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Impacts of Land Abrogation on Socioeconomic Conditions of Local Communities

(A Case study in Saing-Ya Reserved Forest, Yedashe Township, Myanmar)

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သစ်တောမြေအဖြစ်မှ ပယ်ဖျက်ပေးခြင်းကြောင့် ဒေသခံပြည်သူများအပေါ် လူမှုစီးပွားဝိုင်းဆိုင်ရာ သက်ရောက်မှုများ (ရေတာရှည်မြို့နယ်၊ စိုင်းရက်ဦးဝိုင်းအတွင်းတွင် လေ့လာစစ်တမ်းကောက်ယူခြင်း)

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သစ်တောနှင့်ပတ်ဝန်းကျင်ဆိုင်ရာတက္ကသိုလ်

စာတမ်းအကျဉ်း

မြန်မာနိုင်ငံတွင် သစ်တောမြေအဖြစ် သတ်မှတ်ထားသော မြေများပေါ်တွင် စိုက်ပျိုးရေးလုပ်ငန်းများအတွက် အသုံးပြုမှုများရှိလာခဲ့သည်မှာ ဆယ်စုနှစ်များစွာ ကြာမြင့်ခဲ့ပြီ ဖြစ်သည်။ သက္ကရာဇ်၂၀၁၃ခုနှစ်တွင် သစ်တောမြေအတွင်း ကျရောက်လျှက်ရှိပြီး အချိန်ကြာရှည်စွာ အသုံးပြုလာခဲ့သော အမြဲတမ်းစိုက်ပျိုးမြေ(လယ်မြေ)အချို့ကို သစ်တောဦးစီး ဌာနက သစ်တောမြေ အဖြစ်မှ ပယ်ဖျက်ပေးခဲ့သည်။ ထို့အပြင် ဒေသခံများ အခြေချနေထိုင် လျှက်ရှိသော မြေအချို့(ရွာမြေ၊ သာသနာမြေနှင့် အများပိုင်မြေ) များကိုလည်း သစ်တောမြေ အဖြစ်မှ ပယ်ဖျက်ပေးခဲ့သည်။ ဤသုတေသနစာတမ်း၏ အဓိကရည်ရွယ်ချက်မှာ သစ်တော မြေအဖြစ်မှ ပယ်ဖျက်ပေးပြီးနောက်ပိုင်း ဖြစ်ပေါ်လာသော လူမှုစီးပွားအကျိုး သက်ရောက် မှုများကို မပယ်ဖျက်ပေးမီ အခြေအနေများနှင့် နှိုင်းယှဉ် လေ့လာရန်ဖြစ်ပါသည်။ အထူးသဖြင့် မြေနှင့်သက်ဆိုင်သော လူမှုစီးပွား အကျိုး ဆက်များကို လေ့လာထားပါသည်။ ထိုသို့ လေ့လာရာတွင် အိမ်ထောင်စုပေါင်း ၁၂၀ ကို အခြေခံကာ Purposive Sampling Method ကို အသုံးပြု၍ ရွေးချယ်ခဲ့ပါသည်။ လူမှုစီးပွား အကျိုး သက်ရောက်မှုများကို အကဲဖြတ် သုံး သပ်နိုင်ရန် အတွက် Descriptive Statistics,Wilcoxon Signed-ranked test များကို အသုံးပြုထားပါသည်။ သုတေသန၏ ရလဒ်များတွင် ဒေသခံများ၏ မြေပိုင်ဆိုင်မှု ရာခိုင် နှုန်းနှင့် ပျမ်းမျှပိုင်ဆိုင်သောမြေပမာဏများသည် သစ်တောမြေအဖြစ်မှ ပယ်ဖျက်ပေးပြီး နောက်ပိုင်းတွင် တိုးတက်လာခဲ့သည်။ ပျမ်းမျှမြေပိုင်ဆိုင်မှုသည် အိမ်ခြံမြေတွင် မူလပိုင်ဆိုင် မှု၏၂၉ရာခိုင်နှုန်း၊ လယ်မြေတွင် ၃၁ ရာခိုင်နှုန်း၊ ယာမြေတွင် ၄၉ ရာခိုင်နှုန်း အသီးသီး တိုးတက်လာကြောင်း တွေ့ရသည်။ အဘယ်ကြောင့်ဆိုသော် ဒေသခံများသည် သစ်တော မြေအဖြစ်မှပယ်ဖျက်ပေးသော လုပ်ငန်းစဉ်ပေါ်တွင် လွဲမှားသော နားလည်သိမြင်မှု များရှိ နေပြီး ပယ်ဖျက်ပေးမထားသော သစ်တောမြေများပေါ်တွင်လည်း မြေယာချဲ့ထွင် အသုံးချမှု များ ဆက်လက်ရှိနေခြင်းကြောင့်ဖြစ်သည်။ အထူးသဖြင့် ယာမြေပိုင်ဆိုင်မှုနှုန်းသည် ပြောင်း လဲမှု အများဆုံးဖြစ်ကြောင်း တွေ့ရှိရသည်။ လမ်းပန်းဆက်သွယ်ရေး ပိုမိုကောင်းမွန်သည့် ပယ်ဖျက် ပေးထားသော ကျေးရွာများအတွင်းသို့ အခြားဒေသမှ လာရောက် အခြေချ နေထိုင်မှုများနှင့်အတူ မြေစျေးမြင့်တက်လာမှုများကို တွေ့ရှိလာရသည်။ ဒေသခံ များ၏ ၁၂.၅ ရာခိုင်နှုန်းသည် မိမိတို့ လယ်မြေများအတွက် မြေအသုံးပြုခွင့် လက်မှတ် (ပုံစံ၇)များ ရထားကြောင်းတွေ့ရှိရသည်။ ပယ်ဖျက် ပေးပြီးနောက်ပိုင်းတွင် မြေအငြင်းပွားမှု ပြဿနာ များလည်း လျော့နည်းလာကြောင်း တွေ့ရှိရပြီး ဒေသခံများ၏ သီးနှံအထွက်နှုန်းနှင့် ဝင်ငွေ ရရှိမှုတွင်မူ ပြောင်းလဲမှုမရှိကြောင်း တွေ့ရှိရ သည်။ အဘယ့်ကြောင့်ဆိုသော် အများစု သည် မြေအသုံးချခွင့်နှင့်ပက်သက်သော လက်မှတ် တစ်စုံတစ်ရာ မရှိသည့်အတွက် မိမိတို့ စိုက်ပျိုးမြေများတွင် ရင်းနှီးမြှုပ်နှံမှု ပိုမိုလုပ်ဆောင်နိုင်ရန် အစိုးရထံမှ ချေးငွေမရရှိနိုင် ခြင်းကြောင့် ဖြစ်သည်။ ဤသုတေသန၏ တွေ့ရှိချက်များသည် သစ်တောမြေများကို ထိထိရောက်ရောက် စီမံအုပ်ချုပ်ခြင်းနှင့် ဒေသခံများ၏ မြေယာ အသုံးချပိုင်ခွင့်များကို အသိ အမှတ်ပြုခြင်းတို့ကို တစ်ပြိုင်နက်လုပ်ဆောင်နိုင်ရေးအတွက် သင့်တော်သောမူဝါဒများ ချမှတ်ရာ တွင် အထောက် အကူဖြစ်စေပါသည်။

Impacts of Land Abrogation on Socioeconomic Conditions of Local Communities (A Case study in Saing-Ya Reserved Forest, Yedashe Township, Myanmar)

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Abstract

In Myanmar, land demarcated as "forest estates" have been under agricultural cultivation for decades. In 2013, Forest Department (FD) has abrogated some parts of those "forest estates" which were regarded as permanent cultivation for a long period. In addition, some of the settlement areas including village area, religious and communal area were totally abrogated. This study was conducted to compare the socioeconomic conditions before and after land abrogation. The land impacts associated with socioeconomic conditions were explored in this study. A total of 120 sample households were selected by using purposive sampling method. Descriptive statistics and Wilcoxon signed-rank test (a non-parametric test) were used to explore and assess socioeconomic impacts after land abrogation. The results showed that the percentage and size of land holdings increased by 0.07 Ac in housing compound (29.2% of the previous land size), 0.45 Ac (31.3%) in paddy fields and 0.64 Ac (49.2%) in farmland after land abrogation due to their wrong awareness on the process of land abrogation. Land expansion continues on non-abrogated areas as a consequence. Among the three land use, the most changes are occurred in farmland holding. In terms of their land ownership, it was found that 12.5% of respondents had got land use certificates. They are only for abrogated paddy fields. The occurrence of land conflicts decreased after land abrogation. Productivity and income contribution were found no change after land abrogation because most respondents do not have any certificate and cannot access a loan from the government to make more investments in their fields. The number of settlers from outside the village and the land prices also increased in the villages with a better condition of accessibility. Among the villages, the same pattern of land use occurs, however the better accessibility is the likely factor to drive the access to lands and the changes of land price. The findings of the study pointed out for policy makers to reveal the suitable policy intervention in order to manage forest estates effectively while recognizing community land tenure.

Keywords: Land abrogation, Socioeconomic, Local communities, Forest estates

Impacts of Land Abrogation on Socioeconomic Conditions of Local Communities (A Case study in Saing-Ya Reserved Forest, Yedashe Township, Myanmar)

1. Introduction

Land and natural resources are central to the livelihoods and cultures of local communities around the world, and secure rights to them provide a foundation for poverty reduction, increased food security, gender equality, cultural survival and environmental sustainability (USAID, 2016). Therefore, socioeconomic status of local communities are determined by their access to the land and natural resources and then, recognition of local communities' land tenure has become an unneglectable factor in conserving land and natural resources.

The relationship between human being and forests has been an important role for the development of society. It is based on various productive, ecological, social and cultural functions of forests (Ritter et al, 2013). Studsrod & Wegge (1995) also stated that if there is lack of recognition to the needs of local communities living around the reserved areas, the success of forest management would be very limited. According to McNeely (1990) and Ghimire & Pimbert (1997), the long-term survival of reserved areas in developing countries will be jeopardized if it needs, aspirations, and attitudes of local peoples are not accounted for. Therefore, achieving a balance between community welfare and environmental integrity become considered as a sustainable development conundrum worldwide.

In Myanmar, Forest Department is managing reserved forests (RF) and protected public forests with the target to cover 30% of the country's area. But on the other hand, reserved forests have undergone drastic changes over the years due to encroachment by such human activities as agriculture extensions, over-exploitation of forests, over-harvesting of fuel wood and charcoal, unstable shifting cultivation and even settlements (Nyi Nyi Kyaw, 2015). These land use changes with other human activities have resulted in the deforestation and hinder the successful conservation of forest land.

Although such land use changes caused by human activities have negative impacts on the successful conservation of forest land, government recognized parts of land demarcated as "forest estates" that have been under agricultural cultivation and a call has been made to reclassify the land. Regarding to forest dwellers residing in the forest and practicing permanent cultivation and their land use, Forest Department (FD) made an inventory and collected data during February 2013 (Andersen, 2016). FD abrogated "forest areas" where human settlements of more than 50 households to cater for land use change that has occurred over the last decades. Some villages having no more than 50 households are abrogated if these are firmly settled over the last decades. FD totally abrogates village area, religious and communal area and paddy field areas. These areas fall under the administration of related ministries (Tin Min Maung, 2015).

Securing land and resource tenure are essential foundations for the well-being of rural peoples, and for their economic and social development. However, where tenure is insecure, development interventions can inadvertently cause rural communities to lose rights to lands and resources, triggering a range of negative social impacts. These tenure-related social impacts, in turn, can undermine the development intervention's original objectives, and reduce public support for development institutions and activities (Springer, 2016).

A comprehensive review of relevant literature on forests undertaken in 2014 found that where communities have legal recognition on their rights to forests and government support – such as for registration, enforcement of rights, and technical assistance for community forest management - deforestation rates within indigenous and community forests are significantly lower than in forests outside these areas (Stevens et al. 2014).

Therefore, to reveal the suitable policy intervention in order to manage reserved forests effectively and to understand previous and current socioeconomic impacts before and after land abrogation, there is a need to assess what are impacts on the socioeconomic conditions of local communities. In addition, there is a lack of research documents that assessed socioeconomic impacts of land abrogation. Therefore, this study was conducted to assess impacts of the

abrogation of land on the socioeconomic conditions of local communities in Saing-Ya Reserved Forest. The specific objectives of the study are (i) to identify predominant land use of local communities in the study villages and (ii) to assess socioeconomic impacts of local communities before and after the process of land abrogation

2. Study Area and Research Methodology

2.1 Study Area

Saing-Ya Reserved Forest, situated in Yedashe Township, East-Bago Yoma region, Myanmar was selected as study site. In Saing-Ya Reserved Forest, there are 2,120 Ac (about 3.5%) of abrogated area from the original area of 61,188 Ac. In which, there are 13 abrogated villages (FD, 2017). Among those villages, four villages were selected as study sites; namely 7-Mile, Za Ye Bauk, Min Gyi Khone and Ye Ngan Myaung. The study villages were purposively chosen based on the criteria: (i) villages that are abrogated from Saing-Ya Reserved Forest, (ii) villages that also have land uses that are not abrogated from Reserved Forest and (iii) villages that are situated in different road conditions.

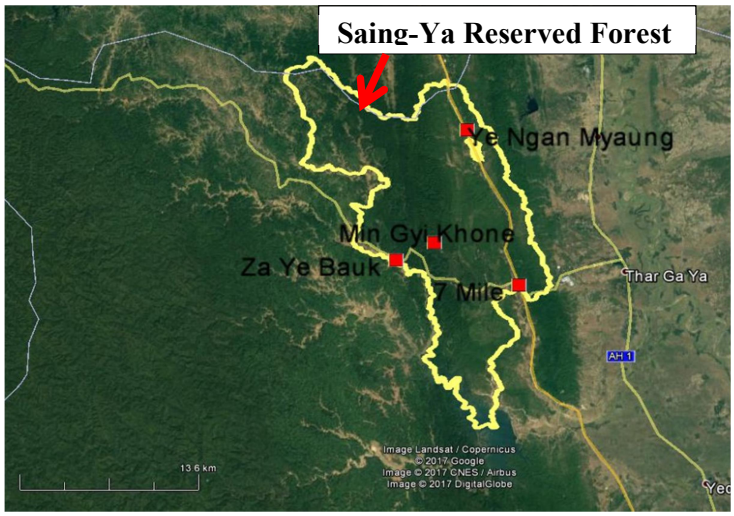


Figure 1 Location map of study area

2.2 Data collection and Sampling

This research is designed to assess impacts affected on the socioeconomic conditions of local communities after the process of land abrogation. Therefore, with the purpose to gather all appropriate information, mixed method of research (both quantitative and qualitative) is applied in this study. Qualitative research design was used to explore the perception of local community on some conditions after land abrogation whereas quantitative research design was used to quantify the numerical data of socioeconomic conditions obtained from household survey.

The primary data was collected from sample households through household survey with semi-structured questionnaires. Focus group discussions (FGD) were conducted to obtain more detailed information. The secondary data were collected from head office and local offices of forest department and from various sources including published and non-published reports, instructions, books, papers, and journals.

Purposive sampling was used to determine the sample size from total population of four villages. It was applied to select the respondents because sampled households knowledge on the subject matter and also households who have experienced on different land related issues are being played important role for generating relevant data sources. There were a total of 241 households in the study area. Sample households were chosen purposively by 30 households in each village. According to Teddlie & Yu (2007), a sample of 30 units is sufficient in purposive sampling. Therefore, a total of 120 households were sampled which covers 50% of total populations. In the questionnaires, before abrogation period is denoted by before 2013 and after abrogation is denoted by after 2013 up to the time of field survey- year 2017.

2.3 Data Processing and Analysis

Descriptive statistics and Wilcoxon signed-rank test were applied for analyzing quantitative data. When analyzing and processing data, Microsoft excels and SPSS 20 version were used. To describe socioeconomic conditions of before and after the process of land abrogation, descriptive statistics including bar graph, pie charts were used. Wilcoxon signed-rank test was used to compare the socioeconomic conditions of four villages before and after the process of land abrogation in order to show how socioeconomic conditions of local communities are affected after land abrogation. The information and explanation regarding to the respondents' feelings, expression and perception obtained from focus group discussion were made to include in the box so as to acquire better understanding and to support the results from the quantitative data analysis.

3. Results

3.1 Predominant land use of local communities before and after abrogation

The study villages mainly depend on land resources for their livelihood. In the study villages, housing settlement and agricultures are found as the major categorical land use of the community. Agricultural lands are majorly used as (i) paddy fields, in which the paddies are majorly grown (ii) farmlands which are normally located in hilly areas and majorly grow dry crops such as beans, sesames and (iii) orchards where the perennial crops are majorly grown and (iv)shifting cultivations which have rotation systems for cultivation and fallows. Of those agricultural lands, farmlands and paddy fields are the most predominant lands covering 42% (153Ac) and 46% (170Ac) when it was before abrogation. Till now, after abrogation it was found that they covered 46% (230.5 Ac) and 45% (224.5Ac) respectively of total community land use (Figure 2). The housing compound area covers 8% of the total land use, the remaining land use for orchards and shifting cultivated area are the least covering only 1% (each 3 Ac) of the total land areas.

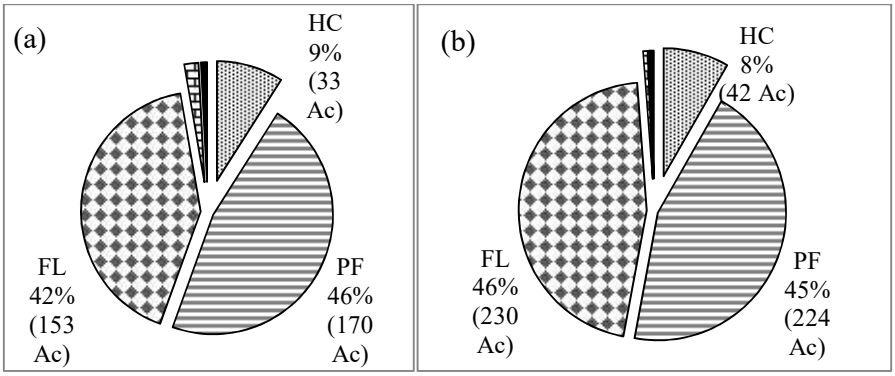


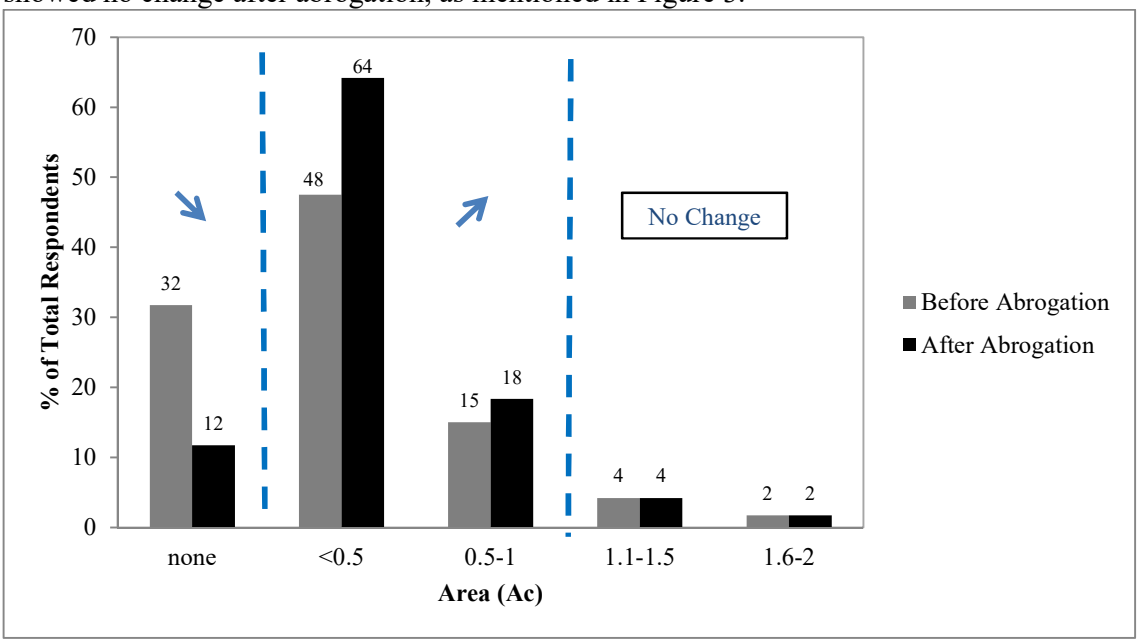
Figure 2 Predominant land uses of total villages (a) before and (b) after abrogation. The total area of land use is 366 Ac in (a) and 502 Ac in (b). HC: Housing Compound, PF: Paddy Field, FL: Farmland.

Box 1 Explanation on predominant land use by a respondent in FGD

Previously, in this village, livelihood was difficult. Later, people became aware and start cultivation on degraded land by making land clearance to be a support for their livelihood. Then, as a result of cultivated-land extensions, cultivated lands are predominant in our village.

3.2 Change in land holdings

In case of housing compound land holding, percentage of landless decreased to 12% after land abrogation whereas it was 32% before abrogation. The ownership of land whose holdings is less than 0.5 Ac increased from 48% to 64%. The ones between 0.6Ac to 1Ac increased to 18% whereas it was 15% before abrogation. The holdings that are above 1 Ac showed no change after abrogation, as mentioned in Figure 3.



In Paddy Fields, the percentage of landless decreased their landholdings from 63% to 48% after land abrogation while it was found increased in the respondents who owned from 1 to 6 Ac of lands. The percentage of land owners whose holdings are more than 6 Ac showed no change after land abrogation, mentioned in Figure 4.

In Farmland holding, the percentage of total respondents decreased to 39% among the landless whereas it was 63% before abrogation. Percentage of holdings (from 1 to 4 Ac) increased. Percentage of holding that are more than 4 Ac do not change after land abrogation, mentioned in Figure 5.

In terms of land holding, it was found three main groups as decreased in landless, increased in holding and no change in holding for all land use types. The results showed that there are encroachments on not-abrogated areas after the process of land abrogation because the percentage of respondents that holds land increased and the area of holding as well. According to the results, smaller land holding percent mainly increased after abrogation. Percentage of land holding did not change if it was more than 1 Ac in Housing Compound, 6 Ac in Paddy Field and 4 Ac in Farmland respectively.

Figure 3 Land holdings change in their housing compound (N=120)

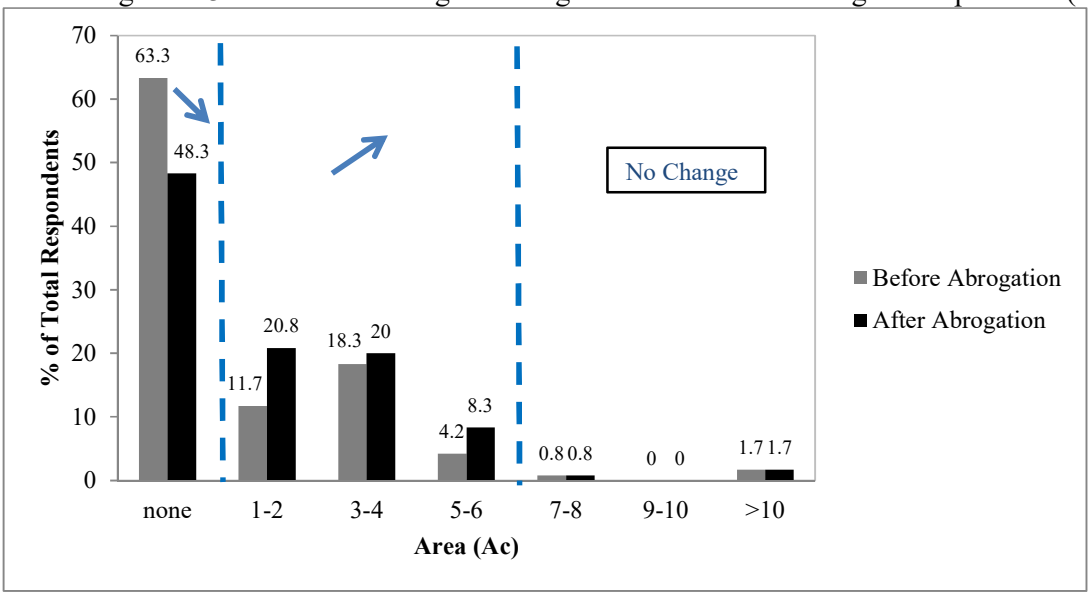


Figure 4 Land holdings change in their paddy fields (N=120)

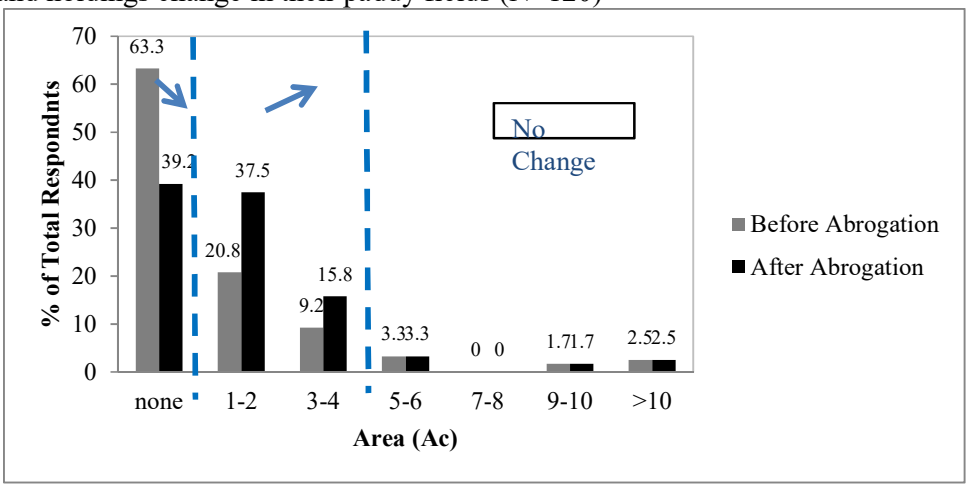


Figure 5 Land holdings change in their farmlands (N=120)

Box 2 Respondent's explanation on land encroachment in Focus Group Discussion (FGD)

> Although most lands used by villagers are included in abrogated-area, some encroachment and extension (land) are not included in it. If these lands are surveyed again, these would be more than the amount of abrogated-area.

and size), whereas Paddy Field increased 0.45 Ac (31.3%) and Farmland increased 0.64 Ac (49.2%), mentioned in Table 1. The type of land which increased mostly is Farmland. With regard to average land holding size of total 4 villages, all land use types had changed after land abrogation. Wilcoxon signed-rank test showed that there was significantly difference in average land holding size of those land use types before and after abrogation. The reason why average land holding size increased is that local communities often tried to make land expansion on degraded land that are free from plantations. These land uses were not been under abrogated area of RF and so, could be regarded as encroached land to forested area.

Table 1 Average land holding size of all villages (N=120)

Land Use type	Average Land Holding Size (Ac) with Standard Deviation		P
	Before abrogation	After Abrogation	
Housing Compound	0.24±0.52	0.31±0.55	0.005**
Paddy Field	1.44±3.08	1.89±3.17	0.000***
Farmland	1.30±2.80	1.94±3.22	0.000***

Wilcoxon signed-rank test, **significant at 0.01 level, *** significant at 0.001 level

Box 2 Respondent's explanation on increased average land holding size in FGD

> Villagers make land clearance on the degraded land that are free from plantations. They cultivate paddy by clearing the land between small-glens. Beans are cultivated on other areas. How they aware is that although these land do not have any permission of government, there might not have any dangerous disturbances on them. Their land would be abrogated in one day. Then, they make encroachment on not-abrogated areas and increase in amount of their land size.

in three villages except Za Ye Bauk. In paddy field, significant changed occurred only in 7 mile village and Min Gyi Khone Village showed the only village where change in Housing compound occur. There are only two villages showing significant changes of two landuse which are 7 mile village where occurs changes in both paddy field and farmland ; and Min Gyi Khone village where Housing Compound and Farmland occurs. The village Za Ye Bauk shows no significant change in all major land use after land abrogation.

Table 2 Average land holding size with the standard deviation of each village in acre (Ac)

	Village Name	Before	After	P value
Housing Compound	1.7mile	0.23±0.48	0.28±0.50	0.32
	2. Za Ye Bauk	0.26±0.50	0.36±0.55	0.08
	3. Min Gyi Khone	0.51±0.68	0.62±0.67	0.05 *
	4. Ye Ngan Myaung	0.11±0.18	0.12±0.18	1.00
Paddy Field	1.7mile	1.57±4.01	2.67±4.17	0.01 **
	2. Za Ye Bauk	1.03±1.49	1.37±1.63	0.11
	3. Min Gyi Khone	1.48±1.70	1.58±1.65	0.18
	4. Ye Ngan Myaung	1.6±4.18	1.87±4.18	0.06
Farmland	1.7mile	1.33±4.08	2.57±5.20	0.01 **
	2. Za Ye Bauk	1.47±3.27	1.67±3.22	0.06
	3. Min Gyi Khone	1.20±1.41	1.82±1.43	0.02 *
	4. Ye Ngan Myaung	1.10±1.65	1.63±1.61	0.02 *

Wilcoxon signed-rank test, *significant at 0.05 level, ** significant at 0.01 level

3.4 Impact on land ownership status after land abrogation

3.4.1 Overall impacts of all villages

In case of land ownership status, it had some impacts after land abrogation. As shown in Figure 6, there was found ownership under abrogated area with certificate in paddy field, representing 12.5% respondents but not found this type of ownership in housing compound and farmland. In other land use types, ownership status can be occurred in two ways, ownership under abrogated area and ownership under not-abrogated areas. In housing compound, none of the respondents represented ownership under abrogated area, 67.5% was ownership under abrogated area without certificate, 23.3% was ownership under not-abrogated area while the remaining was landless. In paddy field, 12.5% respondents represent ownership under abrogated area with

certificate, 14.2% was ownership under abrogated area without certificate, 25% was ownership under not-abrogated area respectively and the rest percentage was landless. In farmland, no respondents represented ownership under abrogated area, 5% was ownership under abrogated area without certificate, 55.8% was ownership under not-abrogated area while the remaining was landless percentage.

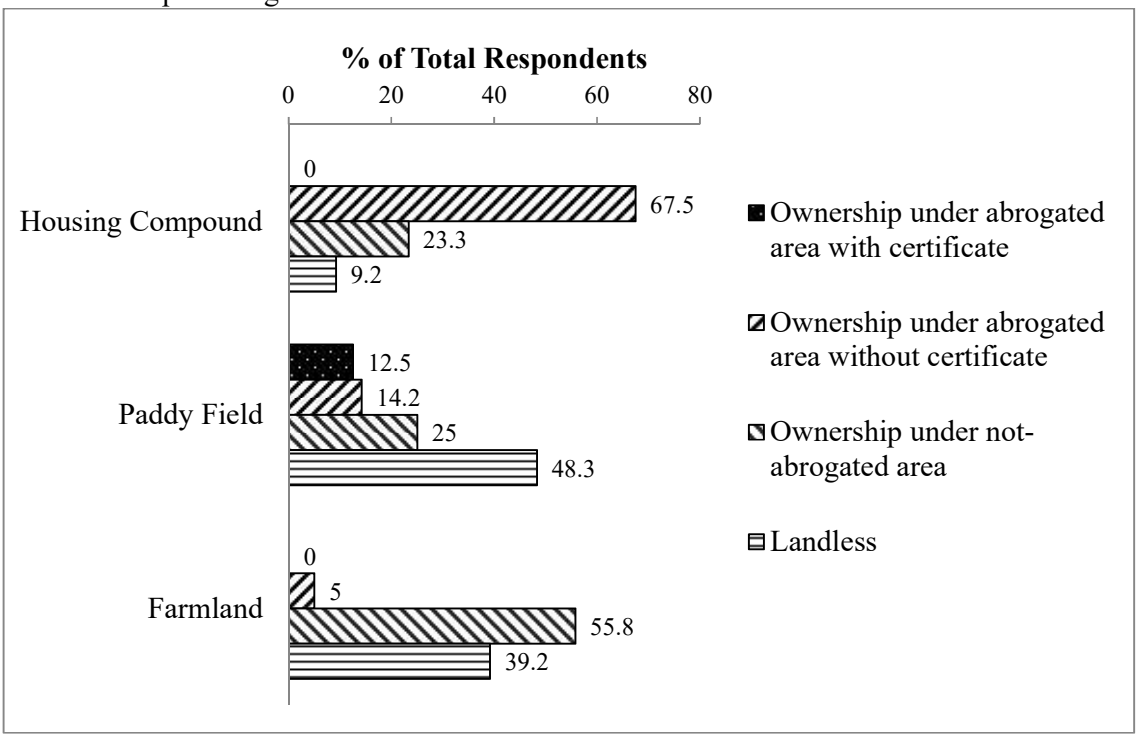


Figure 6 Land ownership after land abrogation shown in percentage. Total number of respondent (N) is 120.

According to the results, most of land users do not have any ownership-evidence, except some Paddy Field owners. Only 12.5% of respondents have got land-use certificate (Form 7) for Paddy Field. According to 5% respondents, farmlands are under abrogated area. Actually Farmland are not abrogated from RF but have the right to establish CF in order to acquire land lease for 30 years. The possible reason of having farmlands under abrogated area is because of reaching under village areas or because of registering as PF.

Box 3 Respondent's expression on ownership status

Now, some of us had got certificates that recognize our land ownership. But most land do not get any ownership-evidence, these have just been under abrogated area of RF. Then, ownership is not secure for these lands until now.

3.4.2 Comparison between individual villages

Regarding to each village, 7 mile and Za Ye Bauk villages had got certificates for some of their Paddy Fields and so, only these two villages have ownership under abrogated area with certificate whereas Min Gyi Khone and Ye Ngan Myaung villges did not have this type of ownership because no one of the villagers hold any certificate until now. Other types of ownership are also described in Table 3 with percentage of respondents for each land use type in each village.

Table 3 Land ownership status of each village after land abrogation in percentage of total respondent of each village (n=30).

		Under abrogated area with certificate	Under abrogated area without certificate	Under not-abrogated area	Landless
Housing Compound	1.7mile	0.0	70.0	13.3	16.7
	2. Za Ye Bauk	0.0	90.0	6.7	3.3
	3. Min Gyi Khone	0.0	60.0	33.3	6.7
	4. Ye Ngan Myaung	0.0	50.0	40.0	10.0
Paddy Field	1.7mile	**26.7**	6.7	23.3	43.3
	2. Za Ye Bauk	**23.3**	23.3	3.3	50.0
	3. Min Gyi Khone	0.0	26.7	30.0	43.3
	4. Ye Ngan Myaung	0.0	0.0	43.3	56.7
Farmland	1.7mile	0.0	0.0	56.7	43.3
	2. Za Ye Bauk	0.0	6.7	46.7	46.7
	3. Min Gyi Khone	0.0	13.3	60.0	26.7
	4. Ye Ngan Myaung	0.0	0.0	60.0	40.0

According to the results, there was difference in ownership status after land abrogation depending on whether the villages got land use certificate or not. The reason depends on their cultivated land are abrogated from RF or not; and the area of abrogated land used for cultivation. Therefore, ownership status can have impacts depending on the process of abrogation as well as certificate holding.

3.5 Impact on experience of land conflict

3.5.1 Overall impacts of all villages

Overall, 8% of respondents had experienced land conflicts in regard with land ownership among local owners or government organizations or private plantation companies. However a total of 92% of the respondents did not experience any land conflict during the study period. After land abrogation, only 1% of respondents occurred land conflict whereas 99% did not occurred, as shown in Figure 7. The process of land abrogation had positive impact on experience of land conflict for the community. Decrease in conflicts is mainly because of no more plantation establishment on abrogated areas of RF.

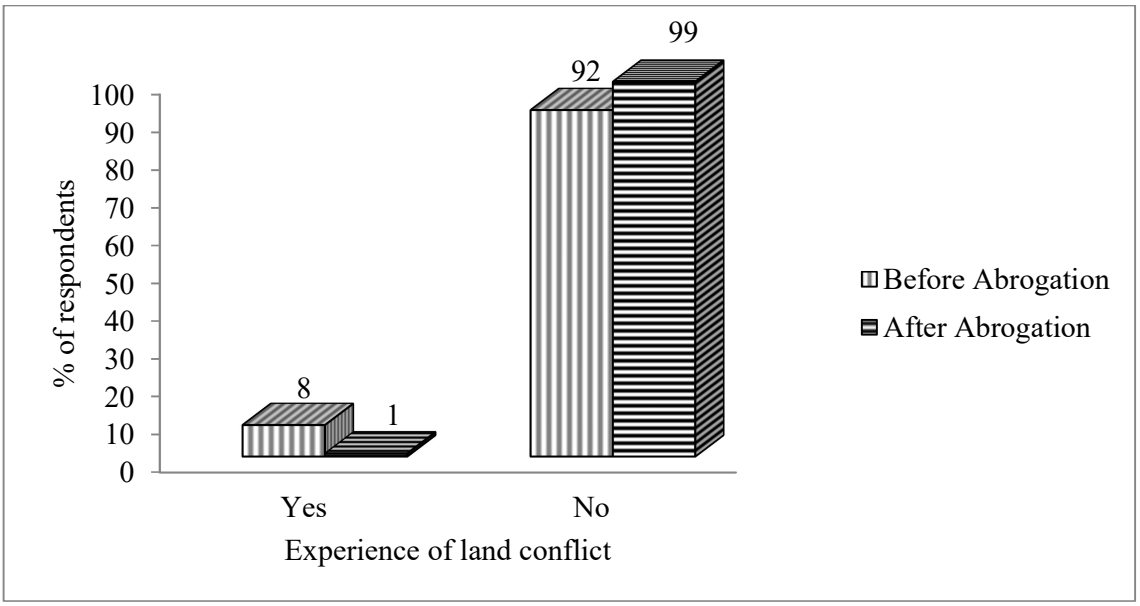


Figure 7 Impact on experience of land conflict (N=120)

Experience of land conflict for each village can be found as shown in Table 4. Three villages had occurred land conflicts before land abrogation. Min Gyi Khone village is the only village which no conflict was experienced. The land conflict still remains only in Ye Ngan Myaun village after land abrogation. Other villages did not occurred conflicts anymore after land abrogation.

Table 4 Impact on experience of land conflict among villages in percentage of total respondent of individual village (n=30)

Experience of Land Conflict	Village Name	Before (%)	After (%)
Yes	7 mile	20	0
	Za Ye Bauk	7	0
	Min Gyi Khone	**0**	0
	Ye Ngan Myaung	7	3
No	7 mile	80	100
	Za Ye Bauk	93	100
	Min Gyi Khone	100	100
	Ye Ngan Myaung	93	**97**

3.5.2 Comparison between individual villages

3.6 Migration of local residents after land abrogation

After land abrogation, immigration number which is defined settlers from outside of the village, highly increased in two villages: 7 mile and Za Ye Bauk, by 56.7% and 76.7% respectively. Immigration may occur in the other two villages: Min Gyi Khone and Ye Ngan Myaung , however in lower numbers than the others. The number of outmigration was rarely found in all villages.

Table 5 Migration of local residents after land abrogation. The number are percentage of total respondents of each village (n=30)

	Immigration	No Change	Out-migration
1. 7 Mile	**56.7**	43.3	0.0
2. Za Ye Bauk	**76.7**	23.3	0.0
3. Min Gyi Khone	36.7	**63.3**	0.0
4. Ye Ngan Myaung	30.0	**70.0**	0.0

3.7 Impact on productivity and income contribution from cultivated land

Respondents' households from the study sites mainly relied on the income from such cultivated land as paddy field and farmland. After land abrogation, productivity and income contribution neither increased nor decreased according to most respondents' answer (50%, 60%, 63%, 93% respectively) from each village, mentioned in Table 6. Because most respondents do not get any certificate and cannot access a loan from the government to make more investments in their fields and they could only cultivate as usual as before abrogation.

As per some respondents, their income contribution increased because, probably, most are certificate-holders who own PF and got a loan to invest more in their PF. Also, may be the ones who make land expansion to make production increased after land abrogation. Therefore, the income contribution pattern might be in two ways (1) contribution from getting a loan to make more investment (2) contribution from making land expansion to make more cultivation and production.

Table 6 Productivity and income contribution from cultivated land after land abrogation. The number are percentage of total respondents of each village (n=30)

Village name	% of Respondents		
	Increased	**No Change**	**Decreased**
1.7mile	50	50	0
2. Za Ye Bauk	40	60	0
3.Min Gyi Khone	30	63	7
4.Ye Ngan Myaung	7	93	0

3.8 Impact on land price

3.8.1 Impact on housing compound price

Land prices were increased in the study sites after the villages were abrogated from RF. It increased 16 times in 7 mile village, 27 times in Za Ye Bauk, 4 times in Min Gyi Khone and 8 times or more in Ye Ngan Myaung village, respectively, mentioned in Table 7.

Table 7 Maximum current price of the housing compound in the villages in Million Kyats per Acre

Village Name	Approximate local land price (Million Ks/Ac)		Increased rate between before and after abrogation		Times increased
	Before Abrogation	After Abrogation	Million Ks/Ac	%	
7 mile	0.8	13.0	12.2	1,525	16 times
Za Ye Bauk	0.4	10.8	10.4	2,600	27 times
Min Gyi Khone	0.2	0.8	0.6	300	4 times
Ye Ngan Myaung	0.0	0.8	0.8	800	8 times or more

The price of housing compound increases 4-27 times in the villages after they are abrogated from RF. The main reason of differing land prices are because of road condition and accessibility. Therefore, apart from land abrogation, increase in Housing Compound price further depends on accessibility and road conditions, too.

3.8.2 Impact on paddy field price

The price of PF increases 2-5 times in two villages (7 mile and Za Ye Bauk) after they are abrogated from RF while the other two villages (Minn Gyi Khone and Ye Ngan Myaung) had never been sold or bought paddy field until now, mentioned in Table 8. The reason of this condition was why the area of paddy fields under the abrogated area was very small in those villages and there was no demand for it.

Table 8 Current local Price of the paddy field of the villages in Million Kyats per Acre

Village Name	Approximate local land price (Million Ks/Ac)		Increased rate between before and after abrogation		Times increased
	Before Abrogation	After Abrogation	Million Ks/Ac	%	
7 mile	0.05	0.30	0.25	500	5 times
Za Ye Bauk	0.20	0.60	0.40	200	2 times
Min Gyi Khone	0.00	0.00	No local market yet		
Ye Ngan Myaung	0.00	0.00	No local market yet		

According to most respondents, the price of paddy field also depends on the distance of the field from the village and water availability.

3.8.3 Impact on Farmland price

In all villages, it was found that farmland did not have local market yet because these lands are not abrogated from RF and there was no demand for it. Therefore, abrogation of land has high impacts on the price of land. Other factors such as the process of land abrogation, by the accessibility, by the distance from the village and some environmental conditions such as water availability are likely affecting the land price. In dealing with land price, the possible consequence is that it may lead to sell the land and to further encroach on not-abrogated areas by the communities as a coping strategy if they face difficulties for their survival because land prices are increased after abrogation from RF and productivity and income contribution is not increased. Then, this would never lead to sustained yield in these areas.

4. Discussion

4.1 Land ownership and holding size

After the villages are abrogated from Saing-Ya Reserved Forest, changes in land holdings were found as one of the positive impacts on the socioeconomic conditions of local communities, though, it was the negative impact for the forest estates.

In each land use type, percentage of landless decreased, and subsequently, percentage of small land holding and average land holding increased. Moreover, changes in average land holding size of before and after land abrogation was significantly different. It is clear that it was because of land expansion of the communities on natural vegetative cover that was not abrogated from RF. Changes in community land holdings, as a result of encroachment of the communities on non-abrogated areas of RF, was found as an important considerable factor in further policy making in forest management because local communities are making encroachment on non-abrogated areas with the assumption of their land would be abrogated in one day. Importantly, it was found that they have wrong awareness on land abrogation and then, dare to make encroachment on not-abrogated areas of RF. Lyaruu (2002) and Tiffen (2003), pointed out expansion of farms for cultivation in the world has changed land cover to more agro-ecosystems and less cover of natural vegetation.

4.2 Land use and socioeconomic issues

Some paddy field owners could own land under abrogated area with certificate because paddy field had the right to get land use certificate after they were abrogated from RF. This was the main advantage of land abrogation for paddy field owners. Certificate holders can get a loan from the government for the agricultural investment and as a consequence, their income contribution would be increased. However, certificate provision may become an interference of forest conservation with the permanent reduction of forest areas. Therefore, there must be a balance between socioeconomic of local communities and protection of forest areas. The

number of certificate-holder is very few in the study area until now when it is compared to the amount of paddy fields under abrogated areas. Concerning to Farmland, a kind of not-abrogated land use, it is needed more encouragement to establish CF because no one have CF certificate although it has the right to establish CF with the encouragement and under the instructions of FD. This can be some kind of a balance between socioeconomic of local communities and forest conservation. Until now, only 3.61 % of "farmland owner" started to establish CF in the study site. Actually, Farmland can be official land use in RF if they are established as CF. Land conflicts are found with the very small percentage while comparing before it was before abrogation. The main reason of decreased conflict was because of no more plantation establishment on abrogated village areas of RF.

In some villages, immigration was increased after land abrogation, whereas it was no change in some villages. The increased immigrations to the abrogated villages was mostly due to availability of some convenient work in a fairly secure area. Some immigrated to start cultivation and to do bamboo harvesting. The reason that the two villages did not increase immigration is because of the limited accessibility. Min Gyi Khone village is far from permanent road and it can only be accessed by passing along a stream or by crossing a plantation. Although Ye Ngan Myaung village is situated beside Yangon-Mandalay Highway Road, the possible reason is, because it is surrounded by plantations and the area is not suitable to fulfill such the aim of most immigrants as cultivation and harvesting. Therefore, the major reason of immigration was found the availability of arable land for cultivation and settlement. This observation concur with findings by Mbonile et al. (2003) and Nzunda et al., (2013) who reported that major reasons for immigration is the peoples movement from their former residence to seek land for cultivation and habitation. Therefore, immigration can be regarded as negative impact on resources though it could be a positive impact for the community development after land abrogation. Then, Village leaders should arrange for immigrated persons to live only on abrogated areas in an official way because some immigrants are trying to live on not-abrogated areas and immigration is increased after abrogation in areas with a better accessible condition. If not, the immigrants would try land encroachment on not-abrogated areas for their accommodation and cultivation.

Mostly, productivity and income contribution from cultivated land did not change after abrogation, except for some paddy field owners. Land use certificate was one of the main factors that could make more investment in the fields to make more productivity and more income with the credit access. While comparing before and after land prices, Housing Compound price increased up to maximum 27 times of previous land price, meanwhile, Paddy Field price increased up to maximum 5 times. This finding is found undesirable from the perspective of sustainably because there may be the selling of lands as an alternative strategy when the communities face difficulties. Therefore, for the sustainable land management and forest conservation, sustainable farming practices that can fulfill the basic needs of communities are urgently needed in the study areas.

4.3 Comparison among villages

Za Ye Bauk is found as the only one village where no significant changes in land use occur, though, the average land holding size increased a little or more in each of the villages. The land use of the other three villages found significant changes. Among the three land use types (housing compound, paddy field and farmland), farmland is found the most significant changes. In 7 mile and Za Ye Bauk villages, there were found land use certificate holders whereas no one has any certificate in Min Gyi Khone and Ye Ngan Myaung villages. The reason is because, both the village area and paddy fields were abrogated in the former two villages, but in the last two villages there were found that no paddy fields were abrogated from RF. Min Gyi khone is the only one village that do not have any land conflicts before and after abrogation. After abrogation, most villages do not face any land conflicts except Ye Ngan Myaung village. Immigration and land prices are mostly increased in 7 mile and Za Ye Bauk villages because of a better accessibility than the other two villages. Productivity and income contribution is found mostly no change in all villages.

4.4 Policy implications

Awareness raisings on the rights and bans of land use should be given after abrogated from RF because most respondents have wrong awareness on land abrogation and occurs land encroachments after abrogation. Extension services for effective and sustainable farming practices should be done to support their livelihoods, productivity, income contribution and to reduce percentage of increasing land holding from making cultivation on not-abrogated areas after abrogation. There is no way encroachment of RF can be avoided if local communities around are left to extreme poverty and if they prefer land expansion to effective and sustainable farming practices.

It was discussed that forest land abrogation may create pressure on RF and, land resources. Establishing a monitoring program that evaluates household socioeconomic status, livelihood strategies, and forestry perceptions is critical after the process of forest land abrogation. The methodology used in this study, might be a useful guide as a based data for the monitoring program. Such a monitoring program should indicate; positive and negative impacts of forest land abrogation and the need for additional mitigation practices and additional considerations in further policy making.

5. Conclusions

This paper has revealed socioeconomic impacts of the process of abrogation of lands from a reserved forest. The findings pointed out, it has positive impacts for local communities. Adversely, it has negative impacts on the forest estate and natural resources. As demonstrated by the result section, local communities have wrong awareness on the process of land abrogation and then, continuing encroachment on not-abrogated land. Consequently, average land holding size of the communities increased, but the area of forest cover reduced. In most cases, certificate holding is found as one main factor that has positive contribution on the socioeconomic conditions by land abrogation. But, from the perspective of land management, such unsustainable land use practices as land expansions are found and therefore, sustainable farming practices are essential in the study area. Overall, the process of land abrogation creates welfare of the community but hinders the sustainable and/or successful management of forest areas. Based on the initial findings of this research, this paper suggest that monitoring and further relevant policy making are essential for balancing the conservation of our forest estates and the recognition of our communities.

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