How about integrating tree crops into your oil palm plantation?

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Abstract. The synergy between forest and plantation is much sought after to maintain the complex role of forest areas. Forest should be managed for its socio-economic and ecological position while land-use change tends towards maximizing economic role. Indonesia is struggling to rehabilitate most of her production forests. Many cases show that the forestlands have been converted into monoculture oil palm or rubber plantation that caused severe ecological degradation and declined forest role in ecosystem maintenance. The government of Indonesia is seeking synergy between these two conflicting land uses types. Forest Management Unit (FMU) has been chosen as a model to carry out day to day management at field level beginning in 2010. Unfortunately, majority FMUs have not been in operation due to limited information at the field level, especially about the willingness of landowners to cooperate in the restoration of the production forest. In Dharmasraya District, West Sumatra, a 33,000 hectare of remaining production forest areas are undergoing deforestation due to forest conversion into oil palm and rubber carried out both by smallholder and large scale oil plantation companies. Based on a household survey among smallholders plantation in Dharmasraya District, West Sumatera Indonesia, the paper presents farmers’ willingness to integrate timber and non-timber plants into their oil palm plantation and discusses its implication for forest management especially in forest restoration management for FMU. The study found that at this time, it is hard for the landowner to integrate a timber tree into their smallholder oil palm and rubber plantation. They value land higher for the farm than for forest. Landowners feel secure with the customary land right than statutory land rights. Hence, the study suggests FMU Dharmasraya intensify forest extension service on forest function and persuade landowners to seek a balance between the ecological and economic role of forestland. More importantly, forest ecosystem service needs a proportional monetary valuation.

Keywords: forest management unit, Dharmasraya, ecosystem service, deforestation, smallholder plantation

1. Introduction
Forest restoration, as part of ecosystem restoration, has become a global agenda. It is a strategy to enhance ecological services mitigate climate change, and create a new economic chance in rural areas [1]. It is intended to address the problem of degraded forests found almost everywhere [2]. It also aims to reduce forest loss with an annual in 1990s estimates of being 9.4 million hectares. The tropical forest is the most severe losses [3]. Forest loss causes biodiversity loss, has direct impacts on social and economic costs due to its environmental service provider aside from timber and various nontimber forest products. Forest losses lead to species extinction, alter hydrological mechanisms, and have damaged the livelihoods of millions of people who depend on the forest. Protecting the remaining forests are no longer sufficient steps to protect the forest functions maintenance [3]. Unfortunately, forest restoration is new practices and many unsuccessful stories than successful ones. The field of forest restoration is still developing and needs time to go mature. Besides, socio-economic development requires a continued study on forest restoration. There are some issues with the institution, as well as the incentive for forest restoration to address.

Among tropical countries, Indonesia is listed as the worst in terms of deforestation and in terms of reforestation. Among tropical countries, Indonesia experiences the second-highest rate of deforestation [4]. The rate of forest loss was constant from 1990 through 2005 (1.87 Million hectares per year) [5]. Kim, Sexton, and Townshend (2015) found out that in Indonesia, deforestation over these two time periods was 653,000 and 842,000 ha per year, respectively [6], while FAO report much higher that is 1,914,000 and 497,500 ha per year respectively [7]. In the most recent release, Indonesia forest governance characterized by weak law enforcement, spatial planning, a lack of transparency, and land tenure problems [8].

Meanwhile, the country could only rehabilitate 600,000 ha per year over 5 years (2003-2007) or only 3 million hectares in five years [9]. Meanwhile, there are 40 million degraded forests to be restored. If the current trends follow, it will take 66 years to rehabilitate those forests provided that deforestation is zero. Production forests suffer the most from deforestation and need serious restoration efforts. Data from the Ministry of Forestry in 2000, the rate of degradation of natural forests in the production forest, managed by concessionaires, is the highest (89%). This needs restoration investment [10]. Indonesia's deforestation was slowed down by forest moratorium. Unfortunately, as environmental activists claim the remaining 32 million hectares, secondary forests are under threat because not covered by the current moratorium Conservationists have long argued that the moratorium should also cover secondary forests.

Involving landowners, especially indigenous people, is crucial in forest restoration. RRI reported that 'forest governance and tenure reforms supporting the rights of local communities and indigenous peoples are key factors in the success of forest restoration initiatives.' Recognizing of rights of local communities and indigenous peoples to forests creates incentives for long-term investments in forest management and restoration, provides the basis for forest-based enterprises and rural economic growth, and enables communities to share in benefits generated from restoration activities. Secure tenure is also necessary to ensure that forest restoration initiatives do not contribute to "land grabbing", unlock locally-driven solutions, and increased conflict over land use in forest areas. But, as this paper will argue, involving local people in forest restoration would depend on history and their experience with previous forest management, their willingness to integrate timber tree in their monocrop perennial crops, and their perception about forest value.

This paper will argue that forest restoration would remain to depend on stakeholders. Aside from local communities, local government. For Indonesia's case, recent threats of deforestation, including regional autonomy, where forest management is decentralized to local government. Unfortunately, instead of the betterment of forest management, deforestation increased under regional autonomy. Reforestation also relies on a local government whose interest is toward converting forest areas into other land use. This is an ironic situation in forest restoration in Indonesia. Besides, a more recent development, Constitutional Court accommodates indigenous people's claim to excluded their forest from state forests. This may further threaten forest existence.
To restore the production forest, the Indonesian government invites investors; however, the only available scheme is through mechanisms and procedures of Granting Business Licenses Forest Timber (IUPHHK-RE) in natural forest. This is an unmatched situation as degraded forest needs more time to rehabilitate and longer time for economic return. However, some conservation agencies, local and international, are interested in taking this scheme, they are interested in the forest ecosystem that has potential biodiversity and contains some endangered species, so the restoration is aimed at species conservation. Other production forest ecosystems that lack biodiversity richness may be left behind.

With the Constitutional Court decision to exclude indigenous people's land from forest areas, it means they can decide land-use type of forest area. In many cases, the villagers want to convert forest areas into monoculture cultivation, mainly oil palm and rubber. Converting this area into plantation means the function is radically changed. Negotiation needs to be made between forest land tenure and forest function. By tenure, it can be community land, but by function, it shall remain as a production forest. By regulation, the villager who owns the forest can grow plantation but not oil palm, because it is not a forest product. They can grow fruit trees, non-timber forest products such as rubber and resin. These trees can maintain forest cover, possible biodiversity protection, producing timber, as well as for landscape maintenance.

Unfortunately, many farmers are attracted to plant oil palm, including in those land encroached production forests. High productivity and stable market are among cited reasons. However, many of those forests in tenure conflict are not yet settled with tenure security, especially if the state has not excluded the area from state forest. Hence there is a need to negotiate with those occupying forest areas to also collaborate in plant and tree selection. It has become important when there is a strong need to involve landowners in forest restoration [11]. It is a big challenge, there is a need to find synergy between forest land-use conversion and forest conservation, although in many cases the last will forgo. In general, integrating the different land uses has been looked after [12].

In Indonesia, communal forest land inside state forests by law should be excluded from state property. By virtue, these forest land is considered as the communal property and tend to be allocated to community members. Their interest in converting the forest land into agriculture land should be slowdown by negotiating with them the use of their preference but the one who can maintain the functional areas as production forest to produce timber and non-timber forest products. This is not easy deal since perennial cash crop such as oil palm is such attractive meanwhile oil palm does not belong to forest product. There is a need to negotiate with "landowners" about their willingness to cultivate forest product tree species than oil palm and their perception about land tenure security.

Forest Management Unit (FMU) is a model chosen by the Indonesian government as the operator of forest management in Indonesia at the field level. FMU shall provide forestry service and forest protection, by way of synchronizing two roles of the forest; environmental service for the general public and goods for private. The main task of FMU is to prepare a forest management plan, rehabilitated the forest areas, and empowering forest-dependent local people. Again, there is a need to negotiate with landowners inside the forest area to rehabilitate the forest only with forest-related trees and not of oil palm.

FMU Dharmasraya in West Sumatra, Indonesia, is a case in point, wherein last fifteen years, forest area reduced from 85% in 2000 to only 18% in the year 2014, while plantation increased from 3.5 thousand hectares to almost 20 thousand hectares, an increase of 600% [13] [14]. Open land also increased that shows land clearing continues. This shows how the forest has been cleared and converted into smallholder plantation. Since the process of land clearing is ongoing, it is a good opportunity to negotiate with forest clearer whether they want to maintain production function of the forest namely to produce timber and non-timber products or at least to integrate tree into their smallholders [15]. Forest cover change in FMU Dharmasraya is presented in Table 1.
Table 1. Forest cover change in FMUP Dharmasraya 2000-2014

| Land cover   | 2000        | 2005        | 2011        | 2014        |
|--------------|-------------|-------------|-------------|-------------|
| Secondary forest | 28971       | 24,092.50   | 13,423.19   | 6,333.43    |
| %            | 86.35       | 71.81       | 40.01       | 18.89       |
| Plantation   | 3,436.2     | 7,920.50    | 17,750.02   | 19,780.06   |
| %            | 10.24       | 23.61       | 52.91       | 59.00       |
| Open land    | 1,143.6     | 1,537       | 2,376.79    | 3,312.09    |
| %            | 3.41        | 4.58        | 7.08        | 9.88        |
| Mix farming  | -           | -           | -           | 4,039.92    |
| %            | -           | -           | -           | 12.05       |
| Shrub        | -           | -           | -           | 62.02       |
| %            | -           | -           | -           | 0.18        |
| Total        | Ha 33,550.00 | 33,550.00   | 33,550.00   | 33,550.00   |

Source: Yonariza 2015

In general, this paper seeks to find synergy between forest function and plantation development for forest restoration in the mind of local people. Specifically, this paper aims at: 1) Presenting landowners’ willingness to integrate the oil palm land with timber tree planting, tree species and farm integration model of their choices; 2) Presenting the factors affecting farmer choices, and; 3) Discussing its implication for forest management especially in forest restoration management for FMU Dharmasraya.

2. Research Methods

This study is part of a more extensive study on forest restoration in Indonesia. It involves investigation on land owner's perception about the forest (see Yurike et al. 2015), local people resistance towards land grabbing [14], and overlapping forest land and plantation area [13]. This study uses a case study method where the Production forest in Dharmasraya District was selected as a case. FMU Dharmasraya represents the last production forest in the district. This forest block has been decided by the Ministry of Forestry as a Production Forest Management Unit Model (PFMU) since 2013 through a ministerial decree No.SK.695/Menhut-II/2013, date of 21 October 2013 covering an area of 33.550 Ha. The decision indicates, by law, its status as a state forest. Since its establishment, unfortunately, FMU has not been able to work correctly due to the large portion of this forest has been invaded by local people. It also shows forest tenure conflict involving the local community where local people claim the forest as their ancestral land. A strong claim by local people reflects, on the other hand that the forest belongs to the local community.

The study used the following data collection techniques. Primary data were collected using a household survey where 41 households in the selected village. We interviewed the head of the household to investigate their assets related to forest and farming activities, their perception about land ownership, and their willingness to integrate tree crops into their farmland area declared by the government as forest area. Aside from the HH survey, we collected primary data by interviewing key informants and field observation. Our key informants cover a wide variety of people, such as: 1) officials at Forestry Department of Dharmasraya District, 2) Representatives of Private Oil Palm Plantation companies, 3) consultant of private plantation company, 4) former director of private forest plantation company, 5) people in nearby forest areas who clear up the forest land, 6) Central Office of forestry who explain the status of state Forestry company in charge of forest rehabilitation, 7) Small scale logging operator, and 8) head of FMU, and forest land seller and buyer. Field observation was carried out from June 2014 – February 2015.

Specific data collected related to negotiating forest and farm integration are: 1) Landowner perception about the synergy of plantation with timber and non-timber wood plants. 2) Landowners perception of the necessity of land title issue by a state agency as proof of ownership, 3) Landowner perception about using oil palm plantations or rubber as collateral in bank loans.
These data would confirm the following issues; possible integration of timber tree into smallholder plantation and land tenure security when customary land law exists. By having these data, it can lead to a process of negotiating forest and farm integration. These have been much look after to achieve sustainable forest management.

3. Results and Discussion
3.1. Study area
The District of Dharmasraya is one of the administrative in West Sumatra Province. Dharmasraya was established in 2004 as a result of Law No. 38 the year 2004. Much of forest management policy happened during the previous administrative unit of Sawahlunto-Sijunjung District, and the current Dharmasraya District Government forest management is the legacy of the previous administration. However, deforestation inclines during the current administration.

The area of Production Forest Management Unit (FMU) Dharmasraya District, West Sumatra, a 33,500 ha, is a remaining low land forest in the district. The government has granted several land use and forest use permits to private and state forestry companies. The former 66,000 ha production forest was granted to a logging concession in 1972. Once concession terminated in early 2002, forest areas were torn into three oil palm companies, i.e. PT Incasi Raya (6,900 ha) PT SMP (6,066 ha) and PT AWB (8,500 ha). The remaining half forested land was granted to a private industrial timber forest concession PT. Dara Sylva 15,000 ha, and to a state company PT Inhutani for the enrichment of Dipterocapaces species for about 15,000 Ha. There is only 3,550 ha of forested land without a permit or management.

There was a period of management vacant after logging concession closure and before issuance two forest concessions. Local people began to clear the forest for smallholder plantation mainly planted with rubber or oil palm in early 2000. To encounter forest encroachment, the Ministry of Forestry issued decree No. 10182/Kpts-II/2002, deciding the working area of the Dipterocarpaceae enrichment model program (PMUMHM) with an area of ± 15.000 Ha to restore timber production. This was one of the four Dipterocapacea enrichment programs in Indonesia. The other half was granted to PT DS to run industrial forest plantation (HTI). These two concessions intended to rehabilitate logged over the forest.

Unfortunately, the two forest concessions failed to manage the remaining forest area. As a consequence, logger over forest severely degraded. Forest land encroachment continues until this very moment. As of 2013, the Ministry of Forestry issued decree No. SK.695/Menhut-II/2013. 21 Oktober 2013, deciding the establishment of the Production Forest Management Unit to handle forest management at the field level. According to the law, PMU will supervise current forest concessions, empower local people, and do forest rehabilitation. Unfortunately, KPHP Model Dharmasraya encounters operation problems due to overlapping claims over forest land tenure [13].

The people in nearby forest areas mainly belong to Minangkabau ethnic where their social organization has been advance, property right attached to the social unit called Nagari and suku (clan). Traditionally, land (including forest land) has been regarded as communal land with various degrees of tenure arrangement. FMU Dharmasraya claimed as communal land owned by Melayu clan. A dominant group called Melayu is widely recognized as the landowner where their concerns must be paid to when dealing with forest land in the site [16].

The forest falls into low land forest, and elevation ranges from 400 feet to 1200 feet above sea level. The topographical condition consists of rather steep, only 11.76%, flat land 48.19%, and sloping 40.04% (KPH Dharmasraya, 2014). These easy access to the forest and lower investment cost.

3.2. Characteristics of household leaving in close approximate with forest land
People living in the forest area are associated with resources in their nearby villages. Evidence of this association can be seen from the assets at their disposal. Economic characteristics of households in the nearby forest area in terms factor inherent in the household that facilitate plantation in forest area, including possession of assets and availability of labor, are presented in Table 2.
Table 2: Household farm assets

| Farm-related asset | Number of asset unit by number of households (N=41) |
|--------------------|--------------------------------------------------|
|                    | 1    | 2    | 3    | 4    | 5    |
| Female labor       | 33 (80.5%) | 2 (7.3%) | 0    | 0    | 0    |
| Male labor         | 35 (85.4%) | 5 (12.2%) | 1 (2.4%) | 0    | 0    |
| Total farm labor   | 4 (9.8%) | 28 (68.3%) | 9 (22.0%) | 0    | 0    |
| Hoe                | 22 (53.7%) | 10 (24.4%) | 1 (2.4%) | 1    | 0    |
| Oil palm harvester | 2 (4.9%) | 2 (4.9%) | 0    | 0    | 1    |
| Motor bike         | 15 (36.66%) | 17 (41.5%) | 4 (9.8%) | 0    | 0    |
| Chainsaw           | 16 (39.0%) | 4 (9.8%) | 1 (2.4%) | 0    | 0    |
| Rubber tapping knife| 8 (19.5%) | 19 (46.3%) | 5 (12.2%) | 4 (12.2) | 0 |
| Grass cutter       | 1 (2.4%) | 1 (2.4%) | 0    | 0    | 0    |
| Manual saw         | 21 (51.2%) | 1 (2.4%) | 0    | 0    | 0    |
| Axe                | 20 (48.8%) | 3 (7.3%) | 0    | 0    | 0    |
| Knife              | 13 (31.7%) | 16 (39.0%) | 8 (19.5%) | 0    | 0    |

Table 3. Agricultural Land occupation by clan

| Total agricultural land (ha) | Number of the household by Clan | Total |
|-----------------------------|---------------------------------|-------|
|                             | Chaniago | Melayu | Patopang | Piliang | Talao | Melayu Koto Tinggi |
| < 1 ha                      | 1        | 2      | 0        | 1       | 0     | 0     | 4     |
| 1 - <2 ha                   | 2        | 3      | 0        | 6       | 0     | 1     | 12    |
| 2 - <3 ha                   | 0        | 3      | 0        | 3       | 1     | 0     | 7     |
| 3 - <5 ha                   | 0        | 2      | 0        | 3       | 1     | 0     | 6     |
| 5 - <10 ha                  | 0        | 2      | 1        | 3       | 0     | 0     | 6     |
| >= 10 ha                    | 0        | 5      | 0        | 1       | 0     | 0     | 6     |
| Sub-total                   | 3        | 17     | 1        | 17      | 2     | 1     | 41    |

| Mean land occupation (ha)   | 0.83     | 9.47   | 5.00     | 3.23    | 2.50  | 1.50  | 5.61  |

Farming households have good access to forest areas uses a motorbike. The distance of their settlement to forest between 10 and 20 km. They also have machinery for forest clearing tools such as chain saw that ease their work to clear the forest and reduce clearing labor. These facilities are operated by family labor. For rubber farming, each household has supporting tools such as a taping knife.

Their association with clan determines their land possession. Melayu clan, as the first settlers, occupy much bigger land than their latter comer fellow villagers. Table 3 presents land occupation by the clan and the average of their land occupation.

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| 1 - <2 ha                   | 2        | 3      | 0        | 6       | 0     | 1     | 12    |
| 2 - <3 ha                   | 0        | 3      | 0        | 3       | 1     | 0     | 7     |
| 3 - <5 ha                   | 0        | 2      | 0        | 3       | 1     | 0     | 6     |
| 5 - <10 ha                  | 0        | 2      | 1        | 3       | 0     | 0     | 6     |
| >= 10 ha                    | 0        | 5      | 0        | 1       | 0     | 0     | 6     |
| Sub-total                   | 3        | 17     | 1        | 17      | 2     | 1     | 41    |

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Their current smallholders plantation plots are newly cleared forest, only few of them as rejuvenation of old plantation. Out of 85% plots being cultivated was formerly forested land. This shows land owner expansion into forest area for cash crop plantation.
Table 4. Small Holder Plot history

| Plot history       | Frequency | Percent  |
|--------------------|-----------|----------|
| Old plantation     | 13        | 15.29%   |
| Forested land      | 72        | 84.71%   |
| Total plot         | 85        | 100.00%  |

History of smallholder plots also revealed that the plots have just been cleared in recent years. It has something to do with the closure of timber concession and local people began to clear the forest for smallholder plantation. The majority of these plots were cleared after the year 2000. Some events were going on during this time. First is the decentralization of forest management from central to local government. Many studies found that local government has a lack of capacity to manage forest land. Secondly, it was the time when logging concession terminated, and concessionaire left the forest vacant. This triggers forest land encroachment. Thirdly, it was the time when the government revitalizes the local village government called Nagari as an administrative unit, and it also revitalizes claim over forest land as their ancestral land.

The planted plot in the forest. The majority of the plot is cleared in the last fifteen years or post logging operation. Out of 83 smallholder plots currently cultivated, 67% of them were cleared after 2005. Plot clearing is going on. De facto, villagers are landowners, although de jure it belongs to the state forest.

Table 5. History of smallholders plot inside forest land

| Year planted | Number | Percentage |
|--------------|--------|------------|
| 1985 – 1994  | 8      | 9.64%      |
| 1995 – 2004  | 31     | 37.35%     |
| 2005 – 2015  | 44     | 53.01%     |
| 2010 – 2015  | 12     | 14.46%     |
| Total plot   | 83     | 100.00%    |

3.3. Negotiating Tree into Plantation in Production forest

There are three pieces of evidence obtained from the farmer about negotiating a timber tree into their smallholder plantation. Firstly we ask about the possibility of integrating timber tree into rubber or oil palm plantation. The production forest is intended to produce timber and non-timber forest products. Since the forest land has been occupied by local farmers to grow rubber and oil palm, it is necessary to investigate their perception about this integration or synergy between two purposes.

Synergy utilization of plantation for timber and non-timber. Firstly, possible wood plants can be integrated into oil palm plantations. Landowners' perceptions about integrating timber tree or non-timber plant into their smallholder plantation in forest areas are "disagree" and "strongly disagree". This has two implications; first, landowners have converted forest into monocropping plantation, which is illegal according to state law. Secondly, discussion with a local forest management agency, the government may tolerate plantation in forest land as far as plantation is mixed with another tree such as jungle rubber. The current practice is not following forest management policy.

Table 6. Landowners perception about integrating timber tree into the plantation

| Perception about integrating timber tree into the plantation | Frequency | Percent |
|------------------------------------------------------------|-----------|---------|

We tested further about their tenure security. By state law, there is no land title issued inside forest land. Since the landowners cultivating land inside the forest area, we asked them whether ownership of property must be proofed by a land certificate issued by the National Land Agency. Their response is shown in Table 7. They disagree that land ownership must be proved with the land certificate. This indicates a robust legal pluralism situation where local farmer feels secure with customary law with regards to land ownership.

| Perceived as Proof of Ownership | Frequency | Percent |
|---------------------------------|-----------|---------|
| Neutral                         | 5         | 12.2    |
| Strongly agree                  | 1         | 2.4     |
| Strongly disagree               | 6         | 14.6    |
| Agree                           | 7         | 17.1    |
| Disagree                        | 22        | 53.7    |
| Total                           | 41        | 100.0   |

We got the response that there were only a few farmers who agree with the land title. The majority of them is disagreed and strongly disagree. Considering the high cost to establish a plantation, we check farmers' perception that ownership of land without a title cannot be pledged to the bank. Their response shows that land in smallholders plantation without land title can be pledged to the bank. They know that their land cannot be pledged to the bank. Few of them disagree, which means that smallholder perennial crop plantation can be pledged to the bank.

| Perceived as Pledge to the Bank | Frequency | Percent |
|---------------------------------|-----------|---------|
| Neutral                         | 15        | 36.6    |
| Strongly agree                  | 4         | 9.8     |
| Agree                           | 20        | 48.8    |
| Strongly disagree               | 2         | 4.9     |
| Total                           | 41        | 100.0   |

We further investigate whether ownership of smallholder plantations or rubber can be used as collateral in bank loans. Their response is shown in Table 9 show that landowners agree with the statement, but one-third of them neutral, which means they can obtain credit with their smallholder plantation without a land title.
Table 9. Landowners perception about using plantation as collateral in the bank

| Perception      | Frequency | Percent |
|-----------------|-----------|---------|
| Neutral         | 17        | 41.5    |
| Strongly agree  | 1         | 2.4     |
| Agree           | 23        | 56.1    |
| **Total**       | **41**    | **100.0** |

Negotiating with landowners for forest rehabilitation is a tough job as many of them are under resistance to previous forest management and plantation development practices. They are claiming back their land from the government and private companies. Landowners opposed to integrating timber tree species to their monoculture oil palm or rubber plantation. It shows limited knowledge and experience in this regard. It is essential FMU to provide more information and integration demonstration plot in

3.4. The implication for forest management under FMU Dharmasraya

FMU Dharmasraya District is not an isolated case with regards to landowners perception where plantation either oil palm or rubber are valued higher than forest. High returns (profit) generated by oil palm independent smallholdings, making it highly competitive with rubber. the benefit from oil palm more profitable than rice production. In other studies in Sumatra, local people appear very responsive and aggressive to new economic opportunities. They do not hesitate to change their livelihood system if it can increase their welfare (household income) [17] [18].

Forest Management Unit (FMU) is adopted in Indonesia as an effort to overcome the growing concern of Indonesian forest conditions. The current conditions are characterized by an increasing rate of forest degradation, underdevelopment of forestry investment, the low progress of forest plantation establishment, less controlled forest area, decline in community economic in and around forests, and increasing unmanaged forest area. FMU is expected to be done through strategic efforts in the form of deregulation and de-bureaucratization of forestry with the multi-stakeholder approach. FMU shall develop a long term forest management plan. The plan shall include programs such as community empowerment and forest rehabilitation. Farmer and local landowner participation are crucial for these purposes. In this process, negotiating is a skill needed by the FMU manager.

As the paper argues, negotiating with landowners and farmers who have cleared forest land for smallholder plantation is a way to synergize forest management plan and landowner's willingness. Unfortunately, as the study shows, the landowner is far from willing to integrate their mono-crop smallholder plantation with the timber tree planting. Mutolib et. al found that the farmer has been in a long time struggle to get the forest from state companies and private companies to be under their control [14]. In fact, as Mutolib argues, forest encroachment is a form of resistance to previous land grabbing. Yurike et al also found that local people put a higher value on farmland than of forest, as such, they cleared the forest without further consider forest socio-economic, cultural, and ecological function [19]. Hence forest function has been dwarfed to only for agricultural expansion area. Besides, local people have no experience of punitive forest encroachment by the local authority. Hence, they assume that their activity is tolerated by the government.

Dysfunction of FMU Dharmasraya is not an isolated case. As also found in FMU Banjar District where people in the study site as one of the key stakeholders who have a strategic function in this FMU policy implementation were not aware of FMU presence. In addition, problems of incomplete and unclear land status add to the dysfunction of FMU [20]. Stakeholder analysis shows that direct and influential stakeholders in "KPH" establishment are "BPKH" [21]. A different result found by Possumah, Akhbar, and Golar (2014) in FMU Model Dampelas Tinombo, where communities had a high understanding of the planning of forest production management [22].

Encroaching of ex-concession production forest area by local people is a common phenomenon in Indonesia. A report published by Survey Team of Forestry Department, Muhamaddiyah University
Palem bang indicates that land encroachment had occurred by people in Muara Merang and Kepayang Village in Lalan Production Forest, but out of MRPP areas. Commonly, land that was tilled by people including 1 to 10 hectares to grow rubber or oil palm. Dharmasraya and other similar cases in Indonesia clearly show that forest restoration is a tough job to carry out. This evidence shows the need for forestry extension workers to develop an extension program on forest function. This must be an important program in the management plan of FMU Dharmasraya. Another important element is forest restoration and the multirole of the forest, including in climate change mitigation. FMU shall also negotiate the value of the remaining forest to maintain the remaining forested area, including the biodiversity contains there in that is essential for forest restoration very shortly. The government also needs to fill the educational curriculum with forest environmental function.

4. Conclusion
Negotiating the integration of timber and non-timber product in smallholder plantations in forest areas is a tough job. Landowners disagree with the idea, and their perception is shaped by a long time history and lack of appreciation towards forested land. This acerbated by the massive expansion of large scale plantation in their ancestral land by oil palm companies in nearby areas. This requires a serious forestry extension program as well as an alternative monetary valuation to ecosystem service provided by the forest. Local landowners should be compensated higher to stop deforestation and the conversion of forest land into the plantation.

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