



UDC 332; DOI 10.18551/rjoas.2022-05.25

INSTITUTIONAL ANALYSIS OF AGROFORESTRY FARMERS TO ACHIEVE FOREST PRESERVATION IN BENDOSARI AND NGABAB VILLAGES OF PUJON, MALANG, INDONESIA

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ABSTRACT

One of the problems faced in the management of production forest areas is related to the activities of the community around the forest to meet their daily needs. The role of Forest Village Community Institutions (LMDH) has not been maximized in forest management. Agroforestry also functions as a deterrent to soil erosion through land cover and canopy strata, storage of groundwater reserves, carbon sequestration, therefore, to reduce greenhouse gas emissions, and as a habitat for the conservation or protection of certain flora and fauna. The purpose of the study was to examine the effect of LMDH on environmentally friendly forest management. This research was conducted in March - September 2021 in the villages of Bendosari and Ngabab, Pujon, Malang Regency. The method of determining the number of respondents uses the Slovin formula. The results obtained are that the performance of LMDH Alam Sumber Makmur and LMDH Bendosari has not been able to meet the needs of the village community, there is a relationship or influence between institutions and sustainability as indicated by the correlation coefficient value of -0.810^* which means it has a significant relationship of 0.015.

KEY WORDS

Agroforestry, institutional, LMDH.

One form of indirect use is agroforestry activities as a forest land management system that combines the production of agricultural crops and forest plants or animals simultaneously or sequentially on the similar land unit, and applies management methods that are in accordance with the culture of the local population" (Hairiah et al., 2003). One of the problems faced in the management of production forest areas is related to the activities of the community around the forest to meet their daily needs. According to Hasan, "forest in its function as a food provider (forest for food production) is obtained through direct use of flora and fauna germplasm to fulfill food needs. In addition, forest areas are also indirectly used to produce food sources". Agroforestry as a land management system that may be offered to overcome the problems that arise due to the conversion of the land function and at the same time to overcome the problem of food availability. However, the success of forestry development through agroforestry activities is largely determined by the level of community participation in contributing to forest management efforts and the quality of supporting human resources (Senoaji, 2004).

Agroforestry as a land management system that is based on sustainability, to increase overall land yields, through a combination of production (including tree crops) and forest plants and or animals simultaneously or sequentially on the same land unit, and applying different management methods. according to the culture of the local people". Therefore, when properly implemented, agroforestry systems can be an effective tool for rehabilitating and managing lands and promoting rural development (Mayrowani, 2011). Ecological, economic, and socio-cultural plant values can be analyzed to help revealing the socio-ecological context of significant factors for plant distribution and use (Brandt et al., 2012).

According to Kartodihardjo (2006) institutional is a complex, complicated, and abstract system that includes ideology, law, customs, rules or habits that cannot be separated from the environment. In the implementation of PHBM, there are still obstacles regarding the



LMDH institution. In the course of time, LMDH was considered less attention by The State Forestry Public Company (*Perhutani: in Indonesian*) because it focused more on other activities such as the establishment of forest village community cooperatives. Another problem is the role of LMDH which is still not optimal in forest management due to obstacles both regarding the quality of human resources and funding sources in carrying out LMDH activities.

METHODS OF RESEARCH

The research was carried out in Bendosari and Ngabab Villages, Pujon District, Malang Regency, in August – November 2021. The research method used a qualitative descriptive method, namely research that describes or describes the object of research based on facts that appear or are (Hadari & Martini 1996). Field data was obtained by determining the sample using the Slovin formula. There were 96 respondents. The data obtained were analyzed by Spearman correlation regression

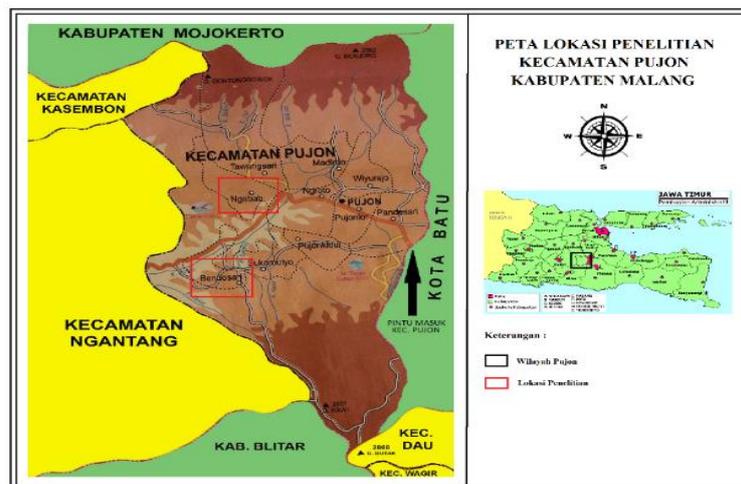


Figure 1 – Map of the research locations for the villages of Bendosari and Ngabab

RESULTS AND DISCUSSION

Bendosari Village is one of the villages in Pujon District. Located on the slopes of Mount Kawi Malang at an altitude of 1200 meters above sea level and has a cold air of about 20 ° C. Almost all of the land in Bendosari is used as agricultural and plantation land, because the majority of the people work in the agricultural sector. Geographically, Bendosari village is an area that has mountains and mostly highlands. Has a strategic potential with an area of 269.23 ha of which 31 ha is a residential area and the rest is dry land and rice fields. Meanwhile, Ngabab Village is one of the villages in Pujon District, Malang Regency, East Java Province. In terms of topography, Ngabab village is located in a hilly plateau with an altitude of 1200 meters above sea level with a temperature range of 8-18°C and is located next to the Mantung market, the largest vegetable transaction center in the Pujon area. Ngabab village is passed by the main road of land traffic that connects the city of Kediri and the city of Malang. The area of Ngabab village is 1244.93 ha which is used as protection forest, production forest, fields, settlements, plantations and other public facilities. The most prominent potential of Ngabab village is in terms of agriculture and animal husbandry.

According to Sekaran, primary data refers to first-hand information obtained by researchers relating to variables of interest for the specific purpose of the study. Secondary data is data that refers to information collected from existing sources (Sekaran, 2011).

Respondents as members of agroforestry farmer groups in Bendosari and Ngabab villages were 4,006 people and the sample of this study was 96 respondents. The data



collected included identity, gender, age, education level, number of family members, main occupation, side work, land area, type and number of stands, farmer groups, farming business, livestock business, trading business, income and expenses of respondents.

Agroforestry has an important role in forest sustainability; if management is carried out properly it will create a sustainable forest. Therefore, the Spearman correlation test was carried out to determine the relationship between agroforestry and preservation.

Table 1 – Spearman test results from agroforestry with sustainability

Correlations	Agroforestry	Sustainability
Agroforestry Correlation Coefficient	1.000	-.917**
Sig. (2-tailed)	-	.001
N	8	8
Preservation Correlation Coefficient	-.917**	1000
Sig. (2-tailed)	.001	-
N	8	8

**Correlation is significant at the 0.01 level (2-tailed).

The results of the Spearman correlation test in table 3.1 can be explained that there is a relationship between agroforestry and sustainability, this is supported by a correlation coefficient value of -0.917^{**} which means it has a very strong relationship while the sign ($**$) is a significant correlation at a significance value of 0.01. Value of Sig. (2-tailed) $0.001 < \text{less than } 0.05$, it means that there is a significant relationship between agroforestry and sustainability. In accordance to the conditions in the field, good agroforestry management supports forest sustainability. The existence of land can provide great economic, social and environmental benefits, so that land use will affect food security (Jokoleno, 2011; Hayashi, 2014; Destianto & Pigawati, 2014). However, land use must be controlled to prevent degradation, starting from the type of plant and farmer labor has a role that can support productivity. Forest sustainability is also closely related to institutions, if the management in an institution is good, the condition of the forest will also be good, then the Spearman correlation test is carried out between institutions and sustainability. The following are the results of the Spearman test analysis related to these two variables:

Table 2 – Spearman test results from Institutional with sustainability

Correlations	Institutional	Preservation
Agroforestry Correlation Coefficient	1.000	-.810*
Sig. (2-tailed)	-	.015
N	8	8
Preservation Correlation Coefficient	-.810**	1000
Sig. (2-tailed)	.015	-
N	8	8

**Correlation is significant at the 0.01 level (2-tailed).

The results from table 3.2 regarding the Spearman correlation analysis are that there is a relationship between institutions and sustainability as indicated by the correlation coefficient value -0.810^* which means that it has a very strong relationship then with a significance value of 0.015. This is in accordance to the conditions in the field that an institution or an institution that has a good structure can manage, utilize forests to the maximum and maintain forest sustainability. The running of the programs from these institutions indirectly also raises awareness, especially for the people of the importance of forests. The economic, technical, and socio-cultural limitations of cultivating native agroforestry species were also revealed. Agroforestry science and practice should, therefore, focus on increasing the reproductive potential of existing woody vegetation, as well as problem-oriented horizontal dialogue between indigenous peoples, experts, and scientific actors (Nair et al. 2007; Brandt et al., 2012; Jose & Bardhan 2012). Agroforestry practices designed primarily for under-stand benefits may be of interest to farmers in the region having productivity gains especially on marginal lands (Fao, 2007 & 2012; Dhakal, Cockfield & Maraseni, 2012).



LMDH Institutional Influence. PHBM is a forest resource management system that carried out jointly by The State Forestry Public Company (Perum The State Forestry Public Company (Perhutani) and Forest Village Communities as well as with other interested parties so that the common interest in achieving the sustainability of the functions and benefits of forest resources can be realized optimally and proportionally.

In this PHBM system, an empowerment process is carried out for forest village communities which aim to achieve sustainable forest resource management and improve the welfare of forest village communities (Awang et al, 2008, Kartodiharjo, 2008). In practice PHBM is carried out without changing the status of forest areas, forest functions, and company land status so that Forest Village Communities in PHBM are obliged to maintain and protect forest resources for the sustainability of their functions and benefits with Perum The State Forestry Public Company (Perhutani) (Corryanti & Waluyani, 2015). It is hoped that LMDH can also provide feedback so that the forest remains sustainable by participating in maintaining forest security. Communities can access forest areas to be used to improve welfare which is carried out according to ecological benefits that must be maintained and LMDH continues to play an active role in protecting forest areas so that forests are sustainable (Mustofa, 2011; Malik & Astuti, 2014). PHBM is intended to provide direction for managing forest resources by combining economic, ecological, and social aspects in a proportional and professional manner. Socio-economic function is a reflection of human effort in trying to meet their needs in the social and economic fields (Hairiah & Ashari. 2013). The results of the research in the field found the fact that there was a lack of intensive The State Forestry Public Company (The State Forestry Public Company (Perhutani) in implementing PHBM, causing LMDH development to be not optimal and the impact on the performance of LMDH members being less productive. The LMDH program did not run smoothly, one of which was due to the lack of support from The State Forestry Public Company (Perhutani). The State Forestry Public Company (Perhutani) also did not provide adequate funding for LMDH activities (Fauzi, 2012). If the guidance from related agencies is not optimal, many farmers will behave defiantly (reducing stands, burning land) for the benefit of their own agricultural production and do not have a sense of responsibility to maintain or manage existing natural resources. The ecological impacts of the implementation of PHBM are increasing land cover, improving hydrological conditions, reducing forest disturbances, and increasing the number of trees in forest areas. The PHBM program has had a good impact on the economy of rural communities.

CONCLUSION

The performance of LMDH Alam Sumber Makmur and LMDH Bendosari has not been able to meet the needs of village communities, especially in relation to planting food crops in production forests, if planting is hampered it can be said that the LMDH group has not been able to realize forest sustainability. From the results of the Spearman correlation analysis, there is an influence between institutions and sustainability, which is indicated by the correlation coefficient value -0.810, which means that it has a very strong relationship with a significance value of 0.015.

Suggestions:

1. There is a need for association activities from various LMDH groups to share experiences or solve existing problems;
2. Special assistance is needed from the relevant government to provide counseling and assistance to LMDH groups, so that sustainable forest land management gets optimal results.

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