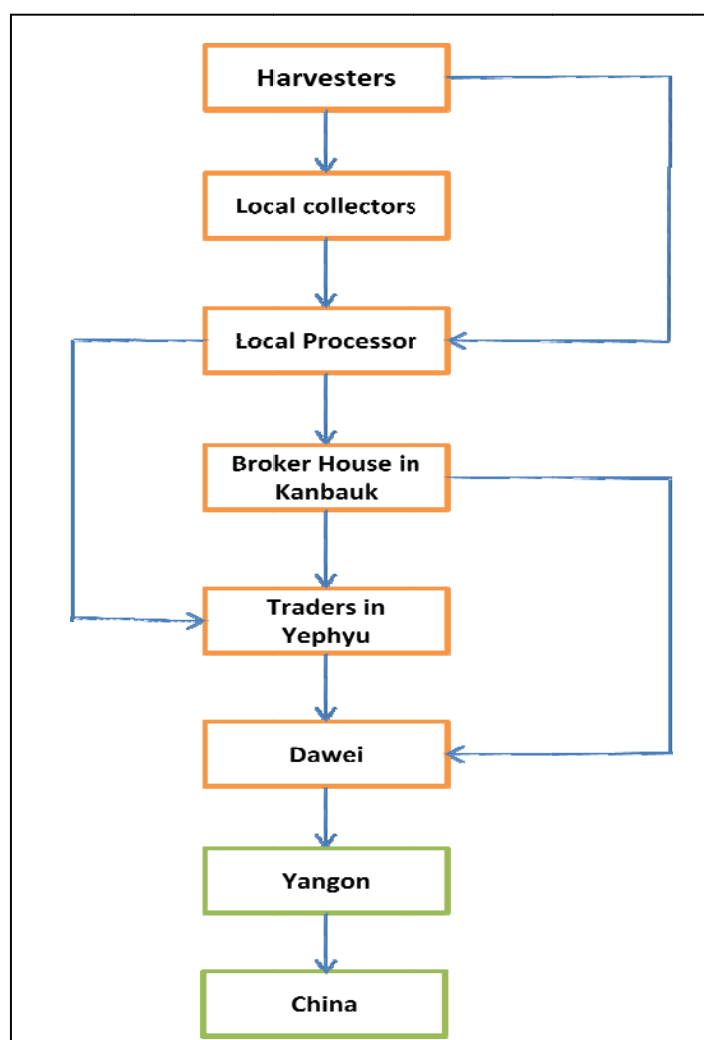


Figure (6.3). Market mapping of Cardamom seeds.

The flow of cardamom market channel shows in simply way. Villagers are basic market channel. They are major player for contribution of cardamom market. Villagers go to the forest areas and find the place to collect the cardamom seeds. They sell the products to collectors or processor within villages. The local collectors, semi-processors and broker house dry the seeds and extend to market city (Dawei). The cardamom seed market has also export market (China). However, one of the important challenges is forest fire. The respondents said that the rate of production can be decrease caused by forest fire and over harvesting.

Cardamom Extraction: Harvesting takes place in raining season, from mid of August to Mid of October in Myanmar. Several study described that ripen fruits only should be picked but leave the younger ones for next gathering.

6.4. Bamboo shoot Marketing Channel

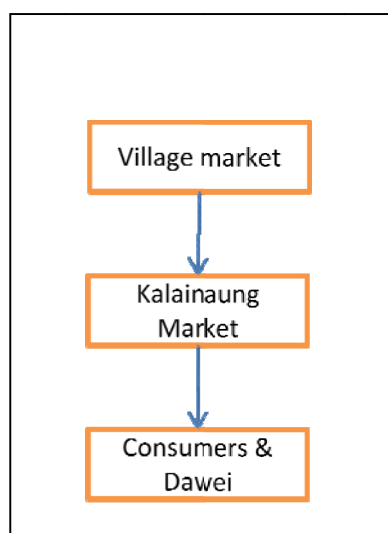


Figure (6.4) Market mapping of Bamboo shoot

Bamboo shoot processing is locally made products. The villagers harvest the bamboo shoot from the forest. Some sell the raw product directly to local processor but some make the processing themselves. Bamboo shoot is locally consumed and has city market (Dawei) regularly. The travelers buy the product from the retailers, especially in local restaurant in Kalainaung village. The bamboo shoot processing get some profit for local small processors especially doing by women. The detail processing cost and benefit can be seen in cost analysis section.

6.5. Bamboo Marketing Channel

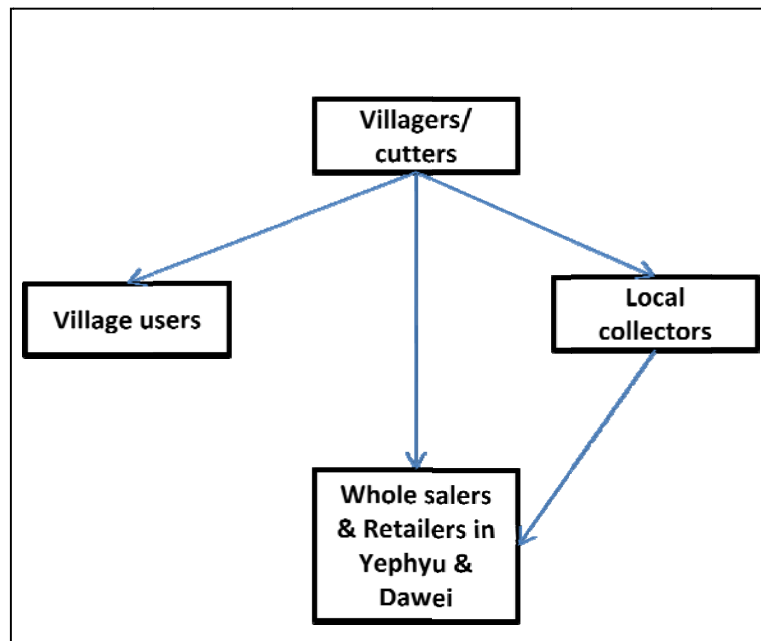


Figure (6.5) Market mapping of Bamboo

The bamboo market channel is simple trend. The figure shows the flow of bamboo market chain. First or basic actor is villager in this chain also. The bamboo cutters harvest the bamboo in the forest land. They sell the products within village for local use, to the collectors and market city. The collectors also contact with market city. It didn't found that any value added activities in this market chain.

6.6. Rattan marketing Channel

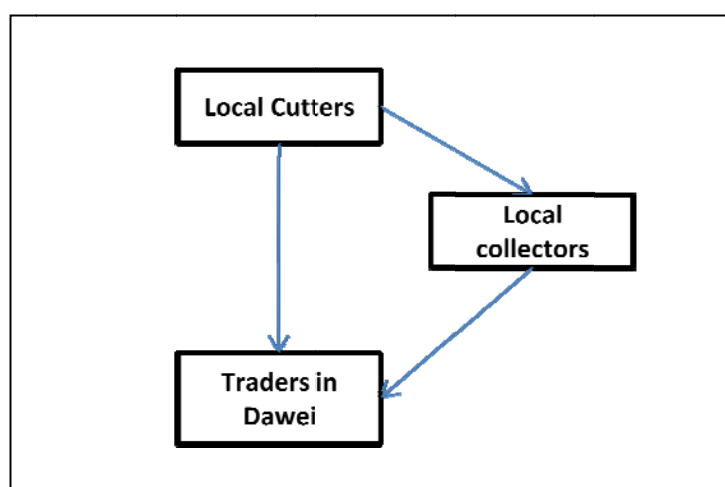


Figure (6.6) Market mapping of Rattan

The rattan market shows in simply market channel. Harvesters or cutters just support the raw product to collectors or middlemen and some directly to the market city (Dawei). Several reports mentioned that rattan handicrafts and furniture making are potential products for export markets. Normally, the raw material used for furniture and handicrafts come from local villagers who are harvesters. However, domestic trade in rattan value added products take place mainly in city market. The lack of the local processing activities is related to the nature of the trade chain, which is complex and long, with individual local harvester contribute only small quantities and generally large processing system situated far from the local production areas.

6.7. Jungle Bean / Djenkol Bean (*Pithecellobium lobatum*) marketing Channel

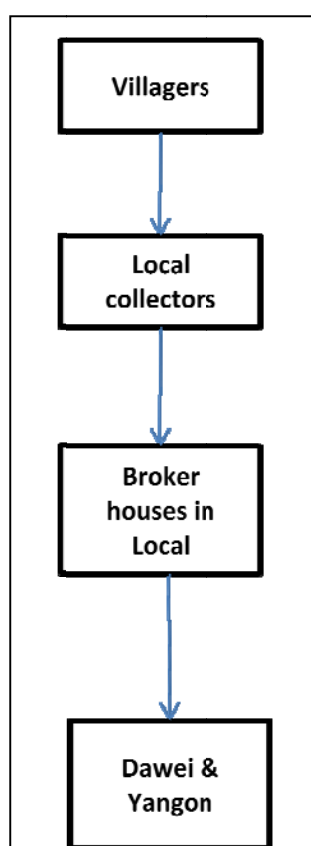


Figure (6.7) Market mapping of Jungle Bean/ Djenkol Bean (*Pithecellobium lobatum*)

The local people collect the jungle bean (doggy fruit) from the forest and local collectors or agent gather the product. When they get certain number of product, they import it to the city market (Dawei and Yangon). As a result of group discussion and semi-structural interview, the rate of production has widely fluctuation over the several years. In addition to that, local harvesters collect the product with unsustainable ways; they cut the branches and even cut down the tree to pick up the product easily. Thus, the harvesting technique of product should be controlled for their livelihood enhancement in sustainable ways.

6.8. Market Mapping of some common Horticulture crops

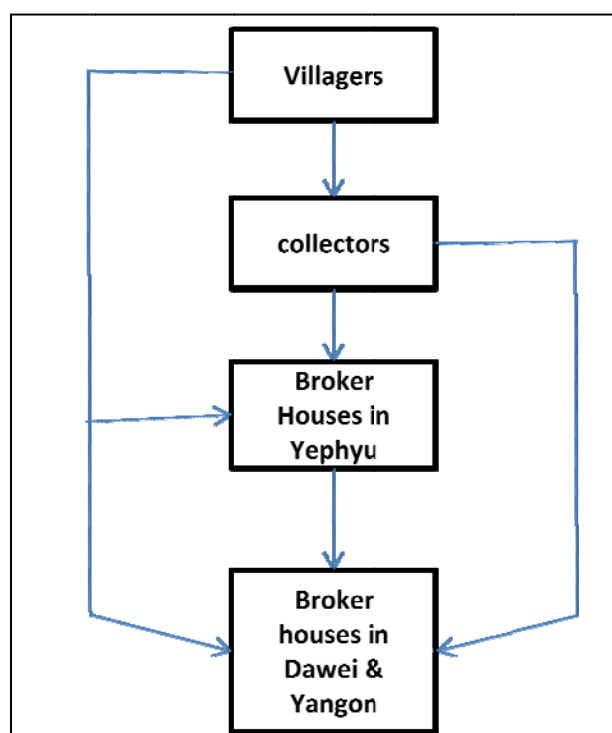


Figure (6.8) Market mapping of some horticulture crops

In this study area, Min Thin Zin (2009), observed that 60% of the families have horticultural farms of different sizes. Most of the perennial cash crops are betel nut and cashew nut. Lime and lemon are also planted in their garden. Some of villagers have the own garden, they collect the products from their trees and some extend to gather the crops from other sources. Even villagers are involved in city market level on a regular basis for commercial purposes. However, they use those crops in this market chain without doing value added.

One of the respondents proved that the more benefit can be obtained by doing value added products such as preserved lemon. Hence, small scale or home based industry should be motivated for livelihood development program. This project needs skill trainings for production and processing methods.

7. Constraints Analysis on the Products

7.1. Fish-Bone for constraints of NTFPs

From the participatory assessment, the most striking factors complained by focus group discussion member was illustrated in Figure 7.1 for major plantation constraints and for major marketing constraints and NTFPs production. With regard to production constraints, participants expressed about their local experiences. The following factors will be faced as production constraints. They are limited seed available, limited technology, risk of thief, limited land available, poor initial set up and the poor market access.

When do plantation, the seeds are needed to produce seedlings. Hence, the project has to contribute the seed production and technology for sowing and planting. They described that the round-yam can grow in limited soil condition. With regards to their experiences, the villagers enter the other people's garden without permission to gather the products. Thus, risk of thief should be considered how to overcome. Moreover, local people have low initial investment for plantation and poor market access.

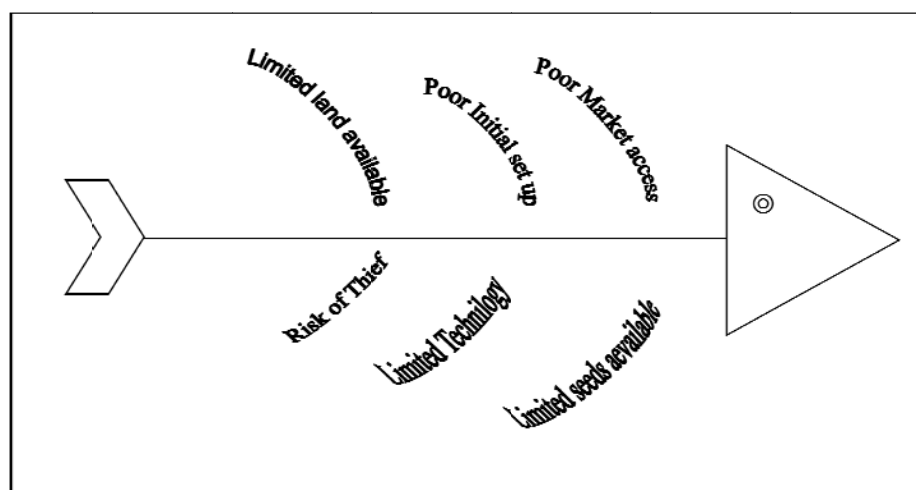


Figure (7.1). Plantation constraints expressed by participant in focused group discussion

7.2. Constraints on different products

Table (7.2). Constraints on products (NTFPs and Horticulture Crops)

Constraints	Wa-U (Round Yam)	Cardamom seed	Bamboo	Bamboo Shoot	Brom	Lime	Betel Nut	Cocunut	Wood Bark	Rattan	Jungle Bean	Cashew Nut	Lemon	Lemonade	Total	Percentage
Irregular transport	1	1	1	1			1		1		1	1			8	4.71%
Higher Transportation Cost	6	3	6				4		2		4	1			26	15.29%
Higher Sale Commission											2				2	1.18%
Higher Tax			5												5	2.94%
Limited Permit	1	1								1					3	1.76%
Grading loss	3	4					2	1	1		2	1			14	8.24%
Measurement loss	3	4					1	1				1			10	5.88%
Low price	4	4	4	1	3	2	4			1	2				25	14.71%
Higher price fluctuation	2	7	1			2	3				2		1		18	10.59%
Storage constraints	2	4								1			1	1	9	5.29%
Packing constraints								1							1	0.59%
Risk of Thief	5		1												6	3.53%
Lack of information	3	6													9	5.29%
Lack of product knowledge	3								1	1					5	2.94%
Lack of bargaining					1										1	0.59%
Low / irregular Yield	7	6					2				5	2			22	12.94%
Forest Fire		6													6	3.53%
Other															0	0.00%
Total	40	46	18	2	4	4	17	3	5	4	18	6	2	1	170	100.00%

With regard to marketing constraints, participants in focused group discussion also described about the constraints on their experiences. To indicate the marketing constraints that were reported during focused group discussion, the data from household questionnaire surveyed

was complied and presented in table 7.2. In term of the percentage of respondent corresponding to particular marketing constraints, the level of the problem could be generally figured out on each product.

Highest price fluctuation was more greatly appeared on cardamom seeds and lack of market information, irregular yield and forest fire are the most serious constraints on Cardamom seeds.

For round-yam (Wa-U) has again higher transportation cost and low price in local market. Most of the villagers pointed out the risk of thief. The villagers gather the yam in the garden of other people.

Bamboo cutters reported that they have higher pay for passing on the way and lead to higher transportation cost.

In broom market, the constraints are low price and lack of bargaining. The collector made the price for collection of broom grass.

The constraints of rattan production have limited permit, storage and lack of product knowledge. The marketing of rattan mainly depend on commission pay. The lenders control the production and price.

The table also shows the constraints of horticulture crops. The jungle bean has significantly constraint that is irregular yield, grading loss and higher price fluctuation. Lime market has higher price fluctuation depend on the season. In summer season the price is high and in raining the price is very low. Lemon also has some constraints that are storage and higher price fluctuation as well.

Home based small scale lemonade production also has storage constraint before processing.

In conclusion, there are higher price fluctuation constraint in Jungle bean and Cardamom seed markets. It is obvious that most the respondents mentioned the forest fire can affect on cardamom seed production rate. Moreover, higher transportation cost appeared on potential NTFPs and decrease in production. In horticulture crops, the most serious constraints are storage capacity.

7.3. Problem analysis for local communities' socioeconomic

Table (7.3.1) Secondary data of socioeconomic problems in villages

Code	Problems	Villages									
		Yapu	Tharyar mon	Mayan chaung	Migaung laung	Zinba	Kyauk shut	Yepone	Heinze	Hnankye	Wunpo
A	No Regular Job		7			9	10	10		5	10
B	Restrictions on cutting bamboos & wood				6	10	4	3	9	10	5
C	Land scarcity		6		9		8		10	9	
D	Health problem		10					9	7		8
E	High prices of basic commodities						9	3	7	5	
F	Wildfire				10		7	6			
G	Water supply		8					8			6
H	Crop yield fluctuation			9				7			
I	Difficulties in Transportation & communication		9								7
J	Reclamation of farmlands					7					4

Source data (Dr.Min Thant Zin), Socioeconomic baseline study report on Local communities adjacent to Taninthayi Nature Reserve, 2009

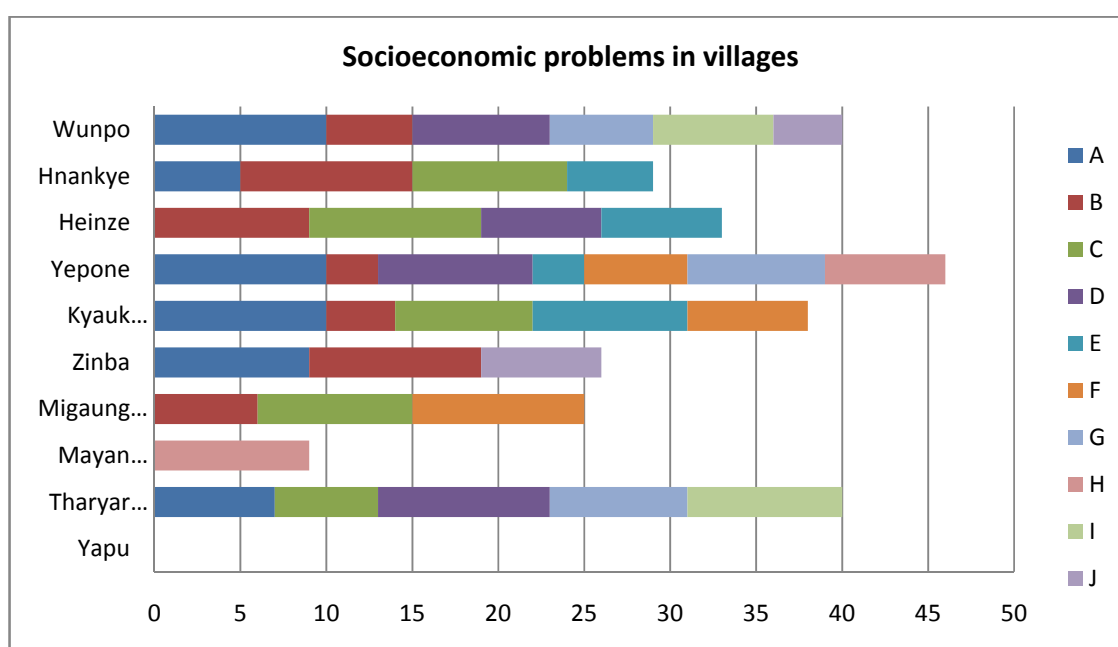


Figure (7.3.1) Most prevailing socioeconomic problems in villages

Table (7.3.2) Indication of the name of the problems

Code	Problems
A	No Regular Job
B	Restrictions on cutting bamboos & wood
C	Land scarcity
D	Health problem
E	High prices of basic commodities
F	Wildfire
G	Water supply
H	Crop yield fluctuation
I	Difficulties in Transportation & communication
J	Reclamation of farmlands

The secondary data have been used for analyzing the prevailing socioeconomic problems in villages under study. The figure (7.3.1) shows different level of socioeconomic problems in 10 villages. Yepone village had highest level of problems compare with other villages. Tharyarmon and Wupo encompassed the second highest in various problems and the problem level of Kyaukshut was also relatively high. While Hnankye, Heinze, Zinba and Migaunglaung have the moderate level of socioeconomic problems, Mayanchaung illustrated the lowest in level. However, the data have not seen to analyze for Yapu.

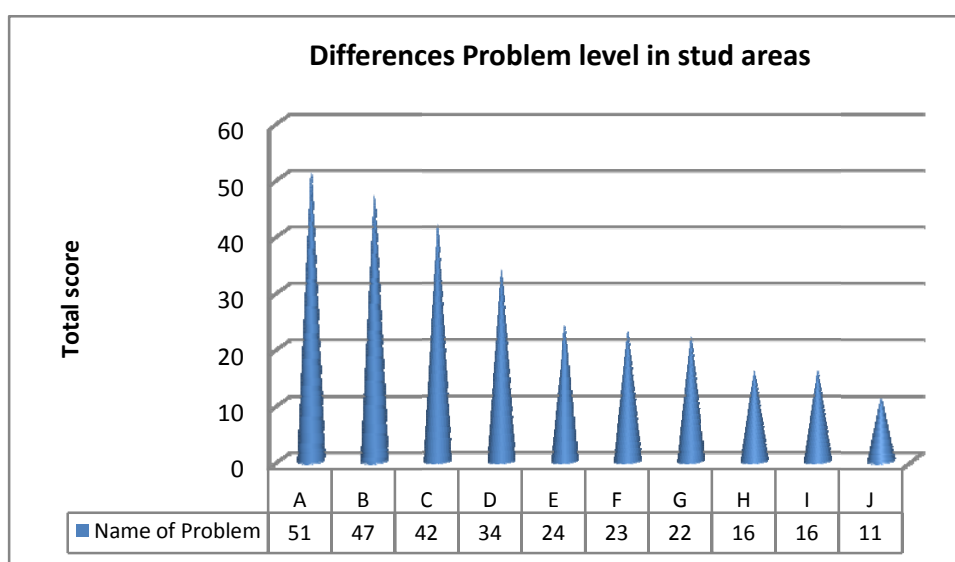


Figure (7.3.2) The level of socioeconomic problems in villages

In those conditions, the figure (7.3.2) can be seen the different level of socioeconomic problems they are facing. The most serious problem is no regular job that could be found in

highest frequency and the second one was restriction on cutting bamboo and wood. Min Thant Zin (2009) described that the causes of no regular job could be the imposing more intensive restriction on extraction of forest products, lack of enterprises, unbalancing job opportunities and current population, lack of general knowledge and correct reasoning ability and using mechanical power in farming, especially for weeding in their gardens. Another difficulty was land scarcity of regular farming system. The author suggested that the desired solutions for those problems which were to establish large enterprises creating attractive job opportunities, to create permanent farm and to have better access to soft loan system for farming (Min Than Zin, 2009).

8. Forest Gross Domestic Product (GDP) Revenue on NTFPs in Dawei Division

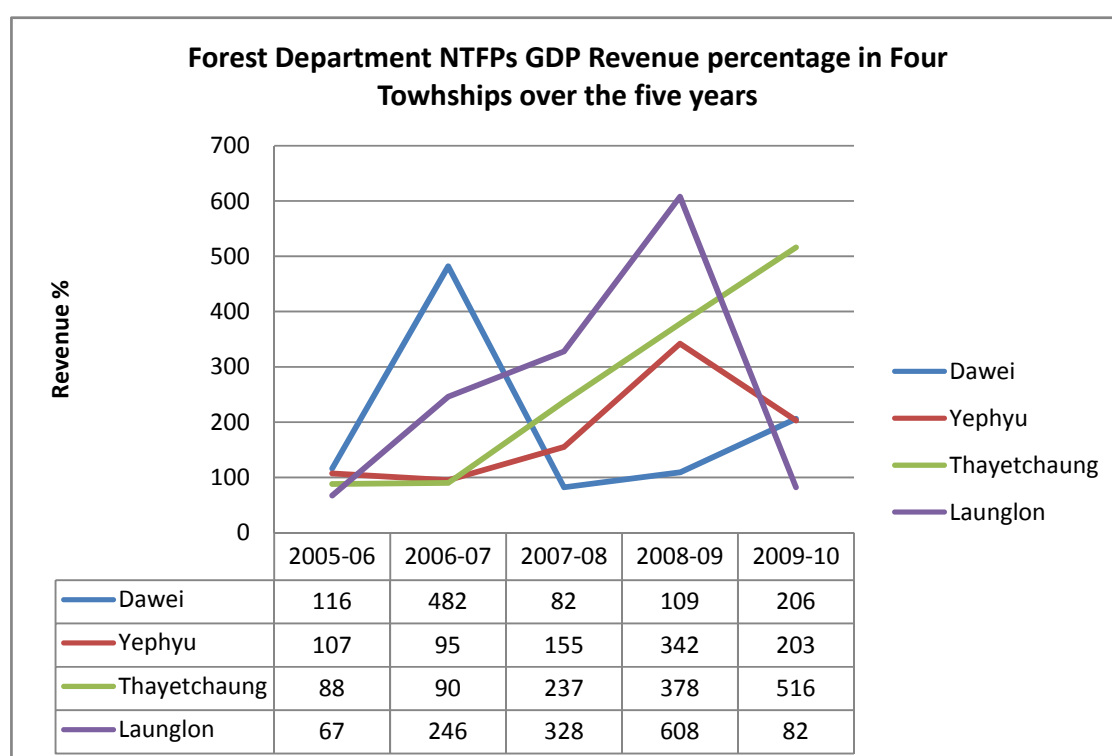


Figure (8.1.1) Revenue on Forest products by Four Townships in Dawei Division

Source of data from Forest Department, Dawei

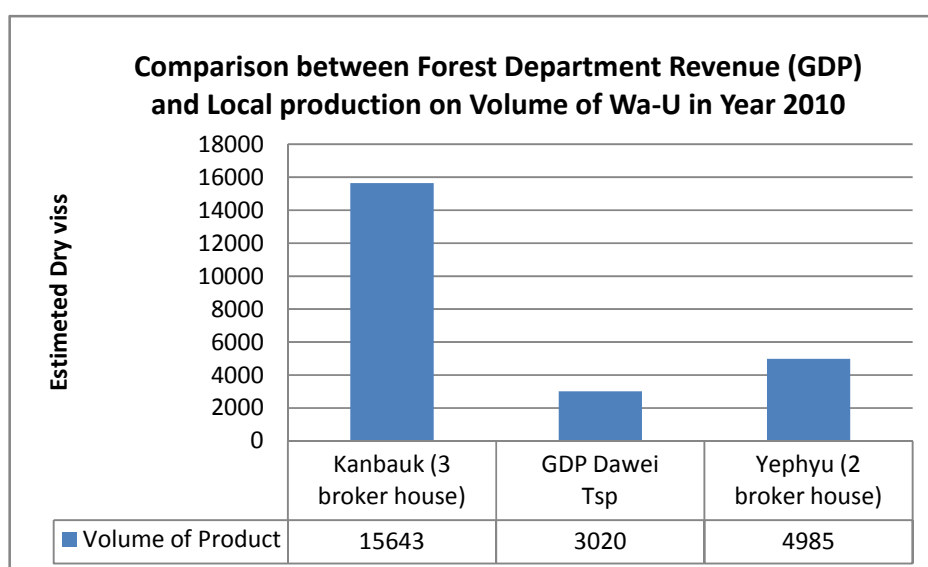


Figure (8.1.2) Local and Forest Department Revenue volume on Wa- U (Round Yam) in 2010

The taxation of Forest Department for NTFPs production was increasing and decreasing trends from year 2005-06 to 2008-09. In Dawei, the GDP rate reached in peak in year 2006-07 and dropped sharply to year 2007-08. And then, there had been a gradual increase from 2007-08 to 2009-10 in the percentage of revenue on NTFPs. The patterns of Yephyu and Launglon Townships showed the more or less the same trends. In both those two Townships, the tax has been collected highest in 2008-09. After that the rate was falling down again in the year 2009-10. However, in Thayetchaung Township, the pattern showed different from other three townships. The revenue percentage trend was increasing gradually from 2005-06 to 2006-07 and growing significantly to the year 2009-10.

Taxation trends of four townships showed the different pattern over the five years. It can be assumed that the amount GDP depend on target of department's instruction.

The figure 8.1.2 illustrated comparisons between volume of Wa-U (Round-Yam) in local and GDP amount. In the year 2010 for Wa-U production, it can be seen the lowest volume of GDP Dawei Township while the total sum volume of the three broker houses estimated at five times of GDP volume by Forest Department in Dawei. Even the total sum volume of two Yephyu broker houses was higher than the GDP volume.

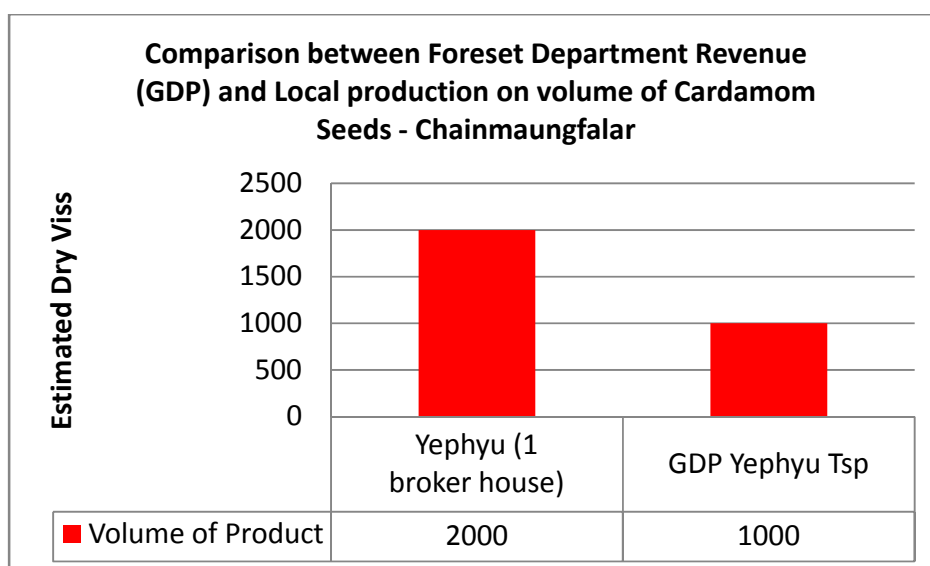


Figure (8.1.3) Local and Forest Department Revenue volume of Cardamom Seeds - Chinmaungfalar) in 2010

In addition to that, Cardamom seeds (Chinmaungfalar) volume at one broker house in Yephyu Township was higher than the taxation by Forest Department in table 8.1.3. Generally, there are differences between volume of GDP on NTFPs and real amount of products. The reason for this, there may be different factors related to less of institutional linkages and weakness in departmental control. It can be occurred declining of products caused by uncontrollable harvesting technique. It is recommended that Forest Department should control the NTFPs harvesting with the annual production rate for sustainable use. In addition, the quantity of products should be considered for market development.

9. Actors Identifying

Name of Actors	Level of Actors
Villager	Harvester/Collector/Agent
Small Processor	Villager
Big Processor	Broker House, Trader
Lender	Broker House, Trader
Wholesaler	Broker House, Trader
Retailer	Villager
Consumer	Villager, People in Township, People in City

With the regards of identifying the actors in market channel over the study areas, local people involve in basic level of marketing, they are harvesters. Some of them are collectors or agents; they get the income with commission rate only. A few local processors involved in small percentages of processing. The harvesters/villagers live in communities associated with forests and utilize forest resources for their subsistence. They sell primary products without or few processing to middlemen in their community or close to it. They have little market information and weak in experiences of commercial opportunities and market access.

Lender, broker house and trader, they make the price of local products. They do the processing and value added products. And then they sell the products to not only city market but also local market.

The villagers are the basic actors of process. They should be decision-makers, even though they may need the initial support of a facilitator. One of the long-term goals of market strategy should be built for the local communities to develop further and operate their enterprises independently.

10. Five Capital Analyses

Five forms of capital can be distinguished for analytical approach to livelihood status

1. **Natural capital:** Environmental factors needed in the production process; natural resources such as land, forests, water, wildlife, waters and minerals.
2. **Physical:** Physical assets that facilitate production process such as privately-owned assets that can be used to increase labor and land productivity (farm animals, tools and machinery); publicly-owned economic infrastructure (roads, electricity); and social infrastructure (schools, educational facilities).
3. **Human capital:** People's knowledge and abilities that drive production processes; including health, nutritional levels, educational standards, knowledge, information, skills, experience, creativity and inventiveness.
4. **Financial capital:** Cash and monetary reserves that provide liquidity for production processes; including cash income and savings, loans, credit, subsidies, remittances and pensions.
5. **Social capital:** Organizations networks and institutions that facilitate cooperative action amongst different actors; the set of relationships between people which help to shape livelihood options, including kinship, friendship, patron-client relations and reciprocal arrangements and the social and cultural norms, values and institutions that shape mutual support and assistance.

The data of Min Thant Zin (2009), socioeconomic baseline study report on local communities adjacent to Taninthayi Nature Reserve were used for this study to analysis for livelihood assessment.

Table (10.1) Summarized results of livelihood assets status tracking of different villages

5 Capital	Yapu	Tharyarmon	Mayanchaung	Migaunglaung	Zinba	Kyauksrust	Yepone	Heinze	Hnankye	Wunpo	Average score
Natural	3.4	3.2	3.8	3.4	3.6	3.6	3.6	3.8	3.1	3.1	3.5
Financial	2.5	1.8	2.0	2.9	2.5	3.0	2.4	2.6	2.1	2.1	2.4
Physical	2.9	2.3	2.2	2.8	3.0	3.2	2.3	2.3	2.2	2.8	2.6
Human	3.1	3.0	3.0	3.6	3.5	3.9	2.9	2.9	3.1	3.4	3.2
Social	3.4	2.7	2.8	2.9	2.6	3.0	2.8	3.1	3.0	2.7	2.9

Source of data from Dr.Min,Thant Zine, Socioeconomic Baseline study report on Local communities adjacent to Taninthayi Nature Reserve, 2009)

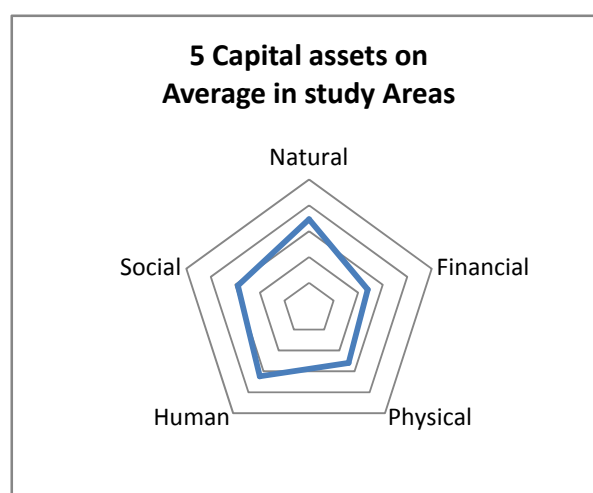


Figure (10.1) Livelihood assets 5 capital analysis of the areas

While natural capital scale was high, human capital and social capital were moderate condition. However, financial capital and physical capital were obviously low. The result for high natural capital, low financial resources and low physical capital, it can be concluded that local communities mainly rely on natural resources for their living. Particularly, the communities in the northern zone dominated by Mon ethnics have to create natural resource based livelihoods (Min Than Zin, 2009). On the other hand, human and social capitals were moderate level. Although, local communities' livelihood base on natural resources, they cannot efficiently and effectively use the products they have. Consequently, it is weak in value added production and lack of market access. In addition, they have less opportunity to set of relationship between people which help to shape livelihood options.

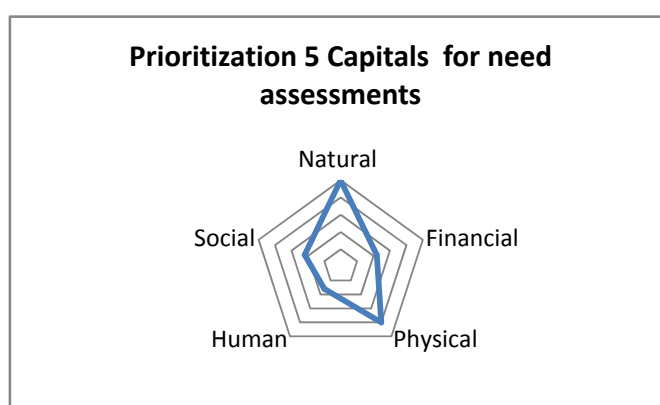


Figure (10.2). Need assessment to develop marketing based on 5 capitals

Table (10.2) The score of needs assessments by prioritizing

No	Criteria	Average Score	Zinbar	Migaunglaung New	Kalainaung	Migaunglaung old	Hnenkye
1	Natural	5	5	5	5	5	5
2	Financial	2	3	1	3	1	3
3	Physical	4	4	4	4	4	4
4	Human	2	1	2	1	2	2
5	Social	2	2	3	2	3	1



Photo (10.1) Focus group prioritizing on needs assessments

The villagers responded that all 5 capitals are needed for their livelihood development program. Hence, the assessment was used with pair wise method to choose prioritization or which on is more important need first than others. According to the assessment data from five villages; Zinbar, Kalainaung, Hnankye, Mighaunglaung (new) and Migaunglaung (old), human capital was needed in first priority and financial capital and social were more or less the same in second. It could be concluded that they have lack of value added production technology, low financial investment for production and weak in relationship between people and other institutions. The desired solutions are to establish cooperative system, support skill trainings and provide pay back system for production.

11. Price Trends of Wa-U (Round Yam) and Cardamom Seeds

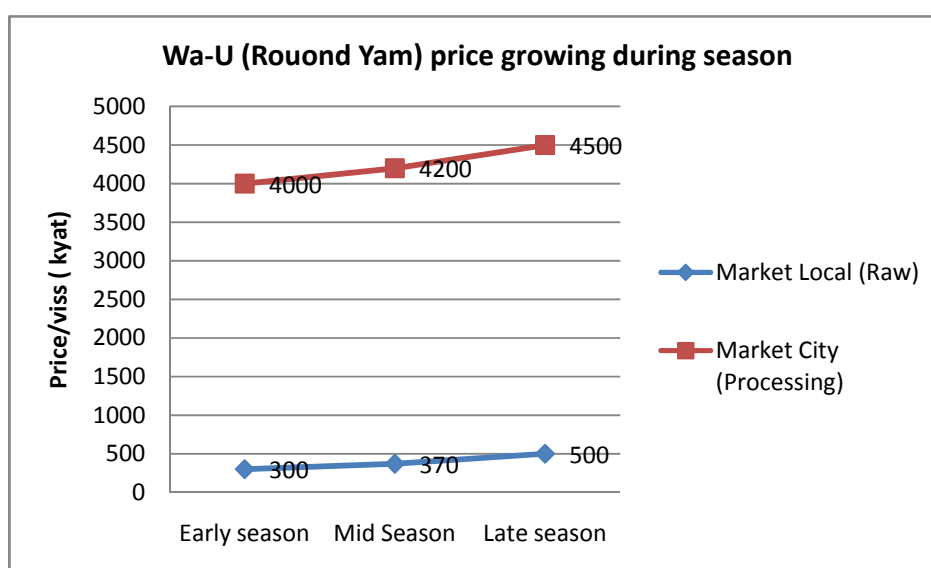
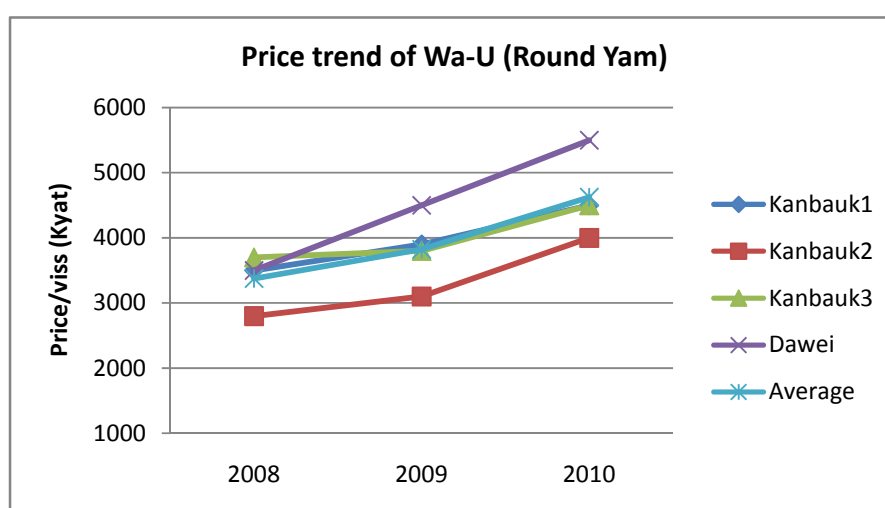


Figure (11.1). Different price of Wa-U (Round Yam) during season

The data were collected through the broker house and harvesters during survey period. The price variation on the season investigation can be used to manage the marketing strategy. The figure () shows the price trend of Wa-U (round yam) within harvesting season. Normally, the lowest price takes place in early season and increasing to the late season. This situation depends on supply and demand figure. In early season, the collection action is higher in competition. During the late season, buying power is increased and supply is low.



The Figure (11.2). The price trends of Wa-U (Round Yam) over the three years

According to the data obtained from three brokers in Kanbauk and one in Dawei, the price trend is growing up from 2008 to 2009. Although the market situation of Wa-U (round yam) is expanding, still local people mainly rely on natural products and use unsustainable harvesting ways.

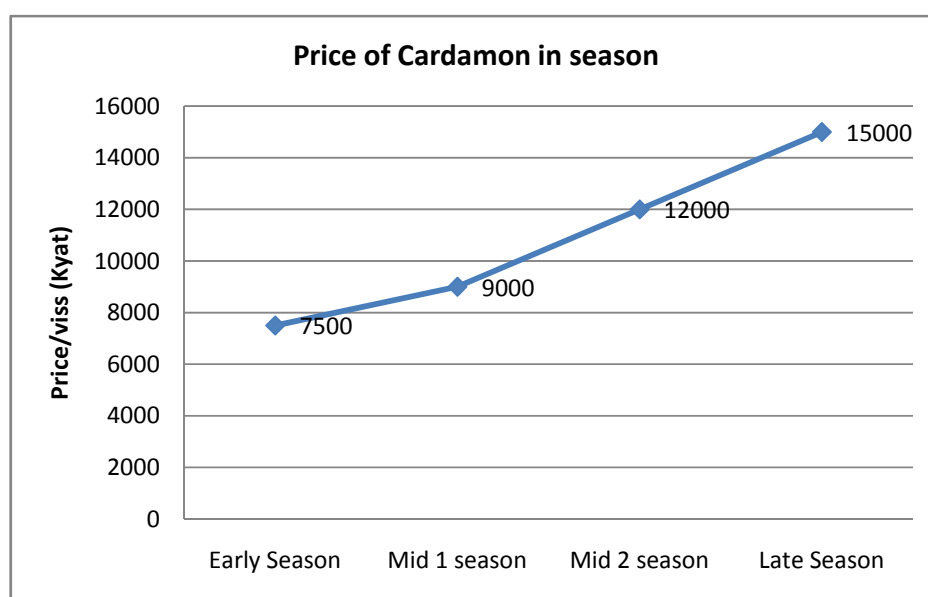
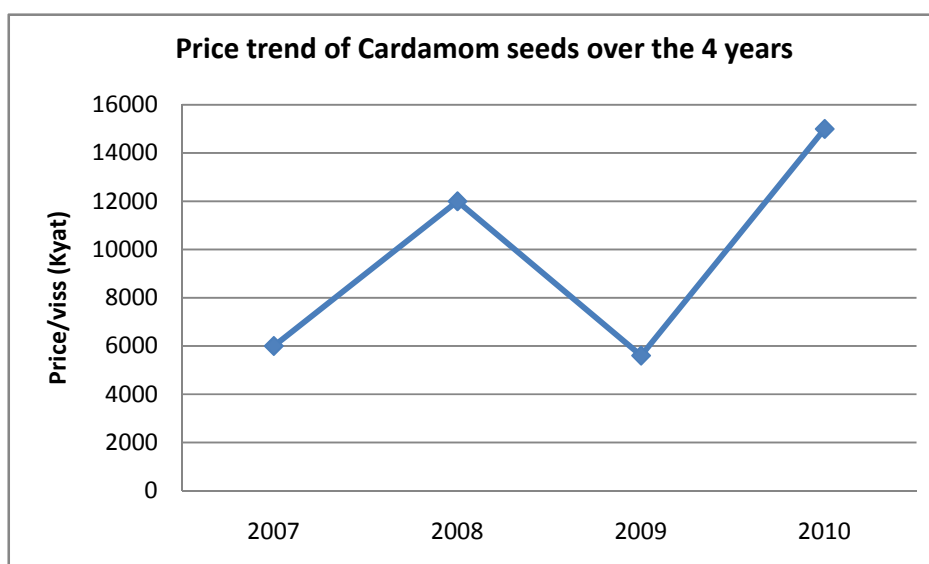


Figure (11.3). Different price of Cardamom seeds during season



The Figure (11.4). The price trends of Cardamom seeds over the Four years

As is illustrated in this figure, there is significant fluctuation in the price of cardamom seeds over the four years. The price of Cardamom seeds fluctuated widely but the price in year 2010 had the highest.

To sum up, in the comparison of price during the season, the price of both Wa-U (Round Yam) and Cardamom seeds were highest in late season. It can be recommended that the post harvesting technology should be taken into account for getting more profit. Although the price trend of Wa-U (Round Yam) was increasing from the year 2008 to 2010, the price trend of Cardamom seeds fluctuated widely.

12. Production and Marketing cost of some NTFPs

12.1. Cost of Broom Making

Table (12.1.1). Estimated cost calculation for Broom Making

Cost item	Cost for Broom making	
	Kyat	%
Raw product (50 No x 1k)	50	32%
Labour cost	55	35%
String	20	13%
Other		
Production Cost	125	79%
Packaging Cost	7	4%
Market transportation	25	16%
Market storage	-	
Sale commission		
Tax		
Other	1	1%
Marketing Cost	33	21%
Total Cost	158	100%
Sale Price	200	
Net Benefit	42	

The present calculation is based on a manager of broom making in Dawei in the year 2010. The broom grass number expected from a year collection is about 300 Lakhs for boom making.

The production coast estimated at 125 Kyat per boom and marketing cost is average 33 Kyat.

The cost of bamboo handle is not included in the total production cost 158 Kyat.

Broom making process mainly needs a building to use as a warehouse for storage and as a working place and skill labors are necessary. About 50 numbers of broom grasses are needed for one broom making, one kyat for one grass in local price. The labors cost estimated at 55 Kyat and 20 Kyat for string to tie. One bag costs for 350 Kyat can hold 50 numbers of broom. Thus, the packaging cost is average 7 Kyat for one. The transportation cost from Dawei to Yangon is

25 Kyat. The minimum wholesale price of broom is 200 Kyat in Yangon. The net benefit for one boom is about 42 Kyat.

Table (12.1.2). The marketing margin of Broom Making

Actors	Minimum Price	Marketing cost	Gross Profit Kyat/number	Marketing Margin
Local raw seller	50	0	50	17%
Processor	200	158	42	50%
Wholesaler	250	200	50	17%
Retailer	300	250	50	17%

The tables proved that the highest percentage 50% of marketing margin in processor of broom making process. According to the answers of two respondents, one from Kanbauk and one from Dawei, total numbers of broom grasses (stick) about 300 Lakh and 300 Lakh can be collected for a year respectively. The market also has the export market such as Malaysia. Thus, boom making is one of the potential livelihood program for local community.

12.2. Cost of Preserve Lemon

Table (12.2.1). Estimated cost calculation for Preserved Lemon

Cost item	Cost for Preserved Lemon	
	Kyat	%
Raw product (Lemon)	15	15%
Processing cost (sugar/salt/--)	35	34%
Labour cost	15	15%
Other		
Production Cost	65	64%
Packaging Cost	35	34%
Market transportation	1	1%
Market storage	-	
Sale commission		
Tax		
Other	1	1%
Marketing Cost	37	36%
Total Cost	102	100%
Sale Price	245	
Net Benefit	143	
Net Benefit for one	20	

The study also describes the preserved lemon production cost to consider alternative livelihood program for local community. The table (12.2.1) provides the estimated cost for preserved lemon production.

Cost for the preserving of lemon is estimated at 65 Kyat for 7 bags production. The price 15 Kyat is for one lemon that is under the local marketable quality for consumer to eat. The preserving also includes 35 Kyat for ingredients. In addition, Kyat 37 are included in the marketing cost. The total production cost and marketing cost is 102 Kyat for 7 bags. The cost of one preserved lemon bag is about 15 Kyat. The wholesale price is 35 per bag. The net benefit of one preserved lemon is about 20 Kyat.

Table (12.2.2). The marketing margin of Preserved Lemon

Actors	Minimum Price	Marketing cost	Gross Profit Kyat/bag	Marketing Margin
Lemon seller (One lemon)	15	0	15	30%
Processor	35	15	20	40%
Whole saler	40	35	5	10%
Retailer	50	40	10	20%

The above table shows the marketing margin of preserved lemon. The processor involves highest percentage 40% in the marketing process.

There are many home gardens or horticulture crops plantation in study areas. The production of lemon is high in that area. However, post harvesting technology is still weakness in local communities. Thus, home based small industrial program such as preserved lemon marketing should be promoted for rural livelihood development. In this case, the project should more emphasize on women group and skill training is needed to produce quality product.

12.3. Cost of wa-U (Round Yam) Processing

Table (12.3.1). Estimated cost for Wa-U (Round Yam) processing

Cost Item	Processing Round-Yam	
	Kyat	%
Raw Round Yam (700x 450)	315000	83%
Labour cost	19,500	5%
Kant (1 viss)	1,000	0%
Charcol (20 bagx900)	18000	5%
Bamboo shelf	20,000	5%
Other		0%
Processing cost	373,500	98%
Transportation cost	5000	1.31%
Packaging (bag)	1400	0.37%
Labour	1500	0.39%
Other		0.00%
Marketing cost	7900	2.07%
Total Cost	381,400	100%
Sale Price (4000 Kyat x 100 Viss)	400,000	
Net Benefit	18,600	
Net Benefit for one viss	186	

The local community can get the benefit from Wa-U (Round-Yam) processing. The processing cost is estimated based on some processors in study areas. The table shows the estimated cost of production and marketing. 7 viss of raw round yam can produce 1 viss of dried round yam. The net benefit for one viss is about 186 Kyat. Here Wa-U marketing process could not be calculated for percentage of marketing margin because there is no information about whole sale and consumer price. The other need to produce the dried the product is cutter.

Table (12.3.2) Estimated cost for Oven construction

Size - 9'x9'x6'
Initial cost of Oven
Construction

Items	qty	rate	Total Cost
Cement	7	7000	49000
Transportation cost for Cement	1	2000	2000
Iron rod	3	10000	30000
3"x2 "timber			19500
Bamboo wall			650
Brick	800	50	40000
Bamboo, post,			34000
Sand			27000
Nepa Roof	1000	85	85000
iron, string			15250
Bamboo shelf	100	500	50000
Labor cost			52000
Total cost			404400

The table described that the initial cost of Oven for Wa-U processing. The total construction cost is high because of standard oven for drying. For local community, it should consider for less cost production system. It means that the can should be constructed using local natural materials such as mud for the wall without using cement and brick.

12.4. Cost of Shaw Phyu (*Sterculia Versicolor Wall*) Plantation

Table (12.4.1). Estimated cost for Shaw Phyu Plantation

Cost Item	200 Trees per Ac	
	Kyat	%
Site preparation	65000	
Stake	2,000	
Staking	10,000	
Planting	15000	
Weeding 2 time	30,000	
Special Weeding	10,000	
Plantation cost	132,000	
Plastic bag (11" x 5")	2000	
Top soil	2000	
Soil Filling	2200	
Seeds	5000	
Labor cost	3000	
Other		
Nursery cost	14200	
Cost for Year 1	146,200	47.7%
Cost for Year 2	40,000	13.1%
Cost for Year 3	40,000	13.1%
Cost for Year 4	40,000	13.1%
Cost for Year 5	40,000	13.1%
Total cost	306,200	100.0%
Sale Price 5000Kyat/Viss	6,000,000	
Gross Marketing Margin	5,693,800	

The table mentions the initial investment of Shaw Phyu (*Sterculia Versicolor Wall*) Plantation. The data and some useful information about Shaw Phyu plantation could be collected from the respondent who has been working for this plantation. The plantation spacing should be 15' x 15' and the total number of trees roughly included in 200 trees per acre. The total cost for the year 1 is highest in this operation. For the years 2, 3, 4 and 5, weeding cost may only be needed for

growing well. The gum can be extracted from 5 year old trees. A tree, on an average, may yield 0.05 viss of gum per annum.

The total number of days for extraction of gum would be 120 days (4 months) per year. Thus, yield per year for 200 trees could be estimated at 1200 Viss. There are different price depend on the quality of products. In this year, 2010, the minimum price for lowest grade (quality) product was 5000 Kyat for a viss but the highest price was 18000 Kyat for the best quality. In the table, calculated the price depended on 5000 Kyat per viss for lowest quality product. According to the calculation, the benefit is significantly high.

There is a need to integrate cultivation of Shaw Phyu (*Sterculia Versicolor Wall*) within the community forestry systems in the region through agro-forestry projects, in order to develop sustainable forest management. Methods of gum collection should be improved in order to get higher quality products.

13.SWOT analysis for NTFPs Marketing

The SOWT (Strength, Weakness, Opportunities and Threats) analysis is used for the decision making of livelihood development program. The following table illustrated the points of analysis conclusion from results, findings and discussion.

<p>Strength</p> <ul style="list-style-type: none"> ▪ Favorable nature condition ▪ Not only NTFPs but also horticulture crops are potential (e.g. Preserved Lemon) 	<p>Weakness</p> <ul style="list-style-type: none"> ▪ Only focus on natural NTFPs but not on plantation ▪ Lack of marketing knowledge ▪ A few processing take place in village ▪ Lack of value added skill in local level ▪ Initial investment for processing ▪ No collector no market in village level ▪ Institutional linkages
<p>Opportunities</p> <ul style="list-style-type: none"> ▪ Able to cultivate some potential NTFPs ▪ Skill trainings for intercropping system ▪ Small business management program ▪ Favorable for initial set up value added production 	<p>Threats</p> <ul style="list-style-type: none"> ▪ Forest Fire ▪ Market demand very seasonal ▪ Declining Natural NTFPs volume in easy accessible areas

In this study area, the nature condition is favorable for their livelihood fulfillment. However, local people mainly rely on NTFPs from the nature reserve forests for their living. Although, there are products can be cultivated in the land, they still use products from the forest. They have weakness in NTFPs marketing system. They have less knowledge for value added process, initial investment and weakness in post harvesting technique. Hence, local people should be encouraged to plant the potential NTFPs in their land and conducted in skill training for implementation. The following figure shows the proposed model for livelihood development program based on NTFPs and other potential product.

14. Declining Yield of NTFPs

In conclusion of focus group discussion and responses of villagers, NTFP collection has been practiced in parallel with commercial timber production. Local villagers gather only natural NTFPs from the Forest Reserve area and Taninthari Nature Reserve (TNR) area. Another problem is collecting unmarketable size lead to low quality products and less quantity products. That can impact on not only local economy but also natural ecosystem. Some NTFP resources may be diminished in or disappeared from the forest. Consequently rural communities may become even more vulnerable to food shortage. They will no longer be able to rely upon forest foods during periods of low agricultural yield and hardships.

The reporters of Weekly Eleven and Seven Days News described the production trends of round-yam (WaU) and present market situation. Thargyi Myat, (2010) mentioned that the amount of the production of round-yam was decline obviously in this year. The reason could be found that most of the local people more rely on wild yam rather than domesticated product. Moreover, the quality of product was getting low because of under marketable size product collection. The writer suggested that the round-yam plantation should be implemented so as to produce qualitative and quantitative products.

There are exports markets to Thailand, China, Singapore and Korea (Maung Kan, 2010). He observed also that the round-yam plantations are being implemented in Kyauk Taw and Ponner Kyun in Rakhine State but have not started in others areas yet. He also recommended that

to grow the yam under the forest trees plantation. The benefit of round-yam can contribute to the cost of plantation.

The following figure shows the trend of Wa-U (round ram) production rate from the wild over the three years. The data were collected from three broker houses in Kanbauk and one from Yephyu.

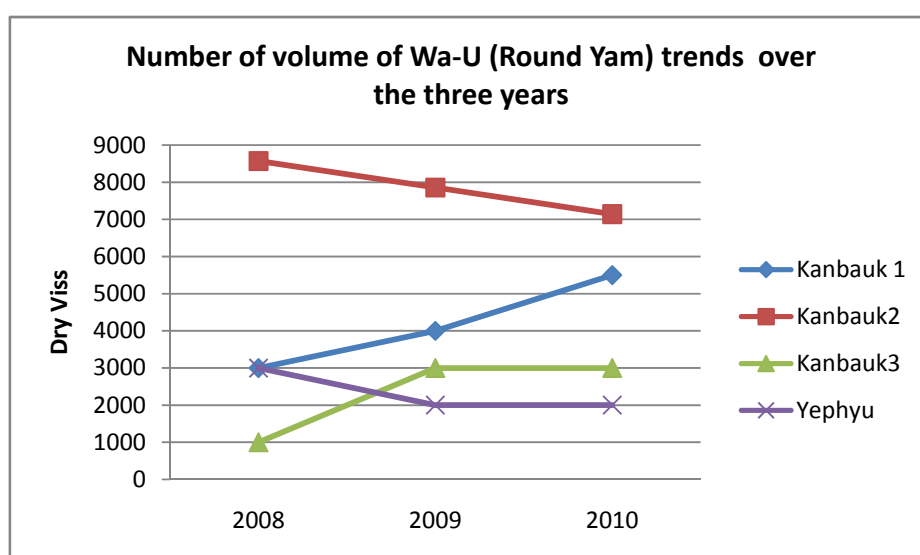


Figure (14.1). The total volume of trends over the three years by the Broker Houses

Only Kanbauk 1 (Broker House) shows the increasing trend over the three years but Kanbauk 2 (Broker House) dropped significantly year from 2008 to 2010. The Kanbauk 3 (Broker House) trend was sharply increased from 2008 to 2009 and then level off to 2010. The pattern of Yephyu (Broker House) indicated that the gradually decreasing trend from 2008 to 2009 and then steady to 2010.

To sum up, the production rate of Wa-U (round-yam) is declining year by year because of only gathering from natural forest. Therefore, the local communities should be encouraged to plant the round-yam in their garden and permitted land by government. In order to strength this system, skill trainings for plantation establishment, processing technology and small business management trainings are needed to be taken.

Because of declining natural NTFPs, there can be negative impact on other forest products such as illegal logging has been taking in TNR regions. The following tables and figure shows the increasing number of cases and amount in differences between 2008 and 2010.

Table (14.1). Illegal logging took place in 2008 in TNR region.

2008			
Sr.	Village	No. of case	Ton
1	Kalainaung (Block- 1)	1	1.53
2	Migaunglaung(New)	1	0.84
3	Hnan Kye	2	9.14
4	Zinbar	3	4.49
5	Yepon	2	2.13
6	Kyaukshat	1	4.15
	Total	10	22.28

Table (14.2). Illegal logging took place in 2010 in TNR region

2010			
Sr.	Place	No. of case	Ton
1	Dawei River	2	4.31
2	Eaishay	2	4.70
3	Eaiwe	1	12.85
4	Heinze Stream	3	1.85
5	Zinbar Stream	6	7.38
	Total	14	31.08

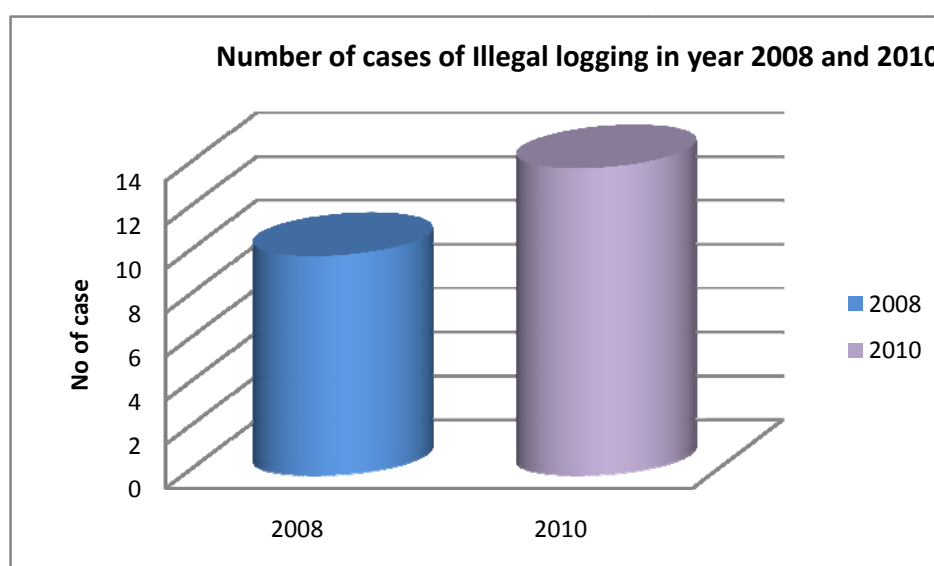


Figure (14.2). Illegal logging in number of cases in year 2008 and 2010

Source of data from TNRP office, Gantkawtaung

Based on the data obtained from the report of Ngwe Thee (2008) and NTRP Office illegal logging were indicated in above table. The highest frequency of illegal logging case was found in Zinbar in 2008 and 2010. The highest amount of timber was found in Hnankye and Eaiwe (the place of name in native) respectively in 2008 and 2010. There were more threats in Zinbar than other villages, the main threats were shifting cultivation, forest fire, hunting, illegal logging. Migaunglaung (old) had some threats; shifting cultivation, forest fire and hunting. The main threats, illegal logging occurred in Hnankye village (Ngwe Thee, 2008).

With the comparison of illegal logging frequency in the years 2008 and 2010, the rate of illegal logging is increasing 10 to 14 cases and the amount is also growing up, 22.28 to 31.08 ton. The local people in some villages still mainly rely on timber extraction for their livelihood fulfillment. For this reason, others alternative livelihood program should be implemented based on local community and sustainable existing resources production system. *(In this data analysis, just only focus on the comparison of number of cases but neglect other influencing factors on this case such as staffs patrolling capacity)*

15. Conclusion and Recommendation

To stimulate the development of NTFPs as a strategy to alleviate rural poverty, it is important to take into account the followings:

Forestry policy reform

National forestry policies should be favorable for the development of NTFPs. The main focus should not only toward timber production but also include NTFP production, especially by local community.

Institutional development at local level

A strong local institution can contribute to the development of NTFPs. Therefore, it is recommended that development agencies and (local) government play roles in stimulating the establishment of a strong local institution.

Improving access to market

Local communities must have good access to market information. They need to know what consumers demand. Development agencies (including NGOs) and local government can play a facilitating role in this regard.

As described earlier, the problem of NTFP commercialization is market access. Rural communities do not have sufficient information regarding market demand and price. They go to the forest and gather the natural NTFPs and then they sell them to local market for solving daily livelihood problem. Therefore they cannot respond adequately to current market trends. Moreover, under the current situation, most of the benefits do not go to the rural community; instead retailers enjoy the most of the benefits. Villagers, they don't have enough storage power and investment for processing and marketing.

Integral approach to NTFP production

As NTFPs from natural forests decline, domestication of economically valuable products becomes more important. Domestication may ensure the sustainability of the flow of the products. This integrated approach (i.e. natural and domesticated) is much better than merely reliance upon the natural habitat alone.

Local Capacity

Local communities only depend on traditional market system. In recent year, even they want to plant the some potential NTFPs species in their manageable land they don't know technical knowhow systematically. For example, despite they are willing to plant Wa-U in their garden or community forestry areas permitted by Forest Department they don't know exactly the ways. There are rich in NTFPs products, local people sell the products without adding value products. Moreover, local community has less storage power of product; they don't have a chance to wait for higher price condition. For example, the price of Wa-U (Round Yam) and Cardamom seeds in late season is higher than early season in normal condition. Thus post harvesting technique and storage power should be improved in order to get more benefit for local community.

Key to Success

- The key to success with the market system approach for an organization is to facilitate change, not to force it.
- The market also needs a set of rules and norms that everyone follows.
- They also cannot get regular income because there is no regular market to sell and to buy. Hence, people do not have a place to sell the goods they produce and cannot buy the things they need. Thus, the broker is crucial to local market.
- Local people mainly rely on forest products or resources, they collect non-timber forest products for their living but they still have a difficulty of business issues that is market access.
- Another important point should be considered that is value added products to be produced for local, regional and national needs.
- For the sustainable point of view, income generation practices should be exercised systematically including individual benefit sharing and common profits for sustainable development.
- The main idea is to avoid creating dependency among local businesses, households and system and to keep the people their own initiative and capacity to develop market system.
- The potential products contribute to local economy development. At the present condition, local people mainly rely on only natural products. Thus, we should encourage them to cultivate multi layer structure in their own land and land permitted by government.
- Small business training should be taken for NTFPs user groups so that they can understand market strategy, market access and know consumers demands.
- Skill trainings for plantation establishment should be taken for their implementation of livelihood development strategy.
- Post harvesting technology is very important for livelihood strategy improvement. The price of Wa-U (Round Yam) and Cardamom Seed is highest in late season in previous mentioned. In this case, if the local community is able to store the products for selling in higher price condition, their economic condition may be increased.

- Train the target group (Lecup, *et al*, 2000)

Some form of trainings through agencies specializing in certain sectors should be conducted for the enterprise or cooperative strategies in order for the Community Based Organization (CBO) to be successful and sustainable. There are options for training in each of the four main issues to be addressed in developing an enterprise. They are:

- ❖ Marketing (enterprise literacy, budgeting, record keeping, management of cooperatives and of producer saving funds, inventory and stock control, customer liaison, product development, quality control, production management, and identification of market opportunities)
- ❖ Resource Management (harvesting, cultivation, community mechanisms for resource control, management of common property resources, and intellectual property rights on local resources and products)
- ❖ Social development (group formation, strengthening and facilitation, conflict resolution for resource management, and legal advocacy for tree and forest product)
- ❖ Science and technology (processing and storage technology)

- Lecup, *et al*, (2000) provided the risks (Scenarios)

The following factors contribute to risk:

- ❖ Over harvesting of NTFPs
- ❖ Alternative fruiting characters of some NTFPs
- ❖ Evasion of cooperative principles by the members
- ❖ Poor leadership quality of the cooperative representatives
- ❖ Poor marketing knowledge and skills
- ❖ Dependence on a sole buyer
- ❖ Decrease in product demand
- ❖ Decrease in selling price
- ❖ Change in government policies
- ❖ Inflation and
- ❖ Uneven distribution of cooperative benefits

In order to minimize and/or handle these risks, training will be given to the target groups.

Lecup (2000) described the organizational plan, before starting production, the following activities should be accomplished;

- Strengthening of the group's abilities through training
- Strengthening of the main group's ability to coordinate and control production of the sub-groups
- Preparing a detailed business plan for each group and also for the main group for production and for refinement and the packing unit
- Applying for a loan and approval
- Contacting equipment suppliers
- Constructing equipment
- Planning labour tasks
- Installing equipment
- Directly purchasing production materials
- Producing for market trial
- Checking market quality
- Analyzing market trial and
- Readjusting the production plan

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I. Particular of a person responding to the questionnaire and Household Head

Name of Household Head (if different from respondent)

Q3: Please describe the sex of each household member. (M = male, F = female)

Q15: How much quantity of each product was kept store?

[illegible]

Q20: What are the production and marketing costs (pay) of Non-Timber Forest Products?												
Direct cost item (paying in cash)	Product 1 (Specify) ----- -----				Product 2 (Specify) ----- -----				Product 3 (Specify) ----- -----			
	Unit	Unit price	# of Unit	Total cost	Unit	Unit price	# of Unit	Total cost	Unit	Unit price	# of Unit	Total cost
Initial Investment												
Labor cost												
Drying cost												
Packaging												
Transport to sale place												
Sale commission												
Tax												
Other												
TOTAL												

Q17: Where were the household's products sold out last time? Who were the buyers there? Tick off as appropriate.

Product	Place		Buyer									
	<input type="checkbox"/> on farm	<input type="checkbox"/> consumer	<input type="checkbox"/> retail shop	<input type="checkbox"/> Processor	<input type="checkbox"/> Collector	<input type="checkbox"/> Broker house	<input type="checkbox"/> wholesale	<input type="checkbox"/> exporter	<input type="checkbox"/> Govt.	<input type="checkbox"/> Big producer	<input type="checkbox"/> lender	
	<input type="checkbox"/> at home/store	<input type="checkbox"/> consumer	<input type="checkbox"/> retail shop	<input type="checkbox"/> Processor	<input type="checkbox"/> Collector	<input type="checkbox"/> Broker house	<input type="checkbox"/> wholesale	<input type="checkbox"/> exporter	<input type="checkbox"/> Govt.	<input type="checkbox"/> Big producer	<input type="checkbox"/> lender	
	<input type="checkbox"/> within village	<input type="checkbox"/> consumer	<input type="checkbox"/> retail shop	<input type="checkbox"/> Processor	<input type="checkbox"/> Collector	<input type="checkbox"/> Broker house	<input type="checkbox"/> wholesale	<input type="checkbox"/> exporter	<input type="checkbox"/> Govt.	<input type="checkbox"/> Big producer	<input type="checkbox"/> lender	
	<input type="checkbox"/> nearby village	<input type="checkbox"/> consumer	<input type="checkbox"/> retail shop	<input type="checkbox"/> Processor	<input type="checkbox"/> Collector	<input type="checkbox"/> Broker house	<input type="checkbox"/> wholesale	<input type="checkbox"/> exporter	<input type="checkbox"/> Govt.	<input type="checkbox"/> Big producer	<input type="checkbox"/> lender	
	<input type="checkbox"/> village market	<input type="checkbox"/> consumer	<input type="checkbox"/> retail shop	<input type="checkbox"/> Processor	<input type="checkbox"/> Collector	<input type="checkbox"/> Broker house	<input type="checkbox"/> wholesale	<input type="checkbox"/> exporter	<input type="checkbox"/> Govt.	<input type="checkbox"/> Big producer	<input type="checkbox"/> lender	
	<input type="checkbox"/> nearby village market	<input type="checkbox"/> consumer	<input type="checkbox"/> retail shop	<input type="checkbox"/> Processor	<input type="checkbox"/> Collector	<input type="checkbox"/> Broker house	<input type="checkbox"/> wholesale	<input type="checkbox"/> exporter	<input type="checkbox"/> Govt.	<input type="checkbox"/> Big producer	<input type="checkbox"/> lender	
	<input type="checkbox"/> nearby town	<input type="checkbox"/> consumer	<input type="checkbox"/> retail shop	<input type="checkbox"/> Processor	<input type="checkbox"/> Collector	<input type="checkbox"/> Broker house	<input type="checkbox"/> wholesale	<input type="checkbox"/> exporter	<input type="checkbox"/> Govt.	<input type="checkbox"/> Big producer	<input type="checkbox"/> lender	
	<input type="checkbox"/> market town	<input type="checkbox"/> consumer	<input type="checkbox"/> retail shop	<input type="checkbox"/> Processor	<input type="checkbox"/> Collector	<input type="checkbox"/> Broker house	<input type="checkbox"/> wholesale	<input type="checkbox"/> exporter	<input type="checkbox"/> Govt.	<input type="checkbox"/> Big producer	<input type="checkbox"/> lender	
	<input type="checkbox"/> market city	<input type="checkbox"/> consumer	<input type="checkbox"/> retail shop	<input type="checkbox"/> Processor	<input type="checkbox"/> Collector	<input type="checkbox"/> Broker house	<input type="checkbox"/> wholesale	<input type="checkbox"/> exporter	<input type="checkbox"/> Govt.	<input type="checkbox"/> Big producer	<input type="checkbox"/> lender	
	<input type="checkbox"/> Thai-Myanmar border	<input type="checkbox"/> consumer	<input type="checkbox"/> retail shop	<input type="checkbox"/> Processor	<input type="checkbox"/> Collector	<input type="checkbox"/> Broker house	<input type="checkbox"/> wholesale	<input type="checkbox"/> exporter	<input type="checkbox"/> Govt.	<input type="checkbox"/> Big producer	<input type="checkbox"/> lender	

Q18: Which of the following constraints did household face in marketing? Please tick off as appropriate.

Constraints	Product 1 = _____	Product 2 = _____	Product 3 = _____
Irregular transport			
Higher Transportation Cost			
Higher Sale Commission			
Higher Tax			
Limited Permit			
Grading loss			
Measurement loss			
Low price			
Higher price fluctuation			
Storage constraints			
Packing constraints			
Risk of Thief			
Lack of information			
Lack of product knowledge			
Lack of bargaining			
Low/irregular yield			
Forest fire			
Other			

Constraints	Product 4 = _____	Product 5 = _____	Product 6 = _____
Irregular transport			
Higher Transportation Cost			
Higher Sale Commission			
Higher Tax			
Limited Permit			
Grading loss			
Measurement loss			
Low price			
Higher price fluctuation			
Storage constraints			
Packing constraints			
Risk of Thief			
Lack of information			
Lack of product knowledge			
Lack of bargaining			
Low/irregular yield			
Forest fire			
Other			

Q19. How much did household earn from the sale of products produced during last year? (Kyat)

Product	Unit	First Time Sale			Second Time Sale			Third Time Sale			Total
		Quantity sold	Unit price	Amount	Quantity sold	Unit price	Amount	Quantity sold	Unit price	Amount	
TOTAL					TOTAL				TOTAL		