

Article

State's Techniques and Local Communities' Strategies in Land Contestations over Agro-Based Community Forests in Myanmar

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Abstract: Forest tenure reforms through community-based forest management programs have gained popularity in the Global South. Agricultural land use and local forest encroachment have caused the global decline of natural forests. Most community forestry (CF) studies have considered local communities as a state intervention target, underestimating their agency in local forest management. Therefore, this study aims to scrutinize land-related and counter techniques employed by the forest department and local communities in Myanmar to determine the incongruent and insufficient arrangement of *de jure* procedures in state CF programs. The findings reveal that although the CF program is deployed as a land control tool to regain the “reserved forest” status, realizing its institutional goals is difficult owing to local communities’ land utilization practices. Additionally, CF’s rigid institutional approach cannot manage changing, diverse, and minute local land control techniques. Meanwhile, local communities lack the indispensable, customary arrangements, leading to unequal land use, owing to which the state has to become a guarantor of common forest resources. Thus, this nature of contesting encroached forests reveals the need to critically reconsider land rights and invoke more profound steps beyond the framing of the contemporary “bundle of rights”.

Keywords: forest tenure; degraded forest; power relation; agroforestry; reforestation; land access



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1. Introduction

In 2012, approximately 1.6 billion people lived near forests (i.e., within 5 km) [1]. Land used for agricultural purposes is practically or culturally inseparable from forests [2]. Since the last century, the Global South has faced severe forest degradation and deforestation under state-controlled forest management regimes, leading to forest tenure reforms in which the locals play a key role in planning, decision-making, and devising livelihood strategies [3–5]. Community-based forestry is a potential win–win solution for improving forest conservation and livelihood outcomes, such as poverty alleviation, rural empowerment, and climate change mitigation [6,7]. Among its models, agroforestry (AF) has the potential to restore and increase forest cover. It is useful in forest conservation, where separating agriculture and forestry is detrimental to livelihood and conservation [8,9]. Consequently, forest governance in the Global South has shifted toward decentralization, and its dominant forms include Payment for Environmental Services (PES) schemes, such

as Reducing Emission from Deforestation and Forest Degradation Plus (REDD+), and participatory models, such as community forestry (CF).

Historically, there have been struggles over forestland occupation, use, and control (hereafter “land contestations”) between the state and local communities [10–12]. An inclusive approach that considers communities’ historical presence and relationships with their ancestral land is necessary to effectively manage state parks and forest reserves [13]. Numerous studies have claimed that despite forest governance being decentralized, forest government by the state forestry persists [14,15]. Therefore, state control may not be eliminated by forest governance. Although state forestry may be transformed, it persists in different forms [15].

In 1995, Myanmar implemented the Forest Policy, comprising the Community Forestry Instructions (CFIs) [16], which introduced CF, considering that local people participate in forest management [17]. Recent studies suggest that state-led agricultural and plantation concessions have caused large-scale deforestation [18]. Between 2010 and 2015, Myanmar lost approximately 546,397.1 ha of forest annually—the third highest rate of deforestation in the world [19]. Agricultural expansion is Myanmar’s main cause of deforestation, with 74% of the deforested areas from 1988 to 2017 becoming agricultural land [18,20]. Additionally, agricultural encroachments by local people are also increasing. In 2014, the encroachment area was estimated to be 293,075 ha, equivalent to 5% of the total state forest area [21]. The 2013 political liberalization led to 1213 villages with 50 or more households in permanent forest estates being degazetted, removing 139,976 ha from permanent forest estates [22]. Agro-based CF was one major strategy of the forest department in these areas.

Agroforestry has a long tradition in Southeast Asia, dating back centuries through practices such as “taungya” and home gardens. Swidden agriculture and taungya involve clearing patches of forest to grow staple crops and then leaving the land fallow for periods of time. “taungya” is a Burmese word, where taung means hill and ya means cultivation [23]. Taungya also played an important role in the history of modern forest management, which was introduced in Myanmar by Dr. Brandis. In fact, Dr. Brandis received the taungya plantation in Prome, Myanmar, from a Karen ethnic farmer, U Pan Hee [24]. Based on this, Dr. Brandis modified his experiment on teak plantations and named it “taungya”, spreading the practice worldwide. However, when CF was introduced in Myanmar, the initial concepts of the CFI 1995 and the Forest Policy 1995 were based on collective ideas for local forest management. For taungya farmers, such as those in our case villages, the 2011 political transition provided an opportunity for forest-encroaching communities. The issue of forest encroachment became a politically sensitive matter for the government. Resultantly, the Forestry Department revitalized agro-based CF for villages located inside reserved forests. Consequently, in upland regions, local communities practicing taungya were given the opportunity to formalize their practices through the agro-based CF program. Indeed, the term “taungya” in forest management remarried with the traditional land-use practice of “taungya” in Myanmar nearly two centuries later.

Previous studies concerning Myanmar’s CF program have focused on empowering local people and their institutions, basic needs, livelihood strategies, community participation, and CF’s performance and tangible contributions [21,25–28]. However, all these studies have considered local communities as state intervention targets, to be empowered by state or outside projects, thereby ignoring or underestimating the agency of local communities. This mainstream forest governance literature criticizes the “limited power devolution” in CF programs, calling for policy implications and emphasizing how to empower local communities [15]. Moreover, power differentials among forest actors require a better understanding of interests and power relations in the interaction between the state and traditional authorities [29]. While Maryudi [12] highlighted the manifestations

of powerful external actors, arguing for the expansion of direct users' influence in CF, Ota et al. [30] pointed out that local dependence on forestland was high, suggesting that the benefit-sharing mechanism alone cannot resolve tenuous conflicts. Therefore, research on land contestations between the state and communities can help solve tenurial land conflicts.

This study investigates the governance of encroached forests through the “governmentality theory” lens, focusing on the contested power relations between the state and locals, by assuming that local communities can reshape the state regarding local forest management [31–33]. Thus, contrary to what the mainstream governance literature suggests, “forest governmentality” can critically scrutinize the well-accepted knowledge of CF governance's participatory approach, related institutional state practices, and community land control techniques in forests [34]. In Myanmar, the governmentality theory has not been employed in forest governance literature. Therefore, the current study aims to bridge this gap by focusing on the forest department's (FD) and local communities' techniques in their struggles over land contestations by scrutinizing conduct (i.e., the state's techniques) and counter-conduct (i.e., the communities' techniques) related to forested land [33]. Consequently, it attempts to reveal (1) land control techniques employed by the state and communities by examining the relations that exist between their rationales, procedures, and practices in their land management and (2) the interplays of land use practices between the state and local communities in the emerging CF program in both discursive and material terms. This study contributes to governmentality research, adding to the scant literature on counter-conduct analysis and its application to encroached forests.

2. Methodology

2.1. Conceptual Background

Governing the people-land nexus (i.e., the evolving relationship between the people and land, including forested land) is a historically evolved governmental practice in forestry (e.g., [10–12]). Stricter regulatory control through top-down forest management can be referred to as “forest government” (or “state forestry”). Contrastingly, when forest management is decentralized and deregulated, it is termed “forest governance” [15]. The dominant forms of “forest governance” include schemes like PES, such as REDD+, and participatory models like CF. However, many studies argue that, despite the shift to decentralized “forest governance”, state forestry practices under “forest government” continue to endure. As such, processes of forest governance may not eliminate “state forestry”; rather, the latter may transform into a new form while still persisting in some capacity [15].

Such a transformation of forestry is theoretically elaborated on by the recent development of the “governmentality” concept [31,35]. This concept theorizes the shift in state power from traditional, hierarchical, and top-down forms of governance to a more modern focus on the well-being of the local population [31]. Resultantly, governing the forests by the state and local communities is intertwined and mutually dependent (e.g., [15,36]). Foucault's [31] distinction between “conducts” and “counter-conducts” helps to explain this complex, interconnected process. It also provides insight into the resistance or struggles of local communities in the forests, with Foucault noting “. . . counter-conduct in the sense of struggle against the process implemented for conducting others . . .” ([31], p. 201). This concept makes it possible to scrutinize power relations in terms of the relations between techniques and strategies between the two sides and vice versa. However, Foucault's concept of governmentality emphasizes the discourse surrounding a changing game, where actors either manipulate or are manipulated by the rules of a game [31,35].

Therefore, the struggles between the state and the community over conducts and counter-conducts were fundamentally tied to disputes over land occupation, use, and control, with each side attempting to territorialize the land within the encroached forests.

This study highlights the underlying rationales, procedures, and practices of both sides, framing them as techniques in the contest for land control in the encroached forests [31]. By applying the Foucauldian governmentality approach, this study demonstrates how people encroaching on the reserved forests can resist the state's efforts to revitalize reserved forests, even in a location just 50 km away from the headquarters of the FD. Simultaneously, it illustrates how their freedom to use the forested land is also restricted by the state's *de jure* legal regime. To explore the contesting power dynamics between the FD and local communities in land governance, we employ the genealogy approach outlined by Paing et al. [17]. This approach, drawing from both Foucauldian and Marxian traditions, serves as an analytical tool for tracing discursive practices—specifically, the production of accepted knowledge from both parties. Additionally, it allows us to examine the material outcomes of these discursive practices, such as land use size, land ratios, and CF participation ratios, among other effects.

2.2. Study Site

Our study sites are located in the Nan Cho and Zi Yaing Reserved Forests in Pynmana township, in the Naypyidaw Union Territory, the capital of Myanmar. We chose the sites based on the following criteria: (1) located in reserved forests, (2) evidence of local settlement, (3) presence of new forest governance strategies, and (4) reliance on farming. In March 2023, a pilot study conducted in four villages in the above-mentioned reserved forests helped us narrow our research sites to two villages, A and B, with the most CF areas and more CF participants, respectively (Figure 1).

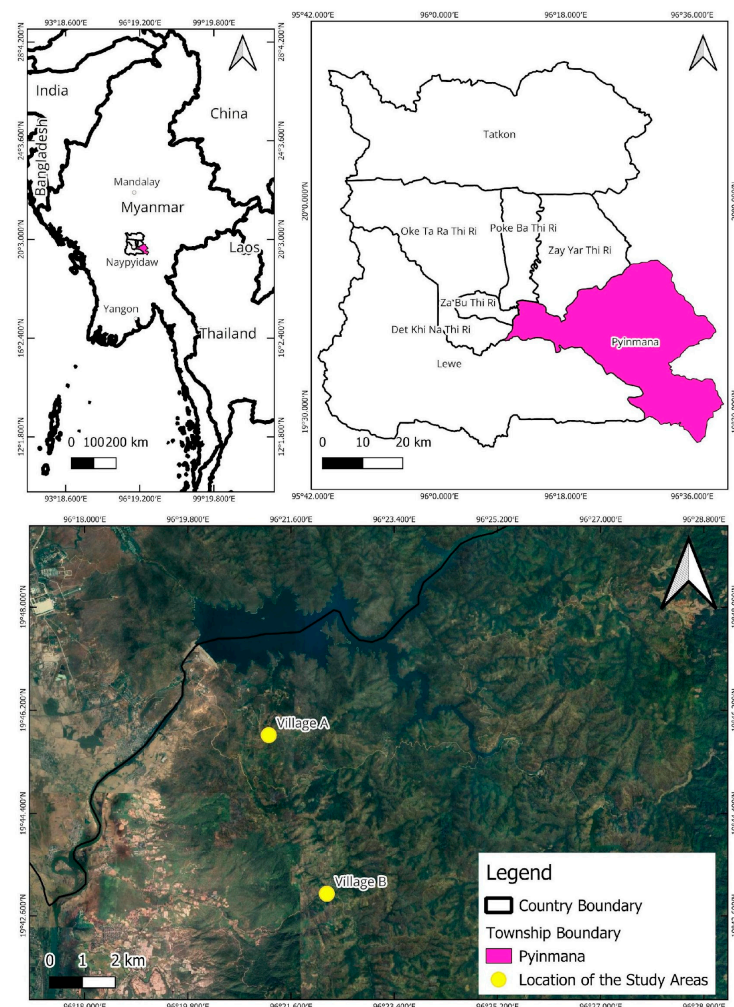


Figure 1. Location of the study site.

Research site selections were also based on Myanmar's socio-political crisis post-February 2021. Villages with potential threats of conflict between Myanmar's armed forces and the local, resistant, and ethnic armed forces were excluded. Although the selected villages are located in the capital region, they are mostly inhabited by tribal people (Table 1). Our study focused on the current implementation of CF schemes in the two villages.

Table 1. Study villages' background information and sample size.

	Village A	Village B
Established in	1978	1953
History	Mahouts from a timber extracting company stayed on, and people from other villages migrated for farming.	People from neighboring areas migrated for farming.
Location	Nan Cho Reserved Forest (1919)	Nan Cho and Zi Yaing Reserved Forest (1919)
Number of households	87	179
CF members until 2022	54 (in six CFUGs)	22 (in three CFUGs)
Total area of CF until 2022	248 acres	205 acres
Ethnic group	Kayin (formerly Karen) and Bamar	Kayin
Major livelihood	Taungya ¹ and Banana farming	Taungya and Betel farming
Sample size	30	22

¹ Taungya is a Burmese word. Taung and Ya mean hill cultivation and farming [23]; CF, community forestry; CFUG, Community Forest Users' Group.

2.3. Data Collection and Analysis

We evaluated the practices, standards, and norms in the state's CF program, outlining the rationale and techniques of state forestry in governing encroached forests. Additionally, we tracked the locals' perceptions, traditional practices in forested land, struggles over land control, and conditions of landholding to reveal the traditional rationality of forest dwellers and their interests, knowledge, practices, and reasons for accessing, occupying, and operationalizing forested land (Figure 2). Using the genealogical analytical method of scientifically examining the production of knowledge [17], we examined the practices and knowledge of both the state and local communities, highlighting local narratives alongside the resulting quantitative data.

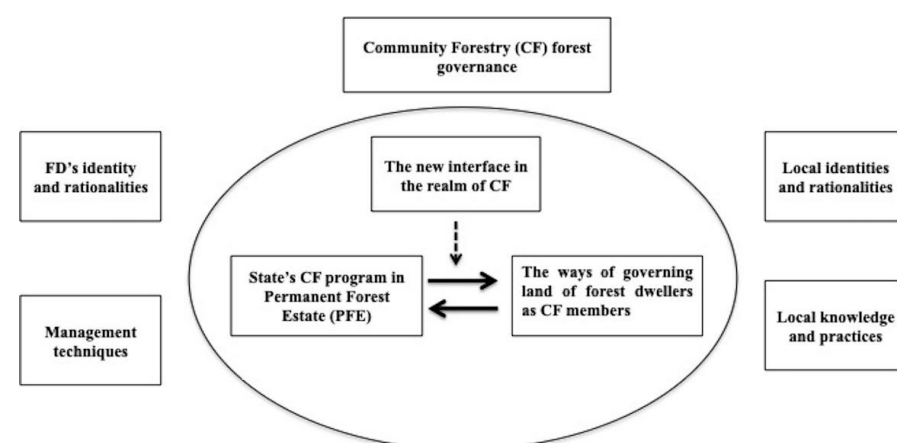


Figure 2. The framework of the study.

In addition to conducting key informant interviews, focus group discussions (FGDs), and observational studies, we referred to the state's standard operating procedures and working and management plans. Moreover, we conducted a survey using a semi-structured open-ended questionnaire in Burmese.

First, a pilot interview was conducted with village heads and elders to obtain information on the history and background of the villages included in the research. Alongside having the research purpose explained to them, participants were informed of their rights and assured of the confidentiality of their information. In line with our theoretical framework, we specifically selected CFUG members for the interviews to gain insights into traditional land techniques, local CF knowledge, and land contestations between the FD and the communities. To ensure a well-rounded understanding, we applied three criteria when choosing the respondents for key informant interviews: CFUG leaders (chairpersons and secretaries), older members of CFUG, and those with long-term experience in CF and FD's agroforestry techniques.

Building on recent discussions regarding effective sample sizes for qualitative research [37,38], we set a higher baseline of 24 interviewees for key informant interviews, despite studies suggesting that a figure of 12 to 14 respondents is sufficient for case analysis [37,38]. This larger sample was chosen to ensure a representative examination of the general pattern of the material dimension outlined by our genealogical approach across both villages. However, in the case of Village B, the entire target population (i.e., local farmers participating in the CF program) comprised only 22 individuals, meaning that we interviewed the entire population (22/22). In Village A, due to active participation during the survey, we interviewed 30 individuals out of 54 CF members (30/54) (Table 2). We selected participants for the FGDs from the respondents of the key informant interviews in each village. We established a baseline of 8–10 respondents for FGDs.

Table 2. Characteristics of respondents.

Villages	No. of Respondents	Average Household Size	Average Farm Size (ha) *	Average CF Land Size (ha)	Major Income Source
A	30	4.83	3.83	2.37	Banana farming
B	22	5.68	4.95	2.12	Betel orchard

* Currently, all respondents hold Ya (dry farm) land, but none possess land certificates from the government, except for CF certificates issued to those farmers who participated in the CF program.

Participants' consent was obtained verbally before and during the survey and during follow-up interviews conducted in April and June 2023, respectively. All key informant interviews and FGDs were audio-recorded and noted along with the interviewers' questions for data verification. The interview responses were transcribed and organized using Microsoft Excel 2016 to develop data nodes and themes, as well as to categorize textual data and local narrative stories. We used R (version 4.3.3) solely for generating the relevant graphs of the numerical data obtained from key informant interviews to reveal the outcomes of local discursive effects. For data visualization in R, we used specific packages from the R library: "ggplot2", "reshape2", and "scales".

2.4. Survey

Our survey included two divisions—Key Informant Interviews and FGDs. The survey for Key Informant Interviews included the following seven sections:

- (1) Background information of the village (interview with the village head)
- (2) General characteristics of each household
- (3) Current land use activities
- (4) Villagers' traditional land use activities on forested land (traditional strategies on people–land nexus)
- (5) Reason for joining CF
- (6) Changes in local practices after joining CF program, and

- (7) Difficult parts of the CF program for following the state's land technique.

With regard to FGDs, the said discussions center on the following four major themes:

- (1) The traditional norms and standards in the utilization of the forested land
- (2) Rights, institutions, and perceptions of use and access to forested land under the CF program
- (3) Participation in the FD's CF management program, and
- (4) Opinions and views on the challenges when it comes to the existing CF program becoming successful.

To reconstruct the local discursive strategies regarding forested land, we consulted FGDs alongside individual arguments from Key Informant Interviews and data obtained from observational studies during the survey visits. We conducted observational studies with well-known respondents who have lived in the village for many years and are currently practicing CF. This included recording CF certificates, community forest user group management plans, FD instructions, local land use and management practices, and agroforestry CF implementation plots. Additionally, we took photos and made notes on tree species, crop farming designs, tree species choices, and the conditions of agro-based CF in order to gain a deeper understanding of the actual practices (see Appendix A). Drawing from these arguments and discussions, we reconstructed the rationales, local knowledge, and practices related to traditional land management and CF. To capture the effects of local discursive strategies, we analyzed the numerical data in relation to land use, exploring the conditions of these local practices in the material realm. Thus, the aspects of the survey aim to reveal the realities of local life in forested land from both discursive and material perspectives.

3. Results

3.1. Key Components of Community Forestry in Myanmar

Myanmar's efforts to expand its national CF program have long been a central goal of the forestry sector. The 1995 Myanmar Forest Policy stipulated the potential for local participation in forest management, which led to the development of the CFI in the same year. The latter program sought to grant local communities the rights to access, use, manage, and exclude others from forest resources, as well as alienation rights, within a 30-year period under the CF certificate. Initially, the program targeted non-timber forest products and small-scale commercial activities for local communities until 2016. Between 1995 and 2019, the program underwent a revision, especially in 2016, to facilitate a gradual shift toward economic benefits. A major revision in 2019 provided legal allowances for the commercialization of CF, including timber harvesting and marketing. With the promotion of CF, the FD also adopted different community-based forest management regimes, each with its own forest management model. One such model was agroforestry-based CF, which allowed for the integration of individually owned land-use conditions in CF implementation, following the 2013 degazetting records. In this model, privately held Yar Land (dry farmland) within reserved forests can apply for legal registration as CF. The procedures of application process follow the usual CF procedures, and involves the formation of a user group, comprising households that have lived continuously for five years in or within five miles of the forest's periphery. These households must be interested in forestry operations and genuinely dependent on the forest for their livelihoods. The group must submit a management plan detailing forestry activities, rules and regulations, and fund management, along with an agreement to keep the designated area under CF management.

3.2. FD's Management Techniques in Forested Land Control

In the study villages (A and B), AF-based CF programs began in 2014 (Figure 3). The main visions of the FD in using the CF program in these encroached villages were twofold: (1) to retrieve control of already demarcated and reserved forests and (2) to revitalize the reserved status of forests under state forestry [39]. The primary institutional vision of the FD was to restore encroached forests to the original status of “reserved forests” [40]. To execute its vision, the FD applied three distinct techniques in forest management: (1) monitoring, (2) incentives (material and financial), and (3) penalties.

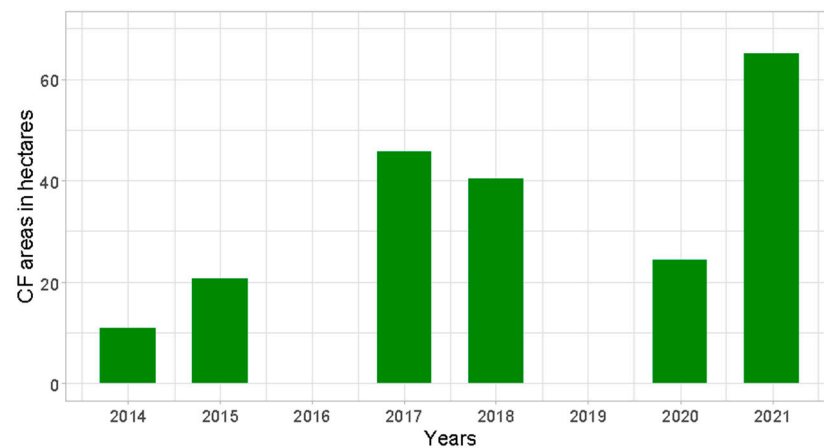


Figure 3. CF areas between 2014 and 2021 in the study sites. Source: CF establishment areas, Forest Department, Pyinmana Township, Naypyidaw Union Territory.

Our findings revealed that the FD's CF management plan emphasized the duties of its participants to ensure the planting and nurturing of the designated number of trees. For this, two strategies were used: (1) counterchecking by its staff and (2) endorsing shared responsibilities through the CFUG. Field notes and FGDs conducted in Villages A and B, hereafter referred to as FGDs (1) and (2), respectively, revealed that the FD's utilization of collective arrangements was solely intended for monitoring and evaluation, not for benefit-sharing in agro- or individual-based CF. Monitoring was carried out mainly to ensure the survival of at least 150 trees per acre of forest, with a minimum survival rate of 70% in the first 3 years. This standard was also a major criterion to subsequently verify the granting of CF plots to local people. Additionally, the FD outlined 16 criteria for each CF plot's ground evaluation that required the local staff to monitor the activities conducted outside of the permitted CF practices (CF unit evaluation guidelines, Extension Division, Forest Department, 28 November 2022) (Table 3). Thus, the main goal of monitoring and evaluation was to ensure the status quo of reserved forests and forbid other land-use activities.

The FD also arranged various incentive programs to achieve its target goals. The two categories of incentive structures were legal (*de jure*) and supportive. The FD presumed that “giving the formal land title to the forest encroachers was good enough to resolve forest encroachment issues”. This incentive resulted in a 30-year land title with the rights of extension and inheritance. Interviews with local FD staff, as well as notes from both the FGDs, revealed that the FD and the CFUG argued that the 30-year land rights title granted the CFUG protection against future evictions from private plantations and other forest dwellers, as well as from internal migrations. Three types of supportive incentives were used: (1) material, (2) technical, and (3) financial. The FD provided material support by giving forest tree seedlings to the locals. Hardwood species were specifically supplied to maintain the status quo of forestlands. Currently, most locals prefer planting teak (*Tectona grandis*), pyinkado (*Xylia xylocarpa*), mangium-sha (*Acacia mangium*), and padauk

(*Pterocarpus macrocarpus*) for future economic benefit. Additionally, and as revealed in the FGDs, the local FD staff provided CFUG members with financial assistance for the agro-based CF program.

Table 3. Items for evaluating and monitoring the CFUG.

CF Checklist Items	Remarks
CFUG members' stability (members leaving and joining)	To report to the district forest officer in case of change in members
Each CFUG's management plan	
Each CFUG's efforts in planting nurseries and natural and assisted regeneration	
The exercising of unauthorized activities	To withdraw the CF certificate
Activities pertaining to land mortgages, sales, or transfers (instead of formal inheritance)	To withdraw the CF certificate
Excavation of natural resources (e.g., sand, gold, stones for construction)	
The construction of permanent buildings	To ensure reserved forest status
Farming with forbidden crops and tree species	
Illegal settlements	
Target area implementation conditions	To modify CF target or set filing fees
Local CF committee rules and regulations	To develop institutional rules and regulations
Condition of timber extraction	To check subsistence or economic use and maintain records
Extraction status of non-timber forest products	To maintain records
Minutes of the committee meeting	To prepare an annual report
Annual progress report	
Local and foreign aid assistance	If yes, report to the FD and ask for permission

The FGDs and key informant interviews highlighted that the FD arranged for numerous technical assistants to help with management plan development and provided training in basic silvicultural practices, developing business opportunities, and other extensive programs. However, the equal and effective dissemination of technical CF information among the participants and villagers was a challenge, as many CF participants were unaware of the aforementioned fundamental information. Moreover, even with extensive training programs, the locals found it difficult to develop CF management plans as they had little formal education and limited knowledge of forest management standards. Our findings revealed that participants in both villages were unfamiliar with management plans. These plans were mainly developed by the local FD staff in Village A and project support in Village B.

As with normal government strategies, after outlining the CFUG's major responsibilities, the FD imposed penalties for violating its management standards, with the major legal penalty being the termination of the designated land title. Rather than sharing responsibilities and counterchecking, this penalty system solely relied on the FD's authority and responsibility for evaluation and verification (Table 3).

3.3. Characteristics and Land-Use Practices of the Locals

During the FGDs, the locals emphasized their generational presence in the locality, with many claiming that their families had roamed the forest since their forefathers. The quantitative data from the participants' responses revealed that approximately half of their land had been inherited (Figure 4). Moreover, it was observed that only a small portion of their landholdings came from internal purchases. Much of their land had been self-claimed through the traditional practice of Da Ma U Gya, meaning “first cut, first own”.

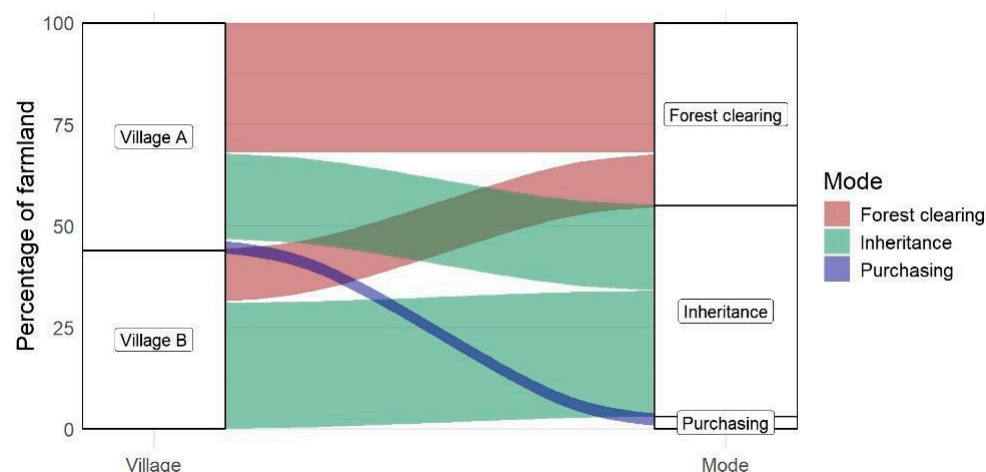


Figure 4. The respondents' mode of land holding (n = 52). Source: Key Informant Interviews conducted in 2023.

Although the two villages were nearby (within 15 km), different vegetation and topographic conditions led to different farming practices in the villages. Compared with Village B, Village A was closer to the urban area. Moreover, the land was mostly covered with thin vegetation, and severe deforestation had occurred in some areas, leading to bare mountains. Thus, low vegetation and a hot climate compelled the villagers to practice banana farming for their livelihood. Village B was located much deeper into the mountain ranges and had a better vegetative cover, leading to the locals choosing betel farming. Thus, the two farming patterns, owing to different soil positions and vegetative conditions, led to heterogeneity in the techniques used in the struggle over forestlands (Table 4).

Table 4. Land-use techniques by locals in the study area (Source: Survey conducted in 2023).

Categories	Village A	Village B
Land occupation techniques	Searching unoccupied lands for quality soil Voluntary efforts Mutual agreement within communities	Searching unoccupied lands for quality soil Voluntary efforts Mutual agreement within communities
Customary institutions and procedures	No institutions or collective rules Voluntary and mutual understanding	No institutions or collective rules Voluntary and mutual understanding
Land-use techniques	Da Ma U Gya, fallowing exhausted plots, the natural boundary with trees and landmarks	Da Ma U Gya, fallowing exhausted plots, the natural boundary with trees and landmarks
Type of farms	Banana orchard	Betel orchard
Land-use intensity	Intensive banana farming (pure banana farm plots) without using chemicals	Farming with forest trees without using chemicals

The locals stated that they had previously practiced shifting cultivation in forests. In fact, shifting taungya, which involves cultivating crops by slashing and burning, shifting, and rotating the land from time to time, was a major land-use technique adopted by their forefathers. In the past, through mutual agreement, both villages practiced shifting taungya as a voluntary occupation. However, during the FGDs, it was revealed that the establishment of Naypyidaw in 2005 and the surrounding military units in the nearby mountains made this technique difficult and unfeasible. Additionally, the FD's designation of locals as illegal forest encroachers worsened the situation, leading to the local strategy of "distancing from the state". Therefore, in the contemporary era, the two villages followed the neoliberal voluntary resistance of "distancing from the state" in the forests. At the time of the survey, both villages practiced permanent agriculture. However, there were no customary institutions or instructional arrangements to guide the use and control of unoccupied forested land located in the vicinity.

3.4. Changing Political Context and Contours of the Relationship Between the FD and Local Communities

The forest dwellers inevitably joined the FD-endorsed CF program in 2015 to prevent the state from evicting them from their land. Before this program, tensions prevailed between the FD and communities, especially in Village A. In 2002, the FD labeled these people illegal forest encroachers and inter-migrants and planted trees inside locally occupied farm plots under the "AF program" to revive the "reserved forests" status by hiring laborers without prior negotiations with the villagers. The local CFUG leaders stipulated that this non-negotiated AF strategy was the FD's technique of evicting the villagers from their land. FGD (1) revealed that the villagers rejected this forced AF program, physically deterring the hired laborers from transplanting the seedlings.

However, in 2015, a mutual CF program was implemented owing to the FD's strategic and creative CF approach and a certain degree of prior negotiations. The FD allowed local leaders to join relevant seminars and workshops in Naypyidaw, training them at its training schools. Additionally, the locals realized that their position was that of illegal occupants in the reserved forest. Therefore, they grasped the opportunity to hold formal land titles to dissolve their illegal occupancy status. Gradually, many villagers from both villages converted their farmland to CF land (Figure 5). During FGD (2), the rationale for local people adopting CF and their opinion on the challenges while participating the program were revealed as follows:

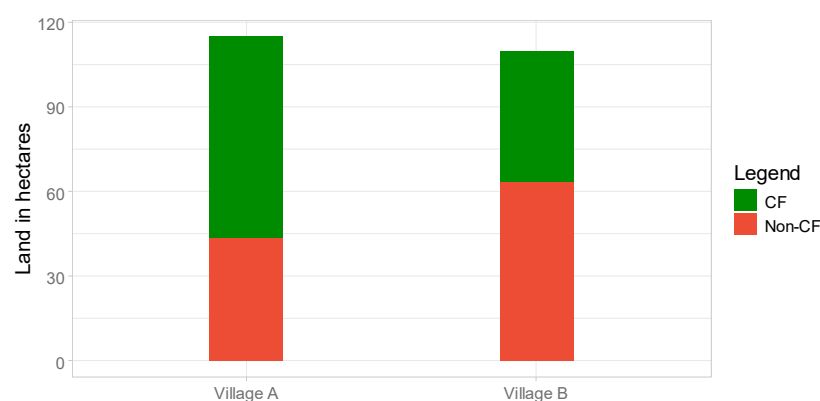


Figure 5. CF participants' CF and Non-CF land holding status (n = 30 in Village A) (n = 22 in Village B). Source: Key Informant Interviews conducted in 2023.

"Before CF, our land was like a black motorcycle (i.e., illegal or a non-registered motorcycle), but with CF, my land became like a legally owned motorbike. It is like a licensed cycle with licensed limitations (During FGD 2)".

3.5. Local Land Techniques and Struggles in Adapting to the CF Program

Planting the number of CF trees outlined in the program was the main goal in both villages. Communities in Village A adopted two distinct planting methods: plot-by-plot (i.e., planting a group of CF and banana trees plot by plot) and boundary planting (i.e., planting CF trees mostly at the farm's boundary, encircling the banana trees). Additionally, a handful of villagers adopted the gap planting method (i.e., planting CF trees in an available space between the banana trees). Village B had no issues when planting CF trees, and well-growth forest conditions beyond the FD's expectations were observed in its betel orchards (Figure 6). During FGD (2), it was revealed that the villagers refer to their farms as "betel forests". After clearing and burning the plot (In Burmese, "တောင်ယာခုတ်" is the clearing and felling of existing vegetations and "ဖျန်းခွေ," the burring of residuals. These land preparation standards are at the core of the land preparation for FD-established plantations), the betel vine growing process involves the villagers' nurturing and growing kathit trees (*Erythrina fusca*) as hosts for betel vines. After two years, the villagers plant betel vines so that those vines can securely attach themselves to the host trees.

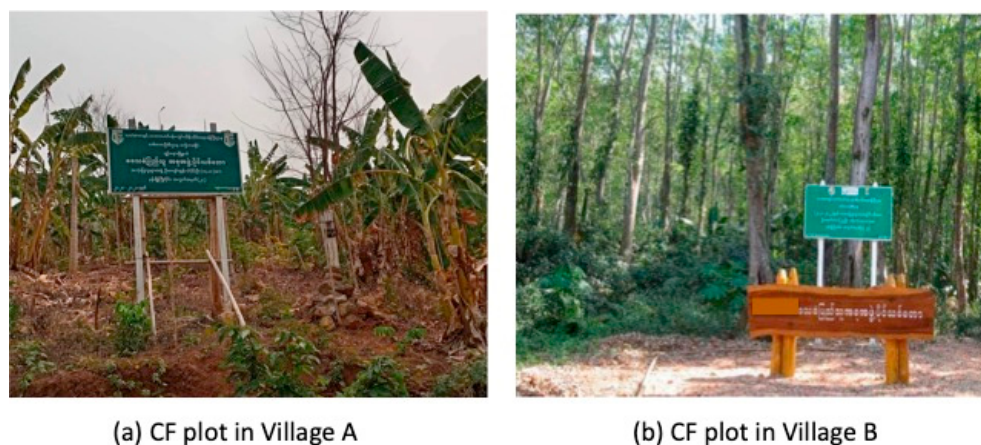


Figure 6. Agroforestry in CF areas: (a) Village A: Banana + CF trees and (b) Village B: Betel + CF trees. Source: Survey conducted in 2023.

Village A faced more difficulties adapting to CF as banana trees are susceptible to shade from forest trees (Figure 6). The villagers claimed that the existing CF trees had already affected their banana trees' growth and yield. The respondents revealed that the reason behind this problem was that, unlike the betel vines in Village B, their banana trees were sensitive to the shade from tree canopies. This issue occurred with farmers who joined CF early and planted CF trees stripe by stripe (interview survey). Resultantly, most farmers who joined later primarily planted CF trees using boundary planting or plot-by-plot (interviews, see Appendix A). Meanwhile, the villagers struggled to meet the forest management guidelines' standard of planting 150 forest trees per acre. Their forest-tree planting design (i.e., stripe-by-stripe, plot-by-plot, and boundary) based on CF management guidelines was determined by the site conditions and each household's decision. During the FGDs, it was revealed that except for the mandate to plant 150 forest trees per acre of land, there were no guidelines for developing a plantation design in this locality and that the seedling survival rates were low.

3.6. Unequal Land Distribution and CF Participation

Both villages suffered from unequal farm size distribution. Our data revealed the different interquartile ranges of CF and non-CF land size distribution between the two villages (Figure 7). The possible reasons for this, observed during the survey through key

informant interviews and FGDs, were threefold. First, neither local institutions nor local rules governed land occupation in this area. Second, household size determined the area of land occupied, as some interviews indicated that respondents did not want to occupy more land than they could manage due to family labor limitations. Another indirect indication of the second reason was that some villagers occupied more land than their family labor could manage, thus meaning they faced difficulties in adhering to the FD's guidelines, as indicated by the discussions in the FGDs. Moreover, there was a significant inequality in the share of CF landholdings among the participants between and within the villages (Figure 8). Our survey data confirmed this unequal distribution. While some households in Village B hold 30 acres (12 ha) each, others hold a total of less than 10 acres (4 ha) (Figure 7).

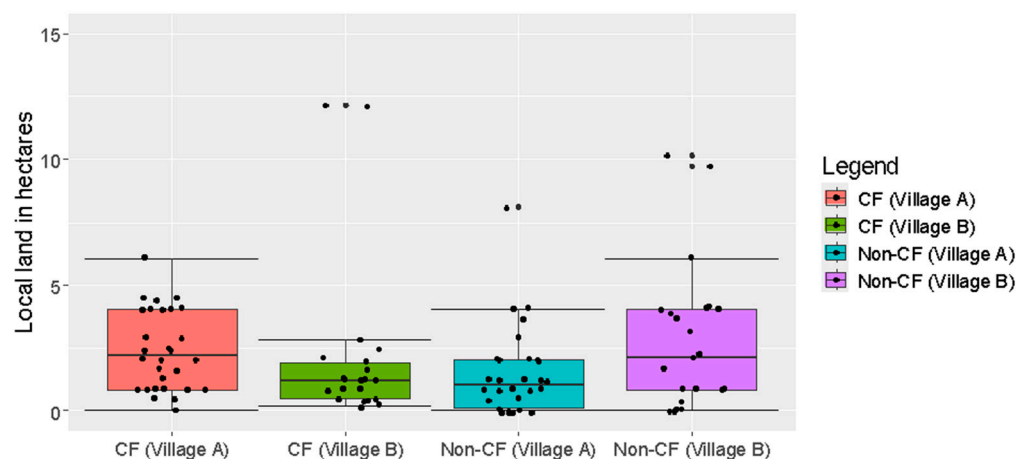


Figure 7. Box plot for distribution of CF and non-CF land size between the two villages (n = 52). Source: Key Informant Interviews conducted in 2023.

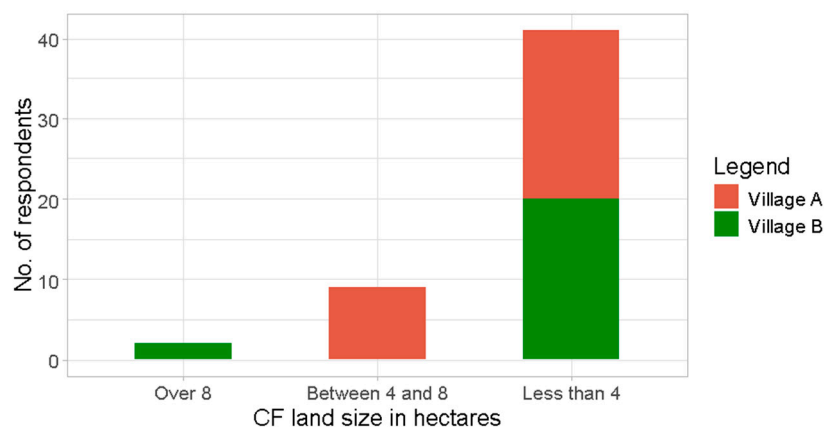


Figure 8. Unequal CF land area distribution among the study's respondents (n = 52). Source: Key Informant Interviews conducted in 2023.

Additionally, the ratio of CF land to total farmland holding was unequal, suggesting that the CF participation level in this locality was somewhat inequitable. The data also revealed that compared with the total landholdings of individual households, the percentage of land engaged in the CF program was unfairly distributed. While 10 and 4 households from Villages A and B, respectively, had registered over 75% of their land under the CF program, 2 and 9 households from Villages A and B, respectively, had registered less than 25% of their land as CF farm plots (Figure 9).

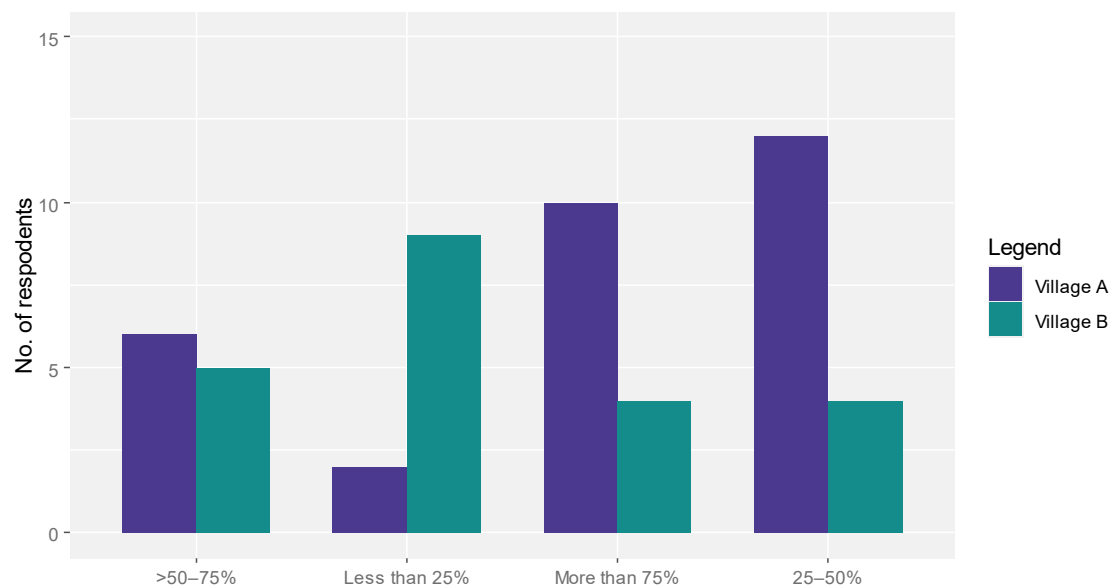


Figure 9. Share of the percentage of CF land to total farmland ($n = 30$ in Village A) ($n = 22$ in Village B). Source: Key Informant Interviews conducted in 2023.

The reasons observed and revealed during the FGD were as follows: First, owing to the FD's limited capacity, it could not approve all the requested land for CF titles because of various technical requirements, such as land measurement and verification. Second, most CFUG leaders held larger CF areas than others because they could acquire firsthand information and thus know the annual plan. Third, scattered land, resulting from a lack of customary local institutions and practices, was a major challenge faced by the FD and local communities. More importantly, households might have occupied more land than could be effectively managed by seeking more CF land titles. During FGD (1), the respondents openly and honestly discussed the situation by stating the following:

"Some people cleared more forest land than they could farm to qualify for the CF program. Thus, following the rules of FD, especially the duty of planting and nurturing forest trees, became difficult for them (During FGD 1)".

4. Discussion

By focusing on the contours of power among actors and institutions [29], we found that the FD's forest management capacity was insufficient to address the minute local land control techniques and mobilization of local forest dwellers. Our results indicated that the FD's vision of restoring encroached forests to the original status of "reserved forests" did not adequately cover the mobilizing and ever-changing livelihoods of the people. The existing supportive regulations, including the CFIs, also remained inadequate and demonstrated significant shortcomings [41]. Additionally, it was difficult for the FD to survey the exact degree of local landholdings across spatial–temporal scales. Moreover, the forest dwellers' diversified struggles and techniques made it difficult for the FD to control local land use [42]. The FD's rigid forest management techniques undermined the mobility of local land practices critical for the locals' livelihoods in a changing climate [41,43]. Owing to their proximity, the FD rationalized applying one framework in Villages A and B. However, adopting a single management plan for variegated communities with different farming styles, farms, and orchards was subject to policy and management guideline revisions. Meanwhile, proactive negotiations that emerged during political transitions were useful for both sides. The state's involvement in the CF program should be directed toward a supportive mechanism to address the issues that surfaced—namely difficulty in CF because of scattered local land occupation, unequal landholding, and passive local

participation. Furthermore, our findings revealed the emergence of elite people from the local community in CF participation, especially CFUG leaders. This is in line with the findings of Ota et al. [30]. However, our findings did not reveal the manifestations of powerful external actors, as highlighted by Maryudi [12].

Additionally, our results indicated that communities subverted and contested the structure of the state's reforestation program through locally produced knowledge [44], and that locals utilized their claim of "generational presence" to legitimize their inherited right on land and reject the FD's claim of them being "illegal forest occupants". Our findings also revealed no local customary institutions or rules to manage the surrounding unoccupied lands. Therefore, the state's leadership role as a guarantor of common forest resources is inevitable [29,45]. Without strong local institutions, this role is necessary as it reconciles bottom-up and top-down initiatives [46]. Moreover, communities depended highly on the FD to resolve issues arising from the CFUG structure [47]. Thus, rather than seeking convincing governance ideas, such as a weak state and strong communities, the preference is for local condition-based collaborative forest management strategies, as these will produce positive social and environmental outcomes [44,48,49]. The new CF governance for local communities revealed a movement from autonomous to hierarchical. However, despite originating from colonial state forestry, this movement was a radical shift from a hierarchical to a more liberal form of the FD [45].

The findings from the two villages in this study unveiled how land was used in the times of their forefathers. This land claimed through their efforts became operational, controllable, accessible, inheritable, tradable, and cultivable. Thus, the optimal solution for the state and forest dwellers is to select a secured property rights type of land ownership category to escape state and private ownership dilemmas [50]. One possible scenario is the forest dwellers' anticipated future of the forestry business (this is also the FD's recent anticipation). Their perceived future scenario with CF plantation industries coincides with what the literature has already stated—environmentality entrepreneurs in a neoliberal way [51]. Thus, the situation consists of the villagers and FD applying the neoliberal strategies of the market as guarantors of CF. This is possible because the management regime of the said locality is individually managed taungya AF plots [21,52]. However, we recommend that this upscaling be put under the prescription of AF under the supervision of FD to prevent permanent land use changes. Our findings imply that conventional state-led decentralization is insufficient for sustainable forest landscape management, especially in encroached forests.

5. Conclusions

Our study contributes to the forest governmentality literature by assessing the state's and local communities' strategies, techniques, procedures, and rationales [33,34], revealing their power relations by reconstructing their land-use rationale in forests. Our study avoided taking sides or searching for significant effects. Instead, we reported on the background conditions of land techniques and the emergent effects, both qualitatively and quantitatively. Additionally, our analysis contributes to the literature on forest and environmental policy by revealing both the discursive effects (i.e., the emergent production of local and state knowledge deployed in land control over the encroached forests) and the non-discursive effects (i.e., the material conditions produced, such as land size and CF participation ratios, which result from these discursive struggles) [53,54]. By incorporating non-discursive effects and material dimensions, this study also enriches qualitative analysis literature, broadening the scope for interpreting numerical data—albeit not in an inferential way. The biggest challenge regarding landholding and land rights is property rights pertaining to local CF land. Under the "state land notion," it is difficult and risky for the

FD to give full private property rights for locally occupied land. Therefore, it is necessary to seek a new terminology to avoid this trap. However, contemporary CF strategies cannot accomplish this task on both sides. Nonetheless, the upcoming shift from conservationist CF plots to enterprise-based ones indicates the role of markets in future CF programs.

Our findings provide four concrete policy recommendations: (1) FDs should give secured property rights to forest dwellers in the neoliberal market economy age (advantageous for the locals); (2) the plots should be permanent forest business plots and regulated by the state as a guarantor of common resources (either with cash crops or forest trees) to prevent permanent land use change (advantageous for the state); (3) FDs' governing techniques (i.e., management plan and standards) should be regional rather than national (advantageous to both); and (4) FDs should develop land area baselines for each household in encroached forests based on local history (advantageous for FDs).

This study was conducted amid political crises and wary states, making long-term meticulous analysis unfeasible. Although a quantitative assessment was employed, a more profound inferential quantitative analysis of socioeconomic aspects was not included. Thus, future studies should analyze forest governance by including quantitative economic and social indicators that might affect local contestation in political ecology.

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Informed Consent Statement: Informed consent was obtained verbally from all participants involved in the study prior to and during the interview survey.

Data Availability Statement: The data used to support the findings of this study are included in the article.

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Abbreviations

The following abbreviations are used in this manuscript:

FD	Forest Department
CF	Community Forestry
CFI	Community Forestry Instructions
CFUG	Community Forest Users' Group
FGD	Focused Group Discussion
AF	Agroforestry

Appendix A

Sample local documents and plantation records.

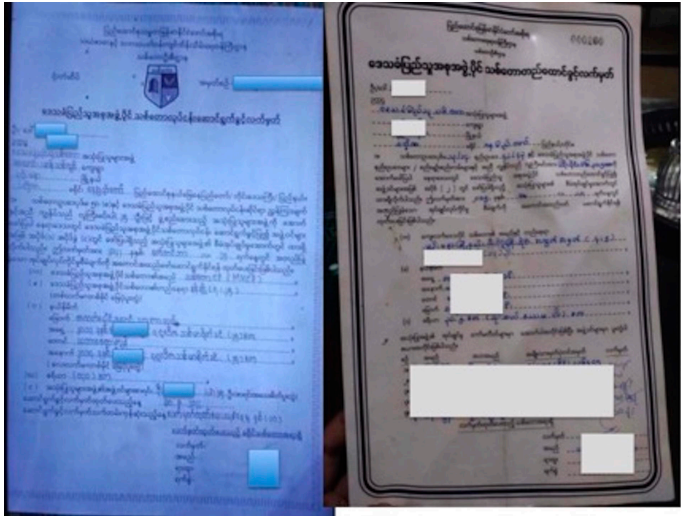


Figure A1. CF certificates.



Figure A2. Banana Farm and boundary tree planting (Village A).

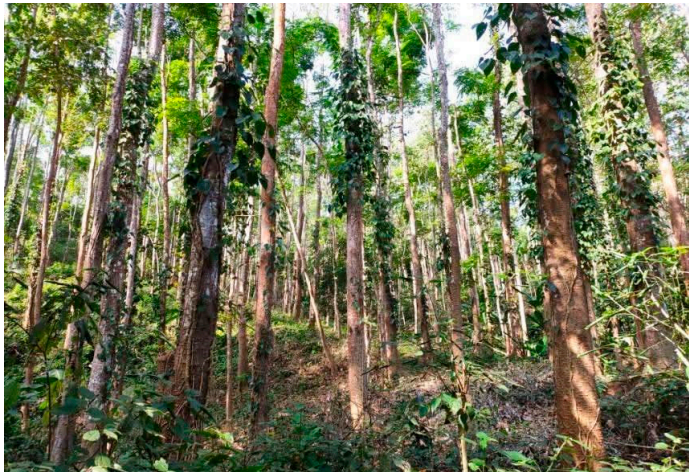


Figure A3. Betel orchard (Village B).



Figure A4. Plot-by-plot planting (Village A).

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