






Formulation of Quality Assurance Social Indicators in Community Forest Health Assessment

Rahmat Safe'i^{1,2}, Irwan Sukri Banuwa^{1,2}, Wahyu Hidayat^{1,2}, Rudi Hilmanto^{1,2}, Rommy Qurniati¹

¹ Department of Forestry, Faculty of Agriculture, Lampung University, Jln. Prof. Dr. Ir. Soemantri Brojonegoro No.1, Bandar Lampung 35145, Indonesia

² Forestry Master Study Program, Department of Forestry, Faculty of Agriculture, Lampung University, Jln Prof. Dr. Ir. Soemantri Brojonegoro No.1, Bandar Lampung 35145, Indonesia

*Corresponding Author: rahmat.safei@fp.unila.ac.id

ARTICLE INFO

Article history:

Received September 20th, 2023
Revised December 6th, 2023
Accepted December 14th, 2023
Available online February 29th, 2024

E-ISSN: 2622-5093
P-ISSN: 2622-5158

How to cite:

Safe'I R., I. S. Banuwa, W. Hidayat, R. Hilmanto and R. Qurniati, "Formulation of Quality Assurance Social Indicators in Community Forest Health Assessment" *Journal of Sylva Indonesiana*, Vol. 7, No. 1, pp. 48-54 Feb. 2024, doi: 10.32734/jsi.v7i01.13710.

ABSTRACT

Community forests provide benefits to their functions and roles in meeting community needs and environmental sustainability based on economic, social, and ecological perspectives. Social indicators play this role in the sustainability of community forest health. This study aims to obtain a weighted value (quality assurance) of social indicators in assessing the health of community forests. The stages of research carried out included, among others, conducting interviews with questionnaire instruments with respondents, determining the priority scale with the Analytic Hierarchy Process (AHP) method, and determining eigenvalues with the Analytic Networking Process (ANP) method. Based on the results of the study, four social indicators can describe the health condition of community forests: education indicators, employment indicators, participation indicators, and institutional indicators. These indicators have the same level of importance, where the eigenvalues obtained do not have significant differences. It means that community forest farmers have realized that social indicators can support environmental sustainability in aspects of forest health. Thus, the weighted values obtained by social indicators from the highest to the lowest are indicator participation (0.29), education indicator (0.27), institutional indicator (0.23), and employment indicator (0.21). The formation of farmer groups needs to be done to improve local institutions. Therefore, they can support community forest management regulations.

Keyword: Community Forest, Forest Health, Quality Assurance, Social Indicators, Sustainability



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<http://doi.org/10.32734/jsi.v7i01.13710>

1. Introduction

A community forest is a forest with the status of private ownership (community) with a minimum area of 0.25 ha and a cover of woody plant canopy and/or other types of plants greater than 50% or at least 500 total plants per ha in the first year (Decree of the Minister of Forestry 49/1997). Community forests have a role and function in meeting needs and ensuring environmental sustainability based on economic, social, and ecological perspectives. Stakeholder support provides strength and opportunities for the development of community forest potential in the form of the protection and empowerment of community forest farmers [1].

One of the areas in Lampung province that has community forest potential is in Suoh District, West Lampung Regency. Suoh is directly adjacent to the conservation area, namely Bukit Barisan Selatan National Park (*Taman Nasional Bukit Barisan Selatan/TNBBS*). In addition, the Suoh area has the opportunity to be a watershed (*Daerah Aliran Sungai/DAS*) utilized by the community for clean water. Another potential in the Suoh area is improving the economy and welfare of community forest farmers. Therefore, the preservation of community forests needs to be maintained so that they are sustainable and support healthy forests.

Forest health describes the condition of optimizing the function and role of areas that are protected from disturbance and disease [2]. In addition, forest health shows the potential of natural resources, which include environmental services and forest products. Thus, forest health in community forests needs to be considered, which is influenced by several indicators and perspectives. According to [3], it is not only ecological indicators but also social and economic factors that can describe the sustainability of community forest functions from the perspective of forest health. Knowing the health condition of community forests is useful as a basis for decision-making in forest management [4]. As the main actors in community forest management, communities, and farmers have social and institutional characteristics that can support the success of community forest exploitation.

The success of community forest management policies depends on the participation of various stakeholders, both government and non-government, private and community [5]. Participation and stakeholders are part of the social elements related to the population and local forest institutions [6]. Strong institutions and community participation will imply employment opportunities and the productivity of forest products received. In addition, several other internal factors influence the participation of people in community forest management, namely education and employment factors. It will lead to how the mindset, knowledge, and forms of participation are given [7]. Supportive policies, strong institutions, and active community participation encourage forest sustainability and increase local community income through good-quality harvests [8].

Currently, especially in Indonesia, measurement and assessment of forest health are still based on ecological indicators. As in several studies that have been carried out regarding forest health, many types of forests in Indonesia are still in moderate condition, which shows that there is a need for effective optimization of their management [9]–[11]. Forest management cannot be separated from actors or stakeholders. Stakeholders have social characteristics that can impact the rules and performance of forest area management [12]. It is necessary to assess not only ecological aspects but also social and institutional aspects to support healthy forests. Apart from that, education and work status in communities managing forests are factors in the direction of the success of healthy forests. In addition, this aspect is expected to play a role in fulfilling welfare and increasing income. Thus, this study was conducted to determine the level of importance and quality assurance of social indicators in supporting the assessment of community forest health.

2. Method

2.1 Research Location

The study was conducted in July 2023. It is located in Community Forest, Suoh District, West Lampung Regency, Indonesia. The research location map can be seen in Figure 1.

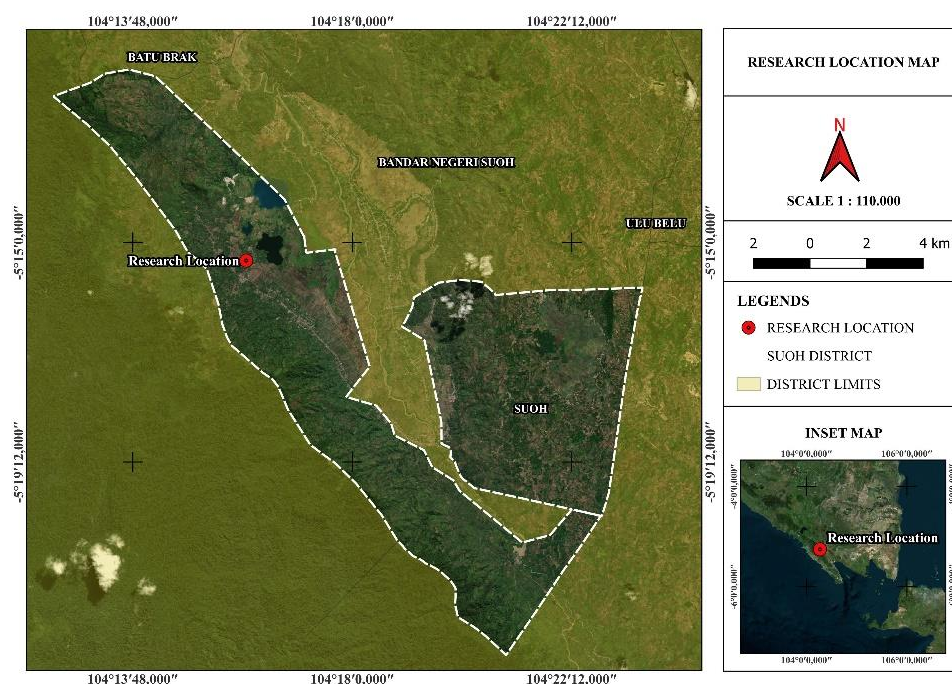


Figure 1. Research location map

2.2 Material and Tools

The materials are informations from key informants. The tools are stationery, questionnaires, cameras, calculators, laptops, and recording devices.

2.3 Data Analysis

The formulation of quality assurance indicators aims to ensure the quality of a forest health indicator to achieve a successful assessment of forest health, especially in community forests. The social indicator formulation of forest health, namely education, employment, participation, and institutions, was carried out by interviewing key informants. The four indicators were determined using a purposive sampling technique based on the results of observations and evaluations of community forest management in Suoh. It is considered that institutional indicators such as education, work status, and community participation are important for sustainable forest management [6,8]. Data collection for these four indicators is based on the results of the questionnaire scoring given to key informants. Scoring is intended to obtain a value from each indicator to obtain an importance-level score.

Key informants (30 individuals) were selected by using purposive sampling techniques. They are experts in their fields without having mandatory academic degrees [2,13]. The 30 key respondents selected included ten site-level managers (farmers), ten academics (lecturers), and ten government officials. Determining the number and criteria of Key informants is based on purposive sampling, which considers the role of actors in community forest management, including site-level managers (farmers), regulators (government), and academics. Furthermore, the interview results were analyzed using the Analytic Hierarchy Process (AHP) method to obtain a priority scale [14]. Then the value of social indicators of forest health was determined using the calculation of eigenvalues using the Analytic Networking Process (ANP) method [15], [16]. In this research, the AHP method was used to determine the level of importance of several social indicators in forest health. The AHP method helps to make decisions. Thus, the solutions are obtained that meet the objectives of the problem [17]. In addition, this method can estimate the sensitivity of several components or variables, which is adapted to ANP to obtain mathematical calculations for all alternatives obtained. The calculated value describes the percentage importance of the indicator in solving a problem.

3. Result and Discussion

Forest health is a multidisciplinary science that describes from various perspectives, including ecological, economic, and social aspects. The development of forest health currently depends on ecological and environmental perspectives. It is inevitable because ecological aspects are necessary to succeed in sustainable forest management. However, besides that, economic and social perspectives are equally principal indicators in forest management, especially the assessment of community forest health. Community forests have the prime function of being productivity producers to meet the needs of the community or farmers. Therefore, community forests have principal economic, social, ecological, and institutional aspects.

The principal value of community forests is their economic benefits as a source of income, socio-cultural benefits in the form of employment in the field of farming, ecological benefits in the form of protection of critical land, erosion hazards, water management, and biodiversity, as well as legality and regulation in forest management and use. Thus, this study was conducted to determine the level of importance and quality assurance of social indicators to assess the health of community forests. The results are in Figure 2.

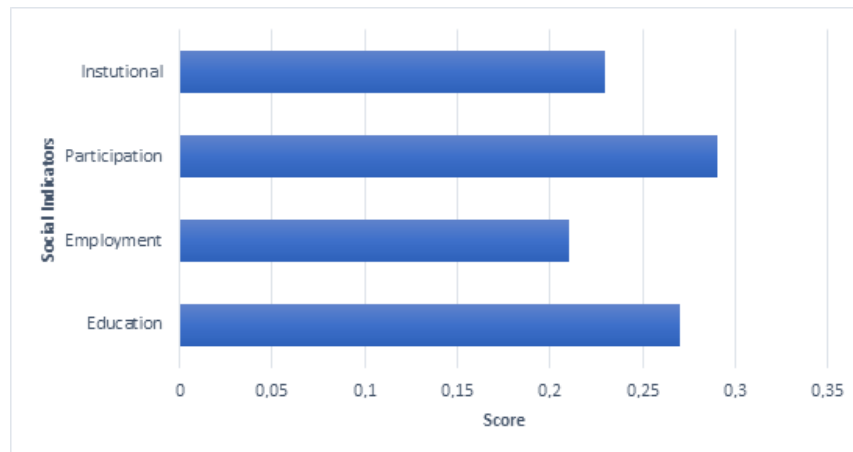


Figure 2. Weighted value of community forest health social indicators

3.1 Education

The education indicator has the second-highest weighted value after the participation indicator. Based on Figure 2, the weighted value of the education indicator is 0.27. Education is considered principal by respondents because it relates to the level of understanding and knowledge possessed. The education level affects the availability of information to be obtained and received by the mind. The contributing factor to the lack of information received by community forest managers is the lack of socialization and training activities related to community forest management [18]. In addition to relating to the level of knowledge and understanding, education can also be related to community competence. The competence in question is the embodiment of behavior for planning activities to achieve a management target. Another factor that affects the level of understanding of respondents about managing community forests is their experience in community forest farming [19]. Thus, it can be concluded that low education (in addition to having implications for the lack of coordination of agricultural planning) will also affect other types of work that can be done by farmers to increase income [20].

3.2 Employment

The employment indicator is an indicator that has the lowest level of importance compared to other indicators, with a weighted value of 0.21. It does not mean that it has no effect, but work has not been a top priority in the success of community forest management. It is supported by the opinion of one respondent, who believes that people who have good career paths will not always impact community forest management. The main occupation of the people in Suoh is farming, and this job does not require being on their farms every day. So, people can still work in other sectors to fill their free time and increase family income. The level of employment is influenced by the outpouring of labor carried out by farmers in carrying out their activities. The outpouring of labor is the amount of working time used by respondents and families in one business to provide harvest results in the form of income [21].

3.3 Participation

The participation indicator is an indicator that has the highest level of importance compared to other indicators. Based on Figure 2, the weighted value obtained by the participation indicator is 0.29. It shows that the community has views and perceptions and that, in maintaining the quality of management and forest health conditions, active involvement of community forest farmers is needed, especially in the Suoh area of West Lampung Regency. Participation is carried out based on the stages of management, which include the planning, implementation, and supervision stages. The involvement and participation of the community are expected to impact the sustainability of ecological functions, mainly improving forest health conditions, as well as economically and socially being able to meet the needs [22]. An example of farmer participation can be seen in Figure 3.



Figure 3. Active participation of farmers in meetings and extension activities

Forest products are still relatively less than optimal, where the income received is not more than Rp.6,000,000 per year [23]. It is caused by several factors, such as conventional cultivation techniques, maintenance intensity, suboptimal thinning, and marketing with a middleman system [24]. Therefore, participation plays a role in overcoming these problems. According to [25], the success of a program is also influenced by community participation and perception as the basis for causing willingness to participate in the program. In addition, there is a need for good organizations to play a role in the decision-making process based on the planning and implementation of community forest management [26].

3.4 Institutional

Community forest management cannot be optimal without good planning and organization. Everything related to community forest management is based on the policies of each family because there is a guarantee of receipt and marketing of forest products based on the farmer's decisions [27]. As well as maintaining the quality of community forest health conditions, it is necessary to organize the right institutions. Based on the results in Figure 2, institutional indicators have a weighted value over the importance level of 0.23. It shows that respondents have not placed institutions on the top priority scale. The main factor is the absence of appropriate institutions or organizations that are the main facilitators of agricultural exploitation carried out by community forest farmers. In the Suoh community forest, management is still implemented individually or independently by land owners because there are no local institutions such as the association of farmer groups. In terms of the health of community forests, farmers still think that humidity has not had a significant impact. The existence of institutions can provide internal regulations and management systems that can guarantee the sustainability of community forest products [19]. However, conceptually, farmers have a perception of the implementation of community forest management based on institutional aspects in the form of policy regulations. Respondents, especially communities and farmers, have an understanding of the rules they can and cannot follow in managing and utilizing community forests. This policy on the use of community forest products needs to be reinforced because the Suoh area is directly adjacent to the conservation area (TNBBS).

Stakeholders have an principal role in supporting the success of community forest management programs for healthy forests and communities. In this case, the government needs to encourage the development of community forests through policies to provide information to farmers related to the marketing of forest products and the provision of facilitators of assistance to farmers [24]. The regional government particularly can optimize the empowerment of Suoh community forest farmers to improve the local economy and natural resources. Through synergy between the government and the active participation of local actors (farmers), it has the potential to produce great access to natural resources and other additional resources [28]. In addition, the government has an main role in implementing several alternative development strategies, such as integration of business climate development, multistakeholder involvement in the process of planning and

implementing development plans, and increasing the capacity of human resources in the field of integrated environmental and biodiversity management [16].

Thus, the research results have shown how much importance social indicators, namely education, employment, institutions, and participation, have on the health of community forests. The results obtained show that each indicator has a level of importance according to conditions in the field. Based on the results obtained, further research can be carried out regarding assessing the health of community forests based on social indicators. Thus, this research only focuses on determining the importance of social indicators and is not related to how to assess the health of community forests. Therefore, as a recommendation for further research, an assessment of the health condition of community forests can be carried out using a comparison of ecological indicators and social indicators, which are the results of this research.

4. Conclusion

Social indicators that are representative in the assessment of community forest health are education indicators, employment indicators, participation indicators, and institutional indicators. These indicators have a weighted value and importance level, with the largest to smallest value, respectively, being participation, which has the highest level of importance (0.29), followed by education (0.27), institutional (0.23), and employment (0.21). These results show that education has the greatest level of importance (around 29%) of the four other indicators of forest health. Thus, indicators that have little value need to be optimized and developed, such as forming farmer groups to strengthen local institutions. This can help with the forest management system so that the healthy condition of the forest is maintained and the results obtained can be optimal.

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