The tradition of farming in the State Forest Area: lesson learned from Batulanteh’s Production Forest Management Unit, West Nusa Tenggara Province

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Abstract. The research is targeted to identify the motivation of farming, the history of occupation, and the effects on the farmers’ livelihood employing an ex-ante approach that provides potential clues about tenurial factors. Data are collected through interviews and focus group discussions with 34 farmers and 10 key persons and analyzed descriptively. The research revealed that the farmers’ residential status are mostly migrant from Lombok Regency. They have been farming for 22 years since Perhutani Company recruited laborers for reforestation program. Economic pressure is presumably being the most reason for farmers to migrate to and cultivate the state forest areas. The changes authority of forest from Perhutani to forestry service, change the policy of forest management too, and unsettle the farmers. This anxiety can be decreased by increasing the sources of farmers’ income through training such as how to produce beverage juice from cashew fruit flesh and raising honey bees. In this regard, cooperation between industrial ministry, trade ministry, local government, and farmer groups is required, particularly for forest product marketing assistance. Additionally, a forest conservation agent is urgent to regenerate from the local farmers.

1. Introduction

Decree of the Minister of Forestry No. 200, 1991 regulating the establishment of Forest Management Units (FMU) as a milestone for forest management at the site level, which is oriented towards strengthening forest areas and the certainty of supporting forestry business [1]. To prepare institutions and to accelerate the implementation of FMUs, the Minister of Forestry establishes a model of FMU which is encouraged to gradually develop based on the local typology [2]. The Ministry of Forestry has established 120 models out of 530 FMUs. Based on the type, 40 units are Protected Forest Management Unit covering 3,550,855 ha, and 80 units are Production Forest Management Unit covering 12,888,863 ha [3].

Production Forest Management Unit of Batulanteh covers eight of 24 sub-districts in Sumbawa Regency, they are: Batulanteh, Moyo Hulu, Moyo Hilir, North Moyo, Labuhan Badas, Rhee, Unter Iwes, and Lape. The areas are divided into several Forest Bloks (FB), including Olat Lake (forest land register no 78) covering an area of 3,381 Ha; Gili Ngara (forest land register no 79) covering an area of 2,259 Ha; Rai Raft Kwangko (forest land register no 80) covering an area of 2,739 Ha; Serading (forest land register no 36) covering an area of 1,894 Ha; Boinsoy (forest land register no 57) covering an area of 5,103 Ha; Batulanteh (forest land register no 61) covering an area of 17,400 Ha [4]. More than
half of the forest area (56%) in Batulanteh is dominated by production forest (56%). Under Government Regulation Number 6 of 2007, the FMU of Batulanteh, therefore, can be classified as a FMU.

The benefit of forming FMU is the increased capacity to guarantee regional certainty [1]. Besides, the existence of FMU also increases access to forests through partnerships with FMU managers and as a resolution to land-use conflicts between communities and the local government [2]. To minimize encroachments in Batulanteh forest, highlighting the benefits of FMU is important.

Several studies on the land tenure problems in forest areas have been carried out, including by [5]; [6]; [7]; and [8]. Several studies also discuss forest land tenure specifically under FMU management, among others are the discussion performed by [9]; [10]; [11]; [12]; [13]; and [14]. However, studies that focus on the condition of smallholders and the chronology of their entry into land tenure conflicts, especially in the Batulanteh FMU, have not yet been carried out. This study aims to contribute to the formulation of community motivation-based forest management model policies that can improve livelihood while maintaining the sustainability of the area. This objective is carried out by tracing the history of the farmers employed in the area using an ex-ante approach.

2. Methodology
2.1. Location
The research is carried out in the forest area of Kanarluk FMU, Sumbawa Regency, West Nusa Tenggara Province.

2.2. Data collection
Data are collected from 42 households who live in Bronjong sub-Village (apart from Labuhan Badas Village) which is located inside Batulanteh FMU area. A total of 34 farmers are intentionally selected as the respondents, while the remaining (eight people) are not included because they are working outside the village. To increase the information during data collection, we involve ten people including community leaders, village officials, Kanarluk Forest Management Resort (FMR) staff, and farmers who master the history of forest management in Batulanteh’s FMU.

2.3. Data collection and analysis
Primary data are collected through interview techniques; this is to obtain information about the origin of the farmers, the reasons for cultivating, the length of stay in the forest area, and the size of the cultivated land. Some additional primary data are also collected through small group interview method (Focus Group Interview) [15], i.e. discussions conducted on one group of farmers and guided by one person. Meanwhile, the secondary data, including the background of forming Batulanteh’s FMU, the history of land cultivation in Sumbawa Regency, and the condition of the residents of Labuhan Badas District are collected from village monographs, research reports, library, books, and other related documents. The collected data are then analyzed qualitatively and is presented descriptively to provide comprehensive information about the community's existence in the forest area of Batulanteh’s FMU.

3. Result and discussion
3.1. Condition of arable land in Kanarluk RPH forest area
The farmers who lived in the forest area (Bronjong Hamlet) are migrants, coming from Lombok, Bima, North Sumatra, and Sasak. Most of the farmers are from Lombok (59%) and the least are from North Sumatra (3%). Farmers gather in one area usually because they have the same interests or work. Likewise, farmers migrate from their area of origin to Batulanteh forest area because they have similarities, such as regional origin and economic factors.

Table 1 shows that the main factor which causes farmers who want to migrate is economic factors. Migration is not solely related to demographic problems but also relates to economic activities in the origin or destination of the migrations [16]. Based on the interviews with respondents, it found that most farmers (79.4%) in their area of origin do not have arable land for cultivation activities. However, some farmers state that about 20.5% of them poses the land that is inherited from their parents, but it is not
sufficient to meet the livelihood demands of their families. Land is one of the most crucial production factors because it can meet the daily economic needs of farmers [17]. The farmer's primary means of production are owned by a farmer [18].

For farmers, land is a matter of one's life and death [19]. Because of the demand for land, farmers and their families are willing to leave their original areas and move to new areas to obtain land cultivation rights and better life [20]. According to [21], the mobility of rural workers to migration destinations includes three triggers, they are: rural economy is not able to provide jobs, rural communities do not have access to village potential, and finally, there are available jobs that can provide income in the destination areas. Farmers who are now working on land in forest areas are second and third-generation farmers, they initially migrated from their original area to Sumbawa when they were still children. With such conditions, land cultivation in forest areas can be managed continuously indefinitely [22].

The result of the interview indicates that nineteen third-generation farmers (Table 1) continue to work on the land in forest areas that are inherited from their great-grandfathers. The size of arable land that is passed on to their descendants has not changed, on average 1.01 ha. Cultivated land in general is very rarely changes hands, but what happens is compensation for the cost of cultivation. The same thing is conveyed [23] that in general the land cultivated in Bulusaraung National Park, South Sulawesi Province is currently inherited from parents. Their ability to clear land or buy other farmers’ arable land makes the communities have wider land. This condition indicates that the community is willing to expand their arable land [24].

This hereditary cultivation of land shows that farmers have lived in the area for a long time. On average, farmers have lived in the area and work on forest land for more than 17 years. Prolong occupation of land make them to possess a different perspective on the land. All farmers (100%) state that this area have become their hometown. All farmers are aware that the land do not belong to them and could not be possessed, but they could not move to other places. This compulsion arises because agriculture is the only most possible activity being conducted in the area [25]. Furthermore, the farmers state that they do not cultivate other lands except the state forest area. Therefore if they are forced to leave the land they would be confused about where the place is, and what they could work. Farmers cultivate their land with various types of high-value crops such as cashew crops, peanuts, rice, and black soybeans which provide the main income for the farmers. Besides, the arable land is also used as a pasture for the farmers' livestock.

As it is reported in the Long-Term Forest Management Plan (RPHJLP) of Batulanteh FMU [26], farmers consider the area to be private property because they have cultivated and managed the area although without clear legitimacy from the government. Some farmers have tried to work as laborers on plantations or Indonesian workers (TKI) by moving to other regions/countries, but in the end, they returned to work in the forest area. It happens because they lack of skill, resulting in being unable to meet the condition required of the job. The low educational qualification of farmers is one indicator of establishing communication and trust among farmers, and also between farmers and the government. Difficulties in establishing communication between farmers make farmers apathetic [27].

| No | Descriptions                              | Remarks       |
|----|-------------------------------------------|---------------|
| 1  | Length of stay of farmers in the area     | Average 17.4 years |
3.2. Early history of farmers working in forest areas
In Batulanteh FMU area, the community has begun to occupy forest areas by establishing settlements inside the forest areas. Among them are found in the hamlet of Kayu Madu, Labuhan Badas Village. This settlement has reached one Neighborhood Association (RT) [26].

This condition is the beginning of settlements in forest areas since Perum Perhutani Company at that time needed workers as Pesanggem as laborers in forest areas, while the community needed jobs. At that time all parties were benefited, but over time, there was a change in policies by forest area management in Sumbawa Regency, resulting in an uncomfortable situation for several parties involved in the area. As stated by [28] that social change can occur due to desired changes (intended change) or planned change and unwanted changes (unintended change) or unplanned change.

The change in forest management policies in Sumbawa Regency has also resulted in social changes for the Pesanggem in the forest area. In more detail, the historical flow of land cultivation in forest areas led to social changes as described in Table 2.

| No. | Period   | Description                                                                                                                                  |
|-----|----------|----------------------------------------------------------------------------------------------------------------------------------------------|
| 1.  | 1980 – 1990 | - Forest area managed by Perum Perhutani  
- There were already local community farmers  
- The Sonokeling project, required laborers from residents and Lombok  
- There was a conflict between resident farmers and Perum Perhutani.  
- 63 workers from Lombok were interested. |
| 2.  | 1991 – 1998 | - Measurement activities were carried out for 360 ha of arable land.  
- The species of woody plants dominated by Tectona grandis and Swietenia mahagoni, while the species of NTFPs consisted of Nephelium lappaceum, Cocos nucifera, Artocarpus heterophyllus, and Mangifera spp. It was also permitted to plant secondary crops, namely corn, peanuts, and rice.  
- Farmers from other areas left the arable location, and the existing farmers were from Lombok. |
| 3   | 1998 – 2002 | - Perum Perhutani's term of office in Sumbawa Regency has been completed.  
- Perum Perhutani ran out of capital  
- Farmers were free to cultivate any crops species in plots 10 and 11  
- Layoffs occurred at Perum Perhutani employees, and farmers had been moved from the regions  
- Farmers who survive in residence only 26 households  
- A total of 26 households requested permission from the head of the hamlet to be able to build a settlement in the Kayu Madu Hamlet  
- There was a conflict between farmers and area managers (Forestry Service)  
- There was resistance from farmers so that they were allowed to build settlements in plot 1. |
| 4   | 2002 – 2011 | - Community-Based Forest Resource Management (CBFRM) Program  
- Government officials related to conflicts in forest areas visited the site  
- The local government (Pemda) allows the farmers to occupy plot 1 with several conditions. |
The history of the people in Kampung Bronjong is divided into 5 periods, namely:

3.2.1. The period when the farmers came to Kampung Bronjong (1980-1990). Cultivation activities in the forest area of Batulante FMU, Labuhan Badas Village, have existed since 1980. The farmers came from Kanar Hamlet, Labuhan Badas Village, where they have cleared the area to be planted as agroforestry fields. Apart from farming, they also raise cattle. The maintenance system carried out is that the cows are kept in the fields and left to find their grass without being tied up and letting them walk anywhere for grazing.

It was revealed that in 1980 the Sonokeling project was implemented in the forest area of Kanarlu FMR by the Forestry Service of NTB Province. In order to carry out the project, laborers are required and mostly come from Labuhan Badas Village.

Unfortunately, conflict occurred between the farmers and the officers because the cattle (cows) often scratching the skin of Sonokeling trees (Dalbergia latifolia Roxb.) with their horns, and Sonokeling program could fail. The conflict was in 1983 ended by removing farmers from the area. Since the implementation of the Sonokeling program, the respondents have been already involved in planting activities in the area. Although the respondent is not a resident of Labuhan Badas Village, they can be involved in the program because of friend invitation who have previously been involved in the program.

Based on the Decree of the Minister of Forestry No. 337/1986 forest management in Sumbawa is carried out by Perum Perhutani to develop Industrial Plantation Forest (HTI) as part of rehabilitation activities [29]. In the implementation of the project in 1990, HTI required laborers and there were 63 household who were interested who came from various places such as Lombok, Bima, Bali, and surrounding project areas. Initially, the project only mobilizes the head of the household, but for the time being, the member of the household request to be mobilized too. Therefore, to transport the entire population, large vehicles such as trucks were needed.

During the early operation of the project, the company gives loans in the form of rice and money which must be deducted from salary. All pesanggem accept to move the project location because the company promise to give some privilege such as 1) they are employed in the project, 2) they would be provided land for housing, 3) they would be provided 1 ha of arable land each household 4) they would be proposed as a local transmigrant.

3.2.2. The period when farmers started planting in forest areas (1991 - 1998). From 1991 to 1992, people who came to Sumbawa were placed in the Kayu Madu Hamlet, Labuhan Badas Village. Furthermore, together with Perhutani to start measuring the location. There was 360 ha arable land available to be cultivated by farmers. The land furthermore was split out into four groups i.e. 1) plot number one that was provided for 20 families from Lombok; 2) plot number two was provided for 20 families from Sumbawa, Lombok, Bima, and Bali; 3) plot number three was provided for 20 households from NTB and Bali; 4) plot number four was provided for 20 households from NTB and Bali. In Kayu Madu Hamlet, there was planned to be developed timber forest products (TFP) such as Tectona grandis and Swietenia mahagoni and nontimber forest products (NTFP) including Nephelium lappaceum, Cocos nucifera, Anacardium occidentale, Artocarpus heterophyllus, and Mangifera indica. The cropping pattern designed by Perhutani were seven rows of Tectona grandis and three rows of Anacardium occidentale trees. However, plot number one was not cultivated because based on an agreement between farmers and the company officers, plot number one would later be designated for farmers' settlements.
The conditions in the field and the work are quite heavy, causing many Pesanggem to quit and only workers from Lombok who can survive until recently. The exodus of many workers from the project area make the programs cannot be completed fully.

Rehabilitation activities have been started since 1986, then continued with the Community Forest (HKM) program under the instructions of the Minister of Forestry No. 1031/1994 dated July 15, 1994, concerning the development of HKM in West Nusa Tenggara (NTB) [29]. Accordingly, farmers are permitted to plant secondary crops such as Zea mays, Arachis hypogaea, and Glycine soja under Tectona grandis and Swietenia mahagoni stand. In 1996, the company held a harvest event for various commodities such as Arachis hypogaea, Oryza sativa, Zea mays, and Glycine max which was opened by the Minister of Forestry. The moment became a beautiful memory for the Pesanggem.

The period from 1991 to early 1998 was the most exciting period for farmers because they had enough food and felt safe to work on the land. It was further stated that the income earned from wages and sale of agricultural products were sufficient for the needs of the households.

3.2.3. Period of uncertainty for farmers (1998 – 2002). In 1998, [29] reported that Perum Perhutani’s concession in NTB, NTT, and East Timor ended. As a result, the operational of HKM activities in forest areas was transferred to Forestry Service and impact on planting conditions in the field. Due to capital shortage, Perum Perhutani canceled to plant Tectona grandis trees in plots 10 and 11 because the seeds were unavailable. To prevent plots 10 and 11 from being abandoned, the farmers were given their freedom to plant other species, such as Anacardium occidentale, Artocarpus heterophyllus, and Mangifera indica.

In 1998 there was a monetary crisis in Indonesia and at that time Perhutani left Sumbawa forest area. As a result, there was a lot of encroachment and land grabbing in the forest area. In 2000, there were layoffs of employees of Perum Perhutani. This condition also impacted to the presence of farmers in the forest area of Kanarluk FMR. They were forcibly removed from the area. The Pesanggem finally came down from the mountain (forest) and stayed in plot one, because they still keep the company promise that plot number one would be used for their settlement. This promise made plot number one has never been planted with any species but left empty. Therefore, the farmers asked the hamlet head to allow them living in Kayu Madu Hamlet (Dusun Bronjong) which was located in plot one.

In 2001 the Forestry Service did not permit the farmers to occupy plot one, because the plot would be restored into the State forest. However, this situation did not end peacefully but rather a conflict occurred. There was intimidation against the farmers in the form of expulsion and arrest, but they continued to survive and live in plot one because they did not have any places to live. They were confused about where to live if they are not allowed to live in plot one.

However, the farmers kept trying to live in a plot while proposing a resident permit for three-time to the Village Head, subdistrict head, Regent, and Council members. The efforts of the farmers paid off, and finally, related officials met the farmers. They were then allowed to build semi-permanent residences using materials found on-site and they were not allowed to cut down trees for building materials purposes. Farmers were permitted to stay in plot one with the following conditions: 1) the tenants may occupy plot one, 2) may not add to the building, 3) not allowed to further develop the building (must remain semi-permanent) (as shown in Figure 1). 4) keep the existing tree from being cut or stolen.
The number of farmers who survived until the construction of houses was 26 households, while the others left plot one because they could afford to buy a house, or returned to their area of origin.

3.2.4. Period of Community Forest Resource Management (PSDHBM Program 2002 - 2011). A regional regulation (Perda) on PSDHBM No. 25/2002 about community-based forest resource management was enacted. The regulation was a legal breakthrough that guarantees access to forest land for communities around forest areas that participate in forest resource management activities [30]. This regulation controls the distribution of government rights and authority to the community in managing resources.

The existence of this legal umbrella provides certainty for farmers to continue working on forest land, as long as they do not violate the agreement. Officials at the Batulanteh FMU stated that the forest area in Kanarluk FMR was in a conducive condition and this was much better than other areas as shown in Figure 2. This conducive condition resulted from a collaboration between officers and farmers, who commit maintain the trust between them with the result of no trees in the area were stolen. The farmers were aware that the main suspects could be addressed to the officers [31]. Therefore, the role of the farmers was very important, to prevent theft and destruction in forest areas. When there were indications of forest damage in Kanarluk RPH area, they were required to immediately report it to the officers [31].

The provision of certainty of management rights over forest areas is expected to have a positive impact on encroaching communities, which will increase their awareness and turn into people who support forest conservation [32], realizing that forest areas are a place to depend on for their lives [31]. [25] stated that farmers in this area could be empowered as one of the guardians of forest area conservation.

3.2.5. FMU model management period (2011 – present). Through the Decree of the Minister of Forestry of the Republic of Indonesia No 342/2011, Batulanteh Model Production Forest Management Unit area (Unit IX) located in Sumbawa Regency with an area of 32,776 Ha is established. The location is very...
In the current condition, after a conducive situation where the farmers can safely cultivate the land, they can also carry out other economic activities. It turns out that this can rise to a new problem, i.e., the increase of the population of farmers from 26 households (2001) to 43 households. The increase in population will impact other aspects, including the increase in residential areas, even though following the agreement in the plot, there should be no additional residences. The increasing number of people living in the area also requires the availability of jobs.

Therefore, there must be preventive efforts to overcome these problems by restrengthening the agreement between officers and the farmers. As stated by [33] the main activities of the forestry sector that must be developed in terms of the social environment and at the same time as an effort to empower the people's economy, include:

- Increasing the carrying capacity of community land which is unproductive so that it is neglected.
- Community forest development
- Community forest development to increase the role of forestry for community by developing non-timber forest products.
- Development of various forestry businesses, both inside and outside forest areas.

4. Development of Social Forestry at Kanar Luk’s FMR
Despite no legal access to forest resources, a total of 43 households live in the forest area of Kanarluk FMR and their livelihood much lean on the forest resources. If they are forcibly removed from the area, they would not be able to survive because no other substitute resources, such as place to live and land to work.
To improve the capacity of the farmers, it is necessary to increase their business skills to optimize the resources utility. However, the forest area used by the community must also be preserved. In this regard, the Social Forestry (SF) program can be implemented in Kanar Luk FMR area, because this program can harmonize between improving people's welfare and forest conservation [34], where the goal is economic equity and reducing inequality based on three pillars: land, business opportunities, and human resources. Social Forestry is also a legal object for communities around forest areas to manage state forest areas [35]. It is also supported by the regulation of the Minister of Environment and Forestry No. 83/2016 concerning social forestry, which regulates forest management by the community in the form of Village Forests, Community Forests, Community Plantation Forests, Partnership Forests, and Customary Forests [36].

The Social Forestry Program in Batulanteh’s FMU is in the implementation process, and a memorandum of understanding (MoU) has been signed between the FMU and the Regent (personal communication with the Head of KPHP, 15 November 2017). The species to be cultivated in the PS program depends on the agreement, i.e., multipurpose species, Calliandra calothyrsus, for animal fodder (cows, goats), feed source for honey-producing bees, firewood, and wood pellets. Many farmers have operated honey business by taking honey from the forest. To minimize dependency on wild honey and generate continuous income, farmers should keep bees and plant C. calothyrsus as a feed source.

The SF scheme that is suitable to be implemented at Kanar Luk FMR is Community Forest (CF), which manage state forest by involving communities to empower local communities. To implement the program, some conditions must be fulfilled, including the ownership of arable land for each household covering an area of two ha, the village must recognize farmer groups in the cultivating community, and the period is 10 years and could be extended (personal communication with the head of the KPHP Batu Lanteh, November 15, 2017). All requirements to implement the SF have been completely fulfilled by farmers, the SF program, therefore, should be implemented. Moreover, Sumbawa Regency Government has issued inline regulation No. 25 of 2002 concerning Community-Based Forest Resource Management (CBFRM).

5. Conclusions and recommendations

Our results demonstrate the importance of evaluating residential history to study land tenure patterns and other related potential problems. The main factor that drives farmers to migrate to Sumbawa is poverty. All farmers who live in the area are landless but have occupied the state forest area for generations. The initial arrival of farmers into the area is as Pesanggem workers employed in the (HIT) project managed by Perum Perhutani. Unfortunately, a new policy has changed the life status of the Pesanggem, who previously worked legally, as land encroachers and later on, are labeled as land encroachers who must be removed from the area.

In addition, the problem does not stop here, because other social problems continue to come. Therefore, the policies implemented must also be in line with social problems developments in the working community. Not letting the forest area be preserved, but the people are impoverished, or vice versa. The community is accommodated for their welfare, but the forest area is damaged.

Regarding those conditions, the management of forest regions cannot be separated from social problems. Therefore, programs related to regional planning must consider the social aspect, because in general, many people depend on the forest areas. Community involvement in forest area development programs is very essential. To achieve the goal of the SF program, good communication between the community and area managers is required. By keeping good communication and accompaniment, the goals and expectations of the management of SF can be achieved and the rights of the community are not neglected. The accompaniment can be done through coaching, mentoring, and counselling the community. It is hoped that this effort will provide new insights in increasing business diversification that farmers can carry out. The more open information, the more open business opportunities will be available, and the dependence of cultivators on the area will decrease.
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