

## Executive Summary

With the supports of Tanintharyi Nature Reserve Project - TNRP, RECOFTC consultancy team conducted agreed tasks covering over i) reviewing on progress of conservation oriented community development activities endeavored by TNRP, ii) mapping of key local stakeholders for community development, iii) enhancing capacity to TNRP staff in the field of CF concept, principles, participation, facilitation skills and enhancing livelihoods and accessing markets, and iv) conducting value chain study for potential forest products, with the aim of providing a set of recommendations for sustainable livelihoods activities for local communities based on conservation oriented community development.

In terms of community forestry that is regarded as only one solution in addressing conservation challenges and enhancing local people's livelihoods, TNRP supported nine villages (12 CFs) in establishing CFs with investing many efforts, particularly in the field of technical supporting for CF management plan development and implementation, financial and coordination with FD to have certificate.

By the time of this consultancy period, TNRP provided revolving fund to three registered CFs; Yebone, Zimba and Kyauk Shut, so as to develop CF through enhancing their livelihoods. It was found that this revolving fund has supported, to some extent, the livelihoods of local people, and majority of local communities also perceived that this fund brought many benefits for them.

A total of 14 key stakeholders are functioning for the sustainable development of TNR and local people's livelihood. Out of them, Karen National Union – KNU, New Mon State Party – NMSP, General Administration Department – GAD, Agricultural Land Management and Statistics Department – ALMSD and Rural Development Department – RDD are the most important key stakeholders, so that TNRP has been building closely partnership with them to have more support for sustainable development of TNR.

TNRP provided a series of trainings to all staff, particularly for extension staff, so that majority of TNRP's staff are supposed having great competency in delivering awareness raising, managing illegal logging and poaching, and doing research as well. However, it was observed that it would be better if provide more capacity building concerning in the field of ***“issue-based awareness raising”*** to meet the needs of local communities, ***“institutional strengthening”*** so as to facilitate CFMC and CFUGs to become strong institutions, and ***“Market Analysis and Development – MA & D”*** to perform continuous market survey based on changeable conditions.

Regarding value chain analysis, it is sure that indentifying potential forest products and value chain analysis should be continuously conducted along with changing conditions, by TNRP's staff who have already earned the capacity of ***“enhancing livelihood and market analysis”***.

Based on the desk review on previous TNRP related documents, discussion with TNRP's staff and local communities, understanding of consultancy team, the recommendations are provided in this report, as follows;

1. **Supportive policy** “what products can be developed in the core zone, or are we talking strict CF boundaries?”
2. **Need to revise existing CFMPs** As per perception of CFUGs, CFMP should be revised to be in line with current situation and interests of CFUGs.
3. **Considering ratio of suitable cash crops into agro-forestry system** To fulfill the interest of local people (expanding betel nut orchards into CF), and aims of TNRP (conserving natural environment), considering certain ration of suitable cash crops under agro-forestry system should be win-win solution for both.
4. **Revolving fund “strengthen link with CF”** The revolving fund seems to work well with the CF members with Yebone village showing a good reserve building up, and support development of local people's livelihood, but it is supposed that the link between the revolving fund and CF needs to be strengthened, and should set up clear strategy on investing the revenue in CF.
5. **Keep up close partnership with key stakeholders** Karen National Union – KNU, New Mon State Party – NMSP, General Administration Department – GAD, Agricultural Land Management and Statistics Department – ALMSD and Rural Development Department – RDD are the most key stakeholders for sustainable development of TNRP, so TNRP has been making partnership with them – this close partnership should be kept up in the long term so as to achieve the aims of TNRP.
6. **VCD “before moving forward in establishing community enterprises, communities themselves need to understand the risks”** The value chain survey which is a part of this consultancy, covers some insights for two key forest products currently identified by TNRP staff as important products for local people living around the reserve, but do not intend to promote those products for further products. Important is that local communities themselves need to know to identify the most potential products in their communities.
7. **Forest product development “for who?”** The target group TNRP works with is not homogenous and has a history of conflict which has recently settled, so that there will be no one solution fitting all people in the same way. It should be clear on which target group TNRP staff is working with (sustainable livelihood approach), as within that particular context different socio-economic become clearer and affects to identification and selection of appropriate forest products to develop.
8. **Staff capacity and attitude “The need for a socio-economic approach if livelihoods need to be developed: a CF Unit with new expertise?”** Suggest to TNRP to invest in additional capacities either by building these with staff interested in the subject or consider hiring staff that have been trained and have a socio-economic or participatory attitude already. Setting up a CF Unit could potentially support TNRP and would take on the responsibility in working with communities in developing their livelihoods.

## Acknowledgements

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Our special thanks go to TNRP field staff and local communities those who devoted their time and shared their perspectives/ views/ opinions regarding the sustainable development of TNRP and local people's livelihood, along the way of this consultancy works.

Last but not the least, our gratitude also goes out to Ms. Amalia Maling, Forest Project Manager of WWF Myanmar in working closely with the RECOFTC team and allowing his staff U Zin Lin Tun in conducting Training on Enhancing Livelihood and Market, and value chain survey to Mawlamyine for additional interviews with cardamom traders.

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## Acronyms and Abbreviations

ALMSD	Agricultural Land Management and Statistics Department
CBNRM	Community Based Natural Resource Management
CBOs	Community Based Organizations
CF	Community Forestry
CFMC	Community Forestry Management Committee
CFUGs	Community Forest User Groups
CMZ	Conservation Multipurpose Zone
EEC	Environmental Education Center
ELM	Enhancing Livelihood and Market
GAD	General Administration Department
KNU	Karen National Union
LCs	Local Communities
LNGOs	Local Non-Governmental Organizations
MA & D	Market Analysis and Development
MCP	Myanmar Country Program
MGTC	Mottama Gas Transportation Company
NGOs	Non-Governmental Organizations
NMSP	New Mon State Party
NTFPs	Non-Timber Forest Products
RDD	Rural Development Department
RECOFTC	Regional Community Forestry Training Center for Asia and the Pacific (also known as RECOFTC – The Center for People and Forests)
SLA	Sustainable Livelihood Approach
TNR	Tanintharyi Nature Reserve
TNRP	Tanintharyi Nature Reserve Project
TPC	Tanintharyi Pipeline Company
VUZ	Village Use Zone
WCS	Wildlife Conservation Society
WWF	World Wildlife Fund

# 1. Introduction

## 1.1 Background of Consultancy for Community Development

Tanintharyi Nature Reserve - TNR has been one of the protected areas established in Myanmar since 2005 by Forest Department with financial supports from Mottama Gas Transportation Company (MGTC) and Tanintharyi Pipeline Company (TPC). A total area of TNR is 1700 km<sup>2</sup> accommodated mostly under Kalein Aung Township and partly of Yebyu Township, Dawei District. Eight villages of ceasefire group of Mon ethnic minorities are located in the northern part of TNR and those are mostly relying on TNR for their subsistence livelihood. The main livelihood of local communities living inside and around TNR is horticulture crops such as rubber, cashew nut, betel nut and citrus, while the marginal farmers still rely on traditional shifting cultivation for their living and some earned subsistence income through harvesting forest products, namely; timber, pole, post, bamboo, dog fruits, and hunting for wildlife trade (Thee, 2008 & Thet, 2010). Tanintharyi Nature Reserve Project aims to protect and sustainable manage ecosystems and endangered wildlife system, but also take into consideration the improvement of the livelihoods of local communities towards conservation oriented community development. To reach this objective, community development has to be accounted into consideration as an important role in the conservation of TNR. In this regard, RECOFTC – The Center for People has been asked for ‘Consultancy for Community Development in TNRP’ along with three main consultancy objectives to be captured by 60 working days from 4 months period.

## 1.2 Consultancy Objectives

The following three key objectives were agreed between TNRP and Myanmar Country Program (MCP) of RECOFTC - The Center for People and Forests.

- To improve understanding of TNRP project team members and extension workers on concept and principles of Community Forestry (CF) in order to promote their participation in Community Based Natural Resources Management - CBNRM in the village use zone of TNRP
- To identify potential forest products and undertake a value chain study for improving livelihoods of local communities through developing capacity of project staff of TNRP and extension workers from the aspects of planning, implementation, monitoring and evaluation
- To provide a set of recommendations for sustainable livelihoods activities for local communities based on conservation oriented community development

### **1.3 Scope of Work**

To achieve objectives mentioned in section 1.2, TNRP and RECOFTC - The Center for People and Forests agreed on four main tasks, namely; i) reviewing on progress of conservation oriented community development activities endeavored by TNRP, ii) mapping of key local stakeholders for community development, iii) enhancing capacity to TNRP staff in the field of CF concept, principles, participation, facilitation skills and enhancing livelihoods and accessing markets, and iv) conducting value chain study for one or two potential forest products.

Principally this consultancy works would suppose to cover issues and challenges encountered by all communities (approximately 29 villages are directly or indirectly relying on TNR area) of TNR. In fact, existing livelihood conditions, livelihood approach, capacity and interests of local people, bio-physical conditions of all villages are not the same as expected, so livelihood enhancement strategies should be timely and spatially adapted. That is why consultancy team tried to identify possible recommendations for community development based on assessment of existing conditions, and enhanced the capacity of TNRP staff to be able to adapt livelihood enhancement strategy timely, and assist local communities in conducting value chain study.

### **1.4 Methodology**

Different methods and activities were applied to have anticipated objectives such as; i) review of secondary documents conducted by previous consultants, ii) stakeholder analysis, iii) enhancement of TNRP's staff capacity in the field of CF concept and livelihood and market assessment, iv) conducting forest product identification and value chain study, v) field assessment and meeting with TNRP's staff and local communities, and vi) data analysis and preparation of reports.

#### **1.4.1 Review of Secondary Documents**

A desk review on available documents and previous consultation reports from TNRP was made so as to know the progress of conservation oriented community development activities and to have overall picture of TNRP. In addition, community development related papers and articles from different countries were also reviewed with the lens of finding possibilities to be referred in TNRP.

#### **1.4.2 Stakeholder Analysis**

While conducting training on CF concept, principles, participation and facilitation skills and doing field assessment, stakeholders mapping and power/interest identification was discussed



with TNRP's staff and local communities, particularly focus on the field of conservation oriented community development.

#### **1.4.3 Capacity Building**

Two capacity building training on CF concept, and enhancing livelihood and market (ELM) for TNRP staff, particularly to extension staff were delivered during this consultancy period, so as to facilitate and support continuously local communities for community development in a way of sustainable manner.

#### **1.4.4 Forest Products Identification and Value Chain Study**

Forest products identification and value chain study was conducted together with TNRP's staff in order to know how to identify potential forest products based on five key areas (market, legal support, natural resources, social and technology), and how to access market to have more benefit goes to local communities.

#### **1.4.5 Needs Assessment on Livelihood Conditions**

Field assessment on six sample villages (namely; Heinze, Kawt Hlaing, Mayan Chaung, Hnan Kyal, Yarphu and Zin Bar) suggested by TNRP's staff during the workshop organized by TNRP was implemented in order to know issues of CF, challenges of existing livelihood approach, potential and alternative livelihood options, possibilities of livelihood diversification, local people's perspectives on TNR, and opportunities for livelihood development.

#### **1.4.6 Data Analysis and Preparation of Report**

Based on the findings from interview of TNRP's staff, meeting with local communities, review of secondary documents and value chain study, activity reports and final overall report mentioning a set of recommendation for sustainable livelihoods activities for local communities based on conservation oriented community development were drafted, then shared with TNRP, and finalized by consultant team.

## **2. Literature Review**

### **2.1 Community-based conservation**

Community-based conservation focus explicitly on biodiversity conservation as the objective of management, involves people who directly affect and are affected by conservation decisions in planning and stewardship, and strives to provide direct economic and social benefits to communities while increasing or maintaining biodiversity (Western and Wright 1994). Community-based conservation has been broadly defined as a wide range of natural resource management practices improving conditions for the coexistence between humans and nature (Berkes 2007). However, Ruiz-Mallen et al. (2015) stated that community-based conservation can be approached in two broad ways depending on the kind of institutional arrangements underpinning conservation activities and their expected outcomes.

This approach more focus on people-centered conservation aiming at reconciling the goals of conservation and development by establishing partnerships between local communities and external organizations such as, government organization, private organization, and non-governmental organization (NGOs). Through this partnership intends to increase the economic and other benefits that local people get by involving in resource conservation or protection (Ruiz-Mallen et al. 2015).

On the other hand, “enterprise-based conservation” focuses on increasing the local economic returns from conservation and the development of conservation-compatible activities in biodiversity-rich areas, which can be problematic in different ways. For instance, initiatives promoting ecotourism, participatory forest management, and the sale of non-timber forest products (NTFPs) can lead to the deterioration of nature by community members and can exacerbate existing socio-economic inequalities (King and Stewart, 1996, Marshall et al. 2006, and Ruiz-Mallen et al. 2015).

### **2.2 Community-based natural resource management (CBNRM)**

Community-based natural resource management (CBNRM) has been defined as a process by which landholders gain access and use rights to, or ownership of, natural resources; collaboratively and transparently plan and participate in the management of resource; and achieve financial and other benefits from stewardship (Child and Lyman 2005).

CBNRM is a decentralization process aimed at giving grass roots institutions the power of decision-making and rights to control their dependent resources. The strategy of CBNRM defines the involvement of communities as a means for promoting the sustainable use of resources while allowing communities dependent on these resources to obtain benefits. CBNRM

should be implemented in an integrated rural development context, means that despite rights and decision-making power being the central pillars of access to natural assets, they have to complement by other provisions such as access to technology-know how and funds for investing in the technology.

CBNRM is being practicing in most developing countries so as to promote livelihoods of local communities while managing natural resources in a way of sustainable manner. In Myanmar, Community Forestry (CF), one of CBNRM, initiated since 1996 after issuing Community Forestry Instruction (1995). Up to December 2015, a total of 2023 Community Forest User Groups, comprising of 54,041 members have established 279, 267.81 acres of CF plantations. According to the data of RECOFTC – The Center for People and Forests (2013), only 0.5% of total forest area has been transferred to local communities under CF mechanism in Myanmar. The detail information regarding CBF in Asia-Pacific region countries are provided in following table 1.

Table 1: Total forest land and forest land in community possession in 2012

Countries	Forest land (million ha)	Forest land under CBF regimes (million ha)	% of forest land under CBF regimes
Bangladesh	2.52	0.27	11%
Bhutan	3.10	0.04	1%
Cambodia	11.12	0.25	2%
China	181.38	108.91	60%
India	68.43	23.20	34%
Indonesia	131.2	0.84	1%
Lao PDR	18.68	5.9	32%
Malaysia	18.48	n.a	n.a
Myanmar	20.41	0.11	0.5%
Nepal	6.01	1.87	31%
Papua New Guinea	25.33	25.08	99%
Philippines	18.08	10.96	61%
Thailand	17.22	0.54	3%
Vietnam	13.52	3.81	28%

Source: RECOFTC – The Center for People and Forests (2013)

## 2.3 Protected areas and community development

Now a day, people living in or near protected areas continue to use resources from these areas including cultivable land, timber, food, fodder, fiber, medicines and other NTFPs. Therefore, Nature reserves and protected areas in many countries will only be sustainable if local communities involve as an integral part of conservation efforts and benefit economically from those efforts (Mackinnon 2001).

In Vietnam, most protected areas are in ethnic minority areas where their poverty mainly results from living in remote areas and lack of access to markets and arable land. Hence, ethnic minority communities are often dependent upon natural resources in protected areas for their well being. Protected areas provide a number of important benefits, such as foods, medicines, clean water and serving ethnic minority culture “spirit or sacred forest”, that help mitigate the impacts of poverty.

Although there are some encountered issues regarding protected area and community development, two approaches namely; *land-use rights for buffer zone households* and *forest protection contracts for buffer zone households* could bring some achievements (International Centre for Environmental Management, 2003). Regarding first approach, land-use rights have been allocated to households in the buffer zones of several protected areas and these households have received land-use certificates before neighboring communities – a clear benefit to living near a protected area. Giving land-use certificates helps stabilize land tenure in the buffer zones of protected areas. In terms of second approach, government support financial for forest protection to households living near protected areas, through which a number of households have benefited financially from these protection contracts and forest cover in some areas, has increased (National Report on Protected Areas and Development, Vietnam, 2003).

In Thailand, it stands on the threshold of significant reform to the ways in which rural communities are involved in natural resource management in areas adjacent to and within protected areas. A range of ongoing activities regarding joint management of protected areas has demonstrated that the participation of local communities in the management of natural resources can both assist efforts to conserve protected areas and promote rural development (RECOFTC 2000).

In Myanmar, government allows local communities to establish community forestry and collect NTFPs within/from buffer zone areas, but totally prohibited establishment of community based resource management and collecting NTFPs from core zone of protected areas.

## **2.4 Management Zone of Tanintharyi Nature Reserve**

TNR is categorized into different zones each with its management options as shown in Table 1. Within the core zone, TNR management plan mentioned to allow conducting research, gas pipeline, rehabilitation with native species, hiking and rafting through taking place with minimal human interference, protecting habitats and biodiversity. Buffer zone of TNR is additionally divided into village use zone (VUZ) where subsistence agriculture, fishing, logging, controlled burning, grazing, NTFP harvesting, planting local tree species, forest conservation, overnight camping agro-forestry and CF are permitted and conservation multipurpose zone (CMZ) where only biodiversity conservation and habitat preservation for wildlife are the main purposes.

Another zone of TNR is transportation zone with the purpose of servicing gas pipelines and roads for transporting gas at low impact to forest. The detailed information prescribed in the following Table 1.

Table 2: Tanintharyi Nature Reserve management zones

Make-up of the Reserve	Core zone	Buffer zone		Transportation zone
	Ecological processes can take place with minimal human interference, protecting habitats and biodiversity	<ul style="list-style-type: none"> <li>1 mile from boundary;</li> <li>in the north there is both an inner and outer buffer zone, bordering with a forest department reserved forest area</li> <li>in the south there is only an inner buffer zone with unclassified land on the outside the reserve</li> </ul>	<div>Village use zone (VUZ)</div> <div>Conservation multipurpose zone (CMZ)</div>	
<b>Area</b>	336,912 acres (136,346 ha)	60,988 acres (24,682 ha)	19,055 acres (7,711 ha)	3,213 acres (1,300 ha)
<b>Allowed activities (as per TNR management plan)</b>	Research, gas pipeline, rehabilitation with local species, hiking, rafting	Subsistence agriculture, fishing, logging; controlled burning, grazing, NTFP harvesting, planting local tree species, forest conservation, overnight camping, agro forestry, CF	Biodiversity conservation, habitat preservation for wildlife	For companies servicing gas pipelines and roads. Companies can transport gas at low impact to forest; reforest areas cleared for construction with native tree species, and can only develop limited number of access roads. Research

Source: Operational Management Plan 2013

## 2.5 Community Forestry Supported by TNRP

In terms of CF, to date 9 villages have 12 certified CFs (750 CFUG members) including management plans, with some villages counting multiple CFUGs (i.e. Zimba has 3 CFUGs each making use of different areas due to historical reasons). In total CF in TNR counts 13,886.50 acres (5,620 ha) of which 3,328 acres (1,347 ha) are native tree plantations and 10,558.5 acres (4,273 ha) natural forest (see annex 1 for more details).

TNRP is engaged in a range of activities with all communities around (27) and in (9) the reserve in and outside the buffer zone. Buffer zone activities include village use zone demarcation, field trainings in tree and NTFPs planting and forest management program. Seedlings are distributed

to villagers for free and planted in abandoned areas of shifting cultivation areas or degraded parts of the CF. In Yebon, Kyaukshut and Zimba villages some user groups have been practicing community based fire management as social mobilization.

Other types of support in terms of CF development relate to revolving fund establishment and financial trainings in collaboration with the Social Economic Department of the Gas company (TOTAL), bamboo handicraft trainings, provision of seedlings (i.e. elephant foot yam is popular), etc.

## 2.6 Livelihoods Supported by TNRP

In terms of livelihood issues the communities face in and around TNR, the project finds it challenging to develop productive livelihoods with local communities and their capacity to manage funds. This is particularly an issue for people who have not finalized primary education. Also the reserve is faced with resettled refugees who have no choice as to enter the forest to survive due to land scarcity. Since conflicts only seized 5 years ago and little has been done to remove unexploded ordinance (UXO), it is still dangerous to enter the forest with landmines still not cleared. A lack of employment in the area sees migration to Thailand, and to date the deep sea-port project has stalled and construction has not fully started.

Demographically the project area can be divided roughly into three zones: northern Mon covering from Law Thaing to Mayan Chaung, central Kayin area composing of Michaung Laung, Zimba and Kyauk Shut and southern Dawei stretching over Yebone, Heinze, Hnan Kyal and Wun Po, area based on their major ethnic residents although mixes occur (Zin, 2009). In terms of livelihood status, based by research from Zin (2009), the middle zone provides communities with good opportunities in choosing livelihood options. Road access and available service are better organized. In terms of benefitting from available resources such as arable land and forest, communities in the southern part of the reserve lack opportunities to develop livelihood activities due to lack of land to develop orchards to the same extend as the middle part and thus depend more on NTFPs and timber. Communities in the north only little depend on the reserve and have more land available for planting cash crop orchards (Figure 2).

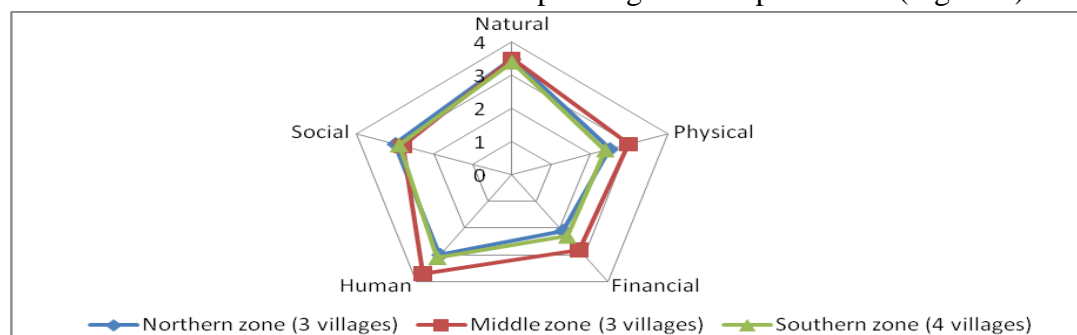


Figure 1: Livelihood analysis of selected villages in the northern, middle and southern zone of TNR (Based on Zin, M.T. 2009)

From discussions with TNRP staff and local communities in Zimba and Kyauk Shut, and similarly reported from Yebone (RECOFTC 2014) village loans obtained from the TNRP installed revolving funds for CFUG are well received. To date 3 registered CFUGs received each a fund of 5,000,000 kyat from which loans of 100,000 – 500,000 kyat are provided to its members. Loans need to be approved by the fund committee: borrowers need to explain what the funds are used for and find 1-2 guarantees who are willing to co-sign the loan application, no collateral is required. In Yebone, the committee also checks if the applicant borrower does not already have a loan with the micro-finance fund operational there. Proposal often are for small enterprise activities, such as pig raising or setting up a village shop. Monthly interest (2%) has to be paid and returned in full after the agreed upon period of 3 months, 6 months, or 1 year. The committee monitors if loans are used as promised. The success rate in Yebone is best known as it operates since 2013 and members are paying interest and are returning their loans, explaining its growth (see Figure 3). The leader of the revolving fund is now receiving an annual stipend of 110,000 kyat for her labors. The link to CF development is still weak, but some fire break establishment, weeding and natural regeneration is supported from the fund.

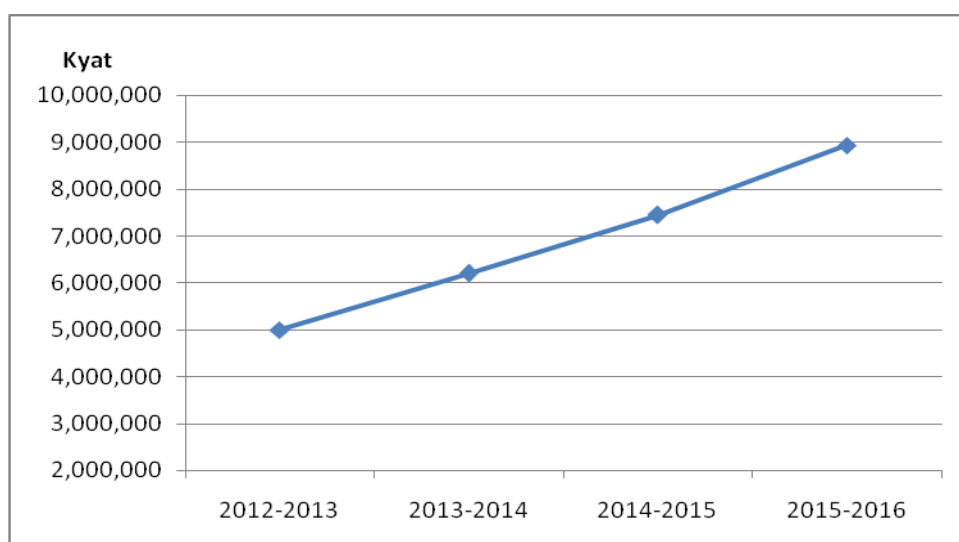


Figure 2: Revolving fund growth in Yebone village (Source: TNRP presentation 2015)

The communities occupying the middle ranges outside of the reserve have had a long and profitable history with Thailand during the conflict era when illegal trade and smuggling were rampant. With peace in the area many villagers from this area still migrate to Thailand to find employment and important remittances. Orchards and home gardens consist of cashew nut, rubber and betel nut. With slumping rubber prices and cashew becoming less productive, interest currently mainly lies in managing betel nut palms. Due to a scarcity of flat land arable for diversified crops for villagers dwelling around TNR area, *taungya* (shifting cultivation) is practiced. Land tenure/titles are not secured for local communities even though orchards in the Reserved Forest are traditionally being managed by their ancestors since decades.



Conditions surrounding the reserve are favorable for rubber and oil-palm and the local government has promoted to grow them at commercial scales with private sector investments receiving exclusive land property rights even moving into established horticultural farms of local residents. Many local residents lost their lands previously held under the traditional acceptance and several land disputes emerged. Socio economic research in the area shows that major issues and threats are: infrastructure development, illegal logging, shifting cultivations, commercial plantations, dam construction and large-scale mining activities.

### **3. Main Activities**

#### **3.1 Review on secondary documents**

Desk review on TNRP related secondary documents was conducted by consultant team so as to know the existing situation of TNRP and what TNRP tried to find out to address the encountered challenges and problems to be sustainable management of TNR. Mostly four main TNRP related secondary documents namely; consultancy report on community forestry - CF (Swe, T. 2008), socio-economic baseline study report on local communities adjacent to TNR (Zin, M.T. 2009), consultancy report for community forestry - CF (Ni, B. 2010), marketing study for non-timber forest products - NTFPs in TNR (Thet, A.K. 2010) were reviewed to have supporting findings for conservation-oriented community development.

#### **3.2 Stakeholder analysis**

Regarding on the development of TNR and local communities living around/within TNR, key stakeholders were analyzed through discussing with staff from TNRP and some local communities from Heinze, Kawt Hlaing, Mayan Chaung, Hnan Kyal, Yarphu and Zimba villages in which TNR supported capacity building through training and awareness campaign and facilitated local people for establishment of Community Forestry.

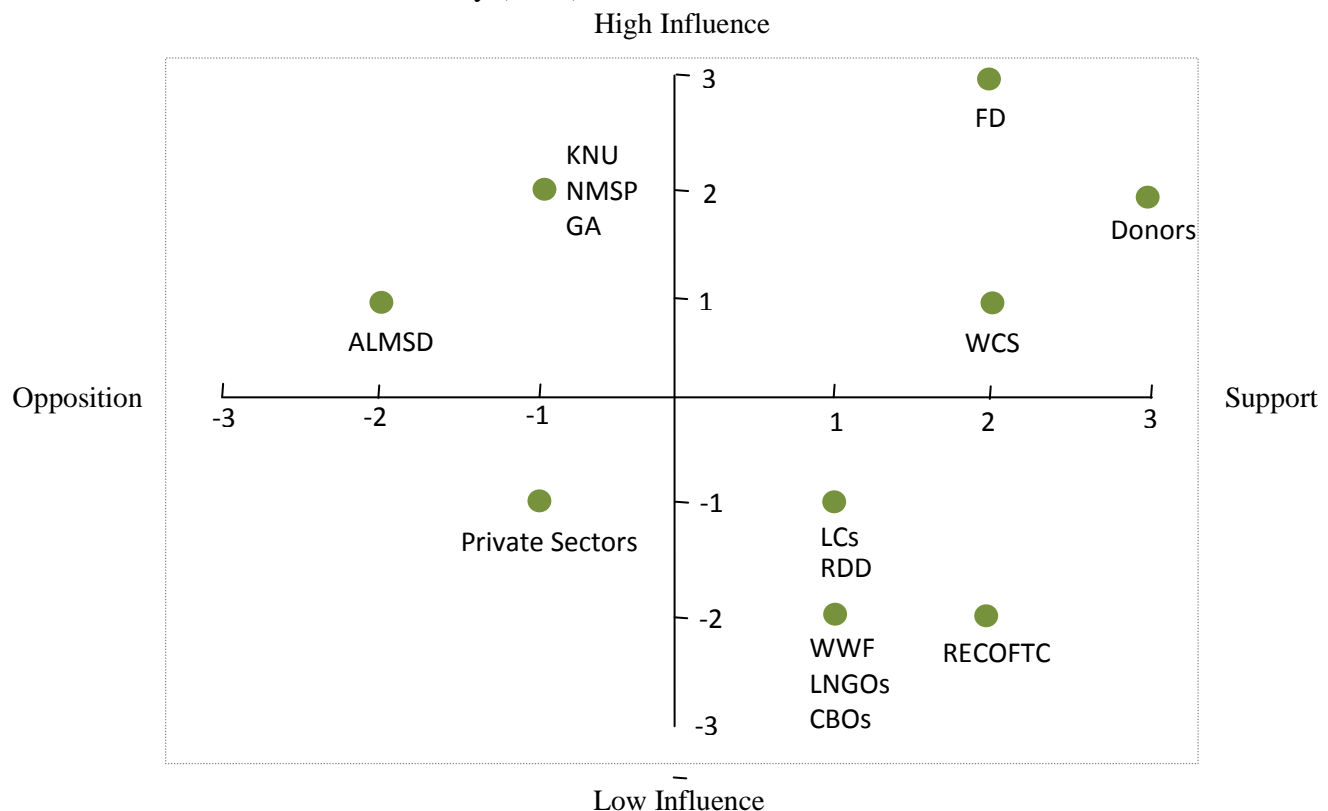
As per results from stakeholder analysis, a total of 14 key stakeholders who may support/opposite and influence on TNR and development of local communities are analyzed based on the perceptions of some staff and local communities. It was observed that FD, donors and WCS who are placed in the quarter of high influence and support, should be close partnerships in consulting and making decision regarding TNR. On the other hand, KNU, NMSP, GA and ALMSD are the positions of opposition and have power to influent, to some extent, on TNR, so that project should keep informing those stakeholders to be satisfied. Some key stakeholders under the quarters of low influence should be regarded as implementing partners (such as LCs, LNGOs, CBOs) and strategic partners (such as RDD, private sectors, WWF, RECOFTC) to have more support from them, though they have no influence power on TNR and development of local communities.



**Table 3: List of identified key stakeholders in TNRP**

Key Stakeholders	Support/ Opposition	Influence
Donors (TOTAL, MGTC, TPC, etc.)	3	2
Wildlife Conservation Society - WCS	2	1
Forest Department	2	3
Karen National Union - KNU	-1	2
New Mon State Party – NMSP	-1	2
General Administration - GA	-1	2
Agricultural Land Management and Statistics Department – ALMSD	-2	1
Rural Development Department	1	-1
Local Communities - LCs	1	-1
World Wildlife Fund - WWF	1	-2
RECOFTC – The Center for People and Forests	2	-2
LNGOs/CBOs related to forestry sector	1	-2
Private sector (Agri-business Companies)	-1	-1

Source: Field Assessment Survey (2016)



**Figure 3: Key stakeholders analysis (Influence and Support/Opposition)**

### 3.3 Capacity enhancement on TNRP staff

To implement sustainably conservation oriented community development in TNR area, it was supposed that TNRP staff should be enhanced their existing capacity regarding the field of community forestry development and livelihood enhancement through community forestry. In this regard, two capacity enhancement trainings namely; concept and principles of CF, participation and facilitation skills, and enhancing livelihood through community forestry, were conducted at Environmental Education Center - EEC, Mee Chaung Laung, in collaboration with TNRP and WWF.

Training workshop on ***“Concept and Principles of CF, Participation and Facilitation Skills”*** was organized from 28 - 31 December 2015, through the participation of 27 TNRP’s staff, aiming to develop existing CF to be more sustainable and provision to livelihoods of local communities by understanding CF concepts and principles and applying approach/facilitation skills to have more participation of key stakeholders. In addition, this training workshop identified challenges and opportunities encountered in existing CFs and analyzed on how far existing CFs were successful against nine CF principles developed by RECOFTC - The Center for People and Forests. The detailed training workshop completion report is attached in Annex-1.

Training on ***“Enhancing Livelihood through Community Forestry”*** was conducted from 23 - 28 January 2016, with the participation of a total of 24 participants including 14 from TNRP and 10 from WWF. This training aims to explain and access on how CF principles can contribute to development of local livelihood, apply the Sustainable Livelihood Approach (SLA) framework to identify livelihood assets of local communities, understand the importance and process of potential product selection and community enterprise development through applying participatory approach, and be able to apply the value chain tool in identifying possible interventions along the value chain of the product up to the end market. The detail training report is provided in Annex-2.

Through delivering above mentioned two training workshops, TNRP’s staff themselves can facilitate to have more participation in conserving TNR, can assess the existing condition of CF, and know on how to use Sustainable Livelihood Approach Framework, able to apply the value chain tool in identifying potential forest products and conducting market analysis.

### 3.4 Forest Products Identification and Value Chain Analysis

As part of this “Consultancy for Community Development in TNRP” RECOFTC – The Center of People and Forests has been requested to specifically address the following aspects: 1) to identify potential forest products for income generation, 2) to conduct an assessment on social acceptability, financial feasibility and environmental suitability of community development

activities and potential community enterprises, 3) to conduct forest product market analyses and assessment backed by TNRP related literature review, followed by 4) key stakeholder workshops to review prioritized community development activities and community enterprises.

According perception of TNRP's staff, secondary information and self observation, key livelihood activities in this vicinity of TNR focus on betel nut, rubber and cashew nut orchards, while land concessions are obstacles for expansion by smallholders. Forest based livelihood activities legally can take place in the buffer zone and CF area of TNR, but inside the core zone of the Reserve commercial activities are limited, however allowed to a certain extend.

Regarding forest products identification, TNRP staff who participated the training of “Enhancing Livelihoods and Markets” initially shortlisted – through a set of criteria – forest products with a potential to develop into enterprise options: cardamom, bamboo stems, dog fruit, bamboo shoots, elephant foot yam and broom grass, representing community members’ interests. Finally, two potential products with the perceptions of TNRP’ staff, namely; cardamom and dog-fruits were identified for value chain analysis. Even though cardamom and dog-fruits were regarded as potential products for the research, by no means are these products definite for enterprise development but rather identified as of high potential to carry out the value chain analysis. High potential products for enterprise development are not sustainable for a long time, means it is changing timely and spatially, so that TNRP’s staff were trained in order to facilitate in identifying potential products and conducting value chain analysis together with local communities.

Herewith the following are the processes of value chain analysis and its key results. The research into both products started with TNRP communities, local forest product collectors and traders towards wholesalers in Dawei, Mawlamyine and Yangon. The research details the shares of the final price received of both forest products as well as a range of governance issues which support the products to be successfully traded, but also existing inefficiencies faced by the chain actors. Both technical and business arrangements are driven by the seasonality aspect and thus temporary focus of the forest products which places challenges and risks for product harvesting, processing and transportation in turn leading to likeness of losses, reduced product quality and even lowered prices offered. In particular Dawei cardamom is regarded as of low quality and suggestions are made by local traders and wholesalers to improve upon. Nevertheless, the market for cardamom looks stable with South Korea particularly interesting and encouraging enough to consider further exploring options to increase and carve out a market share. Dog-fruit, although having a solid domestic market, by no means is investing human and financial resources a safe bet, with uncertain supply basis affected by weather (lowering productivity) and mast years (spiking production). The detail report on “Forest Products Identification and Value Chain Analysis” is provided in Annex-3.

### 3.5 Needs assessment on livelihood conditions of 6 CF villages

The main purpose of this consultancy work is to develop a set of recommendations for conservation oriented community development, so that needs assessment on now local communities' livelihood should be developed, was conducted through selecting six sample villages, namely; Heinze, Kawt Hlaing, Mayan Chaung, Hnan Kyal, Yaphu and Zimba, in consultation with TNRP's staff.

This assessment tried to explore the existing livelihood condition through assessing five livelihood assets (human, natural, financial, physical, and social), perceptions of local communities on existing livelihood condition, and needs to develop communities' livelihood. In this assessment, focus group discussion, key informant interview and self observation were conducted through taking participation of CF management committee, members, non-members and TNRP staff. When assessing existing livelihood condition of local communities, the index, decision variable and value mentioned in the following Table (4) were applied to evaluate five key livelihood capital assets.

Table 4: Index, variable and value to measure livelihood capital assets

Capital asset	Index	Decision variable	Value category
Human asset index	- Skill and knowledge index	- Level of education	• Illiterate = 0, Primary = 0.33, Secondary = 0.66, High school/College = 1
	- Family labor index	- Family labor	• $\leq 14$ years = 0, $\geq 65$ years = 0.5, 15-64 years = 1
Natural asset index	- NTFPs available index	- NTFPs availability	• Very highly decline = 0, Highly decline = 0.33, Moderately decline = 0.66, The same = 1
	- Land holding size index	- Land holding size	• $\leq 3$ ha = 0, 3.1-6 ha = 0.33, 6.1-9 ha = 0.66, $\geq 9$ ha = 1
Financial asset index	- Saving index	- Savings	• $\leq 10\%$ of HHs = 0, 10%-30% = 0.33, 30% - 60% = 0.66, $\geq 60\%$ = 1
	- Income index	- HH income	• $\leq 5$ lakhs = 0, 5 – 10 lakhs = 0.33, 10 – 15 lakhs = 0.66, $\geq 15$ lakhs = 1
Physical asset index	- Transportation index	- Transport crops to direct market	• None = 0, difficult = 0.33, sometimes difficult = 0.66, easy = 1
	- Household's assets index	- Household's assets	• $\leq 1$ items = 0, 2-3 items = 0.33, 4-5 items = 0.66, $\geq 6$ items = 1
	- Cattle index	- Cattle possession	• $\leq 1$ no = 0, 2-5 nos = 0.33, 6-9 nos = 0.66, $\geq 10$ nos = 1
Social asset index	- Participation index	- Participation in CF and TNRP	• Passive Participation = 0, Participation by information giving = 0.33, Functional participation = 0.66, Self-mobilization = 1
	- Leadership potential index	- Representative of community	• No = 0, Member = 0.5, Leading role = 1

Source: Adopted from E.P.N. Udayakumara & R.P. Shrestha (2011)

### 3.5.1 Assessment on existing livelihood condition

As per the assessment of existing livelihood's condition based on perceptions of local communities, it was observed that all study villages have less of financial asset that means majority of local people could not afford to save money and earned not more than 10 lakhs a year, whereas physical assets in all study villages are pretty good as most villages are located along the main road from Yebyu town to Dawei town. In terms of human asset, majority of local people from Mayan Chaung are secondary graduates and more labor contribution, while Heinze, Kawt Hlaing, Hnan Kyal and Yarphu are occupying primary graduates and less labor contributions compared to Mayan Chaung, but better than Zimba. Regarding natural asset, availability of NTFPs in all study villages has been declined to be able to support commercial income rather than subsistence provision, in addition land availability for agricultural farming is also limited. It was surprised that Hnan Kyal was high at social asset, compared to other study villages, whereas social asset of Mayan Chaung was lowest.

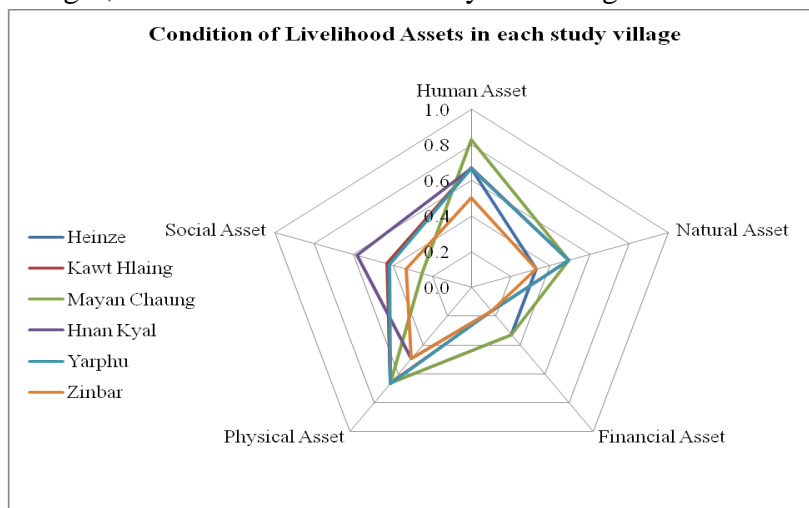


Figure 4: Status of livelihood capital assets in each study village

The overall condition of livelihood assets are mentioned in the following figure (5). By looking at the analysis results, it was noted that there are good opportunities in human, physical and natural assets, to be able to develop the livelihoods of local communities, but need to external supports for the field of financial and social. With related to social asset, participation of local communities to CF and TNRP are mostly the types of passive and participation by giving information, and most local communities are likely to be member rather than taking a leading role in community related activities. Although natural capital is relatively good for local communities, it was found that availability of NTFPs within buffer zone has been gradually degraded, and the land availability for farming is also limited since agri-business plantations such as rubber and oil plam are expanding and encroaching into the area under the management of FD and the land under the Agricultural Land Management and Statistics Department – ALMSD.

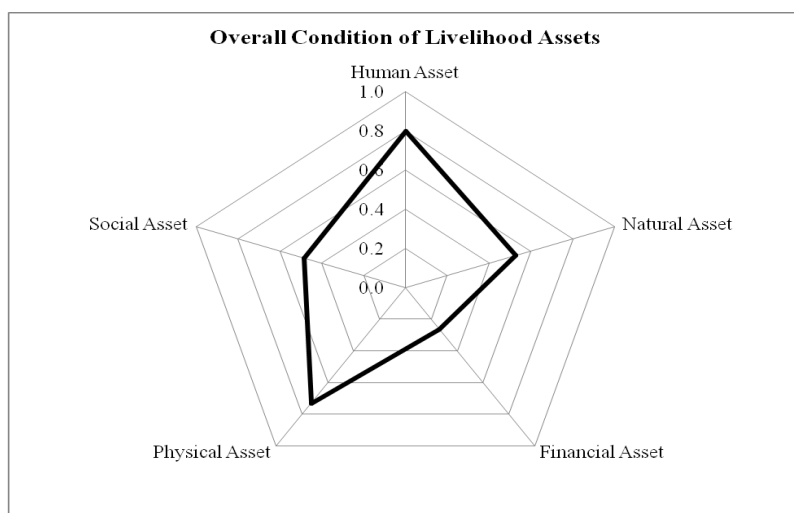


Figure 5: Overall condition of livelihood assets

### 3.5.2 Perceptions of local communities on existing livelihood options

The main livelihood options of local communities living around TNRP area are orchards and home gardens consist of cashew nut, rubber and betel nut, and somewhat shifting cultivation. With slumping rubber prices and cashew becoming less productive, local people's interest currently mainly lies in managing betel nut palms. Due to a scarcity of flat land arable for diversified crops for villagers dwelling around TNR area, *taungya* (shifting cultivation) and encroaching betel nut orchards are still being practiced. Land tenure/titles are not secured for local communities even though orchards in the Reserved Forest are traditionally being managed by their ancestors since decades.

Currently, local communities' willingness is high in managing betel nut orchards rather than cashew nut and rubber plantations. More than half of local communities want to extend betel nut orchards into existing cashew nut and rubber plantations, and encroach to reserve forest area, because of less of land availability. Based on this current market trend, majority of local communities try to shape their livelihood options, regardless considering livelihood diversification to have more livelihood resilience power if facing some difficulties and risks such as disasters, market and policy changes.

In terms of external supports, it was noted that financial, technical and legal support are needed for enhance local people's livelihoods. While culturing orchards and home gardens, local communities need financial inputs and usually take loans with high interest rate – that is a burden for them. In addition, they have less of technique how to have more benefits from a piece of land unit, and how to process their product to have more prices, so that they need technical supports. Regarding legal support, local communities have to pay tax on collecting NTFPs from reserve forests not only to Forest Department – FD, but Karen National Union – KNU, so that they could not make more profit because of less of legal support.

## 4. Key findings

Tanintharyi Nature Reserve - TNR is categorized into three different management zones, such as transportation zone, buffer zone and core zone. Amongst those three zones, local communities are allowed for subsistence agriculture, fishing, logging, grazing, agro-forestry and NTFP collecting only within village use zone (VZU) that is one under buffer zone, and another one is conservation multipurpose zone (CMZ) that is mainly for biodiversity conservation and habitat preservation for wildlife.

TNRP supported nine villages (12 CFs) in establishing community forestry aiming to provide timber, pole, post and other NTFPs from CF and to reduce heavy pressure from illegal harvesting in the CMZ and core zone. It was found that TNRP invested many efforts in CFs, particularly in the field of technical supporting for CFMP development and implementation, financial and coordination with FD to have CF certificate, but majority of CFMC and CFUG members would like to revise their CFMP to be more reflected their current interests and willingness – resulted that CFMC and CFUGs can follow what/how CFMP is mentioning so as to effectively and fully achieved anticipated objectives mentioned in CFMP.

Desk reviews revealed that the villages falling middle zone of TNRP stretching over Michaung Laung, Zimba and Kyauk Shut, occupied good opportunities in choosing livelihood options because road access and available service are better organized, whereas communities in the southern part of TNRP, which covers Yebone, Heinze, Hnan Kyal, and Wunpo, lack opportunities to develop livelihood activities due to lack of land to develop orchards, and communities of northern part covering from Law Thaing to Mayan Chaung, little rely on the reserve and have more land available for planting cash crop orchards (Zin, M.T. 2009).

TNRP provided revolving fund to three registered CFs, namely; Yebone, Zimba and Kyauk Shut by the time of this consultancy period. In Yebone village, the revolving fund was increased from 5,000,000 kyats to approximately 9,000,000 kyats with the (2%) of monthly interest rate. It was observed that this revolving fund has supported, to a certain extent, the livelihoods of local people, and majority of local communities also perceived that this fund shared many benefits to them. However, the link to CF development is still weak, except some fire break establishment, weeding and natural regeneration is supported from the interests of this fund.

Stakeholder analysis showed that sustainable development of TNR and local people's livelihood are functioned by 14 key stakeholders. Among those key stakeholders, Karen National Union – KNU, New Mon State Party – NMSP, General Administration Department – GAD, and Agricultural Land Management and Statistics Department – ALMSD are regarded as most

important key stakeholders those which may be either support or opposition, as they all are in place of high influence and opposition.

Although TNRP's staff were advanced certain capacity in the field of CF concept, principles and facilitation skills, and enhancing livelihood and market analysis, it was observed that it would be better if provide capacity building regarding in the field of ***“issue-based awareness raising”*** to meet the needs of local communities, ***“institutional strengthening”*** so as to facilitate CFMC and CFUGs to become strong institutions, and ***“Market Analysis and Development - MA & D”*** to perform continuous market survey based on changeable conditions.

Although value chain analysis on two potential products (cardamom and dog-fruit) selected in consultation with TNRP's staff, it is sure that identifying potential forest products and value chain analysis should be continuously conducted along with the changing conditions, by TNRP's staff those who have already earned the capacity of “enhancing livelihood and market analysis”. It was observed that local communities have less of technological knowledge in processing the products. For instance, drying the cardamom fruits on an open fire of a bamboo frame is criticized by local traders in TNR, and causes the quality is considered very low – leading to a 50% decrease in prices for the communities in comparison to what is normally offered for well dried fruits.

Regarding the supply of forest products, both communities and local traders around TNR are reporting that supply is still low and has even slowed over the years, since forest fires destroyed forests regardless that fire breaks are established in CF areas and the trainings offered by TNRP.

As per results from assessment of livelihood capital assets, it was found that local communities have less of financial capital and social capital including their effective participation and leadership potentials. During these years, rubber price is getting down, whereas price of betel nut is rapidly increasing. In this context, local communities are planning to increase more betel nut plantations after clearing rubber plantations. Conceptually, livelihood options should be more diversified to be more sustainable and to have more livelihood resilient power. Hence, local communities need to be supported by financial capital and to be built their social capacity through delivering required training and issue-based awareness raising in order to enhance their livelihoods.



## 5. Conclusion and Recommendations

The recommendations provided in this section are based on the research and understanding of the consultancy team. It would be better if the findings and consultant's recommendations should be shared in a follow up workshop with community and TNR stakeholders, through discussions focusing on the feasibility and appropriateness for both communities and TNR.

- 1. Supportive policy “what products can be developed in the core zone, or are we talking strict CF boundaries?”** It must be emphasized that the products identified (including the shortlist) as part of this research, and which have commercial/livelihood options with feasible market linkages do not necessary grow in the CF only but also in the core zone where communities currently harvest from. As the forest law does not allow commercial trade, this will be a critical point for consideration to overcome by TNRP.
- 2. Need to revise existing CFMPs** Although TNRP tried to facilitate CFMC/CFUGs in developing CFMP to be include local people's perceptions and interests, majority of CF management plans have not covered interests and perceptions of CFMC and CFUGs because of rapid changes condition – resulted that they hardly follow to CF management plan. Some members of CFMC thought that objectives mentioning in CFMP should be focused on how to develop local people's livelihoods rather than only focusing on conservation. But they believe that some CF area has to be totally conserved to maintain natural water spring for their water supply. It would suggest that existing CFMP should be revised based on perceptions and interests of local communities with the technical support of TNRP.
- 3. Considering ratio of suitable cash crops into agro-forestry system** Local communities are interested to extend betel nut orchards and to plant betel nut in CF area, but it is hard to accept for TNRP as operational management plan (2013) doesn't allow to plant betel nut, cashew nut and rubber within CF area. In this regard, it would be better if local communities and TNRP can find win-win solutions through considering certain ratio of suitable cash crops under agro-forestry system.
- 4. Revolving fund “strengthen link with CF”.** The revolving fund (5,000 USD per CFUG) activated by TNRP seem to work well with the CF members with Yebone village showing a good reserve building up. Other CFUGs in Kyat Shat and Zimba which received the fund there is yet to be an insight in the level of success. RECOFTC supposed that the link between the revolving fund and CF in terms of CF investments needs to be strengthened. Non forest loans are taken and paid back, but there is no clear strategy on investing the revenue in CF. Although the CFUG can decide on how to implement the exact working of the fund, however, if no investments are required in improving management or the production of forest

products or no clear expectations are agreed upon towards improving CF, the revolving funds' allocated to CFUGs remains uncertain. Regardless how well the fund performs in improving peoples' overall livelihoods, the financial stimulus to develop CF may not be obvious. If TNRP is meant to improve forest quality by providing technical advice and seedlings the incentive for CF forest management may remain without incentives, as these services are provided for free. If real CF ownership is expected from the communities the arrangements between TNRP and CFUGs require clearer agreements in terms of which partner has which particular responsibilities and can be made accountable for those, rather than creating expectations or creating unfeasible assumptions amongst partners.

5. **Keep up close partnership with key stakeholders** General Administration Department - GAD, Agricultural Land Management and Statistics Department - ALMSD, Karen National Union - KNU, and New Mon State Party - NMCP are key stakeholders as they have certain power to influence TNRP, according to the results of stakeholder analysis. Apart from those, Rural Development Department - RDD is financially supporting to local communities through Mya Sein Yaung micro credit program. Hence, TNRP is recommended to keep continue close partnership with mentioning key stakeholders, to be able to sustainably develop TNRP and local people's livelihood.
  
6. **VCD “before moving forward in establishing community enterprises, communities themselves need to understand the risks”** The value chain report covers some insights for 2 key forest products currently identified by TNRP staff as important products for local people living around the reserve. The 2 products and the results of the value chain research *do not intend to promote* these products for further development. They provide new information not earlier collected and are meant to inform TNRP and local communities as inputs in developing next steps within both their capacity and existing support (human resources, budget). Important is to identify with local people themselves the most potential products in their communities as not all people have access to the same assets to engage in dog fruit or cardamom development. Based on key ELM training sessions: sustainable livelihood approach, forest product selection and value chain analysis TNRP staff need to engage with their responsible village tracts in order to get an insight in what options are within the community reach. This requires TNRP staff to facilitate workshops with local communities to make a common decision in which local people believe in and are willing to invest their scarce time/labor in developing potential community enterprise models. It must be stressed that before working with communities in developing community enterprises they require to understand the risks of how markets work and what is possible in the TNR area. The Market Analysis and Development (MA&D) training is suitable to support both TNRP and communities, but requires more of a programmatic approach with sufficient face time between TNRP and communities who are interested. In case TNRP is interested to move into

such a programmatic approach 1-3 pilot villages could be identified and act as learning site for other communities and TNRP staff. Michauhlaung (cardamom) and Zimba (dog fruit) seem to have the potential to start the pilots, but as RECOFTC is not familiar with most villages TNRP works with this requires further discussion.

7. **Forest product development “for who?”.** TNRP faces a range of challenges and in its working landscape it has to deal with a complex socio-economic situation. The target group TNRP works with is not homogenous and has a history of conflict which has recently settled. With this in mind there will be no one solution fitting all people in the same way. The ELM training paid great attention on being clear on which target group TNR staff is working with (sustainable livelihood approach), as within that particular context different socio-economic become clearer and affects the identification and selection of appropriate forest products to develop. Similar as mentioned under the previous paragraph the answer does not necessarily lie in developing dog fruit or cardamom only. Men and women, young and old, but also the various wealth classes need to be considered in developing CF livelihood options. Attention is also needed on the recently resettled refugees who are now landless and have no choice as to use the reserve and its forest products to survive. It has been opted by one of the local traders to work more closely with the forest product collectors as many of them don't own land but have developed particular skills as “buyers” of forest products on behalf of the traders who advance money for paying harvesters for their products on the spot. The collectors have enterprise skills which require knowledge of the 2 parties in the supply (harvesters) and demand (traders) game, an important human asset necessary to actually make trade possible.
8. **Staff capacity and attitude “The need for a socio-economic approach if livelihoods need to be developed: a CF Unit with new expertise?”** TNRP staff in most cases is new to the area or have little experience in participatory approaches with local people. Many staff is not familiar with CF or how communities implement CF or develop their livelihood strategies. Both paragraphs above highlight the importance of a particular skill set in order to develop CF as a viable option with appropriate analysis, creation of ownership with target groups and understanding risk in “making change happen”. A sole professional forestry mindset is not always equipped to deal with these aspects in working with local people, and RECOFTC suggest to TNRP to invest in additional capacities either by building these with staff interested in the subject or consider hiring staff that have been trained and have a socio-economic or participatory attitude already. Setting up a CF Unit could potentially support TNRP and would take on the responsibility in working with communities in developing their livelihoods in a way which works in the current TNR context and people's livelihood setting.

## References



# **Training Completion Report**

## **on**

### **Concept and Principles of Community Forestry, Participation and Facilitation Skills**



**January 2016**

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## **1. Introduction**

Intending to explore the implementation by analyzing that should be done for community development where adjacent to Tanintharyi Nature Reserve forests, Tanintharyi Nature Reserve Project – TNRP of Forest Department and RECOFTC – The Center for People and Forests signed the agreement on 21<sup>st</sup> of December, 2015 as RECOFTC provides for consultancy service. The three purposes agreed from both sides are 1) to understand more facilitation skills and to empower CF concept, rules and participation of TNRP staff (especially extension workers) for the local people' participation in community based natural resource management, 2) to improve more the livelihood of the local people, explore potential markets for forest products and along with the capacity building to TNRP extension workers, value chain of these forest products will be conducted and 3) To implement conservation oriented community development and to find out the process that should be done for sustainable livelihood of local people. To be successful these three purposes, RECOFTC is providing the consultancy service for the main eight tasks within two months.

This training completion report *“Concept and Principle of Community Forestry, Participation and Facilitation Skills”* is one of the first steps of agreement between TNRP and RECOFTC.

## **2. Training Objective**

Specific purposes of the training program are as follow;

- To strengthen more on CF concept, rules and participation and to understand more about facilitation skills
- To strengthen more of CF related multi-stakeholders participation by reviewing established CF and to become the sustainable CF through facilitation

## **3. Training Agenda**

Training was conducted four days through interactive discussion and the training agenda is expressed in Annex-1.

## **4. Training Venue, Period and Participants**

The four-day training was conducted at Environmental Education Center (EEC) at Mi Chaung Laung from 28 to 31 December, 2015. There are altogether 27 participants from TNRP staff including project range officer, project ranger, project deputy ranger and project extensions and CF Partnerships Coordinator (CFPC), Mr. Aung Kyaw Naing and CF Field Coordinator, Mr. Ye Mya Win led the discussion and facilitated by Mr. Aung Kyaw Thu, Field Volunteer. The training participant list is attached in Annex-2.

## 5. Training Methodology

Based on the trainees involved participation, the discussion is led by trainers. The main techniques are snow balling, group discussion, gallery walk, gaming and fish bowl, the review of previous day's skills and knowledge.

## 6. Discussion Point

### 6-1 Training Day One

On the first day of the training, there were four points of discussion which are training introduction, the understanding of conservation based CF by participants, the observation to the CF definitions by other countries and exploration the opportunities which will support better CF establishment after discussing past, present and future challenges based on current CF establishment.

Different CF definitions are hung on the wall and the participants did gallery walk around and stop in front of the definition which they prefer. While standing, the participants discussed the reason of the choice and likeness. It can be seen figure (1) shown the participants' likeness of respective definition;

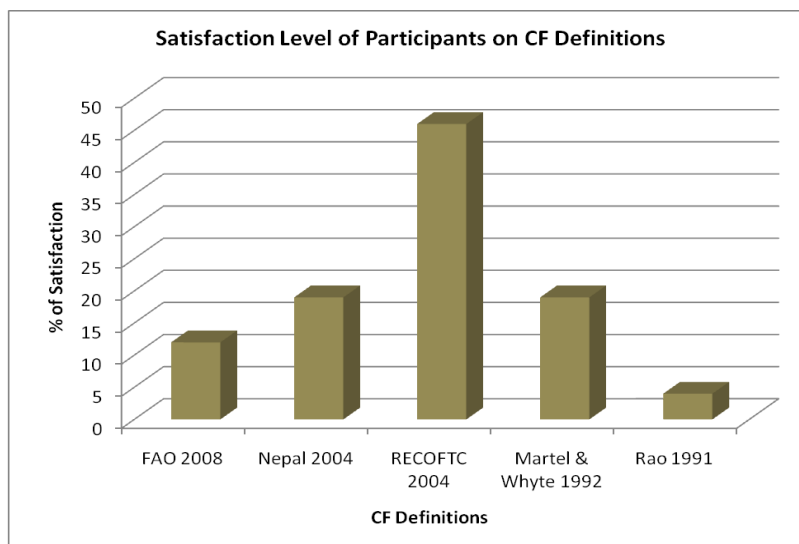


Figure 1: Satisfaction level of participants on CF definitions

After that, participants discussed their perspectives upon CF definition of Community Forestry Instruction (1995) issued by Forest Department. One participant suggested that the definition was complete and to be more, it should be added conservation based CF, not only the cultivation based CF.



After discussion on the challenges of the past, present and future on established CF and supportive opportunities for CF establishment, it can be seen the following table (1);

Table (1) The Challenges and Opportunities met at current CF

No	CF village	Challenges	Opportunities
1	<ul style="list-style-type: none"> <li>• Zinn Bar (1)</li> <li>• Zinn Bar (2)</li> <li>• Zinn Bar (3)</li> <li>• Kyauk Shat</li> <li>• Yay Pone</li> </ul>	<ul style="list-style-type: none"> <li>▪ Transportation</li> <li>▪ The difficulties for food and shelters</li> <li>▪ Weakness in participation</li> <li>▪ Invasion of local armed group</li> <li>▪ Frequent changes of CF committee</li> <li>▪ Weakness in knowledge</li> <li>▪ Knowledge weakness of local people for making the income increase</li> </ul>	<ul style="list-style-type: none"> <li>○ Aid from TNRP (funding for establishment, seedlings, technical and water bucket)</li> <li>○ The forest cover condition is good</li> <li>○ The good market is for forest products</li> <li>○ The encouragement on CF by Forest Department</li> </ul>
2	<ul style="list-style-type: none"> <li>• Yar Phoo</li> <li>• Tharyar Mon</li> <li>• Mi Chaung Laung (old village)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Land conflict</li> <li>▪ Local cannot draw procedures by themselves</li> <li>▪ Low interest by community</li> <li>▪ Supporting weakness by departments</li> <li>▪ Weakness in local people's capacities</li> <li>▪ Weakness in persuasion to users group of CF committee</li> <li>▪ Financial difficulties</li> <li>▪ Encroachment in CF</li> <li>▪ Weakness in charging upon encroachment</li> <li>▪ Having Social problems</li> <li>▪ Weakness in supporting for increasing income</li> <li>▪ Not being able to implement according to CF procedures</li> </ul>	<ul style="list-style-type: none"> <li>○ Aid from TNRP (technical, financial and necessary items)</li> <li>○ Having market opportunities</li> <li>○ Eco-tourism industry</li> </ul>
3	<ul style="list-style-type: none"> <li>• Nhan Kyal (1)</li> <li>• Nhan Kyal (2)</li> <li>• Thet Kal Kwat</li> <li>• Oat Tha Yan</li> </ul>	<ul style="list-style-type: none"> <li>▪ Being entered by local armed groups</li> <li>▪ Lack of unity</li> <li>▪ Weakness in participation</li> <li>▪ Lack of CF funding</li> <li>▪ Having conflict between CF members and non-CF members</li> <li>▪ Forest fire burning</li> <li>▪ Land conflict between one village and another</li> <li>▪ Transportation difficulties</li> <li>▪ Linkage with private land ownership</li> <li>▪ Weakness in leadership of CF committee</li> <li>▪ Weakness in local people's capacities</li> <li>▪ No record for process relating to CF</li> </ul>	<ul style="list-style-type: none"> <li>○ Aid from TNRP</li> <li>○ Transportation is good</li> <li>○ Forest products from CF easy to access markets adjacent to Yay-Dawei road</li> </ul>

## 6-2 Training Day Two

Before starting training day two, the revision for training day one is led by three trainees. On training day two, participants discussed four training programs which were nine principles for successful CF, analysis the current CF using those nine principles, the definition of participation and the importance of participation in CF.

Along with the cooperation of participants, the characteristics in successful CF or nine principles were discussed and 12 sites of CF where current TNRP supporting are put under 39 criteria using these nine principles which is shown as figure (2) below. Along with the principles, 39 criteria are expressed in Annex-3.

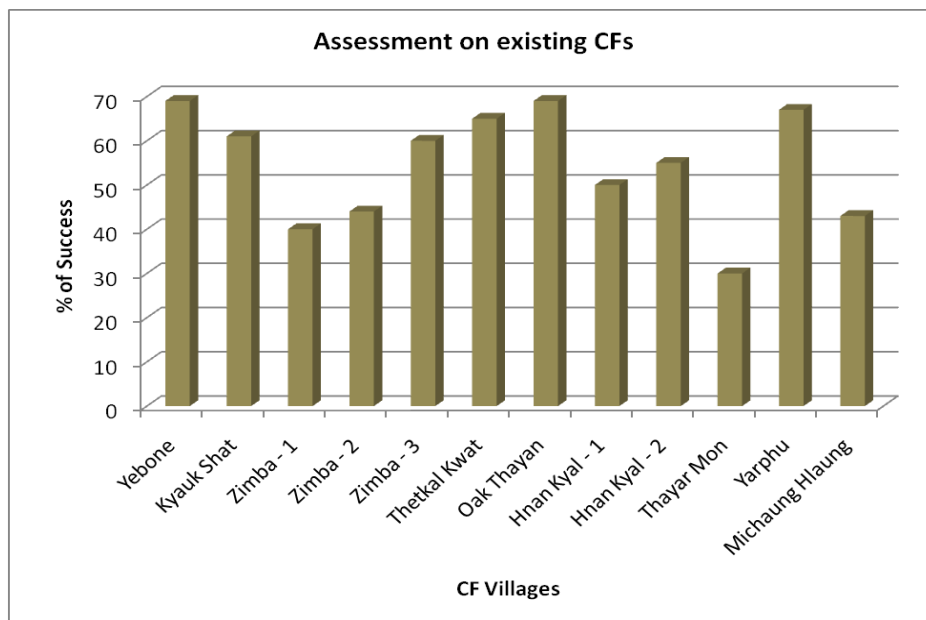


Figure 2: Assessment on existing CFs against 9 principles

This analysis was intended the participants to realize nine factors for successful CF is standardized as the analysis, hence, the outcome strength might be weak. According to the analysis, it can be found that Yebone, Oak Thayan and Yarphu CF stand as the best place while Thayar Mon, Zimba (1) and Zimba (2) stay the least status.

## 6-3 Training Day Three

After the day two revision led by three participants, the training continued to day three with four programs. The trainees learned By grouping, participants discussed Six Steps of Participation; 1) passive participation, 2) information participation, 3) consultation participation, 4) functional participation 5) interactive participation and 6) self-motivated participation and used role play technique to be understood more.

Then, to get the active participation until decision making step, three groups of participants drew three pictures of four essences of participation which are effective participation, shared responsibility, mutual understanding and inclusive solutions. Continuing that related gaming techniques are used for facilitation definition and why facilitation is important in CF processes.

#### **6-4 Training Day Four**

On the final day of the training, participants learned about the facilitation house in which includes basic mindset and skills for a good facilitator. Moreover, the grouped participants discussed dos and don'ts for a good facilitator and made them analyze whether individual followed those factors.

Knowledge sharing plan relating to CF is discussed based on currently implemented processes by participants. Then, one of the main parts of the training which is overcoming challenges for 12 sites of TNRP CF, implementer and external supports are taken into account by grouping. The discussion outcome can be seen in table (2).

Table 2: The overcoming ways that can probably be challenges

<b>CF Village</b>	<b>Challenges</b>	<b>Overcoming ways</b>	<b>Implementer</b>	<b>External Supports</b>
<ul style="list-style-type: none"> <li>▪ Zimba - 1</li> <li>▪ Zimba - 2</li> <li>▪ Zimba - 3</li> <li>▪ Kyauk Shat</li> <li>▪ Yebone</li> </ul>	Transportation	Boat/ Bridge should be supported	TNRP+ local	Finance
	The difficulties for food and shelters	Training on value added for forest products	TNRP	External Consultancy
	Weakness in participation	Facilitation	TNRP, FD, RECOFTC	
	Frequent changes of CF committee	Lay rules and regulation exactly	Local people	Facilitation
	Weakness in knowledge	Extended education	TNRP extension	
	Knowledge weakness of local people for making the income increase	Trainings	TNRP, FD, RECOFTC	Finance
	Invasion of local armed groups	Negotiation	Organization, TNRP, FD, local and government	
<ul style="list-style-type: none"> <li>▪ Yarpku</li> <li>▪ Thayar Mon</li> <li>▪ Mi Chaung</li> </ul>	Land conflict	Negotiation	TNRP+ Local	
	Local cannot draw procedures by	Trainings	FD, TNRP	Finance

Hlaung (old village)	themselves			
	Low interest by community	Facilitation	TNRP extension group	RECOFTC
	Supporting weakness by departments	Policy	FD	
	Weakness in local people's capacities	Trainings	TNRP extension group	RECOFTC
	Weakness in persuasion to users group of CF committee	Reformation of committee systematically	Committee, TNRP	RECOFTC
	Financial difficulties	Aid from TNRP	TNRP	Finance
	Encroachment in CF	Systematic supervising	CF Committee	TNRP
	Weakness in taking action upon encroachment	Coordination with FD	TNRP, FD, CF Committee	
	Having Social problems	Negotiation	CF Committee, TNRP	
	Weakness in supporting for increasing income	Trainings	TNRP	RECOFTC
	Not being able to implement according to CF procedures	To understand more about CF project	TNRP, FD	
<ul style="list-style-type: none"> <li>▪ Hnan Kyal - 1</li> <li>▪ Hnan Kyal - 2</li> <li>▪ Thet Kal Kwat</li> <li>▪ Oak Thayan</li> </ul>	Being entered by local armed groups	Negotiation	TNRP, FD, local people	
	Lack of unity among members	Lay rules for group	CF Committee	TNRP
	Weakness in participation	Facilitation	TNRP	RECOFTC
	Lack of CF funding	Aid from TNRP	TNRP	Finance
	Having conflict between CF members and non-CF members	Consider non-members' benefit	CF Committee	TNRP
	Forest fire burning	Systematic supervision	Committee, user groups	Finance
	Land conflict between one village and another	Negotiation	CF Committee	TNRP
	Transportation difficulties			

	Linkage with private land ownership	On ground explore of responsible persons	FD, TNRP (AD, PD)	
	Weakness in leadership of CF committee	Capacity building	TNRP extension group	RECOFTC
	Weakness in local people' capacities		TNRP extension group	RECOFTC
	No record for process relating to CF	Training for writing reports	TNRP extension group	RECOFTC

## 7. Evaluation

### 7-1 Evaluation upon participants

It is found that most of the trainees participated with concentration and most participants fully understand Community Forestry Instruction, 1995 relating to CF. Among the participants, there are slight gap of knowledge and experiences relating to CF. The interest showed on factors or characteristics for successful CF and the enthusiastic expressed on analysis for established CF based on TNRP sites. Although participants did not get used to participation and facilitation concepts and skills, they agreed the importance of these facts in CF after the discussion. It is observed that some of the attendees required putting on not only skills but also knowledge concerning CF or Conservation Oriented Community Development.

### 7-2 Evaluation of participants

According to the expression of trainees' evaluation on training shown as figure (3), the evaluation and suggestions are made based on the training objectives, trainers, training materials and applying in the job. Under the training objectives, there includes clear intension, training agenda and compatible with purpose, reasonable training period and under the title of trainer, the participants could choose the skills of discussion, linkage skills on discussion, well preparation, encouragement on participation in discussion. As can be seen in the figure, most trainees responded all four topics to totally agree and agree.

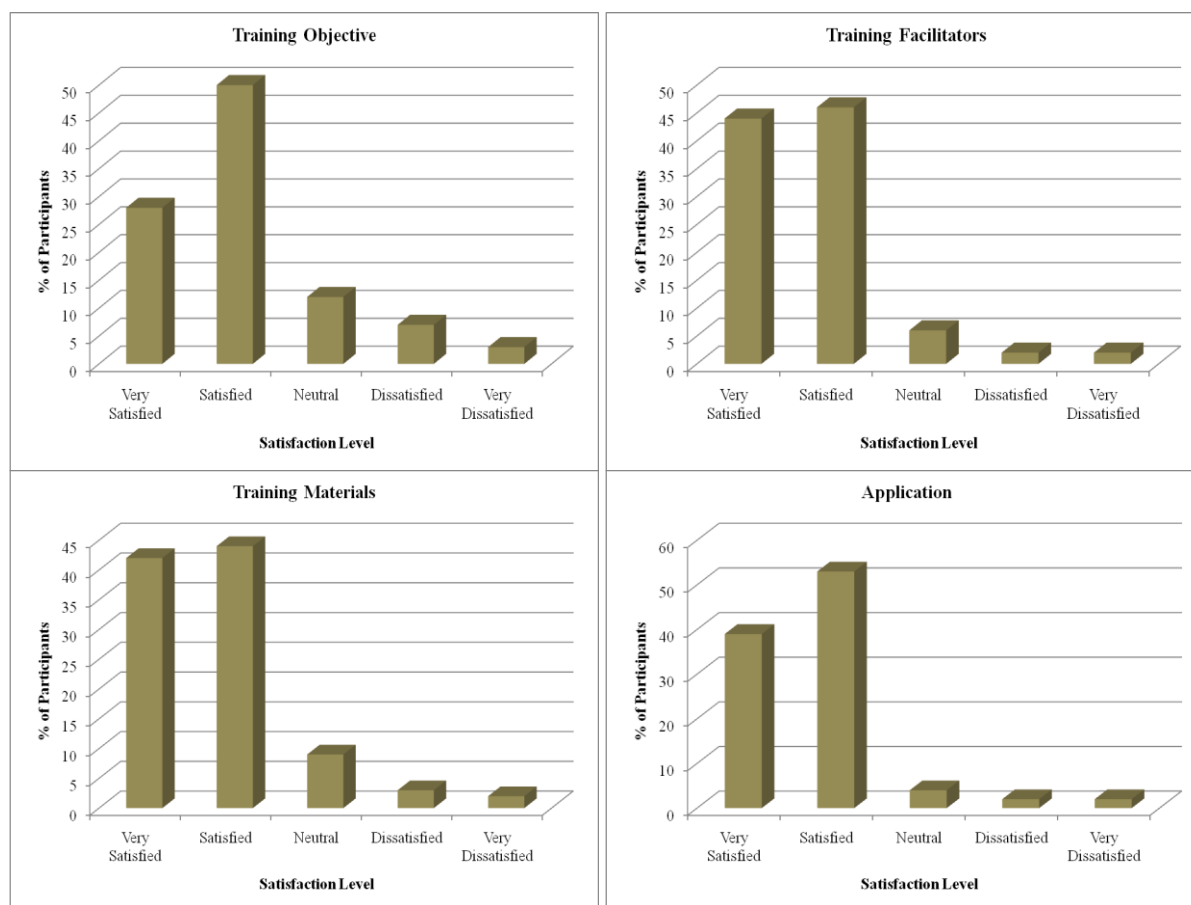


Figure 3: Training evaluation by participants

## 8. Conclusion

Due to the supportive participation from TNRP staff, this training successfully accomplished as the first step of agreement between Tanintharyi Nature Reserved Project of Forest Department and RECOFTC concerning consultancy. This training is not using normal methods but the basic training on review of present establishment of CF and based on the findings, exploration on how to continue to implement more strengthening CFs. Intending participants to get more knowledge about benefits, the discussion was taken into account not only for CF members also non-CF members. The participants studied to consider reducing disputes and conflicts as much as possible between CF user group and non-CF local people or among one village and another since CF establishment.

Although this training discussion is based on CF, it is added complementary knowledge and skills for TNRP staff who will implement Conservation Oriented Community Development. Hence, it can be assumed that the training will be supportive to the agreement purposes between TNRP and RECOFTC.

**Training Agenda**

<b>Time</b>	<b>Day 1</b>	<b>Day 2</b>	<b>Day 3</b>	<b>Day 4</b>
09:00 - 10:30	Opening session and Training introduction	Successful CF principles	Processes of Participation	Facilitator attitudes and skills
10:30 - 10:45	<b><i>Tea Break</i></b>			
10:45 - 12:00	Understanding on CF through conservation perspectives	Assessment on existing CFs against CF principles	Factors affecting on participation and core value of participation	Dos and Don'ts for facilitator and evaluate on participants' skills
12:00 - 13:00	<b><i>Lunch Break</i></b>			
13:00 - 14:45	CF concepts and definitions	Understanding on participation	Understanding on facilitation in CF	Challenges to be overcome by effective participation
14:45 - 15:00	<b><i>Tea Break</i></b>			
15:00 - 16:30	Challenges and Opportunities encountered by CF	Importance of people participation	Role of facilitation	Training evaluation and closing session

**List of Training Participants**

<b>Sr.No</b>	<b>Name</b>	<b>Position</b>	<b>Organization</b>
1.	U Wai Yan Phyo	Range Officer	TNRP
2.	U Thel Ko Ko	Range Officer	TNRP
3.	Daw April Khine Oo	SMART Database Intern	TNRP
4.	U Aung Myat Tun	Ranger	TNRP
5.	U Than Zaw Oo	Ranger	TNRP
6.	U Zaw Myo Naing	Ranger	TNRP
7.	U Thet Ko	Ranger	TNRP
8.	U Hlaing Myo Tun	Ranger	TNRP
9.	U Win Ngwe	Ranger	TNRP
10.	U Sein Win	Ranger	TNRP
11.	U Kyaw Thura	Deputy Ranger	TNRP
12.	U Bo Bo Soe	Deputy Ranger	TNRP
13.	U Eunt Mann Oo	Deputy Ranger	TNRP
14.	U Myo Win	Deputy Ranger	TNRP
15.	U Maung Maung Hlaing	Deputy Ranger	TNRP
16.	U Khin Maung Phyu	Deputy Ranger	TNRP
17.	U Min Thwin	Deputy Ranger	TNRP
18.	U Ye Htet Kyaw	Deputy Ranger	TNRP
19.	Daw Noe Layar	Extension Staff	TNRP
20.	U Dar Dar Htoo	Extension Staff	TNRP
21.	Daw Yamin Phyu Zin	Extension Staff	TNRP
22.	Daw Naw Darr Sate	Extension Staff	TNRP
23.	Daw Aye Thet Win	Extension Staff	TNRP
24.	Daw Su Myat Win	Extension Staff	TNRP
25.	Daw Hla Eainzali Tint	Extension staff	TNRP
26.	U Yan Naing Oo	Extension Staff	TNRP
27.	U Saw Arkar Lin	Patrol	TNRP
28.	Daw Naw Arr Phaw	Local	Yay-Pone Village
29.	U Than Tun Aye	Local	Zinn Bar Village



## Nine CF Principles and Key criteria for CF assessment

### Principle (1) Availability of resources

- i) Forest land availability (Y/N)
- ii) Existing forest condition (Y/N)
- iii) Active leadership of CFMC (Y/N)
- iv) Active participation of CFUGs (Y/N)
- v) Financial availability (Y/N)

### Principle (2) Capacity of local communities and other stakeholders

- i) Participation to CF related training, workshop and awareness raising (Y/N)
- ii) Training needs mentioning in CFMP (Y/N)
- iii) Interests of CFUGs in participation of training (Y/N)
- iv) Recognition of culture, tradition, customs/norms by CF related workshop (Y/N)

### Principle (3) Effective policy and regulatory support

- i) Status of rules and regulations set up by CFUGs (Y/N)
- ii) Participatory decision making (Y/N)
- iii) Clear roles and responsibilities among CFMC and CFUGs
- iv) Use rights for non-CF users (Y/N)
- v) Objective setting by concerned stakeholders (Y/N)

### Principle (4) Strong tenure and rights

- i) Use rights (Y/N)
- ii) Management rights (Y/N)
- iii) Exclusion rights (Y/N)
- iv) Systematic and clear benefit sharing mechanism (Y/N)

### Principle (5) Effective governance

- i) FPIC before establishing CF (Y/N)
- ii) Empowered decision making power to local communities (Y/N)
- iii) Taking consensus (Y/N)
- iv) CF related information sharing (Y/N)
- v) Participation decision making in developing CFMP (Y/N)
- vi) Performance in accordance with CFMP (Y/N)

### Principle (6) Effective participation

- i) Mutual understanding (Y/N)
- ii) Share responsibilities among CFMC and CFUGs (Y/N)
- iii) Effective participation in regular meeting and CF activities
- iv) Inclusive solution in making decision (Y/N)

Principle (7) Fulfilling local needs

- i) Collecting timber, pole, post, fire wood and bamboo from CF (Y/N)
- ii) Satisfaction level of CFUGs on CF establishment (Y/N)
- iii) Provision of CF to livelihoods of CFUGs (Y/N)

Principle (8) Adaptive Management

- i) Monitoring and evaluation on performance of CF (Y/N)
- ii) Application of results/findings from monitoring and evaluation (Y/N)
- iii) Ability in addressing conflicts encountering in CF (Y/N)
- iv) Learning ability on external changes (Y/N)
- v) Revision or amendment on CFMP (Y/N)

Principle (9) Meeting multi-stakeholders' needs and interests

- i) Right to harvest CF products for non-CF users (Y/N)
- ii) Fair benefit sharing mechanism among CF users and non-CF users (Y/N)
- iii) Satisfaction level on conflict resolution regarding land allocation, and sharing CF products (Y/N)

## Photo Session



Opening Speech delivered by Staff Officer of TNRP



Group presentation by training participant



Group presentation by training participant



Group Discussion



Recap Session



Receiving outstanding award by training participant

## Training Completion Report On Enhancing Livelihood through Community Forestry



23 - 28 December 2016

Mee Chaung Laung Environmental Education Centre, TNRP

## Content

1. Background
2. Training Objective
3. Training Place and Period
4. Training Participants
5. Training Team
6. Training Methodology
7. Discussion points
8. Training Evaluation
9. Conclusion
10. Annex

## **1. Background**

Tanitharyi Nature Research offered consultancy assignment to RECOFTC Myanmar Country Program on community development. CF approach is already initiated at buffer zone area and encouraged the community development for them not only conservation and protection of forest. As CF members can legally access to forest product at buffer zone area, forest product based livelihood development become one of alternative opportunity for further consideration of community development program at TNRP buffer zone area.

As similar as TNRP, WWF is one of INGO working at forest conservation program at Tanitharyi region.

WWF is also looking for possible and potential intervention for livelihood development of forest dependent community at that region. In collaboration with two organizations, enhancing livelihood through Community Forestry training program meets both organizations' target / expected activity. RECOFTC facilitated this training program to build up the capacity of TNRP staff and WWF key facilitator.

## **2. Training Objective**

Specific purposes of the training program are as follow;

- To explain and assess how Community Forestry principles can contribute to development of local livelihood
- To apply the Sustainable Livelihoods Approach (SLA) framework to identify community assets and conditions that can help these assets
- To explain and assess the importance of screening forest products and services that can be developed as community enterprises using a participatory approach
- To use the value chain tool to assess potential forest products and services and identify interventions along the value chain to strengthen community livelihoods

## **3. Training Place and Period**

Training was conducted at Kalain Aung, Mee Chaung Laung Environmental Education Camp, and TNRP project. It last 6 days from 23 - 28 January 2016.

## **4. Training Participants**

TNRP select the staff who are person in charge of main core unit team; extension team and patrolling team, person in charge of forest based camp which is the sub-management unit of project and extension team member who are mostly deal with community members. WWF select staff and village representatives who are potential to work with further community forestry development program. In total, there are 26 participants, 14 from TNRP and 10 from WWF respectively. Detail participant list is attached at annex 1.

## **5. Trainer Team**

RECOFTC organized as a team to deliver this training session. Mr. Martin, senior program leader of Enhancing Livelihood and Market, from RECOFTC Head quarter lead on this training program. Along with him, Ms. Khin Moe Kyi, training coordinator and Mr. Sa Tin Min Aung, Project Officer from RECOFTC Myanmar Country Program also participated and facilitated the training sessions. Apart from RECOFTC member, Ms. Amy, Project Manager from WWF supported to this training program by sharing her Cambodia experience on implementation of community livelihood development enterprise based on NTFP.

## **6. Training Methodology and Schedule**

Training schedule is attached at annex 2. Training is delivered by using participatory approach. Facilitator shared theoretical explanation and then tries to reflect on real case. And, experience from other countries is also shared to increase their knowledge and understanding on livelihood development. Apart from that, field trip program also conducted for better understanding of forest product value chain process by interviewing with producers and trader of selected products.

## **7. Discussion Points**

### ***Day One (23. 1. 2016)***

#### **Setting up the training context**

As usual, training opening ceremony is organized by presenting the senior representative from TNRP, RECOFTC and WWF. Opening remark highlighted the role of training program for Tanitharyi Nature Reserve conservation and livelihood development of local community.

Training session was started by pair introduction to warm up training environment. Trainees' expectations are investigated along with sharing of training objective and agenda. Trainees wanted to learn Community forestry, livelihood, value chain and product selection and environmental conservation program. Participants took responsible to feedback for daily discussion and also help to energize the participants when they feel less active for learning.

#### **Community Forestry and Role of Livelihood**

Trainees were encouraged to express their opinion freely on following statements as agree or disagree.

Statement 1: Community forestry is not able to reduce poverty

Statement 2: CF can only produce semi-finished product because local communities are not organized and are not interested in collaborating together

Statement 3: Without clear and secure tenure community forest enterprise are likely to fail

It was noted that two third of participant agree on statement one because CF mainly provide subsistence livelihood, one third of participant disagree to this statement even if household can receive one can of water, it support to their livelihood without any charges for that. For statement 2 also, two third of participant agree on it as business activity mostly lead by individual instead of working together, meanwhile rest of participants disagree on that as it may link on technology rather than collaborative action. Obviously, all participants agree on statement 3 as tenure is very important for CF and directly impact to its related livelihood development activity. There will be no right and wrong answer, facilitator just stimulate participants to share their different opinion about the linkage of CF and livelihood.

As mentioned livelihood development program link with CF, trainees were asked to discuss the important factors required to be successful CF through snow-balling method. After trainees' presentation, facilitator share the principle of successful CF; availability of resources, clear and strong tenure rights, effective regulatory support, effective governance, adaptive learning and management and meeting needs of local people . Then, participants reflected their discussion result against with principles.

As a plenary discussion, trainees strongly supported the role of CF principles for livelihood development in term of quality of resources, tenure, group governance and participation. One prominent example is that if communities actively participate in CF activity, it is highly potential to receive TNRP fund for community development.

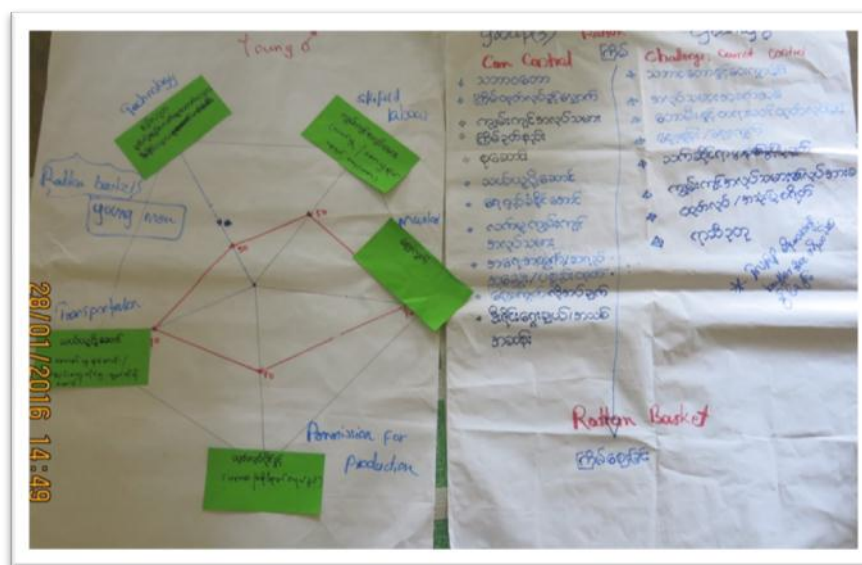
### **Road map to Livelihood Development**

After exploring trainees understanding on the linkage of CF and livelihood development, livelihood development was discussed in detail. Initially, one sample product is selected and then road map to livelihood development for this particular product is drawn out. In which, list of necessary activities and materials or factors to be able to produce marketable product and challenges that can affect to product development without any control are brainstormed as per the following table.

Product	
Activities/ materials/ condition needed to be able to send to market	Challenges that cannot control
-	-
-	-
-	-
-	-
Developed product	



To ensure sustainability of livelihood development, it requires different stakeholders perspective since from product selection. Thus, participants were grouped into four as aged men and young men group, aged women and young women group to convey importance of consideration of different stakeholder's perspectives. Then, preference products are selected based on different stakeholder perspectives. The necessary activities /materials / factors for product production are grouped categorized into their similarities. Then, each category was given score and marked on spider diagram based on the degree of requirement for product development as per following diagram.



Diagram; Road map to rattan basket development and assessment on spider diagram

## Day Two (24. 1. 2016)

### Sustainable Livelihood Approach

Facilitator shared the similar exercise of livelihood development practiced at Lao and then, reflects into Conceptual framework of sustainable livelihood framework. The categories of necessary activity what they exercised behaved as livelihood capital and challenges for production means external factors for livelihood development.

In SLA framework, there are 5 livelihood assets/ capital ; natural capital which represent natural resources, human capital which represent labor force and skill, physical capital which represent materials and infrastructure, financial capital which represent money, technology capital which represent required techniques, social capital which represent social relation or action. Apart from that, climate change context, market context, policy and institution are also discussed as external factors for livelihood development.

It was pointed that the livelihood strategies resulted into livelihood outcomes was influenced by se not only five capitals, but also external factors, and also shared that how good livelihood outcome make strong to resilience or adapt to external factors and also support to livelihood capital.

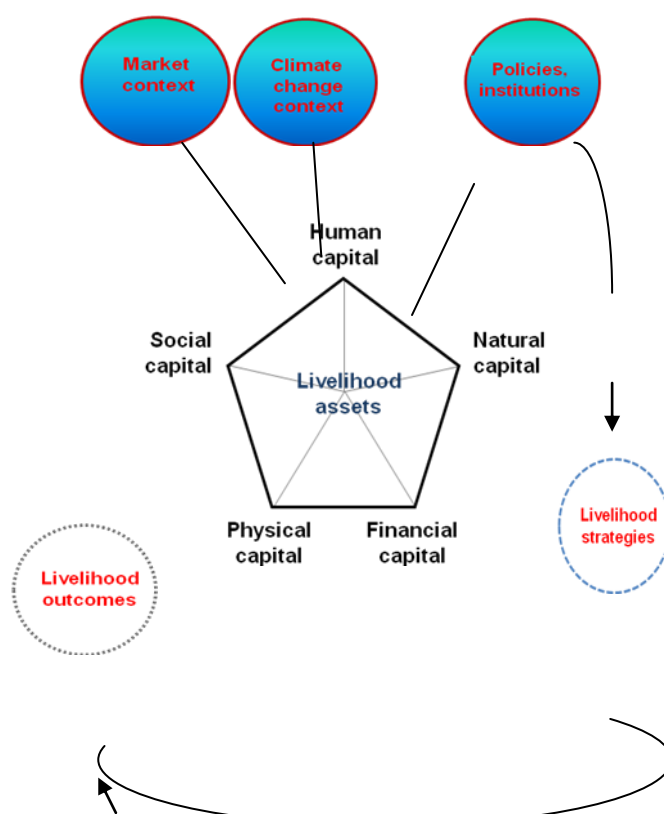


Figure 1: Sustainable Livelihood Framework

## Forest Product Selection

After sharing conceptual framework of sustainable livelihood based on forest product development, selection of potential forest product was exercised step by step. Different stakeholder groups were asked to list down 10 most important species and then asked to choose one product what they want to produce as livelihood product. Then, facilitator raised the question, what are the reasons to select this particular one into first priority and lead to plenary discussion for identification of criteria for forest product selection. Trainees made consensus on selection criteria; access to natural resources, access to market, availability of appropriate technology, availability of human/ labor, possible policy. Then, each group analyzed all 10 products against with selection criteria. After sharing top 2 products from each group, 5 priority products come out for whole group. Then, two products; Cardamom and Dog fruit were selected to study for field trip.

Old Women	Old Men	Young Men	Young Women
Honey	Bamboo stand	Hlae	Cardamon
Bamboo Shoot	Cardamon	Cardamon	Mushroom
Dog fruit	Rattan	Dog fruit	Bamboo grass
Cardamon	Dog fruit	Kant Zaw oil	Orchid

Bamboo stand	Elephant foot yam	Pepper	Kant Zaw Oil
Elephant foot yam	Honey	Bark	Rattan
Orchid	Orchid	Bamboo shoot	Honey
Palm	Lin Khaw (?)	Elephant foot yam	Elephant foot yam
Rattan	Palm	Palm	Bat feces
Bat feces	Tumeric	Rattan fruit	Bamboo stand

**Day Three (25. 1. 2016)**

### Sharing on Cambodia Experience

After theoretical learning on SLA and product identification, real case study of honey production in Cambodia is shared by Ms. Amy, program manager from WWF. Presentation title was noted that the process and lesson learned from developing Community Based NTFP Enterprise in Cambodia. She shares firstly the meaning of enterprise development process comprised of enterprise identification, enterprise development, enterprise implementation, management and capacity building and enterprise monitoring. And then, she highlighted the application of sustainable livelihood assessment and forest product selection including value chain study and market study to be able to develop as enterprise for wild honey production.

### Value Chain Analysis

It is important tool to select forest product as a potential product for livelihood development. Facilitator introduced how the product adds value from each production stage to final consumption stage and explained the meaning of value chain. Description of function, direct actors and indirect actors at value chain are elaborated in detail. Then, role play exercise was conducted to get clear understanding on the relationship of each actor involved in value chain process. Reflection on role play links to conceptual explanation of value chain. Following to this theoretical understanding, participant made group exercise on value chain maps for Cardamom and Dog fruit from men and women perspectives.

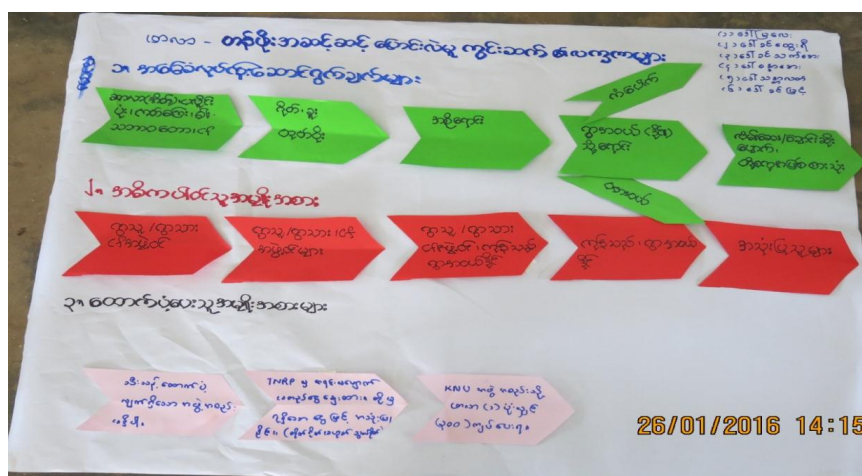


Diagram of Value Chain Study on Cardamom forest product

## **Field trip preparation**

For field trip study, participants were divided into two groups as per no. of study products; Cardamom and dog fruit. Field trip comprises of two parts and takes one day for each; studying at village where products are produced and studying at township where products are processing. As per secondary information provided by TNRP staff members, Zin Bar and Kyauk Shut community forestry villages were selected to study Dog fruit and Cardamom product respectively. To study product processing, Kan Pauk and Kalaing Aung sub-township were selected. Then, trainees for each group are encouraged for detail preparation for field trip program such as questionnaires development and responsibility sharing among group members.

### ***Day Four (26. 1. 2016)***

#### **Field Trip to production site**

At each village, trainees need to explore SLA framework and value chain analysis for selected product. To cover men and women perspective on study product, male and female villagers were requested in advance and trainees were also divided into two groups. One group led the livelihood assessment of product producer meanwhile rest of group took the responsibility for interviewing about product production process. For Dog fruit which was studied at Zin Bar village, villagers have been collected at buffer zone area and their orchard. For cardamom which was studied at Kyauk Shut village, villagers have been collected mostly at CF area and other area within buffer zone area. Villagers harvested fresh cardamom and dog fruit and used to sell to collector without any processing.

### ***Day Five (27. 1. 2016)***

#### **Field Trip to township**

Kan Pauk and Kalain Aug sub-township are visited to interview with dealer or traders of Cardamom and dog fruit respectively. Each trainees group had a chance to visit both township and meet with their respective traders and asked the processing activities including price changes, starting from collection of products from villagers or collector until to send wholesalers. End market of dog fruit is within nation with simple processing, mean while Cardamom's end market is at international and processing is long and more complex than Dog fruit.

### ***Day Six (28. 1. 2016)***

#### **Field trip reflection**

Two day field trip program were reflected by daily feedback team. Trainees remarked that field trip program was very helpful to see how the price on this particular product change from one place to place based on technology and market access, and also came to know potential assets and challenges for producer livelihood development. It was approved that trainees able to reflect their learning from training against with on ground situation.

## Value Chain Development

Facilitator showed the Lao case study about bamboo product development. The case study highlighted how bamboo product could produce by initiating and collaborating relevant department, mutual benefit for collaboration of trader and villagers, rule and regulation between trader and villager, capacity building program for technology, team work and sustainable resource management, division of role & responsibility among team member, challenges and result, and vision of bamboo product development. This case study pointed out what were components or required steps for livelihood enhancement through forest product development. Facilitator concluded the training discussion part by mentioning how important of collaborative action and requirement of capacity building program to move up the different stages of livelihood development.

## Action Planning

This training program aimed for application rather than just for knowledge sharing. Thus, it took one session for action planning at the end of training program.

TNRP developed the action plan comprise with following activities;

Training to new staff and local leaders,

NTFP survey at CF villages,

Value added training to CF members and interested villagers,

Extension and education program on systematic extraction of NTFP.

WWF also developed the action plan to conduct training to partners and livelihood assessment at the village

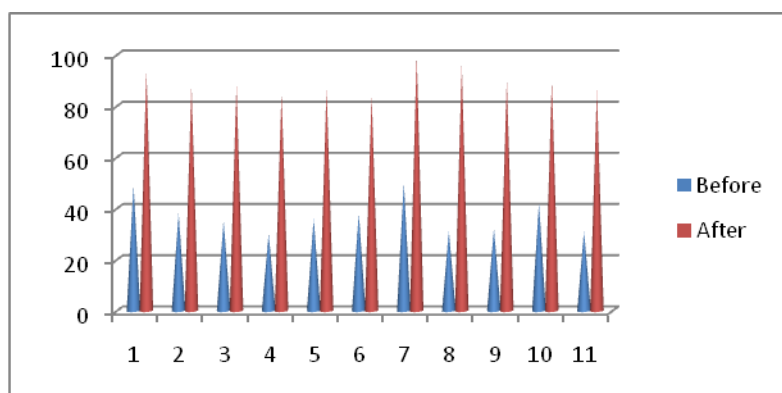
## 8. Training Evaluation and Recommendation

Training evaluation was conducted from two aspects; level of understanding on training content and level of satisfaction on training logistic arrangement including trainer capability.

For assessment on level of trainees understanding, trainees are requested to fill up two times; before and after upon the training subjects. As per following diagram, trainees learn mostly double on nearly every subject. That means trainees fully gained the knowledge and skill conveyed at the training program. But, this learning can be faded away gradually if they have no chance to apply on ground.

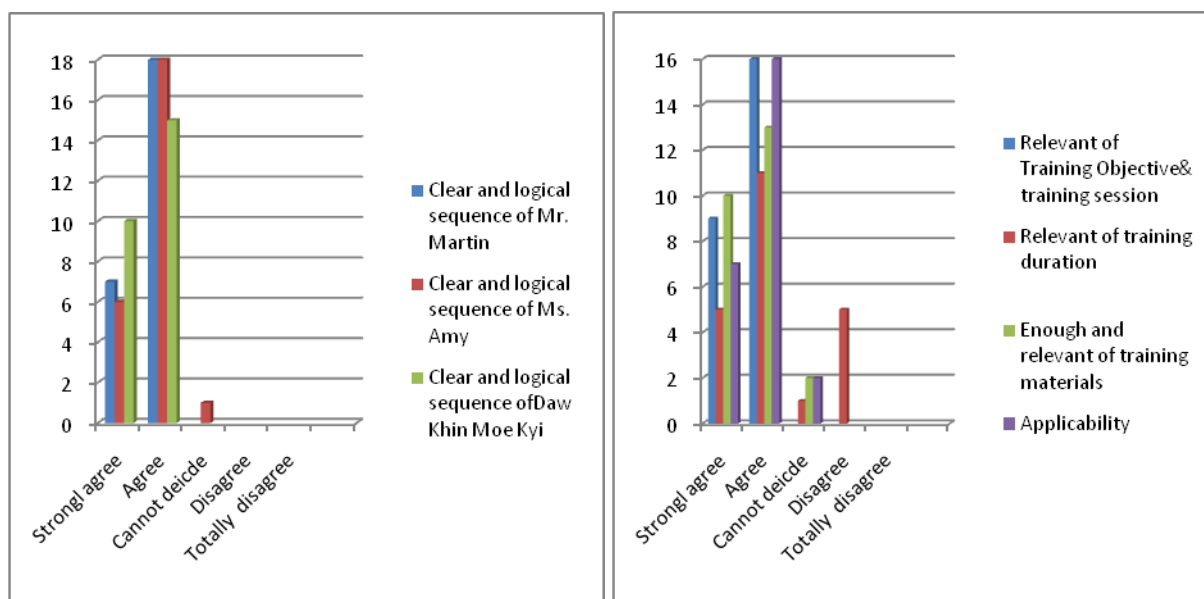
Sr. No	Training Content	Before	After
1	Linking CF with livelihoods development	49	94
2	The role of CF principles in successful livelihoods development	38	88
3	Elements to build a livelihood framework (a road map)	35	88
4	Introduction to Sustainable livelihood framework with Lao case	30	85
5	Reflection of external factors on livelihood	36	87

6	Developing a collective goal to enhance livelihoods	38	84
7	Forest products and services identification and ranking	50	100
8	Value Chain Analysis – part 1	31	96
9	Value Chain Analysis – part 2	32	90
10	Interview role play	42	90
11	Discussion on possible interventions & Value Chain Development	31	86



For level of satisfaction on training logistic, there are four options; strongly agree, agree, cannot decide, disagree and totally disagree. Trainees mostly agreed on trainer capacity in term of delivering the message clearly and logically. Majority of trainees agreed on relevant of training objective & session, relevant of training materials and applicability in the field site.

But, for relevant of training duration, one third of participants disagreed on it. Some participant said it is long and it should be 3-5 days while some said it is short and should take longer than that. This message obviously said about the level of interest on training program. It directly linked to participant selection.



Thus, training participants should be the ones who are relevant with and potential to apply the subject matter. This training program is one of important event to full fill for community development. Thus, especially for TNRP, extension staff members should learn thoroughly about this activity as they mostly have to deal with community members.

## **9. Conclusion**

It doubtlessly hope that this training program become fundamental step to improve livelihood development of forest dependent communities. It enhances not only staff members of particular organizations but also the relationship of TNRP team and WFF organization who are working on Tanitharyi natural forest resources. Thus, The better collaboration among different stakeholders; FD, CSO and community make the better result for forest resource conservation program at Tanitharyi region.

### Training Agenda on Enhancing Livelihood through Community Forestry

Date/ Time	Day -1	Day - 2	Day - 3	Day - 4	Day 5	Day 6
8:30 – 10:00	Opening Ceremony Training Introduction (Khin Moe & Martin)	Introduction to Sustainable livelihood framework with Lao case ( Martin)	Process of Enterprise development in Cambodia ( Amy)	Leaving to field site	Leaving to field site	Reflection on field trip (Khin Moe & Martin)
10:00- 10:15						
10:15- 12:00	Linking CF with livelihoods development ( Martin & Khin Moe )	Reflection of external factors on livelihood ( Martin & Khin Moe)	Value Chain Analysis – part 1 ( Martin & Khin Moe)	Livelihood day : work at two villages by practicing SLA, Production identification and value chain	Value Chain day: Interview with traders, processor, shop, trade centre and government officials	Discussion on possible interventions & Value Chain Development ( Lao case) ( Martin & Khin Moe)
12:00- 13:00	<b>LUNCH</b>					
13:00 - 14:45	The role of CF principles in successful livelihoods development ( Khin Moe & Martin )	Forest products and services identification and ranking (Khin Moe & Martin )	Value Chain Analysis – part 2 (Khin Moe & Martin)	□	□	Action planning ( Martin & Senior TNRP staff)
14:45 - 15:00						
14:45 - 16:30	Elements to build a livelihood framework (a road map) (Khin Moe & Martin)	Forest products and services identification and ranking (Khin Moe & Marin )	Field trip preparation ( TNRP staff )	Leaving from field site	Leaving from field site	Evaluation ( Khin Moe )  Closing



### List of Training Participant

Sr.No	Name	Position	Organization
1.	U Thel Ko Ko	Range Officer	TNRP
2.	U Wai Yan Phyoe	Range Officer	TNRP
3.	U Mg Mg Soe Wai	Range officer, Dawei	FD
4.	U Zin Lin Tun	Forest Officer	WWF
5.	Ma Thazin Nwe	Interm	WWF
6.	Ma April Khine Oo	SMART Database Interm	TNRP
7.	Ms. Amy Maling	Project Manager	WWF
9.	U Sai Zaw Latt	Ranger	TNRP
10.	U Aung Min Soe	Ranger	
11.	U Win Ngwe	Ranger	
12.	U Sein Win	Ranger	
13.	U Swe De Moe	Chairman of CF	
14.	U Thet Ko	Deputy Range Officer	
15.	U Than Zaw Oo	Ranger	
16.	U Win Hteik	Ranger	
17.	U Hlaing Myo Tun	Ranger	
18.	U Soe R Kar	Ranger	
19.	U Saw Wah Htue	Environment Assistant	WWF
20.	U Saw Tar Paw Khwar	CF member	
21.	U Saw Ba Sul Gay	Staff	WWF
22.	Ma Naw Phaw Eh Ta Mwe	CF member	
23.	Daw Khin Nyo Linn	E & A officer	WWF
24.	Hla easil Tint	Extension staff	TNRP
25.	Naw Dah		
26.	Aung Wunna Tun	Staff	WIF
27.	Yan Naung Oo	Extension Staff	
28.	U Aung Myat Tun	D.R.O	

***Forest Products Identification and Value Chain Analysis  
in Tanintharyi Nature Reserve and Community Forest Areas***



Report as part of External Consultancy for Community Development in TNRP

By RECOFTC/TNRP/WWF

January-February 2016

**For more information with regards to the approaches used in this report please contact the following contributing authors:**

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## EXECUTIVE SUMMARY

The objective of Tanintharyi Nature Reserve Project (TNRP) is to protect and sustainably manage ecosystems and endangered wildlife system, but also take into consideration the improvement of the livelihoods of local communities. This focus is in line with the Government of the Union of Myanmar to alleviate poverty through socioeconomic wellbeing of the rural people and Community Forestry (CF) can play a key role in developing livelihood opportunities while increasing the control of resource use by local people and developing market access for forest and non-timber forest products (NTFPs).

As part of this 'Consultancy for Community Development in TNRP' RECOFTC – The Center of People and Forests has been requested to specifically address the following aspects in this report: 1) to identify potential forest products for income generation, 2) to conduct an assessment on social acceptability, financial feasibility and environmental suitability of community development activities and potential community enterprises, 3) to conduct forest product market analyses and assessment backed by TNRP related literature review, followed by 4) key stakeholder workshops to review prioritized community development activities and community enterprises.

Some of the results reported here stem from a training “Enhancing livelihoods and Markets” for TNRP staff also as part of this consultancy. An understanding of the TNRP site and livelihood opportunities of local people surrounding the TNRP was created through training sessions focusing on “Sustainable Livelihoods Approach”. Key livelihood activities focus on betel nut, rubber and cashew nut orchards, while land concessions are obstacles for expansion by smallholders. Forest based livelihood activities legally can take place in the buffer zone and CF area of TNRP, but inside the core zone of the Reserve commercial activities are limited, however allowed to a certain extent. Through the Value chain Analysis training sessions TNRP staff initially shortlisted – through a set of criteria – forest products with a potential to develop into enterprise options: cardamom, bamboo stems, dog fruit, bamboo shoots, elephant foot yam and broom grass, representing community members' interests. Interview sessions by TNRP staff as part of the training with local communities and local forest products traders resulted in better information to make a final product selection for a more detailed value chain research. Even though cardamom and dog-fruits were identified for the research, by no means are these products definite for enterprise development but rather identified as of high potential to carry out the value chain analysis. The research into both products started with TNRP communities, local forest product collectors and traders towards wholesalers in Dawei, Mawlamyine and Yangon. The research details the shares of the final price received of both forest products as well as a range of governance issues which support the products to be successfully traded, but also existing inefficiencies faced by the chain actors. Both technical and business arrangements are driven by the seasonality aspect and thus temporary focus of the forest products which places challenges and risks for product harvesting, processing and transportation in turn leading to likeness of losses, reduced product quality and even lowered prices offered. In particular Dawei cardamom is regarded as of low quality and suggestions are made by local traders and wholesalers to improve upon. Nevertheless, the market for cardamom looks stable with South Korea particularly interesting and encouraging enough to consider further exploring options to increase and carve out a market share. Dogfruit, although having a solid domestic market, by no means

is investing human and financial resources a safe bet, with uncertain supply basis affected by weather (lowering productivity) and mast years (spiking production). The report ends with discussing some options of improving particular steps in both value chains which may benefit communities in future. However, interventions require particular interests and specific roles of communities, TNRP-staff as well as local traders which all need to be agreed upon. It is advised to facilitate a workshop based on this research with these stakeholders before any final recommendations are decided upon. The one aspect the consultancy team likes to highlight is the need to look into market based solutions before any natural resource or community enterprise activities are embarked upon. Working more closely with local private sector will ensure a safer bet in understanding market demand and enable communities to maintain secure market access.

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## **ACKNOWLEDGEMENTS**

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## ACRONYMS AND CONVERSIONS

CF	Community Forestry
CFUG	Community Forestry User Group
FD	Forest Department
NTFP	Non-Timber Forest Product
RECOFTC	The Center for People and Forests
SLA	Sustainable Livelihoods Approach (or Framework)
TNRP	Tanintharyi Nature Reserve Project
TNR	Tanintharyi Nature Reserve
VC	Value chain
VCA	Value chain analysis

<b>Key conversions used in the report</b>	
1 US\$	= 1,263 kyat [MMK] in February 2016
In 2015: 1 man day is priced at 5,000-6,000 kyat (men) and 4,000 kyat (women)!	
1 Lakh	= 100,000 kyat
1 ha	= 2.471 acres, 1 acre = 0.405 ha
1 foot	= 30.48 cm, yard = 91.40 cm, 1 yard = 3 feet
1 viss	= 1.6293 kg
8 milk can	= 1 piy
8 pyi	= 1 bucket
16 pyi	= 1 basket
1 bucket cardamom (fresh)	= 4 viss (fresh)
1 bucket immature cardamom (fresh)	= ¼ viss (dry)
1 bucket mature cardamom (fresh)	= ½ viss (dry)
1 bag	= 2 baskets
1 viss	= 100 kyatthar

*Note: use of various measurements at various points in the value chain research and translations may have resulted in erroneous calculations, but triangulation has also been applied where possible.*



## 1. INTRODUCTION

*This chapter starts with why the report was written and follows suit in giving a brief overview of relevant information already available about Tanintharyi Nature Reserve and documented by earlier consultants. Due to limited time for this research the report will not dwell into analyzing in depth the Nature Reserve itself, its functioning nor its surrounding communities, but references are provided at the end of this chapter.*

### 1.1. Consultancy objective and responsibilities

Since its inception in 2005 Tanintharyi Nature Reserve Project (TNRP) has been a cooperative project between the Government of the Union of Myanmar, represented by the Forest Department (FD), and the Moattama Gas Transportation Company Limited (MGTC), Tanintharyi Pipeline Company LLC (TPC) and Andaman Transportation Limited (ATL).

TNRP is a long term project (2005-2028; with phases of 4 years) that contributes to Myanmar's Forest Policy of establishing protection areas in 5% of the country. The objective of TNRP is not only to help develop protection and sustainable management of significant ecosystems and endangered wildlife system but also take into consideration of improvement of the livelihood of local communities in Dawei District in the Tanintharyi Region of Southern Myanmar.

The Government of the Union of Myanmar is looking forward for rural development and poverty alleviation through socioeconomic wellbeing of the rural people. Community Forestry (CF) is in harmony with this vision and can play a key role in developing existing and creating new livelihood opportunities, increase the control of resource use by local people and developing market access for forest and non-timber forest products (NTFPs). While CF can contribute to improving peoples' livelihoods it faces challenges in the light of current policies placing priority to conservation of biodiversity, with the collection of timber and NTFPs in nature reserves often being considered illegal (Gritten et al., 2015).

Responsibilities as part of this consultancy specifically addressed in this report are:

- To identify a list of potential forest products for income generation program and appropriate income generation methods for current phase and future.
- To conduct an assessment on social acceptability, financial feasibility and environmental suitability of all identified community development activities and potential community enterprises.
- To conduct forest product market analyses, community forest product assessment and literature review of existing socioeconomic information and reports of TNRP.
- To facilitate organizing key stakeholder workshops to review pilot prioritized community development activities and community enterprises and redesign as necessary [*proposed as a validation workshop of this research to TNRP staff and key community members to receive feedback and ways forward rather than the consultancy providing top-down advice*]

The following key activities contributed to the above responsibilities:

- January 23-28, 2016: based on community product assessments [by applying Sustainable Livelihood Framework approach to test feasibility] as part of the 'Enhancing livelihoods and markets' training provided to TNRP staff, key forest products reflecting most target villages were identified for further research.
- January 29-February 5: Forest product value chain research of key products by a team of TNRP, WWF and RECOFTC [Annex 2: List of contacts interviewed for Cardamom and Dog fruit value chain research]
- TBD by MCP: Results of VCA shared with TNRP and key members of selected TNRP pilot villages: receive feedback on results and plan for appropriate interventions with interested villages

## 1.2. Tanintharyi Nature Reserve, Community Forestry and livelihoods

TNR is categorized into different zones each with its management options (Table 1).

**Table 1: Tanintharyi Nature Reserve management zones (Source: Report for TNRP 3rd phase - 2015)**

Make-up of the Reserve	Core zone	Buffer zone		Transportation zone
	Ecological processes can take place with minimal human interference, protecting habitats and biodiversity	<ul style="list-style-type: none"> <li>• 1 mile from boundary;</li> <li>• in the north there is both an inner and outer buffer zone, bordering with a forest department reserved forest area</li> <li>• in the south there is only an inner buffer zone with unclassified land on the outside the reserve</li> </ul>		From Dawei river to Thai/Myanmar border, 600 feet (180 m) wide road and service area
		<b>Village use zone (VUZ)</b>	<b>Conservation multipurpose zone (CMZ)</b>	
<b>Area</b>	336,912 acres (136,346 ha)	60,988 acres (24,682 ha)	19,055 acres (7,711 ha)	3,213 acres (1,300 ha)
<b>Allowed activities (as per TNR management plan)</b>	Research, gas pipeline, rehabilitation with local species, hiking, rafting	Subsistence agriculture, fishing, logging; controlled burning, grazing, NTFP harvesting, planting local tree species, forest conservation, overnight camping, agro forestry, CF	Biodiversity conservation, habitat preservation for wildlife	For companies servicing gas pipelines and roads. Companies can transport gas at low impact to forest; reforest areas cleared for construction with native tree species, and can only develop limited number of access roads. Research

In terms of CF, to date 9 villages have 12 certified CFs (750 CFUG members) including management plans, with some villages counting multiple CFUGs (i.e. Zimba has 3 CFUGs each making use of different areas due to historical reasons). In total CF in TNR counts 13,886.50 acres (5,620 ha) of which 3,328 acres (1,347 ha) are native tree plantations and 10,558.5 acres (4,273 ha) natural forest (see annex 1 for more details).

TNRP is engaged in a range of activities with all communities around (27) and in (9) the reserve in and outside the buffer zone. Buffer zone activities include village use zone demarcation, field trainings in tree and NTFPs planting and forest management program. Seedlings are distributed to villagers for free and planted in abandoned areas of shifting cultivation areas or degraded parts of the CF. In Yebon, Kyaukshut and Zimba villages some user groups have been practicing community based fire management as social mobilization.

Other types of support in terms of CF development relate to revolving fund establishment and financial trainings in collaboration with the Social Economic Department of the Gas company Total, bamboo handicraft trainings, provision of seedlings (i.e. elephant foot yam is popular), etc.

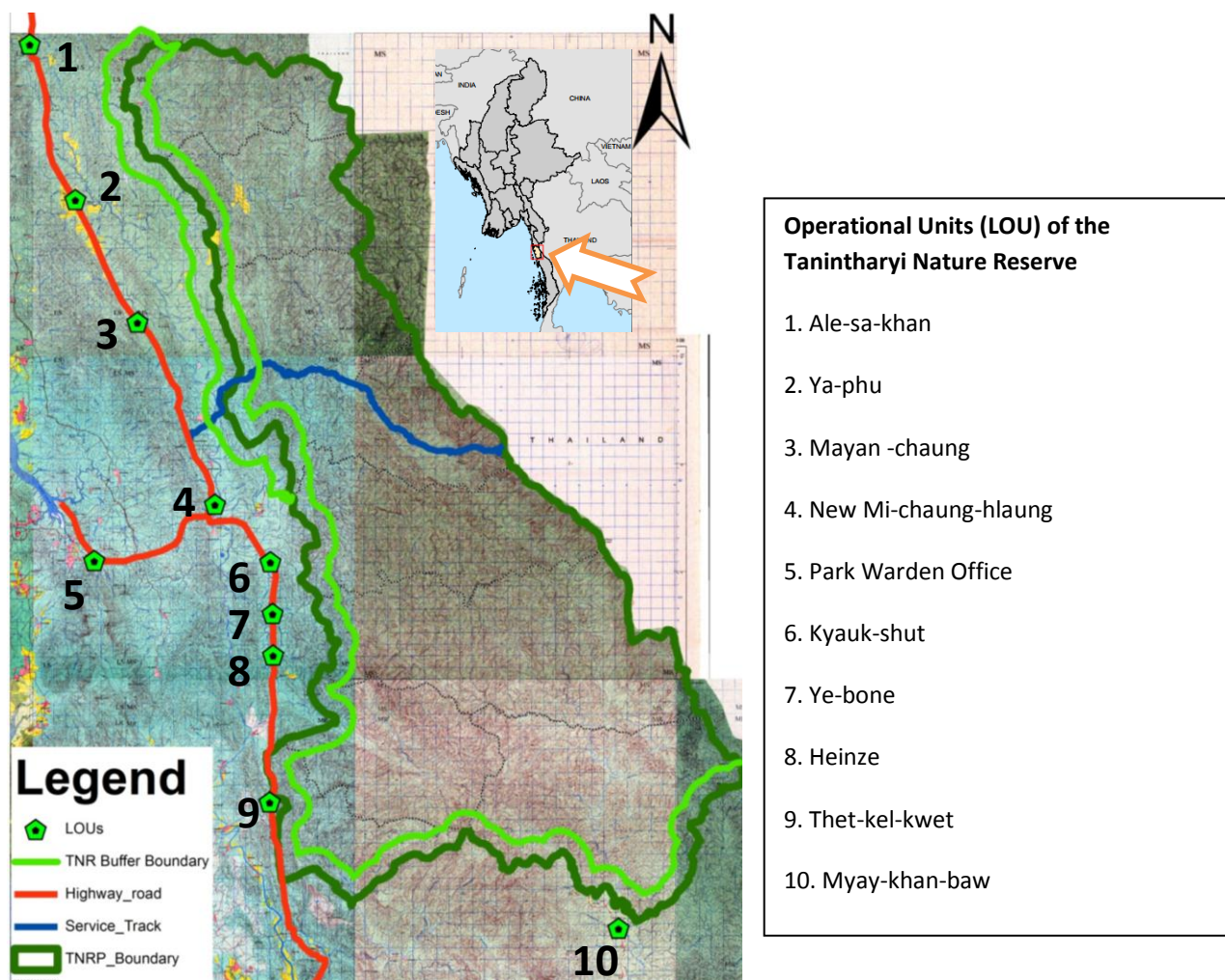
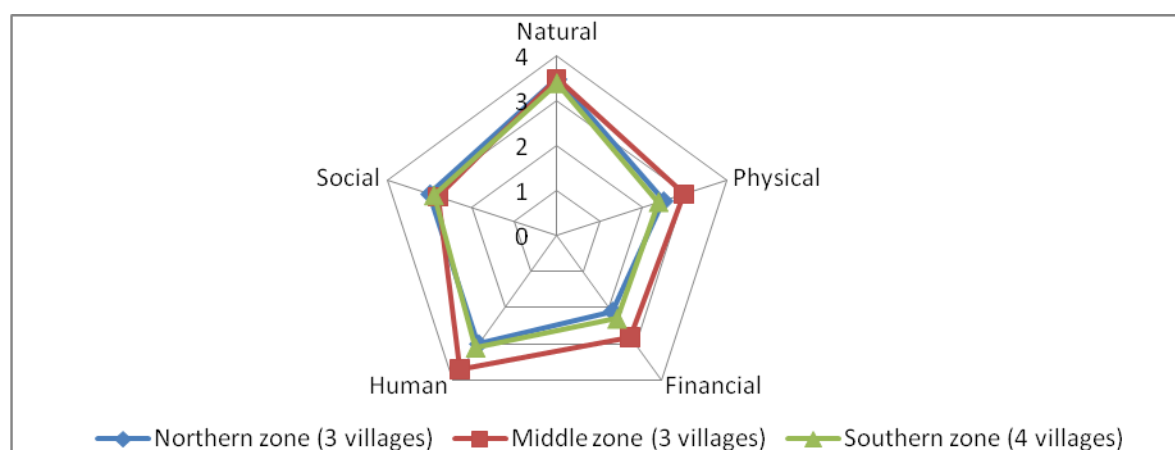


Figure 1: Tanintharyi Nature Reserve and operational units (Source: TNRP 2016)

In terms of livelihood issues the communities face in and around TNR, the project finds it challenging to develop productive livelihoods with local communities and their capacity to manage funds. This is particularly an issue for people who have not finalized primary education. Also the reserve is faced with resettled refugees who have no choice as to enter the forest to survive due to land scarcity. Since conflicts only seized 5 years ago and little has been done to remove unexploded ordinance (UXO), it is still dangerous to enter the forest with landmines still not cleared. A lack of employment in the area sees migration to Thailand, and to date the deep sea-port project has stalled and construction has not fully started.

Demographically the project area can be divided roughly into three zones: northern Mon, central Kayin area and southern Dawei area based on their major ethnic residents although mixes occur (Zin, 2009). In terms of livelihood status, based by research from Zin (2009), the middle zone provides communities with good opportunities in choosing livelihood options. Road access and available service are better organized. In terms of benefitting from available resources such as arable land and forest, communities in the southern part of the reserve lack opportunities to develop livelihood activities due to lack of land to develop orchards to the same extend as the middle part and thus depend more on NTFPs and timber. Communities in the north only little depend on the reserve and have more land available for planting cash crop orchards (Figure 2).



**Figure 2: Livelihood analysis of selected villages in the northern, middle and southern zone of TNR (Based on Zin, M.T. 2009).**

From discussions with TNRP staff and local communities in Zimba and Kyauk Shut, and similarly reported from Yebone (RECOFTC 2014) village loans obtained from the TNRP installed revolving funds for CFUG are well received. To date 3 registered CFUGs received each a fund of 5,000,000 kyat from which loans of 100,000 – 500,000 kyat are provided to its members. Loans need to be approved by the fund committee: borrowers need to explain what the funds are used for and find 1-2 guarantees who are willing to co-sign the loan application, no collateral is required. In Yebone, the committee also checks if the applicant borrower does not already have a loan with the micro-finance fund operational there. Proposal often are for small enterprise activities, such as pig raising or setting up a village shop. Monthly interest (2%) has to be paid and returned in full after the agreed upon period of 3 months, 6 months, or 1 year. The committee monitors if loans are used as promised. The success rate in Yebone is best known

as it operates since 2013 and members are paying interest and are returning their loans, explaining its growth (see Figure 3). The leader of the revolving fund is now receiving an annual stipend of 110,000 kyat for her labors. The link to CF development is still weak, but some fire break establishment, weeding and natural regeneration is supported from the fund.

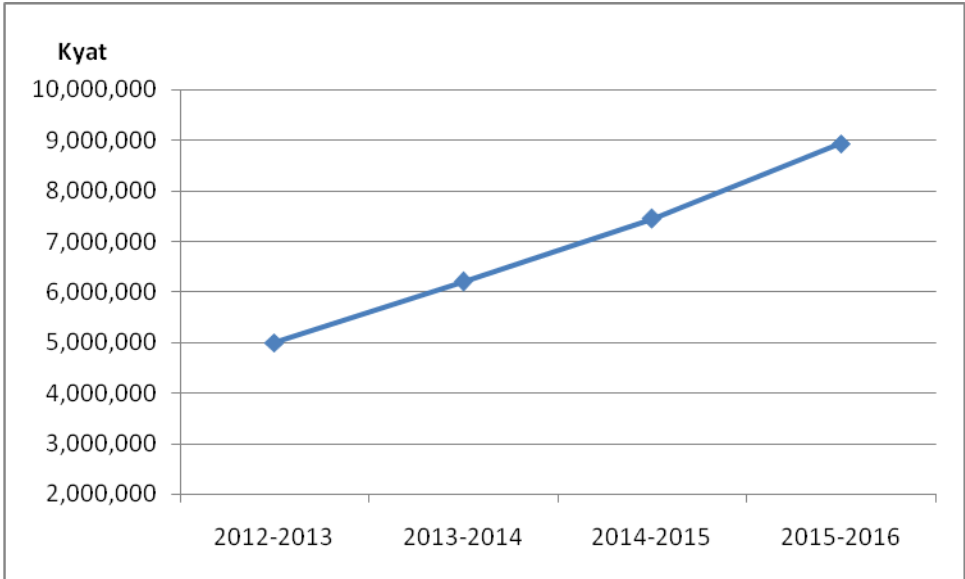


Figure 3: Revolving fund growth in Yebone village (Source: TNRP presentation 2015)

The communities occupying the middle ranges outside of the reserve have had a long and profitable history with Thailand during the conflict era when illegal trade and smuggling were rampant. With peace in the area many villagers from this area still migrate to Thailand to find employment and important remittances. Orchards and home gardens consist of cashew nut, rubber and betel nut. With slumping rubber prices and cashew becoming less productive, interest currently mainly lies in managing betel nut palms. Due to a scarcity of flat land arable for diversified crops for villagers dwelling around TNR area, *taungya* (shifting cultivation) is practiced. Land tenure/titles are not secured for local communities even though orchards in the Reserved Forest are traditionally being managed by their ancestors since decades.

Conditions surrounding the reserve are favorable for rubber and oil-palm and the local government has promoted to grow them at commercial scales with private sector investments receiving exclusive land property rights even moving into established horticultural farms of local residents. Many local residents lost their lands previously held under the traditional acceptance and several land disputes emerged. Socio economic research in the area shows that major issues and threats are: infrastructure development, illegal logging, shifting cultivations, commercial plantations, dam construction and large-scale mining activities.

## 2. METHODS USED

With economies becoming more complex and integration into regional/global supply chains and a growing demand for local goods there is a tendency of inequity and increased poverty for those who are unable to keep up or are disconnected from the information necessary to make a living.

To understand the opportunities for CF communities to develop forest products and improve their livelihoods two main methods were used for this research. To acquire insights in the current forest livelihoods the Sustainable Livelihood Approach (SLA) provides an insight in communities' available assets (human, physical, social, natural and financial) they possess to plan livelihood strategies and consider external conditions (policies, institutions, weather, markets) affecting them, and thus provides for some sort of a socio-economic baseline. A systematic process of forest product identification and selection was undertaken in which a set of criteria (similar as the livelihood assets) were assessed in determining if a product could be developed successfully. As a result a shortlist of products is obtained which have a high potential for developing livelihoods. Selected key products (2) are further researched through the Value Chain Analysis (VCA).

A value chain describes the full range of activities required to bring a product from the CF producer to the consumer (called actors), emphasizing how value is realized and how well relations are established between the chain actors. A value chain (VC) examines who are the actors in the forest product/service chain, what activities they carry out, what their profitability levels and opportunities are and what constraints they face in terms of regulations, investment in human capital and infrastructure. To some extent the VCA brings together the data and information generated by community-level research (i.e. SLA) and market analyses. It is a flexible tool useful in identifying key constraints and opportunities within a forest product value chain.

VCA allows for creating an understanding of the dynamics of income distribution and policy environment. In this context the VCA focuses on analyzing the current impact of 2 forest product value chains from the point of view of the people engaged in CF, and intends to identify leverage points to make the chain work better for the CF communities and where possible more successfully benefit from markets. The research and the resulting information is critical in empowering actors in the chain, and informing regulators, policymakers and development agencies to develop interventions that will have sustainable and equitable implications.

The objectives of value chain analysis are to:

- Identify the main actors or organizations in the value chain from the input provider to the community forestry producers to the final consumer and describe their specific activities.
- Identify the different routes to commercialize a forest product/service, which could be what currently exists and what potentially is available or could be developed.
- Assess how well the value chain is working for the different actors based on their established relationships

In terms of improving the value chains for the poor, to identify ways to:

- Increase the total amount and value of products that the CF communities sell in the value chain
- Sustain the share of CF communities in the chain or increase the margins per product, so that they do not only gain more absolute income but also relative income compared to other actors in the value chain.

VCA is thus a governance tool trying to discover and address the nature and inequalities between actors in the chain. By focusing on all links in the chain (not just on production) and on all activities in each link (for example, the physical transformation of materials in the production stage), it helps to identify which activities increase profits, and which are resulting in loss. As a result of these insights appropriate choices and interventions as well as policies can be developed.

The steps of VCA (based on SLA results) carried out for this research:

- Desk study on identified forest products
- Prepare interviews in Myanmar language for: communities, collectors, traders, wholesalers, government offices (Dawei forest department and TNRP), and in collaboration with TNRP staff identify particular villages, collectors and traders for interviews.
- The initial stages of the analysis take place in the community to identify the important traders and markets and develop an understanding of how familiar the community is with the chain beyond this initial market point of contact.
- Subsequent stages of the analysis are undertaken with traders and at markets identified with the community to determine what happens to the forest product/service and who is involved. The research consequently moves to the next actor along the chain, continuing until wholesalers and retailers.
- Once a chain has been mapped from producer to consumer, data gaps are identified and filled with either primary or secondary data.
- The VCA results eventually should be presented and discussed with the community, and where necessary modified.
- Where appropriate, the results from the value chain analysis should be disseminated to local authorities and forestry policy decision makers.

### 3. CURRENT STATUS OF COMMUNITY FORESTRY LIVELIHOODS & IDENTIFIED PRODUCTS

Results of this chapter is based on interviews carried out with pilot communities, SLA and product identification/selection.

From the ‘Enhancing Livelihoods through CF’ (ELM) training held between Jan. 23-28 ELM for TNRP staff and WWF staff key [total 24 staff] six key forest products were identified in various sessions (see training report). Criteria used to identify these key products were: access to natural resources (N), access to market (M), access to technology (T), available labor (H) and physical conditions (P) while considering policies affecting forest products during the whole training. To select the most promising products for developing community enterprises each product was assessed by TNRP staff based on the criteria. They were asked to assign a high score for a positive feature while a criterion represented a major constraint it would get a low score or none at all.

The resulting scores are only to be used as indicators of strengths and weaknesses and not a precise measuring tool. The highest scores indicate the products with the least constraints and therefore the most economically viable to develop by local communities. Figure 4 shows the scores per criteria and Table 2 the total criteria scores of each product.

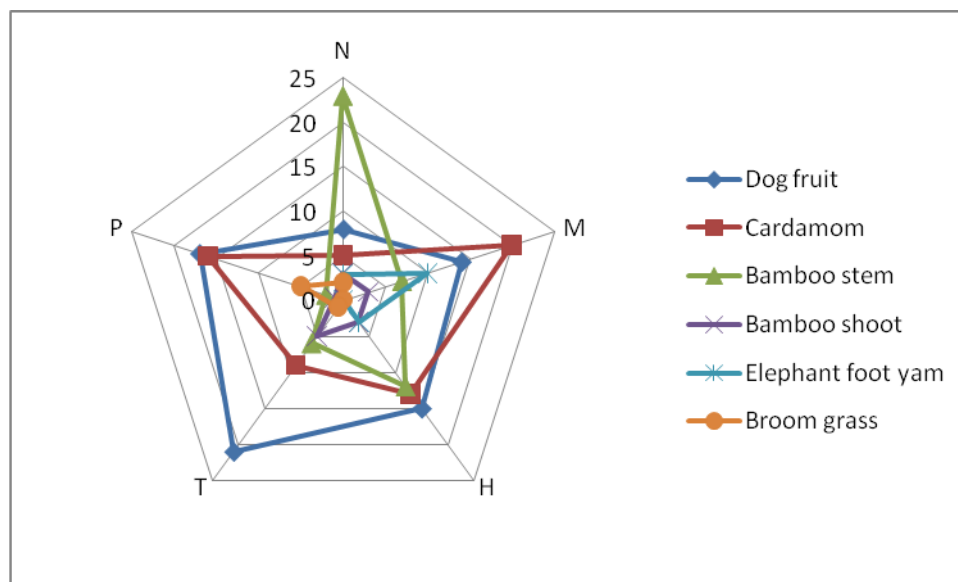


Figure 4: Livelihood assets of key forest products identified in the ELM training (scale is arbitrary).

#### Notes:

- Dog fruit has a reasonable good market and supply of fruits (mainly from natural forests in TNR), it is also a product well known by Myanmar people and many local communities (both women and men) collect it, with a good access to the forest area and road for collectors to collect the fruits from the villages.



- Cardamom has a good market, and involves a reasonable amount of people in TNR, some locals have developed skills in terms of drying (but not yet 100% quality), the plants are found in many places in the reserve and light to transport for both women and men.
- Bamboo is found in large supply, with fair amount of mainly men collecting the stems.
- Elephant foot yam extensively traded in the north of Myanmar has a reasonable good market (dried chips, pounded).

**Table 2: Ranked forest products signifying the overall importance for local people's livelihoods and opportunity to develop into potential community enterprises.**

Priority	Key forest products identified by TNRP staff	Total score*
1	Dog fruit	46
2	Cardamom	43
3	Bamboo stem	29
4	Bamboo shoot	14
5	Elephant foot yam	10
6	Broom grass	5

*\*TNRP staff each had two votes to score each criteria for key products.*

Usually, a single product will not satisfy the needs of all community members, especially in a heterogeneous social context. For instance in an exercise in the ELM training participants identified that most community members have a preference for cardamom but when elderly women were considered they would choose elephant foot yam. It thus is important to select several products to develop for each target group or interested potential community entrepreneurs. However, the top ranked products dog fruit and cardamom were identified to carry out a detailed value chain research as requested by TNRP.

NTFPs are for additional cash income and collected and traded when in season see Table 3.

**Table 3: Seasonal calendar of key forest products in TNR (Source: Thet, 2010)**

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

#### 4. ANALYSIS OF SELECTED PRODUCT VALUE CHAINS

This chapter displays and describes the cardamom and dog fruit products and value chains, the actors and their function in the chain as well as some typical characteristics in terms of capacities, organization and the level they benefit from engaging in the product trade. The enabling environment concerning both products is combined towards the end of this chapter with a provision of opportunities and constraints.

##### General information of both products

It is estimated that most TNR villages collect NTFPs for sale from the middle and southern parts of the reserve, with some of the largest villages being Kaleinaung and Yarphu subtownships. The main NTFP traders are housed in Kampauk villages and Kaleinaung subtownship, and both source from TNR but also from villages located west of the reserve. Southern villages either sell to Dawei or Yebyu traders

##### 4.1. Cardamom



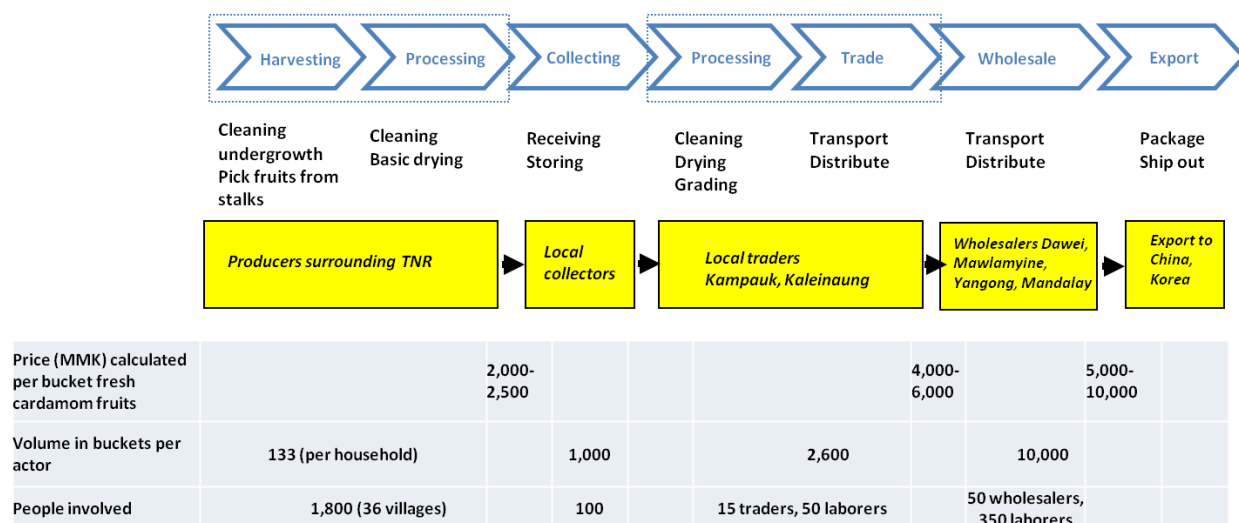
**Cardamom plants in forest, dried fruits and dried seed.**

Sources: Copyright 2016 Pukka Herbs<sup>1</sup> and Sa Tin Min Aung

Cardamom or *phalar* in Myanmar language (scientific name: *Amomum villosum* – but there are many *Amomum* species and are easily confused) is a well known forest product used for centuries as a food spice and as traditional medicine in particular in China, India, Korea, and Vietnam. It is a perennial herb and member of the ginger family which requires half shade from forest trees to grow well and produces quality fruits. Cardamom is traded in various forms, as immature fruits (lowest quality collected early in the season), mature fruits and seeds (whole or broken) and is traded mainly in Asia and Australia. More information is found in Annex 3.

The value chain depicted in Figure 5 follows the fresh cardamom fruits harvested in TNR. The VC map includes prices (Myanmar Kyat per bucket) received for the fresh and dried cardamom fruits (2 buckets fresh cardamom produces 1 viss of dry cardamom), and is calculated in buckets to trace the share of each actor in the cardamom trade [*Price (MMK) calculated per bucket fresh cardamom fruits*]. The volume of cardamom produced by each actor is also presented per bucket and is calculated per individual [*volume in buckets per actor*], while sharing the total amount of individuals per actor [*people involved*]. The diagram is followed by a detailed description of each actor group in the chain and an individual actor assessment.

<sup>1</sup> <http://www.pukkaherbs.com/pukka-planet/pukkapeda/cardamom/>



Note: Trade to Yangon is 10% and Mandalay 90% in terms of volume, estimated to be in total 3 million viss (1,800 tons) per year

**Figure 5: Cardamom value chain emerging from Tanintharyi Nature Reserve**

#### 4.1.1. Description of the cardamom value chain and its actors

##### Community harvesters TNR

Individuals but sometimes organized groups from the villages collect cardamom fruits between August and October from the forest area in TNR. Some fruits are also collected in CF areas, but in most cases there is not sufficient tree cover to grow cardamom. Harvesting is very simple, using bags and buckets to collect the fruits in and knives or scissors to remove the fruits from the fruit stalks. Both men and women collect the small fruit clusters (2 inches tall) and carry these either to the village or like in the case of Michauhlaung village (Kayin ethnicity) dry the cardamom fruits in the CF area on bamboo frames over an open fire. Both immature and mature fruits are collected, but immature fruits are according to the CF regulations (i.e. Zimba village) not allowed to harvest as it both reduces volume and quality of potential production.

##### Collectors TNR

Collectors are often local community members who in close contact with local traders buy both the fresh and dry cardamom from the community harvesters. Collectors gather the cardamom until sufficient amounts can be shipped to the store of the traders. When harvesters require advances before they harvest the cardamom they can obtain these from the local collectors. Some collectors then pay a reduced price as compared to the price offered normally, which allows the collector to build up a profit and themselves pay back their loans. A few collectors also dry the collected cardamom on metal sheets they invested in. The collectors are sometimes landless people but also shop keepers in the villages and specialized in setting up trade relations with both traders and harvesters.

### Local traders TNR

Local traders buy both fresh and some dry cardamom mainly through local collectors and sometimes from organized harvesters (i.e. Michauhlaung village). Shipments are collected by truck after collectors contacted the traders, with costs of transport covered by the trader. Traders provide advances to collectors, often as many as 100 at the time, depending on the level of trust the amounts advanced can vary. Many traders employ local labor (men and women) to clean, dry, grade the cardamom and have invested in drying installations (open air, charcoal and firewood ovens) and storage facilities. Once products are ready for transport they ship them to trading houses and wholesalers in Dawei, Mawlamyine, Yangon and sometimes Mandalay.

### Trading houses / wholesalers in Dawei and Mawlamyine

Trading houses and wholesalers buy the dried cardamom fruits and seed from local traders or to each other. They trade in a multiple of seasonal products and cardamom is a small part of their business, dominated by betel nut, cashew nut and rubber sheets, similar as upstream actors in TNR. Cardamom is sold to Mandalay wholesalers (90% of the total volume) and to Yangon markets (10% of the volume). Well established contacts with wholesalers in Yangon and Mandalay allow the trading houses to use market information to profit and remain somewhat secretive to local traders.

### Yangon wholesalers

Wholesalers buy dried cardamom (seed or fruits without cover and dried fruits with cover) from various locations in Myanmar, with Thangoo the most famous, followed by Kayin state. Tanintharyi originating cardamom is often mentioned as low in quality blaming the collection of immature fruits and basic drying techniques by local communities. Through Dawei and Mawlamyine wholesalers cardamom products from Tanintharyi arrive in Yangon at Bayint Naung Warehouse area, where cardamom is further distributed to Teintgyi market in Yangon where it is sold as medicine. The better quality seed (maximum 20% broken seed; based on interview with: Mr. Sein Win, Midland Shwe Pyi Trading co.,Ltd) is exported to Korea and Japan where it is used in traditional medicine.

### Mandalay wholesalers and exporters

In Mandalay Chinese agents trade the cardamom through Muse in Shan State to China. At the time of the report no interviews and additional information is available.

#### **4.1.2. Value chain assessment**

Table 4 provides an overview of the cardamom value chain assessment in terms of capacity, opted challenges and opportunities of each of the actors.

**Table 4: Assessment per cardamom chain actor**

Value chain assessment per actor	Harvester TNR	Collector TNR	Trader TNR	Wholesaler Dawei, Mawlamyine ,Yangon
Price share	• Receives roughly a ¼ of	• Receives a handling	• Receives roughly a ¼	• Receives roughly half

	the final price – there is not much fluctuation in price but a steady increase over the years.	fee but does not actually buys or sells cardamom.	of the final price mainly from drying.	of the final price. • For export additional drying is required.
<b>Level of organization</b>	<ul style="list-style-type: none"> <li>Sometimes harvest in groups, but no organization in collective management.</li> </ul>	<ul style="list-style-type: none"> <li>No official organization but agreement amongst collectors to divide volume of products equally</li> </ul>	<ul style="list-style-type: none"> <li>Work in unity together in setting the prices.</li> </ul>	<ul style="list-style-type: none"> <li>Wholesalers in the region and Yangon/Mandalay share up to date information mainly.</li> </ul>
<b>Skill level</b>	<ul style="list-style-type: none"> <li>Basic drying methods results in low quality and lower prices.</li> </ul>	<ul style="list-style-type: none"> <li>Basic, but tendency to be entrepreneurial, many women involved.</li> </ul>	<ul style="list-style-type: none"> <li>Business capacity and drying and storage facilities in place for multiple products.</li> </ul>	<ul style="list-style-type: none"> <li>Business capacity well developed based on contacts.</li> <li>Little actual added value takes place.</li> </ul>
<b>Opportunities</b>	<ul style="list-style-type: none"> <li>Improve drying techniques.</li> <li>Cultivate in gardens to control quality and quantity.</li> <li>Active management in core zone is a conservation practice in favor of park policy.</li> </ul>	<ul style="list-style-type: none"> <li>Potential entry point for TNRP to stimulate entrepreneurship at local level.</li> </ul>	<ul style="list-style-type: none"> <li>Engaged in multiple seasonal products and well versed in trade. Good local network.</li> </ul>	<ul style="list-style-type: none"> <li>Insight in market developments.</li> </ul>
<b>Constraints</b>	<ul style="list-style-type: none"> <li>No available land to cultivate cardamom.</li> <li>Uncertain benefits from natural forest due to “first comes first served” phenomenon and irregular quantities.</li> <li>Forest fires threaten cardamom plants.</li> <li>Lack of finance to invest.</li> </ul>	<ul style="list-style-type: none"> <li>Revolving fund is too small to invest in expansion (larger volumes).</li> <li>Other loans require high interest rates.</li> <li>Some are landless.</li> </ul>	<ul style="list-style-type: none"> <li>Limitations in accessing wholesale market due to lacking information.</li> </ul>	<ul style="list-style-type: none"> <li>Secrecy in terms of market information.</li> </ul>

#### 4.1.3. Gender issues and social inclusion

The sector in terms of social inclusion provides more or less the same opportunities for women and men, but also for the young and elderly. Cardamom fruits are a light product and provide for rather easy access opportunities for all members of the communities in and around TNR. In terms of trade it seems that women have the most knowledge of the volumes traded and price trends of the seasonal forest products. Female collectors seem to play an important role in bridging the trade between harvesters and traders. In fact in all interviews held – including for dog fruit – there was an equal representation of women and men providing the research team with information.

#### 4.1.4. Chain governance in value chains

The market is dominated by the wholesalers in Yangon and Mandalay who provide price information to upstream actors, even though local traders and collector have their own connections in Dawei and Mawlamyine to consult the latest prices. Each actor expressed to be satisfied with the price of cardamom and hardly ever face any challenges. This maybe surprising with plenty complaints from downstream wholesalers on the quality of the dried cardamom or its immaturity, but with cardamom always in demand traders will accept almost always lower qualities and immature fruits, offering a slightly lowered price. With a demand higher than supply each actor is trying to keep the relations they

have. This is also demonstrated by the provision of financial advances to both harvesters and collectors to ensure supply is guaranteed.

#### **4.1.5. Competition**

Cardamom is mainly collected from TNR with perhaps a sole individual growing it under agro forestry canopy. Unlike Kayin State, Taungoo (Bago Region) and Shan State where cardamom gardens are managed, time and land are the scarce factors for communities surrounding TNR to invest in actively manage such gardens. Wholesalers complain about the quality from TNR and shared that they pay lower prices of between 1,500-2,000 kyat per viss (dry) as compared to Thangoo (Bago). Most wholesalers stressed that cardamom from Dawei gets the lowest price because of quality of fruit/seed while Taungoo gets the highest price, although some suggest that the species may be different.

In terms of Asian competition India exports high quality cardamom seed to Myanmar, which has a value double than that of Dawei originating cardamom. India produces cardamom from Kerala, West Bengal and Sikkim, while Nepal, Sri Lanka and Papua New Guinea are also large producers in the region which have invested in high producing gardens. India mainly produces for its domestic market (95%)

#### **4.1.6. Market trends**

For years China has been importing wild cardamom from Myanmar, Vietnam and Laos and without demanding high quality product standards. With the Chinese economy recently showing signs of stagnation some traders expressed some concern, but they have not looked at alternatives. This can be explained that cardamom is a seasonal product and in terms of volume does not compete with betel nut – which at community level earns 10 times as much than cardamom.

Korea and Japan buy better quality cardamom seed and offer better prices. The research team only identified one export company in Yangon with solid contacts in Korea, but the market demand looks promising according to its President.

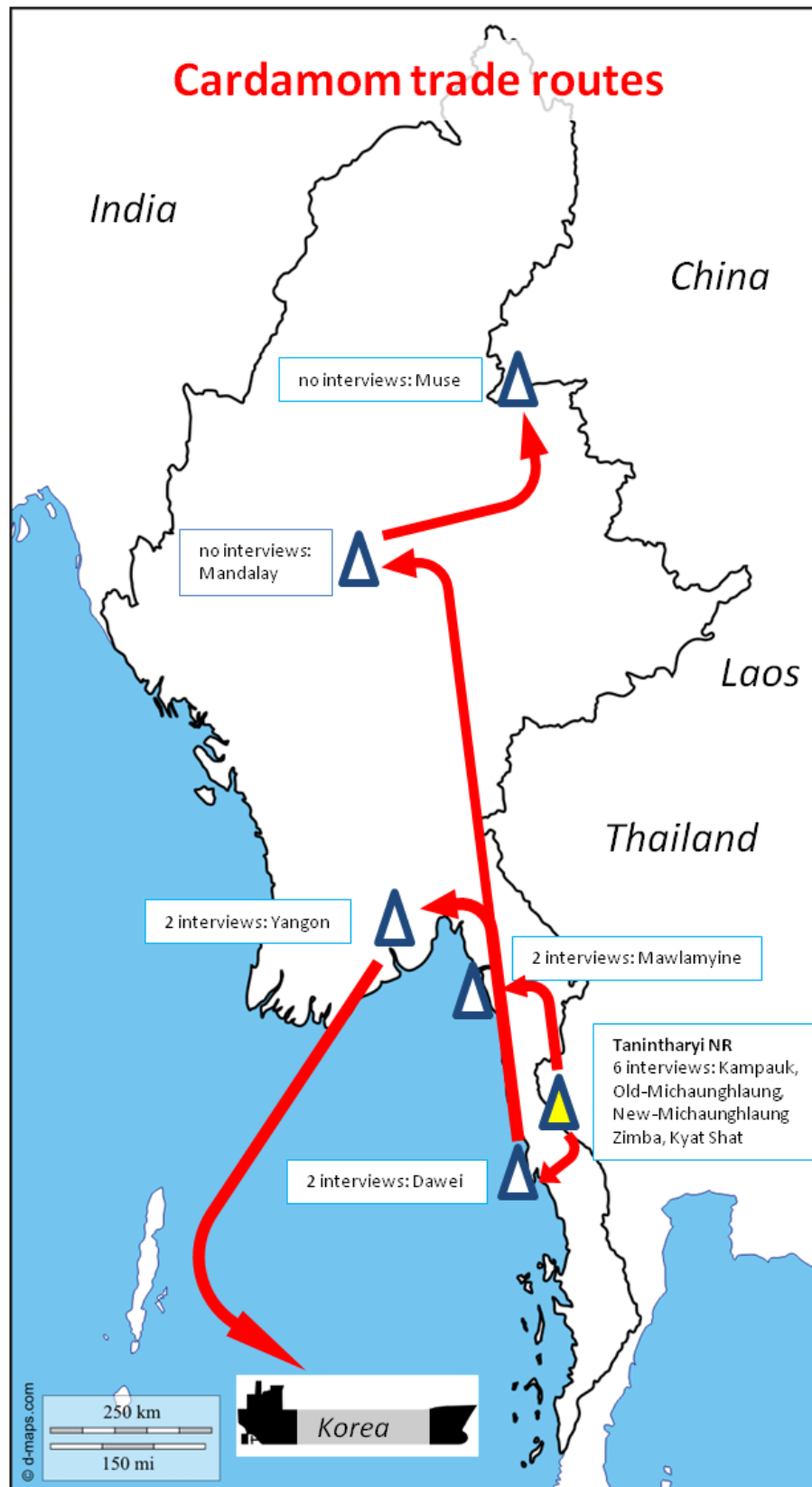


Figure 6 : Trade routes of cardamom in Myanmar

## 4.2. Dog fruit



**Dog fruit pods, seed and a typical Myanmar dish.**

Sources: ©FAO/Yunita Kopjanski; hariquang.wordpress.com; <http://health-and-beauty-information.blogspot.com><sup>2</sup>

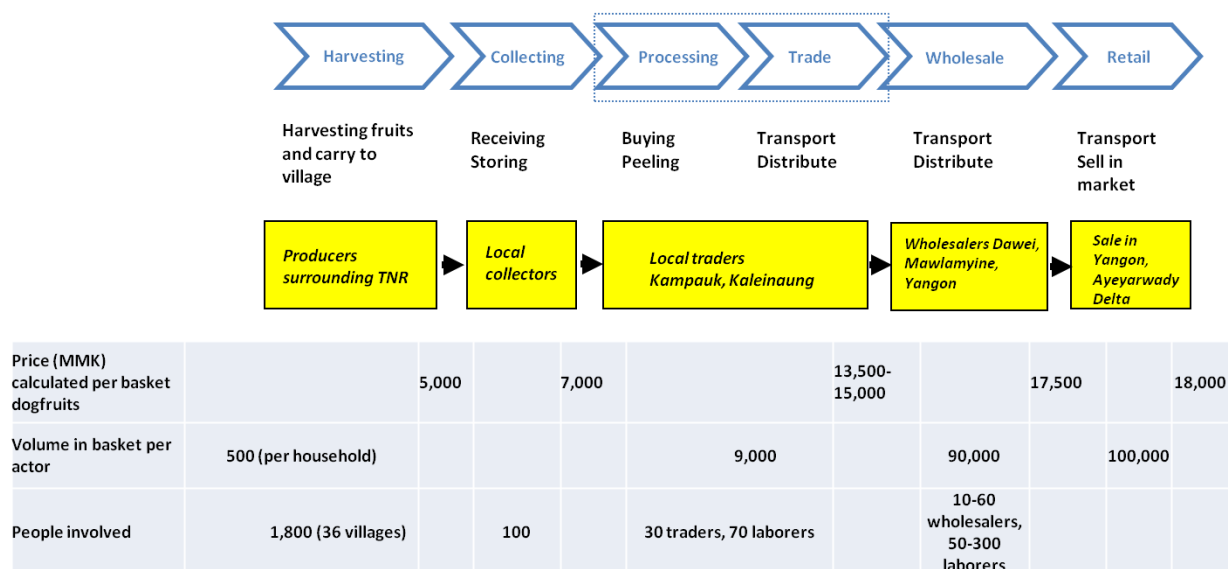
Dog fruit, *da nyin* in Myanmar language (scientific name: *Archidendron jiringae* (Jack) I.C. Nielsen) is a typical Myanmar product with its own domestic market. Dog fruit is a type of bean of which seeds are eaten raw (young seeds only) or fermented. Trees are grown in many parts of the country either naturally or in orchards and a range of varieties exist. The trading season starts slow but after April the volume sores and prices become unpredictable. Immature fruits, mature fruits and seeds are all traded. More information is found in Annex 4.

The VC map (Figure 7) includes prices (Myanmar Kyat per basket) received for the fruits and seeds (2 baskets of dog fruits is equal to 1 bag; and 5 bag of fruits produces 1 bag of seed), and is calculated in baskets to trace the share of each actor in the dog fruit trade [*Price (MMK) calculated per basket dog fruits*]. The volume of dog fruit produced by each actor is also per basket and is calculated per individual [*volume in baskets per actor*] while sharing the total amount of individuals per actor [*people involved*]. The diagram is followed with a detailed description of each actor group in the value chain and individual actor assessment.

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<sup>2</sup> <https://www.flickr.com/photos/faoforestry/19263230822>; <https://hariquang.wordpress.com/tag/dogfruit/>; <http://health-and-beauty-information.blogspot.com/2013/06/benefits-and-dangers-of-consuming.html>





*Note:* Trade in fruits is 70% and 30% in seed in terms of volume, estimated to be in total 6.5 million bags per year

**Figure 7: Dog fruit value chain emerging from Tanintharyi Nature Reserve**

#### 4.2.1. Description of the dog fruit value chain and its actors

##### Community harvesters

Throughout April-July groups of 5-10 mixed men and women collectively harvest the dog fruits from the CF, core zone and sometimes from their own gardens. When in the forest they often stay for several days and nights. Dog fruits are collected by climbing the trees and removing the fruit pods with a knife from the branches. Both unripe and ripe fruits are picked, however sometimes trees are cut down for easy collection of fruits. After the harvest they carry the fruits back in buckets and sell them to the collectors. The harvesters do not peel the fruits but quickly sell them off.

##### Collectors

Local collectors living in the villages where dog fruits are collected receive the supply from the harvesters and contact the trader who sends transport to carry the fruits to his store. The collectors pay the harvesters based on advances received from the local trader. No adding value such as fruit peeling takes place.

##### Local traders

Trading of dog fruits can be hectic and risk full business for local traders. The initial supply of young fruits from Tanintharyi starts slowly just before the Myanmar New Year, however soon after most parts of the country also start producing a supply boom results in dropping prices which find their way back up in the supply chain. Local traders provide advances to collectors to ensure steady supply of fruits throughout the season. Some traders engage female laborers in peeling the fruits.

##### Trading houses / wholesalers in Dawei

Many trading houses or wholesalers collect fruits and seeds from collectors in the Tanintharyi region, but generally they the products from the local traders from all over the region. Once they received the bags they transport these as soon as they can (within 3 days) to Yangon or Ayeyarwady Delta to prevent the fruits from going bad. They however first pay for the products before they receive the most up to date price information from the Yangon retailers. This is particular a feature when supply in country increases rapidly and can result in unpredictable losses.

#### Yangon retailers

A unique feature in how the Yangon retailers operate is that they solely provide a service function for which they request a fee of 10% of the total trade they obtain from the local traders and trading houses in the region. They act as a vendor to Thirimingalar market but also service other parts of Yangon and Ayeyarwady Delta and Bago region.

#### **4.2.2. Value chain assessment**

Table 5 provides an overview of the dog fruit value chain assessment in terms of capacity, challenges and opportunities of each of the actors interviewed.

**Table 5: Assessment per dog fruit chain actor**

Value chain assessment per actor	Harvester TNR	Collector TNR	Trader TNR	Trade house Dawei	Retailer Yangon
<b>Price share</b>	<ul style="list-style-type: none"> <li>Receives ¼ of final price</li> </ul>	<ul style="list-style-type: none"> <li>Mainly receives a service fee (5%)</li> </ul>	<ul style="list-style-type: none"> <li>Receives 40% of the final price (but can 0% in some years)</li> </ul>	<ul style="list-style-type: none"> <li>Earns between 1-5% of the final price, no actual added value takes place here.</li> </ul>	<ul style="list-style-type: none"> <li>No risk handling fee earns a guaranteed 7-10% of the trade value sold in Yangon.</li> </ul>
<b>Level of organization</b>	<ul style="list-style-type: none"> <li>Group collection of fruits and profit is shared.</li> <li>CF committee observes the sustainability of the harvesting.</li> </ul>	<ul style="list-style-type: none"> <li>Collector helps with bamboo raft to carry dog fruit out the forest.</li> <li>Advanced payments to harvester if requested.</li> </ul>	<ul style="list-style-type: none"> <li>Advanced payments to collectors if requested.</li> <li>Not organized in a union and unable to control prices.</li> </ul>	<ul style="list-style-type: none"> <li>Not organized in a union and unable to control prices.</li> </ul>	<ul style="list-style-type: none"> <li>Traditionally earns a commission to receive and distribute dog fruit (no actual selling).</li> </ul>
<b>Skill level</b>	<ul style="list-style-type: none"> <li>No particular skill required.</li> <li>Management training has been provided by TNRP.</li> </ul>	<ul style="list-style-type: none"> <li>Basic, but tendency to be entrepreneurial, women involved.</li> </ul>	<ul style="list-style-type: none"> <li>Peeling is done by women hired as laborers.</li> <li>Need to act fast to maintain quality and on price fluctuations.</li> </ul>	<ul style="list-style-type: none"> <li>No technology known to salt, can and store the seeds (for more information see text box <i>Look-niang-dorng</i>).</li> </ul>	<ul style="list-style-type: none"> <li>Well established network in Yangon, Bago and Delta.</li> </ul>
<b>Opportunities</b>	<ul style="list-style-type: none"> <li>Tanintharyi is one of the first regions in the country to produce dog fruits.</li> <li>Shwebo (Sagaing) prefers the sticky</li> </ul>	<ul style="list-style-type: none"> <li>Potential entry point for TNRP to stimulate entrepreneurship at local level.</li> </ul>	<ul style="list-style-type: none"> <li>Good connections with collector and harvesting communities.</li> </ul>	<ul style="list-style-type: none"> <li>Mature fruit can be stored longer (3-5 days) than young fruits – still not advised.</li> </ul>	<ul style="list-style-type: none"> <li>Apparently there is a processing plant in Yangon able to ferment seeds</li> </ul>

	variety of dog fruit from Mon (and Tanintharyi?) State. <ul style="list-style-type: none"> <li>• Active management in core zone is a conservation practice in favor of park policy.</li> </ul>				(needs follow up).
<b>Constraints</b>	<ul style="list-style-type: none"> <li>• Dog fruits production reducing, as some trees are cut down.</li> <li>• No land tenure rights so first comes first collect.</li> <li>• Beans can't be stored long as they can shrink and rot.</li> <li>• Weather can affect production.</li> </ul>	<ul style="list-style-type: none"> <li>• Revolving fund is too small to invest in expansion (larger volumes). Other loans require high interest rates.</li> <li>• Some are landless.</li> </ul>	<ul style="list-style-type: none"> <li>• Up to date price information from Yangon and Dawei is sometimes shared too late.</li> </ul>	<ul style="list-style-type: none"> <li>• Competition from Thailand and other regions in Myanmar (Kachin state mainly with orchards).</li> </ul>	<ul style="list-style-type: none"> <li>• Product quality rapidly decreases once arrived in Yangon.</li> </ul>

#### 4.2.3. Gender issues and social inclusion

Like with cardamom and many other forest products (except bamboo stems and rattan) women are more or less similarly involved in the harvesting and trading of the dog fruits. Employed by local traders, women from the surrounding villages peel the fruits and separate the beans. Everyone, member or not of the CFUG or landless can collect dog fruits which grow throughout the forest in the reserve. Some villagers have integrated dog fruit trees in their orchards and have more control and less need for collecting wild produce. The only way less fortunate villagers may suffer is when prices of dog fruit drop too low and no income is gained as a result of oversupply elsewhere in the country.

#### 4.2.4. Chain governance in value chains

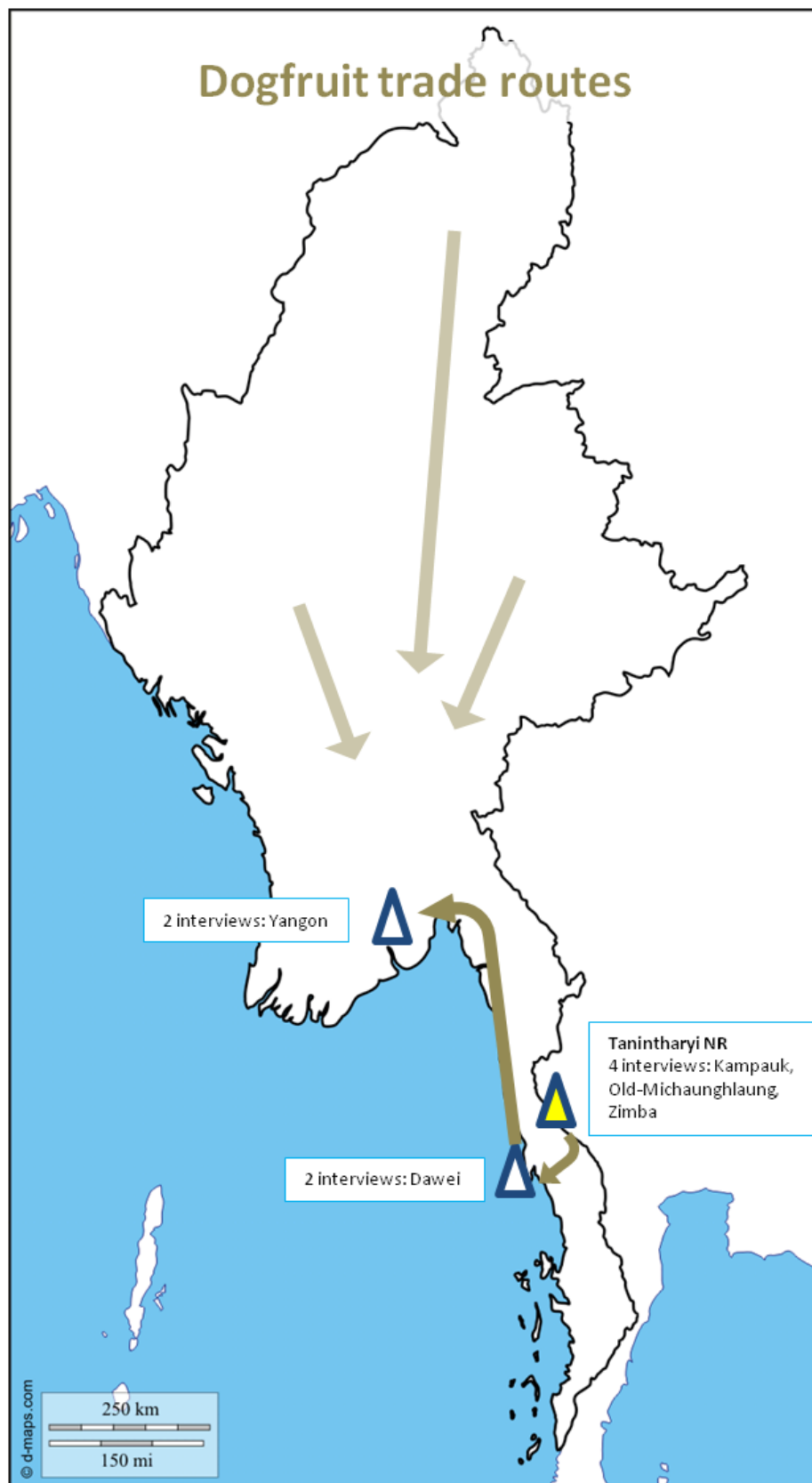
Yangon, the main collection point of the country for dog fruit, more or less controls the market, as retailers receive the supply from all parts of the country and are in direct contact with consumers. When they observe an increase in supply retailers start to reduce prices and delays of transferring this information to upstream actors can lead to losses by local wholesalers and traders. Dog fruits at the same time have a short shelf life and the speed of which information travels is crucial, as the fruits can't be stored for more than 3 days, thus not allowing traders to wait for a price increase, which is possible for dried cardamom.

#### 4.2.5. Competition

Only early in the fruiting season can Tanintharyi benefit, being the first to produce in the country. Within weeks however when northern regions and states start to produce the price of the fruits start to fall, even up to 500 kyat in 1-2 days. Kachin state famous for its dog fruit orchards has more control over its production and can probably wait out fruit collection by leaving them on the trees depending on the supply situation in the country. Towards the end of the season imports arrive from Thailand through the Myawaddy-Mae Sot border crossing selling dog fruit at somewhat higher prices.

#### **4.2.6. Market trends**

As discussed in previous paragraphs dog fruit knows highly fluctuating prices caused by demand and supply, leading to low prices when all parts of the country supply fruits to the market. The latter is said to happen once in 3 years when trees know mast years. All villages interviewed near TNR mentioned on various occasions they stopped harvesting fruits from the forest when the price is too low. Only some who have trees in their orchard still traded fruits but laborers employed by traders did the collecting instead after agreeing on a fix price. For instance a Kampauk trader pays 4,500 kyat/basket in advance to collect all fruits from the trees in the orchard, which is 500-1,000 cheaper then when villagers collect.



## 5. ENABLING ENVIRONMENT

TNR is a conservation area in which local people collect and trade forest products from both CF and the core zone. TNRP recognizes that this might be against the forest law but allows non-destructive harvesting as it operates in a sensitive area where people not that long ago tried to survive in a conflict ridden era. Although TNRP aims for the communities to operate in the buffer zone areas where CFs are established, another 26 villages have not officially received the CF certificate. There are outreach programs run by TNRP which stimulate livelihood activities, established revolving funds and promote amongst others the cultivation of elephant foot yam, but not all communities are fully involved and can benefit. Some CF areas are still degraded and lack cardamom or other shade tolerant plants to be promoted; however iron wood (*Xylia dolabriformis* Benth or “Pyinkado” in Myanmar language) and mahogany (*Swietenia* species) are grown by CFUGs.

The National Forestry Master Plan (2001-2031) (MOECF/FD, 20011) provides guidance for the management of minor forest products (or NTFPs) in district forest management plan or so called Working Cycle (time frame 10 years). At national level the total area of managed NTFPs (combining all district management plans) was 1,796,845 acres in 2005-2006, and up to 3,057,204 acres in 2010-2011, taking in consideration that the NTFP working cycle can overlap also with the forest production working cycle. No clear instructions per forest product exist but there are plans to demarcate the working cycles depending on available products (i.e. bamboo, cardamom) in the future. Although managed by the state local communities are able to benefit from NTFPs for subsistence use, but also for starting small business enterprises. However, community benefits from NTFPs have not excelled in terms of income due to lacking added value opportunities and export of raw produce. Foreign exchange income from NTFPs (i.e. rattan, bamboo and 11 other products) counted for: 10,965,700 dollar for the period of 1997-2000.

For the forest sector to contribute to the countries' GDP a forest product quota system and tax system is the official mechanism for FD States and Regions to collect revenues, and is shared out amongst the various regions. In reality such a mechanism is not suited to meet a particular situation on the ground nor is it based on sound forest resources data. This has lead that reported revenues may not necessarily come from the actual product taxed. Tax levied is meant to be 25% over the price of forest product transported between states and regions, but in reality traders can negotiate a lower rate than the actual market price. Cardamom is taxed (figure 9) but not for dog fruit, which is not clear why. Normally products cultivate on own land are not taxed by FD, but neither product is cultivated in Tanintharyi Region.

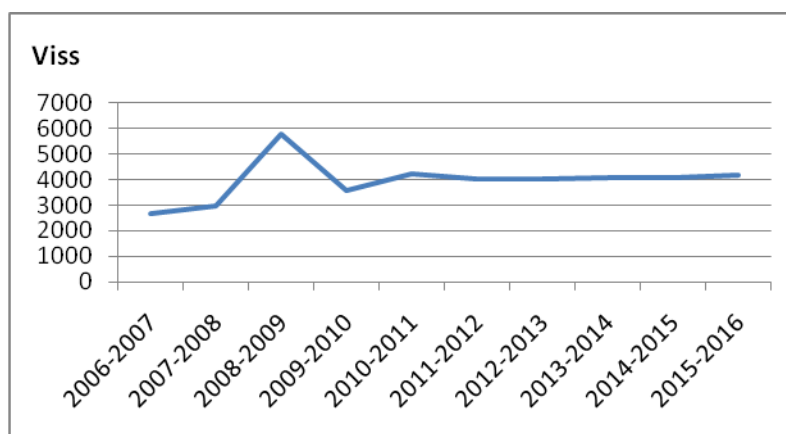


Figure 9: Taxed Cardamom in Dawei (Viss)

When traders want to trade forest products they need to apply for a license for which there is no fee. Normally FD needs to monitor forest product harvesting at township level, its trade by establishing check points but due to security issues in the area this is not happening. Once products are traded from the village the local trader pays for a “value ticket” at the local township FD which represents the tax paid for forest products like elephant foot yam and cardamom. For larger scale products like charcoal, firewood, bamboo and rattan tax is paid once it is traded between states. In both instances the trader needs a removal pass. Data on volume traded between states is recorded by Dawei FD for 26 products (i.e. elephant foot yam, bamboo, firewood, charcoal, rattan and cardamom) which are mostly traded to Yangon.

The FD has no active program in place to support or provide incentives for forest product development. FD concerns itself over forest management issues, incl. forest fire protection but believes that local NGOs are engaged in livelihood development from forest products. Nevertheless, FD strongly believes that adding value to forest products is crucial to address livelihood issues, stating that successful CF is one which provides livelihood development.

The Karen National Union (KNU) operates in some of the areas where cardamom and dog fruit are collected and both harvesters and traders are required to pay tax to the KNU. This is for both actors somewhat confusing as they also pay tax to the FD. Often these taxes can be negotiated and no real issues were identified by the research team.

## 6. CONSTRAINTS AND OPPORTUNITIES IN THE PRODUCT SECTOR

Before providing some options to develop, or overcome some of the identified constraints, of each of the forest products studied, first the key challenges observed are discussed to highlight some important aspects which require attention by TNRP if cardamom and dog fruit will be selected to develop into potential community enterprises.

### 6.1. Cardamom

#### Constraints:

- Proper drying of cardamom reduces damage (broken seed, mould), saves transport costs (reduced weight) and provides the required quality to the product, especially when exported. However, the approaches and technologies applied by some communities, such as Michauhlaung village drying the cardamom fruits in the forest on an open fire on a bamboo frames is criticized by local traders in TNR and by Yangon wholesalers, as the quality is considered very low. More often than not this has to lead to a 50% decrease in prices for the communities in comparison to what is normally offered for well dried fruits.
- Both communities and local traders around TNR are reporting that supply is still low and has even slowed over the years. Reasons mentioned are mainly forest fires destroying plants, regardless that fire breaks are established in CF areas and the trainings offered by TNRP. Not all villages benefit and are actively involved in fire prevention and with also outsiders operating in the reserve fire are caused regardless. Another reason of lowered volumes is due to the collection of immature fruits, however some regulations exist with established CFUGs which try to guard that deliberate destruction and premature harvesting takes place.
- Currently no active management takes place with the wild cardamom growing in the natural forest, and not much stock is available in CF areas due to limited tree cover, a requirement of cardamom. No cardamom gardens exist inside the TNR nor outside the Reserve due to lacking land to establish them. Villagers mentioned that even under betel nut cardamom it is not preferred as the plants will hinder the collection of the nuts, still a priority crop for many farmers.
- The Chinese market (90%) is still important for Myanmar but with their economy slowing down some local traders and wholesalers are worried whether demand for cardamom will still remain intact.
- As many cardamom species exist and affect quality, more information is needed in terms of what species is found in TNR. Immature collection and inappropriate drying has been blamed without exactly knowing if species variety maybe a cause as well.

#### Opportunities:

- While the cardamom market is still rather stable with an active trade from Mandalay to China for a wide range of seasonal forest products trading with Korea and Japan provides for a promising market (incl. elephant foot yam) requiring good quality cardamom seed. Some larger



companies such as Midland Shwe Pyi Trading co. ([www.midlandshwepyi.com](http://www.midlandshwepyi.com)) in Yangon is an active trading partner.

- Midland Shwe Pyi and Myanmar Payasay Warehouse (Yangon) both mentioned that the Indian quality is preferred and varieties used have been tested for decades and maybe provide a suitable option to boost the production level in Myanmar where cardamom gardens are managed. Lessons may also be learned from Kayin state where local farmers have been tending cardamom orchards for the last 10 years.
- Cardamom is a pro-conservation forest product, without tree cover (half shade) it can't produce fruits. With forest regulations stating that no forest products can be traded from the core zone, potential incentives may be removed from communities actively promoting cardamom if TNR will enact on these regulations. This is both a potential constraint as well as opportunity, depending in how the TNRP approaches wild cardamom. If sustainable harvesting of wild cardamom is promoted local people would have an incentive to work with TNRP in ensuring forest cover is maintained and fires prevented.

## **6.2. Dog fruit**

### Constraints

- The erratic behavior of the Yangon market and the irregular supplies from all over the country makes the dog fruit trade a gamble. Some traders and communities mentioned that dog fruit knows a cycle of 3 years in which a sudden increase in fruits is available, also called mast. Within the rules of supply and demand, prices will drop. Nevertheless, traders in TNR region may in some year made losses, but when profits are made by the same traders these can range between 10,000-60,000 kyat per bag of seed.
- Dog fruit is blamed to be a difficult product to trade. Fruit pods are bulky, and the seeds are sensitive to quick drying or rot can occur when not enough ventilation is ensured during transport. It is of essence to make quick decisions when buying and transporting to maintain the quality and keep losses at a minimum which requires a sense of quick business decisions and a financial buffer to be able to survive possible losses. Such as risk full business model may for many communities not be a viable option and may need to be lead by local traders and wholesalers.
- It has been reported on various occasions that dog fruit trees are felled by local people but also outsiders to collect the fruits more easily. In CF regulations it is stated that a penalty will be given if it is reported and the culprit identified. This requires for strong CFUG organization and further capacity development.

### Opportunities:

- Dog fruit is a tree which contributes to the TNRP's objectives of conserving local flora, but like cardamom local communities in the strict sense of the law aren't allowed to harvest and commercially trade the fruits. Currently TNRP accepts that some forest products (non-timber) are collected and traded and has lead to workable partnership with local communities.

- More investigation is needed to identify long term storage of dog fruit seeds using existing technologies used in the home-industry or more advanced food processing techniques. Adding value in by appropriate food processing can prevent local people and local traders being at mercy of the market. An example from Thailand is provided in the textbox.

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<b><i>Look-niang-dorng (Thai) or fermented dog fruits processed in home industry</i></b>
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- |  |
|--|
| <ol style="list-style-type: none"><li>1. Crack the brown kernels of dog fruits and remove them.</li><li>2. Wash the beans and place them in a clean glass jar or bowl.</li><li>3. Dissolve salt (about 10% of the weight of the beans) and a small amount of sugar in water. Add to the bean, covering them. In some places rice-wash water is also added to get a better aroma, but the fermentation period and storage life are shorter.</li><li>4. Close the lid and leave the beans under shade to ferment for 10 days.</li><li>5. Storage life is 2-3 months: contains solid green beans in a cloudy solution with a salty and slightly sweet taste</li></ol> |
|--|

Source: <https://www.jircas.affrc.go.jp>

## 7. CONCLUSIONS & RECOMMENDATIONS

*[The recommendations provided here are based on the research and understanding of the research team and should be shared in a follow up workshop with community and TNR stakeholders. The discussions in the workshop should then focus on the feasibility and appropriateness for both communities and TNR. The recommendations from the workshop then need to be inserted in this chapter.]*

Forest products from the wild require active management to become productive in a way they can compete with other labor investments. For the forest products researched here there have been complaints on achieving a reliable supply (volume) caused by a lack of recognized or controlled tenure over cardamom plants and dog fruit trees and bad weather destroying plants and young fruits, but also in terms of quality due to damage by animals, outsiders and the collection of immature fruits.

If more guaranteed benefits need to be achieved from the forest reserve and CF areas, active forest management and the right to manage forest resources cannot be disregarded. Even if compromises are made between conservation approach and livelihood development approach, a potential risk may always be that the achieved incentives are not met by invested efforts. RECOFTC firmly believes that “the forest stays if the forest pays”, in other words forest need to be able to compete with other livelihood options in order for local people to actively invest in its management.

This chapter provides some thoughts on some of the observed challenges in TNRP in furthering the concept of CF and developing community livelihoods and perhaps commercializes particular forest products.

**9. Supportive policy “what products can be developed in the core zone, or are we talking strict CF boundaries?”** It must be emphasized that the products identified (including the shortlist) as part of this research, and which have commercial/livelihood options with feasible market linkages do not necessary grow in the CF only but also in the core zone where communities currently harvest from. As the forest law does not allow commercial trade this will be a critical point for consideration to overcome by TNRP.

**10. VCD “before moving forward in establishing community enterprises, communities themselves need to understand the risks”** The value chain report covers some insights for 2 key forest products currently identified by TNRP staff as important products for local people living around the reserve. The 2 products and the results of the value chain research *do not intend to promote* these products for further development. They provide new information not earlier collected and are meant to inform TNRP and local communities as inputs in developing next steps within both their capacity and existing support (human resources, budget). Important is to identify with local people themselves the most potential products in their communities as not all people have access to the same assets to engage in dog fruit or cardamom development. Based on key ELM training sessions: sustainable livelihood approach, forest product selection and value chain analysis TNRP staff need to engage with their responsible village tracts in order to get an insight in what options are within the community reach. This requires TNRP staff to facilitate workshops with local communities to make a common decision in which local people believe in and are willing to invest their scarce time/labor in

developing potential community enterprise models. It must be stressed that before working with communities in developing community enterprises they require to understand the risks of how markets work and what is possible in the TNR area. The Market Analysis and Development (MA&D) training is suitable to support both TNRP and communities, but requires more of a programmatic approach with sufficient face time between TNRP and communities who are interested. In case TNRP is interested to move into such a programmatic approach 1-3 pilot villages could be identified and act as learning site for other communities and TNRP staff. Michauhlaung (cardamom) and Zimba (dog fruit) seem to have the potential to start the pilots, but as RECOFTC is not familiar with most villages TNRP works with this requires further discussion.

**11. Forest product development “for who?”**. TNRP faces a range of challenges and in its working landscape it has to deal with a complex socio-economic situation. The target group TNRP works with is not homogenous and has a history of conflict which has recently settled. With this in mind there will be no one solution fitting all people in the same way. The ELM training paid great attention on being clear on which target group TNR staff is working with (sustainable livelihood approach), as within that particular context different socio-economic become clearer and affects the identification and selection of appropriate forest products to develop. Similar as mentioned under the previous paragraph the answer does not necessarily lie in developing dog fruit or cardamom only. Men and women, young and old, but also the various wealth classes need to be considered in developing CF livelihood options. Attention is also needed on the recently resettled refugees who are now landless and have no choice as to use the reserve and its forest products to survive. It has been opted by one of the local traders to work more closely with the forest product collectors as many of them don't own land but have developed particular skills as “buyers” of forest products on behalf of the traders who advance money for paying harvesters for their products on the spot. The collectors have enterprise skills which require knowledge of the 2 parties in the supply (harvesters) and demand (traders) game, an important human asset necessary to actually make trade possible.

**12. Staff capacity and attitude “The need for a socio-economic approach if livelihoods need to be developed: a CF Unit with new expertise?”** TNRP staff in most cases is new to the area or have little experience in participatory approaches with local people. Many staff is not familiar with CF or how communities implement CF or develop their livelihood strategies. Both paragraphs above highlight the importance of a particular skill set in order to develop CF as a viable option with appropriate analysis, creation of ownership with target groups and understanding risk in “making change happen”. A sole professional forestry mindset is not always equipped to deal with these aspects in working with local people, and RECOFTC suggest to TNRP to invest in additional capacities either by building these with staff interested in the subject or consider hiring staff that have been trained and have a socio-economic or participatory attitude already. Setting up a CF Unit could potentially support TNRP and would take on the responsibility in working with communities in developing their livelihoods in a way which works in the current TNR context and people's livelihood setting.

**13. Revolving fund “the missing link with CF”.** The revolving fund (5,000 USD per CFUG) activated by TNRP seem to work well with the CF members with Yebone village showing a good reserve building up. Other CFUGs in Kyat Shat and Zimba which received the fund there is yet to be an insight in the level of success. RECOFTC is not yet clear what the link between the revolving fund and CF is in terms of CF investments. Non forest loans are taken and paid back, but there is no clear strategy on investing the revenue in CF. Although the CFUG can decide on how to implement the exact working of the fund, however, if no investments are required in improving management or the production of forest products or no clear expectations are agreed upon towards improving CF, the revolving funds’ allocated to CFUGs remains uncertain. Regardless how well the fund performs in improving peoples’ overall livelihoods, the financial stimulus to develop CF may not be obvious. If TNRP is meant to improve forest quality by providing technical advice and seedlings the incentive for CF forest management may remain without incentives, as these services are provided for free. If real CF ownership is expected from the communities the arrangements between TNRP and CFUGs require clearer agreements in terms of which partner has which particular responsibilities and can be made accountable for those, rather than creating expectations or creating unfeasible assumptions amongst partners.

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### Annex 1: Certificate-issued Community Forestry within Tanintharyi Nature Reserve Project (TNRP)

Sr.	District	Township	Village	RF/PPF, Compartment No.	Established Year	Certificate Issued Date	RF/PP			Unclassified Forest (not inventoried yet)			Grand Total	No. of User Group	No. of Member
							Plantation	Natural Forest	Total	Plantation	Natural Forest	Total			
							(Acres)	(Acres)	(Acres)	(Acres)	(Acres)	(Acres)	(Acres)		
1	Dawei	Yephyu	Old Mi-chaung-hlaung	Heinze-Kalein-aung	2009-10	6/3/2009	0.00	105.00	105.00	0.00	0.00	0.00	105.00	1	76
2	Dawei	Yephyu	Zin-bar	Heinze-Kalein-aung	2011-12	28-7-2011	300.00	578.00	878.00	0.00	0.00	0.00	878.00	1	30
3	Dawei	Yephyu	Ye-bone	Lu-waing, (7,8,9)	2011-12	28-7-2011	0.00	936.00	936.00	0.00	0.00	0.00	936.00	1	56
4	Dawei	Yephyu	Old Mi-chaung-hlaung	Heinze-Kalein-aung	2011-12	28-7-2011	525.00	2702.00	3227.00	0.00	0.00	0.00	3227.00	1	76
5	Dawei	Yephyu	Thar-yar-mon	Heinze-Kalein-aung	2011-12	28-7-2011	50.00	1002.00	1052.00	0.00	0.00	0.00	1052.00	1	54
6	Dawei	Yephyu	Zin-bar	Heinze-Kalein-aung	2011-12	28-7-2011	950.00	1217.00	2167.00	0.00	0.00	0.00	2167.00	1	62
7	Dawei	Yephyu	Oak-tayan	Lu-waing, (72)	2014-15	28-8-2014	23.00	290.00	313.00	0.00	0.00	0.00	313.00	1	51
8	Dawei	Yephyu	Hnan-kye (2)	Lu-waing, (63)	2014-15	28-8-2014	0.00	404.00	404.00	0.00	0.00	0.00	404.00	1	79
9	Dawei	Yephyu	Yar-phu (Old)	Heinze-Kalein-aung (26,27)	2014-15	1/12/2014	291.00	300.00	591.00	0.00	0.00	0.00	591.00	1	70
10	Dawei	Yephyu	Zin-bar (3)	Heinze-Kalein-aung	2014-15	12/4/2014	663.00	1103.00	1766.00	0.00	0.00	0.00	1766.00	1	47
11	Dawei	Yephyu	Kyauk-shut	Lu-waing, (1,2,5)	2014-15	12/4/2014	390.00	1771.50	2161.50	0.00	0.00	0.00	2161.50	1	87
12	Dawei	Yephyu	Thet-kel-kwet	Lu-waing, (67,69)	2014-15	12/4/2014	50.00	100.00	150.00	0.00	0.00	0.00	150.00	1	36
13	Dawei	Yephyu	Hnan-kye (1)	Lu-waing, (63)	2014-15	12/4/2014	86.00	50.00	136.00	0.00	0.00	0.00	136.00	1	26
<b>Grand Total</b>							<b>3328.00</b>	<b>10558.50</b>	<b>13886.50</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>13886.50</b>	<b>13</b>	<b>750</b>

## Annex 2: List of contacts interviewed for Cardamom and Dog fruit value chain research

Actor	CF product	Name	Address	Phone	Interview date
CF/harvester	Cardamom	Kyat Shat CFUG	Kyat Shat village, Kaleinaung subtownship (subtwns), Yebyu stownship (twns)		26/01/16
CF harvesters	Dog fruit	CFUG: Zimba	Zimba village, Kaleinaung subtwns, Yebyu twns		26/01/16
Trader	Cardamom	Ko Wai Yan Soe	Kampauk village, Yebyu twns	09-450844154; 09-49865106; 09-451060500	27/01/16
Trader	Cardamom	U Myint Thein + Daw Ohn Shin	New-Michaunghlaung village, Kaleinaung subtwns, Yebyu twns	09-781042363 09-781806082	27/01/16
Trader	Dog fruit	Daw Than Than Aye	Kampauk village, Yebyu twns	09-594980728	27/01/16
Trader	Cardamom, Dog fruit	Ko Aung Naing + Ma Cho Ma	Kampauk, Yebyu twns	09-8752105 09-49323593	30/01/16
Collector	Cardamom	Daw Aye Thin	Zimba village, Kaleinaung subtn, Yebyu twns	-	30/01/16
Collector	Dog fruit	Daw Daewi	Zimba village, Kaleinaung subtwns, Yebyu twns	09-452283973	30/01/16
CF/harvesters/dryers	Cardamom, Dog fruit	CFUG Old Michaunghlaung village	Old Michaunghlaung village, Kaleinaung subtwns, Ye Phyu twns		30/01/16
Trader	Cardamom	Daw Ye Ye Khaing + Nyi Lay Cho	Ye Phyu twns	09-780373093	Not available
Forest Department	NTFPs	Soe Tint (Assistant Director)	Dawei		01/02/16
Wholesaler	Cardamom	Ma Ohmar Thaug	Dawei	059-23249 09-8742015	01/02/16
Wholesaler	Dog fruit	Ma Po Swun	Dawei	09-5949851710	02/02/16
Wholesaler	Dog fruit	Pyae Sone workshop (Ma Me Nyo+ Ko Thuya)	Thirimingalar wholesale market, Yangon	01-9688521 09-8623858	04/02/16
Wholesaler	Dog fruit	'135' Nay Aung	Thirimingalar wholesale market, Yangon	09-450862008	04/02/16
Wholesaler	Dog fruit	TWZ, Ma Sandar Lin & Tan Zaw Win	Thirimingalar wholesale market, Yangon	09-5072923; 09-49321173	04/02/16
Wholesaler	Cardamom	Kyaw Yatanar, Zaw Yatanar workshop	BayintNaung workshop Yangon		Not found
Wholesaler	Cardamom	Myanmar Payasay Warehouse, Myat Tun	Bayint Naung Warehouse, Mayangone twns, Yangon	09-5154355; 09-5006998; 09-861310	05/02/16
Wholesaler	Cardamom	Sein Win, Midland Shwe Pyi Trading co.,Ltd (export and import)	Room 301, bldg 1, Zeyarmon Compound, Bayint Naung Rd, Mayangone twns, Yangon	01-6882206; 01-683169 <a href="mailto:Midland.shwepyi@gmail.com">Midland.shwepyi@gmail.com</a> ; <a href="http://www.midlandshwepyi.com">www.midlandshwepyi.com</a>	05/02/16
Wholesaler	Cardamom	Theingyi Zei Market			Not
Wholesaler	Cardamom	Aung Myaing + Ma Naw Naw Win	San Mya Thidar Quarter, Mawlamyine	09-8701104	11/02/16
Wholesaler	Cardamom	Kyaw Khaing Myint	Mawlamyine	09-49801208 057-26155	Not
Wholesaler	Cardamom	Ma Akwe	Mandalay	09-2018663	
Transporter (without shop)	Cardamom	Mya U	Yangon	09-5411588	Not available
Wholesaler	Cardamom	Ko Kyaw Kyaw	Nay Pyi Taw	095979612222 095997612222	Not. Sells saplings of cardamom and more information available



### Annex 3: Cardamon

***Amomum villosum*** Lour. (synonym: *Cardamomum villosum* (Lour.) Kuntze), Family: ZINGIBERACEAE

There are multiple species of *Amomum* and both the red and green varieties are found in TNR.

**Vernacular name:** *Phalar* (general name), *Chin-paung-phalar*, *Ma-ei-tui* (Mon), *Mar-ayet* (Kayin).

**English:** tavoy cardamom, kravan, Java/Bengal/Siamese cardamom, white/green/red/black cardamom, bastard or false cardamom, amomum fruits, Guinea grains or grains of paradise.

**Use:** Mainly exported and used in cooking as an ingredient in Eastern as well as Scandinavian cookery. The fruit and seeds are used in different types of sweet or spicy dishes, especially in curries, also called 'the queen of spices' and has been used since ancient times. Now it is used by the food industry as flavoring in cakes, gingerbread, sausages, pickles and curry powders. The drinks industry uses the oil as flavoring in cordials, bitters and liqueurs, and it provides a commercial flavoring for the pharmaceutical industry in proprietary medicines. The essential oil is a commercial ingredient used by the perfumery industry particularly in some eau de colognes. Medicinally, it has been used locally in India and some other Asian countries for various diseases. In China, the **spicy and warm-tasting** fruit forms an important component of various medicines, especially in treatment of stomach aches, constipation and other digestive problems. It is also chewed like a nut, as a breath and tooth cleaner. In Malaysia it is chewed with betel nut.



Figure 10:  
<http://www.healthyfig.com/cardamom/>

**Description:** Perennial understorey herb with thick rootstocks to 2-3.5 m high. The narrow leaves are about 7 cm wide and up to 50 cm long. Inflorescences grow from the rootstock and produce pairs of white flowers. The oval fruit is a spiny red capsule, 2 cm long, with brown seeds which have a camphor-like odour.



**Distribution & ecology:** found throughout the country, but mainly in the east (Kayin and Thaninthairyi state), in moist riverine places within mixed and secondary deciduous or evergreen forest and requires about 50% shade: if too much sunlight is present, larger plants with more leaves and less fruit will be produced. Cultivation mainly under existing forest cover in agro-forest gardens.

**Harvesting:** Fruits are picked from the rootstock for a period of 15-25 days in July-August. Local people determine harvestable fruits by peeling the shell to observe dark red colour of fruit and deep purple seed. Pre-mature harvesting of wild immature fruits leads to low product quality and more moulding.

**Yields, densities:** In Laos, planted in densities of 12,000-25,000 stems/ha yields 80-200 kg/ha in fresh weight, equivalent to 14-40 kg/ha of dry fruit. The best yields are obtained four or five years after planting, but stands continue to give sustainable yields for up to 50 years or more.

**Sustainability:** Harvesting of fruit has little effect on the mother plant or on regrowth, as natural propagation is mainly through rootstocks. Competition for harvest may result in premature harvests and uprooted rootstocks, decreasing the yield for the following season. In such cases part of the rootstocks should be left for another two years for regeneration.

**Processing:** Because harvesting takes place in the wet season, the product suffers from moulding due to insufficient drying. Drying of unpeeled fruit usually takes place in the sun or over wood fires or in ovens, to avoid reduction of oil. Amomum needs four to five hours to dry in an oven, which should only be as hot as one can tolerate with one's hand for a while. Fruit needs to be dried evenly to give an even quality. When well dried, 15 kg of fresh amomum fruit results in 3 kg of dry fruits. Storage in a ventilated room is recommended. Kept in a glass jar, dried amomum pods can be kept indefinitely. In China fruits are processed into essential oils and in Thailand seed oil is obtained by water distillation.

**Quality criteria:** Dry, clean fruit, still in the capsules to preserve taste. Grading is performed on the basis of size of fruit or clusters of seeds, amount of immature and overripe fruit, amount of moulding, dirt and unwanted plant material. There are three grades for seeds: 1. mature blue-black seeds, 2. over-mature black seeds and 3. broken seeds.

**Trade:** Market is mostly China, Korea, Japan and Arab countries, although also popular in Thailand and Vietnam. Via the internet, China is selling amomum as a single herb extract for US\$17.4 per 100 g. Demand on the Chinese medicine market seems to be growing. Improvements could be made in timely harvesting, more efficient drying and dry storage methods. Distillation of amomum oil could be promising. Cardamom is also processed into gelatine pills.

**Propagation:** Ripe fruit is dried and the shell peeled-off, because unpeeled stored seeds have a lower germination rate. Cardamom is often propagated by cuttings from buds on horizontal branches at the base of plant and from rootstocks. Before they flower, young rootstocks 10-20 cm in height with one or two leaves are selected and collected from plants in the natural forest, and planted approximately 3 cm deep in the soil, in May-June. The distance between plants should be at least 3 m x 3 m to ensure sufficient growth space and fruit production. Planting is recommended on black soft soil in the forest and not on hard soil on ridges, nor in dense forest (maximum 30-50% shade). Good fencing and shading is essential. When amomum is planted on steeper slopes, plants produce side shoots down the slope and it self-propagates faster. Domestication under shade trees and enrichment planting in forest is common, especially for red amomum. Amomum sprouts two or three years after a field is burnt for swidden agriculture, and an additional period of three years or more is required before fruit can be gathered. Kayin and Shan state cardamom is grown in garden under tree shade, in Kayin state mature cardamom plantations are valued at 1,000,000 kyat per acre. Cultivated in China in a planting system with rubber, total yields provide four times the annual revenue than that of rubber alone. In Yunnan about 13,000 ha is being cultivated in agro-forestry systems.

#### Annex 4: Dog fruit

***Archidendron jiringae*** (Jack) I.C. Nielsen, member of the Mimocaceae, Fabaceae family. Older synonyms often used are *Pithecellobium lobatum* and *P. jiringae*.

**Vernacular name(s):** *da nyin* (Myanmar), *jering* (Malay), *luk nieng* (Thai).

**English:** Jungle Bean, Djenkol Bean.

**Use:** The seeds are prepared by frying, boiling, or roasting and are also eaten raw when young. The edible fruits are very much appreciated in Myanmar. The market is so far mainly limited to Myanmar, but it is also a well-known product in southern Thailand, Malaysia and Indonesia. The consumption in those countries is estimated to be over 100 tones per day (source: Foppes, 2011). The

seed is edible, highly nutritious, with 23% protein and high contents of vitamin C (80 mg/100g), Calcium (140mg/100g), Iron (4.7 mg/100g) and Phosphorus (167mg/100g). The smell is not appreciated by everybody and over-consumption should be avoided as it may lead to kidney failure. The beans are mildly toxic due to the presence of djenkolic acid, an amino acid which causes djenkolism (djenkol bean poisoning). The beans and leaves are traditionally used for medicinal purposes such as purifying the blood. The seeds have an antioxidant effect and they are also being tested for anti-diabetic properties.

**Description:** It is a tree about 18-24 m tall with a spreading crown. It has a grey stem and one pair of smooth leaves. The leaf is rectangle, stiff and papery with 3-5 white flowers, growing in a branched inflorescence. The pods or fruits are 20-50 cm long, 4-5 cm wide, horseshoe-shaped or twisted, deep purple and deeply lobed, and easily broken by hand. There are 3-6 seeds per pod. The seed is 3-5 cm across with yellow seed coat when young, which turns brown at maturity.

**Distribution & ecology:** The tree is indigenous to primary and secondary forests in humid, mountainous and undulating areas as well as on river banks from sea-level up to 1,600 m altitude in Southeast Asian countries such as Myanmar, Bangladesh, Indonesia, Malaysia and Southern Thailand. Trees grow best in sandy or lateritic soils and they need a high rainfall guaranty. Kachin state has invested for years in orchards from a range of dog fruit varieties. The southern source seems to come from 1 species only.

**Harvesting:** Harvesting of fruits is by climbing the trees and pick the fruits between April and July. For transport, seeds, in particular young ones, should not be removed from the pods to avoid drying out. One way to store the seeds is by processing it into chip, another possibility could be its procession to flour, however to date, due to the high moisture content, this is hardly done.



Figure 11: Photo by NusHub distributed under license Creative Commons



Figure 12: Source: <http://indonesianplants.blogspot.com/2013/07/jengkol-archidendron-pauciflorum.html>

**Yields, densities:** Many people believe that after Kachin state, Tanintharyi with Mon and Kayin state are the most productive areas for Dog fruit in Myanmar, followed by Rakhine. In TNR local people estimate to collect in one season 8-20 buckets of fruit per tree, depending on a seed year masting once in 3 years. In Indonesia a tree produces between 1,000 and 4,000 seeds per year.

**Sustainability:** A common threat for the trees is that in the fruiting season there are regular reports that trees have been felled to ease collection. In CF regulations penalties are stated to avoid this.

**Processing:** Young fruits are traded immediately due to their perishability. Mature fruits are often peeled by hand and the seeds are traded and within 3 days need to be at the market in Yangon. Transport needs to be done with care allowing seeds to breathe and this not covering them during the journey. Seeds can be eaten raw when young but all seeds can be fermented at peoples home.

**Quality criteria:** When seeds are kept too long (more than 3-5 days) they start to emit a strong odour which is not preferred. Seeds which start to germinate can still be eaten and are believed to release some of the jeonkol toxins.

**Trade:** Myanmar is the end market, with Thailand exporting and compete with domestic trade. Huge volumes are traded after the water festival (April) when prices start to drop. The south starts the trade a month before the North (Kachin, Rakhine states) where dog fruit orchards start producing.

**Propagation:** Trees have often been spared when forest has been cut down and integrated in people's home gardens or orchards. Kachin state has invested for years in orchards and is well known throughout the country. Gardens in Indonesia know planting distances of 10 – 15 m.