COMMUNITY FORESTS AND COMMUNITY FOREST ENTERPRISES DEVELOPMENT SURVEY IN SOUTH RAKHINE

Final Report

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Contents

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This report was prepared by Isituto Oikos team, lead by Elisa Carturan and Lorenzo Gaffi. The team was composed by Myint Aung, Wai Yan, Thet Zaw, Chaw Su Su Win.

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ACRONYMS AND ABBREVIATIONS

AD	Assistant Director
BIF	Business Innovation Facility programme
CF	Community Forest(ry)
CFE	Community Forest Enterprise
CFNWG	Community Forest National Working Group
CFUG	Community Forest User Group
EFY	Elephant Foot Yam
FD	Forest Department
GoM	Government of Myanmar
IGA	Income Generating Activity
INGO	International Non-governmental Organization
MA&D	Market Analysis and Development
MONREC	Ministry of Natural Resources and Environmental Conservation
MRBEA	Myanmar Rattan and Bamboo Entrepreneurs Association
RBA	Rakhine Bamboo Association
NTFP	Non-Timber Forest Product
RBA	Rakhine Bamboo Association
RECOFTC	Regional Community Forestry Training Center for Asia and the Pacific
RYER	Rakhine Yoma Elephant Range
SSID	Small-Scale Industries Department
UNDP	United Nations Development Programme
UNOPS	United Nations Office for Project Services

1. THE PROJECT'S OVERVIEW

The current project is developed with the aim of fostering community engagement in sustainable forest management, in the area surrounding the Rakhine Yoma Elephant Range (RYER) Wildlife Sanctuary, South Rakhine. This aim is being promoted by reproducing and scaling up the successful model of Community Forestry that Istituto Oikos and its local and international partners have been carried out since 2010. In addition, the intervention focuses on strengthening local communities' socio-economic capacities by linking forest conservation activities with the creation of alternative income generating activities based on the commercialisation of raw materials and processed products deriving from the forest.

The activities were designed in different phases. First, the status of effectiveness and activity of the previous established CFs was verified, in order to monitor their trend, strengths and potential obstacles encountered, so as to contribute to the construction and update of the national CFs database. Furthermore, an assessment in the project area was carried out to identify new potential Community Forests. Following the consultations with local key informants from civil society and local authorities, the selected communities are then supported in the procedures for the establishment of Community Forest Users Groups (CFUGs), the preparation of suitable management plans, technical training programs on forest operations and administration, and the application procedure for CF Certificate.

CFs members have been involved into an extensive survey so as to identify the socially, economically and environmentally suitable products for the establishment of Community Forest Enterprises (CFEs). Consultancies with local producers and key stakeholders in the local market are conducted with the final objective to identify the main constraints and needs for local producers. A final strengthening programme will be proposed as starting point from were to establish CFEs.

2. THE COMMUNITY FOREST AND COMMUNITY FOREST ENTERPRISE – THE MYANMAR CONTEXT

Forests are one of the main sources of the basic needs and necessary income of the poor in Myanmar. Most rural people depend on the forestry sector as sources of food, household materials, and fuel wood. According to FAO, in 2010 almost half of the country was covered by forests which comprise many important hardwood species such as Teak, Pyinkado and Padauk. However, deforestation is a serious threat to the environment of the country as well as to food security. In the early 1990's Community forestry was introduced in Myanmar with the objective of promoting environmental protection and sustainable management of natural resources. Since then, several reviews of the legal framework and the regulation were done by the Forest Department, until the latest Forest Instructions were issued in 2019.

The Community Forest (CF) is a model of forest management, where a "contract" between local people and the Forest Department, gives to the local community the authority to legally make decisions, in agreement with the management plan drafted. There are four main steps in creating a Community Forest, which include: establishing a tree plantation, activities for protection and maintenance, adaptation of a rotation and method of harvest and distribution of forest products (Hlaing et al, 2010).

The CF management plan, drafted by the local community and approved by the FD, describes the actions to be implemented. Degraded areas are re-forested with indigenous tree species and healthy environmental patches are managed to ensure the regenerative forest process. The CFs users maintain their right on the land for 30 years and the certificate can be renewed at the end of the contract. In March 2019 there were 614,579 acres (248,711 ha) of CFs certified by the FD in Myanmar, covering 4,707 CFUGs (119,355 households).

The Government of Myanmar (GoM), as well as several development and donor organizations, have recognized the potential of community forestry to address issues related with deforestation, habitats loss, livelihoods and food security. This recognition was followed by the definition of an ambitious target for CF development: 2.27 million acres [919,000 hectares (ha)] of CFs established by the 2030. Despite the Government is far beyond reaching the target, this initiative demonstrates commitment and opens opportunities to expand consistently the CF programme countrywide.

Community forestry has a huge potential to support livelihoods of rural communities by providing a legal tool for sustainable management and extraction of natural resources. The Community Forest instructions of 2016 and 2019 take into account the possibility to upscale the concept of CF to Community Forest Enterprises (CFEs). This innovation aims at creating mechanisms to promote sustainable businesses which, at the same time, contribute to environmental protection. Small and medium scale enterprises have the opportunity to initiate market initiatives focused on forest products sustainably harvested from the forest. While the timber market is subject to strict regulations and provides benefits only after very long time, Non Timber Forest Products (NTFP) offer a wide array of options for businesses which are more easily viable under the legal and technical framework on the short and long term. Several products have been identified in this regard, including bamboo, rattan, agroforestry products, etc.

The role of the enterprise can be to collect the products, elaborate them in order to enhance their value, trade the manufacture and redistribute the earnings.

By linking the protection of forest and its productivity with economical benefits, long term conservation of the environment can be achieved. In the recent years, the national programme on community forestry and development moved its focus from preservation of the natural resources, to sustainable use and enterprise development for livelihoods, recognizing that forests conservation can only be achieved if local communities are allowed and able to tangibly benefit from their natural environment.

Still a lot of work has to be done in order to clarify the legal framework and the procedures for CFE at the institutional level. Issues related with the registration of the enterprises, the taxation system and benefits for the groups will have to be discussed with the Government in order to define precise regulations for rural communities willing to start CFEs.

Defining CF and CFE *(AA.VV. The World Bank, 2019)*

Community forestry *"refers to all aspects, initiatives, sciences, policies, institutions and processes that are intended to increase the role of local people in governing and managing forest resources. The broad definition serves to include all kinds of organizational forms under which people participate in forest management, from village-based groups to individual management. It also covers all types of activities undertaken in connection with forest or forestland, from the management of natural forests to plantations.".*

Community Forest Enterprise *is an entity undertaking commercial exchanges or activities based on forest landscape products (that is, timber products, NTFPs, environmental services, agricultural products), overseen by a credible representative body that can claim legitimacy within a self-defining 'community' that generates and redistributes profits within that community. CFEs are different from private enterprises because their business activity is undertaken as a means of achieving community benefit, not private gain.*

3. THE RAKHINE COMMUNITY FORESTS IN THE SOUTH RAKHINE ENVIRONMENTAL AND SOCIOECONOMIC FRAMEWORK

3.1 GENERAL OVERVIEW

In the area situated at the western border of Rakhine Yoma Elephant Range WS (RYER), which covers an area of 175,000 ha of mountainous dense forest, the majority of the population – whose total amounts to around 200.000 - lives scattered in rural villages. Livelihoods are strictly dependent on natural resources and related activities, such as collection of wood for cooking, charcoal production, harvesting and use of NTFPs (honey, berries, roots, medicinal plants). Most of the people are engaged in agriculture and fisheries, while the most marginalized groups (landless, ethnic minorities) rely on illegal logging and poaching. Among the marginalized groups, Rakhine women are generally excluded from land ownership and from decision-making in natural resource management due to the patriarchal family structure. The price of land is increasing and farmers have started to sell their customary lands to private companies which clear the natural forests for the establishment of commercial plantations and tourism resorts. There is a pressing need to strengthen local governance on natural resources, especially fostering the participation of marginalised minorities and consolidating civil society organisations.

3.2 THE WORK OF OIKOS IN THE TARGET AREA

The work of Istituto Oikos and its local and international partners for the promotion of CFs in Southern Rakhine, has been demonstrating the great potential of Community Forests' model to improve local communities' livelihoods and socio-economic conditions, and to reduce deforestation and forest degradation rates. Between 2013 and 2020 17 CFs were established and 10 Community Forest Guardian Groups created. Also 26 women-led saving groups were created to facilitate the start-up of small businesses selling processed forest products.

Further interventions are necessary for the entitlement of community members to the co-management of the forest and for increasing the dialogue between their representatives and local authorities. In this context, the development of new income opportunities that move together with the protection of natural environment and of the ecosystem services are of main concern.

4. ASSESSMENT OF THE EXISTING CFs AND THEIR POTENTIAL IN THE AREA

Southern Rakhine is an area rich of natural hill and mangrove forests. Several environmental conservation projects have been implemented in order to protect the natural resources and promote a sustainable management of the land in collaboration with the local communities. Since the early 2010's the Forest Department promoted the creation of Community Forests and established collaborations with implementing partners among local and international NGOs. In 2017 71 existing CFs were known in the district of Thandwe. Unfortunately, due to the lack of an uniformed CF database system, few information on the composition and vitality of the groups were available at that time. An ongoing project was launched by the FD in 2018-2019 with the goal of building a national digital database of the community based initiatives for the management of forests implemented in Myanmar. Such initiative is facing several challenges because in most of the cases data on CFs are only available at the local FD field offices, where hand written registers were filled several years ago. Moreover, it was reported that extreme climatic events, recurring in the coastal area, might have damaged part of the documentation available. With the current project, a substantial effort to collect data on the Community Forestry sector in southern Rakhine was carried out. Thanks to several meetings with FD representatives and local communities, the existence of a total 104 community forests has been verified in the townships of Gwa, Thandwe and Taungup. The table in the Annex A of this report provides the detailed information which will be delivered for the development of the national CF database of FD. About 80% of the CFs of southern Rakhine are in the township of Gwa, 13% are in Thandwe and only 7% are in Taungup. Most of the CFs are constituted by hill forest, a wide category which, in the study area, includes mixed deciduous forest and secondary growth. On average the CFUGs are constituted by about 60 members, although 10 CFUGs with less than 5 members, managing areas of less than 10 acres are present in the list. These few groups should be considered as the result of a process of regularization for small private owners of customary land, who were granted with CF certificates. Largest groups are constituted by almost 300 members, managing areas up to 1400 acres wide.

FD actively promoted the establishment of a quarter of the CFs, while the others were realized in the framework of 3 main initiatives:

- the CLEARR project - implemented by a consortium of local NGOs, called MERN, which collectively established 8.000 Ac of mangrove CFs in 2014;
- SuComFor project - RECOFTC, which promoted the establishment of over 11.000 Ac of CFs in 2017;
- Istituto Oikos CFs Programme (CES, DAFNE, Sun Bear) which supported the creation of about 2.500 Ac of hill and mangrove CFs between 2013 to 2020;

Considering the vitality of the groups, it is clear how the CF members who were supported over time, both during the application process, and especially in the following phase, are still active and are continuing the programme. The experience of Istituto Oikos is that local communities are highly active in exploring opportunities for community forestry during the initial phase of the process and within the first 1-2 years of the certification. Interest and participation tend to drop after this time and the risk for the groups to abandon forest management systems and get back to unsustainable exploitation of natural resources (illegal logging, mangrove cutting, slash and burn practices, etc) is very high after 3-4 years. Provision of livelihoods for CFUGs is a concern of matter. Villagers involved in the creation and management of CFs are requested to put a substantial effort and spend considerable time to carry out forestry operations which will provide economical benefits only after several years.

This can have a negative impact on the general economy of the community and the sustainability of the programme, because villagers would rather spend their time in productive activities which provide income on the short term. The absence of a livelihoods provision scheme linked to environmental protection, caused the failure of several CF groups in Rakhine. In particular the CFUGs involved in mangrove protection were unable to develop concepts for the innovation of sustainable business that exclude, of course, mangrove cutting for charcoal production. Most of the mangrove CFs currently registered in south Rakhine were found to be inactive. CFGUs rarely organize coordination meetings and unsustainable practices were restarted. The area has a huge potential in terms of economical development in the sector of sustainable aquaculture and in the future for ecotourism opportunities. Most active CFUGs are those currently supported by local and international NGOs. It was registered an higher level of participation when the CF was supported by the establishment of self funding schemes and promotion of livelihoods. Members of six of the most successful CFs established by Istituto Oikos were involved in developing small scale businesses based on traditional products as bamboo handicraft, agroforestry, food processing, etc. Also, in ten out of the 17 Istituto Oikos' CFs, a revolving fund programme was tested for the first time in the area. This initiative, started in 2019, gives the possibility to worthy members of the groups to obtain a small loan for productive activities with low interest rate. The amount of the fund initially provided to each group is 1.000eur. The system is proving to be successful, as the members, supported and monitored by the project staff, are able to manage the fund and punctually repay the loan. There is a great opportunity in Rakhine to better connect forest and mangrove management with sustainable economical development. In this framework CFEs are a powerful tool to strengthen this link. At the moment there are two CFEs in southern Rakhine, in the township of Gwa: Swe Yoma and Yoma Amway. These enterprises, established in 2019 by RECOFT, will constitute an example for future development of the programme. Their system is based on a network of 18 CFs which provide the raw materials and the enterprises are responsible to manage the commercial component. Members of the 2 CFEs were interviewed during the development of the current project in order to assess constraints, challenges and opportunities. Details are provided in the section below and in Annex B. Pre-existing CF networks can constitute the base for the future development of CFEs systems. At the moment there are four main formal and informal CF networks, mostly linked to the project which supported their establishment:

- CLEARR (45 CFs)
- SuComFor (18 CFs)
- Oikos (17 CFs)
- Oikos Community Forest Guardian Groups (10 CFs)

These systems constitute the foundation for grater networking opportunities. Expanding the CFs and CFE programme in Rakhine should involve both the creation of new CFs and a better connection of the already existing groups in order to foster the participation and explore collective economic opportunities. The programme should have a multidimensional approach that includes forest protection and enterprise development. In the last 10 years Istituto Oikos has been exploring different opportunities in these sectors, including a wide array of activities aimed at reaching conservation goals and ensure long term sustainability of the programme. The institution of the Community Forest Guardian Groups, for example, allowed since 2018 to implement a patrolling protocol inside the CFs to prevent illegal logging and consequent loss for the local communities. Currently about 120 members of the CFs are involved in this programme, which was reported to be effective in reducing environmental crimes. For what concern the expansion of the programme on the coastal area, mangrove protection and restoration has a huge potential.

The ongoing "Climate Change Adaptation in Coastal Community of Myanmar" - FDCCA, funded by the Embassy of Denmark (2018 - 2023) aims at improving management of mangrove forest in Rakhine and Tanintharyi and to establish CFs in more than 30 coastal villages. This approach could be expanded on a larger scale to the main mangrove areas of south Rakhine. A network of 4500 Ac of mangrove CFs in Gwa could be strengthened and new mangrove CFs could be established in Thandwe and Taungup Townships covering an area of about 10.000 Ac. Such programme would be beneficial for the local communities under several point of view: a) climate change adaptation, by conserving mangrove forest which play a well know role in disaster prevention against extreme climatic events; b) economical growth, by linking small businesses and enterprise with mangrove protection; c) conservation of biodiversity, which involves maintenance of the ecological process of forest regeneration, conservation of fish stocks and diversification of natural resources.

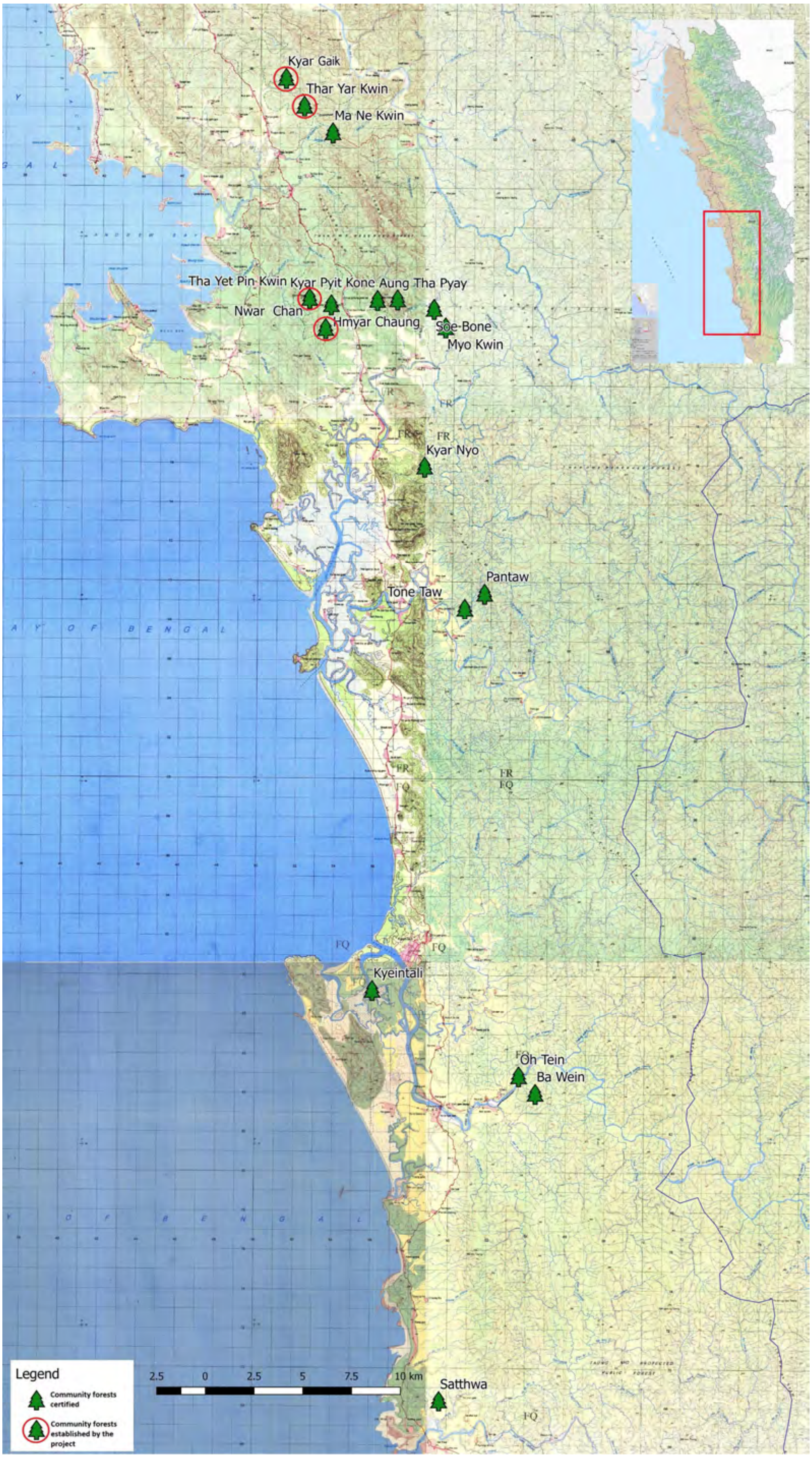


FIGURE 1: CFS SUPPORTED BY ISTITUTO OIKOS

5. SURVEY ON SUITABLE PRODUCTS FOR CFEs (Activity 3)

5.1 FOREWORD

The topics faced in this project have never been deeply and systematically investigated in the target area.
Information about management of natural resources, quantity harvested, commercial rights, income generated by the NTFPs has been collected by RECOFTC during the final assessment of the DAFNE project in 6 out of 13 CFs established with the OIKOS INGO’s support. During workshops with the local communities it was remarked that products and services from the CFs have an economic value and they can be an income source for villages livelihood development.
Generally speaking, the CFUGs and have general knowledge about the meaning of Community Forests Enterprises although they have never actively explored the market chains of natural forest products and the legal, financial and technical aspects of business in the area

5.2 METHODOLOGY AND WORKFLOW

The challenging goal of the project, compared to the available time span, according to the situation explained in the foreword, allowed for a limited consultation process and an initial examination of the suitable products especially in relation with national and international market level.

Firstly, the project staff (hereafter called "facilitators") were trained in order to spread knowledge about

- the concept behind the Community Forest Enterprise,
- the information to pass to the CFUGs and other market actors,
- the relevant information to be collected
- the use of survey tools to assess the constraints and opportunities for the enterprise development.

At the same time it was also necessary to understand the CFUGs’ approach to entrepreneurship projects and assess the existence of business ideas from local communities. This was done in order to explore the topic under the point of view of the project beneficiaries with a focus on the network of producers/suppliers.

The work plan included a training course for the facilitators, a preliminary workshop, several fields interviews and meetings with all the actors identified during the development of the survey. In the following chapters the different tools adopted will be presented.

5.2.1. Market Analysis and Development

When we name a product as "sustainable" product, and consequently a "sustainable" enterprise, we have to take into account several aspects which are closely linked with the forest products, the rural communities' livelihood development and the responsible business.
The project Activity 3 aims to identify socially, economically and environmentally suitable products, then sustainable products.
The influencing factors to be investigated for the first time in this area were potentially a lot, therefore a comprehensive and organized approach was needed to succeed in the assigned task.
After having examined many literature sources, in the Market Analys & Development – MA&D (FAO, 2011) has been identified the most suitable instrument.

MA&D has been recently (RECOFTC, 2019) suggested by RECOFTC as an essential step in the CFE Establishment Process during a national workshop organized by the FD in Nay Pyi Taw, last 10 December 2019 – Scaling up CF and CFE.

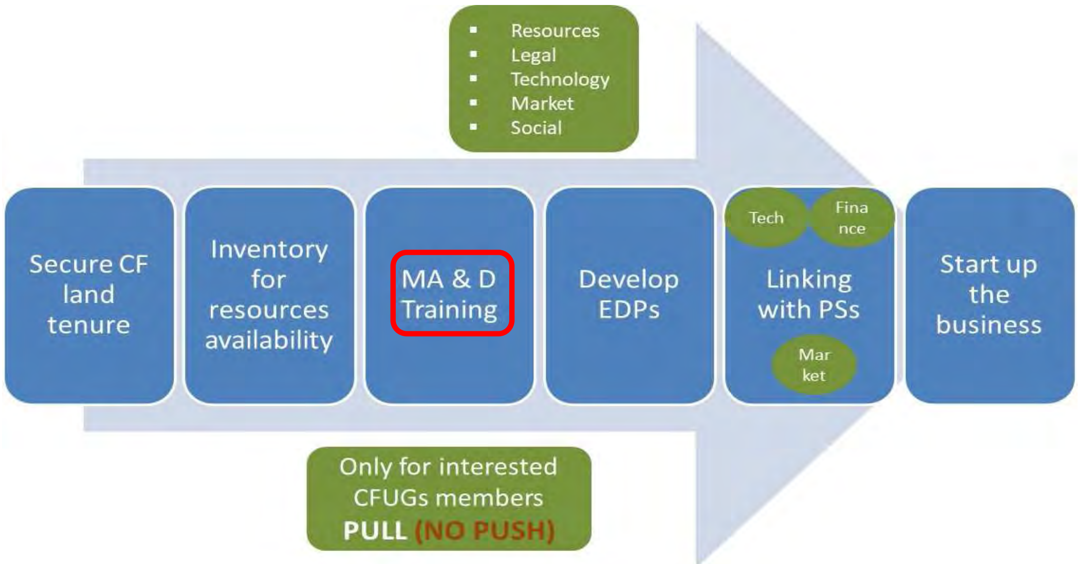


FIGURE 2: CFE ESTABLISHMENT PROCESS

MA&D is a 4 phases procedure designed to closely assist the rural communities (in our case CFUGs) to develop enterprises to generate and improve their incomes, while ensuring the sustainable management of forest resources. The MA&D approach empower producers, manufactures and traders to plan equitable, sustainable, ecologically, socially and financially viable enterprises using participatory method and tools.

By 4 phases or stages (from the assessment to the start-up of the enterprise) the potential entrepreneurs, helped by the facilitators, follow a sequence of systematic steps to ensure that all critical elements are included in order to minimize any risks linked to establishing their enterprises and to select the best product among several possible for their business.
The selection process is performed step by step screening the, so called, five areas of the enterprise development. It means that each information collected and each decision made takes into account the environmental, social, institutional and technical factors, as well as commercial and financial aspects of a product (see the figures below).

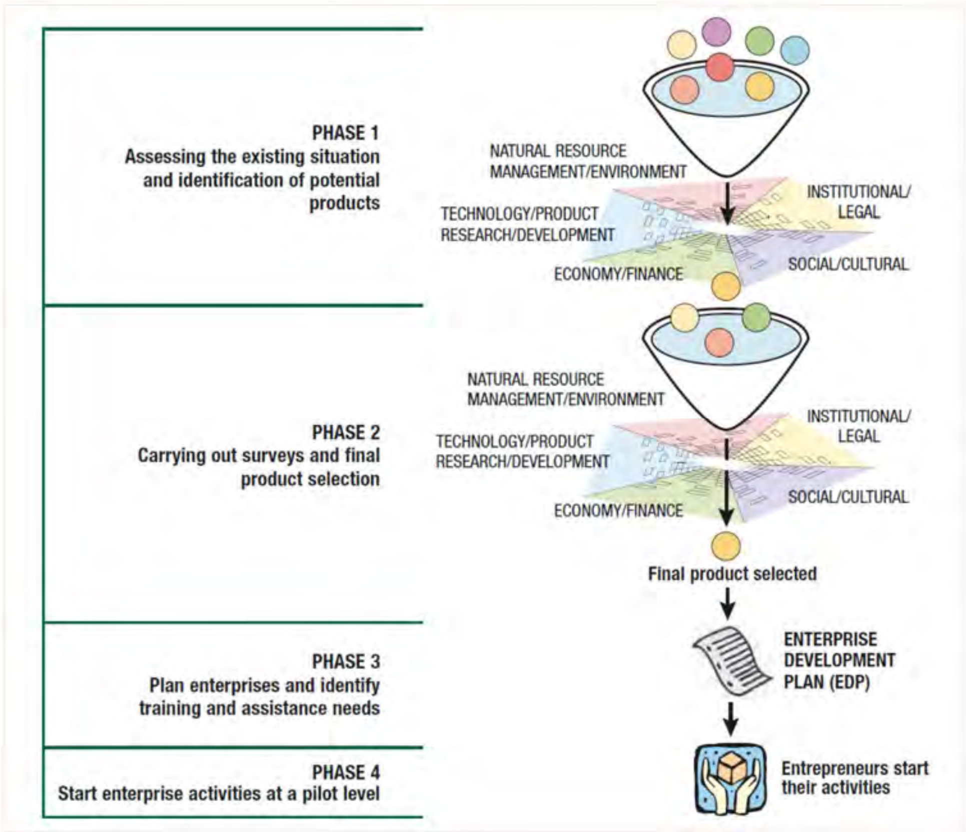


FIGURE 3: THE FOUR AM&D PHASES AND THE FILTER DIAGRAM

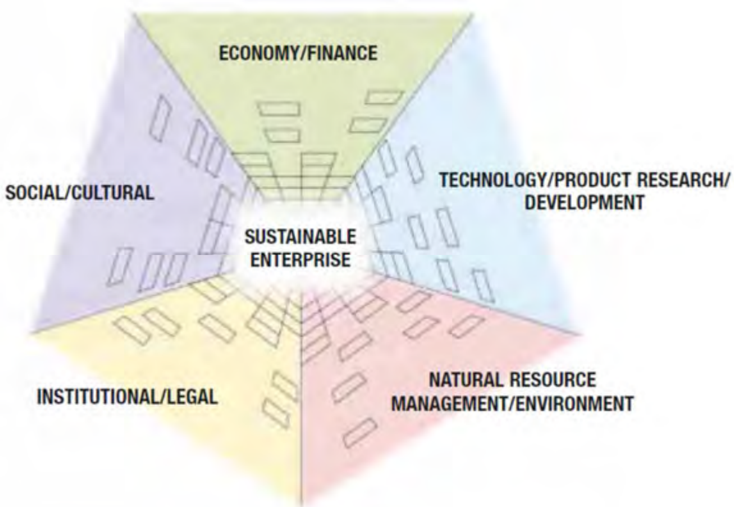


FIGURE 4: THE FIVE AREAS OF THE ENTERPRISE DEVELOPMENT

The core principles of the MA&D approach

Using participatory method and tools

Screening the five areas of enterprise development (1. Environmental, 2. Social, 3. Institutional, 4. Technical, 5. Commercial/Financial)

Sustainability. Process that increases economic benefits, improves livelihoods without causing negative social or environmental impacts and creates resilient enterprises to changing markets

Gender sensitivity

Participation of enterpreneurs throughout the MA&D process. PErs acquire the skills to make their own decisions and to formulate their own enterprise plan

The important of strategic alliances between PErs and direct (harvesters, traders, transporters, manufactures, consumers) and indirect (policy makers, researchers,…) market actors, private or public.

Strengthening institutional capacity. MA&D improve relationship, enhance trust and promote collaborations between government staff and local communities.

Addressing policy constraints. The process often reveals constraints related to access the forest resources and encourage the governmental institutions to propose relevant policy solutions.

Diversification and consolidation of local networks among CFEs, market actors, goverments,…

8 to 11 OIKOS staff facilitators have been trained in 6 sessions in the preliminary + 3 phases of the MA&D. The 4th phase is focused on the start-up of the enterprise; a process that is beyond the goals of the current project and for this reason it was not discussed.
Thanks to the training, facilitators became confident with the topics, with the philosophy of the participatory approach to be adopted and with the tools provided by the methodology.

The tools have been modified and adapted to the local context. This study had the goal of investigating opportunities and not to establish enterprise at the moment, nevertheless the facilitators have been fully trained and their experience can be used in future.

FIGURE 5: THE FACILITATORS DURING A TRAINING SESSION

5.2.2. The Workshop "CF Enterprises – Opportunities through mutual learning"

On 15 January 2020 a one day workshop with the representatives of the 26 Incoming Generating Activities (IGA) established by Oikos in 2017-2018 and the two CFEs She Yoma and Yoma Amway, was organized in order to learn from the experiences of micro/small enterprises already operating in the target area. A total of 36 people (9 female and 27 male) attended the event.

3 CF representatives interviewed 3 IGA members about the business they are running, the issues they faced during the start-up phase, the problems concerning the financial system and the future opportunities. 2 CFEs' chairmen intervened with a presentation of their personal experience (Annexes B and C).
In the next chapters reflections about the speeches and interviews are presented.

8:30 - 9:00	Registration and welcome tea
9:00 – 9:10	Opening
9:10 – 9:20	Introduction to the project contents
9:20 – 9:40	Each CF introducts itself briefly
9:40 – 10:00	Each IGA introducts itself briefly
10:00 – 11:15	Interviews to 3 selected IGA, "+ and – game", reflections and conclusions
11:15 – 12:00	Shwe Yoma and Yoma Amwe free speaches
12:00 – 13:00	Lunch break
13:00 – 13:15	Questions and answers to Shwe Yoma and Yoma Amwe
13:15 – 14:00	The meaning of CFE (law, CFI, ...) and MA&D methodology (steps, filter, 5 areas of ED)
14:00 – 15:00	List of feasible products discussion groups and most promising products ranking
15:00 – 16:00	CFs' wish list
16:00 – 16:15	Reflection and conclusion

FIGURE 6: THE WORKSHOP AGENDA

The event has also been a chance to strengthen the network among the CFs, the IGAs and the new CFEs; they have met for the first time, and had the chance to discuss about NTFPs, enterprise, business, market opportunities.
During the workshop several topics were discussed, including the definition of CFE, the CFE in the new Community Forestry Instruction (2019), the Community Forestry Strategic Action Plan 2018-2020, the notions about the 5 aspects of sustainability of an enterprise (Natural Resource/Environment, Social/cultural, Legal, Market/Finance, Technological) and the meaning of doing responsible business.

Starting from the principle that the CFUG members should be motivated, supported and incentivized (but not pulled) in the CFE development, the workshop represented not only the opportunity to share information, but also to identify feasible forest products according to the CFUGs experience and assess their interest for launching new businesses.

FIGURE 7: INTERVIEWING AN IGA'S MEMBER

FIGURE 8: DRAFTING A LIST OF PRODUCTS

FIGURE 9: RANKING THE PRODUCTS

5.2.3. The field surveys and interviews

In order to analyse the market chain of different products many field surveys visiting villages, live or phone interviews and meetings with the different actors were carried out during January and February. The questionnaires used were always designed to investigate the most relevant aspects of the 5 areas of development, according to the interviewee's role in the chain.

The following table summarises the main activities:

Date	Interviewee	Subject
20-25/01/2020	5 IGAs group (phone)	Business description, constraints and opportunities
24/01/2020	Thein Than Tun – AD of Thandwe FD	FD advices concerning law and rules about CF and CFE. Bamboo resources. Agroforestry and the importance of cash crop
27/01/2020	Soe Bon IGA members at Soe Bon village	1st session: Focus on bamboo mats production
31/01/2020	Soe Bon IGA members at Soe Bon village	2nd session: Focus on bamboo mats production
01/02/2020	Soe Bon IGA members at Soe Bon village	3rd session: Focus on bamboo mats production
01/02/2020	K.M. Thun – Kyeinchaung Village	Bamboo souvenirs artisan
01/02/2020	Bamboo restaurant's owner @ Ngapali	Bamboo for buildings and bamboo mats
01/02/2020	Bamboo retailer at Nan Chaung	Focus on bamboo mats trade
01/02/2020	Bamboo retailer at Ngapali	Focus on bamboo mats trade
01/02/2020	Bamboo trader at Hmar Chaung	Focus on bamboo mats trade
05/02/2020	Director of Rakhine FD and AD of Thandwe FD	FD advices concerning law and rules about CF and CFE.
07/02/2020	Chairman and 2 members of Myanmar Rattan and Bamboo Enterpreneurs Association (MRBEA)	National perspective of the bamboo market and opportunities of cooperation
10 – 21/02/2020	11 CFs	General survey about bamboo, EFY, agroforestry resources and perspective
17/02/2020	Good Care – Myanmar Natural Shampoo Producer (phone)	Supply of forest products for natural shampoo production
05/03/2020	Rakhine Bamboo Association (phone)	National and regional perspective of the bamboo market and opportunities of cooperation
06/03/2020	Expert in private small enterprises	Possible forms of enterprises and financial sources
07/03/2020	Expert in EFY farming and trade	EFY farming opportunities for CFs

TABLE 1: SUMMARY OF THE COMMUNICATION ACTIVITIES

5.3 RESULTS

5.3.1. The workshop findings and the subsequent steps: the products selection

In the last part of the workshop, after being trained on the different aspect of sustainability, the attendees drafted a list of products they consider feasible for the economic development of their CFs. The results were then summarized and reassessed by the same participants.
The following chart shows the final ranking of the products identified by all the participants of the workshop. High ranked products were mentioned multiple times by the participants.

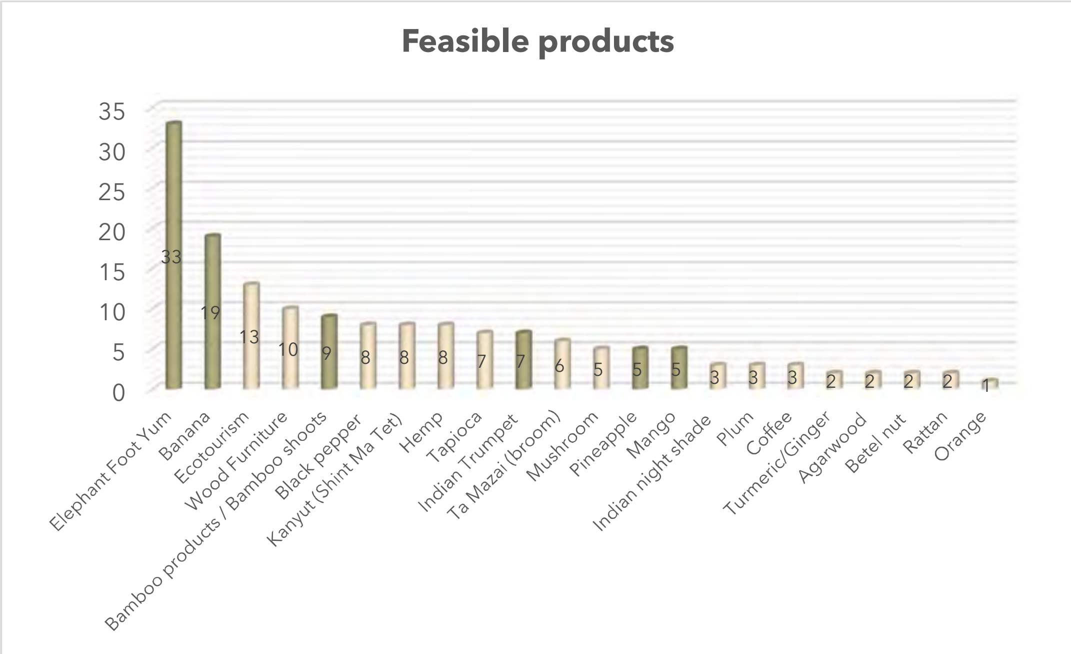


CHART 1: THE SELECTED PRODUCTS

Several different types of products were listed: from the short term crops (black pepper, turmeric, ginger) to the forest services (ecotourism), agro-forestry and highly processed products (wood furniture).
Some traditional products (Kanyut, Ta Mazai) were mentioned as well as products from different areas (Coffee, Agarwood).

Among these products some were selected according to the following criteria:

- feasibility on the short term. For example, ecotourism can be a promising activity in the future, but the services targeting tourists in the area are still too poor and the system will be properly set up in a few years;
- climatic and environmental features of the project area;
- status of the CFs' forests and resources. For example, at the moment, CFs' can't provide wooden resources for furniture;

- people experiences, skills, knowledges and current feasibility to introduce new products' processes and technologies;

The selection's criteria can be summarized in "Products that can contribute to the short term income of the CFUGs as compensation for the time, money and efforts put on the start-up phases of the CFs."

The identified products are then:

1. Elephant Foot Yam (EFY);
2. Bamboo products, with a special focus on the bamboo mats production;
3. Banana;
4. Indian Trumpet;
5. Pineapple;
6. Mango.

According to the selected products, specific surveys have been done to collect information about the resources' availability, the skills of CFUGs related to the production, the presence of already viable business, the readiness of CFUGs to start new business experiences.

5.3.2. Agroforestry products

Agroforestry products and the cultivation of wild plants are recognized as one of the key income resources on the short term for the CFUGs.

The interviews carried out by the facilitators in the 11 CFs highlighted that:

- 9 CFs, out of 11, are interested to develop agroforestry system for a total amount of 105 acres available for crops;
- Me Ne Kwin CF cultivates 15 acres as agroforestry crop (banana, lemon, lime, pineapple), Ba Win has 3 acres with cashew and Hmyar Chaung 1 acre of banana. The other CFs don't have CF's area intended for agroforestry;
- The 3 above listed CFs run small fresh fruits businesses in their villages and Me Ne Kwin supplies the Thandwe market;
- Me Ne Kwin has a remarkable business of about 3.300,00$/year (4.500.000MMK) employing only 2 people.

In the Annex D the questionnaire and the answers are available.

Information about the products obtained from literature and interviews in the target area are available in the Annex E. Each product is described starting from the resource, its main characteristics, the calendar availability, the average time span from planting to harvesting the first fruits, the description of the production process and the market potential.

Still in the framework of the agroforestry and wild plant sector, an interview to the natural shampoo and soap producer, Good Care, has been carried out. In the shampoo ingredients two wild forest products are included: bark of *Grewia elastica* and fruits of *Sapindus* sp. (soapberry or washnut). Pounded and dried bark and dried washnuts are bought by the company from an agent who collects the products from villages in Bago region. The supply from Bago is enough for the company's need but they have good links for the trade of washnuts in national market; unfortunately, in the target area, *Grewia elastica* is available in the forests but *Sapindus* sp tree is not a native species. The current value of processed shampoo bark is 3.000MMK/viss and of the dry washnut is 1.500MMK/viss.

Grewia elastica bark together with *Acacia concinna* dried fruits, mixed and boiled, are used to prepare a traditional shampoo, usually sold in the local markets.

FIGURE 10: SMALL PLASTIC BAGS OF DOMESTIC PROCESSED TRADITIONAL SHAMPOO SOLD AT KYEINTALI'S MARKET

5.3.3. Bamboo products

According to the general survey in the CFs, in the target area, bamboo appears as the most promising long term resource and short term income generating NTFPs.

Most of the interviewed CFs are interested in exploring opportunities based on elaboration of bamboo, a resource widely available in the area and highly versatile. One of the Istituto Oikos' CFUG was supported to develop a business idea for production and trading of bamboo mats in 2017. The success of this growing business confirms the potential of the resource for further expansion of the programme.

Bamboo and the sustainable development (INBAR)

Bamboo can contribute to the achievement of several Sustainable Development Goals and can play an important role in a circular economy:

- *Bamboo is easy to manage and fast growing: bamboo poles can be extracted within 3-7 years.; It has the potential to create many new jobs across the value chain. Together, bamboo and rattan have over 10,000 estimated uses.* ***SDG1: an end to povertry.***

- *Bamboo biomass can be used directly as fuelwood, modified into charcoal for cooking and heating, or converted into gas for thermal and electrical energy generation. Because it grows quickly and does not require re-planting, bamboo can provide a continuous supply of fuel. A community of 250 households would require only 180 kg of dry bamboo to generate sufficient electricity for 6 hours.* ***SDG7: affordable and clean energy.***

- *Bamboo houses are flexible, modern and affordable. They can be particularly resilient in earthquakes, remaining intact even when concrete structures are destroyed.* ***SDG11: sustainable and resilient housing.***

- *Bamboo is often used as a fast-growing alternative to timber or other building materials, and its products can have a low or even negative carbon footprint across their lifecycle. Bamboo reduces pressure on forest resources and can replace cement and plastic. Adaptable, fast-growing, and easy to cultivate and manage, bamboo and rattan have huge potential for use as a sustainable material.* ***SDG12: efficient use of resources.***

- *Bamboo provides practical solutions to combat climate change. The plant stores a large amount of carbon. Bamboo can also offer additional income opportunities to individuals whose livelihoods are impacted by climate change, making it important tools for adaptation.* ***SDG13: address climate change****.*

- *Bamboo's extensive root systems help bind soil and regulate water flow. They are used to restore severely degraded soil across the world. Bamboos are also an essential part of tropical forest ecosystems, providing a primary source of food and shelter for some of the world's most iconic and endangered animals.* ***SDG15: life on land.***

5.3.3.1 Bamboo in Myanmar: resource and sector profile

Due to its flexibility, bamboo can be considered as one of the most important NTFPs in Myanmar.

Most of the information in the following description were obtained from a recent and comprehensive survey about the bamboo sector in Myanmar, funded by the UKAid under the Business and Innovation Facility programme and developed for the MREBA in 2015.

Bamboo primarily serves consumers with general household goods (mats, panels, utensils) and the construction sector (with bamboo poles). In addition, there are cottage industries based on handicrafts and bamboo shoots. There is also evidence of the industrial processing of bamboo (primarily panels and flooring), although it is very limited at the moment. Making estimates of the economic value of each sector is challenging. Most of the bamboo sold locally for production of house goods does not follow the process of the formal economy end export of raw bamboo (pipes) and edible bamboo shoots might cross borders unrecorded.

Bamboo handicraft is well developed in the country and almost in all villages people produce baskets, hats, mats, small toys, musical instruments, roofs, bridges and housing. The International Institute for Environment & Development highlighted that bamboo is the greatest resource for small enterprise development in Ayeyarwady Delta, Mandalay Region and the second (after thatch) in Shan State. (Kyaw Tint et al, 2014).

Myanmar has 17 genera, about 100 species and 4 varieties of bamboo. They range from small species, *Arundinaria armata* and *A. racemosa*, found on high mountains, to very large species like *Dendrocalamus giganteus*, *D. brandisii* and *D. hamiltonii* with culm length reaching over 35 m (105 ft) and with diameter of 25 cm (8-10 inches). Both monopodial and sympodial species are found in Myanmar. Many species are indigenous and a few are introduced from neighbouring countries. (Nyan Thun)
Bamboo brakes are widespread in the country although information about the health status of the bamboo forest is inconsistent.

Regional location	Size of area (square km)	Hectares
Bago East	5,969	1,545,963
Bago West	2,224	576,013
Rakhine State	5,059	1,310,274
Tanìnthayi region	1,800	466,197
Total	**15,052**	**3,898,447**

Source: Planning and Statistic Division. Forest Department, 2000

FIGURE 11: MAYOR LOCATIONS FOR BAMBOO RESOURCE

The private sector usually doesn't rely on the natural bamboo forests, as they are not easily accessible and the collection of the resource can be difficult. Bamboo plantations are usually established and a selection of productive species in suitable areas are planted. Myanmar is rich of suitable sites due to its environmental and climatic characteristics.

A selection and description of the most important bamboo species under the commercial point of view is provided in the BIF survey. *Melocanna baccifera* has a great potential for poles and weaved products, it produces edible shoot, even though the quality of these is generally low. The small size of the canes of this species limits its possible uses. On the contrary, the large *Dendrocalamus asper,* seems to be the most appreciated species for all applications.

Commercial Species Myanmar	**Myanmar Name**	**Height M**	**Dia mm**	**Application**	**Ranking shoots**	**Ranking poles**	**Ranking weave**	**Ranking pulp**
Bambusa arundinacea (bambos)	Kya-khat-wa	25-30	10-15	Poles for splitting	Low	High	High	Mid
Bambusa polymorpha	Kya-thaung	10-20	7-15	Poles	Low	High	Mid	High
Bambusa tulda	Thaik-wa	10-15	10-15	Solid pole	Low	High	Mid	Very high
Cephalostachyum pergracile	Tin-wa	10-12	5-7	Poles	Low	High	High	High
Dendrocalamus asper	Wa net	20-25	10-20	Poles & shoots	High	High	High	High
Dendrocalamus brandsii	Wabo	15-25	10-20	Poles & shoots	High	High	Mid	High
Dendrocalamus calostachys	Wagyi	15-25	10-20	Poles & shoots	Low	High	Mid	High
Dendrocalamus giganteus	Wabogyi	25-35	15-30	Poles, shoots, erosion	Mid	High	Mid	High
Dendrocalamus latiflorus	Wani	15-25	8-20	Shoots & poles	Very High	High	High	Mid
Dendrocalamus membranaceus	Wa pyu	15-25	6-10	Poles & pulp	Low	High	High	High
Dendrocalamus strictus	Myin Wa	6-12	3-8	Pulp & poles	Low	High	Mid	Very high
Gigantochloa apus	Wado	10-15	10-25	Poles	Low	Very high	Very high	Mid
Melocanna baciffera (bambusoides)	Kayin-wa	10-20	8-12	Poles	Mid	Very high	Very high	High
Thyrsostachys oliveri	Thana-wa	20-25	5-8	Poles	High	High	Low	High
Thyrsostachys siamensis	Htiyo-wa	20-25	5-8	Poles	High	High	Low	High

Notes on Sizes: The sizes listed are for clumps growing under ideal conditions. Most grow to a smaller size in less than ideal conditions.

Source: BIF Myanmar Bamboo Resource Assessment 2015

FIGURE 12: BAMBOO SPECIES AND COMMERCIAL APPLICATIONS

Most of the bamboo products at local level (bamboo shoots, handicrafts, utensils, poles) require a very low level of processing. At the moment the value chain and the value-added products are very simple. Most of the processing activities take place near the source, in villages situated at the border with the natural forest.

The two images below summarize the general model of supply identified in the target area. In this framework the important role played by aggregators and community enterprises emerges, since the resource harvesters are usually scattered and not organized.

Category	Type of activity
Low Input Low Output (LILO)	Family owners of bamboo plot/ mixed bamboo and timber plot selling small or larger quantities of bamboo to individuals or traders
Company aggregators/ traders	Intermediaries organising harvesters/ cutters to source bamboo for sorting/grading and onward transporting
Handicraft community enterprises/ family enterprises	Small-scale private handicraft producers and community village enterprises primarily producing for the domestic market
Small manufacturing enterprises/ cottage industry	Sourcing and value added processing of food and timber substitute products

FIGURE 13: BAMBOO SECTOR BUSINESS MODELS

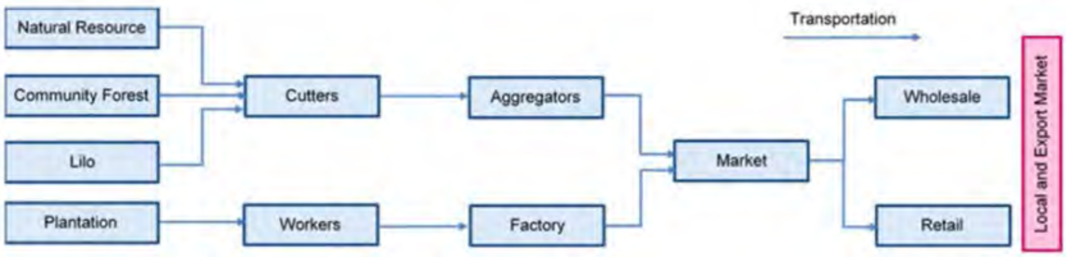
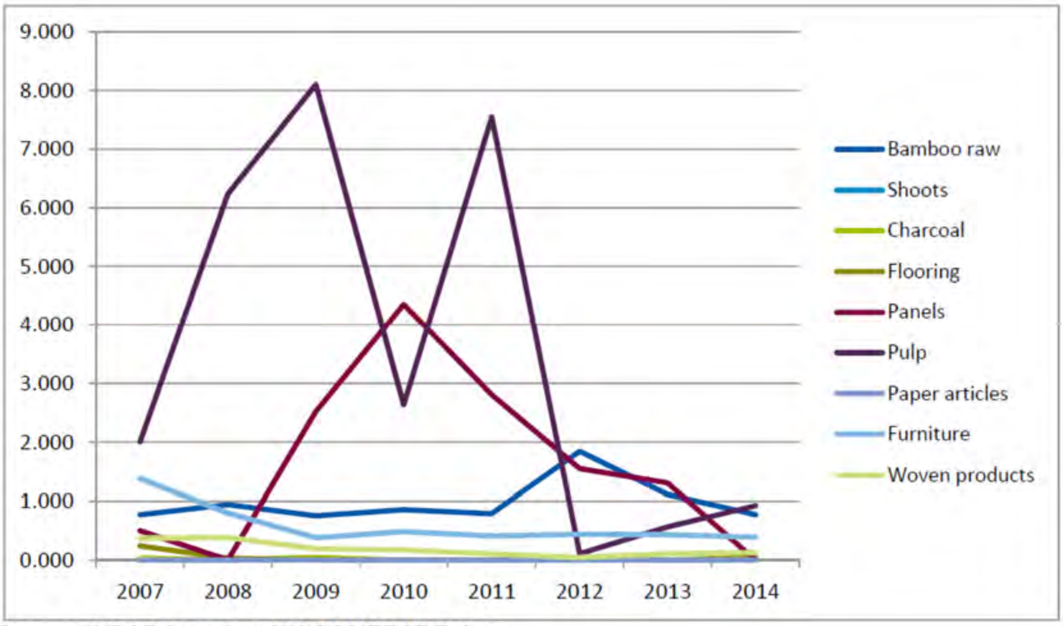


FIGURE 14: POSSIBLE VALUE CHAINS OF BAMBOO POLES/PIPES

The industrial structure is currently dominated by traditional enterprises with aggregators and small-scale enterprises; some of these enterprises recognize the need to innovate and improve the efficiency of this system. For those involved in the extraction of bamboo there is an opportunity to improve resource management and productivity.

The most comprehensive export data for Myanmar shows consistent fluctuations over time, with relevant peaks in 2009 and 2011 for pulp and in 2010 for panels. Export had fallen after 2013. Woven products were quite stable but at very low value.



Source: INBAR based on UN COMTRADE data

FIGURE 15: MYANMAR BAMBOO EXPORT PROFILE 2007-2014 (US$M)

The main competitor of Myanmar, China, has developed efficient production and processing systems for bamboo, including veneer panels, flooring, shoots and charcoal. Clustering of activity may enhance the competitiveness of Myanmar in the international market.
Bamboo can be considered a wood substitute material, moving the focus from the unprocessed resource to a value-added market, would consistently increase the economic benefits for the enterprises.

A consistent overview on the bamboo sector assessment has been carried out by the BIF Competitiveness Survey in 2015 and it is summarized in the table presented at Annex F.
The study remarks the importance of being cautious and fully assess the risks in trying to expand and diversify the bamboo market, taking in consideration the high competitiveness of China in the international panorama. Beyond traditional and cottage industry products, the edible shoots (canning) and poles market faces lower risks. Another product with both domestic and export market potential to be considered is bamboo for housing (bamboo culms as primary building materials, bamboo frame plastered with cement or clay, modern prefabricated houses made of bamboo laminated boards, veneers and panels).

Melocanna baccifera (Kayin-wa)

- *Produce open and diffuse clumps with some distance (up to 1 m) between the culms.*
- *Clumps can reach 4-5 m diameter and can produce 30 – 40 new culms annually. 30 – 40 culms should naturally die annually starting from the age of 5 years.*
- *Density can reach 600-700 clumps/ha (240-290 clumps/ac).*
- *Selection felling recommended silviculture.*
- *3 years felling cycle: 1 year old and 2 years old culms are all left in the clump, 3 years old and older culms are all cut.*
- *Recommended culms density in the clump is 10 to 20 culms of 1 to 3 years old: 3 to 7 culms/age class.*
- *Ideal culms density should be: 600-700 clumps/ha x 10 – 20 culms/clump = 6,000 – 14,000 culms/ha/aa (2400-5700 culms/ha/aa). Which means 18,000 – 42,000 culms/ha/3 years felling cycle (7200-17100 culms/ac/3 years).*
- *Annual yield is about 4000 culms/ha/aa (1650 culms/ac/aa) or 12000 culms/ha/3 years felling cycle (4950 culms/ac/3 years). Generally ranges from 3 to 10 tons green/ha/aa (1.2 to 4 tons/ac/aa) or 9 to 30 tons green/ha/3 years felling cycle (3.6 to 12 tons/ac/3 years).*
- *Culms older than 3 years don't produce shoot anymore.*
- *The number of shoots produced every year in a clump is at least equal to the number of 1 years old + 2 years old + 3 years old culms in the clump.*
- *Shoots natural mortality is about 9-37%.*
- *Shoots harvest shouldn't exceed 30% of yearly production.*
- *Conversion values: 1000 culms = 4,4 tons green = 2,5 tons air dry*
- *It blooms every 50 years and the last flowering was in March 2010.*

**the listed above values are gathered from a mix of sources about M. baccifera in its entire spatial distribution, no specific data for Rakhine forests has been found*

5.3.3.2 Bamboo in the CFs of the target area

The field survey on the CFs was focused in the investigation of the relation between CF and bamboo sector.
CF Management Plans as requested by the FD, do not estimate the presence of bamboo in surface (area) nor in quantity (volume or weight), and no specific inventories are available at the moment in the District or Region.
For what concerns the CFs established by Istituto Oikos, it was found out that:

- CFUGs estimate the presence of a total of 144 Acre (approx. 58 ha) of bamboo forest in their CFs;
- The CFs of Aung Tha Pyay, Kyar Pyit Kone and Hmyar Chaung, and Soe Bon village too) do not have any bamboo. Just one species is naturally growing in the area: Kayin-wa (Melocanna baccifera).
- area was estimated by the CFUGs as percentage of the total area of their CFs;
- Most of these forests are easily accessible except for Oh Thein where the bamboo is scattered and far from village and in Tone Taw where only 50% of it is easily accessible;
- With an ideal culm density of 2,400-5,700 culms/ac and a sustainable harvest of 1,650 culms/ac/aa (as suggested in literature) in the approximate easily accessible 52 hectares (128 Ac) of bamboo forests, the yearly extraction could provide 212,000 pipes.
- There are 4 CFs with insufficient resource which is not harvested. In other 7 CFs bamboo is extracted; in Myo Kwin CF bamboo is harvested mainly by Soe Bon villagers for the production of weaving of mats;
- Except Hmyar Chaung and Me Ne Kwin, the other CFUGs manufactures some scarcely processed products.

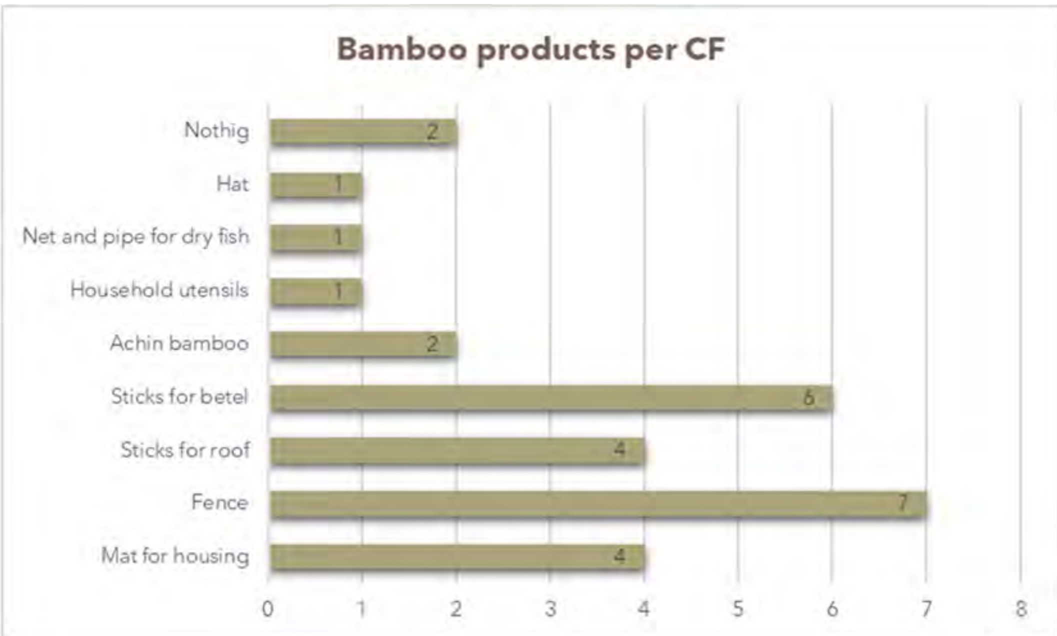


CHART 2: BAMBOO PRODUCTS AND NUMBER OF CF PRODUCERS

- The declared average annual extraction shows a very wide range: from 170 pipes/ac/year to 24,000 pipes/ac/year compared to an ideal extraction of 1,650 pipes/ha/year as stated in the literature. Deeper investigation on this will be needed in order to evaluate whether local communities are overharvesting bamboo or not, and what consequences this would have on the natural regeneration of the resource.
- Individual members of Pan Taw CF and Myo Kwin CF (the 2 CFs with higher rate of extraction) are involved in small scale trading of bamboo products, the remaining villages only harvest it for personal needs.
- Bamboo is extracted from the CF of Pan Taw from the members of the same village and from a village close by, Myo Kwin just provide the raw material for the Soe Bon village's business;
- All CFs declared to have skilful members for bamboo harvesting and processing for fences, sticks and household items;
- 5 CFs out of 11 would be interested in bamboo plantations in 95 Acres available. Soe Bon is also interested in 30 Acres plantation of Kayin-wa.
- 6 CFs are interested in an entrepreneurial experience as member of an entrepreneurial group, 3 CFs as single entrepreneur and 2 CFs, both with few resources available in their boundaries (Aung Tha Pyay and Hmyar Chaung) are not interested in the bamboo sector.

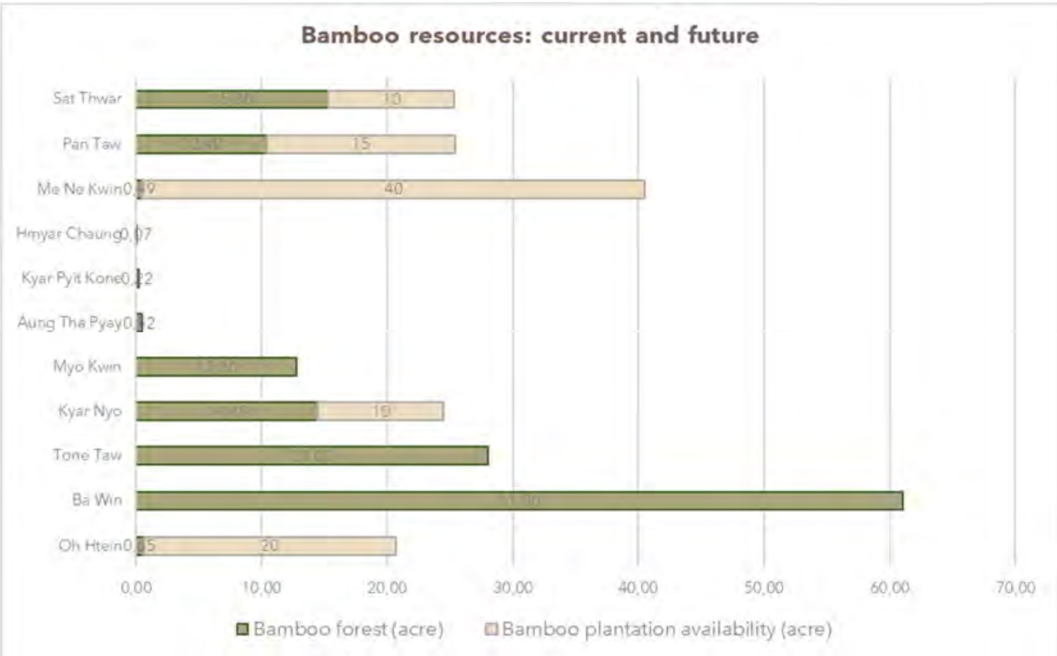


CHART 3: BAMBOO FOREST AREA AND SURFACE AVAILABLE FOR BAMBOO PLANTATIONS IN THE CFS

In the Annex G the questionnaire and the answers of the CCFUGs are provided and in the Annex E some bamboo products are illustrated.

FIGURE 16: A SELECTION OF LOCAL BAMBOO PRODUCTS SHOWCASE

5.3.3.3 The private sector's point of view: MRBEA and RBA

To summarize the point of view of the private sector about the bamboo market it is presented a SWOT analysis, coming from the BIF survey. This analysis presents several challenges to faced in future, especially for the natural bamboo forests.

Strengths	Weaknesses
• Significant land available to develop bamboo plantations (vacant and degraded land) • Significant variety of bamboo species and commercially relevant species (with the exception of the Moso species) • Low labour costs (relative to China and other competitor countries) • River system provides for low cost transport in some areas • Port access (for some areas and is good in comparison to other countries, e.g. Laos)	• Knowledge of the stock of bamboo across the country is uncertain • Some high quality stocks in remote and/or conflict affected areas • Lack of market access, technology access and finance combined with poor regulation • Infrastructure poor (in particular roads and power grid system) • Not easy to acquire land and the price of land is increasing • Land use policy (zoning) not yet approved • Unclear land rights (country wide, esp. Kachin state) • Tax policy does not support sector development • Current market focus is on low value added construction uses, handicrafts and cottage industry food processing • Forest fires and wild elephants destroy farms
Opportunities	**Threats**
• Opportunity to influence government policy and promote afforestation and appropriate role of plantations • Timber can be replaced with Non-Wood timber (Bamboo) • Growing domestic demand from the construction sector, especially bamboo poles for scaffolding • Bamboo housing for disaster relief and local low cost housing • Export markets for bamboo products include US, Brazil, Australia, South Africa; also Japan and Taiwan (but high quality demanded) • Carbon credits is an opportunity to explore • Can support diversified employment; in cultivation, processing and manufacturing	• Cost of labour and electricity increasing • Forest cover rapidly decreasing • Climate change is making some areas hotter and drier and is already affecting bamboo stocks • Natural disasters • De-forestation due poor enforcement and weak forest law (lack of staff) • Biodiversity loss with monoculture bamboo plantations • More innovative products by competitors/ ability to offer lower prices (backed by government support in particular China) • Increasing pressure on bamboo resources because of a rising demand for poles for low value applications

Source: Bamboo Industry Development Workshop 29th October 2015 and Bamboo field analysis

FIGURE 17: SWOT ANALYSIS ON THE MYANMAR BAMBOO SECTOR

A meeting with the President and other two members of the Myanmar Rattan and Bamboo Entrepreneurs Association (MRBEA) was organized on 7th February. The meeting resulted in an interesting discussion about the present status of the bamboo market in Myanmar and the short and medium/long term perspective.

The Association has a clear view about the best arrangement for bamboo industry in Myanmar, looking to the China model as the most efficient and successful.

They explained that *Melocanna baccifera* is an average quality bamboo. This species is good for weaving mats for traditional houses but not for furniture, mostly because the size of its cane is too small. Also, the mats obtained from this species are very stiff and rough. In order to enhance the value and the attractiveness of these mats, very high quality customized products with special patterns or dimensions could be added to the market. This added value could justify their export for the national market and balance the high transportation costs.

The MRBEA is much more oriented on better quality bamboo plantations (*Dendrocalamus asper* or *D. giganteus* or other) for laminated bamboo, bamboo panel, board, composite, plyboo, engineering bamboo. According to MRBEA, a minimum sustainable surface of plantation should be about 5-20 acres.

The MRBEA's vision for the sector is an efficient integrated system of high quality bamboo plantations (villages, communities and CFs), cottage industries for the culm splitting and stripes preparation and a bigger factory for the final product process, all in the same area.

The Association has shown an interest to cooperate with INGOs and CFs-CFEs and has offered support with providing information/suggestions and also in provision of trainings.

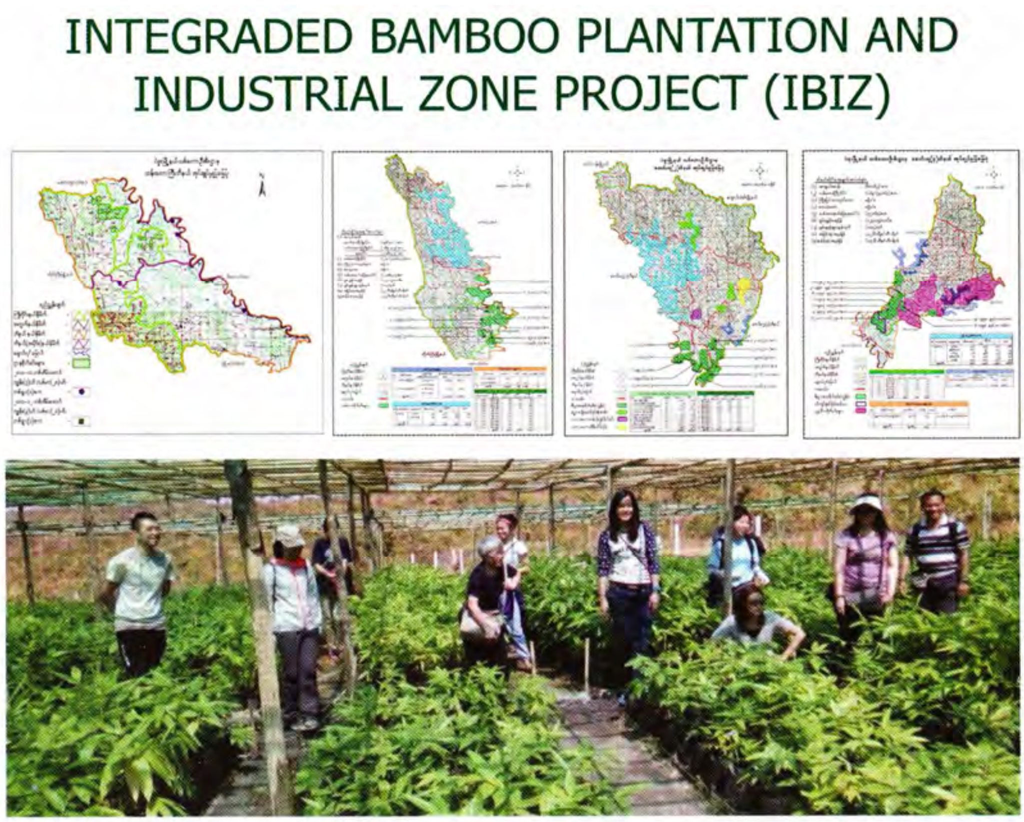


FIGURE 18: A VISION ON MYANMAR BAMBOO SECTOR DEVELOPMENT (MRBEA)

The Rakhine Bamboo Association (RBA) is also a group of members, organized in subgroups (national, district, township, local) with the purpose of harvesting and growing bamboo, rattan and timbers and trade them and their products while ensuring the sustainability. RBA is not yet registered but it has applied for the registration to the Ministry of Home Affair.

This Association has been interviewed for the scope of this survey and to strengthen local network and links for the future development of business of the CFs.

The Association is moving its first steps in the bamboo sector and for the first two years it is planning to focus on the local market of pulp for paper, chopsticks and shoots, successively it will try to expand to national and international markets.

RBA is planning to plant other bamboo species for the production of shoots (e.g. Hmyit-Cho-Wa in local name). The association shares the vision of MRBEA for the development of the bamboo market in Rakhine as an integrated system of even scattered producers/harvesters and artisans with a centralized medium scale industry. The local communities can be involved in the system by supplying bamboo raw materials (communities' bamboo supply chain) and working at the production plants.

RBA wishes to cooperate with the CFs in the future, seeking the international market.

5.3.4. Bamboo mats value chain in the Thandwe District: the case study of Soe Bon village

The workshop and the following interviews revealed a general interest in developing businesses based on bamboo although, at the moment, the user groups are unable to initiate this process autonomously. They need motivational, technical and financial support.

However, in the Thandwe District, the Soe Bon village is a peculiar entity in the bamboo sector, compared to the local context (South Rakhine).

In Soe Bon almost all families are involved in the bamboo mats production; the business is not run as a unique community's enterprise, but many small businesses are simultaneously running in a sort of balanced competition.

In Soe Bon there is a certified CF which includes members also belonging to an IGA group focused on bamboo mats for walling and ceiling. In the village 6 households are involved only in IGA, 18 only in CF, 3 involved in both CF and IGA.

This entity has been considered worthy to be analysed in detail for the purpose of the present project, as an important experience and potential starting point for the development of the bamboo sector in the area. Constraints and opportunities have been assessed under the "5 areas of the rural enterprise development" using the M&AD approach.
The IGA's members have been interviewed by the facilitators team in 3 different occasions, the survey was also extended to other actors of the value chain (traders, retailers and customers in Ngapali). The findings are commented below and displayed in the Annex H.

FIGURE 19: SOE BON IGA'S WOMEN PARTICIPATE TO THE INTERVIEWS

5.3.4.1 Natural resource management and environment

Soe Bon CF doesn't provide bamboo for the production; it is obtained mainly from the CF of Myo Kwin. According to the experience of the villagers interviewed, an extraction of 15-20,000 culms/acre/year is sustainable in a natural forest (which is very far from the 4,000 culms/acre/year suggested by the literature). So in order to supply for the yearly needs of the village (1,456,770 Bamboo pipes, 342,000 Bamboo shoots harvest by 120 people) from 70 to 100 acres of bamboo forest are needed. The total surface of easily accessible bamboo forests in the 11 CFs are 128 acres, so it is enough to satisfy the Soe Bon production. With a plantation of 30 acre of Kayin-wa, the extraction effort should be more sustainable.

The production process of mats has to be considered highly environmental-friendly, no fossil fuels are used (except for transportation) and the waste is very limited. From one pipe, three main products are usually obtained: splits for weaving mats and other items, strips for fences from the inner part, and fuel for households. Minor scraps are left in the forest, since the splitting is done directly in the field.

5.3.4.2 Products and market

The yearly production of the Soe Bon village is composed by:

- 700,000 Bamboo pipes
- 20,000 Bamboo mats
- 50 Bamboo baskets to fence chickens
- 40,000 Bamboo sticks for making Nypa roof
- 100 Bamboo mats for poultry farming
- 20 Bamboo hats
- 100 Bamboo nets for fishing
- 100 Bamboo baskets to conserve fish
- 342,000Bamboo shoots.

households' consumption is included.

The peak of resource availability (pipes) is at the end of the wet season, while the availability of shoots corresponds the wet season. The market demand of mats is opposite than the availability, people set houses before the rainy season starts and fix it at the end of the monsoon.
Despite this trend of demand, the price doesn't suffer of seasonal fluctuation according to the producers and retailers. The trader stated, instead, that in April, when the demand is higher, he can sell at an higher price.

The value chain is quite simple and involves only few actors: harvesters (mainly men) and weavers (mainly women), traders and retailers. The IGA members are in charge of both harvesting and weaving and then sell to the trader, bringing mats on the main road. Trader transports to Thandwe and Ngapali market and sell to either retailers or end customers.

FIGURE 20: BAMBOO MATS VALUE CHAIN PROCESS AND ACTORS OF THE BAMBOO MATS SECTOR IN THE IGA'S MODEL

By Interviewing the retailers in Thandwe town it was discovered another model of value chain adopted in the Soe Bon village by people who are not part of the IGA. This system includes collectors/traders who belong to the community; the retailers deal with collectors (paying a commission) and carriers (paying for transportation costs).

FIGURE 21: ACTORS OF THE BAMBOO MATS SECTOR IN THE VILLAGE OTHER THAN IGA'S MODEL

The two systems lead to different prices (20-25% difference) for the same items in the same market. The second model leads to a cheaper price for the end customer but less profit for the retailers.

Customized mats (design and size) are also available on order, but the demand is very low due to the difficulties of the IGA members to promote their products in the right final market.

According to the information collected, Soe Bon village is the only supplier, at business level, in the Thandwe Township. Other villages in the area can wave mats, but they do it only for their household needs. In Gwa township nobody sells bamboo mats, they all come from Thandwe, usually transported by bus.

5.3.4.3 Finance

Soe Bon is a former savings group, turned to an IGA group in bamboo mats productions; after its establishment, the IGA had a grant as start-up capital from OIKOS in the framework of DAFNE project of 1,310,000 MMK.

5.3.4.4 Legal framework

People involved in the business declared not being properly aware about the rules and regulations. The national legal framework is currently developing and not completely clear at the moment.

The Forestry Department is the main regulator for forest management. It provides permission for bamboo extraction rights (based on a yearly quota) to bamboo traders and collects forest revenue from bamboo traders. The Department collects revenue from bamboo cutters extracting from natural forests and issues permission for transporting bamboo outside townships. The Forestry Department issues permissions for selling forest related products, including bamboo, to wholesalers and retailers. (BIF and MRBEA, 2015).

Application process to harvest and trade/transport forest products (Grejimans M, at al., 2018)

1) A License to request permission to harvest and transport forest products is issued by the Regional/State FD. A person/entity that wants to commercialize forest products needs to submit a request with details of the product and volume that is planning to work with and submit it to the Regional/State FD for consideration.
The Regional/State FD will consult with the concerned District FD and Township FD if the request to harvest the forest products is feasible in terms of sustainability and based on the management plans available. If the consultation is positive, a permit is issued.
2) A Bill is issued at district FD, which is based on the issued license including the details. Once the license holder has paid the required tax (i.e. 25 kyat per small diameter bamboo canes, and 70 kyat for larger canes) at the Government Bank, the bill is issued after which harvesting can take place.
3) A Removal Pass is issued by the township FD. With the Bill and the harvested products ready for transport a removal pass needs to be requested at the township level to allow transport over district and regional borders. The amount of products mentioned in the license and subsequent bill needs to be in line with the removal pass.
Source: U Win Kyaw – FD Assistant Township Officer

5.3.4.5 Social/Cultural

The Soe Bon village situation could be a potential source of social conflicts because many businesses, more or less organized into groups and with different, marketing systems, coexist side by side. The competition in the bamboo mats production is just inside the village; we can say that Soe Bone holds the leadership on this market in South Rakhine. On the contrary, the producers have found their mutual balance and everyone manage its own market share.

The IGA/savings group allocates the 10% of profit for the social development of the village every 3-4 years

5.3.4.6 Technology/product research and development

The level of skills of local villagers in harvesting and processing bamboo can be considered sufficient to place a competitive product on the market, but they feel themselves very weak in trading and marketing their production.
Soe Bon village suffers for a insufficient infrastructures asset: mobile phone coverage is very poor and the village is almost isolated during the rainy season due the main road condition.

Dalia Pankalay savings group in Soe Bon

People in Soe Bon set up a saving groups to support enterprise and development activities in the village. The saving groups Dalia Pankalay has 10 members of which 7 are women, and manages a fund of 200,000 MMK. It is financed by memberships fees (3,000 MMK per person), as well as a monthly fees (500 MMK per person) and returned loans with an interest rate of 5%.

All 100 housholds in Soe Bon village work to produce about 20,000 "Kayin wa" bamboo mats per year. Dalia Pankalay sources 5,000 mats to sell in Thandwe markets, the remaining 15,000 are bought by local traders. The group also invests in rice trade inside the village for those not able to grow enough.

For the next four years, they intend to support transport costs for schoolchildren to go school in Ngaphan village. The Chairwoman of Dalia Pankaly mentioned that "the savings funds from our activities, including the bamboo mat trade, is supporting local children to go to school".

FIGURE 22: THE BRIDGE ALONG THE SOE BON VILLAGE MAIN ROAD

5.3.4.7 Summary

Together with the facilitators the IGA members have assessed their business in terms of opportunities, constraints and possible solutions. The table below presents their findings, but the topics have been analysed in detail in the framework of Activity 4 and 5 of the project and reported in the following chapters.

	Market/Economy	Natural Resource Management/Environment	Social/Cultural	Institutional/Legal	Technology/Product development
Opportunities	Enterprise development training (IGA group) have been provided Some initial capital has been distributed There is the market for all seasons which means the whole year	The natural regeneration or growth rate is very fast The resource is available on the long term Easy to access for harvesting Waste can be reused	The women participation is good; women can participate more than men in this business	Already have the permission or right to harvest from CF. According to the CFI, CGUGs are allowed to initiate CFEs..	CFUGs already have the skills related to bamboo harvesting and processing.

Constraints	Low capital There is no contract between traders and sellers, this makes the business unstable There are only verbal agreements between the actors. Sometimes CFUGs can have losses when promises are not respected.	There are not many CF areas with bamboo Weak in systematically harvesting This type of bamboo is flowering every 50 years	Weak in participation	Cost for enterprise registration, tax level and other administrative burdens	Roads are bad for transportation especially during rainy season. Skills related with market link and market analysis are needed New technology or machines could be needed
Possible solutions	Organizing as an enterprise and trying to get funds from the bank Trying to link or contact directly with the retailer or customers Trying to do business with official contracts	Growing bamboo plantation inside CF Organizing meetings with all bamboo users to draw bamboo resource management plans	Try to promote participation by organizing more meetings and negotiation	Explore opportunities to obtain taxes exemption for CFUGs	Providing trainings for market analysis and development

FIGURE 23: BAMBOO MATS PATTERNS IN SOE BON VILLAGE

5.3.5. Elephant Foot Yam

Elephant Foot Yam can be considered as a cash crop. It naturally grows in the forest and some villagers already harvest it - as described below -, but it can also be easily cultivated in the forest canopy.

The CFs members have been interviewed about their current and future interest in harvesting and growing EFY (Annex I).

At the moment no CFUGs among those interviewed grows EFY, despite all harvest it for small seasonal business (September – November) in their own village or neighbouring villages. According to the interviews, all are interested in farming EFY. They state that 240 acres in total are potentially available for its cultivation.

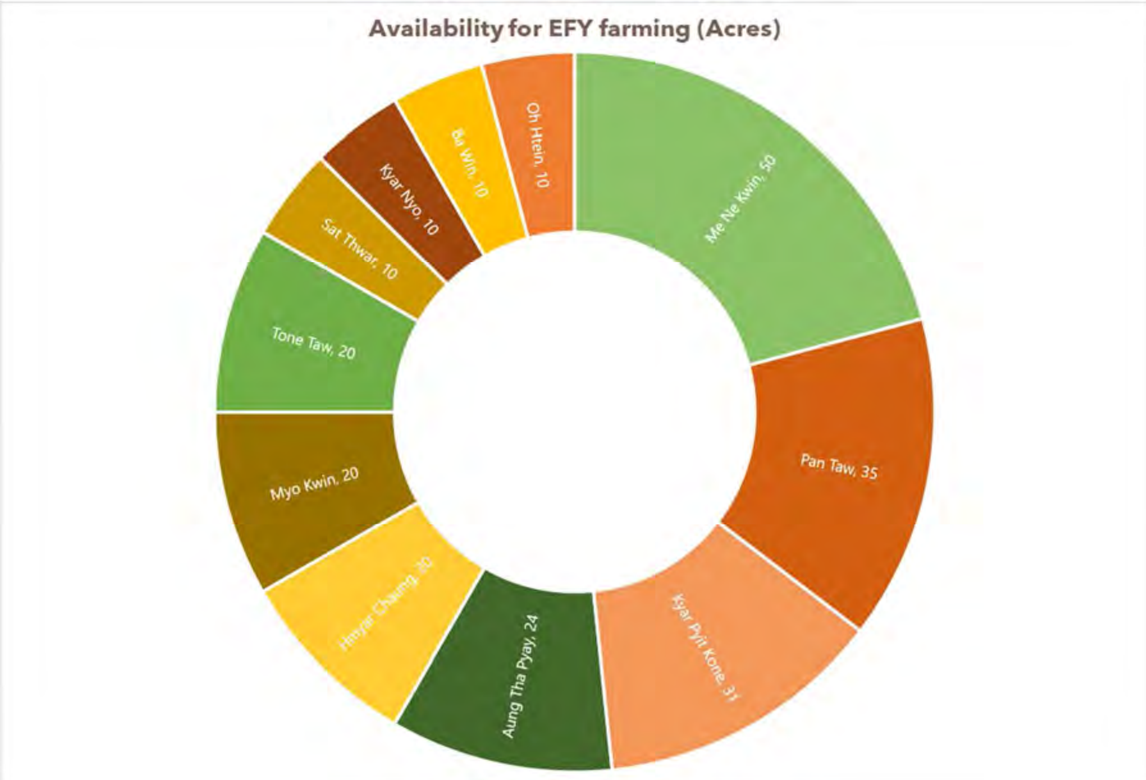


CHART 4: COMMUNITY FOREST AREA AVAILABLE FOR EFY FARMING

The quantity of EFY currently harvested in the CFs is approximately 49,600 viss (30,429 kg).

The market price of 1 EFY viss ranges from 400 to 900MMK. The average and most frequent value declared by the interviewees is 500MMK. The yearly total value of the wild EFY business in the 10CFs (Sat Thwar excluded) is 27.950.000MMK (20.000US$). It seems that the price is geographically and seasonally determined.

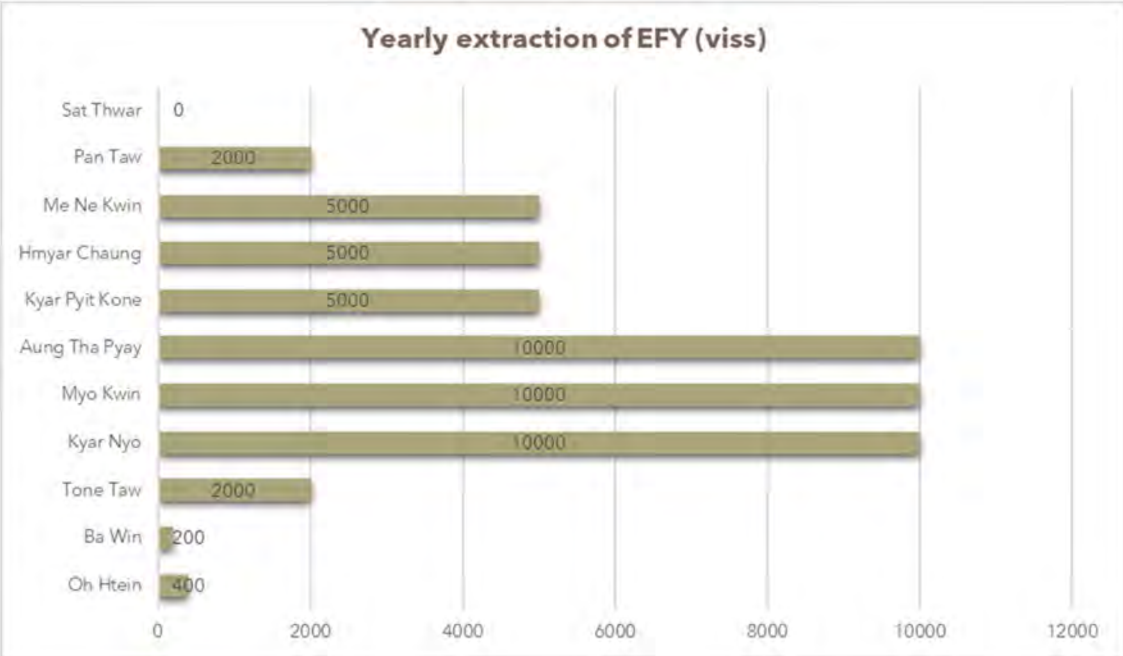


CHART 5: EXTRACTION OF WILD EFYS IN THE CFS

The quality of the wild EFY in South Rakhine is good but its size is too small compared to the size that reaches in high market value, which is obtainable only by farming. In addition, the quantity provided is limited.
The fresh product is suitable for local and national market demand. On the international market it is widely traded diced or sliced, and dried under the sunlight. The mechanical drying is usually more efficient that the natural sunlight, especially for big quantities.

EFY is sold either for food or for cosmetic and pharmaceutical purposes. Selling wild-harvested and fresh product at local level ensures an income ranging from 400 to 900MMK/viss. On the other hand, selling farmed-cultivated EFY for national/international market ensures a higher income, of around 1,600-2,400MMK/viss, according to the variety.

The market chain always includes a trader, even for the trade of the fresh product at local level. Seldom do CFs directly sell it to households: usually a few amount is sold to the same villages' retailers, and the larger part is sold to the traders.
Among EFY market actors there is a long chain of intermediaries, at almost every administrative level (village, township, district, region) before reaching the foreign industries addressed for the product's processing.

FIGURE 24: THE ACTORS INVOLVED IN THE EFY VALUE CHAIN

Many CFUG members of the target area have been already trained on the EFY farming and drying processing; they also have experience with the market (and the link with traders) and selling the wild fresh product. The main constraint at the moment in order to develop and enlarge the market opportunities, is starting investment for plantations.

EFY looks like a social fair product since in its whole process women can be easily included and it is also an environmental friendly product; the waste of farmed EFY can be reused as natural fertilizer for natural regeneration of forest or in the cropland.

The Annex J reports the whole Market Analysis obtained mainly by an interview to an EFY expert and former trainer in the cultivation of EFY for UNDP and UNOPS.

5.3.6. The possible forms of enterprises

During the assessment for the potential for the establishment of CFEs, information has been gathered to identify what are the existing legal procedures for their start-up. Success stories in the project area and broader literature on Myanmar case studies were examined. Data shows that the presence of Small and Medium Enterprises (SMEs) in Myanmar is consistent. In 2014-2015 out of the total number of registered enterprises in Myanmar 99.4 per cent were SMEs (Abe & Dutta, 2014), in the last years the proportion has not moved from 90 percent. The majority of them are family-based establishments and self-employed workers, comprising a very heterogeneous group of businesses usually operating in the agribusiness, service, trading and manufacturing sectors. CFEs do fall in this category, together with Cottage Industries, namely small family businesses, mostly located in rural areas (Cottage Industries Law, 1991).

Moreover, under the Cooperative Society Law (1992), the different levels of cooperative societies are comprised. Differently from enterprises, cooperatives have a different internal allocation of the profits derived from the commercialization of their products, some also being non-profit.

According to the last version of the Law on the Development of Small and Medium Businesses (2015), SMEs are defined based on their number of employees, capital invested, level of turnover and the type of industrial or service sector into which the enterprise’s activities fall. Once the members have certified to meet the respective criteria, they can proceed with the registration. Upon registration, the law secures the members several important rights, as to submit grievances, to attend local and foreign trainings and business networks and to apply for financial assistances and loans (OECD 2016).

The legislative framework does not provide particular clarity on the registration mechanisms, and in particular on the distribution of responsibilities among governmental agencies. In 2011 the Ministry of Industries established the Industrial Development Committee which was appointed responsible to foster and support the establishment of new small and medium enterprises. Actually, different ministries are involved in SME development, mainly according to the sector of concern: the ministry of industry, cooperatives, commerce, finance, national planning and economic development, agriculture and irrigation, and science and technology (Abe & Dutta, 2014).

For what concerns non- industrial and non-urban enterprises, especially for the cases in remote and rural areas, the procedure is to apply for a license at the offices of city and township development committees.

In particular, for the Community Forestry manufacturing enterprises, the registration could be processed by the Cooperative Department and the Small-Scale Industry Department (SSID), which are under the Ministry of Agriculture Livestock and Irrigation (MOALI). The request for registration at the Cooperative Department must be submitted together with the organization chart and a written recommendation by the Forest Department's township officer. The members who apply need to pay membership fees and they can borrow money at the amount of around 25 lakhs with 2% interest. While, when registering to the SSID, the chairman or representative of the enterprise must fill the application form provided by the department with attached pictures of the business activities. Another option for CFEs registration is provided by the Directorate of Industrial Supervision and Inspection - DISI. CFE groups can receive vocational training delivered by DISI and also can get a loan from the bank linked with the Directorate.

		Micro	Small	Medium
No. employees	Manufacturing	< 10	≤ 50	> 50 ≤ 300
	Wholesale	< 10	≤ 30	> 30 ≤ 60
	Retail	< 10	≤ 30	> 30 ≤ 60
	Service	< 10	≤ 30	> 30 ≤ 100
	Other	< 10	≤ 30	> 30 ≤ 60
Capital Investment			≤ 500	> 500 ≤ 1000
Turn Over (Last Annual Income)	Wholesale		≤ 100	> 100 ≤ 300
	Retail		≤ 50	> 50 ≤ 100
	Service		≤ 100	> 100 ≤ 200
	Other		≤ 50	> 50 ≤ 100

Enterprises are subjected to the payment of an income tax which varies on the bases of the characteristics of the company and the products sold. Income taxes rates can vary from 30% to 40%. However, the law foresees a preferential treatment for SMEs as a tax exemption for small enterprises for the first three years, beginning with the year in which the operation commences, and a further tax exemption or relief for considered beneficial for the state (Small and Medium Enterprises Development Law, 2015).

5.3.7. The possible sources of financial assets

The majority of government and private financial loans to SMEs are provided by government and private banks, as Myanmar Investment & Commercial Bank (MICB) and Myanmar Industrial Development Bank (MIDB), SME Development Bank and Myanmar Agricultural Development Bank (P.Polsaram & T.D.Htwe, 2010).
However, despite some progresses in the last years, as reported in the Small and Medium Enterprises Development Law drafted by the government in 2015, the access to financial loans and facilitations is one of the main obstacles faced by SMEs in Myanmar, together with "human resource" and "technology development and innovation" shortcomings (JICA, 2017).

The SME Development Bank has been operating a microfinance programme since 2013 thanks to which it has been loaning about five billion kyats (about US$6 million) to help SMEs in urban areas (K.Tint et al., 2014).

Myanmar Agricultural Development Bank, created under the supervision of the MOALI for the support an development of agriculture, livestock and rural enterprises, provides the small loans to the rural farmers, fishery sector and rubber plantation. It is now the largest money-lender in the rural landscape in the country. Farmers can receive group loans: these must be guaranteed by the entire group, consisting of seven to ten members, and if one member breaks the agreement, the whole village is black-listed. The lending rate is 8-8.5 percent per year, and the amount loaned varies according to the type of crop and the land size (K.Tint et al., 2014).

Other financial sources can come from the Ministry of Cooperative, who also provides financial support to micro enterprises, or Microfinance Institutions that, on average, provide loans at a lower interest rate of 2.5 percent.

There are traders and agricultural development companies which provide loans to farmers, on the condition that the farmers sell their products at a reduced price, with a landing rate from 3 to 5 percent per month. There is also informal lending in the villages by wealthy villagers who set flexible loan amounts with high interest rates that, in most cases, result in entrenched poverty (K.Tint et al., 2014).

Finally, another solution for CFUGs is the Revolving Fund internal to the community, where loans are granted by the same members of the community to finance new investments for sustainable activities that create sources of revenues by CF products.

6. IDENTIFICATION OF THE CONSTRAINTS FOR THE DEVELOPMENT OF CFEs (Activity 4)

The constraints emerged as results of this study can be divided in: (a) general constraints linked to the wide scale context, as national or regional socio-economic conditions; (b) specific constraints, due to local conditions or related to some aspects of the resource and the market/production process of the selected products.

The interviews conducted to the IGAs and to the existing CFEs were aimed at highlighting general constraints to rural/sustainable business-making in South Rakhine. The information gathered was then shared in a workshop, with the aim of raising awareness of those who could become responsible entrepreneurs in the next future (among CFs' members).

Most of the constraints listed by RECOFT in its final report on DAFNE project seem to be addressed and in the process of being overcome as far as the CF management experience is growing and strengthening. The constraints listed below do not represent a threat anymore:

- Limited local participation in sustainable forest management and use, maintenance and restoration of the environment and its natural resources.
- Weak knowledge and awareness related to forests (mountain, coastal and marine) services and resources.
- Weak sense of ownership towards forests and natural resources.
- While, some other constraints are still present:
- Lack of alternative sustainable income generating activities. To promote conservation of natural resources and sustainable environmental management, associated economic activities generating income in a short time are needed;
- Weak mechanisms for coordination and information sharing among users groups, communities, grassroots organizations, NGOs and government organizations.

The identified constraints are presented in the tables below, divided into 5 categories that correspond to the "5 areas of the enterprise development" identified in MA&D methodology. The approach helps to conduct a comprehensive report of the Constraints/Weaknesses/Threats and facilitates the identification of related Solutions/Opportunities in order to design a strengthening programme to be implemented in the future.

6.1 INSTITUTIONAL AND LEGAL AREA

Constraints/Limits/Issues/Difficulties/Weaknesses/Threats	Products (if applicable)
The national scenario of the CFs and of the legal status and governmental support to CFEs is still uncertain	General context
The CFEs can be recognized according to the Community Forestry Instruction (2019) but they are not registered enterprises which creates difficulties for credit access	General context
The permission for harvesting, transport and trading of CF's products is obtained from the FD on a yearly base, which is a very short time for an enterprise	General context
The link with the public sector is very weak. The FD is the only contact with public administration	General context
Written contracts/agreements along the market chain are not customarily used	General context
Policy and legal framework is complex and CF members need outsourced support for bureaucratic procedures in the CFEs start-up phase (harvesting permission, transportation permission, commercialization permission, taxes and registration of the enterprise)	General context
The FD recognition of CFEs does not equal an enterprise registration. CFE must be registered in order to obtain bank loans or support from SSID	General context
Long procedures and informal charges are identified as impacting trade and investment. Tax policy is not fully supportive in encouraging the local processing sector (e.g. tax on chemical inputs for bamboo flooring).	General context
Unclear instructions for harvesting timber/NTFPs from CFs for CFEs. CFEs have to abide the same harvesting taxes and other taxes along the supply chain as larger companies	General context
Limited access to information (for example marketing opportunities) and lacking awareness of rights and regulations	General context
Need for enabling environment for private sectors' investment	General context

TABLE 2: CONSTRAINTS/LIMITS/ISSUES/DIFFICULTIES/WEAKNESSES/THREATS IN THE INSTITUTIONAL AND LEGAL AREA

6.2 NATURAL RESOURCES MANAGEMENT AND ENVIRONMENT AREA

Constraints/Limits/Issues/Difficulties/Weaknesses/Threats	Products (if applicable)
CFs size is too narrow to develop a one-to-one sustainable CFE	General context
People primarily base business on locally and customary well known resources, products and production technology	General context
Many natural resources are seasonal. Villagers can be fully busy in some periods and unoccupied in other periods	General context
Lack of inventory data and information about the current status of the bamboo resources in South Rakhine and in the whole Myanmar	Bamboo - *Melocanna baccifera*
The Management Plans miss information about availability of resources in terms of quantity and accessibility	Bamboo - *Melocanna baccifera*
The Management Plans miss information about sustainable harvest and resource management for medium and long term planning	Bamboo - *Melocanna baccifera*
The impact of the current bamboo extraction in the resource cannot be assessed at the moment	Bamboo - *Melocanna baccifera*
According to the bamboo survey, some villages do not have bamboo resources to run small business	Bamboo - *Melocanna baccifera*
The target area natural bamboo forests are composed only by one species: Kayin-wa	Bamboo - *Melocanna baccifera*
The most widespread natural bamboo forests in the South Rakhine provide an average quality raw material	Bamboo - *Melocanna baccifera*
The Kaying-wa bamboo flowers every 50 years, the flowering completely destroys the resource for sometime	Bamboo - *Melocanna baccifera*
The private sector does not relay much on the natural bamboo forests which is considered uncertain for its scale and accessibility	Bamboo - *Melocanna baccifera*
Wild EFY is less requested in the market because smaller in size. It can be then sold at lower price.	EFY

TABLE 3: CONSTRAINTS/LIMITS/ISSUES/DIFFICULTIES/WEAKNESSES/THREATS IN THE NATURAL RESOURCE MANAGEMENT AND ENVIRONMENT AREA

6.3 ECONOMY/MARKET/FINANCE AREA

Constraints/Limits/Issues/Difficulties/Weaknesses/Threats	Products (if applicable)
People primarily base business on locally and customary well known resources, products and production technology	General context
Development mindset rather than business mindset or grant mindset	General context
The CFUGs, at the moment, are not self-directed; they need motivational, technical and financial support	General context
Feasible products are not yet identified by the CFs members because they do not know exactly the available resources and the concerning market	General context
The CFs members are not aware of the market/value chain of the products. They don't have contacts with the chain actors or they have solely local contacts	General context
Difficulty in exploring new end markets or in keeping contact with new customers or in promoting the business activity (no marketing strategy) due to lack of skills and experience in commercialization, lack of time and opportunities, restrictions in infrastructural assets	General context
The network is narrow, same customers and same traders and few exchanges, this leads to a limited negotiation capacity	General context
The difficult access to finance limits communities' investment in value added processes and services	General context
Restrain in accessing loans from banks or governments (it is related to the registration issues because if they can officially organize CFE by responsible department, they can access loan from banks)	General context
Start-up funds are necessary but working capital and long-terms are also essential. Start-up capital is usually obtained from a donor but during the business life time the credit access is difficult or almost impossible. Saving and credit groups are often the only option. Trader credit or payment delay are favourably accepted	General context
Selling and purchasing prices are not stable, end market is often not stable either	General context
South Rakhine is a remote area, uplands are between sea and mountain range. Shipping goods out from the region is very expensive, high transportation costs	General context
Despite most of IGAs' members attained start-up training courses in business and administration they would need ongoing support, advice and consultations	General context
Cooperation is poorly adopted as a system to overcome context constraints and to improve the economical efficiency of the business	General context
CFUGs cannot afford the cost of a proper market and business/enterprise development plan service	General context
Limited capacity on financial management	General context

CFUGs struggle in book keeping and monetising the labour work	General context
The current market focuses on low value added construction uses, handicrafts and cottage industries food processing, mostly at national level	Bamboo
In the Soe Bone village almost all the households are involved in the bamboo mats business. They are not organised as a unique group enterprise but they work in competition. The value chains for the same product, produced in the same site, are different with different actors involved; it results in different prices for customers belonging to the same final market.	Bamboo
The selling price is affected by geographical and seasonal fluctuations	EFY
The competition in the EFY market is very high. In South Rakhine, competition involves mainly the wild fresh products	EFY
The main constraint for the CFs in the target area, at the moment, in order to develop and enlarge market opportunities, is the starting investment for the plantation.	EFY

TABLE 4: CONSTRAINTS/LIMITS/ISSUES/DIFFICULTIES/WEAKNESSES/THREATS IN THE ECONOMY, MARKET AND FINANCE AREA

6.4 SOCIAL AND CULTURAL AREA

Constraints/Limits/Issues/Difficulties/Weaknesses/Threats	Products (if applicable)
Internal conflicts among CF members can appear if members have different approach or entrepreneurial attitudes. CFE's members can be a portion of the CF's members	General context
People primarily base business on locally and customary well known resources, products and production technology	General context
Cooperation is poorly adopted as a system to overcome context constraints	General context
Many stakeholders in the market do not know what a CF is and they are not willing to pay an higher price for a community's product	General context
CFUGs and facilitators are generally aware about sustainable enterprise development. The process needs time and participatory support	General context

TABLE 5: CONSTRAINTS/LIMITS/ISSUES/DIFFICULTIES/WEAKNESSES/THREATS IN THE SOCIAL AND CULTURAL AREA

6.5 TECHNOLOGY AND PRODUCTS DEVELOPMENT AREA

Constraints/Limits/Issues/Difficulties/Weaknesses/Threats	Products (if applicable)
Most CFs do not have specific skills and knowledge about production processes	General context
People primarily base business on locally and customary well known resources, products and production technology	General context
Trainings are needed to improve the quality standard of the products or services provided. Difficulties in contacting customers and in getting feedbacks from them leads to a gap between the customers' needs and the supply available	General context
Need for market analysis skills and for profitable markets	General context
The inner capacity to create new design and to innovate the products or the process is very poor	General context
Need technology for the value chain and in order to produce value added products	General context
Not sealed road conditions, especially during the rainy season, and power grid are still challenging factors in some villages of the target area	General context
Bamboo production is a flourishing sector in the target area but it involves only low value added products	Bamboo
A considerable investment is necessary for a EFY drying machine, it can be feasible only for a large scale group of villages	EFY

TABLE 6: CONSTRAINTS/LIMITS/ISSUES/DIFFICULTIES/WEAKNESSES/THREATS IN THE TECHNOLOGY AND PRODUCTS DEVELOPMENT AREA

7. CONCLUSIONS

The picture that emerges from this survey is a complex framework constituted by several components of the biological and socio/economic context of South Rakhine. The greatest achievement of this study is a comprehensive investigation of all these aspects, and the overview of the constraints and opportunities for developing sustainable economic opportunities for rural communities.

The absence of a strong and clear legal framework and procedures for developing enterprises emerges as one of the main limiting factor as well as access to information, lack of infrastructures and efficient transportation routes. It is legitimate to expect improvements in these sectors in the coming years, but it is necessary to reflect about solution and measures to implement on the long as well as short term. The work of the INGOs could support the Government in developing a clear legal framework for CFEs and provide technical training to CFUGs. At the same time simple business ideas could be supported, in agreement with the existing regulations. By testing the viability of these businesses at local level, the foundation for a larger scale market an national (or event international) level will be prepared.

The study area offers great opportunities for small enterprises based on sustainable forest management. The products identified (agroforestry, bamboo and elephant foot yam) can be sustainably harvested and have a recognized market potential at national level. Also, the existence of bright examples of community-based programmes, like CFs, CGGs, IGAs, is encouraging for the future establishment of participatory systems for business.

The information provided with this report are essential for the future development of the CFE programme in south Rakhine. Besides constraints and opportunities, some risk factors have emerged. Implementing a rural development programme for the establishment of enterprises, without taking these factors in consideration, could lead to severe consequences for the stability of the economic system of the local communities. As mentioned in the previous sections, in the study area there isn't a structured organization of the market, but a series of verbal agreements, traditions and customary rights support the existence of a non-formal economic system. It is very important that the following actions for the establishment of CFEs will take in consideration weaknesses and strengths of this system to support an inclusive, participatory and sustainable model for the well being of local communities and the conservation of natural resources.

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9. ANNEXES

Annex A - Community Forests list in Thandwe District, South Rakhine

Annex B – Interview to the CFEs' chairmen

Annex C – Interviews to the AGAs' members

Annex D – Agroforestry survey

Annex E – Products profile

Annex F – BIF's assessment summary

Annex G – Bamboo survey

Annex H - Field Survey – Soe Bon Village – Bamboo mats production – Market Analysis

Annex I – Elephant Foot Yam survey

Annex J – Market Analysis of Elephant Foot Yam

Annex A - Community Forests list in Thandwe District, South Rakhine

No	Township	Village	Reserved/ Protected Public Forest (Plot.no)	Date of certification	Reserved/ Protected Public Forest			Government Land			Total (Acre)	User members	Implementing Organization/ Project	Forest type
					Plantation (Acre)	RIF (Acre)	Total (Acre)	Plantation (Acre)	RIF (Acre)	Total (Acre)				
1	Gwa	Su Poke Kone, Si Sone Kwin, Doe Dan	51	8-19-09				5	125	130	130	41	RCA and BANCA	Hill Forest
2	Gwa	Kyin Gyi	51	5-9-13					200	200	200	51	MERN - CLEARR project	Mangrove
3	Gwa	Satthwar	54	11-6-13				32.56	120.87	153.43	153.43	32	OIKOS- CES project	Hill Forest
4	Gwa	Bogalay Chan Su	51	2-17-14				20	5	25	25	8	MERN - CLEARR project	Hill Forest
5	Gwa	Bogalay Kyaung Kone	51	2-17-14				10.5	89.5	100	100	20	MERN - CLEARR project	Hill Forest
6	Gwa	Shauk Kone	51	2-17-14				31	13	44	44	33	MERN - CLEARR project	Mangrove
7	Gwa	Zay Di Kwin	51	2-17-14				37.1	15.9	53	53	11	MERN - CLEARR project	Mangrove
8	Gwa	Kyauk Khaung Kwin	51	2-17-14				7.6	192.4	200	200	20	MERN - CLEARR project	Hill Forest
9	Gwa	Tha Phan Kwin	51	2-17-14				11.7	88.3	100	100	19	MERN - CLEARR project	Hill Forest
10	Gwa	Yahine Kudo	54	2-17-14				42	18	60	60	41	MERN - CLEARR project	Mangrove
11	Gwa	Palin Maw	51	2-17-14				30	65	95	95	22	MERN - CLEARR project	Mangrove
12	Gwa	Ywar Thit	52	2-17-14				7	18	25	25	11	MERN - CLEARR project	Mangrove
13	Gwa	Gyaing Gyi	52	2-17-14				5.7	64.3	70	70	11	MERN - CLEARR project	Hill Forest
14	Gwa	Del Poke	52	2-17-14				7.6	62.47	70	70	13	MERN - CLEARR project	Hill Forest

15	Gwa	Tha Byu Chaung	52	2-17-14				5.8	19.2	25	25	5	MERN - CLEARR project	Hill Forest
16	Gwa	Kywe Chaing	52	2-17-14				7.6	172.4	180	180	22	MERN - CLEARR project	Hill Forest
17	Gwa	Gwa Ywar Ma	55	2-17-14				22.5	52.5	75	75	21	MERN - CLEARR project	Mangrove
18	Gwa	Ywar Thit Kone	54	2-17-14	30	170	200				200	37	MERN - CLEARR project	Hill Forest
19	Gwa	Gwa Ywar Ma	55	8-31-14				285	665	950	950	101	MERN - CLEARR project	Mangrove
20	Gwa	Kan Ngu	55	8-31-14					540	540	540	61	MERN - CLEARR project	Mangrove
21	Gwa	Kyauk Kyi	54	8-31-14				420	180	600	600	64	MERN - CLEARR project	Mangrove
22	Gwa	Ywar Thit Kone	54	8-31-14					600	600	600	94	MERN - CLEARR project	Mangrove
23	Gwa	Ale Chaung	54	8-31-14				140	60	200	200	91	MERN - CLEARR project	Mangrove
24	Gwa	Chaung Wa	51	11-24-14				31.5	13.5	45	45	31	MERN - CLEARR project	Mangrove
25	Gwa	Nyaung Pin Thar	51	11-24-14				88.5	38.1	127	127	50	MERN - CLEARR project	Mangrove
26	Gwa	Zay Di Kwin 2	51	11-24-14				60.9	26.1	87	87	60	MERN - CLEARR project	Mangrove
27	Gwa	Pone Nyet	51	11-24-14				77	33	110	110	62	MERN - CLEARR project	Mangrove
28	Gwa	Chin Kwin	51	11-24-14				84	36	120	120	111	MERN - CLEARR project	Mangrove
29	Gwa	Kyauk Par Sat	52	11-24-14				35	15	50	50	30	MERN - CLEARR project	Mangrove
30	Gwa	Kan Pauk	52	11-24-14				105	456	150	150	44	MERN - CLEARR project	Mangrove
31	Gwa	Kywe Chan Kwin	52	11-24-14				105	45	150	150	19	MERN - CLEARR project	Mangrove
32	Gwa	Thaing Kyun	52	11-24-14				77	33	110	110	76	MERN - CLEARR project	Mangrove

33	Gwa	Mayan Kyun	52	11-24-14				33.6	12.4	46	46	41	MERN - CLEARR project	Mangrove
34	Gwa	San Dar	52	11-24-14				122	48	170	170	35	MERN - CLEARR project	Mangrove
35	Gwa	Kyin Gyi	52	11-24-14				70	30	100	100	23	MERN - CLEARR project	Mangrove
36	Gwa	Sar Phyu Kwin	54	11-24-14	20	30	50				50	5	MERN - CLEARR project	Hill Forest
37	Gwa	Shauk Kone	51	11-24-14				50	28	78	78	66	MERN - CLEARR project	Mangrove
38	Gwa	Kyeintli (Ward-1)	51	11-24-14				140	60	200	200	38	MERN - CLEARR project	Mangrove
39	Gwa	Yamar Kyun	51	11-24-14				150	50	200	200	103	MERN - CLEARR project	Mangrove
40	Gwa	Sar Chet	51	11-24-14				19	6	25	25	84	MERN - CLEARR project	Mangrove
41	Gwa	Pyin Kwin	51	24-11-14				28	12	40	40	23	MERN - CLEARR project	Mangrove
42	Gwa	KaToe Lay	52	24-11-14				14	6	20	20	73	MERN - CLEARR project	Mangrove
43	Gwa	Yadanar Myine	52	24-11-14				45	15	60	60	63	MERN - CLEARR project	Mangrove
44	Gwa	Ye Kyaw	52	24-11-14				24.5	10.5	35	35	124	MERN - CLEARR project	Mangrove
45	Gwa	Palin Maw 2	52	24-11-14				63	27	90	90	39	MERN - CLEARR project	Mangrove
46	Gwa	Yahine Kudo 2	54	24-11-14				60	20	80	80	30	MERN - CLEARR project	Mangrove
47	Gwa	Taing Kyo	55	24-11-14				200	1250	1450	1450	223	MERN - CLEARR project	Hill Forest
48	Gwa	Sin Kuu	52	29-12-14	2.85		2.85				2.85	3	Forest Department	Hill Forest
49	Gwa	Kyauk Chet	52	29-12-14	26.73		26.73				26.73	26	Forest Department	Hill Forest
50	Gwa	Shwe Oo Kwin 1	52	29-12-14	37.18		37.18				37.18	28	Forest Department	Hill Forest
51	Gwa	Shwe Oo Kwin 2	52	29-12-14	36		36				36	30	Forest Department	Hill Forest
52	Gwa	Htein Kyin	55	29-12-14	19.88		19.88				19.8	18	Forest	Hill Forest

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53	Gwa	Yae Thoe	52	29-12-14	48.35		48.35				48.35	22	Forest Department	Hill Forest
54	Gwa	Htan Pin Khon	54	29-12-14	31.49		31.49				31.49	16	Forest Department	Hill Forest
55	Gwa	Shwe Oo Kwin 3	52	30-12-15	191.22		191.22				191.22	180	Forest Department	Hill Forest
56	Gwa	Kwin Gyi Kan Nar,Kwin Gyi Taung Nar	54	30-12-15	129.83		129.83				129.83	54	Forest Department	Hill Forest
57	Gwa	Chin Kwin Ywar	54	30-12-15	18.43		18.43				18.43	12	Forest Department	Hill Forest
58	Gwa	Shwe Oo Kwin 4, Sin Kuu, Taing Kyo, Kyaung Taung, Jo Lein (5 villages)	52	4-11-16	98.4		98.4				98.4	63	Forest Department	Hill Forest
59	Gwa	Mwe Twe, Sar Chet Kwin, Sar Phyu Kwin, Pauk Tu (4 villages)	54	4-11-16	20.12		20.12				20.12	13	Forest Department	Hill Forest
60	Gwa	Dwar Bon, Lae Da Ngu, Phet Shar, Thatkada, Kan kyin, Uhmin Wa, War Yone Kwin (7 villages)	55	4-11-16	49.9		49.9				49.9	46	Forest Department	Hill Forest
61	Gwa	Pauk Too Kwin,Kaing Taw Kwin,PaDeKaw	54	4-28-17	100	400	500				500	41	RECOFTC - SuComFor project	Hill Forest
62	Gwa	Htan Pin Khone	54	4-28-17	40	460	500				500	67	RECOFTC - SuComFor project	Hill Forest
63	Gwa	Chin Kwin	54	4-28-17	50	400	450				450	54	RECOFTC - SuComFor project	Hill Forest
64	Gwa	Mwe Twae	54	4-28-17	17	353	570				570	37	RECOFTC - SuComFor project	Hill Forest
65	Gwa	Ale Chaung	54	4-28-17	10	890	900				900	87	RECOFTC - SuComFor project	Hill Forest
66	Gwa	Yahine Kwin	54	4-28-17	60	300	360				360	102	RECOFTC - SuComFor project	Hill Forest
67	Gwa	Yae Thoe	52	4-28-17	10	990	1000				1000	91	RECOFTC - SuComFor project	Hill Forest
68	Gwa	Kwin Yar Shae	54	4-28-17	200	440	640				640	60	RECOFTC - SuComFor project	Hill Forest
69	Gwa	Kyauk Chet	52	4-28-17	300	700	1000				1000	92	RECOFTC - SuComFor project	Hill Forest
70	Gwa	Sin Kuu	52	4-28-17	100	700	800				800	76	RECOFTC - SuComFor project	Hill Forest
71	Gwa	YahinePhyar	54	4-28-17	50	950	1000				1000	111	RECOFTC - SuComFor project	Hill Forest

72	Gwa	Kwin Kyi Taung Nar	54	4-28-17	80	360	440				440	70	RECOFTC - SuComFor project	Hill Forest
73	Gwa	Ywar Thit Kone	54	4-28-17	200	700	900				900	140	RECOFTC - SuComFor project	Hill Forest
74	Gwa	Kyaung Kone	54	4-28-17	106	208	314				314	71	RECOFTC - SuComFor project	Hill Forest
75	Gwa	Sar Chat Gyi	52	4-28-17	100	700	800				800	70	RECOFTC - SuComFor project	Hill Forest
76	Gwa	Laung Kyo	Mangrove	4-28-17					80	80	80	290	RECOFTC - SuComFor project	Mangrove
77	Gwa	Shwe Twin Tu	54	4-28-17	100	660	760				760	68	RECOFTC - SuComFor project	Hill Forest
78	Gwa	Chin Kone	54	4-28-17	10	740	750				750	89	RECOFTC - SuComFor project	Hill Forest
79	Gwa	Oh Htein	52	4-28-17				15	115	130	130	34	Oikos- DAFNE projcet	Hill Forest
80	Gwa	Ba Win	52	4-28-17				29.88	92.12	122	122	35	Oikos- DAFNE projcet	Hill Forest
81	Gwa	Pauk Too	54	4-28-17	25.05		25.05				25.05	14	Forest Department	Hill Forest
82	Gwa	War Yone Kwin	54	4-28-17	21.1		21.1				21.1	18	Forest Department	Hill Forest
83	Toungup	Da Nyin Taung	Yu-Ma Ei PPF	12-29-14	22.61		22.61				22.61	14	Forest Department	Hill Forest
84	Toungup	Let Pan	Yu-Ma Ei PPF	12-29-19	125.19		125.19				125.19	27	Forest Department	Hill Forest
85	Toungup	Sa Tone	Yu-Ma Ei PPF	12-29-14	34.99		34.99				34.99	24	Forest Department	Hill Forest
86	Toungup	Zee Kaing	Yu-Ma Ei PPF	1-20-17	2.5		2.5				2.5	2	Forest Department	Hill Forest
87	Toungup	Kyet Thway	Yu-Ma Ei PPF	1-20-17	3		3				3	2	Forest Department	Hill Forest
88	Toungup	TaRaGu	Tagagu mangrove	–						768.4	768.4	18	Forest Department	Mangrove
89	Toungup	Chay Taw Yar	Yu-Ma Ei PPF	9-28-17	4		4				4	3	Forest Department	Hill Forest
90	Toungup	Da Let	Tan Hlwe PPF	9-28-17	3.75		3.75				3.75	6	Forest Department	Hill Forest
91	Thandwe	Pwint Phay	43	4-25-06				-	248	248	248	7	Forest Department	Hill Forest
92	Thandwe	Pan Taw	49	11-6-13				25.63	271.37	297	297	35	Oikos - CES project	Hill Forest
93	Thandwe	Hlay Gyi Gyaing	50	11-6-13				95	58	153	153	31	Oikos - CES	Hill Forest

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94	Thandwe	So Bon	13/15	6-6-17	58	69	127				127	29	Oikos - DANFE project	Hill Forest
95	Thandwe	Tone Taw	49	6-6-17				63	49	112	112	40	Oikos - DANFE project	Hill Forest
96	Thandwe	Kyar Nyo	50	6-6-17				63	98	161	161	41	Oikos - DANFE project	Hill Forest
97	Thandwe	Myo Kwin	13	6-6-17	59	69	128				128	33	Oikos - DANFE project	Hill Forest
98	Thandwe	Mae Nae Kwin	27/35	10-31-19	246		246				246	45	Oikos - DANFE project	Hill Forest
99	Thandwe	Kyar Pyit Kone	15	10-31-19	107		107				107	31	Oikos - Sun Bear project	Hill Forest
100	Thandwe	Aung Tha Pyay	15	10-31-19	103		103				103	24	Oikos - Sun Bear project	Hill Forest
101	Thandwe	Hmyar Chaung	20/21	10-31-19	144.45		144.45				144.45	30	Oikos - Sun Bear project	Hill Forest
102	Thandwe	Pauk Too, Hmyar Chaung	12	12-25-18	8.252		8.252				8.252	5	Forest Department	Hill Forest
103	Thandwe	Daw Mya Ywar	-	12-25-18	1	4	5				5	5	Forest Department	Hill Forest
104	Thandwe	Dar Wa, Goke Ma Taung, Kyun Ma Ywar	-	12-25-18	8.5		8.5				8.5	5	Forest Department	Hill Forest

Annex B - Interview to the CFEs' chairmen

Resource

1. Did you implement specific inventories to assess the rattan resource?	
CFE name	Answer
Shwe Yoma	We have implemented specific inventories in our CFs to assess the rattan resources together with the Forest Department.
Yoma Amay	We have implemented specific inventories in our CFs to assess the rattan resources together with the Forest Department.

2. Does the rattan resource used for products comes entirely from the CF? Or do you need external resource?	
CFE name	Answer
Shwe Yoma	The rattan resource used for our products comes entirely from the CFs. We don't need external resource. And we produce the rattan depending on the available amount in Our CFs.
Yoma Amay	The rattan resource used for our products comes entirely from the CFs. We don't need external resource. And we produce the rattan depending on the available amount in Our CFs.

3. Are you sure you will not overharvest the resource?	
CFE name	Answer
Shwe Yoma	Surely, we are not going to overharvest the resource in Our CFs because we have defined which plot will be harvested year by year according to the specific inventories in our CFs.
Yoma Amay	Surely, we are not going to overharvest the resource in Our CFs because we have defined which plot will be harvested year by year according to the specific inventories in our CFs.

Products and technology

1. Why have you chosen the rattan-based products? Was it an instant decision or did the idea grew up step by step? (selection among different feasible products)	
CFE name	Answer
Shwe Yoma	We have chosen the rattan-based products because it can be potential for CFE, easily accessible for harvesting, we have a lot of resources in our CFs and already have market demand. We made decision to do it step by step, and we selected among different feasible products.
Yoma Amay	We had chosen the rattan-based products because we have contacts for selling the products, we have a lot of resources in our CFs and they are easily accessible for harvesting, and the FD can provide permission for collection, transportation and trading of our products. We made an instant decision to do it.

2. Why does your CFE deals with more than one product?	
CFE name	Answer
Shwe Yoma	At the moment, we have only one product of boiled rattan.
Yoma Amay	At the moment, we have only one product of boiled rattan.

3. Did you obtain assistance/training in improving products?	
CFE name	Answer
Shwe Yoma	We obtained assistance and training in improving products.
Yoma Amay	We obtained assistance and training in improving products.

Annex B - Interview to the CFEs' chairmen

4. How did you quantify the demand for products?	
CFE name	Answer
Shwe Yoma	We contacted directly the MRBEA for the demand of products and we made agreement according to their needs. Before contacting MRBEA, we made market study in Ngapali and Yangon.
Yoma Amay	We contacted directly the MRBEA for the demand of products and we made agreement according to their needs.

Market chain

1. Can you describe the process of your products (market chain)?	
CFE name	Answer
Shwe Yoma	Firstly, we harvest the rattan from the CF and move it to the place where the boiling tank is. We boil and dry them. Then we pack the dried rattan. After that we contact the transporter to transport it to Yangon. When we transport the rattan to Yangon's market we have to pass many toll gates on the way. We need to show the transportation permission from FD to pass toll gates, for this reason, one of our member needs to go with the transporter.
Yoma Amay	Firstly, we harvest the rattan from the CF and move it to the place where the boiling tank is. We boil and dry them. Then we pack the dried rattan. After that we contact the transporter to transport it to Yangon. When we transport the rattan to Yangon's market we have to pass many toll gates on the way. We need to show the transportation permission from FD to pass toll gates, for this reason, one of our member needs to go with the transporter.

2. How did you come in contact with the actors of the market chain? (traders, transporters, seller,)?	
CFE name	Answer
Shwe Yoma	Firstly, the actors of the market chain have been contacted by RECOFTC for us. Later we ourselves contacted the actors also by Phone.
Yoma Amay	Firstly, the actors of the market chain have been contacted by RECOFTC for us. Later we ourselves contacted the actors also by Phone.

Financial asset

1. Can you describe the access to capital?	
CFE name	Answer
Shwe Yoma	Our start-up capital is 10,000,000 MMK from MBREA and 1,600,000 MMK from CFE members.
Yoma Amay	Our start-up capital is 10,000,000 MMK from MBREA.

2. How did you face the start-up phase of the enterprise?	
CFE name	Answer
Shwe Yoma	We have faced many difficulties during the start-up phase of the enterprise: (1) we have paid the tax at the same rate of other rattan enterprises that are competitors of CF products, (2) we faced a delay in obtaining the production permission, (3) we faced a delay in policy and legal support and the need of someone who closely supports with market and policy issues.
Yoma Amay	We had to attend a lot of negotiation meetings between 18 CFs and the Forest department for harvesting, taxes, permission for transportation, contribution to the CFs' fund

Annex B - Interview to the CFEs' chairmen

3. Are you involved in any credit/saving system?	
CFE name	Answer
Shwe Yoma	We have no credit and saving system but we have been provided the advance money by MRBEA.
Yoma Amay	We have no credit and saving system but we have been provided the advance money by MRBEA.

Human resources

1. Do the CF members correspond to the CFE members? If no, how do you deal with this issue?	
CFE name	Answer
Shwe Yoma	The CF members correspond to the CFE members.
Yoma Amay	The CF members correspond to the CFE members.

2. Any conflicts? If yes, how did you solve it?	
CFE name	Answer
Shwe Yoma	We have some conflicts among the CF members of 18 CFs. We called meetings and we discussed and found solutions. Finally, we made agreement among the CF members of the 18 CFs and we decided to do another CFE with CF members who wanted to be entrepreneurs of rattan enterprises.
Yoma Amay	We have not had any conflict because we started the CFE according to the agreements among the 18 CF villages.

3. How many people work in the CFE? Describe their skills and tasks	
CFE name	Answer
Shwe Yoma	We have 8 people working in the CFE. They have skills on rattan selection, boiling and packaging and they have tasks according to their skills.
Yoma Amay	We have 9 people working in the CFE. They have skills on rattan selection, boiling and packaging and they have tasks according to their skills.

4. Have they attended training course?	
CFE name	Answer
Shwe Yoma	They attended a training course for preparing and making handicraft based on rattan.
Yoma Amay	They attended a training course for preparing and making handicraft based on rattan.

Legal aspects

1. Could you explain the legal status of your enterprise?	
CFE name	Answer
Shwe Yoma	Our enterprise is a legal enterprise according to the Community Forestry instruction (2019), because we already received CF certificate and the forest department recognizes our enterprise. But some organization and departments (SSID, Word Bank and local bank) have not recognized it because we have not registered the enterprise yet. It could be better if we register our enterprise to get loan form others.
Yoma Amay	Our enterprise is a legal enterprise according to the Community Forestry instruction (2019), because we already received CF certificate and the forest department recognizes our enterprise. But some organization and departments (SSID, Word Bank and local bank) have not recognized it because we have not registered the enterprise yet. It could be better if we register our enterprise to get loan form others.

2. Any registration, permission, restriction on collection, transportation and trading of your products?

Annex B - Interview to the CFEs' chairmen

CFE name	Answer
Shwe Yoma	We have permission on collection, transportation and trading of our products from Forest department. But we have to request the permission from FD yearly.
Yoma Amay	We have permission on collection, transportation and trading of our products from Forest department. But we have to request the permission from FD yearly.

Network

1. Who did support you in the start-up phase of your enterprise?	
CFE name	Answer
Shwe Yoma	During the start-up phase of our enterprise, the RECOFTC supported looking for market contacts and technology related with the enterprise. The MRBEA supported capital (advance money) and provided the training for preparing rattan and making rattan handicrafts.
Yoma Amay	During the start-up phase of our enterprise, the RECOFTC supported looking for market contacts and technology related with the enterprise. The MRBEA supported capital (advance money) and provided the training for preparing rattan and making rattan handicrafts.

2. Are you linked with other CFE? Organizations? Private and/or private sector?	
CFE name	Answer
Shwe Yoma	We have linked with Yoma Amay CFE, MRBEA, Forest Department, transporters, Green way org, World Bank and Local banks in Myanmar.
Yoma Amay	We have linked with Shwe Yoma CFE, MRBEA, Forest Department, transporters, Green way org, World Bank and Local banks in Myanmar.

Annex C - Interview to the IGAs' members

1. Why have you decided to run a business?		
IGA name	**Activity**	**Answer**
Kaing Khone	Nypa for roof trade	We decided to run a business of trading Nipa for roofs because it easy to establish by group and it is the main business in our village. Most of local households use the Nipa for making houses' roofs. The raw materials are available in the village. And there is already local market demand. Most of members in group are also skillful doing it.
Kyar Nyo	Sow breeding - piglets production	We decided to run a business to earn income through self-employment. And we decided to do a business of Sow Pig breeding. This business is adaptable to local conditions and most of the members, especially women, who are involved in the group are skillful in doing it.
Kyeintali	Bamboo handicraft	We decided to run a business of bamboo handicraft production and trading. We decided to run this business because we are aiming for the common good rather than the individual one, systemically managing the business with the community, and because we focus on value-added products when resources are scarce.
Myo Kwin	Peanuts trade	We decided to do a business of Peanut products trading. We decided to run this business because it is easy to establish by group. This business is adaptable to local conditions and to the raw material available in the village. And also because there is already local market demand.
Oh Thein	Cow breeding - calves production	We decided to run a business of Cow breeding because we have a lot of pasture land for cows feeding. And this business is adaptable to local conditions and most of the members, especially women, who are involved in the group are also skillful doing it. It was convenient for the members who have no cattle to handle the farm.
Pan Taw	Peanuts trade	We decided to run a business of Peanut trading because this business is adaptable to local conditions and the raw material available in the village. Additionally, most of the members, especially women, who are involved in the group are also skillful doing it.
Soe Bon	Bamboo mats production and trading	We decided to run a business of bamboo mat trading because the business is easy to establish, it is easy to enter the local market and because espically women can be involved and get regular income from business.
Tone Taw	Rice trade	We decided to run a business of Rice trading because this business is adaptable to local conditions and to the raw material available in the village. Additionally, most of the members, especially women, who involved in the group are also skillful doing it.

2. Can you briefly describe the production process?		
IGA name	**Activity**	**Answer**
Kaing Khone	Nypa for roof trade	We can run this business for 6 months per year (November to April). Before the season, we provide money in advance to the people who have the nipa plantation. In the season time we collect and purchase from them the nipa for roofs. And we sell it to the people from closer villages.
Kyar Nyo	Sow breeding - piglets production	Firstly we have rent a land and built a building for sow pigs. We purchased pigs that were ready to get pregnant. We contacted the Veterinary form Kyeintali for medical checkup and vaccination. We regularly feed them and take care of them. And the sow pigs are then impregnated from the Boar. We get piglets from Sow pigs that have been pregnant after 4 months. Them we take care of the piglets for 45 days. After 45 days, we sell them.
Kyeintali	Bamboo handicrafts	Firstly, we have been looking for the bamboo raw material, which is suitable for handicrafts, in closer villages. We cut and peeled the bamboo. And we prepared the bamboo to keep it long term (boiled and dried). Then we produced the bamboo handicraft products. After that we have marketed our products to the hotels and direct consumers.
Myo Kwin	Peanuts trade	We have two peanut products in our business. There is peanut oil production and fresh peanut trading. For the Peanut oil production, we collect and buy the fresh peanut from villagers in our village and we send to the peanut mill for peeling them. After that we get the fresh peanut seed and we produce peanut oil by Oil press (ox drivern). Then we make packages with plastic bottles and we sell to the customers in Thandwe and Kyeintali. For the fresh peanut trading, we collect and buy the fresh peanuts from villagers in our village and we sell them directly to traders who come to the village from Thandwe.

Annex C - Interview to the IGAs' members

Oh Thein	Cow breeding - calves production	Firstly, we purchased cows that were ready to get pregnant from nearly villages. We appointed three members for feeding and taking care of the cows regularly. Then the cows were impregnated from the Oxen. We get cattle form Cows which have been pregnant for 8 months. Then we have to take care of them for 2 or 3 years for until they are ready to work farming. After that, we will sell them.
Pan Taw	Peanuts trade	Firstly, we collect and buy the fresh peanut from villagers in our village and we send to the peanut mill for peeling them. After that we get the fresh peanut seed and we make packages and transport to the trader in Yangon market by truck.
Soe Bon	Bamboo mats production and trading	In our village, every household produces bamboo mat for income. We collect and buy the bamboo mats from them. And we sell to the traders who buy the bamboo mats from the village.
Tone Taw	Rice trade	Firstly, we buy the paddy from villagers in our village and we send the paddy to the rice mill for production of rice. We contact the local buyer to sell the rice bags in Tone Taw and other villages as following an hire-purchase scheme, where the customer will pay an initial installment and repays the remaining cost over a period of 15 days. Then we re-collect money from the buyers as agreed in the hire-purchase scheme, at least 2 times per month.

3.Can you describe your costumers? How did you come in contact with your customers?		
IGA name	**Activity**	**Answer**
Kaing Khone	Nypa for roof trade	Our customers are direct consumers from closer villages and especially form Taing Kyo village and Gwa town. We have put a signboard beside the main road for sale. Everybody can see it easily.
Kyar Nyo	Sow breeding - piglets production	Our costumers are communities from our village and neighbor villages and traders from other places. We contacted our customers by Phone.
Kyeintali	Bamboo handicrafts	Our costumers are direct consumers and especially hotel zone in Ngapali. We contacted our customers by Phone. And we went to the hotels directly for marketing our products.
Myo Kwin	Peanuts trade	Our costumers are direct consumers, owners of restaurants, retailers and traders form Thandwe. We contacted our customers by Phone.
Oh Thein	Cow breeding - calves production	Our costumers are the farmers form nearly villages. The buyer comes to our village to buy the cows.
Pan Taw	Peanuts trade	We haven't any costumer. We just sell them to the trader in Yangon market and we contracted only by Phone.
Soe Bon	Bamboo mats production and trading	We haven't any costumer because we just sell them to the trader and he sells to Thandwe and Ngapali markets.
Tone Taw	Rice trade	Our costumers are direct consumers form our village and closer villages. We contact the costumers by phone (or) ourselves.

4.Any difficulties to marketing your products?		
IGA name	**Activity**	**Answer**
Kaing Khone	Nypa for roof trade	We don't have any difficulties in marketing our products.
Kyar Nyo	Sow breeding - piglets production	We have difficulties in marketing our product. The price of the food for pigs is very high and the price of pigs is very low.
Kyeintali	Bamboo handicrafts	We have no any difficulties in marketing our products.
Myo Kwin	Peanuts trade	We don't have any difficulties in marketing our products.
Oh Thein	Cow breeding - calves production	We have no any difficulties in marketing our products.
Pan Taw	Peanuts trade	We have difficulties in marketing our products. The market price in Yangon is not stable and we can't find new costumers
Soe Bon	Bamboo mats production and trading	We have difficulties in marketing our products in Thandwe by the retailers. In Thandwe market people are not very interested in our products because we can't compete with other traders for the price.
Tone Taw	Rice trade	We have difficulties in marketing our products. There a long time waiting to be paid back by the costumers.

Annex C - Interview to the IGAs' members

5.Can you describe your financial sources? Start-up capital and other investments (credit/saving system)		
IGA name	**Activity**	**Answer**
Kaing Khone	Nypa for roof trade	We have two financial sources for our business. The main source is supported by Oikos and the other one is made from contributions and savings by Group members. Our start-up capital is 2,250,000 MMK.
Kyar Nyo	Sow breeding - piglets production	We have two financial sources for our business. The main source is supported by Oikos and the other one is made from contributions and savings by Group members. Our start-up capital is 2,229,300 MMK.
Kyeintali	Bamboo handicrafts	We have two financial sources for our business. The main source is supported by Oikos and the other one is made from contributions and savings by Group members. Our start-up capital is 3,202,000 MMK.
Myo Kwin	Peanuts trade	We have two financial sources for our business. The main source is supported by Oikos and the other one is made from contributions and savings by Group members. Our start-up capital is 2,470,000 MMK.
Oh Thein	Cow breeding - calves production	We have two financial sources for our business. The main source is supported by Oikos and the other one is made from contributions and savings by Group members. Our start-up capital is 2,620,000 MMK.
Pan Taw	Peanuts trade	We have two financial sources for our business. The main source is supported by Oikos and the other one is made from contributions and savings by Group members. Our start-up capital is 2,199,000 MMK.
Soe Bon	Bamboo mats production and trading	We have two financial sources for our business. The main source is supported by Oikos and the other one is made from contributions and savings by Group members. Our start-up capital is 2,765,000 MMK.
Tone Taw	Rice trade	We have two financial sources for our business. The main source is supported by Oikos and the other one is made from contributions and savings by Group members. Our start-up capital is 2,680,000 MMK.

6.Can you describe your IGA members? (women, old-young people,)		
IGA name	**Activity**	**Answer**
Kaing Khone	Nypa for roof trade	We have 10 IGA members. 5 men and 5 women are involved and mostly are old people.
Kyar Nyo	Sow breeding - piglets production	We have 12 IGA members. Mostly young people and 60 % are women.
Kyeintali	Bamboo handicrafts	We have 10 IGA members. Mostly young people, 6 men and 4 women.
Myo Kwin	Peanuts trade	We have 17 IGA members. 7 men and 10 women are involved, 40 % are young people.
Oh Thein	Cow breeding - calves production	We have11 IGA members. Mostly women and 70 % are young people.
Pan Taw	Peanuts trade	We have 20 IGA members. Mostly women and 40 % are young people.
Soe Bon	Bamboo mats production and trading	We have 14 IGA members and mostly women and young people.
Tone Taw	Rice trade	We have 22 IGA members. Mostly women and young people.

7.Are the members increased from the beginning till now?		
IGA name	**Activity**	**Answer**
Kaing Khone	Nypa for roof trade	We don't have any members' increase till now.
Kyar Nyo	Sow breeding - piglets production	We don't have any members' increase till now.
Kyeintali	Bamboo handicrafts	We don't have any members' increase till now. We have plan to increase the members.
Myo Kwin	Peanuts trade	We don't have any members' increase till now.
Oh Thein	Cow breeding - calves production	We don't have any members' increase till now.
Pan Taw	Peanuts trade	We don't have any members' increase till now.

Soe Bon	Bamboo mats production and trading	We don't have any members' increase and 4 people resinged from the group because our business was lose.
Tone Taw	Rice trade	We don't have any members' increase till now.

8.Do they all actively participate in the business activities?		
IGA name	**Activity**	**Answer**
Kaing Khone	Nypa for roof trade	Not all members have actively participated in the business activities. 6 members actively participated.
Kyar Nyo	Sow breeding - piglets production	Yes, all members participated actively in the business activities, because we have managed to involve all members in the business and we have divided responsibilities inside the group.
Kyeintali	Bamboo handicrafts	Yes, all members have actively participated in the business activities since the beginning. Later the participation became weak.
Myo Kwin	Peanuts trade	Yes, all members have actively participated in the business activities
Oh Thein	Cow breeding - calves production	Yes, all members have actively participated in the business activities
Pan Taw	Peanuts trade	Yes, all members participated actively in the business activities, because we have managed to involve all members in the business and we have divided responsibilities inside the group.
Soe Bon	Bamboo mats production and trading	Not all members have actively participated in the business activities.
Tone Taw	Rice trade	Yes, all members participated actively in the business activities, because we have managed to involve all members in the business and we have divided responsibilities inside the group.

9.Have you attended any trainings?		
IGA name	**Activity**	**Answer**
Kaing Khone	Nypa for roof trade	We have attended some trainings related with the business.
Kyar Nyo	Sow breeding - piglets production	We have attended some trainings related with the business.
Kyeintali	Bamboo handicrafts	We have attended some trainings related with the business and bamboo handicraft
Myo Kwin	Peanuts trade	We have attended some trainings related with the business.
Oh Thein	Cow breeding - calves production	We have attended some trainings related with the business.
Pan Taw	Peanuts trade	We have attended some trainings related with the business.
Soe Bon	Bamboo mats production and trading	We have attended some trainings related with the business.
Tone Taw	Rice trade	We have attended some trainings related with the business.

10.Do you need more trainings? If yes, which one?		
IGA name	**Activity**	**Answer**
Kaing Khone	Nypa for roof trade	We don't need more trainings at the moment.
Kyar Nyo	Sow breeding - piglets production	We need more trainings for the business.
Kyeintali	Bamboo handicrafts	We need more trainings on how to treat the bamboo to keep it long term.
Myo Kwin	Peanuts trade	We need more trainings related with agriculture.
Oh Thein	Cow breeding - calves production	We don't need more trainings.
Pan Taw	Peanuts trade	We need more trainings on peanut's products.
Soe Bon	Bamboo mats production and trading	We need more trainings for bamboo products such as weaving and pattern's design.

Tone Taw	Rice trade	We don't need more trainings at the moment.

11.Do you have any business link with the private sector? (other IGAs, transporters, traders, sellers?)		
IGA name	**Activity**	**Answer**
Kaing Khone	Nypa for roof trade	We have business links with other IGAs and private businessmen.
Kyar Nyo	Sow breeding - piglets production	We have business links with the transporters, traders and other IGAs.
Kyeintali	Bamboo handicrafts	We have business links with other IGAs.
Myo Kwin	Peanuts trade	We have business links with other IGAs and traders.
Oh Thein	Cow breeding - calves production	We have business links with other IGAs.
Pan Taw	Peanuts trade	We have business links with the transporters and traders.
Soe Bon	Bamboo mats production and trading	We have business links with the traders only.
Tone Taw	Rice trade	We have business links with the transporters and other IGA and rice mill owner.

12.What about public sectors? (government offices, district offices,)		
IGA name	**Activity**	**Answer**
Kaing Khone	Nypa for roof trade	We don't have any link or contact with the public sectors.
Kyar Nyo	Sow breeding - piglets production	We have contacts with the department of Veterinary.
Kyeintali	Bamboo handicrafts	We have contacts with the forest department.
Myo Kwin	Peanuts trade	We don't have any link or contact with the public sectors.
Oh Thein	Cow breeding - calves production	We don't have any link or contact with the public sectors.
Pan Taw	Peanuts trade	We don't have any link or contact with the public sectors.
Soe Bon	Bamboo mats production and trading	We don't have any link or contact with the public sectors.
Tone Taw	Rice trade	We don't have any link or contact with the public sectors.

13.Which was the biggest challenge/issue you faced since the beginning of the business?		
IGA name	**Activity**	**Answer**
Kaing Khone	Nypa for roof trade	We have no big challenges and issues because we had managed very well.
Kyar Nyo	Sow breeding - piglets production	Our biggest challenge is that the market price is not stable and the food for pig is very expensive.
Kyeintali	Bamboo handicrafts	Our biggest challenge is that we can't control the bamboo handicraft products to keep it long term (it become mouldy, mildewed) and some member are not actively participating in the business.
Myo Kwin	Peanuts trade	Our biggest challenge is that the processing cost of peanut oil is very high.
Oh Thein	Cow breeding - calves production	We have no big challenge / issue.
Pan Taw	Peanuts trade	Our biggest challenge is that the market price is not stable and transportation is expensive.
Soe Bon	Bamboo mats production and trading	Our biggest challange are trasportation and marketing of the products .
Tone Taw	Rice trade	We have no the big challenges (or) issues.

14.Do you plan to enlarge your business in future?		
IGA name	**Activity**	**Answer**

Annex C - Interview to the IGAs' members

Kaing Khone	Nypa for roof trade	We are planning to enlarge our business in the future. We will run continuously this business sustainably.
Kyar Nyo	Sow breeding - piglets production	We are planning to enlarge our business in the future to produce more products either focusing again on Sow breeding or on the new settled businesses (see the comments below)
Kyeintali	Bamboo handicrafts	We are planning to enlarge our business in future to produce more products.
Myo Kwin	Peanuts trade	We are planning to enlarge our business based on our new products (see the comments below) in the future to produce more.
Oh Thein	Cow breeding - calves production	We are planning to enlarge our business in future. We will do cow breeding with more quantity and we are planning to own a rice mill.
Pan Taw	Peanuts trade	We are planning to enlarge our business in the future to produce more products.
Soe Bon	Bamboo mats production and trading	We can't plan to enlarge our business in the future because our group members are not actively participating and we have lack of capital.
Tone Taw	Rice trade	We are planning to enlarge our business in the future, but not rice trading because we have no more costumers for rice products. Now we have one more business that is cattle breeding.

Comments		
IGA name	**Activity**	**Answer**
Kyar Nyo	Sow breeding - piglets production	Now we have stopped the business of Sow Pig breeding because of piglets' local demand. We are planning to change the breeding system starting again the individual pig breeding. We shifted our IGA's activity and now we are running three business activities depending on the season: Nypa roof trading, Salt selling and rice trading.
Myo Kwin	Peanuts trade	Now we have stopped the business of peanut oil production because of the high processing cost . We shifted our IGA's activity and now we are running three business activities depending on the season: fresh peanut trading, dried chili selling and rice trading.

Annex D - Agroforestry survey

1. Do you have any agroforestry land in your CF?	
CF name	Answer
Oh Htein	Yes
Ba Win	No but before we established CF some people already have cashew plantation about 3 Acre and it has been included in CF area
Tone Taw	No
Kyar Nyo	No
Myo Kwin	No
Aung Tha Pyay	No
Kyar Pyit Kone	No
Hmyar Chaung	Yes
Me Ne Kwin	Yes
Pan Taw	No
Sat Thwar	No

2. If NO, are you interested in agroforestry? How many acres of your CF would you like to devote for agroforestry? In which products are you interested in?	
CF name	Answer
Oh Htein	We already have some agroforestry land but we still interest in agroforestry. 10 Acre could be possible. We interested in banana, pineapple, mango jack fruit
Ba Win	Yes, we interest in agroforestry. 20 Acre could be possible. We interested in banana, pineapple, jack fruit and danyin
Tone Taw	Yes, we interest in agroforestry. 5 Acre could be possible. We interested in banana, mango, pineapple and black pepper
Kyar Nyo	No
Myo Kwin	No
Aung Tha Pyay	Yes, we interest in agroforestry. 15 Acre could be possible. We interested in pineapple, mango and black pepper
Kyar Pyit Kone	Yes, we interest in agroforestry. 15 Acre could be possible. We interested in pineapple, mango and black pepper
Hmyar Chaung	Yes, we interest in agroforestry. 20 Acre could be possible. We interested in banana and pineapple
Me Ne Kwin	We already have some agroforestry land but we still interest in agroforestry. 10 Acre could be possible. We interested in banana, mango, jack fruit nad lime
Pan Taw	Yes, we interest in agroforestry. 5 Acre could be possible. We interested in banana, pineapple and mango
Sat Thwar	Yes, we interest in agroforestry. 5 Acre could be possible. We interested in banana, cashew and mango

3. If YES, how many acres of your CF are planted with agroforestry trees?	
CF name	Answer
Oh Htein	0.5 Acre of agroforestry land in CF
Ba Win	3 Acre
Tone Taw	No
Kyar Nyo	No
Myo Kwin	No

Annex D - Agroforestry survey

Aung Tha Pyay	No
Kyar Pyit Kone	No
Hmyar Chaung	1 Acre
Me Ne Kwin	15 Acre
Pan Taw	No
Sat Thwar	No

4. Which products do you farm?	
CF name	Answer
Oh Htein	Banana, Mango and jack fruit by mixing with Mahorgany and Acacia Mangium
Ba Win	Cashew
Tone Taw	No
Kyar Nyo	No
Myo Kwin	No
Aung Tha Pyay	No
Kyar Pyit Kone	No
Hmyar Chaung	Banana
Me Ne Kwin	Banana, Lemon, Lime, Pineapple
Pan Taw	No
Sat Thwar	No

5. Can you quantify the yearly production of each product?	
CF name	Answer
Oh Htein	Not yet
Ba Win	31.500 kg/year
Tone Taw	No
Kyar Nyo	No
Myo Kwin	No
Aung Tha Pyay	No
Kyar Pyit Kone	No
Hmyar Chaung	150 banana bunches
Me Ne Kwin	2160 banana bunches, 800 Lemon, 400 Lime, 200 Pineapple
Pan Taw	No
Sat Thwar	No

6. Do you use AF products for the households' needs or for small business?	
CF name	Answer
Oh Htein	Not yet
Ba Win	small business
Tone Taw	No
Kyar Nyo	No
Myo Kwin	No
Aung Tha Pyay	No
Kyar Pyit Kone	No
Hmyar Chaung	small business
Me Ne Kwin	small business
Pan Taw	No
Sat Thwar	No

Annex D - Agroforestry survey

7. Do you use/sell it fresh or processed?	
CF name	Answer
Oh Htein	Not yet
Ba Win	fresh (seed)
Tone Taw	No
Kyar Nyo	No
Myo Kwin	No
Aung Tha Pyay	No
Kyar Pyit Kone	No
Hmyar Chaung	fresh
Me Ne Kwin	fresh
Pan Taw	No
Sat Thwar	No

8. If you run a small AF products business, can you quantify the quantity sold of each product, the unit value in MMK? And then the total yearly value of your business?	
CF name	Answer
Oh Htein	Not yet
Ba Win	90 kg = 4000MMK (so total 1,400,000 MMK)
Tone Taw	No
Kyar Nyo	No
Myo Kwin	No
Aung Tha Pyay	No
Kyar Pyit Kone	No
Hmyar Chaung	1 banana bunch = 2000MMK (so total 300,000MMK)
Me Ne Kwin	1 banana bunch = 2000MMK (so total 4,320,000MMK)/ 1 Lemon = 200MMK (so total 160,000MMK)/ 1 Lime = 200 (so total 80,000MMK)/ 1 pipe apple = 200MMK (so total 40,000MMK)
Pan Taw	No
Sat Thwar	No

9. Where do you sell the products?	
CF name	Answer
Oh Htein	No
Ba Win	in the village
Tone Taw	No
Kyar Nyo	No
Myo Kwin	No
Aung Tha Pyay	No
Kyar Pyit Kone	No
Hmyar Chaung	in the village
Me Ne Kwin	Thandwe market
Pan Taw	No
Sat Thwar	No

10. How many people are involved in the AF activities?	
CF name	Answer
Oh Htein	All CFUGs

Annex D - Agroforestry survey

Ba Win	3 people
Tone Taw	No
Kyar Nyo	No
Myo Kwin	No
Aung Tha Pyay	No
Kyar Pyit Kone	No
Hmyar Chaung	2 people
Me Ne Kwin	2 people
Pan Taw	No
Sat Thwar	No

Annex E – Products profile

Product:	**Elephant Foot Yam fresh corm**
Resource:	Elephant Foot Yam (*Amorphophallus paeoniifolius*)
Resource short description:	Elephant foot yam grow in forest naturally and some people grow it for business. There are three types that are grown in Myanmar: yellow, red and white (basically).
Product short description:	Use the stem for foods like soup. Now the traders want and buy buds of these plants. There is a big market in Myanmar now. They use in making cosmetic, medicine and foods. In India, they use in production of traditional medicines.
Natural growing/Farmed (agroforestry):	It is distributed in most of the natural forest area of southern Rakhine region.
Calendar of availability:	For natural growing the best months are October, November, December. For Farming, it can available based on growing time and depends on the demand but the best time to harvest is in January and February.
Time span from planting to harvest:	It takes 1 year or 2 years according to the size of buds that you farm or grow. It will take 2 years for seeds grow. It will take 1 year if you grow 0.15 viss of buds.
Short production process description:	Digging the buds and putting in plastic bags and then transporting to main road.
Potential markets (village, township, district,…):	According to some references, in 1 Acre of EFY farm can be earned 4,000,000 MMK. There is no farming for EFY in southern Rakhine. Now just interesting in growing. EFY currently is just harvesting as wild plant from forest.
Already marketed by IGAs/CFs in the target area:	10 CFs, but just harvesting from natural growing
Notes:	EFY can be processed as diced and dried chips and packed. Can see more information in EFY survey




Pictures collected from the web

Product:	**Bamboo shoot fresh**
Resource:	Bamboo (*Melocanna baccifera)*
Resource short description:	In Rakhine region, most of the forests are naturally rich of bamboo. Especially one species, *Melocanna baccifera* (Kayin-wa). Produce open and diffuse clumps with some distance (up to 1 m) between the culms. Clumps can reach 4-5 m diameter and can produce 30 – 40 new culms annually. 30 – 40 culms should naturally die annually starting from the age of 5 years.
Product short description:	Most of the people from southern Rakhine are going to the forest and harvest bamboo shoots not only for the households but also for small business. For small business, most of them are sold directy in the own villages and near villages. Melocanna baccifera (Kayin-wa) shoots are suitable only to be sold fresh and can not be used as sour bamboo shoot or other kind of preservation.
Natural growing/Farmed (agroforestry):	All bamboo shoot resources are natural growing in southern Rakhine
Calendar of availability:	It can be harvest or produced during rainy season (June, July, August, early September)
Time span from planting to harvest:	For natural growing, bamboo produces new shoots every year.
Short production process description:	Firstly, they harvest the bamboo shoots and bundle 5 shoots per 1 bundle
Potential markets (village, township, district,…):	Most of the Rakhine people consume a lot of bamboo shoots during the growing season. The market already exists but there are a lot of competition in the area.
Already marketed by IGAs/CFs in the target area:	Already sold by CFs' household members but not as a group, only individual.
Notes:	

Pictures collected from the web

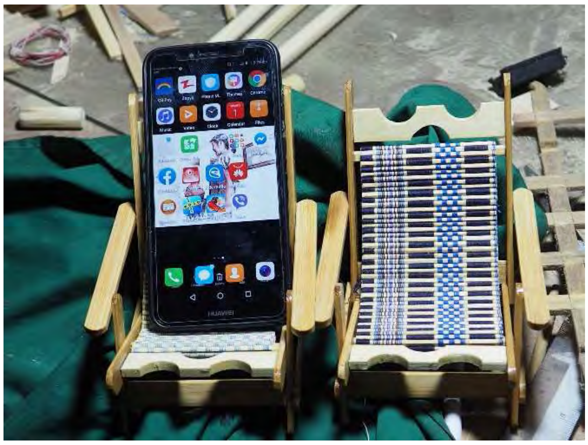
Product:	**Bamboo pipes or rods**
Resource:	Bamboo (*Melocanna baccifera)*
Resource short description:	In Rakhine region, most of the forests are naturally rich of bamboo. Especially one species, *Melocanna baccifera* (Kayin-wa). Produce open and diffuse clumps with some distance (up to 1 m) between the culms. Clumps can reach 4-5 m diameter and can produce 30 – 40 new culms annually. 30 – 40 culms should naturally die annually starting from the age of 5 years.
Product short description:	Most of the people from southern rakhine are going to the forest and harvest bamboo pipes not only for the households use but also for small business. For small business, most are sold in the own village and near villages, especially in the rainy season. Bamboo pipes are sold in the rainy season because it is easier to harvest and transport from the forest to the village along the rivers or streams.
Natural growing/Farmed (agroforestry):	All bamboo resources are natural growing in southern Rakhine
Calendar of availability:	It can be harvested in all seasons. But according to our bamboo survey, villagers harvest and do small business for bamboo pipes in the rainy season.
Time span from planting to harvest:	It takes 3 year from the bamboo shoot stage.
Short production process description:	Firstly, they harvest the bamboo pipes and then they bundle 50 baboo pipes per 1 bundle and transport along with the rivers or streams until the main road and then they collect all in one place and sell to the consumers and traders.
Potential markets (village, township, district,…):	In the rainy season, most of the people could not go to the forest by themself to get bamboo. So they buy from the producers for household use and agriculture use.
Already marketed by IGAs/CFs in the target area:	Already sold by CFs' household members but not as a group, only individual.
Notes:	




Product:	**Bamboo mats**
Resource:	Bamboo (*Melocanna baccifera)*
Resource short description:	In Rakhine region, most of the forests are naturally rich of bamboo. Especially one species, *Melocanna baccifera* (Kayin-wa). Produce open and diffuse clumps with some distance (up to 1 m) between the culms. Clumps can reach 4-5 m diameter and can produce 30 – 40 new culms annually. 30 – 40 culms should naturally die annually starting from the age of 5 years.
Product short description:	Rakhine households and some guest-houses or hotels use these kind of bamboo mats. They use for ceiling and walls. In the market it is usual to find the same pattern but special and customized patterns can be found
Natural growing/Farmed (agroforestry):	All bamboo resources are natural growing in southern Rakhine
Calendar of availability:	It can be harvested or produced in all seasons.
Time span from planting to harvest:	It takes 3 year from the bamboo shoot stage.
Short production process description:	Firstly, they cut the bamboo pipes and prepare bamboo splits, they transport splits bundles to the village where bamboo mats are woven
Potential markets (village, township, district,…):	According to the survey about bamboo mats of So Bone, for traders and customers, there are already the markets and so bone is the only village which produces bamboo mats in the area (from Gwa to Thandwe).
Already marketed by IGAs/CFs in the target area:	Yes, already marketed by the So Bone IGA
Notes:	Can see more information in Bamboo Mat survey

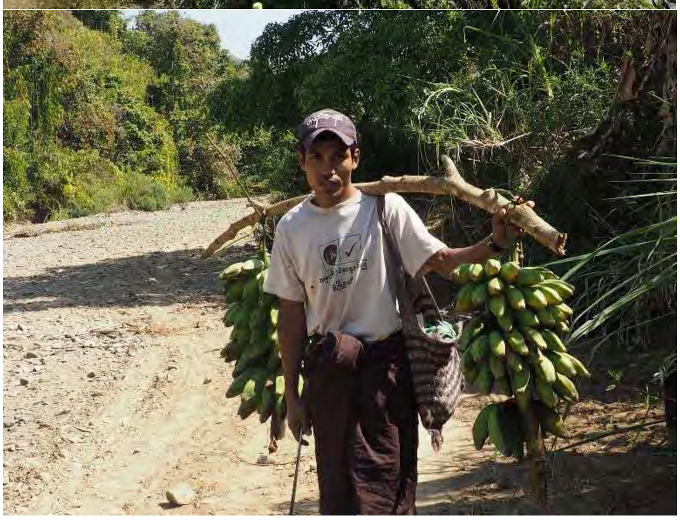



Product:	**Bamboo handicrafts**
Resource:	Bamboo (*Melocanna baccifera)*
Resource short description:	In Rakhine region, most of the forests are naturally rich of bamboo. Especially one species, *Melocanna baccifera* (Kayin-wa). Produce open and diffuse clumps with some distance (up to 1 m) between the culms. Clumps can reach 4-5 m diameter and can produce 30 – 40 new culms annually. 30 – 40 culms should naturally die annually starting from the age of 5 years. This bamboo species is suitable to make handicraft but it needs to be tannin or other chemicals treated for long term use or long lasting.
Product short description:	In the target are people who can do bamboo handicrafts: bamboo hat, bamboo chair, bamboo basket, bamboo net, bamboo lamp, souvenirs, etc.
Natural growing/Farmed (agroforestry):	All bamboo resources are natural growing in southern Rakhine
Calendar of availability:	It can be harvested in all seasons.
Time span from planting to harvest:	It takes 3 year from the bamboo shoot stage.
Short production process description:	It depends on the products. There will be a lot of different processes for bamboo hadicraft production.
Potential markets (village, township, district,…):	Bamboo handicrafts are mostly sold in Ngapali market and hotels. Sometimes they order directly to the producers what kind of handicrafts they want. There could be a local market for bamboo daily domestic items that could replace the wooden ones (cutleries, plates, glasses, cups,…)
Already marketed by IGAs/CFs in the target area:	Not yet
Notes:	Bamboo handicraft has great potential in the international market but it requires high design, production and quality standards (see the images below took in Italy on February 2020)



Product:	**Banana fresh fruits**
Resource:	Banana (*Musa* sp.)
Resource short description:	In Rakhine region, people grow bananas and sell them to the market. We can't list the banana cultivars available in Rakhine
Product short description:	Product is just sold fresh.
Natural growing/Farmed (agroforestry):	Farmed in the area. We can't list the banana cultivars available in Rakhine.
Calendar of availability:	It depends on when it is grown or farmed. It can be available in all seasons.
Time span from planting to harvest:	It takes 8 months from the beginning (banana seedling 3ft height).
Short production process description:	Firstly, farmers grow or separate young plant from the mother tree when it reaches 3ft height. After 8 months, they can harvest banana bunch and transport it to the near market (Thandwe, Kyeintali, Gwa and some villages).
Potential markets (village, township, district,…):	There is market at Thandwe, Kyeintali and Gwa. They are mostly sold at district level.
Already marketed by IGAs/CFs in the target area:	They are marketed by CFs' household members especially in Me Ne Kwin CF but not as a group, only individually.
Notes:	The fruits can also be processed in different ways (dried, fried,...) and packed for long term consumption.






Product:	**Indian trumpet fresh**
Resource:	Indian Trumpet (*Oroxylum indicum*)
Resource short description:	In Rakhine region, Indian Trumpet grows naturally in many places. The large leaf stalks wither and fall off the tree and are collected near the base of the trunk, appearing to look like a pile of broken limb bones. The pinnate leaves are approximately 1 metre (3.3 ft) in length and comparably wide, borne on petioles or stalks up to 2 metres (6.6 ft) in length, making this the largest of all dicot tree leaves, which are quadripinnate (leaflets display four orders of branching).
Product short description:	Product is just sold fresh. These fruits are used for medicinal purposes and also for cooking.
Natural growing/Farmed (agroforestry):	All Indian Trumpet plants are naturally growing in southern Rakhine
Calendar of availability:	It can be harvested on July, August, September.
Time span from planting to harvest:	It takes 5 years from the beginning of seedling. For natural growth, it will take 10 years from the beginning of natural regeneration.
Short production process description:	Villagers just harvest fruits and transport them to the market. Sometimes traders came to the villages and buy the fruits directly.
Potential markets (village, township, district,…):	People in Rakhine use it as meal but there are also traders who collect and buy a lot. The traders use them for selling at the markets and sometimes they sell to companies or retailers.
Already marketed by IGAs/CFs in the target area:	They are marketed by CFs' household members but not as a group, only individually.
Notes:	Thet fruits and bark root can be processed and packed for long term consumption.

Pictures collected from the web

Product:	**Pineapple fresh fruits**
Resource:	Pineapple (*Ananas comosus)*
Resource short description:	The pineapple (*Ananas comosus*) is a tropical plant with an edible fruit. In Rakhine region, people grow pineapple and sell it in the market.
Product short description:	Product is just sold fresh.
Natural growing/Farmed (agroforestry):	Farmed in the area.
Calendar of availability:	It can be harvested in March, April and May.
Time span from planting to harvest:	It takes 2 years from the beginning of seedling and growth.
Short production process description:	Farmers just harvest fruits and transport them to the market.
Potential markets (village, township, district,…):	There is market at Thandwe, Kyeintali and Gwa. Mostly sold at district level.
Already marketed by IGAs/CFs in the target area:	They are marketed by CFs' household members especially in Me Ne Kwin CF but not as a group, only individually.
Notes:	The fruits can be processed in different ways (dried, jam, juice,…) and packed for long term consumption.

Picture collected from the web

Product:	**Mango fresh fruits**
Resource:	Mango (*Mangifera indica*)
Resource short description:	In Rakhine region, people grow mango and sell it to the market.
Product short description:	Product is just sold fresh.
Natural growing/Farmed (agroforestry):	Farmed in the area.
Calendar of availability:	Green or fresh mango can be harvested in March and April. Ripe mango can be harvested in April, May and June
Time span from planting to harvest:	It takes 5 years from the beginning of seedling
Short production process description:	Farmers just harvest fruits and transport them to the market
Potential markets (village, township, district,…):	There is market in Thandwe, Kyeintali and Gwa. Mostly sold at district level. This mango cultivar (Florigon mango) is very sweet and high demanded by people. The price in the market is currently high and also could provide an high profit for CFUGs.
Already marketed by IGAs/CFs in the target area:	They are marketed by CFs' household members especially in Me Ne Kwin CF but not as a group, only individually.
Notes:	The fruits can also be processed in different ways (dried, jam, juice,…) and packed for long term consumption.

Pictures collected from the web

Annex F – BIF's assessment summary

Porter's conditions	Factors	Key findings	Recommendations/opportunities
Factor conditions	Resource base	The existing bamboo resource base is poorly managed with overharvesting impacting on its sustainability and the supply of mature bamboo of good quality for valued-added processing. Company aggregators are important agents of change to reach significant numbers of farmer beneficiaries to improve resource management. Extraction of higher quality resources from conflict affected/remote areas will need to be managed carefully. The information on the extent and quality of bamboo resource is weak and needs to be improved to inform sector planning. Information on environmental and climate change impacts of bamboo show that context matters in terms of achieving positive net environmental benefits.	Pilot bamboo resource management training materials for dissemination through Company aggregators/ traders and plantations. Fallow land presents an opportunity to develop a more sustainable commercially oriented supply of bamboo to the processing industry. There is a need to accelerate land use planning on fallow land to encourage investment in bamboo plantations. Undertake joint impact research with MRBEA and others on the use of fallow land to develop new bamboo stocks.
	Labour market	Whilst labour wages are relatively low, these rates are rising driven by increasing competition for labour. Therefore a key issue in developing a competitive bamboo sector will be the productivity of labour. China provides the best country comparator to learn from (including near source processing, plantation efficiency and waste minimisation).	Skills training needs to be increased (e.g. on planting and harvesting techniques) working through identified agents of change (aggregators/ traders and plantations). Pilot appropriate use of equipment (e.g. chain saws/bamboo trolleys/H&S) to improve production efficiency and worker wellbeing.
	Infrastructure	Road infrastructure is variable but provides an adequate basic infrastructure. The availability of low cost power is more problematic, in particular for the development of a processing industry. The river system presents an opportunity for more sustainable approach to the movement of raw bamboo	Full use of bamboo material can assist firms in reducing power costs and should be promoted (bamboo waste minimisation). Examine the case for designating state/ regional based bamboo clusters. Enabling the emergence of strong area based supply chains.

		material, especially for Kachin state, as long at the bamboo can be transported to the factory gate at the right price point.	
Demand conditions	Domestic	Domestic demand conditions are generally favourable. With continued population/ household growth and a decade of strong tourism growth forecast.	Promote the value of bamboo as a sustainable material. Pilot BIF Tourism (quality of handicrafts) and Garments linkages (use of bamboo as an alternative material). Examine introduction of a low cost housing pilot initiative working with MRBEA, the construction sector and government.
	International	Myanmar has been losing international market share and has seen a decline in its export performance. In contrast to Myanmar's current level of exports at US$2.2m the bamboo industry is a huge market opportunity (with international trade of US$1.3bn).	Pilot intervention with emerging value-added processors. Use the local market to help develop competitive products.
Industry structure	Firm rivalry and cooperation	The MRBEA demonstrates that players in the sector recognise cooperation can help develop the foundations for a new sector and better business environment. There are limited exports of bamboo products and these have been declining. But at the same time there are new investors moving into the sector. RCA data analysis does not provide direct evidence of a natural comparative advantage, but the data shows that wood and food processing are current areas of specialisation for Myanmar.	Joint working to promote bamboo material to wood processors and consumers. There is an opportunity to build on the skills and competitiveness of 'best in class' timber and rattan enterprises. There is a need to improve productivity in production and processing. Clustering of activity may enhance the competeveness of the sector (this is often seen in China with many processing factories co-located).
Supporting institutions	Government (Forestry Department)	Government land policy reforms are leading to the increased availability of land for economic development. But there are private sector concerns about implementation of policy.	Need to promote transparency in the allocation of land working with Government stakeholders.
	R&D	Firms recognise the importance of design and being able to innovate (for production and processing). This is an area of weakness. In order to access value-added markets innovation including design is essential and in particular to secure Japanese, EU and US market penetration.	Integrate design and technical innovation as part of the MAS. Examine the technical properties of bamboo to help the promotion of products. Supply chain linkages should be promoted with Myanmar designers currently resident overseas to help build local service demand.

	Access to finance	To take the sector forward project and risk finance will be required, although some businesses may seek funds through joint venture equity partners. Access to market and business planning services is required to facilitate growth.	Provide facilitation business support to pioneer business to develop their business plans. Test the appetite of financial institutions (in particular co-funded banks to fund.
Government policy	Land policy	A lack of transparency and clear procedures for accessing land is currently constraining private sector investment in the sector.	Land zoning and the identification of bamboo plantation investment areas should be explored with government to encourage investment in new bamboo supply.
	Trade policy	ASEAN single market agreements will remain critical over the next five years.	Call for continued reform of the soft infrastructure supporting trade facilitation in the MAS.
	FDI	There will an acceleration of interest from investors in a range of markets. This is expected to spread beyond construction and tourism in the new post-election environment. Key markets include Japan (shoots, flooring and energy), the EU (value added flooring) and India (raw bamboo). But many firms already have existing trading connections and relationships which should be fully exploited.	Develop a structured programme to facilitate market linkages with international buyers (working with associations and trade bodies). Facilitate the identification of partner investors in the processing sector (wood, food and material diversification).
	Tax and customs	Lengthy procedures and informal charges are identified as impacting trade and investment. Tax policy is not fully supportive of encouraging the local processing sector (e.g. tax on chemical inputs for bamboo flooring).	Promote the case for a review of duty claw-back arrangements on inputs for exports.

Source: BIF (Business Innovation Facility) and MRBEA (Myanmar Rattan and Bamboo Enterpreneurs Association), 2015. "Myanmar Bamboo Sector Competitiveness Study" BIF and MRBEA, UKAid.

Annex G - Bamboo survey

1. Can you estimate the % area of your CF covered by bamboo?		
CF name	Answer	Area [Acre]
Oh Htein	0.5% is covered by bamboo	0,65
Ba Win	50% is covered by bamboo	61,00
Tone Taw	25% is covered by bamboo	28,00
Kyar Nyo	9% is covered by bamboo	14,49
Myo Kwin	10% is covered by bamboo	12,80
Aung Tha Pyay	0.5% is covered by bamboo	0,52
Kyar Pyit Kone	0.2% is covered by bamboo	0,22
Hmyar Chaung	0.05% is covered by bamboo	0,07
Me Ne Kwin	0.2% is covered by bamboo	0,49
Pan Taw	3.5% is covered by bamboo	10,40
Sat Thwar	10% is covered by bamboo	15,30
		143,93

2. Is all the bamboo resource easily accessible for harvesting (spatial distribution)?	
CF name	Answer
Oh Htein	Inaccessible because the bamboo is scattered inside CF and far from the vil
Ba Win	Easily accessible
Tone Taw	50% is easily accessible and 50% is not easily accessible
Kyar Nyo	Easily accessible
Myo Kwin	Easily accessible
Aung Tha Pyay	Easily accessible
Kyar Pyit Kone	Easily accessible
Hmyar Chaung	Easily accessible
Me Ne Kwin	Easily accessible
Pan Taw	Easily accessible
Sat Thwar	Easily accessible

3. Do you harvest bamboo in your CF?	
CF name	Answer
Oh Htein	No
Ba Win	Yes
Tone Taw	Yes
Kyar Nyo	Yes
Myo Kwin	Yes (but most of the bamboo harvesters are from So Bone)
Aung Tha Pyay	Yes
Kyar Pyit Kone	No
Hmyar Chaung	No
Me Ne Kwin	No
Pan Taw	Yes
Sat Thwar	Yes

4. Do you need to go further every year to access good quality pipes?	
CF name	Answer
Oh Htein	Yes, because inside CF there is no a lot of bamboo
Ba Win	No
Tone Taw	No

Kyar Nyo	No
Myo Kwin	No
Aung Tha Pyay	Yes, because inside CF there is no a lot of bamboo
Kyar Pyit Kone	Yes, because inside CF there is no a lot of bamboo
Hmyar Chaung	No
Me Ne Kwin	No
Pan Taw	No
Sat Thwar	No

5. Which products do you obtain from the bamboo?	
CF name	Answer
Oh Htein	Mats (roof, wall), weaved bamboo fence, bamboo stick for nipal roofing
Ba Win	Mats (roof, wall), weaved bamboo fence, bamboo stick for nipal roofing and bamboo stick for betel leaves farm
Tone Taw	Achin bamboo (local name) use in roofing like arrow, weaved bamboo fence, bamboo stick for betel leaves farm
Kyar Nyo	Achin bamboo (local name) use in roofing like arrow, bamboo stick for betel leaves farm
Myo Kwin	Mats (roof, wall), weaved bamboo fence, bamboo stick for nipal roofing and bamboo stick for betel leaves farm
Aung Tha Pyay	Mats (roof, wall), weaved bamboo fence
Kyar Pyit Kone	Weaved bamboo fence, and some household useful items
Hmyar Chaung	No
Me Ne Kwin	No
Pan Taw	Weaved bamboo fence, bamboo stick for betel leaves farm, bamboo stick for nipal roof
Sat Thwar	Bamboo net and pipe for drying fish, bamboo stick for betel leaves farm and bamboo hat

6. Can you quantify the yearly production of each product?	
CF name	Answer
Oh Htein	No
Ba Win	No
Tone Taw	About 5,000 bamboo pipes
Kyar Nyo	About 3,000 bamboo pipes
Myo Kwin	About 150,000 bamboo pipes
Aung Tha Pyay	No
Kyar Pyit Kone	No
Hmyar Chaung	No
Me Ne Kwin	No
Pan Taw	About 250,000 Pipes
Sat Thwar	About 3,000 Pipes

7. Can you describe the availability in time all year long of each product?	
CF name	Answer
Oh Htein	It can be available in all seasons (12 months)
Ba Win	It can be available in all seasons (12 months)
Tone Taw	It can be available in all seasons (12 months)
Kyar Nyo	It can be available in all seasons (12 months)
Myo Kwin	It can be available in all seasons (12 months)

Aung Tha Pyay	It can be available in all seasons (12 months)
Kyar Pyit Kone	It can be available in all seasons (12 months)
Hmyar Chaung	No
Me Ne Kwin	No
Pan Taw	It can be available in all seasons (12 months)
Sat Thwar	It can be available in all seasons (12 months)

8. How do you use the waste of your production?	
CF name	Answer
Oh Htein	No answer
Ba Win	No answer
Tone Taw	No answer
Kyar Nyo	No answer
Myo Kwin	No answer
Aung Tha Pyay	No answer
Kyar Pyit Kone	No answer
Hmyar Chaung	No answer
Me Ne Kwin	No answer
Pan Taw	No answer
Sat Thwar	No answer

9. Do you use bamboo products in the households or for small business?	
CF name	Answer
Oh Htein	Only for households
Ba Win	Only for households
Tone Taw	Only for households
Kyar Nyo	Only for households
Myo Kwin	Only for households in the village but we provide bamboo for business in So Bone
Aung Tha Pyay	Only for households
Kyar Pyit Kone	Only for households
Hmyar Chaung	No
Me Ne Kwin	No
Pan Taw	Both for household use and small business
Sat Thwar	Only for households

10. If you run a small bamboo business, can you quantify the quantity sold of each product, the unit value in MMK of each product? And then the total yearly value of your business?	
CF name	Answer
Oh Htein	No
Ba Win	No
Tone Taw	No
Kyar Nyo	No
Myo Kwin	No
Aung Tha Pyay	No
Kyar Pyit Kone	No
Hmyar Chaung	No
Me Ne Kwin	No

Pan Taw	No, because we don't have exactly information and we harvest both for household and small business; mostly are for household use
Sat Thwar	No

11. Where do you sell the products?	
CF name	Answer
Oh Htein	No
Ba Win	No
Tone Taw	No
Kyar Nyo	No
Myo Kwin	No
Aung Tha Pyay	No
Kyar Pyit Kone	No
Hmyar Chaung	No
Me Ne Kwin	No
Pan Taw	In the village and Thit Ngote Toe village
Sat Thwar	No

12. How many people are involved in the bamboo harvesting?	
CF name	Answer
Oh Htein	Just one
Ba Win	Just one
Tone Taw	2 people
Kyar Nyo	3 people
Myo Kwin	2 people
Aung Tha Pyay	Just one
Kyar Pyit Kone	Just one
Hmyar Chaung	No
Me Ne Kwin	No
Pan Taw	4 people
Sat Thwar	2 people

13. Do your CFUG's members have any technical skill in bamboo processing? If Yes, can you describe the skills and quantify the people?	
CF name	Answer
Oh Htein	Yes, we have some technical skills related with bamboo harvesting, bamboo processing (making bamboo basket, weaving for fence, making bamboo stick)
Ba Win	Yes, we have some technical skills related with bamboo harvesting, bamboo processing (weaving for fence, making bamboo stick)
Tone Taw	Yes, we have some technical skills related with bamboo harvesting, bamboo processing (weaving for fence, making bamboo stick, bamboo hat and bamboo basket which is used for chicken keeping)
Kyar Nyo	Yes, we have some technical skills related with bamboo harvesting, bamboo processing (making bamboo stick, bamboo basket and bamboo splits)
Myo Kwin	Yes, we have some technical skills related with bamboo harvesting, bamboo processing (weaving bamboo mats, making bamboo stick, bamboo basket and bamboo splits)

Aung Tha Pyay	Yes, we have some technical skills related with bamboo harvesting, bamboo processing (weaving for fence, making bamboo baskets which are used in fishing and making bamboo stick)
Kyar Pyit Kone	Yes, we have some technical skills related with bamboo harvesting, bamboo processing (weaving for fence, making bamboo baskets which is use in fishing and making bamboo stick)
Hmyar Chaung	Yes, we have some technical skills related with bamboo harvesting, bamboo processing (weaving for fence, making bamboo baskets, making bamboo stick and making bamboo hat)
Me Ne Kwin	Yes, we have some technical skills related with bamboo harvesting, bamboo processing (weaving for fence, making bamboo baskets which are used in fishing, making bamboo stick and making bamboo hat and bamboo chair)
Pan Taw	Yes, we have some technical skills related with bamboo harvesting, bamboo processing (weaving for fence, making bamboo baskets which are used in fishing, making bamboo stick and making bamboo hat)
Sat Thwar	Yes, we have some technical skills related with bamboo harvesting, bamboo processing (making bamboo baskets and making bamboo hat)

14. Are you interested in bamboo plantation? How many acres of your CF could be devoted to the bamboo plantantion?	
CF name	Answer
Oh Htein	Yes, 20 Acres could be devoted to bamboo plantation
Ba Win	No, because we have a lot of bamboo in our CF area
Tone Taw	No
Kyar Nyo	Yes, 10 Acre could be devoted to bamboo plantation
Myo Kwin	No
Aung Tha Pyay	No
Kyar Pyit Kone	No but we are interested in bamboo shoot farming if it is possible
Hmyar Chaung	No
Me Ne Kwin	Yes, 40 Acre could be devoted to bamboo plantation
Pan Taw	Yes, 15 Acre could be devoted to bamboo plantation
Sat Thwar	Yes, 10 Acre could be devoted to bamboo plantation

15. Is your CFUG potentially interested in the bamboo business? Either as single enterprenuer or as a member of an entrepreneurial group.	
CF name	Answer
Oh Htein	Yes, we are interested in bamboo business as members of an enterpreneurial group because it is not possible to become successful bussiness as single enterprenuer
Ba Win	Yes, we are interested in bamboo business as members of an enterpreneurial group
Tone Taw	Yes, we are interested in bamboo business as members of an enterpreneurial group
Kyar Nyo	Yes, we are interested in bamboo business as single enterprenuer
Myo Kwin	Yes, we are interested in bamboo business as members of an enterpreneurial group

Annex G - Bamboo survey

Aung Tha Pyay	No
Kyar Pyit Kone	Yes, as members of enterpreneurial group
Hmyar Chaung	No
Me Ne Kwin	Yes, we are interested in bamboo business as members of an enterpreneurial group
Pan Taw	Yes, we are interested in bamboo business as single enterprenuer
Sat Thwar	Yes, we are interested in bamboo business as single enterprenuer

Annex H - MA&D OF AN EXISTING RURAL BUSINESS EXPERIENCE

Field Survey – Soe Bon Village – Bamboo mats production

Natural resource management/environment

1. Can you estimate the % area of your CF covered by bamboo?
   0.8% area covered by bamboo, estimated 1 Acre. Total CF area is 127 Acres
2. Is all the bamboo resources easily accessible for harvesting (spatial distribution)? If NO, can you quantify the % of inaccessible or no reasonably accessible area?
   Yes, all the bamboo resource is easily accessible for harvesting
3. Do you harvest bamboo in your CF? If NO, where do you obtain the resource?
   No, because we don't have a lot of bamboo in our CF area. We obtain from other sources, also from other CFs.
4. Can you quantify the yearly extraction of bamboo?
   1,456,770 Bamboo pipes, 342,000 Bamboo shoots
5. How many bamboo pipes do you estimate to harvest per area unit (number of pipes/acre OR number of pipes/hectare)?
   Between 15,000 and 20,000 bamboo pipes can be harvested per 1 Acre on natural forest area (37,000 – 49,400 pipes/hectare)
6. Can you quantify the yearly growth of bamboo?
   Growth rate is nearly 3 times the extracted quantity. We cannot quantify yearly growth.
7. How do you assess the sustainability of your bamboo extraction?
   We don't have the plan for bamboo extraction's sustainability
8. How many people are involved in the bamboo harvesting?
   About 120 people
9. Which products do you obtain from the bamboo?
   Bamboo pipes, Bamboo mats, Bamboo shoots, Bamboo Baskets to cover chicken, Bamboo sticks for making Nypa roof, Bamboo mats for poultry farming, Bamboo hats, Bamboo nets for fishing, Bamboo baskets which are used to put fish.
   Bamboo pipes, Bamboo mats and Bamboo shoots are produced for business and the other products are used for household only.
10. Can a conflict in the resource availability arise producing different products?
    No

	Quantity	Yearly growth	Yearly extraction	Balance
Bamboo resource in forest	No inventory	No inventory	No inventory	No inventory
Bamboo pipes	700,000		700,000	
Bamboo Mats	5,000		750,000 (15 bamboo pipes = 1 bamboo mat)	
Bamboo Shoots	342,000		342,000	
Bamboo Baskets to cover chicken	50		250 (5 bamboo pipes = 1 Bamboo basket)	

Bamboo sticks for making Nypa roof	40,000		5,700 (1bamboo pipe = 7 bamboo sticks)	
Bamboo mats for poultry farming	100		400 (4 bamboo pipes = 1 bamboo mat)	
Bamboo hats	20		20 (1 bamboo pipe = 1 bamboo hat)	
Bamboo nets for fishing	100		200 (2 bamboo pipes = 1 bamboo net)	
Bamboo baskets which use to put fish	100		200 (2 bamboo pipes = 1 bamboo basket)	
Total			1.798.770	

11. Are you interested in bamboo plantation? How many acres of your CF could be devoted to the bamboo plantation?
    Yes, we are interested in bamboo plantation. About 30 Acres can possibly be diverted to bamboo plantation
12. Which species of bamboo do you wish to plant?
    Especially Kayin-wa (*Melocanna baccifera*) because this bamboo is of best quality and more suitable for making bamboo mats, while the other bamboo species are not very suitable for making bamboo mats
13. Does your production generate waste? If yes, how do you use the waste of your production?
    Yes, some are thrown away as waste in the forest. Some pieces like inner part of culms are used for house and agricultural land fencing and some are used as fuelwood

Products and market

1. Can you quantify the yearly production of each product? Can we calculate the quantity of resource needed for a unit of product?
   See the above table for relation between resource and product.
2. Can you describe the availability in time all year long of each product?

High							√	√				
Average High	√	√	√						√	√	√	√
Average Low						√						
Low				√	√							
Months	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec

3. Do you produce bamboo products for the households' use or for small business?
   Both
4. If you run a bamboo business, can you quantify the quantity sold of each product, the unit value in MMK of each product? And then the total yearly value of your business?

Products	Selling price (MMK)	Quantity/volume traded/yearly	Total revenue (MMK)
Big mat (6*7,5ft)	3,500	3,000	10,500,000
Small mat (6*6ft)	3,000	2,000	6,000,000
Pipe	100	30,000	3,000,000
			19,500,000

5. Are your products' prices influenced by seasonal fluctuations? Are the prices stable?
   Our products' prices are stable
6. Where do you sell the products? How do you sell your products (direct contact with the customers or do you use intermediaries)?
   Only at the village because the traders come to the village to pick up the products
7. Can you describe the yearly demand trend? And the demand trend since the beginning of the business?

High					√							
Average High	√	√									√	√
Average Low			√	√				√	√	√		
Low						√	√					
Months	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec

8. Can you draw the production process of your products?
   Harvesting bamboo & preparing for bamboo mats
   Cut the bamboo
   Split the bamboo
   Split the bamboo splits
   Bundle the bamboo splits
   Transport to village or house

   Weaving bamboo mats
   Weave bamboo mats
   Keep in one place

   Selling to traders
   Contact with traders
   Sell
9. Can you describe the processing, storage and transportation requirements for your products in the different seasons?
   The process is the same in every season
10. Can we try to draw the Value/Market Chain of your product enlighting all the actors (direct and indirect)? Can you price the product (and then quantify the costs) at each level of the chain? And the quantity at each level? (We may need to collect information out of village too – traders, transporters, wholesalers, consumers)

Informants	Buying price per unit (MMK)	Selling price per unit (MMK)	Transport costs (from village to main	Packaging costs	Tax	Storage/rental costs	Revenue per unit (MMK)	Remarks
Producer – big mat	3000	3500	200				300	Only IGA
Producer – small mat	2500	3000	200				300	Only IGA
Trader - big mat	3500	4000 On the road side					500	
Trader - small mat	3000	3500 On the road side					500	

Time spent from home to harvesting	Quantity harvested per day	Time spent from home to production site	Quantity produced per day	Production season (list months in the year)	Storage time between harvest and production	Storage time between production and sell	Storage place
4 hr	15 bamboo pipes	0 hr (productio n is at home)	1 bamboo mat (consideri ng haversting +splitting +weaving in the same day)	12 months	No	No (only to wait for the trader to pick up and collect the products)	No

11. How many bamboo splits bundles a harvester can prepare in a working day?

An harvester can prepare one bundles which is included 550 bamboo splits in a working day

12. How many bamboo mats a weaver can produce in a day?
    A weaver can produce 10 bamboo mats in a day, starting from the weaving of the already prepared splits.

Main market places	Time needed to reach the market places	Production activities (% by men/women)	Means of transport	Cost of transporting goods to market places (From main road/trader to retailer)	Number of trips to the market places for selling	Amount of tax/legal fees paied
Thandwe	1 hr	70% women/ 30% men	Tok Tok	300 MMK	Thandwe – Gwa main road	No
Ngapali	1 hr and 15 minute					

13. Do you know your competitors in the area? Can you list them? Do you have any direct or indirect (e.g. transporters) contact with them?
    No, the competitors are only in the village
14. Can your product be substituted by other products?
    Plywood, chipboard, Nypa roof, wood
15. Do you produce different mats designs/patterns? If Yes, are the prices different according to the design? If Yes, how do they establish the price?
    Yes, we produce different mats designs/ patterns, but they are produced only when we have an order. The price is based on measures. 3ft*10ft = 10,000 MMK which means for 6ft*20 will be 20,000 MMK
16. Have you studied your potential market? How do you search for new customers? How do you promote your product?
    Yes, we tried to contact retail sellers and negotiate with them for our products. To promote our product, we make different patterns of bamboo mats but the demand is too low

Finance

1. Can you describe your financial sources? Start-up capital and current capital (daily needs) (credit/saving system). Describe your experience in raising capital

Credit source	Amount	Sponsoring group	Credit term	Interest rate	Reimbursement
INGO	1,310,000MMK	OIKOS	No	No	No

Legal framework

1. Can you list rule and regulation that influence your business activity? (harvest, process, transport, trade,…)

We don't know exactly about rules and regulations.

Social/cultural

1. Can you describe your internal regulation about the distribution of the income among the members? Does the IGA contribute to the social development of the village? If YES, how?

   On the basis of the income after 3 or 4 years, we will share the benefits as 70% for group member, 20% for capital and 10% for social development of the village

2. Can you describe your IGA members? (women, men, old-young people,…). Can you describe the roles of each category in the business activities?

   9 IGA members (6 women and 3 men) there is no specific roles of each categories but women mainly produce the mats and men try to contact and deal with traders and do bamboo harvesting in which women are also involved

3. Have you ever faced conflicts among the IGA's members? And/or the IGA's members and the other villagers?

   No conflicts, just problems when the member could not give back the withdrawn money to the group. There is no conflict among the other villagers

4. Have the members increased from the beginning till now?

   No

5. Who decides about the use of the income from the product? Please describe its use.

   See answer 1.

Technology/product research and development

1. Do your CFUG's members have any technical skill in bamboo processing? If Yes, can you describe the skills and quantify the people?

   Yes, we have technical skills related to bamboo havesting, bamboo mat making, making bamboo handicrafts, etc.

2. Do you think that the level of your skills (harvesting, post-harvesting, processing, marketing) is sufficient to place a competitive product in the market?

   For harvesting, post-harvesting and processing it is sufficient to place a competitive product in the market but for marketing skills we need training and capacity building.

3. How can these technical skills be improved to meet the requirements of new/broad market?

   According to our technical skills, we can improve increasing bamboo mat production, making new designs and patterns, and produce other bamboo handicraft.

4. Do you think that your product's quality is suitable for the market? Do you have any feedback from your customers about the quality of your product?

   We do not have any specific feedback from customers about the quality of our products

5. Have you ever compared your product with one of your competitors? Which is the result of your assessment?

   It is the same as the others' product

6. Do you need equipment and tools for your product process?

   Only knife

7. Do you think that new/improved technology could improve the quantity or the quality of your product?

   We don't know about the equipment and tools for our product process but if there is some high tech or machine, we will be glad to have it.

8. Do you know the costs of the technical improvement?

   Don't know

9. Do you think that your production process can be considered eco-friendly? Can you suggest any improvements to greener the process?

   Yes, we think that our production process can be considered eco-friendly because cutting or harvesting bamboo helps to grow back strong and good bamboo, and also helps for soil fertilizer, e.g if we do not cut the bamboo, bamboo forest will be thin and weak and there will be no place to grow freely and strongly. Another example is the waste or residuals from harvesting that can become natural fertilizer for soil because they can decompose easily

10. Is the physical infrastructure (roads, telecommunications,…) adequate for your business?

    Not very adequate for business because the roads are not in very good condition for transportation during rainy season

Summary

1. Can we fill in together the Product Assessment Table of your products?

	Market/Economy	Natural Resource Management/Environment	Social/Cultural	Institutional/Legal	Technology/Product development
Opportunities	We have already had enterprise development training (IGA group). We have already had the capital. There is the market for all seasons which means the whole year.	The natural regeneration or growth rate is very good. Can produce long term. Easy to access for harvesting. Can reuse the waste.	The women participation is good; women can participate more than men in this business	Already have the permission or right to harvest from CF. According to the CFI, we have right to do CFE. Becoming a CFE is a bit far but we are taking the chance into consideration.	CFUGs already have the skills related to bamboo harvesting and processing.
Constraints	Low capital. There is no contract between traders and sellers, it could not be safe or trust in the business. Just only verbal agreement. Sometimes we lose those contracts, e.g they promised to buy 200 mats but they did not and they promised to give 4000 MMK for each according to negotiation but they did not.	There are not a lot of areas in CF which are covered by bamboo forests. Weak in systematically harvesting. This type of bamboo is flowering every 50 years.	Weak in participation	Cost for enterprise registration, tax level and other administrative burdens	Roads are bad for transportation especially during rainy season. Need skills related with market link and market analysis. Need some new technology or machines.

Possible solutions	Organizing as an enterprise and trying to get funds from the bank. Trying to link or contact directly with the retailer or customers. Trying to do business with official contracts.	Growing bamboo plantation inside CF. Organizing meetings with all bamboo user households to draw bamboo resource management plans.	Try to promote for participation by making more meeting and negotiation	Requesting to MONREC to reduce or cancel tax on using or harvesting forest products by CFUGs	Requesting the government to improve transportation. Giving training and practice for market link and market analysis.

FIGURE 1: BAMBOO MATS PROCESS IN SOE BON

2. Can we score together your products?

CRITERIA	SCALE	SCORE
MARKET/ECONOMY		
Raw material supply/availability	large moderate limited very limited	4 3 2 1
Market demand	large moderate limited very limited	4 3 2 1
Competition (for a market niche)	low moderate high very high	4 3 2 1
Constraints to business entry	low moderate severe very severe	4 3 2 1
Margins/profitability	high moderate low very low	4 3 2 1
Capital investment available	high moderate low very low	4 3 2 1
NATURAL RESOURCE MANAGEMENT/ENVIRONMENT		
Availability (in time)	almost always occasionally rarely/seasonal very rarely	4 3 2 1

CRITERIA	SCALE	SCORE
NATURAL RESOURCE MANAGEMENT/ENVIRONMENT		
Availability (in space): time needed to find and harvest resources	widespread moderate rare very rare	4 3 2 1
For farm products only Time from planting to harvest	short moderate long very long	4 3 2 1
For forest products only Regenerative potential	high moderate low very low	4 3 2 1
For forest products only Impact of harvesting on survival of the species	minimal moderate severe very severe	4 3 2 1
Positive impact of enterprise on the environment	high moderate low very low	4 3 2 1
SOCIAL/CULTURAL		
Indirect benefits for the community	positive unnoticeable negative very negative	4 3 2 1
Experience with the product	high moderate low very low	4 3 2 1

CRITERIA	SCALE	SCORE
SOCIAL/CULTURAL		
Potential for employment creation	high moderate low very low	4 3 2 1
Gender impact/activity done by	only women both men and women few men only men	4 3 2 1
INSTITUTIONAL/LEGAL		
Policy control (permit, licence, quota, etc.)	high moderate low very low	4 3 2 1
Legal costs (fees, taxes, royalties, etc.)	very low low moderate high	4 3 2 1
Support from local/national institutions	high moderate low very low	4 3 2 1
TECHNOLOGY		
Suitability for rural entrepreneurs: processing location	home village district province/other	4 3 2 1

CRITERIA	SCALE	SCORE
TECHNOLOGY		
Suitability for rural entrepreneurs: processing technology/expertise	high moderate low very low	4 3 2 1
Human resources: number	high moderate low very low	4 3 2 1
Human resources: skills, expertise	high moderate low very low	4 3 2 1
Infrastructure in place	high moderate low very low	4 3 2 1

Criteria	Score
Market economy	
Raw materials supply	4
Market demand	3
Competition (for market niche)	2
Constraints to business entry	3
Margins/profitability	1
Capital Investment needs	2
Subtotal	*15*
Natural Resource management/Environment	
Availability (in time)	4
Availability (in space)	4
For farm products only: Time from planting to harvest	3
For forest products only: Regenerative potential	4
For forest products only: Impact of harvesting on the survival of species	4
Impact of production on environment	4
Subtotal	*23*
Social/Cultural	
Indirect benefits for the community	4
Experience with the product	3
Potential for job creation	3

Gender impact	2
Subtotal	*12*
Institutional/Legal	
Policy control (permit, licence, quota, etc.)	3
Legal costs (fees, taxes, royalties, etc.)	3
Support from local/national institutions	1
Subtotal	*7*
Technology, product research and development	
Suitability for rural entrepreneurs: processing locations	3
Suitability for rural entrepreneurs: processing technology	4
required	4
Human resources (number)	3
Infrastructure status	2
Subtotal	*16*
Total	**73**

Benefits-Costs Analysis

1. Can we analyze together benefits (revenues) and costs of your product since the beginning of your business? Can we make a projection about the year ahead?
   We do not have this kind of benefits and costs and we can't make a projection about the year ahead.

Strategies for future

1. Do you want to enlarge your business activity to become a registered enterprise? Do you think that an enterprise group can contribute to an improvement in your business activity? Should you work individually or in a group?
   Yes, an enterprise group can contribute to improve our business. We should work as a group.
2. What do you think about the potential for employment creation of your business? Would you need more labour force? Would you need particular skills now missing in your business?
   Our business can create the potential for employment as for producers for harvesting and making mats. We need more labor force. We need skills especially related to market analysis and how to develop the business.
3. Do you expect any public/institutional support for your business? Which could be the best support that you would like to receive? (i.e tax exemption, tax reduction for trading, public funding programme, easier access to financial institutions, simpler enterprise registration formalities, contracts to supply public institutions with products,…)
   Yes, we do. Fundraising will be the best support for us.
4. Do you think that introducing a new side product to your business could help you to obtain an extra income?
   Yes, it could be, but we don't know about that market
5. Do you think that with new financial sources your business could be expanded?
   Yes

Figure 2: weaving fence

Field Survey – Bamboo mats retailer 1

1. Where do you buy these mats?
   I buy these mats from Soe Bon village.
2. From whom do you buy these mats?
   I order a villager from Soe Bon village to buy it and I provide him with commission.
3. Do you know who (where) do produce these mats?
   I know that it was produced from Soe Bon village.
4. How many bamboo mats do you buy in a year? When during the year?
   I buy 1500 bamboo mats in a year. Especially in October, November, April and May.
5. How much do you pay each?
   I pay 3350 and 3850 MMK per each depending on the size of the mats, all inclusive: commission, transportation, gate fee. I have to manage the transportation from the village to my shop.
6. Is the price affected by seasonal/yearly fluctuation?
   The price is not affected by seasonal fluctuations.
7. Are you willing to pay higher price for certified mats from South Rakhine (Gwa, Thandwe) Community Forests, produced under sustainable forest management and social fair production?
   I don't know exactly about CF and I am not willing to pay for higher price.
8. How much would you willing to pay extra for a certified product?




Field Survey –Bamboo mats retailer 2

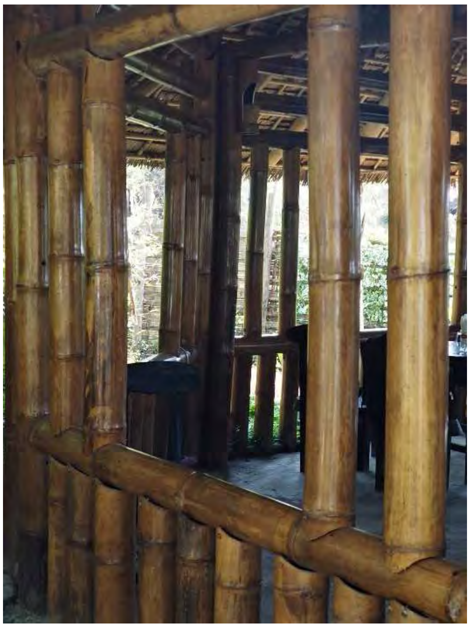
1. Where do you buy these mats?
   I but these mats form Nga Pan village.
2. From whom do you buy these mats?
   I buy them directly from traders at Nga Pan village.
3. Do you know who (where) do produce these mats?
   I know that they are produced in Soe Bon village.
4. How many bamboo mats do you buy in a year? When during the year?
   I buy 1000 bamboo mats in a year. Especially in October, November, February, March, April and May.
5. How much do you pay each?
   I paid 4000 and 4500 MMK per each depending on the size of the mats. The traders bring mats in my shop and provide me with a one month credit system.
6. Is the price affected by seasonal/yearly fluctuation?
   The price is not affected by seasonal fluctuations.
7. Are you willing to pay higher price for certified mats from South Rakhine (Gwa, Thandwe) Community Forests, produced under sustainable forest management and social fair production?
   I don't know exactly about CF, but I am willing to pay higher price (a little more) if it is produced from a community group. (A credit system waiting for payment for 3 or 4 months is needed.)
8. How much would you willing to pay extra for a certified product?

Field Survey –Bamboo mats trader

1. Where do you harvest bamboo?
   I don't harvest bamboo. I am a trader. I purchase the bamboo mats form Soe Bon village and trade them to Ngapali.
2. Roughly, how many mats do you produce in a year?
   I don't produce bamboo mats.
3. How many people is involved in the business? Man? Woman?
   2 men are involved in the business.
4. Which are your customers?
   My customers are retailers in Ngapali and Thandwe.
5. Where (transporter, trader, directly to customers,…) do you sell your mats? If they state that they just sell to the trader, try to understand if they know the final destination of their mats (e.g. Ngapali beach hotels)
   I just sell them to traders and retailers. The final destination of the mats are houses, hotels and store houses in Ngapali and Thandwe.
6. How (transporter, trader, directly to customers,…) do you sell your mats?
   The first time I directly went to traders and retailers for marketing. Later I contacted them by Phone.
7. Which is the price of a mat?
   The price is between 4500 and 5000 MMK per mat depending on the size of the mat at the retailer shop. 3500 – 4000 MMK at my warehouse.
8. Is the selling price stable or influenced by seasonal fluctuation?
   The selling price is influenced by seasonal fluctuation. Especially in April, I can sell more quantity of mats and at a higher price.
9. Do you produce different design/pattern mats? If Yes, are the prices different for the different designs?
   I have no different design/pattern mats.
10. Do you know your competitors in the area? Can you list them? Do you have any direct or indirect (e.g. transporters) contact with them?
    There are 4 competitors in this area and I don't have any direct or indirect contact with them.
11. Do you produce any other bamboo product?
    I have other bamboo mat products but they are only a few, and they are only used for poultry farm.

Field Survey – Ngapali – Bamboo Garden restaurant

I used many kinds of bamboos for my restaurant building. I bought the bamboo raw materials locally (close from Ngapali), and I built this building myself together with my staff and other local people. Local people are not used to build using bamboo and they are poor in technical skills. I know very well about CF. I don't want to pay higher prices for CF products. I would like to pay according to the market price. I think that the bamboo market demand would be huge locally if we had a lot of people who used the bamboo for construction in our area.



Annex I - Elephant Foot Yam survey

1. Do you harvest or farm EFY in your CF?	
CF name	Answer
Oh Htein	No CFUGs, the other people who are not in CF member harvest EFY
Ba Win	Yes
Tone Taw	Yes
Kyar Nyo	Yes
Myo Kwin	Yes
Aung Tha Pyay	Yes
Kyar Pyit Kone	Yes
Hmyar Chaung	Yes
Me Ne Kwin	Yes
Pan Taw	Yes
Sat Thwar	No

2. If YES, do you harvest natural EFY or grow it?	
CF name	Answer
Oh Htein	Natural EFY that they harvest
Ba Win	Natural EFY
Tone Taw	Natural EFY
Kyar Nyo	Natural EFY
Myo Kwin	Natural EFY
Aung Tha Pyay	Natural EFY
Kyar Pyit Kone	Natural EFY
Hmyar Chaung	Natural EFY
Me Ne Kwin	Natural EFY
Pan Taw	Natural EFY
Sat Thwar	No

3. Are you interested in EFY farming? How many acres of your CF would you like to devote for the EFY farming?	
CF name	Answer
Oh Htein	Yes we interest in EFY farming. 10 Acres could be possible for EFY farming
Ba Win	Yes we interest in EFY farming. 10 Acres could be possible for EFY farming
Tone Taw	Yes we interest in EFY farming. 20 Acres could be possible for EFY farming
Kyar Nyo	Yes we interest in EFY farming. 10 Acres could be possible for EFY farming
Myo Kwin	Yes we interest in EFY farming. 20 Acres could be possible for EFY farming
Aung Tha Pyay	Yes we interest in EFY farming. 24 Acres could be possible for EFY farming
Kyar Pyit Kone	Yes we interest in EFY farming. 31 Acres could be possible for EFY farming
Hmyar Chaung	Yes we interest in EFY farming. 20 Acres could be possible for EFY farming
Me Ne Kwin	Yes we interest in EFY farming. 50 Acres could be possible for EFY farming
Pan Taw	Yes we interest in EFY farming. 35 Acres could be possible for EFY farming
Sat Thwar	Yes we interest in EFY farming. 10 Acres could be possible for EFY farming

4. Can you describe the availability in time all the year long?	
CF name	Answer
Oh Htein	For natural EFY, in October and November
Ba Win	For natural EFY, in October and November
Tone Taw	For natural EFY, in September and October
Kyar Nyo	For natural EFY, in October and November

Myo Kwin	For natural EFY, in September and October
Aung Tha Pyay	For natural EFY, in September, October, November
Kyar Pyit Kone	For natural EFY, in September, October, November
Hmyar Chaung	For natural EFY, in September, October, November
Me Ne Kwin	For natural EFY, in September, October
Pan Taw	For natural EFY, in October and November
Sat Thwar	No

5. Can you quantify its yearly production?	
CF name	Answer
Oh Htein	Don't know exactly but if we estimate, about 400 viss
Ba Win	About 200 viss
Tone Taw	About 2,000 viss
Kyar Nyo	About 10,000 viss
Myo Kwin	About 10,000 viss
Aung Tha Pyay	About 10,000 viss
Kyar Pyit Kone	About 5,000 viss
Hmyar Chaung	About 5,000 viss
Me Ne Kwin	About 5,000 viss
Pan Taw	About 2,000 viss
Sat Thwar	No

6. Do you use EFY for the households' needs or for small business?	
CF name	Answer
Oh Htein	They use it for small business
Ba Win	Small business
Tone Taw	Small business
Kyar Nyo	Small business
Myo Kwin	Small business
Aung Tha Pyay	Small business
Kyar Pyit Kone	Small business
Hmyar Chaung	Small business
Me Ne Kwin	Small business
Pan Taw	Small business
Sat Thwar	No

7. Do you use/sell it fresh or processed?	
CF name	Answer
Oh Htein	Fresh
Ba Win	Fresh
Tone Taw	Fresh
Kyar Nyo	Fresh
Myo Kwin	Fresh
Aung Tha Pyay	Fresh
Kyar Pyit Kone	Fresh
Hmyar Chaung	Fresh
Me Ne Kwin	Fresh
Pan Taw	Fresh
Sat Thwar	No

Annex I - Elephant Foot Yam survey

8. If you run a small EFY business, can you quantify the quantity sold of each product, the unit value in MMK? And then the total yearly value of your business?	
CF name	Answer
Oh Htein	1viss = 400MMK - 600MMK, we don't know how many quantity the EFY harvesters got yearly. We estimate 400 viss total per year. So, 400 viss * 500 MMK (average) = 200,000MMK
Ba Win	1 viss = 500 MMK (so total 100,000MMK)
Tone Taw	1 viss = 800 MMK (so total 1,600,000MMK)
Kyar Nyo	1 viss = 500 MMK (so total 5,000,000MMK)
Myo Kwin	1 viss = 500 MMK (so total 5,000,000MMK)
Aung Tha Pyay	1 viss = 500 MMK (so total 5,000,000MMK)
Kyar Pyit Kone	1 viss = 500 MMK (so total 2,500,000MMK)
Hmyar Chaung	1 viss = 500 MMK (so total 2,500,000MMK)
Me Ne Kwin	1 viss = 850 MMK (so total 4,250,000MMK)
Pan Taw	1 viss = 900 MMK (so total 1,800,000MMK)
Sat Thwar	No

9. Where do you sell the products?	
CF name	Answer
Oh Htein	Gant Gaw Taung villages
Ba Win	In the village
Tone Taw	In the village
Kyar Nyo	In the village
Myo Kwin	Na Chan village
Aung Tha Pyay	Nwar Chan, Ma Dae and Me Ne Kwin
Kyar Pyit Kone	Nwar Chan and also in the village
Hmyar Chaung	In the village
Me Ne Kwin	In the village
Pan Taw	In the village
Sat Thwar	No

10. How many people are involved in the EFY harvesting?	
CF name	Answer
Oh Htein	It depends on the number of household' member but only one or two person involved for harvesting EFY
Ba Win	It depends on the number of household' member but only one or two person involved for harvesting EFY
Tone Taw	6 people per acre
Kyar Nyo	5 people
Myo Kwin	6 people
Aung Tha Pyay	It depends on the number of household' member but only one or two person involved for harvesting EFY
Kyar Pyit Kone	5 people per acre
Hmyar Chaung	10 people per acre
Me Ne Kwin	20 people per acre
Pan Taw	5 people per acre
Sat Thwar	No

Annex J - MARKET ANALYSIS OF ELEPHANT FOOT YAM

Natural resource management/environment

EFY is a cash-crop – agroforestry product.

1. Estimation of area (ha or acre) that CFUGs wish to devote for EFY grow will come from CFs interviews
   240 Acres
2. Description of the product (varieties, plantation site preparation, density of plantation, agronomic requirements, rotation requirements, intercropping chances, time from planting to harvest, yield, …)
   13 species in the tropical area (Africa, South Asia, Southeast Asia, tropical Pacific Islands), 3 species grow in Myanmar.
   Prepare site selection, seeds collection take place in summer and grow before the first rain.
   Density of plantation: 2ft in the seed bed and 2ft between seed beds.
   Time from planting to harvest depends on the size of seed buds, generally farmers grow bud of 0.05 viss and it takes 2 years to be harvested.
   Necessary tools are knife, mattock and shovel, etc.
   Rotation requirement: 2 years.
   Yield depends on the variety grown and farm practice but it is likely 30-40 tons/ha.

3. Local production/extraction trend

High										√	√	
Average High												√
Average Low	√								√			
Low								√				
Months	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec

   Since the product is fresh sold, the production/extraction trend is equal to the demand/sell trend.

4. Is it a waste generation crop or process? How can we add value to the waste?
   It produces waste when peeling the fresh EFY to dried chips. We can't add value but we can reuse as natural fertilizer.

Products and market

1. Form and quality standard (products description) of the products currently traded at the local level
   Good quality but size of the EFY is small because it is natural EFY and a lot people harvest.

2. Form and quality standard (products description) of the products currently traded at national/international level
   It is good quality and could be transported to international level. It can be currently traded because it is now farming in plantations.
3. Describe the different EFY products at each market level (local, national, international)
   Fresh EFY trade in local and national market. Dried chips trade in international market.
4. Availability in time all year long of each product
   As fresh product is available in Jan, Feb, Mar, Aug, Sept, Oct, Nov and Dec. Dried EFY can be found all year long in the market.
5. If the CFs in the target area already run an EFY business, can you quantify the quantity sold of each product, the unit value in MMK of each product? And then the total yearly value of our CFs business?
   Total 49,600 viss harvested, the value in MMK is 27,950,000. The CFs business is related only to the fresh EFY, then only one product is traded.
6. Are the products' prices influenced by seasonal fluctuations? Are the prices stable?
   Yes, like early harvesting time, mid time and end time. In August and September, the price is low. In October, November, December, the price is high and stable. In January, February, March, the price is highest.
7. Where do the target area CFs sell the products? How do they sell their products (direct contact with the customers or by intermediaries)?
   Most CFs sell in their own villages either directly to households or to the village's retailers. They also sell to wholesalers/intermediaries for markets other than the village one. But, since they just harvest natural fresh products, the marketed quantity is few.
8. Description of annual demand/sell trend in our CFs area and in the national/international market

High	√	√	√								√	√
Average High										√		
Average Low									√			
Low								√				
Months	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec

9. Description of the production process of EFY products (in our area and in the national/international market)
   Only 2 type of EFY products are available in Myanmar market, which are fresh and dried chips.
10. Description of the processing, storage and transportation requirements for the products in the different seasons according to the different production processes
    Except the rainy season, the process for fresh EFY is the same all year long; storage is allowed only for dry EFY and it depends on the demand trend.

11. Draw of the Value/Market Chain of the product in the local area and in the national/international market enlightining all the actors (direct and indirect). Price the product (and then quantify the costs) at each level of the chain

FIGURE 1: VALUE CHAIN OF FRESH EFY MARKET

FIGURE 2: VALUE CHAIN OF DRY EFY MARKET

FIGURE 3: ACTORS OF EFY (FRESH OR DRY) MARKET

Informants	Buying price per unit (MMK)	Selling price per unit (MMK)	Transport costs (from village to main road/trader) per unit (MMK)	Packaging costs	Tax	Storage/rental costs	Revenue per unit (MMK)	Remarks
Farmer a	1 viss (seedlings or seed buds)= 4000 MMK	1 viss EFY = 1600 MMK	100,000 viss per year	1 viss = 100 MMK	30 viss = 100 MMK	Free	No	Private plantation (pink EFY)
Farmer b	1 viss (seedlings or seed buds)= 5500 MMK	1 viss EFY = 2400 MMK	100,000 viss per year	1 viss = 100 MMK	30 viss = 100 MMK	Free	No	Private plantation (yellow EFY)

Products	Time spent from home to harvesting	Quantity harvested per day	Time spent from home to production site	Quantity produced per day	Production season (list months in the year)	Storage time between harvest and production	Storage time between production and sell	Storage place
Fresh	No	30 viss	No	30 viss	August to March	No	No	No
Dried chips	No	15 viss	No	15 viss	August to March	No	Yes	Temporary building to prevent from wet and heat

Products	Main market places	Time needed to reach the market places	Production activities (% by men/women)	Means of transport	Cost of transporting goods to market places (From main road/trader to retailer)	Number of trips to the market places for selling	Amount of tax/legal fees paied
Fresh	Yangon/Mandalay	2 days	65% / 35%	Don't know	1 viss = 100 MMK	2 trips	Free
Dry	Yangon/Mandalay	2 days	65% / 35%	Don't know	1 viss = 100 MMK	2 trips	Free

12. Competitors in the area (i.e. other EFY farmers or processed EFY products)
    A lot of people in local area harvest wild EFY.

Finance

1. Estimation of the Start-up capital for a new EFY cultivation for area unit (e.g. for 1 acre)
   2,000,000 MMK (1,400US$) per 1 Acre for a private plantation: cost for clearing ground, collecting seed buds, labour charges and the all the consequent process till the complete plantation. For a CF the unit costs will be less, since the work can be done by CF's members.

Legal framework

1. List of the rule and regulation that influence the EFY business activity (harvest, process, transport, trade,…)
   Don't know

Social/cultural

1. Do CFs internal rules and regulations already foresee agroforestry – crop activities and the concerning distribution of revenues among CFUGs or other social activities in the villages?
   Not yet
2. Can women participate in the EFY products production?
   Yes

Technology/product research and development

1. Do the CFUG's members have any technical skills in EFY cultivation and process? If Yes, can you describe the skills and quantify the people?
   Yes, they can harvest, grow and dry. All of the people from CFUGs can do.
2. Do the CFUGs think that the level of their skills (harvesting, post-harvesting, processing, marketing) is sufficient to place a competitive product in the market?
   Yes
3. How can these technical skills be improved to meet the requirements of new/broad market?
   They already have contact or network with traders.
4. Does EFY cultivation and process need equipments and tools to be carried out?
   Just agricultural tools like knife, shovel, mattock, etc.
5. Do you think that new/improved technology could improve the quantity or the quality of the EFY products?
   Yes, drying plant
6. Do you know the costs of the technical improvement?
   100,000,000 MMK for drying machine (but it can get that amount back in 1 year). According to the private plantation owners and wholesalers the fresh EFY is, at the moment, more profitable and more demanded; but the market is quite unstable and susceptible of yearly demand fluctuations.
7. Do the EFY cultivation and production process can be considered eco-friendly? Can you suggest any improvements to greener the process?
   Yes, It can be used for natural regeneration of forest or in the cropland since the waste of farmed EFY can be reused as natural fertilizer
8. Is the physical infrastructures (roads, telecommunications,…) adequate for this business in this area?
   Yes

Summary

1. Fill in the Product Assessment Table of each EFY products

	Market/Economy	Natural Resource Management/Environment	Social/Cultural	Institutional/Legal	Technology/Product development
Opportunities	There is EFY market already exits in the area. Demand is great. Profit is great.	It can also help natural regeneration in CF	Can improve communities livelihood	Free tax	
Constraints	No constraints				
Possible solutions					

2. Score each different EFY products

CRITERIA	SCALE	SCORE
MARKET/ECONOMY		
Raw material supply/availability	large moderate limited very limited	4 3 2 1
Market demand	large moderate limited very limited	4 3 2 1
Competition (for a market niche)	low moderate high very high	4 3 2 1
Constraints to business entry	low moderate severe very severe	4 3 2 1
Margins/profitability	high moderate low very low	4 3 2 1
Capital investment available	high moderate low very low	4 3 2 1
NATURAL RESOURCE MANAGEMENT/ENVIRONMENT		
Availability (in time)	almost always occasionally rarely/seasonal very rarely	4 3 2 1

CRITERIA	SCALE	SCORE
NATURAL RESOURCE MANAGEMENT/ENVIRONMENT		
Availability (in space): time needed to find and harvest resources	widespread moderate rare very rare	4 3 2 1
For farm products only Time from planting to harvest	short moderate long very long	4 3 2 1
For forest products only Regenerative potential	high moderate low very low	4 3 2 1
For forest products only Impact of harvesting on survival of the species	minimal moderate severe very severe	4 3 2 1
Positive impact of enterprise on the environment	high moderate low very low	4 3 2 1
SOCIAL/CULTURAL		
Indirect benefits for the community	positive unnoticeable negative very negative	4 3 2 1
Experience with the product	high moderate low very low	4 3 2 1

CRITERIA	SCALE	SCORE
SOCIAL/CULTURAL		
Potential for employment creation	high moderate low very low	4 3 2 1
Gender impact/activity done by	only women both men and women few men only men	4 3 2 1
INSTITUTIONAL/LEGAL		
Policy control (permit, licence, quota, etc.)	high moderate low very low	4 3 2 1
Legal costs (fees, taxes, royalties, etc.)	very low low moderate high	4 3 2 1
Support from local/national institutions	high moderate low very low	4 3 2 1
TECHNOLOGY		
Suitability for rural entrepreneurs: processing location	home village district province/other	4 3 2 1

CRITERIA	SCALE	SCORE
TECHNOLOGY		
Suitability for rural entrepreneurs: processing technology/expertise	high moderate low very low	4 3 2 1
Human resources: number	high moderate low very low	4 3 2 1
Human resources: skills, expertise	high moderate low very low	4 3 2 1
Infrastructure in place	high moderate low very low	4 3 2 1

Criteria	Score
Market economy	
Raw materials supply	4
Market demand	4
Competition (for market niche)	4
Constraints to business entry	3
Margins/profitability	4
Capital Investment needs	2
Subtotal	*21*
Natural Resource management/Environment	
Availability (in time)	2
Availability (in space)	2
For farm products only: Time from planting to harvest	3
For forest products only: Regenerative potential	2
For forest products only: Impact of harvesting on the survival of species	2
Impact of production on environment	3
Subtotal	*14*
Social/Cultural	
Indirect benefits for the community	4
Experience with the product	3

Potential for job creation	3
Gender impact	3
Subtotal	*13*
Institutional/Legal	
Policy control (permit, licence, quota, etc.)	1
Legal costs (fees, taxes, royalties, etc.)	4
Support from local/national institutions	4
Subtotal	*9*
Technology, product research and development	
Suitability for rural entrepreneurs: processing locations	3
Suitability for rural entrepreneurs: processing technology	3
required	4
Human resources (number)	2
Infrastructure status	3
Subtotal	*15*
Total	**72**