

**MYANMAR CONSERVATION AND DEVELOPMENT PROGRAM (MCDP)**

**CONSTRAINTS AND OPPORTUNITIES FOR COMMERCIAL  
TIMBER EXTRACTION FROM COMMUNITY AND  
SMALLHOLDER FORESTS**



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<b>Cover image</b>	<p>Top: Participatory forest inventory conducted by FUG members of Le Pon Lay village, Kachin state, Indawgyi</p> <p>Right: CF certificate issued by State Forest Department in the name of a FUG</p> <p>Left: Shwe Let Pan FUG nursery management in Kachin state, Indawgyi wildlife sanctuary</p> <p>Bottom: Locally produced window frames from community forests in Mohnyin township, Kachin state</p> <p>Credit: Bjoern Wode/FFI Myanmar (2014)</p>
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**List of Abbreviations and Acronyms**

CF	Community forestry
FUG	Forest User Group
FLEGT	Forest Law Enforcement Governance and Trade
FSC	Forest Stewardship Council
FD	Forest Department
FFI	Fauna & Flora International
AAC	Annual Allowable Cuts

**Technical notes:**

1 hectare = 2.47 acre

1 cubic meter = 10.76391 cubic feet

1 inch = 2.54 centimeter

1 sample plot (66x66 feet) = 0.1 acre

954 MMK = ~ 1 USD

1 square meters per hectare = 0.229568411 square feet per acre

1 cubic meter per hectare = 14.2913386 cubic feet per acre

# 1. BACKGROUND

The National Community Forestry Instruction (1995) provides communities the opportunity for 30 year licenses to manage state forests lands for natural forest protection, mixed agro-forestry and timber production systems. The Forestry Master Plan (2001) envisions around 920,000 ha to be handed to local Forest User Groups (FUGs) by 2030, about 1.36% of the total land area.

A recent review of community forestry (CF) conducted in 2011 identified a range of constraints to allowing individual CFs to “fulfil their potential”, and to scaling up the handover of CF to better meet the 2001 Forestry Master Plan targets. The review focused mostly on the institutional and technical impediments but also clearly identified the need for the scope of CF to shift from “subsistence to enterprise” and integrate “timber harvesting on a significantly larger scale”.

Since 2008, FFI Myanmar and its partners have been actively supporting the establishment of CF as a tool for watershed protection, protected area buffer zone establishment and livelihood development. To date FFI has assisted over 50 communities with CF establishment, provided small grants and technical assistance to a further 30 CF groups, and conducted CF training for state and regional level civil society groups.

FFI’s current strategic plan includes: i) The continued development of CF models to become self-funding, and ii) Evidence-based advocacy to streamline the CF application procedure. The long-term sustainability of CF in Myanmar may not be clear for some years, as even the oldest commercial CF trees are only 15 years old, but CF seems to offer considerable potential to provide a supply of timber and therefore generate substantial revenues for local communities.

The current reforms in the Myanmar forest sector and the EU FLEGT initiative are providing an unprecedented opportunity to clarify community rights over CF timber and by doing so to promote the expansion and sustainability of CF.

This report was prepared under an FFI project supported by the FAO/EU FLEGT Support Programme, which promotes the implementation of the FLEGT Action Plan by improving forest governance, providing technical assistance, and building capacity through funding projects in eligible countries.

## PROJECT FACTS

Project	Improved Legality, Governance and Trade for Community and Smallholder Timber in Myanmar (EU/FAO)
Aim	Encourage the development and sustainability of Community Forestry (CF) and smallholder forestry through the enhancement of the legality of timber production and trade and the improvement of CF and small holder timber revenues.
Scope	Kachin state, Tanintharyi Division, Magwe Region, Ayeyarwady Region (see Fig. 1)
Target groups	Forest user groups, community members, township forest officers, sawmills and traders
Duration	One year; 1 December 2013 to 31 November 2014
Funding	FAO EU FLEGT regional grant

*Note: Results from Ayeyarwady and saw mills/traders will be presented in a later report.*



**Fig 1.** Map of Myanmar showing the surveyed States and Regions



## **2. MYANMAR CF POLICY FRAMEWORK**

CF evolution in Myanmar is understood as a national response to increased forest degradation and increased fuelwood shortage encountered by the local rural population.

After a period of nearly two decades of implementation, and with established FUGs and plantation areas growing to a significant scale, a new potential for engaging FUGs into commercial timber production, trade and marketing is currently emerging.

### **2.1 Policy issues**

The CF instruction remains the only legal basis that is clearly stipulating general options for commercial forest utilisation under the article on exploitation of forest products from community forest.

Thus, a scope for a commercial orientation and even development of local processing industries is actually provided for under the CFI which however, as only issued by the Ministry of Forestry without requiring Cabinet approval, remains at a lesser legal status. A general orientation towards smallholder-based commercial timber trade should therefore be further integrated into the Forest law to provide for a strong legal foundation.

A revision of the Forest law has been conducted with amendments submitted to Parliament and is awaiting final approval within 2014. The revised Forest law is expected to provide further clarification regarding legal harvest options for Teak and hardwood timber from CF plantations and will thus provide for a strong legal basis for communities to engage in future hardwood timber marketing and sale.

### **2.2 Planning and reporting**

Forest management and utilisation can only be economic viable and ecologically sustainable if conducted under a sound planning, reporting and monitoring regime.

The CFI is promulgating the elaboration of *strategic* CF Management Plans for the 30 year lease period under the CF certificate. CFMPs are forming a crucial planning step towards the issuance of a legal CF certificate and are to be used as main evaluation tool at the end of the certificate period in view of a potential prolongation.

At *operational* level, planning and reporting is conducted via annual FUG progress reports which could become an important monitoring and compliance tool to be used for approval procedures of proposed commercial timber harvests by FUGs.

Accountable annual planning targets could effectively be incorporated into annual planning procedures at district level under the general district forest management plans. This in return would ensure that the proposed harvest amount would reach a legal approval and could later be used by the FUG to enforce their granted use rights.

However, substantial inputs under the current CF annual reporting system would be required to upgrade and integrate annual reports into a comprehensive forest management planning system for commercial forest management by FUGs. Especially in view of a compliance with international certification and legality standards, CFMPs and especially annual reports would form a key document to be referred to during planning, implementation and monitoring.

### **2.3 Silvicultural and operational issues**

A clear lack of bylaws or technical instructions to guide CF on silvicultural management, monitoring & reporting is observed as a major bottleneck to initiate commercial timber production by FUGs. Current Departmental Instructions are solely designed to support FD and MTE operations and are oriented towards international trade and marketing through the State but would require substantial adjustments to be applied for FUG-based sustainable forest management and timber harvest.

Furthermore, no forest monitoring procedure is mentioned in order to obtain quantifiable forest characteristics (stem number, diameter, height, volume) which however would form the basis for any regulated natural forest management, calculations towards a sustainable Annual Allowable Cuts (AACs) and ultimately prospects of certification under FSC towards commercial timber trade and marketing under upcoming FLEGT procedures.

Participatory forest monitoring concepts could be applied as technical sound and economic viable option to repeatedly obtain forest data for the development of sound AACs under FUG management to be incorporated into standardised annual reporting at district Forest Departments.

Based on available best practises under the National Code of Harvest Practises, Reduced Impact Logging procedures and certification criteria, separate chapters for an application under CF are thus to be elaborated on silviculture as well as monitoring with distinct and simplified FUG procedures.

### **2.4 Outlook**

Support towards options for commercial timber trade and marketing has to be provided as a two-pronged approach with policy development as well as capacity building and field-level piloting to ultimately derive at a concept that is economic-viable, technical sound and within the capacities of local stakeholders.

Policy development would require the elaboration of distinct procedure for silviculture, harvest planning and implementation as well as reporting and monitoring towards forest certification standards. Outcomes are to be approved as technical instructions and bylaws to complement existing Departmental Instructions under the scope of CF.

Proposed procedures and standards are to be piloted under different socio-ecological environments and outcomes applied for a final refinements of the revised policy prior to a legal approval by the State. Field implementation would further yield valuable information on required financing and labour as crucial data for a subsequent budgeting under State and ODA projects.



### **3. FIELD RESEARCH METHODOLOGY**

The following chapter provide a detailed description of the underlying methodological thoughts applied for a national field research on 'Improved Legality, Governance and Trade for Community and Smallholder Timber in Myanmar'.

#### **3.1 Objectives**

The survey was designed to serve Myanmar's aspiration under FLEGT Timber Legality Assurance System (TLAS) by providing an objective assessment of ground reality with regard to a realistic engagement of FUGs into a regulated and legal timber trade and marketing under a TLAS.

The research aimed to test a number of questions identified during project preparation and, the initial desk review (MCDP Report 37) and discussions during the project inception workshop (MCDP Report 38). These questions were posed as hypotheses to test (Annex 1), and form the structure of the Analysis and Discussion chapter.

#### **3.2 Desk study**

A brief literature review of existing policies, laws and administrative regulations (Annex 2) was conducted under the current FAO/EU FLEGT Project. The review identified constraints and opportunities for the reinforcement of the legality of CF and smallholder timber production and trade, and the improvement of CF and smallholder revenues (MCDP Report 37; Wode et al 2014). Outcomes were used for the design of the detailed field research methodology. The report is structured along a narrative description of general outcomes and recommendations, complemented by a detailed policy analysis in tabular form as Annex to the report.

#### **3.3 Target groups**

In clear contrast to a conventional policy analysis, this research focussed on obtaining FUGs perceptions, interest and challenges as perceived by them which might in some cases divert from the existing legal policy frame and regulations. It however, is understood as a crucial information towards the elaboration of detailed bylaws and technical guidelines to be developed under the upcoming revised Forest Law.

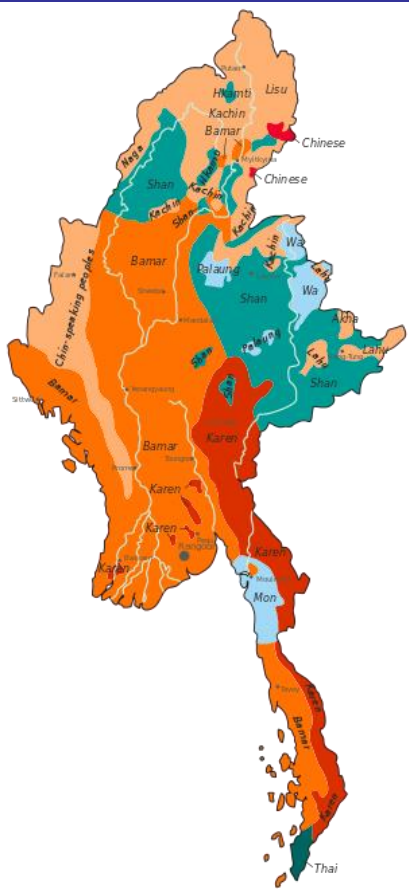
Township, District, and State/Division Forest Departments were consulted regarding their role and function to support FUGs under bureaucratic procedures, silvicultural management and forest protection law enforcement. It is clearly understood that CF cannot be sustained if applied outside the legal system and without administrative support structures.

#### **3.4 Justification of Spatial Scope**

The survey was designed to cover a broad spectrum of existing socio-ecological regions in Myanmar's north, centre, delta and south. Subject to availability of reliable planning data, selection of survey sites followed a number of selection criteria as summarized in the table below.

**Table 1.** Selection criteria for scope of field research

State/Division		
Eco-region	Forest type	Ethnicity
<b>Kachin</b> (Northern mountains)	Moist deciduous	Kachin, Jinfal, Lisu
<b>Magway</b> (Central Dry Zone)	Dry deciduous	Chin, Bamar
<b>Ayeyawady</b> (Delta)	Mangrove	Bamar, Kayin
<b>Tanintharyi</b> (Southern lowland)	Moist evergreen	Bamar, Karen
District		
-No. of Forest User Groups		
-No. of CF certificates issued		
-Area of natural forest per user group		
Forest User Group		
-Plantation with hardwood species		
-Plantation age or volume		
-Total CF forest size (acre)		
-Natural forest area per member		
-Age of FUG		
-Age of certificate		
-Conducted timber harvest		



Ranking	State/Division	CF area with legal certificate issued	
1	Shan	58686.10	acres
2	Kachin	12943.00	acres
3	Ayeyarwady	9619.25	acres
4	Tanintharyi	8705.00	acres
5	Magwe	6404,83	acres
6	Mandalay	6093,87	acres

Source: Forest Planning and Statistics Division MOECAP

We initially selected Kachin, Ayeyarwady, Tanintharyi and Magwe as providing the best overall coverage, and because Shan state had a propensity of small CF areas/FUGs. Shan state was later added as a survey sites due to the sheer number of certified CFs there, and the fact that it represents more than half of all certified CF in terms of area. Results from Ayeyarwady region will be published at a later date.

### 3.5 Semi-structured interviews

Six distinct questionnaires comprising of a total of 181 questions have been completed during field research in four States/Divisions. Research teams comprising of up to four members have been assigned per State/Division. Interviews were conducted at the FUG villages, or Forest Department offices to ensure that interviewees felt comfortable to engage into an open discussion. Sawmill interviews were conducted without recording the name or detailed address as some part of the survey might contain sensitive information regarding the unregulated timber trade at the locality. All survey teams were supervised and attended by trained project staff to ensure a consistent implementation quality. Questionnaires are attached in Annex 3 and 4 for reference (a separate sawmill questionnaire will be published at a later date).

**Table 2.** Research questionnaires structure

Questionnaire target group	Pages	No. of questions
1. Forest User Group	3	51
2. Non-participating households	1	13
3. Township Forest Department	3	46
4. Local sawmill/trader etc.	2	21
5. District Forest Department	2	26
6. State/Division Forest Department	2	27

### 3.6 Data analysis

Data was entered into pre-prepared Excel worksheets which included output tables that populated automatically from the survey data. This provided a standardised and time efficient method for data storage and analysis. Hardcopies of completed questionnaires are stored as evidence in the Yangon project office.

Our analysis concentrates on answering the key questions identified during the research design. However, due to the large number of questions there is much scope for further analysis and data mining. The spreadsheets are available on request for further analysis by interested third parties.

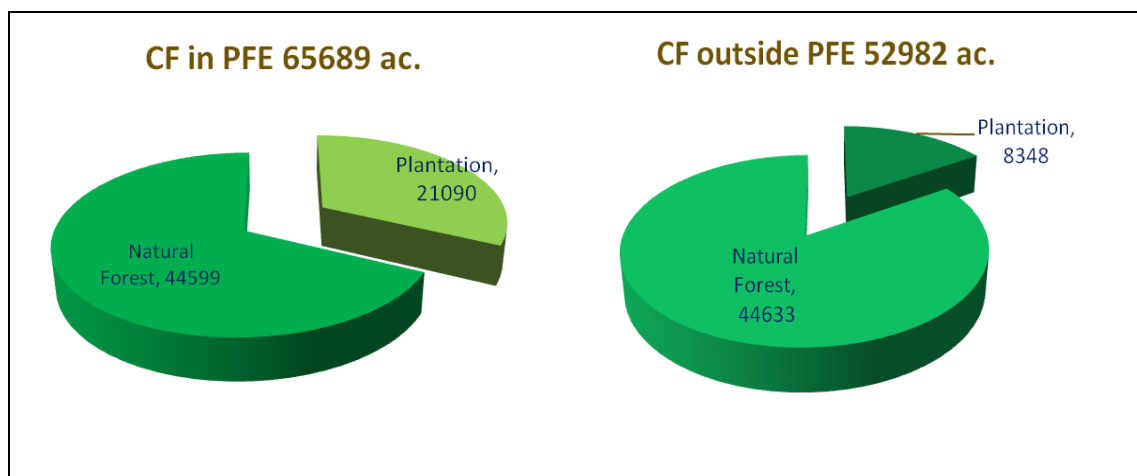
## 4. RESULTS

### 4.1 National status of CF establishment

As of February 2014, only about 10% of the national target area for CF – as defined in the Forest Strategy 1995-2025 – has been met. However that still means 745 certified community forests with over 30,000 members, plus an unknown number of applicants that have not yet been awarded certificates or who are developing applications.

The national figures hide a number of issues:

1. It is not clear how many CF certificates are still valid as there is no systematic testing of performance and they are by and large not cancelled once issued.
2. Although the average area of each CF nationally is around 160 ac, this masks a very wide range of areas, between a few tens and several thousand acres per forest user group
3. The proportion of plantation versus natural forest also varies greatly, some CFs are 100% plantation while other comprise only or predominantly natural forest
4. The area per household (or per member) is also highly variable; some households have less than 1/10<sup>th</sup> of an acre, while in the largest CF areas each household gets nearly 50 acres.



**Fig 2. Summary of CF progress**

Note: Total CF area in acres 118,670, Total no. of FUGs 745, Total no. of members 30,484.  
Source: University of Forestry Associate Professor Tin Min Maung

### 4.2 Shared characteristics of all FUGs

Some key characteristics of the 68 FUGs surveyed are summarised in Table 3. Generally the responding FUGs showed a diversity of features and attitudes similar to what might be expected from the diverse nature of CF in the country, as summarised above.

**Table 3.** Summary of surveyed FUG key characteristics

<b>Question summary</b>	<b>Kachin</b>	<b>Magwe</b>	<b>Shan</b>	<b>Tanintharyi</b>
No FUGs	9	25	15	19
No > 5 yrs	89%	76%	100%	68%
MPs submitted	89%	84%	100%	53%
Certificate issued	89%	88%	100%	84%
Members (current)				
Average	125	66	111	41
Highest	263	335	300	87
Lowest	27	5	5	5
FUGs w plantation	100%	79%	0	68%
Average size	457ac	90ac	0	164ac
FUGs w nat. forest	89%	84%	100	100%
Average size	554ac	102ac	405ac	830ac

However respondent FUGs did share some characteristics:

- Almost all FUGs had natural forest, and all were under collective rather than individual management (although Tanintharyi was more mixed)
- Management Committee membership is almost entirely voluntary, with almost all FUGs reporting that their MCs need capacity support from local forest department or NGOs
- Members reported being motivated by a mixture of economic and ecological (ie, watershed and climate protection) benefits; few sought tenure security for its own sake
- FUGs reported few negative impacts of CF on availability or quality of agricultural land or grazing
- Despite most respondent FUGs having been certified for over five years, very few said they reported on timber harvesting in their annual reports, and none reported having sold any timber from their CF
- Almost none of the FUGs had started a small business related to their CF activities
- Around two-thirds of FUGs were involved in CF networks, mostly for the purpose of information sharing, but with at least one in five motivated to protect the user rights of their members
- All used thinning remains for subsistence use, although there was some sale of these products in Kachin and Tanintharyi reported
- Almost none of the user groups reported that their members had planted timber species on their own lands (although about 10% were not sure).
- Nearly 100% of groups reported no conflict with their CF or loss of CF land

- A large majority of FUGs reported that their members conducted activities together outside of the CF; this may indicate CF helps spur communal action or simply that user groups may often be formed by existing social groups
- All of the respondent FUGs were primarily agrarian communities, though in Magwe and Tanintharyi around one third indicated other sources of income were more important
- FUG unanimously agreed that it was 'worthwhile' joining the CF group despite clearly tangible benefits yet to be observed.
- Almost none of the FUGs had approached local timber traders and most had no contact at all with the local timber market, the exception being Shan state where half the respondent FUGs responded in the affirmative
- Most of the FUGs expected any income from the sale of timber to be marginal or at least below income from agriculture. However there was some optimism in (five) groups from Kachin and Tanintharyi that timber production could potentially outstrip agricultural production

State and regional results are presented in Annex 5, and the results for each are summaries in the materials presented in the state/regional consultations.



## 5. ANALYSIS AND DISCUSSION

### 5.1 Supply side (FUGs and smallholders)

#### *What interest (and potential) in commercial production from communities? What are the relevant costs and benefits?*

The interest to participate in CF is mostly based on ecological benefits (59%) while economic benefits from main and minor forest products is mentioned 2<sup>nd</sup> (25%). Land tenure security and avoidance of land grabbing by larger companies only ranked 3<sup>rd</sup> (9%).

Strong regional differences however occur, with Kachin state and Tanintharyi FUGs showing the highest interest in commercial timber production, at 38% and 32% respectively. The highest interest is strongly positively correlated with the size and quality of natural forest per FUG.

Shan state remains constantly at the lowest level (6%) in terms of interest in commercial timber/NTFP prospects and interest by FUGs, despite a strong need to purchase timber even for subsistence use.

FUG establishment costs vary greatly, and due to the large ranges may not be reliable. More consistently, respondent FUGs mentioned that between five and 15 years would be required to recover initial investment costs.

Annual financial inputs also seemed too wide ranging to be accurate, though the sources of those funds may be more so. Operational costs are said to be provided through either donor finance (38%) or through community funds (36%). In the mid- to long-term these have to be sustained through revenues from revenues.

During the survey 58% of FUGs mentioned that funds for CF establishment and management had already been used up, while only 33% thought they would obtain sufficient funding for a continued operation from some source.

Annual costs are currently covered through donor support (36%) or member fees (11%), while most FUGs have not yet developed a clear mechanism for financing recurrent costs. Only 2% mentioned that profits are used to sustain annual operation. Shan state remains showed the highest level of donor support, with 93% of respondent groups indicating this as their main source.

Only 54% of all respondent FUGs stated an intention to sell timber. Fully 38% stated no interest in any timber sale. This latter result is hard to interpret; it could be due to the rather young development stage of plantation, the low quality or small area of much of the of allocated natural forest, a general subsistence focus among respondents, or some other reason. The question will be followed-up in regional consultation meetings under the project.

Approximately equal numbers of FUGs stated they expected timber sales to be conducted within or outside the village.

No FUG considered forestry to be a significant source of income (the highest was 7% of respondents in any one state/region). Overall agriculture (52%) and 'other business' (26%) remain of highest economic importance.

Expenses for forest protection are perceived to be low as most FUGs employ forest protection teams on a voluntary basis (67%). Patrolling is conducted twice a month on average Only Shan FUGs reported up to daily protection tasks, which might be correlated to the high demand for subsistence timber and fuelwood.

Actual cost for timber harvest are considered small by 76%, and would thus seem not to limit an economically viable timber utilisation. Only 5% considered logging cost would exceed the possible revenues.

***What potential timber volume could be produced by an average sized FUG? Would these volumes be sufficient to stimulate a viable commercial timber trade for an individual FUG?***

Estimates on commercial timber volume is at present not available due to lack of updated and reliable inventory data, as well as growth and yield research for natural timber species (except in the case of *Tectona grandis*). The project is testing a technical concept for FUG forest inventory aimed at addressing the first constraint (see Working Paper No.3); growth rates for other species will need to be compiled over time but should focus on commercial species commonly planted in CF (such as ironwood and Yemeni).

However, general perceptions of FUGs regarding potential timber utilisation, sale and marketing are discussed in the following.

Income from timber sale is expected to be realised mainly on a 5-10 year cycle through selective harvesting of natural forests and small-scale clear felling of plantations (56% of respondents) while an average of 20% perceive they will never obtain substantial income from CF timber, with particularly conservative answers in Magwe (60%) region and Shan (50%) state.

Income from timber sale	n=25
(%) annually	7,9
(%) every 5-10 yrs	56,2
(%) only once	15,9
(%) never	20

Regardless of the actual status of the CF timber resources, only 55% of all FUGs articulated an intention to sell natural timber while the remaining 46% saw the main role of their CF forest in terms of ecological benefits (eg, watershed protection) or subsistence use.

Again, Kachin and Tanintharyi division show the highest interest in commercial timber sale with 78% and 73% respectively. These are identified as two future key areas for piloting sustainable commercial timber production and trade by FUGs.

***Can CF timber production in the short-, medium-, long-term supply commercial timber processing plants?***

Preliminary data from Tanintharyi division - representing a region of highest timber supply and good prospects for commercial timber trade - is used as a case study to discuss on options for FUGs to engage in commercial timber supply for local timber processing plants placed at a respective township.

Based on responses from local sawmill operators at township level (see table below), designed processing capacities range from 200 to 1000 tons/annum which translates into a slightly higher related timber volume when applying the mean basic density of ~0.8-0.9 g/cm<sup>3</sup> of Pyinkado (*Xylia xylocarpa*) as a main commercial species in both woodlots and natural forest in the surveyed regions.

Location of interviewed sawmill (Township)	Designed capacity (tons)	Utilised capacity 2013 (tons)	Planned capacity upcoming year	
			(tons)	(percentage)
Dawei	1000	1000	200	100%
Kaleinaung	300	50	50	17%
Myeik	300	300	< 300	100%
Myeik	200	80	< 80	40%

*Note: Data obtained from each one sawmill per township only*

On average interviewed sawmills operated at only 64% of designed capacity in 2013 with a decreasing tendency predicted for upcoming years. Shortage in timber supply from official sources such as MTE and FD was mentioned as main reason, while options to substitute losses from FUG-based timber supply was not yet considered by most sawmill owners. Increased timber shortage could in a worst case result in an increased demand from timber of unknown sources and would in return result in an increased monitoring burden for township forest departments to ensure a compliance under a national FLEGT. This aspect is further emphasised as at present, 93% of respondents at township forest departments mentioned that sawmill processing is solely based on their individual demand and not related to any official harvest quota per district or region.

Interestingly, out of three interviewed states/regions (Kachin, Magwe, Shan) only respondents in Kachin mentioned 'illegal logging transport & trade' as a current major (50%) forest protection issue. While in other cases subsistence firewood (Magwe with 46%) or fire hazards (Shan with 75%) were mentioned as major threat only.

At present, sawmill monitoring by forest township officers does not follow a specific protocol (see table below) but is widely varying among townships even within a single state/region. While ~18% of respondents mentioned no or only irregular monitoring of sawmills, the majority (~77% respondents) mentioned monthly monitoring as regular task under their department, which would be sufficient to comply with main monitoring procedures envisioned under a national FLEGT process. When effectively coordinated with seasons of permitted timber harvests by FUGs and based on reliable annual operational plans, a strict chain of custody (CoC) protocol could become operational under existing administration to monitor timber flows under FUG management.

Frequency of sawmill monitoring by township forest department	Responses in percentage for three state/regions n=17
never	11,8
weekly	5,9
monthly	76,5
annual	0,0
irregular	5,9

*Note: Survey data based on interviews in Kachin, Magwe, Shan state*

All four interviewed sawmill owners are not members of the Myanmar Timber Merchants Association (MTMA) and revealed hardly any knowledge on the ongoing FLEGT process in Myanmar. Correspondingly, most respondents mentioned that the current FLEGT efforts not yet impacted their business at all.

Thus, apart from official 3<sup>rd</sup> party monitoring through the administration, major capacity building for sawmill operators would be required to form the foundation on

which an effective FLEGT monitoring and reporting prior to an engagement of FUGs could be operated.

In the following two tables an analysis of the potential timber supply that could be sustainably provided by an average FUG in the mid- to long-term, assuming well-protected forest resources of average productivity, is described.

The example is based on average forest sizes per FUG with 175ha natural forest and 73ha afforestation as obtained during the survey in Kachin, Magwe, Shan and Tanintharyi. On the demand side an average annual 100m<sup>3</sup> of utilised capacity per sawmill is estimated with reference to the actual timber demand ranging from 50 to <300 tons/annum as predicted by sawmill owners.

The analysis clearly highlights that an average FUG could sustainably produce up to 200m<sup>3</sup> of timber per year to sustain the operation of up to two small-sized local sawmills (assuming a mixed assortment of natural forest timber and plantation).

Potential timber supply from natural forest	Amount
Average annual timber demand per sawmill	100 m <sup>3</sup>
Average natural forest site per FUG	174,9 ha
Reduction for inaccessible sites and young regenerating gaps (=f-20%)	139,9 ha
Annual timber increment based on a very conservative 1 m <sup>3</sup> /ha/year <sup>1</sup> increment	140 m <sup>3</sup>
Percentage of increment to be sustainably harvested on an annual basis (assuming 100 m <sup>3</sup> )	~70%

Potential timber supply from afforestation	Amount
Average annual timber demand per sawmill	100 m <sup>3</sup>
Average afforestation site per FUG	72,4 ha
Reduction for mortality and replanting efforts (=f-20%)	44,8 ha
Annual timber increment based on conservative 3 m <sup>3</sup> /ha/year <sup>1</sup> increment	134 m <sup>3</sup>
Percentage of increment to be sustainably harvested on an annual basis (assuming 100 m <sup>3</sup> )	~75%

### ***What would be the minimum economic size for a FUG managed woodlot to engage in commercial timber production?***

As discussed under the previous question, current available forest areas per FUG could potentially provide sustainable harvest quotas to effectively engage into economic-viable commercial logging, considering a supportive opening-up situation of the forest stand without any further needs for costly infrastructure measures.

On a case by case basis however, minimum economic sizes could vary significantly depending on the actual standing timber stock, site index (future growth potential) and species composition as influenced during past unregulated logging operations and can therefore not be generalised as such.

Required forest characteristics have to be obtained for a respective FUG site through a participatory forest inventory to derive at a reliable estimate of the production potential of a given forest.

Two case studies from Tanintharyi division and Kachin state as supported by the project in 2014 are provided below. Result data is obtained from temporary sample plots (each 0.1 acre) in which individual tree diameter at breast (dbh) and total tree

height measurements have been conducted by FUG members under supervision of project technicians.

Output tables (see Fig 3 and 4, below) are designed to illustrate a stem number diameter distribution as well as quantitative forest characteristic in numbers per hectare and acre.

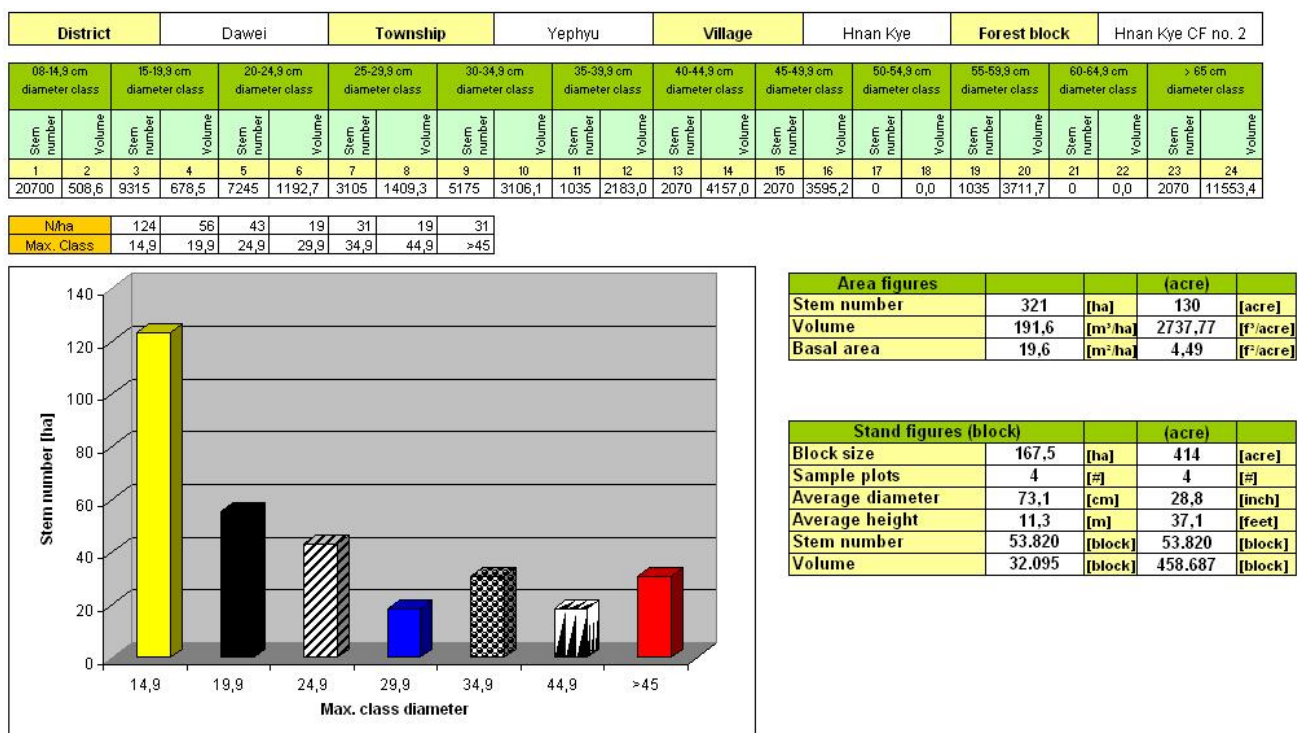
The first output table describes field results from a FUG site in Tanintharyi which shows clear signs of previous logging operations (wavelike stem number distribution<sup>1</sup>) and a resultant lower standing timber volume of 191m<sup>3</sup>/ha. A corresponding forest site in Kachin state shows much higher total timber volume (260m<sup>3</sup>/ha) indicating less timber extraction especially in the lower diameter classes.

Out of these overall statistics, detailed harvest quotas can be extracted and in the case of Kachin state revealed that 116m<sup>3</sup>/ha or 44% of the current timber stock already exceeded the minimum harvest diameter (>30 cm dbh). While in the case of Tanintharyi 169m<sup>3</sup>/ha or a staggering 88% of the total standing timber volume is comprising of trees above 30cm dbh, thus highlighting the strong economic potential of the allocated natural forest resources, while at the same time indicating the importance to better protect natural regeneration from recurrent fire hazards.

As a general conclusion, forest areas of roughly 200ha (comprising of varying degrees of natural forest and/or plantation) are sufficient to enable a FUG to engage into a commercial timber trade with small-sized sawmills or inter-village timber sale.

Compliance with reduced impact logging practises, on-site processing by use of portable sawmills as well as manual skidding operations will further contribute to an increased timber recovery rate while at the same time reducing up-front infrastructure investments such as skidding trails and larger machinery.

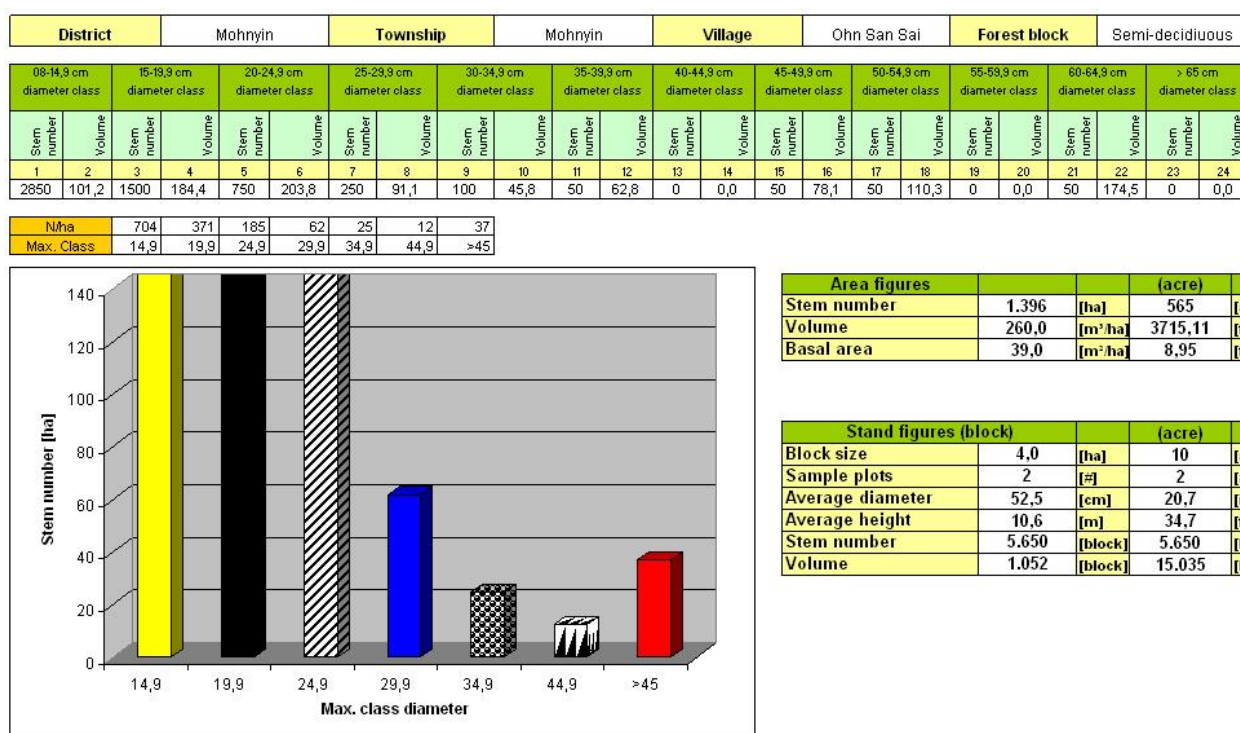
**Fig 3.** Participatory forest inventory output table Tanintharyi division



<sup>1</sup> An undisturbed natural forest would follow a logarithmic falling curve with each smaller diameter class represented by increasing stem numbers to ensure sustainability



**Fig 4.** Participatory forest inventory output table Kachin state



**What are the options for collective planning and marketing for CF/smallholder timber (and other forest products); e.g. under district forest management plans, or third party certification (FSC or PEFC) within a township?**

So far none of the interviewed FUGs have sold timber from CF forest yet, while around a third of respondent FUGs in Kachin have sold timber from 'private land'.

None of the FUGs is expecting a FUG network to increase their opportunities for timber sale, apart from Tanintharyi where 22% of respondents though so. Information sharing is consistently mentioned as most important benefit from an FUG network.

Township forest departments mentioned that they have a clear five year orientation for CF implementation, and that they actively contribute to the development of the 10 year District Forest Management Plan. The DFMP is thus an obvious mechanism through which harvesting quotas within CF management plans could be effectively incorporated into routine Forest Department planning (see Wode et al 2014).

However, at present township forest departments report that no Annual Allowable Cut (AAC) is stipulated to accommodate CF harvest quotas, and no inventories of CF forests are conducted during five-yearly planning (see also Wode et al 2014).

At present, regular reporting by forest user groups (ie, annual reports to township forest departments) in most cases do not mention timber harvest at all. They are primarily focused on afforestation targets as required to obtain legal CF certification.

Timber harvest mentioned in annual report	Kachin n=9	Magwe n=21	Shan n=4	Tanintharyi n=18
(%) Yes	33	14	0	17
(%) No	67	86	75	83
(%) Only describe afforestation	0	0	25	0



Third party group certification for sustainable forest management could potentially form a viable technical option for FUG networks wishing to undertake a legal timber sale, especially with the current lack of legal harvest quotas under DFMPs, and prohibitive certification costs for individual FUGs given the low volumes that might be expected.

***What is the current cost-benefit structure of CF/smallholder production and could new models of financing be viable (e.g. commercial loans, contract production, joint stock investment models).***

Recurrent costs have to be separately analysed under i) regular maintenance and ii) timber harvesting. These are discussed separately in the following.

**Operational costs** for community forest management mainly consist of protection efforts. These are however considered low by all interviewed FUGs, and in addition 91% of all reported protection teams work on a voluntary basis. It was further stated that most members only work once a season on CF related activities. As such, operational fix costs remain relatively small and appear unlikely to impact significantly on potential income from timber harvesting. As such, an FUG has a strong competitive advantage compared against a commercial or state operator with large fix costs which have to be recouped through larger minimum cuts.

Frequency of working for CF	n=50
(%) daily	2
(%) weekly	0
(%) monthly	14
(%) once a season	42
(%) once a year	18
(%) other	24

Forest establishment is also not considered a financial burden by any respondent FUG, 93% of whom are planning to replant woodlots in a second cycle. Lack of relevant technical knowledge was mentioned as a constraint to this by only 7%.

Replant 2 <sup>nd</sup> cycle	n=45
(%) yes	93
(%) no finance	0
(%) lack technique	7

**Timber harvesting costs** are those involved in; i) the harvesting design process, ii) actual logging, and ii) transport to the first log yard. If CF harvesting follows our proposed manual logging concept (see Working Paper No.3), which includes on-site-processing and manual skidding, there are no costs for road construction. This limits implementation costs to labour and motor-manual felling equipment (eg, bow saw and/or chainsaw and sawmill frame); in 76% of interviewed FUGs these costs were considered to be small. Only 5% (all Tanintharyi) considered harvesting cost to likely exceed revenues from timber sale.

Timber harvest cost	n=21
(%) small	76
(%) paid through rev.	19
(%) cost exceed rev.	5

Provided there is a supportive policy and regulatory framework, and natural forest resources contain a harvestable timber volume, an economically viable and sustainable timber harvest is considered feasible by most FUGs.

Additional financing (eg, commercial loans) is therefore not considered necessary for most of the FUGs with an adequate supply to conduct commercial timber harvesting.

## 5.2 Regulators (Forest Department)

*Does the current policy framework contain clear regulations on commercial timber production, marketing and trade for FUGs? What is the current objective for CF as stipulated by law and accompanied regulations/instructions? What changes would be required to allow this to happen?*

A detailed analysis of the current policy frame is provided in the desk study report (Wode et al 2014; MCDP Report 37). The following discussion focuses on the responses received by township forest department officers, and thus reflects the present opinions and capacities at the local level.

Survey results indicate a general tendency to allow FUGs to harvest timber from natural forests, and to engage in commercial timber trade, with around 80% of township forest department representatives saying commercial harvest is in line with the Community Forestry Instruction.

FUG has rights to harvest timber from natural forest	n=17	FUG permitted to sell timber to the public market	n=11
(%) yes	76	(%) yes	82
(%) no	24	(%) no	18

Interestingly, more detailed questions specifically on the legality of “hardwood timber” harvest from “natural forest” revealed greater reluctance among the authorities, with only 61% of responses being entirely in favour, while 28% would only permit subsistence harvest and the remaining 11% would not permit any hardwood harvest all.

Ultimately, only half of township forest departments questioned said FUGs could sell natural timber to a sawmill, while 25% would not allow any timber sale at all.

CF timber sale to sawmill	n=16
(%) yes	50
(%) no	25
(%) yes, but only plantation	25

This reserved stance can be explained by a general lack of trust in the managerial and technical capacities of FUGs as expressed by a majority of interviewees.

FUG capacities	n=17
Yes sufficient knowledge to conduct harvest with support	26
No, insufficient capacities	74

An additional factor may be a lack of practical experience of the capacities and interests of community forest managers. Survey results indicate rather weak cooperation between the township forest officers and established FUGs, with only 11% of the former reporting to be in regular contact, eg, via attendance of

management committee meetings. No township officers indicated they ever joined with FUGs during protection patrolling in the forest, despite patrolling support is often stated as a need by FUGs themselves.

Forest department cooperate with FUG	n=19
% regular MC meetings	11
% based on demand	89
% joint protection patrolling	0

A perhaps more significant challenge is the lack of technical guidelines on silvicultural and reporting procedures to be followed during timber harvest (see Wode et al 2014). This is likely to leave township forestry officers in a state of uncertainty as to whether they may issue legal timber harvest permits or not.

Due to this lack of CF specific guidelines most officers would appear to favour the application of similar silvicultural procedures as under Myanmar Timber Enterprise harvest and silvicultural practises following the Myanmar Selection System (MSS).

FUG compliance with MSS	n=11
(%) yes	82
(%) no	18
don't know	12

This does not however appear to be stipulated in any CF regulations, and harvest design and reporting procedures as described under the MSS cannot be complied with by a normal FUG. This requirement would therefore cause severe limitations to the expression of FUG's utilisation rights as stated in the CFI and Forest Law.

### ***Can FUGs engage in the lucrative Teak timber market with trees planted on their woodlot sites?***

A large proportion of woodlot afforestation under FUGs has actually been conducted with teak *Tectona grandis*. This is despite uncertainty of ownership and thus future harvest rights, since teak trees are currently regarded as reserved species and thus state property. (The 'reserved species' list is currently under review but the law has not yet been changed at the time of writing.)

Interesting, the majority of interviewed officers supported the move to legal teak harvest, with 79% stating harvest from CF plantation is legal and may include teak and other hardwoods.

FUG has rights to harvest timber from plantation	n=19
(%) yes	79
(%) no	21

### ***Can FUGs be certified under FSC/CoC/PEFC by applying their current management and monitoring practises?***

Any type of certification requires clear monitoring and reporting procedures justifying (i) the silvicultural interventions (AAC calculations based on inventory and growth and yield data) as well as (ii) allowing to trace back any log back to its original logging site (tracking systems).

However, the CFI provides only loose guidance for FUG management, and only requires a general 30 year 'strategic' forest management plan. The CFMP includes little detailed management information beyond afforestation targets; silvicultural interventions or AAC calculations are neither required, nor provided in practice in any existing plan seen by the authors.

On an annual timescale, FUGs are requested to provide reports to the township forest department, which include only the achievements of the previous year and do not stipulate activities for the coming year. Annual reports therefore do not provide for annual operational planning.

Most (88%) township forestry officers stated that annual reports do not include any details of timber harvest, not to mention any quantification of the actual standing timber – data that would be essential for a reliable tracking system.

<b>Annual FUG report describes timber harvesting</b>	<i>n=16</i>
(%) yes, but no quantities	13
with estimates in tons or m <sup>3</sup>	0
(%) no information	88

Township forest officers act as a crucial link between grassroots forest managers and the local administration, and ultimately the Union Forest Department. Paragraph 17 of the CF Instruction indeed requires township foresters to provide “technical forest assistance and expertise necessary for the establishment, cultural operations, management and utilization of [FUGs] so as to attain sustainable development.”

As such they have a crucial function as forestry extension system to provide FUGs with the required guidance to conduct sustainable forest management and reporting.

However, at present administrative support remains rather fragmented with the majority of township forest departments not being engaged in the preparation of annual FUG reports.

<b>support FUG annual report writing</b>	<i>n=18</i>
(%) yes	17
(%) no	39
(%) not yet prepared by FUGs	44

Furthermore, a lack of a standardised reporting and filing system makes it difficult to provide a meaningful reference for any certification schemes, and as a reliable basis for regular audits.

<b>Keep FUG annual report</b>	<i>n=16</i>
(%) yes	32
(%) no	21
(%) not yet prepared by FUGs	47

Apart from reporting procedures, the ultimate foundation for any sustainable forest management is a reliable, operational-level forest inventory on which to calculate reliable AAC estimates. This is currently absent from the CFI, and without any other guidance from the Forest Department there is currently no inventory standard being applied in the field.

FFI Myanmar and our partners have however now tested participatory inventory and management planning concepts that are well within the capacities of FUGs and local

authorities. The methods are described in a number of published documents (see References), but would likely require full recognition by the Forest Department before they could be applied uniformly in the field by interested FUGs.

***How would timber produced on private land (settlement area, field boundaries etc) be monitored/certified as part of the timber volume supplied by an FUG? Would procedures for timber legality differ from timber produced on reserved forest land?***

In general, all timber produced on private land is understood as generated from afforestation and is therefore subject to a simplified harvest permit compared to timber from natural forests, which would need to following an AAC based on a comprehensive forest inventory.

Timber produced on private land as property of an individual family would best be monitored, permitted and traded outside the common pool of CF managed forests and products. If agreed by a FUG, the CF management committee could act as service provider to add private timber to a specific timber lot from CF areas to reduce transportation, permit and marketing costs for members or other individuals, perhaps for a fee.

However, monetary benefits of the privately owned timber would have to be returned to the specific family after deduction of an agreed management fee by the MC on behalf of the FUG. There may also be legal issues if an FUG were to undertake private business, at least potentially a need to register as a company or association.

***What would be the realistic scope (village, township, state/region, national) of a timber trade from CF produced material?***

As stated in the CFI, timber trade by FUGs is permitted within the entire country but subject to a legal removal pass in accordance with forest law (CFI Section 23). Accordingly, 95% of all interviewees confirmed this information.

However, despite this general permission, only 76% of interviewed forest officers stated that they would permit FUGs to sell timber to another state, while the remaining would not issue any removal pass for CF timber.

Ultimately the respective township forest officer would be held responsible in case of any irregularities. Thus again, a lack of detailed guidance or direction seems to prevent something that is otherwise allowed in law.

Apart from legal and bureaucratic procedures, lack of information on and access to timber markets is understood as main limitation for a timber sale outside township boundaries. Only 20% of all FUGs said they had 'contact' to timber markets, while only 7% were approached by local traders; these were in Kachin state and Tanintharyi division, where FUG respondents all had significant areas of natural forest.

Contact to timber market	N=64
(%) yes	20
(%) no	52
(%) never tried	28

The highest reported knowledge on timber markets (47%) in Shan state is understood to refer only to small-scale local trade for subsistence demand.

Villagers' timber supply vary widely within states and between regions as illustrated in the table below, although in total fully 47% of all FUGs currently rely on timber purchases from outside their own village. Inter-village timber trade is clearly stipulated in the CFI and is exempted from tax, so existing local markets do seem to represent large, accessible commercial options for CF timber.

Villager's timber source	n=9	n=15	n=15	n=18
(%) purchased in village	11	13	0	56
(%) purchased outside village	33	40	100	17
(%) harvest myself	56	47	0	28

A total of 30% of FUGs mentioned their members harvest timber for their own needs, of which 94% stated the source was "other forests" outside of their own CF area, which presumably are not being used to meet subsistence demand while other resources (effective 'commons') are available. This raises the important question of 'leakage' – ie, the displacement of undesirable or unmanaged resource use – which has so far received very little attention in CF discussions in Myanmar, including so far in the revision of the CF Instruction.

To conclude, local markets look the most promising for CF timber in terms of demand and reduced bureaucratic procedures and transport costs. A direct trade among FUG members and between FUGs/villages is also preferable as it involves people of similar cultural and educational background. Lastly, local trade also partly helps reduce leakage issue since local demand is still being met locally, and as CF expands and matures then unmanaged timber extraction can gradually be replaced with legal, sustainable supply.

### 5.3 Demand side (processors, traders, buyers)

***Are timber species that are currently preferred by FUGs corresponding with the timber demand for local or international markets?***

A large variety of timber species have been successfully raised in decentralised FUG nurseries and applied in woodlot afforestation or enrichment planting in secondary forests. Table 5, below, lists some of the most commonly utilised species with a clear purpose for either timber or firewood production.

Nearly all of the species are common trade species with a clear reference provided in e.g. the List of Indian timber trees. As such they clearly correspond with domestic as well as international market demands.

***How is furniture production for local markets/self-consumption organised at village/township level? Could FUGs be organised into small timber processing units at local level?***

Paragraph 27 of the CFI clearly stipulates the right of FUGs to use income from forest products to develop business enterprises that produce value added products. Thus, the option for a further processing of CF timber by FUGs, eg, into semi-finished or final products such as furniture or construction materials, is clearly permitted.

Despite this supportive policy framework, the need for a formal registration of carpenter shops inside villages was mentioned by nearly 50% of interviewed township officers. It is not known to the survey team how complex a registration is, and if it would place a significant burden in front of an interested FUG.



**Table 4.** Main CF afforestation tree species in surveyed states

#	Local name	Scientific name	Usage
1	Teak	<i>Tectona grandis</i>	Timber
2	Pyinkado	<i>Xylia xylocarpa</i>	Timber
3	Yemane	<i>Gmelina arborea</i>	Timber
4	Thingun	<i>Hopea odorata</i>	Timber
5	Pyinma	<i>Lagerstroemia sp.</i>	Timber
6	Kantkaw	<i>Mesua ferrea</i>	Timber
7	Kathit	<i>Lagestroemia sp.</i>	Timber
8	Sat Hnan	<i>Phoebe lanceolata</i>	Timber
9	Lauk-ya	<i>Schima khasiana</i>	Timber
10	Kyi Lan	<i>Shorea sp.</i>	Timber
11	Saga Wha	<i>Michelia champaca</i>	Timber
12	Tama	<i>Azadirachta indica</i>	Timber
13	Yingut Gyi	<i>Gardenia coronaria</i>	Timber
14	Yingut Kalay	<i>Gardenia obtusifolia</i>	Timber
15	Thabyay	<i>Eugenia formosa</i>	Timber
16	Yon	<i>Anogeissus latifolia</i>	Timber
17	Yinma	<i>Chukrasia tabularis</i>	Timber
18	Mezali	<i>Cassia siamea</i>	Firewood
19	Thit Seint	<i>Terminalia belerica</i>	Firewood
20	Thit Pa Hlwe	<i>Balanites triflora</i>	Firewood

These issues will be followed up during state/regional consultations planned immediately following publication of this report.

Open interviews revealed a general interest by FUG members in community forest enterprises (ie, small wood businesses). However, strong competition with existing commercial furniture manufacturers was mentioned as a significant challenge facing the development of this type of community business. It might therefore be worth considering the possibility of CF-business partnerships as one possible model for getting more value from timber production into the hands of community producers.

***Is there an adequate local market/supply chain beyond the township for small-scale producers, how does this vary across the country, and who are the likely market chain actors most relevant to CF and smallholder producers?***

Wooden furniture in the rural areas is mostly produced by decentralised small carpentry businesses at township or state level, while export oriented factories remain clustered in an around Yangon as the major export hub.

The April 2014 round and rough-cut wood export ban is likely to further stimulate the wood processing industry in Myanmar in general, and in remoter timber producing states in particular. All else being equal, pre-processing of timber at or near the site of production, as we advocate for CF, will significantly reduce transportation costs to all consumer markets regardless of the actual supply chain or location of manufacture.

However, in order to participate in the **export oriented market** via Yangon, FUGs would have to comply with international quality standards, and ensured constant quantities. However individual CF areas remain too small and with only 3-4 age classes in any given FUG woodlot site, meaning individual CFs cannot provide a regular, guaranteed annual output.

In the case of Shan state, no plantation areas at all were reported by any respondent FUG, with many CF sites likely being small local natural forests surrounding pagodas under community strict protection.

FUG forest resources (ha)	Kachin	Magwe	Shan	Tanintharyi
	<i>n=9</i>	<i>n=25</i>	<i>N=15</i>	<i>n=19</i>
Average plantation size	185	36,4	0	27
Average nat. forest size	224	41	164	336

We therefore foresee the biggest opportunity for FUGs to develop into small-scale producers to be at the **township to state level**, and directed primarily towards local markets or direct orders placed by local end consumers or local businesses such as hotels or schools. Local markets will further allow to utilise a wide range of natural timber species – co-called ‘lesser-known species’ – which could not be utilised under a standardised product for international export such as outdoor furniture.

## 6. CONSTRAINTS AND OPPORTUNITIES UNDER FLEGT

### 6.1 Policy - Administrative support - Reporting

#### *Opportunities*

The CFI provides a general foundation to engage FUGs in (i) utilising local forest resources sustainably, (ii) timber trade and marketing within and beyond the township level, and (ii) developing business enterprises.

#### *Constraints*

Lack of detailed guidelines for local authorities and FUGs alike currently constrain any FUG forest utilisation, marketing and trade. There is nothing to stop FUGs from trying, but there are clearly disincentives attached to this lack of guidance.

Township forest departments – as a crucial linkage between the Government and the FUGs – are not equipped with a clear job description, nor have they received a comprehensive on-the-job training to effectively support an FUG during all reporting and monitoring procedures required to establish a legal commercial timber business. Cooperation and reporting procedures by FUGs are strongly dependent on external support from the Forest Department and/or NGOs, and consequently vary greatly between FUGs and regions.

Annual reporting up to township Forest Departments is limited to achievements under afforestation targets and lacks descriptions on planned activities, especially on timber harvest and processing. No standardised filing system allows to utilise annual reports during monitoring procedures.

Field presence of forest officers is mainly demand-driven without any regular schedules. Lack of (structured) cooperation is resulting in a general lack of trust by local authorities in the self-management capacity at FUG level, and a lack of understanding of Forest Department objectives and role in CF by the FUGs. Under this situation the forest department cannot provide good governance and technical extension to an FUG in view of guiding them towards sustainable forest management, utilisation and trade.

#### *Solutions*

Based on the general policy framework, as provided by the CFI and other departmental instructions, detailed procedures for the abovementioned procedures should be spelled out. Standardised on-the-job training should then be provided to field officers (and possibly other forest extension personnel such as NGO staff) to effectively support FUGs during their forest management responsibilities.

Annual reporting procedures should include both a review of annual achievements of the previous year, and most importantly a detailed plan of activities and required administrative support for activities to be conducted in the coming year.

This annual operational plan will then form the foundation for effective administrative support and monitoring. This will help ensure CF management can satisfy requirements under FLEGT, especially in terms of timber utilisation, trade and marketing, and possibly third part certification standards at a later date (see FFI Myanmar Working Paper No.2).

## **6.2 Silvicultural management – Monitoring - Utilisation**

### ***Opportunities***

The legal policy framework clearly allows FUGs to utilise timber from natural forests as well as from established woodlots. This right is clearly understood by the local forest administrations, and permits are granted without major difficulties encountered in the field.

Sustainable benefits from timber utilisation are one of a number of major incentives for communities to engage in and maintain the operation of community forestry, and this right needs therefore to be strengthened in practice.

### ***Constraints***

Silvicultural management is described under the Myanmar Selection System designed for large-scale concession management, however clearly lacking any adjustments to ensure its feasibility under implementation by FUGs.

The CFI itself does not describe a detailed silvicultural guideline to be applied for natural forests under FUG management.

No detailed CF forest inventory is available to be used for the estimation of an Annual Allowable Cut (AAC) as a benchmark for harvest permits and monitoring. As such the District Forest Management Plan does not spell out any CF harvest quota which would form the legal basis for township forest officers to allocate and permit harvest quotas to FUGs.

Under this situation, neither the Forest Department nor the FUG has a planning tool at hand that allows for a regulated forest management to happen, and harvest permits therefore depend on the personal attitude and understanding of individual officers (and FUGs). In return, any irregularities or unexpected impacts will be considered the responsibility of the respective officer.

This situation can clearly result in a rather reluctant attitude of officers to issue a legal harvest permit and thus critically impact on the incentive of FUGs to continue with forest management.

As revealed by our field survey, most FUGs therefore satisfy their subsistence demand from “other forests” without obtaining any legal permit, thus creating a critical leakage effect towards State forest resources which is clearly against the intention of the CFI and Forest Law, would immediately terminate any third-party certification prospects, and would likely breach a national legality definition for CF timber. Addressing this problem would seem to be a top priority for everyone involved in community-based forest management.

Overall the whole monitoring and reporting system as it stands remains insufficient to comply with main criteria under FLEGT or international certification schemes. Fundamental improvements are therefore required in terms of technical procedures as well as local capacities for implementation.

### ***Solutions***

Transparent and reliable surveys and monitoring procedures are crucial to ensure that the FUG and the township forest department have a common understanding of what type and amount of forest products could sustainably be harvested from a specific forest area, and what procedures are required.

A comprehensive capacity building would need to include methods of participatory forest inventories and basic methods of calculating a sustainable AAC. Such estimates should be incorporated into District Forest Management Plans to enter the

legal planning environment of the district for ten and five year periods, based on which harvest quotas could be allocated to individual FUGs.

Any harvest request would be expressed in annual FUG reports, provided they are revised to incorporate an annual workplan. This would provide the administration with a detailed planning basis for the year ahead which would allow coordinated support and oversight during tree selection during harvest design, implementation and post-harvest monitoring.

Silvicultural guidelines following Reduced Impact Logging (RIL) technologies need to be developed and specifically adjusted towards the needs under smallholder/FUG management.

Township forest officers can play a key role as a forest extension service to provide technical assistance to FUGs during implementation of these improved procedures, although their terms would have to be adjusted accordingly.

Most of these suggested improvements would best be piloted in one or two districts with sufficient FUGs to provide an overview of feasibility and implementation costs and benefits. Following a pilot phase there should then be a review before design of a larger programme of expansion, for which international support may well be required. The launch of FLEGT negotiations offers a solid backdrop of transparency in forest sector reform against which to implement such a phased review of CF timber legality and sustainability.

### **6.3 Forest product utilisation – Trade and Marketing**

#### ***Opportunities***

The CFI is clearly encourages and supports FUGs to engage in a business oriented forest product utilisation, marketing and trade, even beyond state/region boundaries.

Specialisation of villagers, added values to forest products and an economically viable timber trade would significantly contribute to a diversification of income sources in rural areas, and would provide strong incentives for community-based efforts on forest protection and sustainable management.

#### ***Constraints***

A number of constraints prevail to limit options for a business-oriented management of FUGs and are discussed in the following.

As a common challenge in a number of regions (especially Shan state) the forest resource base remains insufficient in the short- to medium-terms to produce any substantial surplus to be sold in the open market.

Our results currently indicate that the biggest potential for a realistic engagement of FUGs in a commercial timber market is revealed in Kachin state and Tanintharyi division, due to the existence of both significant productive native forest resources and relatively large areas of forest overall.

Due to large differences in resources, no nation-wide blueprint can be put forward to ensure an economically viable timber operation of FUGs. This likely applies to other forest resources as well.

As CF currently retains an overly strong focus on reforestation, only limited experiences on sustainable forest utilisation and marketing are available at present.

Due to a lack of information on the potential timber base, and a lack of any reliable forecasts of planned harvest amounts, the local timber market, timber processing plants and FUGs remain disconnected. Only a few timber traders have yet contacted FUGs in two of the surveyed areas; Kachin state and Tanintharyi division.

Unclear procedures for a legal timber permit and issuance of removal pass for FUGs further hamper a strong market orientation.

### **Solutions**

Timber traders and processing units need reliable forecasts of raw material availability (type, quality and quantity) to be provided by producers so they can undertake proper business planning.

Such forecasts could be provided through the annual FUG reports under a comprehensive filing system as described above and administered through the township forest department as part of the official AAC quota, and stipulated in the District Forest Management Plan.

Township Forest Departments could further act to link potential timber buyers with local FUGs, and could provide technical advice to the FUG regarding legal formats on business contracts and taxation requirements. This would require a significant refocusing and re-training of some Forest Department field staff away from direct management towards extension, facilitation and regulation of community forest management.

Under such a system, a transparent chain of custody system could be established linking timber from the logging site via the trader and processing plant to the final product under the clear supervision of the respective township administration. Such a CoC system will likely be required under FLEGT in Myanmar, and any other global sustainability or legality standards.



## 7. CONCLUSION AND RECOMMENDATIONS

An engagement of FUGs in a regulated timber trade under FLEGT requirements will not happen at a national scale in the immediate future, but will be limited initially to CF areas with the highest prospects regarding existing areas of natural and plantation forest.

Areas with highest prospects are envisioned to be Kachin state and Tanintharyi division.

Our study indicates that of the four survey areas currently Shan state has the lowest prospects to engage in a market-oriented timber trade. This is due to actual CF sites mainly comprising natural forest sites under traditional community protection schemes (eg, surrounding pagodas), combined with a very high demand for subsistence timber use that at present cannot be satisfied by any interviewed FUG. There will thus be no significant surplus for trade until subsistence demand is met.

Implementation scope is foreseen to be limited to township, district or, at most, state/region level, with production targeted towards client-oriented local markets.

An engagement into national level and export orientation timber markets currently looks unrealistic due to: i) the rather limited resource base under afforestation with typically only 3-4 age classes, thus limiting prospects for longer-term contracts with sustained annual outputs, and ii) mixed assortments of raw materials, as typically occurring under natural forests, which will be difficult to accommodate under standardised products such as usually required by export markets.

At present, no reliable planning and reporting procedures are in place that would comply with FLEGT or third-party certification schemes such as SFC (SFM) or PEFC. Reporting remains limited to annual FUG reports on achievements under afforestation targets only while lacking any form of timber harvest planning.

The main improvements that will be required with the elaboration of detailed guidelines fall under three main headings:

- a) **Participatory forest inventory** and estimation of **Annual Allowable Cuts** for natural forest resources. An integration of developed AACs into the District Forest Management Plans (DFMP) would ensure that proposed FUG harvest targets will quickly meet requirements for legal approval. FUG targets are to be spelled out separately in the DFMP, which would require an adjustment to the current format. A technical concept for a participatory forest inventory has been successfully piloted by this project in Kachin state by several FUGs (Working Paper No.3; Wode et al *in prep.*). This tool is now proven to be a cost- and time-efficient method to obtain required forest characteristics while at the same time ensuring that FUG members themselves are fully engaged in data collection and analysis.
- b) **Silvicultural guidelines** for afforestation and natural forest management and utilisation which would require significant adjustments/simplifications compared to the current MSS guidelines for state-sector commercial forests. A draft concept for an adjusted silvicultural concept is provided in FFI Myanmar Working Paper No.3 (Wode 2014). The concept follows '**close-to-nature forest management concepts**' in line with principles under international sustainability certification schemes.

- c) **Reporting of Annual Operational Plans (AOP)**, including a comprehensive monitoring and evaluation process to be supported by Township Forest Departments. Detailed but simple formats and capacity building of FUGs through township forest officers would ensure that plans will be elaborated in a consistent way to allow for a direct aggregation into township and district targets. Drafts are in preparation that will be piloted by FFI Myanmar in 2015.

The elaboration of guidelines has to be accompanied by a comprehensive training strategy of forest officers with a focus at district and township levels.

Trained forestry personnel would then act as trainers during village meetings, and would establish regular meeting schedules with FUGs. Regular contact would result in improved cooperation and mutual trust, both essential to meet national CF and forestry objectives.

The recently established national working group on CF could effectively act as national steering board during elaboration of the above proposed guidelines, and could oversee a pilot implementation in selected townships in Kachin state and Tanintharyi division. FFI and other non-government partners are ready to assist and support such a pilot implementation and capacity building on the ground.

The national working group could further provide a platform to discuss and present outcomes to national decision makers. The ultimate goal would be strengthened policy and regulation that supported environmentally, socially and economically sustainable CF management under FLEGT legality requirements in Myanmar.

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## ANNEX 1: Research Hypotheses

The following questions and accompanying hypotheses were developed by the authors based on the desk study (MCDP Report 37) and expert feedback during the subsequent inception workshop (MCDP Report 38), plus several interviews with key stakeholders. They were revised slightly during the conduct of the field surveys.

### Demand-side questions

- a) **Are timber species that are currently preferred by FUGs corresponding with the timber demand for local or international markets?**

**Hypothesis:** Many of the timber species planted by FUGs may not be those of interest in local or international markets. The species being grown and market demands need to be better understood, and better links created between the producers and suppliers.

- b) **How is furniture production for local markets/self-consumption organised at village/township level? Could FUGs be organised into small timber processing units at local level?**

**Hypothesis:** At present a well-functioning small-scale timber processing business is operational at all localities and was mainly supplied from unregulated timber supply from natural forest. These structures could be effectively converted into sustainable production units and to be supplied from timber produced on well-managed FUG woodlots.

- c) **Is there an adequate local market/supply chain beyond the township for small-scale producers, how does this vary across the country, and who are the likely market chain actors most relevant to CF and smallholder producers?**

**Hypothesis:** The small scale of the current (formal) domestic timber processing industry is well known, but there is sufficient scope and opportunity for growth to make smallholder production a viable income option. Growth in smallholder production is therefore justified and could become an increasingly important part of the Myanmar timber industry.

### Supply-side questions

- d) **What interest (and potential) in commercial production from communities? What are the relevant costs and benefits?**

**Hypothesis:** The entire project is premised on the idea that communities and smallholders are interested in commercial timber production, if only for the local market. This assumption comes from the seeming large number of commercial species that are planted under CF, especially teak and ironwood. This assumption needs to be tested and qualified.

- e) **What potential timber volume could be produced by an average sized FUG in Kachin state? Would these volumes be sufficient to stimulate a viable commercial timber trade for an individual FUG?**

**Hypothesis:** Current demand for firewood and house building material remains very high and will most likely intensify due to increasingly depleted natural forest resources. In the medium-term FUGs might remain with a clear focus on subsistence timber production only. The current size of an average FUG woodlot can only produce sufficient timber for subsistence demand and surplus might only occur on an irregular basis and with marginal volume.

- f) **Can CF timber production in the short-, medium-, long-term supply commercial timber processing plants?**

**Hypothesis:** at present afforestation efforts remain rather scattered, and are concentrated in the first years of the CF cycle. Scattered planting does not allow for a comprehensive forest inventory to predict a sustainable timber supply that can be committed under a contractual arrangement with local timber buyers. At present, woodlots have a very even-aged structure and will not allow to supply timber on an annual basis but rather on a one-time fashion.

Thus, only through a larger FUG network sufficient and balanced timber supply could be ensured to engage into a commercial contract with processing.

- g) **What would be the minimum economic size for a FUG managed woodlot to engage in commercial timber production?**

**Hypothesis:** Monitoring requirements under FLEGT are costly and have to be stemmed by the FUG and have to be compensated via revenues from annual timber sale. At present, the advantage of engaging into a timber trade outside township boundaries would clearly outweigh increased benefits as woodlot sizes remain too small.

- h) **What are the options for collective planning and marketing for CF/smallholder timber (and other forest products); e.g. under district forest management plans, of FSC group certification within a township?**

**Hypothesis:** Collective planning will increase prospects for an economic-viable timber utilisation, processing and marketing under international certification standards (PEFC, FSC). Certification standards could further bridge the gap until a nation-wide TLAS is operational and designed to accommodate CF.

- i) **What is the current cost-benefit structure of CF/smallholder production and could new models of financing be viable (e.g. commercial loans, contract production, joint stock investment models).**

**Hypothesis:** CF is expensive to establish but rarely pays for itself within reasonable time-frames. Thus many inputs are being provided in kind by communities with unclear financial benefits, which disincentivises CF. There is however potential for income generation from some CF models which would cover management costs, and could also be used to justify alternative funding for CF establishment

## **Legislative/administrative questions**

- j) **Is the current policy frame stipulating regulations on commercial timber production, marketing and trade for FUGs? What is the current objective for CF as stipulated by law and accompanied regulations/instructions? What changes would be required to allow this to happen?**

**Hypothesis:** CF in Myanmar was clearly designed as a means to address fuel wood and timber shortage at a local subsistence level and to mobilise the public into a national reforestation campaign. The national CF target is derived from an estimated national fuelwood demand and was not based on available land resources nor commercial timber demand/supply situations. Clear changes in the policy frame would therefore be required before FUGs could engage into a legal timber trade outside township boundaries.

**k) Can FUGs engage in the lucrative Teak timber market with trees planted on their woodlot sites?**

**Hypothesis:** Teak was historically referred to as reserved tree under State control and ownership regardless whether it was extracted from natural forest or planted on private land. Despite this regulations Teak is commonly observed in CF woodlots and scattered tree plantings on private land with utilisation limited to subsistence use or trading inside village boundaries. The legal policy frame does not clarify these issues and commercial timber trading by FUGs is thus widely not considered feasible or legal.

**l) Can FUGs be certified under FSC/CoC/PEFC by applying their current management and monitoring practises?**

**Hypothesis:** Timber processing plants will orient their production towards the international market under FLEGT requirements and would require a certified timber supply from FUGs especially if natural forests are managed for timber production. It is assumed that FUGs have sufficient capacities to comply with requirements under certification schemes at least for timber produced in plantation. However, capacity building would be needed and depends on external (government or NGO) technical and financial support.

**m) How would timber produced on private land (settlement area, living fence) be monitored/certified as part of the timber volume supplied by an FUG? Would procedures for timber legality differ from timber produced on reserved forest land?**

**Hypothesis:** Spontaneous scattered tree planting is widely observed in the region and could further contribute to the timber market at local levels if clear monitoring protocols are available and within capacities of FUGs under the supervision of a FUG network.

**n) What would be the realistic scope (village, township, state, national) of a timber trade from CF produced material?**

**Hypothesis:** Trading of timber inside a township administrative boundary does not require a removal pass nor any further official permits, thus making this market readily available for FUGs. At present, monitoring and reporting procedures for a FUG based timber trade are not yet in place in Myanmar and will therefore not permit a realistic engagement outside township boundaries for at least the coming five to ten years.



## ANNEX 2: Relevant regulations and guidelines

Myanmar FLEGT Reference Library					
Improved Legality, Governance and Trade for Community and Smallholder Timber in Myanmar Project					
No	Title	Year	Author	Publisher	Language
1	<a href="#">ASEAN C &amp; I for Legality of Timber</a>	Nov, 2009	Alexander Hinrichs	ASEAN-German ReFOP	English
2	<a href="#">CF in Myanmar Fulfilling its Potential</a>	Aug, 2011	Oliver Springate-Baginski, et al	ECCDI	English
3	<a href="#">CF in Myanmar Progress-Potential</a>	Aug, 2011	Kyaw Tint, et al	ECCDI	English
4	<a href="#">CF in Myanmar Some Field Realities</a>	Aug, 2011	Oliver Springate-Baginski, et al	ECCDI	English
5	<a href="#">Criteria and Indicator (C&amp;I) for SFM in Myanmar</a>				
6	<a href="#">Current State of the Development and Implementation of the National Code of Harvesting Practices in Myanmar</a>	Nov, 2003	Khin Zaw		English
7	<a href="#">Departmental Instruction (DI) MTE- section 1 to 122</a>	Aprl, 2008	Myanmar Timber Enterprise, MoECaF		Burmese
8	<a href="#">Environment Conservation Law Leaflet</a>	Mar, 2012		The Pyidaungsu Hluttaw Law No. 9 / 2012	Burmese
9	<a href="#">Environmental Conservation Law</a>	Mar, 2013		The Pyidaungsu Hluttaw Law No. 9 / 2013	English
10	<a href="#">EU Timber Regulation</a>	Oct, 2010		The European Parliament and of the Council	English
11	<a href="#">Forest Certification in Myanmar- Information Brief Forest Trends</a>	Sep, 2012	Kevin Woods and Kerstin Canby	Forest Trends	English
12	<a href="#">Forest Policy (1995) Forest Law (1992), Wildlife-Protected Area Law (1994) and CFI (1995)</a>	Jan, 2003		Forest Department, MoECaF	English and Burmese
13	<a href="#">Framework for Assessing Legality of Forestry Operations, Timber Processing and Trade (ANNE)</a>	Nov, 2013		TRAFFIC and WWF's Global Forest & Trade Network	English
14	<a href="#">Guidance Note on the Common Framework for Assessing Legality of Forestry Operations, Timber Processing and Trade and National Legality Frameworks</a>			TRAFFIC and WWF's Global Forest & Trade Network	English
15	<a href="#">Lessons Learned from Civil Society Efforts to Promote CF Resource Right and other Rights in V</a>	Oct, 2013	Lindsay Duffield and Michael Richard	Forest Trends	English
16	<a href="#">Myanmar Forest Sector Legality Analysis-ETTF Programme</a>	Sep, 2013		European Timber Trade Federation (ETTF)	
17	<a href="#">Myanmar Timber Legality Assurance System (MTLAS)</a>	Feb, 2013	Working Group of the Timber Certification Committee of Myanmar		English
18	<a href="#">National Code of Forest Harvesting Practice in Myanmar</a>	1999	Forest Department, Myanma Timber Enterprise and Planning and Statistics Department	Ministry of Forestry	English
19	<a href="#">National Forest Mgt 30 yrs master plan-volume 1</a>	Jun, 2001		Ministry of Forestry	Burmese
20	<a href="#">National Forest Mgt 30 yrs master plan-volume 2</a>	Jun, 2002		Ministry of Forestry	Burmese
21	<a href="#">Overview FLEGT Baseline Study 4 Myanmar</a>	Aug, 2011	Kevin Woods and Kerstin Canby	Forest Trends	English
22	<a href="#">Reduced Impact Logging (RIL) Guidelines Myanmar</a>	Sep, 2008	Myo Myint	Myanma Timber Enterprise	Burmese
23	<a href="#">Status of Forest Management in Myanmar- ITTO</a>	2004		ITTO	English
24	<a href="#">Sub-Regional Training Workshop on Timber Legality Assurance</a>	Nov, 2010			English
25	<a href="#">Tackling Timber Regulation a Guide for Myanmar</a>	Dec, 2013		Forest Trends	English
26	<a href="#">Timber Trade Flow and Actors in Myanmar- The Political Economy of Myanmar's Timber Trade</a>	Nov, 2013	Kevin Woods	Forest Trends	English
27	<a href="#">Tropical Timber Market Report, ITTO</a>	Aug, 2013		ITTO, Market Informatio Service	English

Format and guidelines for district forest management plans (1996)  
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MTE Extraction Manual (1948)  
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- *No. 06 Classification Hammers*
- *No. 11 Method of hammering marks on logs*
- *No. 12 Field inspection*
- *No. 45 Acceptance and measuring of logs at measuring points and delivery points*
- *No. 63 Annual extraction plan*
- *No. 90 Regulations on hardwood extraction*

National Legality Framework (WWF/GFTN - TRAFFIC)  
REGULATION (EU) No 995/2010 of 20<sup>th</sup> October 2010 (EUTR)

## ANNEX 3: FUG Questionnaire

**Date:**      **No.:**      **Recorder:**

FUG ID:	Year of FUG establishment:
State:	CF certificate <b>No:</b> <input type="checkbox"/> <b>Yes:</b> <input type="checkbox"/> since when_____
District:	MP submitted <b>No:</b> <input type="checkbox"/> <b>Yes:</b> <input type="checkbox"/> since when_____
Township:	Plantation: <b>No:</b> <input type="checkbox"/> <b>Yes:</b> <input type="checkbox"/> acre_____
Village tract:	Natural forest: <b>No:</b> <input type="checkbox"/> <b>Yes:</b> <input type="checkbox"/> acre_____
Village:	
Management regime: Collectively managed <input type="checkbox"/> Allocated to individual hhs. <input type="checkbox"/> Mixed <input type="checkbox"/>	

<p>1.1) Initial motivation to participate in CF and form FUG?  secure village land certificate <input type="checkbox"/> economic benefits from timber <input type="checkbox"/> ecological benefits <input type="checkbox"/>  others _____</p> <p>1.2) No. FUG members at: Beginning _____ Current number _____  Reason for reduction:  lack of technical support <input type="checkbox"/> no economic benefits <input type="checkbox"/> conflicts among members <input type="checkbox"/>  others _____</p> <p>1.3) How did CF implementation affect your availability of agriculture and grazing land?  No effect: <input type="checkbox"/> Minor effect: <input type="checkbox"/> Shortage: <input type="checkbox"/> Had to sell livestock: <input type="checkbox"/></p> <p>1.4) Please rank the importance of your CF forest for the community members life (from 1 to 5)  ___ watershed ___ timber sale ___ timber subsistence ___ NTFP ___ landscape beauty</p> <p>1.5) Do you submit annual reports to township Forest Department?  yes, regular <input type="checkbox"/> only one time <input type="checkbox"/> never <input type="checkbox"/></p> <p>1.6) Does the annual report include your annual amount of timber you harvest from CF?  yes <input type="checkbox"/> no <input type="checkbox"/> only describes afforestation plan <input type="checkbox"/></p> <p>1.7) What details regarding timber harvest and or sale are mentioned in the annual report?  describe _____</p> <p>1.8) Did you plant Teak or other hardwood species in your woodlot? if yes, how much?  <input type="checkbox"/> &lt;10%      <input type="checkbox"/> &lt;50%   <input type="checkbox"/> &gt;50%   <input type="checkbox"/> All</p> <p>1.9) When do you expect to harvest planted hardwood timber?  <input type="checkbox"/> before 20 yrs age      <input type="checkbox"/> before 30 yrs age      <input type="checkbox"/> after 30 yrs age  <input type="checkbox"/> already harvested, describe species and amount _____</p> <p>1.10) Do you think your CF plantation will produce enough timber for subsistence use?  yes <input type="checkbox"/> no <input type="checkbox"/></p> <p>1.11) Do you think your CF plantation will also produce surplus timber to be sold in the market?  yes <input type="checkbox"/> no <input type="checkbox"/>  if not, please explain _____</p> <p>1.12) Do you intend to harvest timber from your natural CF forest?  yes <input type="checkbox"/> no <input type="checkbox"/> only subsistence <input type="checkbox"/> also for commercial sale <input type="checkbox"/>  if not, please explain _____</p> <p>1.13) Will timber from plantation or from natural forest be more important?  plantation <input type="checkbox"/> natural forest <input type="checkbox"/> why? _____</p>
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1.14) Do you need a permit when you want to cut your planted Teak or hardwood species?  
yes ☐ no ☐ not sure ☐

1.15) Do you intend to sell timber from your CF area?  
not sure ☐ no ☐ yes ☐, if yes, will you sell inside village ☐ or outside ☐  
If not please explain why? \_\_\_\_\_

1.16) Did you sell any timber so far? if yes, explain, when, what species, to whom?  
no ☐ yes ☐ \_\_\_\_\_

1.17) Do you intend to sell timber from private land, village area or agricultural land?  
not sure ☐ no ☐ yes ☐ if yes, will you sell inside village ☐ or outside ☐

1.18) Do you think you can harvest even after the expiry of your CF certificate in 30 years?  
yes ☐ no ☐ explain \_\_\_\_\_

1.19) What timber assortments (species, length, dimension) are currently used in the village?  
describe main ones \_\_\_\_\_

1.20) Which of the assortments are in insufficient supply in your village? If so, describe  
\_\_\_\_\_

1.21) Are you satisfied with the development of your plantation?  
yes ☐ no, low survival rate ☐ no, slow growth ☐ no, low timber quality ☐

1.22) Do you intend to do any thinning in your plantation?  
yes ☐ no ☐ don't know yet ☐

1.23) Do you think your can sell thinning remains to pay for the invested labour?  
Yes ☐ no, products have no market ☐ no, total volume too small for sale ☐

1.24) What will you use the thinning remains for?  
subsistence ☐ commercial sale ☐ no use ☐

1.25) Do you expect income from CF timber sale to be?  
marginal ☐ less than from agriculture ☐ more than from agriculture ☐

1.26) Do you expect income from CF timber to come?  
every year ☐ every 5-10 years only ☐ only one time ☐ never ☐

1.27) What are three most limiting factors to conduct timber sale for income generation?  
too small CF area ☐ poor plantation quality ☐ don't know how to obtain permit ☐  
lack technical skills ☐ no contact to timber market ☐ subsistence demand too high ☐

1.28) Did local traders ever approach you to sell timber? no ☐ yes ☐  
if yes, describe \_\_\_\_\_

1.29) Do you know any timber buyer and how to contact? no ☐ never tried ☐ yes ☐

1.30) How and from what source do you get your construction timber from?  
purchased inside village ☐ purchased outside village ☐ harvest myself ☐  
CF forest ☐ other forest ☐ private land ☐

1.31) Do you know market prices for different hardwood species? No ☐ Yes ☐  
where can you obtain price information? \_\_\_\_\_

1.32) Do you have specialised logging teams in your FUG?  
only few people do ☐ everybody can do ☐ have to hire from outside ☐

1.33) Do you harvest commercial NTFP from your CF forest? No ☐ Yes ☐  
if yes, most families ☐ only very few households ☐ only poor households ☐

1.34) Did income from natural forest products help you to prevent you from the following problems?

forced selling of livestock ☐ food shortage ☐ work as hired labour ☐  
 selling agricultural products prior to harvest ☐ none ☐

1.35) How much time you invest in CF compared to agricultural production?  
☐ <5% ☐ <10% ☐ <20% ☐ <50% ☐ same time ☐ more time

1.36) How often are you working in your CF natural forest area?  
 daily ☐ weekly ☐ monthly ☐ once a season ☐ once a year ☐

1.37) Please do pairwise ranking of which activities contribute most to your household income:

	Agriculture	Livestock	Forestry	Hired labour	Other business
Agriculture					
Livestock					
Forestry					
Hired labour					
Other business					
Ranking					

1.38) Do you have experienced any land use conflict with loss of CF area?  
 no ☐ yes ☐ if yes, describe \_\_\_\_\_

1.39) Do you have to invest much efforts in forest protection?  
 no ☐ yes, voluntary ☐ yes, with payment for patrolling ☐

1.40) How often do you patrol the natural CF forest?  
 no. of people in patrol team \_\_\_\_\_ no. of patrols per month \_\_\_\_\_

1.41) Is your actual afforestation following the design in the CF management plan?  
 yes, mostly ☐ not much ☐ completely different ☐ don't know plan details ☐

1.42) Will you replant plantation forest after final clearcut?  
 yes ☐ no, lack of finance ☐ no, lack of technical knowledge ☐

1.43) How many members are in your MC? Please provide number \_\_\_\_\_

1.44) On what terms are MC members working?  
 voluntary ☐ receiving financial compensation for their work ☐ finance stopped ☐

1.45) How often do MC members meet?  
 weekly ☐ monthly ☐ once a year ☐ irregular ☐ no more meetings after planting finished ☐

1.46) Do you think the MC has sufficient capacity to support timber harvest, monitoring, reporting and sale? yes ☐ no, need NGO support ☐ no, need township FD support ☐

1.47) How will you decide which household can use timber from the plantation?  
 MC decide ☐ poor households first ☐ we will sell all timber and share money ☐  
 each household harvest timber from his own plot ☐ don't know yet ☐

1.48) How high do you estimate the cost for timber harvesting by FUG members?  
 small ☐ high, but paid from timber revenue ☐ cost likely to exceed timber revenues ☐

1.49) Can you obtain a legal timber harvest permit for Teak?  
 yes ☐ no ☐ don't need a permit ☐  
 explain why \_\_\_\_\_

1.50) Does your FUG participate in a network or association? no ☐ yes ☐ if yes, Name: \_\_\_\_\_

1.51) What are expected benefits from participation in the network?  
 information sharing ☐ better protect FUG use rights ☐ cooperation during timber sale ☐

## ANNEX 4: Township FD Questionnaire

**Date:**      **No.:**      **Recorder:**

State:	Total area under FUG:
District:	No. of Rangers/Range Officer:
Township:	No. of Deputy Rangers:
No. of FUGs in township:	No. of Foresters:
Total reserved forest area in township: Acre:      forest cover %:	No. of Forest guards:
Address:	Office telephone:

- 1.1) What are most difficult forest protection issues in reserved natural forests? (Name 3)  
conversion ☐    subsistence fuelwood ☐    fire ☐    illegal logging transport & trade ☐
- 1.2) Describe your role and mandate during FUG timber harvest  
\_\_\_\_\_
- 1.3) Did you ever receive an in-service training course of Community forestry?  
no ☐    yes ☐ if yes, when \_\_\_\_\_ and how many days \_\_\_\_\_
- 1.4) Did you ever support a FUG in timber harvest?  
yes ☐ no ☐
- 1.5) How do you cooperate with FUGs?  
regular MC meetings ☐    based on demand ☐    joint protection patrolling ☐
- 1.6) Do you support FUGs in annual report writing?  
yes ☐ no ☐ not yet prepared by FUGs ☐
- 1.7) Do you keep any annual reports from FUGs?  
yes ☐ no ☐ not yet prepared by FUGs ☐ (if yes, please provide example)
- 1.8) Does the annual report describe and quantify timber harvest by FUGs?  
yes, but no quantities ☐    with estimates in tons or m<sup>3</sup> ☐    no information ☐
- 1.9) Do you have one staff specialised in FUG support?  
yes ☐ no ☐
- 1.10) Does a FUG need a permit for subsistence-use timber harvest?  
yes ☐ no ☐ don't know ☐
- 1.11) Does a FUG has to follow the MSS when managing natural forests?  
yes ☐ no ☐ don't know ☐
- 1.12) Can a FUG conduct thinning in plantations without need for a permit?  
yes ☐ no ☐ don't know ☐
- 1.13) Does a FUG has the right to conduct commercial timber harvest from their plantation?  
yes ☐ no ☐ please name legal reference \_\_\_\_\_
- 1.14) Does a FUG has the right to conduct commercial timber harvest from their natural forest?  
yes ☐ no ☐ please name legal reference \_\_\_\_\_
- 1.15) Can a FUG conduct legal hardwood timber harvest in their natural CF forest?  
yes ☐    no ☐    only for subsistence use but not for commercial sale ☐
- 1.16) Do you have sufficient experience in supporting a FUG in pre-harvest inventory, tree marking, reporting and harvesting procedures as stipulated by law?



yes sufficient capacities ☐ would require additional training ☐ not my legal mandate ☐

1.17) Do you think FUGs have sufficient capacities to conduct legal timber harvest from natural forest?  
Yes sufficient knowledge to conduct with FD support ☐ No, insufficient capacities ☐

1.18) Can a FUG obtain a removal pass to sell harvested timber in a different township?  
yes ☐ no ☐ explain \_\_\_\_\_

1.19) Is it possible for a FUG to sell timber to another State?  
yes ☐ no ☐ explain \_\_\_\_\_

1.20) What hammer marks would a FUG need on their logs to sell inside a township?  
describe \_\_\_\_\_

1.21) What type of hammer marks do you have in your office?  
species code ☐ compt.-in-charge ☐ range-in-charge personal ☐ tree/log number ☐  
log serial number/compartment ☐ FD revenue ☐ FD revenue serial no. ☐

1.22) Who would be responsible for tree marking if FUGs intend to harvest hardwood from their natural forest?  
state FD ☐ district FD ☐ township FD ☐ only FUG ☐ not clear ☐

1.23) Do you regularly monitor sawmill owners?  
no ☐ yes, weekly ☐ monthly ☐ annual ☐

1.24) Do sawmills have an annual quota limitation?  
yes ☐ no, only depend on sawmill demand ☐

1.25) How many sawmills are currently operating in the township? Irregular  
describe \_\_\_\_\_

1.26) What are minimum and maximum annual capacities of sawmills?  
describe \_\_\_\_\_ (in tons or m<sup>3</sup>)

1.27) What timber species are used by sawmills?  
name three \_\_\_\_\_

1.28) What timber assortments are normally purchased by sawmills? (length, diameter)  
describe \_\_\_\_\_

1.29) Do sawmills produce for local market or for shipments to Yangon?  
describe \_\_\_\_\_

1.30) Can CF timber be sold to a sawmill?  
yes ☐ no ☐ yes, but only plantation timber ☐

1.31) What legal documents would a FUG need to sell timber to a local sawmill?  
describe \_\_\_\_\_

1.32) Is there a local timber market in the township?  
yes ☐ no ☐

1.33) Can FUGs sell timber on the timber market?  
yes ☐ no ☐ describe \_\_\_\_\_

1.34) What documentation is needed to sell sawn timber in the local market?  
describe \_\_\_\_\_

1.35) Do you have any township level data on wood supply/demand situation?  
yes ☐ no ☐ describe \_\_\_\_\_

1.36) Do carpenter shops inside villages need a permit or are they registered?  
yes ☐ no ☐ describe \_\_\_\_\_

- 1.37) How often do you monitor CF plan compliance?  
describe \_\_\_\_\_
- 1.38) During regular reporting to District Forest Department, was information regarding FUGs are mentioned?  
describe \_\_\_\_\_
- 1.39) Are you responsible to conduct tree marking and to apply hammer marks on MTE logging sites?  
yes ☐ no ☐ describe \_\_\_\_\_
- 1.40) Do you get any CF targets (e.g. 5 year orientation) from district level?  
yes ☐ no ☐ describe \_\_\_\_\_
- 1.41) Do you contribute to the elaboration of the 10 year District Forest Management Plan?  
yes ☐ no ☐ describe \_\_\_\_\_
- 1.42) What information do you send to the district FD regarding FUG performance?  
plantation ☐ protection ☐ harvest proposal ☐ timber amount harvested ☐
- 1.43) Is there an established firewood market?  
yes ☐ no ☐ describe \_\_\_\_\_
- 1.44) Could FUGs sell firewood in the market?  
yes ☐ no ☐ describe \_\_\_\_\_
- 1.45) What are currently prices for firewood?  
describe \_\_\_\_\_
- 1.46) What species are used for firewood?  
name 3 most important \_\_\_\_\_

## ANNEX 5: Tabulated Research Results

### BACKGROUND INFORMATION ON FUGS

Question summary	Kachin	Magwe	Shan	Tanintharyi
<b>Overview</b>	<i>n</i> =9	<i>n</i> =25	<i>n</i> =15	<i>n</i> =19
No FUGs	9	25	15	19
No > 5 yrs	89%	76%	100%	68%
MPs submitted	89%	84%	100%	53%
Certificate issued	89%	88%	100%	84%
Members (current)				
<i>Average</i>	125	66	111	41
<i>Highest</i>	263	335	300	87
<i>Lowest</i>	27	5	5	5
<b>Forest resources</b>	<i>n</i> =9	<i>n</i> =25	<i>n</i> =15	<i>n</i> =19
FUGs w plantation	100%	79%	0	68%
Average size	457ac	90ac	0	164ac
FUGs w nat. forest	89%	84%	100%	100%
Average size	554ac	102ac	405ac	830ac
<b>Management regime</b>	<i>n</i> =9	<i>n</i> =24	<i>n</i> =15	<i>n</i> =16
Collective	89%	83%	93%	44%
Individual	0	0%	7%	0
Mixed	11%	17%	0%	56%
<b>Motivation to Participate*</b>	<i>n</i> =16	<i>n</i> =21	<i>n</i> =17	<i>n</i> =31
Secure village land certificate	13%	10%	6%	7%
Economic benefits from timber	38%	24%	6%	32%
Ecological benefits	38%	67%	88%	42%
Others	13%	0%	0%	19%
<b>Impact on agri/grazing land</b>	<i>n</i> =9	<i>n</i> =24	<i>n</i> =15	<i>n</i> =19
No effect	0%	80%	47%	89%
Minor effect	100%	21%	53%	11%
Shortage	0%	0%	0%	0%
Had to sell livestock	0%	0%	0%	0%
<b>Annual reports</b>	<i>n</i> =9	<i>n</i> =23	<i>n</i> =15	<i>n</i> =18
Yes, regular	100%	17%	0%	36%
Sometimes	0%	50%	80%	21%
Only one time	0%	33%	20%	43%
Never	0%	0%	0%	0%
<b>Timber harvest in annual report</b>	<i>n</i> =9	<i>n</i> =21	<i>n</i> =4	<i>n</i> =18
Yes	33%	14%	0%	17%
No	67%	86%	75%	83%
Only describe afforestation	0%	0%	25%	0%
<b>Teak and hardwood planted</b>	<i>n</i> =9	<i>n</i> =11	<i>n</i> =4	<i>n</i> =13
(%) Planted <10%	22%	73%	25%	92%
(%) Planted < 50%	33%	27%	50%	8%
(%) Planted >50%	33%	0%	25%	0%
(%) Planted 100%	11%	0%	0%	0%

\* Multiple responses allowed.

### IMPORTANCE OF TIMBER TO FUGS

Question summary	Kachin	Magwe	Shan	Tanintharyi
<b>Expected harvest</b>	<i>n</i> =9	<i>n</i> =13	<i>n</i> =1	<i>n</i> =16
(%) < 20 yrs age	89%	31%	0%	63%

**MYANMAR CONSERVATION AND DEVELOPMENT PROGRAM (MCDP)**

(%) < 30 yrs age	11%	39%	100%	13%
(%) > 30 yrs age	0%	31%	0%	25%
<b>3 most import. species</b>	<i>n=0</i>	<i>n=0</i>	<i>n=0</i>	<i>n=0</i>
(%) Teak	n/a	n/a	n/a	n/a
(%) Cassia	n/a	n/a	n/a	n/a
(%) Xylia	n/a	n/a	n/a	n/a
(%) Others	n/a	n/a	n/a	n/a
<b>Annual running costs</b>	<i>n=2</i>	<i>n=2</i>	<i>n=1</i>	<i>n=4</i>
Average	5,786,667	180,000	600,000	275,000
Max	15,000,000	180,000	600,000	500,000
Min	860,000	180,000	600,000	0
<b>FUG started small business</b>	<i>n=9</i>	<i>n=22</i>	<i>n=15</i>	<i>n=19</i>
Yes	11%	0%	20%	11%
No	89%	100%	80%	90%
<b>Participate in network</b>	<i>n=9</i>	<i>n=22</i>	<i>n=15</i>	<i>n=19</i>
Yes	78%	23%	27%	26%
No	22%	77%	73%	74%
<b>Use of thin. remains</b>	<i>n=9</i>	<i>n=14</i>	<i>n=2</i>	<i>n=11</i>
(%) subsistence	78%	86%	100%	73%
(%) commercial	22%	0%	0%	18%
(%) no use	0%	14%	0%	9%
<b>Who covered cost for CF established</b>	<i>n=9</i>	<i>n=19</i>	<i>n=15</i>	<i>n=18</i>
(%) Donor	56%	5%	80%	11%
(%) Loan	0%	0%	0%	0%
(%) Own money	44%	37%	20%	44%
(%) don't know	0%	58%	0%	44%
<b>Importance of timber source</b>	<i>n=9</i>	<i>n=22</i>	<i>n=0</i>	<i>n=18</i>
(%) plantation	100%	18%	n/a	39%
(%) nat. forest	0%	82%	n/a	61%
<b>Permit for hardwood harvest</b>	<i>N=9</i>	<i>n=19</i>	<i>n=4</i>	<i>n=19</i>
Yes	100%	68%	0%	95%
No	0%	11%	25%	5%
(%) not sure	0%	21%	75%	0%
<b>Intend to sell timber</b>	<i>N=9</i>	<i>n=23</i>	<i>n=14</i>	<i>n=19</i>
Yes	100%	22%	21%	74%
No	0%	78%	64%	11%
(%) not sure	0%	0%	14%	16%
<b>Where would you sell timber</b>	<i>n=9</i>	<i>n=8</i>	<i>n=0</i>	<i>n=13</i>
(%) inside village	0%	38%	n/a	62
(%) outside village	11%	38%	n/a	0
(%) in & outside village	89%	25%	n/a	38
<b>How are annual costs covered</b>	<i>n=9</i>	<i>n=12</i>	<i>n=15</i>	<i>n=15</i>
(%) profits	0%	8%	0%	0%
(%) member fee	44%	0%	0%	0%
(%) donor	44%	0%	93%	7%
(%) don't know	11%	92%	7%	93%
<b>Planned thinning</b>	<i>n=9</i>	<i>n=21</i>	<i>n=5</i>	<i>n=18</i>
Yes	89%	24%	0%	44%
No	11%	71%	0%	33%
(%) don't know yet	0%	5%	100%	22%
<b>How much to establ. CF</b>	<i>n=3</i>	<i>n=7</i>	<i>n=1</i>	<i>n=5</i>
Average (MMK)	110,000	243,333	500,000	1,028,000
Max (MMK)	200,000	600,000	500,000	2,500,000
Min (MMK)	20,000	30,000	500,000	20,000

<b>Period to recover initial invest. (years)</b>	<i>n</i> =8	<i>n</i> =3	<i>n</i> =0	<i>n</i> =3
Average	16	7	n/a	10
Max	20	10	n/a	15
Min	6	5	n/a	5
<b>CF Timber sold</b>	<i>n</i> =9	<i>n</i> =12	<i>n</i> =8	<i>n</i> =10
(%) yes	0%	0%	0%	0%
(%) no	100%	100%	100%	100%
<b>Timber from private land sold</b>	<i>n</i> =9	<i>n</i> =21	<i>n</i> =15	<i>n</i> =17
Yes	33%	10%	0%	0%
No	44%	90%	73%	88%
(%) not sure	22%	0%	27%	12%
<b>Harvest after CF expire</b>	<i>n</i> =9	<i>n</i> =21	<i>n</i> =4	<i>n</i> =19
Yes	89%	57%	25%	95%
No	11%	43%	75%	5%
<b>Satisfied with plantation</b>	<i>n</i> =9	<i>n</i> =21	<i>n</i> =6	<i>n</i> =17
(%) yes	89%	67%	33%	82%
(%) no, low survival	0%	24%	67%	12%
(%) no, slow growth	11%	10%	0%	6%
<b>Expected benefits from joining network</b>	<i>n</i> =11	<i>n</i> =8	<i>n</i> =5	<i>n</i> =18
(%) info sharing	55%	75%	80%	61%
(%) protect FUG use rights	45%	25%	20%	17%
(%) cooperate on timber sale	0%	0%	0%	22%
<b>FUG maintain fund</b>	<i>n</i> =9	<i>n</i> =20	<i>n</i> =15	<i>n</i> =19
Yes	56%	15%	40%	21%
No	44%	65%	60%	63%
(%) don't know	0%	20%	0%	16%

## FUG MANAGEMENT OPERATIONS AND ATTITUDES

### Kachin

<b>CF plantation production subsistence</b>	yes	no	d/k	No Target	<i>n</i> =
Firewood	89%	0%	0%	11%	9
Poles	89%	0%	0%	11%	9
Posts	89%	0%	0%	11%	9
Timber	89%	0%	0%	11%	9
<b>CF plantation production commercial</b>	Yes	No	d/k	No Target	<i>n</i> =
Firewood.	89%	0%	0%	11%	9
Poles	89%	0%	0%	11%	9
Posts	89%	0%	0%	11%	9
Timber	89%	0%	0%	11%	9

### Magwe

<b>CF plantation production subsistence</b>	yes	no	d/k	No Target	<i>n</i> =
Firewood	95%	5%	0%	0%	22
Poles	90%	10%	0%	0%	21
Posts	67%	33%	0%	0%	18
Timber	50%	50%	0%	0%	12
<b>CF plantation production commercial</b>	Yes	No	d/k	No Target	<i>n</i> =
Firewood	78%	22%	0%	0%	23
Poles	61%	39%	0%	0%	23
Posts	52%	48%	0%	0%	21
Timber	40%	60%	0%	0%	15

**Shan**

<b>CF plantation production subsistence</b>	yes	no	d/k	No Target	n=
Firewood	100%	0%	0%	0%	15
Poles	88%	0%	0%	13%	8
Posts	89%	0%	0%	11%	9
Timber	50%	0%	25%	25%	8
<b>CF plantation production commercial</b>	Yes	No	d/k	No Target	n=
Firew.	20%	47%	0%	40%	15
Poles	25%	0%	0%	75%	8
Posts	25%	0%	0%	75%	8
Timber	13%	13%	13%	63%	8

**Tanintharyi**

<b>CF plantation production subsistence</b>	yes	no	d/k	No Target	n=
Firewood	89%	11%	0%	0%	19
Poles	84%	16%	0	0%	19
Posts	84%	16%	0%	0%	19
Timber	74%	26%	0%	0%	19
<b>CF plantation production commercial</b>	Yes	No	d/k	No Target	n=
Firewood	63%	21%	5%	11%	19
Poles	58%	21%	5%	16%	19
Posts	56%	22%	6%	17%	18
Timber	47%	32%	5%	16%	19

<b>Question summary</b>	<b>Kachin</b>	<b>Magwe</b>	<b>Shan</b>	<b>Tanintharyi</b>
<b>Conflict and CF land loss</b>	<b>n=9</b>	<b>n=23</b>	<b>n=15</b>	<b>n=10</b>
(%) yes	11%	0	20	0
(%) no	89%	100	80	100
<b>FUG conduct activities outside CF</b>	<b>n=9</b>	<b>n=22</b>	<b>n=15</b>	<b>n=19</b>
No	22%	0	47	5
Yes	78%	95	53	84
Don't know	0%	5	0	11
<b>Village logging teams</b>	<b>n=9</b>	<b>n=22</b>	<b>n=15</b>	<b>n=19</b>
(%) only few people	22%	0	0	42
(%) everybody do	0%	0	0	11
(%) hire outsider	0%	0	0	0
(%) no experience	78%	100	100	47
<b>Commercial NTFP usage</b>	<b>n=9</b>	<b>n=22</b>	<b>n=15</b>	<b>n=18</b>
(%) no	22	86	47	44
(%) yes	78	14	40	50
(%) very few hhs.	0	0	0	0
(%) only the poor	0	0	13	6
<b>Income sources</b>	<b>n=9</b>	<b>n=8</b>	<b>n=26</b>	<b>n=42</b>
(%) Agriculture	56	63	54	36
(%) Forestry	0	0	0	7
(%) Hired Labour	6	0	12	14
(%) Other business	19	38	12	33
(%) Livestock	19	0	23	10
<b>Worthwhile join CF</b>	<b>n=16</b>	<b>n=23</b>	<b>n=15</b>	<b>n=19</b>
(%) no	0	0	0	0
(%) yes	100	100	100	100



<b>Local trader approached</b>	<i>n</i> =9	<i>n</i> =18	<i>n</i> =15	<i>n</i> =18
(%) yes	11	0	0	17
(%) no	89	100	100	83
<b>Contact to timber market</b>	<i>n</i> =9	<i>n</i> =22	<i>n</i> =15	<i>n</i> =18
(%) yes	11	5	47	22
(%) no	11	91	20	50
(%) never tried	78	5	33	28
<b>Villager's timber source (1)</b>	<i>n</i> =9	<i>n</i> =15	<i>n</i> =15	<i>n</i> =18
(%) purchased in village	11	13	0	56
(%) purch. out. village	33	40	100	17
(%) harvest myself	56	47	0	28
<b>Villager's timber source (2)</b>	<i>n</i> =9	<i>n</i> =22	<i>n</i> =15	<i>n</i> =18
(%) CF forest	22	0	0	0
(%) private forest	0	0	0	11
(%) other forest	78	100	100	89
<b>Knowledge on timber prices</b>	<i>n</i> =9	<i>n</i> =21	<i>n</i> =15	<i>n</i> =18
(%) yes	89	52	100	78
(%) no	11	48	0	22
<b>Frequency of working for CF</b>	<i>n</i> =9	<i>n</i> =15	<i>n</i> =10	<i>n</i> =16
(%) daily	0	0	10	0
(%) weekly	0	0	0	0
(%) monthly	22	13	10	13
(%) once a season	44	13	70	50
(%) once a year	22	13	0	31
(%) other	11	60	10	6
<b>Forest protection efforts</b>	<i>n</i> =9	<i>n</i> =23	<i>n</i> =15	<i>n</i> =19
(%) low	0	20	27	53
(%) high	0	0	0	0
(%) voluntary	89	68	67	42
(%) with payment	11	4	7	5

## FUGS HARVEST, SALE AND INCOME QUESTIONS

Question summary	Kachin	Magwe	Shan	Tanintharyi
<b>People per patrol</b>	<i>n</i> =1	<i>n</i> =1	<i>n</i> =1	<i>n</i> =1
average	6	5	4	13
max.	12	5	5	87
min.	1	5	2	1
<b>Patrols per month</b>	<i>n</i> =2	<i>n</i> =2	<i>n</i> =2	<i>n</i> =2
average	2	2	26	2
max.	4	2	30	4
min.	1	2	1	1
<b>Harvest time hardwoods</b>	<i>n</i> =9	<i>n</i> =13	<i>n</i> =1	<i>n</i> =16
<20 years (%)	89	31	0	63
<30 years (%)	11	38	100	13
>30 years (%)	0	31	0	25
<b>Income timber sale</b>	<i>n</i> =9	<i>n</i> =5	<i>n</i> =2	<i>n</i> =9
(%) annually	11	0	0	11
(%) every 5-10 yrs	78	20	50	56
(%) only once	11	20	0	22
(%) never	0	60	50	11
<b>Intend sell natural Timber</b>	<i>n</i> =9	<i>n</i> =21	<i>n</i> =15	<i>n</i> =11
(%) yes	78	14	53	73
(%) no	22	86	47	27

**MYANMAR CONSERVATION AND DEVELOPMENT PROGRAM (MCDP)**

<b>Purpose</b>	<i>n</i> =7	<i>n</i> =4	<i>n</i> =8	<i>n</i> =8
(%) subsist.	100	100	100	75
(%) commer.	0	0	0	25
<b>Time spend per year on CF</b>	<i>n</i> =9	<i>n</i> =5	<i>n</i> =12	<i>n</i> =12
Average days/yr	77	22	14	11
Max days/yr	240	45	30	30
Min days/yr	20	7	8	0
"Sometimes"	0	3	0	0
<b>Replant 2<sup>nd</sup> cycle</b>	<i>n</i> =9	<i>n</i> =21	<i>n</i> =0	<i>n</i> =15
(%) yes	89	100	0	87
(%) no finance	0	0	0	0
(%) lack technique	11	0	0	13
<b>MC member working terms</b>	<i>n</i> =9	<i>n</i> =23	<i>n</i> =15	<i>n</i> =18
(%) voluntary	100	100	100	94
(%) receiving finance	0	0	0	6
(%) finance stopped	0	0	0	0
<b>MC capacities</b>	<i>n</i> =8	<i>n</i> =21	<i>n</i> =15	<i>n</i> =19
(%) sufficient	0	5	7	11
(%) need NGO support	88	0	13	74
(%) township FD support	13	95	80	16
<b>Timber harvest cost</b>	<i>n</i> =4	<i>n</i> =10	<i>n</i> =0	<i>n</i> =7
(%) small	100	100	0	29
(%) paid through rev.	0	0	0	57
(%) cost exceed rev.	0	0	0	14
<b>Limitations for timber sale</b>	<i>n</i> =7	<i>n</i> =0	<i>n</i> =0	<i>n</i> =12
Too small CF area (%)	0	n/a	n/a	8
Poor plantation quality (%)	0	n/a	n/a	0
Don't know how obtain permit (%)	32	n/a	n/a	17
Lack technical skills (%)	18	n/a	n/a	25
No contact to timber market (%)	27	n/a	n/a	42
Subsistence demand too high (%)	23	n/a	n/a	8
<b>CF income help to prevent:</b>	<i>n</i> =13	<i>n</i> =5	<i>n</i> =22	<i>n</i> =13
(%) forced sale of livestock	8	20	27	23
(%) food shortage	38	20	50	15
(%) work as hired labour	0	0	9	0
(%) selling agri. Pre-mature	38	0	5	38
(%) none	15	60	9	23
<b>Plantation follow CFMP</b>	<i>n</i> =9	<i>n</i> =23	<i>n</i> =15	<i>n</i> =19
(%) yes, mostly	100	80	7	53
(%) not much	0	12	87	26
(%) totally different	0	0	7	0
(%) don't know plan	0	0	0	21
<b>MC members</b>	<i>n</i> =9	<i>n</i> =22	<i>n</i> =15	<i>n</i> =19
average	7	6	6	5
max	12	14	10	5
min	5	5	3	2
<b>Meeting schedule</b>	<i>n</i> =9	<i>n</i> =21	<i>n</i> =15	<i>n</i> =18
(%) weekly	22	0	47	11
(%) monthly	67	48	7	61
(%) once a year	0	14	0	6
(%) irregular	11	38	47	0
(%) stopped after plant.	0	0	0	22
<b>Decision-making harvest</b>	<i>n</i> =9	<i>n</i> =18	<i>n</i> =8	<i>n</i> =19
(%) MC decide	89	67	75	47

(%) poor hhs. first	0	0	0	5
(%) sell and share money	0	11	0	5
(%) each hhs. alone	11	0	0	16
(%) don't know yet	0	22	25	26
<b>Income timber sale</b>	<i>n=9</i>	<i>n=6</i>	<i>n=5</i>	<i>n=9</i>
(%) marginal	0	100	0	22
(%) < agricult.	78	0	100	44
(%) > agricult.	22	0	0	33
<b>Thinning remains pay for labour</b>	<i>n=9</i>	<i>n=4</i>	<i>n=0</i>	<i>n=8</i>
(%) yes	22	50	0	25
(%) no market value	56	50	0	38
(%) volume too small	22	0	0	38
<b>Legal permit for Teak harvest</b>	<i>n=9</i>	<i>n=11</i>	<i>n=3</i>	<i>n=11</i>
(%) yes	89	18	33	18
(%) no	11	82	67	82
(%) don't need a permit	0	0	0	0

### TOWNSHIP FOREST DEPARTMENT VIEWS

Question summary	Kachin	Magwe	Shan
<b>General Survey Data</b>	<i>n=2</i>	<i>n=13</i>	<i>n=4</i>
No. of FUG in Township	2	33	159
Ac-Reserved Forest Area	72,576	1,128,098	595,574
Ac- Area of FUG	8,477	4,543	42,168
No. Range Officer/Ranger	2	10	4
No. Deputy Ranger	13	47	21
No. Foresters	8	125	46
No. Forest Guard	-	16	3
<b>Specialize CF staff</b>	<i>n=2</i>	<i>n=13</i>	<i>n=4</i>
Yes	-	4	-
no	2	9	4
<b>FUG need permit for subsistence use</b>	<i>n=2</i>	<i>n=13</i>	<i>n=4</i>
yes	2	13	4
no	-	-	-
don't know	-	-	-
<b>FUG follow MSS</b>	<i>n=2</i>	<i>n=13</i>	<i>n=4</i>
yes	-	10	2
no	1	1	1
don't know	-	1	1
<b>Thinning require permit</b>	<i>n=2</i>	<i>n=13</i>	<i>n=4</i>
yes	1	11	3
no	1	2	-
don't know	-	-	1
<b>FUG right Timber harvest from plantation</b>	<i>n=2</i>	<i>n=13</i>	<i>n=4</i>
yes	2	10	3
no	-	3	1
<b>FUG right Timber harvest from natural forest</b>	<i>n=2</i>	<i>n=13</i>	<i>n=4</i>
yes	2	8	3
no	-	3	1
<b>Monitoring sawmills</b>	<i>n=2</i>	<i>n=13</i>	<i>n=4</i>
no	-	2	-
weekly	-	1	-

# MYANMAR CONSERVATION AND DEVELOPMENT PROGRAM (MCDP)

monthly	1	9	3
annual	-	-	-
irregular	-	-	1
<b>FUG sell timber to market</b>	<i>n=2</i>	<i>n=13</i>	<i>n=4</i>
yes	1	7	1
no	1	-	1
<b>CF targeted (5years district orientation)</b>	<i>n=2</i>	<i>n=13</i>	<i>n=4</i>
yes	2	10	3
no	-	2	1
<b>Firewood market</b>	<i>n=2</i>	<i>n=13</i>	<i>n=4</i>
yes	2	5	3
No	-	8	1
<b>Forest Protection Issues</b>	<i>n=2</i>	<i>n=13</i>	<i>n=4</i>
% conversion	50%	38%	25%
% subsistence fuelwood	-	46%	-
% fire	-	15%	75%
% illegal logging, transport & trade	50%	-	-
<b>Training course on CF</b>	<i>n=2</i>	<i>n=13</i>	<i>n=4</i>
no of yes	1	6	2
no of no	-	3	2
<b>Support timber harvest</b>	<i>n=2</i>	<i>n=13</i>	<i>n=4</i>
no of yes	1	2	-
no of no	1	11	4
<b>Legal hardwood harvest</b>	<i>n=2</i>	<i>n=13</i>	<i>n=4</i>
no of yes	1	8	2
no of no	-	2	-
only for subsistence, not commercial	-	3	2
<b>Capacity/experiences</b>	<i>n=2</i>	<i>n=13</i>	<i>n=4</i>
yes sufficient capacities	2	6	2
would require additional training	-	7	1
only for subsistence use but not for commercial sale	-	-	1
<b>FUG capacity</b>	<i>n=2</i>	<i>n=13</i>	<i>n=4</i>
Yes sufficient knowledge to conduct with support	-	5	-
No, insufficient capacities	2	8	4
<b>Removal Pass</b>	<i>n=2</i>	<i>n=13</i>	<i>n=4</i>
no of yes	2	12	4
no of no	-	1	-
<b>Annual Sawmill quota</b>	<i>n=2</i>	<i>n=13</i>	<i>n=4</i>
yes	-	-	1
no, only on sawmill demand	2	9	3
<b>Data wood supply/demand</b>	<i>n=2</i>	<i>n=13</i>	<i>n=4</i>
no of yes	1	4	-
no of no	1	7	4
<b>Contribute 10 years DFMP</b>	<i>n=2</i>	<i>n=13</i>	<i>n=4</i>
no of yes	1	11	2
no of no	1	2	2
<b>Carpenter shop-permit/register</b>	<i>n=2</i>	<i>n=13</i>	<i>n=4</i>
no of yes	1	5	1
no of no	1	5	3
<b>Information for FUG performance</b>	<i>n=2</i>	<i>n=13</i>	<i>n=4</i>
plantation	2	2	-
protection	-	9	-

harvest proposal	-	-	-
timber amount harvested	-	-	-
<b>FUG sell firewood in the market</b>	<i>n=2</i>	<i>n=13</i>	<i>n=4</i>
no of yes	2	5	1
no of no	-	7	3
<b>Cooperate with FUG</b>	<i>n=2</i>	<i>n=13</i>	<i>n=4</i>
(%) regular MC meetings	50	9	-
(%) based on demand	50	91	11
(%) joint protection patrolling	-	-	-
<b>Support FUG annual report writing</b>	<i>n=2</i>	<i>n=13</i>	<i>n=4</i>
no of yes	1	2	-
no of no	1	5	1
not yet prepared by FUGs	-	5	3
<b>Keep FUG annual report</b>	<i>n=2</i>	<i>n=13</i>	<i>n=4</i>
no of yes	1	4	1
no of no	1	2	1
not yet prepared by FUGs	-	7	2
<b>Report describe harvesting</b>	<i>n=2</i>	<i>n=13</i>	<i>n=4</i>
yes, but no quantities	-	2	-
with estimates in tons or m <sup>3</sup>	-	-	-
no information	1	10	3
<b>Hammer type</b>	<i>n=2</i>	<i>n=13</i>	<i>n=4</i>
species code	-	-	-
compt.-in-charge	1	4	-
range-in-charge personal	1	6	2
tree/log number	-	1	-
log serial number/compartment	-	2	1
FD revenue	-	-	-
FD revenue serial no.	-	-	-
<b>Responsible for tree marking</b>	<i>n=2</i>	<i>n=13</i>	<i>n=4</i>
state FD	-	-	-
district FD	1	1	-
township FD	-	9	2
only FUG	-	1	-
not clear	-	-	-
<b>Timber market in TSP</b>	<i>n=2</i>	<i>n=13</i>	<i>n=4</i>
no of yes	1	6	1
no of no	1	6	3
<b>Responsible for MTE logging sites</b>	<i>n=2</i>	<i>n=13</i>	<i>n=4</i>
no of yes	1	13	1
no of no	1	-	1
<b>CF timber sell to sawmill</b>	<i>n=2</i>	<i>n=13</i>	<i>n=4</i>
no of yes	1	6	1
no of no	-	3	1
yes, but only plantation	1	1	2
<b>Sell timber to another state</b>	<i>n=2</i>	<i>n=13</i>	<i>n=4</i>
no of yes	2	8	3
no of no	-	3	1