# **Ministry of Natural Resources and Environmental Conservation**

# **Forest Department**

# **Taninthayi Nature Reserve Project**



# Report on Marketing Assessment of Non-Timber Forest Products in

# **Taninthayi Nature Reserve**

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#### **Executive Summary**

Non timber forest products are all biological products other than timber extracted from forests for human use (de Beer and McDermott, 1989).Non-timber Forest Products (NTFPs) have been shown to contribute to a large part of forest peoples' incomes and livelihoods (Van Paddenburget al, 2012). It accounts for an estimated 25% of the income of close to one billion people (Guerrero et al., 2015) and form the base of community forestry enterprises in the ASEAN region.

Commercialization of non-timber forest products is one of the contributing factors for livelihood improvement of forest dependent rural community as well as the best solution for alleviation of deforestation through illegal logging. However, unsustainable harvesting and limited market information of NTFP are the main barriers for NTFP based livelihood improvement programs.

The main purpose of the report is to give recommendation for alternative livelihood development through NTFPs products in Tanintharyi Nature Reserve Project area. To achieve this purpose, studying **the potential markets** using available Non-Timber Forest Products (NTFPs) resources such as bamboo, cane, medicinal plants, Wa-U(elephant foot yam) and cardamom seeds, etc, observing the **current market situation, demand and supply of NTFPs and its trend** around the Tanintharyi Nature Reserve, assessing the **past situation of harvesting NTFPs and Forest Gross Domestic product** were conducted and finally **recommendations for appropriate community development program by using NTFPs** based on gap analysis were provided.

The study was conducted in 11 villages Tanintharyi Nature Reserve Project affected area and Yephyu and Dawei townships in March 2018. The main research method is participatory value chain analysis based on 5 areas of sustainable enterprise development which was adapted from Market Analysis and Development for community based trees and forest products methodology (FAO 2011).

The key findings are;

- Local collectors have been receiving the least benefit among all actors in the value chain of NTFPs due to market monopolization in some villages, less market information and lack of value addition.
- Most of the local people have less interest in value addition (primary processing) of NTFPs and underestimate the economic value of NTFPs as well as they have limited capacity in business skill, financial investment, value added technology and market linkage.

- Most of the donors and Non-Governmental Organizations and International Non-Governmental Organizations in Tanintharyi Nature Reserve area usually support for planting, awareness raising, education and revolving fund and not for access to market information and development.
- In KNU managed area, the harvesting of NTFPs is controlled by revenue collection and the harvesting of highly-priced rattan species is not accessible to local collectors.
- Although bamboo is most abundant in all NTFPs of TNR area and many bamboo handicraft trainings were conducted, finished products making such as making handicraft, furniture are hardly ever found because of unconfident in market, lack of market access and less earning per day.
- Elephant-foot-yam and villous amomum were highly preferable from marketable point of view although the natural resource was getting less and unsustainably harvested.
- Although bamboo, broom grass and rattan are the most abundant and highly potential for community based enterprise development of all NTFPs, the market linkage and value added technology for finished product production have not developed yet.

The following interventions are suggested as the recommendation for community based NTFP enterprise development;

- As local people are inaccessible to market and underpaid for NTFP, networking as CF/ NTFP producer organization and coordinating with business men from private sector should be necessarily done to implement Public Private Partnership.
- 2) The domesticating and cultivating of highly marketable elephant foot yam in the home gardens and community forest area should be encouraged. And facilitation and extension to make dried- elephant-foot-yam to local collectors should be conducted in order to increase their income as well as improve forest conservation in TNR area.
- 3) Developing the internal rules for sustainable production, harvesting, marketing of commercial NTFPs as well as the researches and trainings for systematic planting, collection and processing/drying to reduce post harvest lost should be conducted.
- 4) Being a non-profit organization facilitating the payment for ecosystem services, TNRP should carefully carry out and support green economy businesses such as community based ecotourism, community based NTFP enterprise to achieve the sustainable natural forest conservation, biodiversity conservation and profitable local livelihood improvement for long run.
- 5) According to survey, there are some villagers' whose livelihood rely on illegal logging and charcoal burning, therefore, it is necessary to support the activities for community based enterprise development including value chain improvement and market

development of NTFP in order to ensure effective forest conservation and socioeconomic improvement in TNR area.

- 6) In order to do so, market analysis and development trainings have to be conducted to choose the most potential community based NTFP enterprise(CBNE) such as bamboo, rattan, elephant-foot-yam, broom grass, Villous amomun fruit and ecotourism and followed by initiation of pilot projects.
- 7) As bamboo, rattan and broom grass are the most abundant NTFPs in TNR areas, trainings for handicraft and finished product making should be conducted by selecting the interested people from CF and project affected villages and urging to make practically, coordinating with private sector and facilitation for market linkage and development.
- 8) Promotion of nature based tourism and incentivizing the protection of standing valuable trees as cash for conservation and cultivation of commercial NTFPs (elephant-foot-yam (Wa-U), chin-paund-phalar) in CF area should be introduced. After confirming the sustainable forest management in CF area, we can advertise the NTFPs products from community forest labeling products from sustainably managed community forest as a kind of sale promotion.
- 9) In order to promote entrepreneurship in community based NTFP enterprise, training about business skill improvement, saving and loan group scheme, group management, product skill, packaging and product exhibition have to be conducted.

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#### Marketing assessment of Non-Timber Forest Products (NTFPs) in Tanintharyi Nature

Reserve

#### **1. Introduction**

Tanintharyi region, located in southern part of Myanmar, is not only famous as the last frontier of Myanmar natural forest for possessing the pristine Tropical Evergreen forest and rich biological diversity but also one specific example of Payment for Ecosystem Service(PES) in Myanmar. In order to conserve the tropical evergreen ecosystem and native flora and fauna in north and east part of Tanintharyi region, Ministry of Natural Resources and Environmental Conservation established "Tanintharyi Nature Reserve(TNR)" in March 2005 with compliments of Forest Department as implementing agency and Mottama Gas Transportation Company (MGTC), Taninthayi Pipeline Company (TPC) and Andaman Transportation limited (PTTEP) as funding agencies. The two major goals of the project are;

- To ensure the sustainable protection of Tropical Evergreen forests and its endangered wild endemic plants and animals
- To promote the participation of local people in conservation of TNR with appreciated manner on value of biodiversity by supporting for the sustainable socioeconomic and livelihood improvement of local people.

Exactly, Tanintharyi Nature Reserve(TNR) is located in Kalainaung (Yephyu) and Dawei Townships, Dawei District and lie between Dawei river and Thailand- Myanmar broundary. It encompass an area of (420076.8) acres with part of Heinze-Kalainaung Reserve Forest and Lu Wine Reserve Forest.

It is undeniably accepted that forest conservation cannot be effective and successful without active participation of nearby forest dwellers or forest dependent local people. Therefore, clear understanding the livelihood options and socio-economic condition of nearby local community is necessary for effective conservation of TNR area. More importantly, facilitation and guidance for non-destructive sustainable livelihood opportunities are essential for success of any conservation project.

In Tanintharyi Nature Reserve area, the main livelihood options are horticulture farming with perennial crops and causal work (Seint San Zaw 2017). Scarcity of land due to extension of orchard and lack of job opportunity become the serious burdens for landless causal workers who can easily involve in illegal cutting of timber.

Commercialization of non-timber forest products is one of the contributing factors for livelihood improvement of forest dependent rural community as well as the best solution for alleviation of deforestation through illegal logging. However, unsustainable harvesting and limited market information of NTFP are the main barriers for NTFP based livelihood improvement programs.

#### 2. Objective

The main purpose of the report is to give recommendation for alternative livelihood development through NTFPs products. To achieve this purpose, the specific tasks to be carried out are:

- 1. To study **the potential markets** using available Non-Timber Forest Products (NTFPs) resources such as bamboo, cane, betel nut shells, medicinal plants, Wa-U(elephant foot yam) and cardamom seeds, etc
- 2. To study the **current market situation, demand and supply of NTFPs and its trend** around the Tanintharyi Nature Reserve.
- 3. To study the past situation of harvesting NTFPs and Forest Gross Domestic product.
- 4. To give recommendation for appropriate community development program by using NTFPs based on gap analysis

### 3. Limitation and scope of the survey

Firstly, the data collection was carried out within limited time.

- Secondly, participants from some of the community and some of the marketable NTFP could not be seen and local collectors in some village couldn't be met due to their unavailability.
- Thirdly, some of the Community Forest villages don't rely on NTFP collection very much, thus, their answers are too general.

As a scope, the market research is mainly focused on regional level, though national and global level data are not able to collect due to the limited time and resources.

#### 4. Rationale

#### **4.1Marketing of NTFP**

Marketing is a more involved process than selling. Selling is part of the marketing process and is the act of encouraging a potential customer to buy a product – i.e. to receive ownership of a product – in return for compensation, usually money. Marketing, on the other hand, is a comprehensive approach to designing a product, delivering it on time and at the right price to meet customers' needs. Marketing includes the production, the processing, the promotion, the distribution and finally the sale of a product (FAO 2011).

A key principle of marketing is to produce what can be sold for a profit, rather than simply what can be produced easily. An enterprise must identify and satisfy consumer needs in order to survive. This generally means adding value to a product by processing or packaging it, which usually involves indirect actors in the process. Successful entrepreneurs are marketoriented rather than product-oriented.

However, in case of NTFPs commercialization in a developing country like Myanmar, most of the NTFPs have been sold in dried, just primary processed forms. Producing the finished product is little far from their capacity. Therefore, studying the value chain of marketable NTFP is the effective way to identify the detailed challenges and difficulties for market development of NTFPs. As the value chain process is production to consumption system, various direct actors and indirect actors are involved and their roles are essentially important. Before the attempt for complete transforming of low value raw form selling to high-price-valued added finished product marketing, the effective intervention to add more value to raw NTFP is one particular suggestion for livelihood improvement.

In detail, the main activities of commercial enterprises includes identification of groups with production potential, participatory analyses of market systems and market exploration (rapid market appraisals) and facilitation of the collaboration between producer groups, private sectors and other market actors. The work on NTFPS also includes promoting production and product innovation. The development of a simple and robust market information system is equally foreseen. It is expected that these interventions will also contribute to the generation of employment, both in the groups as well as with private sector partners, particularly for young people (Peldon 2017).

According to Dhyani (2017), the major constraints for market development of NTFPs in developing South Asian countries are;

- Inadequate support to the primary collectors and their organizations for enterprise development and access to market.
- ➤ Unsustainable harvesting practices by the primary collectors leading to destruction of forest and absence of data to determine sustainable harvest levels
- Unorganized market mechanism leading to exploitation of the primary collectors and producers.
- Poor capacities with the stakeholders for sustainable management of NTFPs and linking it to livelihood security.
- Lack of market information system and market intelligence, product development and market development.
- Poor institutional arrangements for procurement, value addition, marketing of NTFPs and other technical services.
- Poor supply chain infrastructure (warehousing, cold storage facilities, efficient and transparent trading platforms)
- Absence of infrastructure for quality standardization, quality control, certification, branding and promotion.

It has been often seen that traders and collectors do not know the end use of the produce and the manufacturers don't know where the produce has come. Local level traders much as they are mostly unaware of the commercial worth of the produce they collect and trade. Primary collectors sell it for whatever they get. It is not possible for them to find more lucrative market. Traders and manufacturers, on the other hand, derive benefits by manipulating the information flow.

4.2 Challenges and Interventions for community based NTFPs enterprise development



# Value Chain for the NTFPs

Figure: (1) Value chain steps of NTFP

A review of the existing community-based non-timber forest products enterprises (NTFPs CBE) in South Asia region by the regional expert meeting in Bhutan in August 2017 discovered the following challenges and interventions for community based enterprise development Gurang(2017). Actually, marketing assessment of NTFP is not able to be successfully conducted without value chain assessment especially for community based forest product enterprise.

## Challenges can be categorized in each step of value chain as follow;

## Management of NTFP resources

In management of NTFP resources lack of capacity of the community, solidarity if the user group member in community forest, lack of constant monitoring and lack of conservation of forest resources are usually found. Additionally, diverse group members and difficult to come to consensus, lack of transparency and leadership of the group, sporadic growth of resources and lack of proper functioning of user group are the difficulties for NTFPs management phase.

#### Harvesting of NTFP

Harvesting of NTFPs is usually tricky because of the limited access to forest resources, limitation in innovation by user, lack of capacity of the user to harvest, process and collect. And unsustainable harvesting methods, harvesting is not based on trader and high initial financial investments are also the weak points in harvesting of NTFPs.

#### **Collection of NTFP**

High transportation cost, lack of adequate knowledge on latest technology to harvest and no proper transportation are mostly found in collecting of NTFPs. Moreover, high post harvest loss, lack of management protocol for collection and no good packaging are the weak factors in collection phase. Finally, some marginal farmers are not interested in collection and systematic and sustainable collection of resources at right time is rarely found.

#### Value addition and product development

Adding the value to the collected NTFPs and product development are hindered by the drawbacks including no linkages to funding sources, lack of storage technological know-how, lack of initiative in creating or adhering to international standards, weak linkages with research, lack of training and infrastructure and fund support and lack of demand assessment for products

#### Marketing

The most important and final step of value chain is marketing and commonly detected restrictions are no marketing network for NTFPs, lack of good dealership, limited access to market and market information. Besides, too much of informal trading, too much competitiveness and lack of proper market area assessment are the serious problems for NTFPs marketing.

#### Interventions for value chain improvement in each step are shown below,

#### Management of NTFPs resource

Constant monitoring and evaluation of resources, good inventory data on forest resources, strengthening the forest department to ensure protection, formation of groups based on their area of interest and development of constitution, capacity building and good governance are the important solutions for NTFPs resource management. And then group training about resource management plan and guideline development for intuitional strengthening, dissemination of successful research and best practices, capacity building for awareness on all aspects of the value chain, are also crucial. Finally, sustainable utilization of NWFP, reviewing the stock, replenishing resources, harvesting protocol, capacity building on financial management, book keeping & accounting, marketing, findings buyers, using the Market Information System and accessing information, analyzing/rationalizing information, business planning, communication, education and information and sensitize and convince the community on " there is strength in number."

group formation with representative from all and provision of resource and training are essential for NTFP management.

#### Harvesting

Capacity building for groups regarding the latest harvesting techniques, package practices of best knowledge, facilitate the NWFP group in timely transportation, training on sustainable harvesting of NWFP, proper guidelines integrating the environment friendly and modern technology, manual for how to harvest NTFP with required equipment, transfer knowledge on good harvesting, based on Indigenous Traditional Knowledge and provision of skill and techniques are the capable answers for effective harvesting.

#### Collection

Collection can be systematic and effective only if methodology and capacity building for providing storage facilities at central level, developing proper guidelines and implementation/enforcement, awareness raising and facilities for transportation, and finally introducing use of proper collection equipment to avoid post harvest loss.

#### Value addition and product development

For value addition and product development, subsidizing rates for equipment required for post harvest processing of resource, developing strong policy/strategies that community based NWFP's enterprise should follow in the process of value chain, primary processing options and training, tailored made training or training groups members on value addition and product development based on market demand are essential. Furthermore, knowledge sharing and research technology transfer based on market need assessment, vocational trainings about use of NTFP, providing appropriate mechanics and equipping the members with the much needed skills are significantly important.

### Standard and grade

For intruding penetrating the market and market promotion, government oversight in creating a standard or maintaining international standards, guidelines, providing skills and equipment, enforcement of regulations, regional certification body, information and education about potential of products are important strategies for value chain development. In addition, labeling, packaging with detailed story of the products and trade marking and fixing of parameter to assess the standard are vital for value chain improvement.

#### Marketing

In case of marketing, the measures including facilitation during marketing such as setting up buyer-seller meetings, information availability market infrastructures development, provision of market information at right time, investment and subsidies, demand oriented marketing, supporting for market study and enabling condition to domestic and international market are helpful. Likewise, make the members aware on the marketing dynamics and empower them with better bargaining power, decision support system and doing linkage with local and international market are essential for marketing.

### 5. Methodology

The research was conducted from 15<sup>th</sup> to 31<sup>st</sup> of March 2017 and 82 respondents were participated in the survey. Data were collected through face-to-face, semi-structured interviews, Key Informant interviews, Focus group discussions and direct survey. A review of documents, including consultancy reports, official documents and presentations related to the operations, was also conducted. The survey villages are selected according to the presence of NTFP production and marketing, included in TNR affected area as well as the presence of secure community land ownership (Community Forest certificate).Out of 31 villages located on and around TNR boundary area, 15 villages (9 CF villages and 6 non-CF villages) were selected and interviewed. Individual interviews were conducted in 7 villages in accordance with the dominant ethnic group and status of NTFP commercialization. The number of respondents according to value chain actors list is as follows;

Actor	Male	Female	Total	Remarks
Local collector	28	11	39	Direct actors
Village trader	3	5	8	Direct actors
Township broker	7	1	8	Direct actors
Government staff	3	-	3	Indirect actors

(Forest Department)				
TNRP staff	25	4	29	Indirect actors
Total	66	21	87	
%	76%	24%	100%	

#### Table(1) Respondents list

### **5.1Main research theme**

Research methodology is based on the concept of Sustainable Enterprise Development which was developed by FAO in 2011 for market analysis and development (MA&D) of community based tree and forest products enterprise. There are 4 steps in MA&D process as follow;

Step 1. Assessing the existing situation and identification of potential products

Step 2. Carrying out surveys and final product selection

Step 3. Plan enterprises and identify training and assistance needs

Step 4. Start enterprise activities at a pilot level

From these steps, I chose the required steps to know information for Market survey of commercial NTFPs and Value Chain analysis of selected NTFPs as necessary. In selecting the potential product for future commercialization, screening the five areas of enterprise development is applied to take into account environmental, social, institutional and technical factors, as well as commercial and financial aspects of a product. The focus on social and environmental issues means that the benefits to communities will be protected throughout the long-term development of an enterprise. Namely, the five areas include:

- Market/Economy, including financial aspects;
- Natural resource management/Environment
- Social/Cultural;
- Institutional/Legal;
- Technology/Product research/Development.

The principle of sustainability is the key factor in market analysis and development process (MA&D). Therefore, the sustainability in following areas is significant for product selection and to know the difficulties and status for further intervention for market development.

# **Five areas of enterprise development**



Figure: (2) Five areas of sustainable enterprise development

### 5.1.1 Sustainability of the resource

Any enterprise idea based on a resource that may be threatened by the activity will be discarded. Enterprises selected through the MA&D process ensure that the exploitation of resources is sustainable. The sustainable exploitation of resources preserves the ecosystem. With care, resources can be harvested indefinitely from a limited area of forest or domesticated on farmland. The criteria for resource sustainability are; availability in time (seasonality), availability in space (time needed to find and harvest), impact of production on environment, length of time from planting to harvest, regenerative potential, impact of harvesting.

#### 5.1.2 Social sustainability

Any enterprise idea that could create social disharmony or exclusion of local groups will be discarded. MA&D ensures that the activities and benefits of the enterprises are equitable and gender-balanced, that they do not harm the weakest members of the community or create social conflicts. The criteria are indirect benefits for the community, contribution to incomes, experience with the product, potential for employment creation and gender impact.

## 5.1.3 Market sustainability

Any enterprise idea that cannot propose attractive products for markets will be discarded. MA&D aims at market sustainability by ensuring constant access to market information so that entrepreneurs remain competitive. Entrepreneurs are thus able to assess changes in the market environment and adapt their products accordingly. The criteria are raw material supply, market

potential, competition to find a market niche, constraints to business entry (market channels, high financial needs, etc.) and profitability.

#### 5.1.4 Legal and institutional sustainability

Any enterprise idea that is not able to adapt to legal and institutional realities will be discarded. MA&D ensures that entrepreneurs stay abreast of changing policies influencing harvest, processing, transportation or distribution of their products. Entrepreneurs also need to remain aware of changes in administrative procedures that can impact the registration, financing or management of their enterprises. The criteria are policy restrictions and institutional support.

### 5.1.5 Technological sustainability

Any enterprise idea that is unable to acquire the equipment required to produce high quality products will be discarded. MA&D encourages entrepreneurs to select equipment that is suitable to the needs of their enterprise, users and local conditions. Users must learn to use the equipment properly, to maintain it and to upgrade it as needed. The indicative criteria are suitability for rural entrepreneurs, processing location (distance from home), processing technology required (complexity), infrastructure status, human resources, skills and expertise and number of people available to provide human resources.

#### 6. Results

#### 6.1 Market potential of available NTFPs from TNR area

According to questionnaire survey, the NTFPs found in TNR area are bamboo, bamboo shoot, rattan, rattan fruit, pepper, cashew net, betel nut, elephant-foot-yam(*Amorphophallus campanulatus*), chin-paung-phalar(*Amomum villosum* Lour. var. *xanthioides*), jungle bean, kone-kan-zaw( Seeds of thit-ja-poe), broom grass, taung-htan leaves, da-yin-kaut-myint, gon-khar, sin-tone-ma-nwe, kway-u etc. Among them, the preferred marketable NTFPs responded by 41 interviewee are shown in the figure (3).



#### Figure (3) Marketable NTFP according to individual interview result

Out of 41 respondents, 66% replied that elephant-foot-yam is the most suitable one for community based NTFP enterprise development. Chin-paund-phalar is the second most suggested item and followed by bamboo and Jungle bean. This is because dried round-yum and dried Chin-paund-phalar can give the significant income for the livelihood and their market demand is very high. However, elephant-foot-yam, Chin-paund-phalar and jungle bean can be harvested in just (2) to (3) months in a year. On the other hand, bamboo can be harvested year round and can be value-added to a finished product if technology is available. In spite of the regular bamboo handicraft trainings by TRNP, local villagers are not interested in making bamboo based product due to the lack of market and poor daily income. Broom grass is very much abundant in TNR area but only one household make finished product "broom". Over all, local people in TNR area are more eager for their conventional perennial/horticulture and selling raw materials than trying to make finished/value added products due to not familiar with handiwork technology as well as limited awareness for innovation. Most of the people benefited by elephant-foot-yam and Chin-paund-phalar are the local collectors and middle men who make more value adding (cleaning, chipping and drying in oven) after buying from harvesters.

From these NTFPs, the most common marketable NTFPs in 15 villages of TNR according to focus group discussion results area are shown in the figure 4.



## Figure (4) Preferred NTFP for market development

From the chart, it can be clearly seen that bamboo is the most abundant NTFP in all village and followed by jungle bean. Elephant foot yam and Chin-paung-phalar(Villous amomum fruit) are third mostly important NTFP and followed by broom grass and rattan. Taung Htan leaves, cashew nut and pepper are also important ones for the livelihood. Nearly all of the NTFP are sold in raw forms especially bamboo, cane. As local people are more eager to grow and sell the crops from perennial horticulture and low interest to make value-added-finished products due to limited technology and market access.

NTFP	Ja	n	Fe	eb	M	ar	Ap	ril	Ma	ay	Ju	ne	Ju	ly	Aı	ıg	Se	р	0	ct	No	OV	De	ec
Bamboo																								
Rattan																								
Elephant foot																								
yam																								
Villous amomum																								
Broom grass																								
Jungle bean																								
Taung htan(palm)																								

#### **6.1.1NTFP** seasonal calendar

Figure (5) Seasonal calendar of NTFP production

From this calendar, it can be clearly seen that bamboo and rattan can be produced much longer than other marketable NTFPs yearly. Although the price and effort for cutting these two NTFPs are not much profitable, the availability in both quantity and time is always higher than others. As many people started to cultivate elephant foot yam in their gardens, the availability in quantity is not so affected, however, the production time is just about 2 months. Chin-paungphalar (Villous amomum) is available for two and half month in a year, the yield has been declining due to the incident of wild fire. The duration of collecting time for elephant foot yam, broom grass, jungle bean and taung-htan are three months.

NTED		Production per year per	Unit price	NTFP income per year
NIFF	umi	man	(MMK)	(MMK)
Bamboo	Pole	5550	<u>200</u>	1,110,000
Elephant foot yam	Vice	200	400	120,000
(Green)	V 188	300	<u>400</u>	120,000
Elephant foot yam	Vice	400	5000	2,000,000
(Dried)	v 155	400	<u> 3000</u>	2,000,000
Villous amomum fruit	Viss	50	<u>9000</u>	450,000
Jungla baan	8-viss	30	8000	240,000
Juligie bean	container	50	<u>8000</u>	240,000
Broom grass	Viss	260	<u>5000</u>	1,300,000
Rattan	Pole	600	250	150,000

#### 6.1.2 Income from NTFPs

Table (2) Price of key NTFPs



The priority for community based enterprise development screening with 5 areas of sustainable enterprise development is shown in figure 6.



In screening with the 5 areas of enterprise development, elephant-foot-yam has the largest potential to develop as a community based enterprise and followed by bamboo based products. Although the availability and usefulness of bamboo is much higher than other NTFPs, weakness in technology, skill and market linkage for bamboo based products make the score low. The third one is Chin-paung-phalar(*Villous amomum*) and unsustainable resource stock due to forest fire and unstable market price are challenging for enterprise development. In case of rattan based product, uneasiness to collect due to in forest under the control of ethnic armed organization and technology, skill and market access are the major hindrances for rattan based community enterprise development. The availability of broom grass and jungle bean is a bit adequate, however, the wiliness and technology to make finished product are still low. The price of pepper is high but the availability is low due to few people started to grow.

## 6.2. Current market situation, demand and supply of NTFPs and its trend around the Tanintharyi Nature Reserve.

The demand for the NTFPs in TNR area, their values and product management strategies are shown in the following table

Name of NTFP	Amount of production/	Unit price	Product	Sustainable	Targeted	Demand	Use
	acre/ year	(MMKyats)	quality/price	Productivity	Market	Regularity	
						(High,	
						medium, low)	
Bamboo(Num.)	5550	200-700	Depend on species	High	Local market	High	Building, utility
Elephant foot yam (fresh)(viss)	300	400	No difference	Medium	Local processor	High	Food, medicine
Elephant foot yam (dried)(viss)	50	6000-10800	Depend on demand time and dryness	Medium	China	High	Food, medicine
Villous amomum fruit(dried)	30	8000-12000	Ripe and dried fruit	Medium to low	China	High	Medicine
Jungle bean	260	5000-10000		Medium	Local market	High	Food
Broom grass(viss)	600	250-500	Dryness	High	Local market	medium	Broom making
Rattan	5000	80-500	Depend on	Medium	Local market	Medium	Furniture,
(raw)(Num.)			species				handicraft,
Pepper	30	9000			Local market	High	spice

Table(3) Current market situation, demand and supply of NTFPs in TNR area.

### 6.2.1Elephant-foot-yam

#### 6.2.1.1Market mapping of Elephant-foot-yam



Figure (7) Market channel of Elephant-foot-yam

According to the market chain survey, the targeted market of dried elephant-foot-yam is China. Both fresh and dried elephant-foot yam are transported to Yephyu, Ye, Dawei and Mawlamyaing cities, from these cities transferred to Mandalay and Yangon. There are drying factories and local processing units in these cities.

# 6.2.1.2Market data of Elephant foot yam

Informants	Buying price	Selling price	Quantity/volume	Transport	processing	Tax	Storage/rental	Margin	Remarks
	per viss	per viss	traded by informant	costs	cost	(MMK)	cost	(MMK)	
	(MMK)	(MMK)	(viss)	(MMK)	(MMK)		(MMK)		
Local collector a	400	4,000	400		100,000			1,340,000	dried sell
Local collector b	400	450	30					1,500	green
Local collector c	500	900	2,000	120,000				680,000	green
Average of local	433	1,783	810	120,000	100,000			673,833	
collector									
								-	
Village Trader 1a	700	1,000	5,000	50,000				1,450,000	
VillageTrader 1b	850	4,500	3,000	550,000	1,800,000			8,600,000	dried sell
VillageTrader 1c	900	6,000	4,000	600,000	3,600,000			16,200,000	
Average of village	817	3,833	4,000	400,000	2,700,000			8,750,000	
trader									
								-	
Township broker 2a	n 700	1,600	5,000	1,000,000	50,000	375,000		3,075,000	
Township broker 2b	4,500	5,000	10,000	2,000,000				3,000,000	dried sell
Trownship broker 2c	8,000	10,800	50,000	10,000,000	75,000,000	11,250,000	400,000	43,750,000	dried sell
Average of township broker	4,400	5,800	21,667	4,333,333	37,525,000	5,812,500	400,000	16,608,333	

Table-(4) Market data of Elephant-foot-yam





Figure (8) - Price trend of Elephant-foot-yam in last 3 years

This figure shows the average price of 1 viss-weighted elephant-foot-yam during the previous 3 years in villages of TNR area. The price of fresh elephant-foot-yam remains stable and that does not support the livelihood of local harvesters who could not accessible to primary processing (cleaning, chipping and drying in oven). However the dried elephant-foot-yam has been priced significantly in upward trend during this period. This may be because the market demand of dried elephant-foot-yam is higher and higher in end market, China.

Concerning with this, the two brokers from Dawei and Mandalay cities suggested that cultivation or domestication of elephant-foot-yam should be encouraged because there will be private factories in these cities which will certainly need much raw material. That statement is confirmed by Assistant Director of Dawei District.



Figure (9) Status of production of villous amomum for community based enterprise development plan

#### **6.2.2Chin-paund-phalar** (Villous amomum)

6.2.2.1 Market mapping of Chin-paund-phalar (Villous amomum)



Figure (10) Market channel of Chin-paund-phalar (Villous amomum)

The main target market of Chin-paung-phalar(Villous amomum) is China. The local collectors from villages of TNR area roughly dry the villous amomum fruit in the forest and sell to townships traders. And township traders make special dried (packing) again and transported to city brokers such as Taunggoo, Yangon and Shwe Li. In Taunggoo, large amount of Villous amomum fruits are produced from home gardens and exported to China. In the new democratic government time, the management including revenue collection of NTFPs is empowered to local governments. In addition, the production and marketing of NTFPs such as Phalar and Elephantfoot- yam harvested from household yard and home gardens can get tax exemption in accordance with the agreement of local government authorities. On one hand, this can favor the more domestication and planting of Chin-paund-phalar in homegarden and homestead area. In the other hand, local government and relevant official should support for getting the right and good price, setting the minimum standard for harvesting, guiding to be collected in right time and monitoring of the revenue from Chin-paung-phalar to conserve the sustainability of resource.

# 6.2.2.2Market data of Chin-paund-phalar(Villous Amomum)

Informants	Buying price per viss(MMK)	Selling price per viss (MMK)	Quantity/ volume traded by informant (viss)	Transport Costs(MMK)	Processing cost(MMK)	Tax/year (MMK)	Storage/ rental cost(MMK)	Margin (MMK)	Remarks
Local collector a	4,000	4,500	2,000	5,000		30,000		965,000	
Local collector b	8,000	11,000	200	50,000	40,000			510,000	
Local collector c	6,000	8,000	60		30,000			90,000	
Average of local collector	6,000	7,833	753	27,500	35,000	30,000		521,667	
Village Trader 1a	6,000	8,000	300	10,000	250,000			340,000	
VillageTrader 1b	6,000	9,500	400	40,000	400,000			960,000	
VillageTrader 1c	9,000	12,000	200	210,000	40,000			350,000	
Average of village trader	7,000	9,833	300	86,667	230,000			550,000	
Township broker 2a	6,000	9,000	50	50,000	25,000			75,000	
Township broker 2b	8,000	12,000	7,000	14,000,000	70,000	1,750,000		12,180,000	
Trownship broker 2c	6,000	8,000	10,000	300,000	200,000	2,500,000		17,000,000	
Average of township broker	6,667	9,667	5,683	4,783,333	98,333	2,125,000		9,751,667	

 Table(5) market data of Chin-paund-phalar(Villous amomum fruit)

### 6.2.2.3 Price trend of Chin-paund-phalar(Villous Amomum fruit)



Figure (11) Price trend of Chin-paund-phalar (Villous amomum)

This figure illustrates the price trends of one viss of normal dried and packing (specially dried) villous amomum fruits. Compared to normal dried fruits, specially dried (reprocessed the normal one) fruit can get the higher price. However, the fluctuating price trend is resulted not only because of the irregular demand from China but also destruction by wild fire and unsystematic production.



Figure (12) Status of production of villous amomum for community based enterprise development plan

#### 6.2.3 Broom grass

#### 6.2.3.1 Marketing mapping of Broom grass



#### Figure: (13) Marketing mapping of Broom grass

Broom grass is one of the most abundant NTFPs in TNR area which can somehow support livelihood of local people. Most of the harvesters collect and sell in raw forms and very few villagers made value addition such as broom making. Even though the quality of broom is good and demand is regular, the profit is not so much due to poor market information and high transportation. The most benefited persons are the processors and middle men in cities including Ye, Thanphyuzayat, Mawlamyaing and Yangon who make broom or resell the finished brooms.

Product Item	Input	Final price	Net	Amount	Total
			<pre>profit(Kyats)</pre>	per day	
Raw grass (partial	time & work	500 kyats/viss	500	10 viss	5000
sun-dried)					
Raw grass (super	More time & work	700 kyats/viss	700	10 viss	7000
sun-dried)	for drying				
Long raw grass	Much time and man	2 kyats/plant	2	4000 Num.	8000
(super sun-dried)	for sorting,				
	cleaning, drying				
Broom making by	Time & manpower	300kyats/broo	190	50 brooms	9500
Local villager	for weaving +110	m			
	kyats				
Broom selling by	300 kyats+50kyats	500kyats/	150	50 brooms	7500
broker	for transportation	broom			

#### 6.2.3.2Value chain of broom grass

Table(6) Value chain of broom grass



Figure (13) Status for broom making for community based enterprise development plan

## 6.2.4 Bamboo

### 6.2.4.1 Marketing mapping of Bamboo





#### 6.2.4.2 Value chain of bamboo

Product Item	Input	Final price	Net	Amount	Total value	
			profit(Kyats)	per day	(Kyats)	
Bamboo pole	a day & 5 person	250 kyats/viss	250	50-100	12500-25000	
	work			Nums		
Bamboo weaved	1400 Ks	7000kyats	5600	3	168000	
wall	(2poles x 700Ks) +	/(7'x6')sheet				
	weaving	(1'x1' size = 180)				
		Kyats)				

#### Table(7) Value chain of Bamboo







Figure (16) Status for production of rattan based product for community based enterprise development plan.





# 6.3 Past situation of harvesting NTFPs and Forest Gross Domestic product.



### Figure (18) Marketing and GDP of NTFP in Dawei (2017-2018)

This figure show the comparison of marketing amount of Wa-U (elephant-foot-yam )and Chin-paund-phalar(Villous amomum) Dawei township and the amount of forest gross domestic product in 2017-18. In production of dried elephant-foot-yam, the actual production from brokers 'houses is about 10 times higher than forest GDP amount. This is because of the departmental order of tax exemption for cultivated NTFPs produced from household yard or home gardens other than wild NTFPs harvested from natural forest. In case of Chin-paund-phalar, the actual production amount is approximately 6 times higher than the forest GDP. This may be the same reason as elephant-foot-yam or the reason of less production might be destruction by fire and declining of yield.





6.4 Recommendation for Community based Non-timber forest products enterprise development



Figure (20) Status for production of bamboo based product for community based enterprise development plan.

In Tanintharyi Nature reserve area, the natural capital for availability of NTFPs and social and cultural favorability are quite high for most of marketable NTFPs, especially for bamboo, broom grass, and rattan, however, the technology, market access and financial support for high-valued finished product production is notably poor. Although dried elephant foot yam, jungle bean and dried villous amomum are significantly superior in marketability, their resource sustainability, technological support is still weak and social desirability is not so high due to the difficult processing and pungent smell in storage and unsuitability for health. Whereas Institutional and legal support for bamboo based product, dried-elephant-foot-yam, rattan based product is strong, those for broom making and dried villous amomum seem to be not so effective. This is because very low price of making broom and tax collection from ethnic armed organizations in harvesting from their managed forest. From technological point of view, handicraft trainings for rattan, bamboo and broom grass should be necessarily and urgently conducted in form of public-private-partnership.

# 6.4.1 Challenges for NTFP market development

Concerns	Score	Related areas
Limited market promotion capacity, market	15	Market development
linkage/ market information and experience,		
insecure for market of bamboo based products		
Give low price by middlemen, poor interest to	10	Institutional support
make value added product ( no farsighted)		(extension, networking,
		coordination)
Over and careless harvesting	10	Silvicultural practices
		(Harvesting rule, research
		on productive capacity and
		nature of NTFPs)
Authority conflict zone	9	Peace process negotiation
Scarcity of NTFP due to fire, extension of	9	Systematic land use
rubber plantation, pest, climate change		planning and awareness
		raising
Less interest in NTFP due to poverty, being	9	Institutional support to
illegal logger and low market price		guarantee for affordable
		price in order to ensure fair
		trade and community
		outreach program
Limited knowledge in drying/ processing	5	Research, training and
technique of commercial NTFP( Elephant foot		extension (processing/ drying
yam, Chin-paund-phalar, etc)		of commercial NTFPs)
Limited knowledge in planting methods of	4	research, training and
commercial NTFP(Elephant foot yam, Chin-		extension for planting of
paund-phalar, etc)		commercial NTFP
Unclear procedure in transportation and	3	Easy, transparent and legal
marketing of NTFP( double, triple taxation)		support for trade facilitation
		of commercial NTFP

Table(8) Challenges for NTFP market development

Market linkage and limited market information system are the most serious challenges for NTFP based livelihood improvement in TNR area. Lack of information about the supply and demand of NTFPs severely hinders the prospect of collectors to get a fair price. As collectors sell their harvest to local traders (in informal markets), information about prices, product flow and marketing options is rarely available.

Secondarily, low pricing by middle men and limited interest to make value added production make the rural poor people become poorer. The systematic information and data on NTFPs collection, processing, trade and marketing is lacking, as most of these products are traded in raw form. The lack of market information of existing high value NTFPs resources is one of the major constraints for price realization of these products. Because of this information gap primary collectors do not get the actual price of the commodity and are therefore, heavily exploited by the contractors and traders. Also, the prices of NTFPs fluctuate frequently and further discourage people to invest in the sector.

Authority conflict, scarcity of NTFP due to fire, extension of rubber plantations, pest, climate change and less interest in NTFP due to poverty and getting less profit are thirdly concerned factors.

Finally, poor knowledge not only in planting methods but also in drying and processing techniques of commercial NTFP (Elephant foot yam, Chin-paund-phalar, etc) and unclear procedure in transporting and marketing of NTFPs are also found as the difficulties for local people.

Over all, the concerns for NTFP based community based enterprise development are market, market information, institutional failures for NTFP management, silvicultural practices for NTFP conservation and technology for NTFP value addition.

# 6.4.2Suggestions for NTFP market development

Suggestions	Score	Related area
Training for broom making, bamboo handicraft making	18	Technology
Extension & assistance for NTFP Community Based Enterprises from management to marketing (planting methods, species, storage methods and rule for sustainable harvesting)	12	Value chain development
Training for Market Analysis Development and Value Addition	10	Marketing
Affordable price setting by CF producer organization as coordinating organization	8	Poverty reduction and equitable benefit sharing (fair trade)
Drying technique, investment, small holder drying machine	7	Value chain development
Extension and support to make value added product through local authorized persons	6	Value chain development and awareness of local administrators
Assistance to link the right market and buyer, effective market information system	6	Value chain development
Domestication of commercial NTFP in CF and Assistance for CF based ecotourism	6	Sustainability
Fire protection and natural forest conservation	4	Sustainability
Clear instruction and quick procedure for NTFP transportation and legal marketing	1	Legality

## Table (9) Suggestions for NTFP market development

The most important suggestion for the livelihood improvement through NTFPs include capacity building trainings for value addition such as broom making, bamboo

handicraft making. In addition, extension and assistance for NTFP Community Based Enterprises from management to marketing (planting methods, species, storage methods and rule for sustainable harvesting) are necessarily needed to fill the major gap of local community need. In order to avoid the market monopoly and lower pricing, networking and affordable price setting by CF producer organization and relevant organizations should be conducted in a coordinated manner.

Technical support and investment for primary processing (drying) should be facilitated at least by providing small holder drying machines in each piloting community organization.

Assistance to link the right market and buyer, effective market information system are importantly needed.

Moreover, in order to raise the interest of local community in NTFP value addition, encouraging value added production through local authorized persons should be carried out. Domestication of commercial NTFP in Community Forest, fire protection and natural forest conservation should be performed to ensure the sustainable production. Finally, clear instruction and quick procedure for NTFP transportation and legal marketing is needed to ease NTFP marketing.

Overall, the suggestions are mainly focused on value chain development, technical support, long term production, awareness of local administrators and local community (both direct and indirect influenced actors), poverty reduction, equitable benefit sharing (fair trade), sustainability and legality.

## 7. Major Findings

- The market conditions of Elephant foot yam(Wa-U), Villous amomum (Chin-paundphalar) and jungle bean are more profitable than other NTFPs if they sell primary processed (dried) materials.
- Most of NTFP harvesting from natural forest is not sustainable.
- According to market analysis data, it is clearly shown that much more profit goes to village traders (who make primary processing) and city brokers. In spite of hard effort to harvest and collect from forest every year, socioeconomic condition of local people has not improved yet.

- Local collectors have been receiving the least benefit among all actors in the value chain of NTFPs due to market monopolization in some villages, less market information and lack of value addition.
- Most of the local people have less interest in value addition (primary processing) of NTFPs and underestimate the economic value of NTFPs as well as they have limited capacity in business skill, financial investment, value added technology and market linkage.
- Most of the donors and Non-Governmental Organizations and International Non-Governmental Organizations in Tanintharyi Nature Reserve area usually support for planting, awareness raising, education and revolving fund and not for access to market information and development.
- In KNU managed area, the harvesting of NTFPs is controlled by revenue collection and the harvesting of highly-priced rattan species is not accessible to local collectors.
- Although bamboo is most abundant in all NTFPs of TNR area and many bamboo handicraft trainings were conducted, finished products making such as making handicraft, furniture are hardly ever found because of unconfident in market, lack of market access and less earning per day.
- Nearly most of the community forests in TNR area are aimed for water resource conservation, basic needs fulfillment and socioeconomic development, income generation from CF products has not apparently found.

## 8. Recommendations

- As local people are inaccessible to market and underpaid for NTFP, networking as CF/ NTFP producer organization and coordinating with business men from private sector should be necessarily done to implement Public Private Partnership.
- 2) The market price of dried elephant foot yam is in upward trend and there will be new private elephant-foot-yam drying factories in Dawei and Ye townships, the domesticating and cultivating in the home gardens and community forest area should be encouraged. Moreover, facilitation and extension to make dried- elephant-foot-yam to local collectors should be conducted in order to increase their income as well as improve forest conservation in TNR area.

- 3) Developing the internal rules for sustainable production, harvesting, marketing of commercial NTFPs as well as the researches and trainings for systematic planting, collection and processing/drying to reduce post harvest lost should be conducted.
- 4) Being a non-profit organization facilitating?/implementing the payment for ecosystem services, TNRP should carefully carry out and support green economy businesses such as community based ecotourism, community based NTFP enterprise to achieve the sustainable natural forest conservation, biodiversity conservation and profitable local livelihood improvement for long run.
- 5) According to survey, there are some villagers' whose livelihood rely on illegal logging and charcoal burning, therefore, it is necessary to support the activities for community based enterprise development including value chain improvement and market development of NTFP in order to ensure effective forest conservation and socioeconomic improvement in TNR area.
- 6) In order to do so, market analysis and development trainings have to be conducted to choose the most potential community based NTFP enterprise(CBNE) such as bamboo, rattan, elephant-foot-yam, broom grass, Villous amomun fruit and ecotourism and initiate pilot projects.
- 7) As bamboo, rattan and broom grass are the most abundant NTFPs in TNR areas, trainings for handicraft and finished product making should be conducted by selecting the interested people from CF and project affected villages and urging to make practically, coordinating with private sector and facilitation for market linkage and development.
- 8) Promotion of nature based tourism and incentivizing the protection of standing valuable trees as cash for conservation and cultivation of commercial NTFPs (elephant-foot-yam (Wa-U), chin-paund-phalar) in CF area should be introduced. After confirming the sustainable forest management in CF area, we can advertise the NTFPs products from community forest labeling products from sustainably managed community forest as a kind of sale promotion.
- 9) In order to promote entrepreneurship in community based NTFP enterprise, trainings about business skill improvement, saving and loan group scheme, group management, product skill, packaging and product exhibition should be conducted.

# 9. Proposed actions for future steps

Sr	Steps	Action	Accountable			
			person/institution			
1	Extension and education of	To all TNR affected	TNRP staff or			
	importance of NTFPs and	villages	experts			
	sustainable harvesting practices					
2	Promotion of handicraft trainings	To all TNR affected	TNRP staff or			
	for bamboo, rattan and broom	villages	experts and			
	grass in connection with private		private business			
	sector		entrepreneurs			
3	Give training on enhancing	To all villages in TNR	TNRP staff/			
	Livelihood through Community	affected area	RECOFTC,			
	Forest Management focused on		experts			
	NTFPs					
4	Give training on Market Analysis	To all CF villages in	TNRP staff/			
	and development of NTFPs	TNR affected area	RECOFTC,			
	based CF		experts			
5	Creating the NTFPs based	TNR area(Local),	TNRP staff/			
	Community Forest Producers	township/district and	RECOFTC,			
	Organizations according to each	regional level	experts,			
	specific marketable NTFP and					
	practitioners network for market					
	information and product					
	development of each					
6	Implementing the pilot programs	3 CF villages or	TNRP staff,			
	on community based NTFPs	promising villages in	Experts			
	enterprise development with	TNR affected area				
	enough inputs for management,					
	processing, value addition and					
	marketing technology and					
	financial investment.					

Table (10) Proposed actions for future steps

## **10. Conclusions**

The market development of NTFP can be attained in an integrated and cooperative manner with the participation of all actors from harvesters to policy makers. In order to ensure the market development, not only natural resource sustainability is crucial for environmental point of view but also facilitation in technical, marketing and financial capacities is also crucial for economic context. In addition, political support to strengthen the institutional capacity and respecting the social norms in favour of the poverty reduction and grass-root level development are vital important for social corner. Interventions to manage and fill the gaps in all steps of value chain can give the best solution for sustainable community based NTFPs enterprise development in other words, the local livelihood improvement and efficient and effective forest conservation.

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# Pictures



1. Local rattan handicraft items from Kalone Htar Village



2(a) Elephant-foot-yam stored as seed plant



2(b) Elephant-foot-yam plant



3. Villous amomum plants



4. Broom grass



5. Bamboo



6. Focus Group Discussion at Ye Bone Village CF members



7. Focus Group Discussion at Lawthai Village CF members



8. Focus Group Discussion at TNRP office

Annex (1)

	Village name	Chin Paung	Elephant-	Pepper	Genkor	Cahsew	Bamboo	Broom	cane	Rattan	Honey	Taung Htan
		phalar	foot-yam		Bean	nut		grass	fruit			(Palm leaves)
1	Kyaut Shat											
2	Yaphu											
3	Thetkaekwt											
4	Myay Khan Baw	$\checkmark$	$\checkmark$									
5	Ye bone	$\checkmark$	$\checkmark$									$\checkmark$
6	HeinZae											
7	Mayanchaung											
8	MiKyaunglaung(old)	$\checkmark$				$\checkmark$						
9	Zinbar	$\checkmark$										
10	Alaesakan											
11	Kaut Hlaing											
12	Gan Gaw Taung											
13	Kalonehta	$\checkmark$									$\checkmark$	
14	Lawthai											
15	Thayarmon											

Table 2. List of survey villages and their abundant NTFP