

Implementation of local superior plant of forest and land rehabilitation based on community perception in Girimulyo Village, East Lampung Regency, Indonesia

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ABSTRACT

Public perception is important in implementing Forest and Land Rehabilitation (FLR) in forest areas where tenure conflicts are thick. The research aims to analyze community perceptions of the implementation of FLR based on local superior plants in Girimulyo Village, Marga Sekampung District, East Lampung Regency. Data collection was carried out using a questionnaire of 30 respondents determined by purposive sampling. The collected data was analyzed descriptively to analyze farmers' perceptions and their relationship to social, economic and ecological aspects. Public perception of FLR activities based on forestry plants (Trees) is included in the medium category. The public's perception of FLR based on the superior Siger avocado crop in terms of social, economic and ecological aspects is in the high category. The community realizes that FLR for local superior plants is more profitable than FLR based on forestry plants. It is necessary to increase human resources in the Mulyo Lestari Agro Forest Farmers Group in order to facilitate the administrative management process.

Keyword: Farmer's Perception of Land Degradation, Forest and Land Rehabilitation, Local Featured Crops, Tenure Conflict Resolution



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1. Introduction

Environmental degradation in Indonesia is experiencing an alarming increase in damage [1]. Degraded forest land in Indonesia is quite high at 1.08 million ha per year, with critical land amounting to 30.197 million ha [1]. Forest destruction usually occurs due to widespread illegal forest encroachment, increasing population pressure, large-scale logging, deforestation, forest fires and natural disasters [2]. Land degradation in forest areas is closely related to the conversion of forest land into agricultural land. The registered forest area of 38 Forest Management Unit (KPH) Gunung Balak is recorded as 80.65% in critical condition due to invasion and land conversion [3]. Land conversion is an event that shows a change in part or all of the functions of an area that has a sustainable impact on the forest ecosystem [4].

The large-scale conversion of forest land into agricultural land can cause a lot of damage and new problems, especially in forest areas, as well as damage to environmental conditions such as soil erosion, floods, drought, ecosystem extinction, and very rapid global climate change [5]. These activities cause living creatures to lose their homes, causing them to enter residential areas [6]. Inadequate socio-economic factors are also one of the problems behind this. The influx of people into forest areas triggers tenure conflicts between the government and the community.

Conflict occurs due to differences in perception between the government and society. The interests of values, land ownership, area status, and use of forest products are factors that cause differences in perception, resulting in conflict [7]. This conflict explains the existence of interests, strengths and vulnerabilities in resource utilization [8]. Limited forest resources cannot meet community needs, which is also the cause of conflicts over forest resource management. Conflicts that occur require conflict management for conflict resolution [9]-[11]. One alternative for conflict resolution is forest and land rehabilitation activities.

Forest and land rehabilitation activities aim to reduce forest land degradation and restore degraded land as well as soil and water conservation efforts [12]. The implementation of FLR in forest management is included in the planning and implementation aspects of activities in achieving sustainable forest management. Therefore, FLR is considered important to do. The forest life support system must continue. Therefore, forest rehabilitation is one of the most effective activities in minimizing forest damage [13]. FLR activities have been implemented for a long time, but the types of plants used are forestry plants (trees), so these types of plants are not in demand by the public [14]. The implementation of FLR this time is based on the local superior plant avocado siger and has received full support from the community because the community hopes that it will have economic value. As explained, selecting plant types that can improve community welfare and preserve forests is the key to success in FLR [15]. Community participation is also important in implementing FLR [16]. Increasing community participation can be done through FLR based on local superior plants. Local superior plants are forest and land rehabilitation modification plants that can improve the community's economy and the ecological function of protected forests [14]. So, this research is considered important to conduct to see community perceptions in social, economic and ecological aspects. This research aims to analyze community perceptions regarding the implementation of FLR based on local superior plants in Girmulyo Village, East Lampung Regency.

2. Method

This research was conducted in October 2022 in Girmulyo Village, Marga Sekampung District, East Lampung Regency, Lampung Province, as the research location map can be seen in Figure 1. Data collection was carried out using a questionnaire. The sample was selected using a purposive sampling technique because, in sampling, only farmers were involved in the program. The number of respondents to be used is 30 respondents [17]-[18]. The question guide contains five aspects of perception, namely FLR based on siger avocado plants, FLR based on forestry plants (wood), and economic, social and ecological aspects of FLR on siger avocado plants.

Data processing uses a Likert scale in scoring respondents' answers. The data will be analyzed using quantitative descriptive analysis to determine farmers' perceptions and their relationship in social, economic and ecological aspects in implementing FLR based on local superior crops. It is confirmed by [19] that quantitative descriptive is valid for use in research.

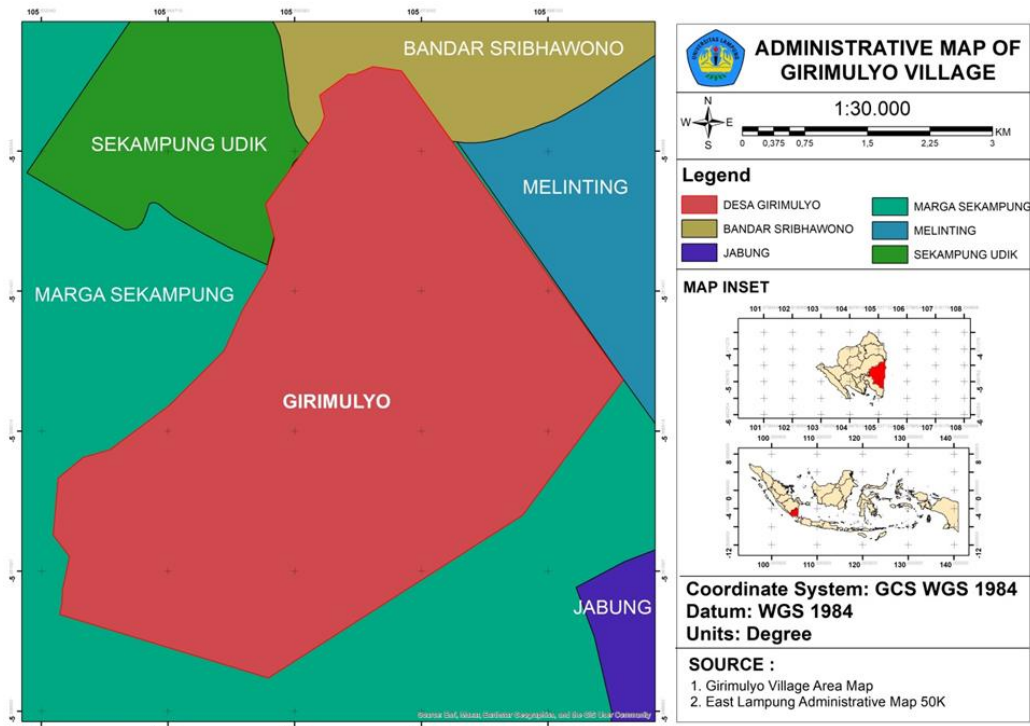


Figure 1. Map of the research location

3. Result and Discussion

3.1. Overview of research locations

The location of this research is Girimulyo Village, Marga Sekampung District, East Lampung Regency, Lampung Province. The location map can be seen in Figure 1. Most of this village has the status of a protected forest area that stretches across plains with an area of 7,769 ha. On July 7 1988, Girimulyo Village became a definitive village, which was determined by the Governor's decree in 1990 [20].

Register 38 Gunung Balak, especially Girimulyo Village, is one of the protected forest areas where disputes have never been resolved. Poverty and unequal distribution of forest resources, especially opening up access and control of assets, have pushed forest utilization beyond that carrying capacity. Most of the forest areas are surrounded by residents who are generally hungry for land. Limited quality of human resources causes limited business opportunities and employment opportunities. Not all people can be accommodated in the formal sector. Becoming a farmer is the easiest way because it tends to be realistic. The community does not own land as a production asset. The easiest way is to open forests to encroach on various purposes, especially for planting plantations and agricultural commodities.

The things mentioned above have clearly triggered conflict between stakeholders. Conflict is defined as a manifestation of differences in perspective between various parties in the Gunung Balak community and the government regarding the same object, namely Register 38 Protected Forest, especially Girimulyo Village. This problem has resulted in an increasing rate of forest and land destruction. In contrast, efforts to enforce the law on agricultural activities and encroachment in forest areas have actually given rise to land conflicts with escalation, which are increasing day by day. The disputes that have occurred have emerged in the public arena, such as demonstrations, lawsuits and various protests against the government.

The willingness of the Girimulyo people, who are, in fact, in a position of conflict over protected forest management, did not happen in an instant but was a long process. Choosing the right formula is a key that will determine the success of the program. Based on this, in 2020, the Way Seputih Way Sekampung Watershed Management Center (BPDAS WSS) tried to take various approaches to the Girimulyo community. Changing people's behaviour, especially people's acceptance of the FLR program, is not easy. Consistent efforts finally yielded results with the acceptance of the FLR activity program through an agroforestry pattern of planting local superior seeds, namely siger avocado. This is the main reason the community accepts the program because the types of plants are the types of plants that the community wants. The guarantee of no relocation of land is also an important thing that encourages the FLR program to be accepted.

3.2. Farmers' perceptions in implementing forest and land rehabilitation based on local featured crops

Several indicators are used to measure farmers' perceptions of the implementation of land forest rehabilitation in Girimulyo Village, namely FLR based on the local superior plant avocado siger, economic aspects, social aspects, ecological aspects and FLR based on forestry plants. Categories of the level of perception of the Girimulyo community towards FLR activities can be seen in Table 1.

Table 1. Farmer perceptions of local superior crop-based FLR implementation

No.	Indicators	Class Interval (Likert Scale)			Score	Category Farmers' Perceptions
		1	2	3		
1.	FLR is based on the siger Avocado plant	0-50	51-100	101-150	150	Hight
2.	Forestry plant based FLR	0-50	51-100	101-150	57	Medium
3.	Economic aspects of FLR Avocado plants	0-50	51-100	101-150	121	Hight
4.	Social aspects of FLR Avocado plants	0-50	51-100	101-150	150	Hight
5.	Ecological aspects of FLR Avocado plants	0-50	51-100	101-150	147	Hight

Interviews using a questionnaire with the Girimulyo community regarding FLR activities based on the local superior plant avocado siger, the number of people who answered in favour of FLR activities was 150 answers. All questions asked were answered in the affirmative so that the percentage shows 100% of the Girimulyo community agrees with the FLR activities based on local superior plants carried out by BPDAS WSS. The level of community understanding of these activities, as stated in Table 1, is included in the high category with a score of 150. Community perception in the high category illustrates that the community has a good understanding of the existence of forests and forest functions, practices farming and participates in forest rehabilitation activities. And land to maintain and conserve forest resources to maintain land productivity [21]. A high public understanding of the importance of FLR activities is a factor in the acceptance of the FLR program in Girimulyo Village. The Girimulyo community has a high level of understanding, one of which is due to the successful preconditioning stages carried out by BPDAS WSS so that the community has the same knowledge and views regarding FLR activities.

The community fully approves of the forest and land rehabilitation program based on the local superior plant avocado siger carried out by BPDAS WSS. The role of BPDAS WSS in this activity is as a facilitator for the FLR program. Watershed Management Center has duties in accordance with Minister of the Environment Regulation number 14 of 2022, namely as an implementing unit for river watershed management and land rehabilitation, which carries out the preparation of plans and evaluations of river watershed management; institutional strengthening, soil and water conservation and rehabilitation of forests, land, inland waters and mangroves in accordance with statutory regulations. The Girimulyo community's acceptance of FLR activities is due to the BPDAS WSS approach, which takes into account aspects of community welfare (economic), social and ecological. The success of forest and land rehabilitation programs depends on economic, social and ecological aspects that work side by side [21]. The community will focus on the economic aspect. If the program can have a positive impact on community welfare, then the community is likely to take part in FLR activities. Social and ecological aspects of society are impacts that are ignored by society but are the main goal of agencies.

The perception of the Girimulyo community towards FLR based on forestry plants is the community's view that the plants used are not superior siger avocado plants but rather forestry plants (wood). Based on the results of the questionnaire, the community's answers to FLR activities based on forestry plants, 57 answers agreed, 4 answers were doubtful, and 89 answers did not agree with this pattern. The percentage of people's answers was 59% who disagreed with this pattern, 3% of people were doubtful, and 38% of people disagreed. Based on these answers, the level of community understanding of the pattern, as stated in Table 1, is Medium, with a score of 89. The moderate level of community understanding shows that the community does not agree with the implementation of FLR based on forestry plants (Trees). The community does not agree because they consider forestry plants to be woody plants such as mahogany, sengon, bayur, rosewood, and others. Where these plants cannot be used other than their wood, and the wood cannot be used (cut down) because of the prohibition on logging in protected forest areas. Apart from that, the community answered in the affirmative as much as 38% because, based on the questionnaire, the community understands the positive impact of using forestry plants in FLR activities for the condition of protected forests. Still, the community does not want anything other than siger avocado plants because it has no economic impact and

can directly bring prosperity to the community. FLR activities had previously been carried out in Girimulyo Village through the activities of the National Forest and Land Rehabilitation Movement (GNFLR). The community accepts this activity, but it is not implemented in the field. The program provides seeds to the community, but the seeds provided are not the seeds that the community wants. These seeds include acacia, mahogany, bayur and so on. These plants are trees that cannot be used apart from their stems, and there is a prohibition on cutting down trees in protected forest areas so that they do not have a positive impact on the community's economy. [22] Explains that one of the efforts to preserve forest areas is that cutting down trees in protected forest areas must be prohibited and subject to sanctions. Communities that have experienced drift into forest areas have resulted in land being cleared for settlements and becoming dry land for agriculture. In line with the opinion of [23], people prefer to plant crops compared to forestry crops because they have faster profits. The community considers that these activities only pay attention to ecological aspects but do not pay attention to the welfare of the community. FLR programs that do not accommodate all aspects (social, economic and ecological) can result in conflicts between communities and forestry stakeholders. The Girimulyo community has experienced prolonged conflict with all forestry agencies. To overcome these problems, the programs carried out must accommodate socio-economic and ecological aspects.

Community perception in the economic aspect illustrates whether FLR activities based on local superior plants can have a good impact on community welfare. The public answered the questionnaire with 121 answers agreeing, one answer being unsure, and 128 answers disagreeing. The percentage of people of 81% answered agree, 0% answered doubtful, and 19% answered disagree. The level of community understanding of these activities, as stated in Table 1, is included in the high category with a score of 121. The score obtained illustrates that the community knows that the implementation of FLR based on local superior plants can increase community income. Apart from that, based on the questionnaire, 19% of the public did not agree that avocado stems could not be sold because avocado stems are considered poor wood, so avocado stems cannot be economically useful. The public's high preference for planting Siger avocado seeds is largely influenced by the superiority of this variety in terms of being easy to grow, producing quickly, having large fruit characteristics and delicious taste. Siger avocados can be harvested at the age of 3 years and are capable of producing 50-100 kg/tree each year. In line with the statement [24], avocado plants grown vegetatively can ideally be harvested at the age of 3 years, and in the highlands, avocado trees can bear fruit at the age of 2 years. Research [25] confirms that avocado plants can produce 50-150 kg/tree in one harvest.

The implementation of FLR activities based on local superior plants has economically created a new source of livelihood in the community. This activity stimulates the economy in the community. FLR activities, which started in 2020, have not yet produced results because they have not yet entered the harvest period. However, this activity has stimulated the community to create employment opportunities such as grafting avocado plant nursery centres, seed grafting service businesses and field study facilities for students, farmer groups and agencies and the community. The nursery centre built by the community is able to meet the need for seeds not only in the East Lampung region but also in various regions inside and outside Lampung Province. Apart from the nursery business, the community also runs a seed grafting service business to improve the quality of seeds using top working techniques at a price of IDR 100,000 per 1 live graft shoot. Apart from producing fruit, avocado cultivation is also a business that can increase income [26].

Farmers' perceptions in the social aspect illustrate whether this program can have a good impact on social relations between communities, between agencies and the community and agencies. The results of the interview with the questionnaire obtained 150 agree answers, 0 for undecided answers, and 0 for disagree answers. The percentage obtained from these answers is that 100% of the Girimulyo community agrees with FLR activities based on the local superior plant avocado siger. The level of community understanding of social aspects, as stated in Table 1, is included in the high category with a score of 150. This illustrates that the community has a high understanding of the social impact on society and related agencies. The community knows that the FLR program based on the local superior plant avocado siger can improve good relations between the community and the community, the community and Forest Farmers Group (KTH), the community and BPDAS WSS, and the community and KPH. In line with what was stated by [27], FLR activities can be beneficial in the social aspect in the form of increasing cooperative relationships and a sense of mutual trust between parties so that FLR activities can run well. The impact on community access rights to forest resources, certainty of land management, and access to trees and other forest resources are two positive impacts for local communities from FLR activities. With clearer and more definite rights to rehabilitation areas and access to collectively managed resources, the institutional strength and traditional culture of local communities will increase. Increasing institutional strength will strengthen community social ties that are oriented towards positive impacts on the implementation of FLR [28].

Forest and land rehabilitation can increase the involvement and participation of the Girimulyo community in managing the area. Research [29] states that FLR activities can increase community participation by 79.69%, which is characterized by community support, knowledge and commitment to FLR activities. Community participation in FLR activities based on the local superior plant avocado siger has an impact on the inclusion of social forestry programs. Social forestry is carried out through the HKm scheme. Social forestry is a regulation of the management or use of forest areas to reduce poverty, unemployment and population inequality [30]. Community forest is one of five social forestry schemes that manage land using an agroforestry system [30]. The policy stated in Minister of Environment and Forestry Regulation Number 83 of 2016 states that this activity is an activity to grant legal access rights to state land to the community. In line with [31] explains that community forest activities aim to improve community welfare through managing or utilizing forest resources optimally, fairly and still paying attention to environmental sustainability. Unfair land use will lead to degradation of forest resources and disparities in local communities [8].

The ecological aspect shows that the number of respondents who answered agree was 147 answers, three answers were unsure, and no one answered disagree. The percentage level of perception on the ecological aspect shows that 98% answered agree, 2% answered doubtful, and 0% disagreed. The level of understanding of the Girimulyo community regarding ecological aspects was obtained with a score of 147. This score is included in the high category. Communities that fall into the high category mean that the community has a fairly good understanding of the ecological impacts of FLR activities based on the local superior plant avocado siger. Apart from that, 2% of people still doubt that avocado plants can have a good impact on nutrient cycles. The community understands that FLR activities based on local superior plants can restore the function of protected forests in Girimulyo Village. The public understands that avocado is a tree-bearing plant that provides coolness and beauty to the environment. Avocado plants have strong roots, so they are able to support landslides, absorb and store water and have a good impact on nutrient cycles. In line with what was stated by [32], it was explained that polluted river basins could be revitalized through avocado plants. The implementation of FLR based on local superior plants, siger avocado, has an impact on the planting patterns adopted by the community. The community uses intercropping or agroforestry cropping patterns. The agroforestry planting pattern, according to [33], is a land utilization step by combining forestry activities with agricultural activities optimally and sustainably in a land management unit by taking into account the ecological, social, economic and cultural conditions of the community. Siger avocado plants in Girimulyo Village are combined with various plants, including dragon fruit, chillies, eggplant, kapok, bananas and secondary crops such as corn and cassava. This pattern has changed the way the Girimulyo community views efforts to increase land productivity. FLR activities in Girimulyo Village produce various types of secondary crops and fruit products. Protected forest land, which was initially only planted with annual crops, has now been planted with Multi-Purpose Tree Species (MPTS) plants, including siger avocado and areca nut. The avocado plant is one of the MPTS plants [5]. Minister of Forestry Regulation No. 87 of 2014 states that MPTS is a multi-purpose plant, which is a plant that can produce products in the form of wood and non-wood (roots, leaves, fruit, sap, fibre, animal feed, etc.) so that economically the benefits are obtained for more than one.

4. Conclusion

Public perception of FLR activities based on forestry plants (Trees) is included in the medium category. Farmers' perceptions of FLR based on the superior Siger avocado crop in terms of social, economic and ecological aspects are in the high category. People disagree with forestry plants (trees), but people only want siger avocado plants. The community considers forestry plants to be woody plants such as mahogany, sengon, bayur, rosewood and others, whose wood cannot be used because of the prohibition on logging in protected forest areas. At the same time, avocado is an multi purpose tree plant that has economic value apart from the wood/trunk. Coordination between relevant stakeholders needs to be improved to avoid differences in views in implementing activities, as well as the need to increase human resources for the Mulyo Lestari Agro Forest Farmers Group to facilitate the administrative management process.

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