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Global Forest Journal

Community participation and evaluation of mangrove forest rehabilitation activities using multicriteria analysis in Pasar Rawa village, Langkat Regency

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ARTICLE INFO

Article history:
Received 18 October 2023
Revised 14 December 2023
Accepted 24 December 2023
Available online 30 January 2024

E-ISSN: 3024-9309

How to cite:
O. K. H. Syahputra, M. R. Fernando, "Community participation and evaluation of mangrove forest rehabilitation activities using multicriteria analysis in pasar rawa village, langkat regency", *Global Forest Journal*, vol. 02, no. 01, January 2024.

ABSTRACT

Mangrove forests in Pasar Rawa Village have experienced degradation and damage due to activities changing the function of forest areas into oil palm plantations and fish farms. To overcome this, community participation is key in evaluating forest and land rehabilitation (FLR) as a step to restore, preserve, and improve the function and productivity of these forests and land. This research aims to analyze the level of participation and the determination of a set of criteria and indicators for the success of FLR evaluation. This research uses the method scale Likert to determine the level of community participation, and multicriteria analysis is used to choose a set of criteria and indicators for the success of FLR evaluation. This research shows that community participation in planning, implementation, monitoring, and post-planting activities received a high category, and the FLR success rate was 82.3%, including the "good" predicate. This is due to the heightened awareness of the importance of protecting mangrove forests. However, it is still necessary to improve FLR activities in the future so that the mangrove forest in Pasar Rawa village remains sustainable.

Keyword*:* Forest and Land Rehabilitation, Multicriteria Analysis, Participant

http://doi.org/10.32734/gfj.v2i01.14103

1. Introduction

Forest and Land Rehabilitation (FLR) is a management effort to address and minimize the impacts of increased critical land and the degradation of forests and land. The primary objective of FLR is to restore, preserve, and enhance the ecological functions and productivity of forests and land that have undergone detrimental changes. The Asian region has a mangrove area of 8 – 8.2 million hectares, with the number of species found (a combination of flora and fauna) totaling 1,800 – 1,850 species. Indonesia has a mangrove cover of more than 200,000 hectares [1]. However, the rate of degradation and loss of mangrove forests in Indonesia is relatively high, where in the last 2 to 3 decades, almost 50% of the total mangrove forests in Indonesia have been lost. Anthropogenic activities (human activities) that cause the loss of mangrove forests in Indonesia include fisheries, plantations, agriculture, logging, industry, settlements, salt ponds, and mining [2]. The existence of mangrove forests in Pasar Rawa Village has a vital role in maintaining environmental sustainability, especially in maintaining the balance of the ecosystem in the area. However, the mangrove forest has experienced severe damage and degradation over the last few years. Pasar Rawa Village is a coastal area as a protected forest with mangrove species covering an area of 22,000 ha consisting of 12,000 ha in good condition and 10,000 ha in damaged condition [3].

The importance of community participation in maintaining sustainability means that the (FLR) evaluation process must be carried out systematically, carefully, and thoroughly. So, the FLR evaluations that have been

carried out to date are still focused on responsibility for activities, only using measurements of the percentage of plant life, the level of health of the FLR-produced plants, and plant height. For the success of the FLR program as a system, the level of community participation in planning, implementing, and monitoring FLR activities is an important success factor for evaluating the FLR program. Many aspects and criteria must be considered in FLR evaluation, so a reliable method is needed to assess the level of success. One of the methods used is the Analytical Hierarchy Process (AHP). AHP aims to set priorities from various existing options and choices are complex or multi-criteria [4].

From the explanation above, evaluating FLR activities requires systematic and comprehensive participation. Therefore, a multi-criteria analysis using the AHP method is employed to prioritize various complex or multi-criteria options, determining the importance of community participation in assessing the success level of FLR evaluation. The results of this study are expected to provide valuable information for the government and local communities to improve mangrove forest rehabilitation programs and enhance community participation in preserving and caring for the mangrove forest. Furthermore, this research provides insights into the level of participation for the success of FLR and analyzes the establishment of criteria and indicators for the successful evaluation of FLR. Based on the explanation above, this research aims to analyze the level of participation for the success of FLR and determine the determination of criteria and indicators for the success of FLR evaluation.

2. Method

2.1. Time and location

The study was conducted in Pasar Rawa Village, Gebang District, Langkat Regency, between June and August 2023. Fig. 1 shows a map of the research location.

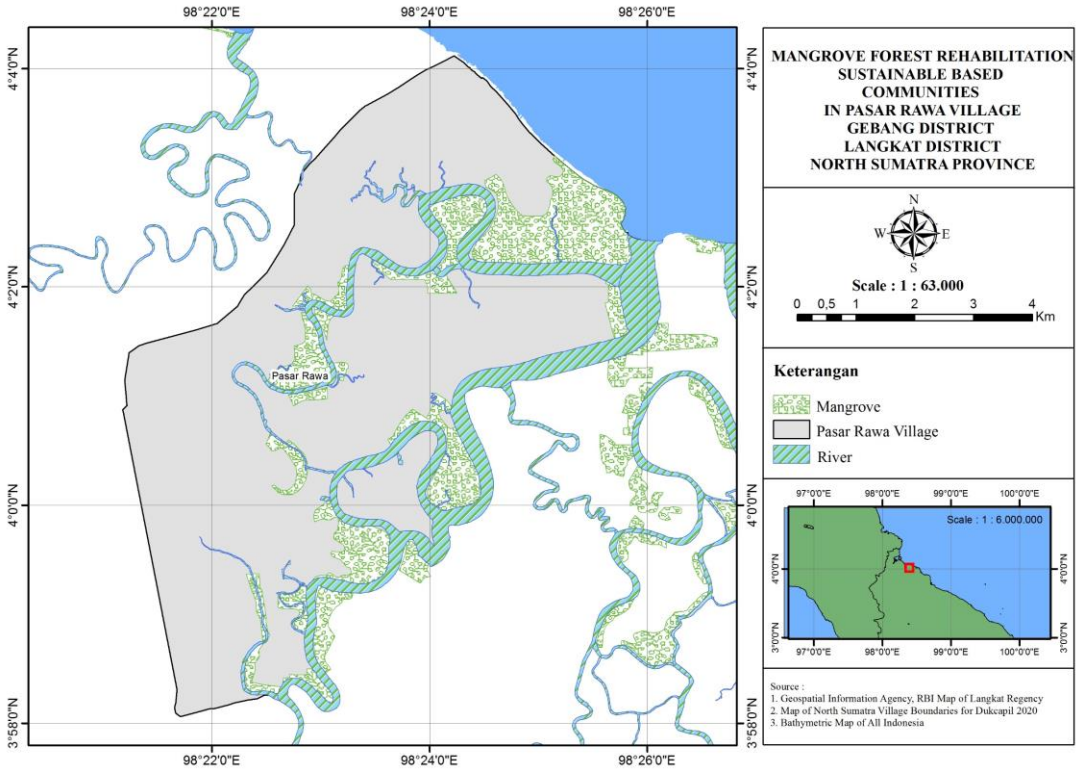

Figure 1. Map of research line location

2.2. Collecting data

Data collection involved utilizing the census method to ascertain community participation levels and key information gathering to evaluate the success of Forest and Land Rehabilitation. 23 Forest Farmer Group (FFG) “Maju Bersama” respondents were involved in determining the participation levels. Additionally, to assess the success of FLR, 23 respondents from FFG, five respondents from Forest Management Unit (FMU) Region 1 Stabat, and two lecturers from the USU Faculty of Forestry were engaged. Two types of data were employed to measure participation levels: primary data, encompassing respondent characteristics, and secondary data, which could be sourced from previous reports.

2.3. Data Analysis

2.3.1. Analysis of participation levels

FFG participation was analyzed using a Likert scale. The data analysis begins by reviewing all the data obtained through questionnaires and interviews, then describing it in percentage form. The answer scale and score can be seen in Table 1.

Table 1. Level of FFG participation

Answer scale	Score
Often	3
Sometimes	2
Never	1

From determining the Likert scale score above, the data can be classified using attitude scales, categories and scores to obtain classification using the following formula:

$$\text{How to get percentage} = \frac{\text{number of people}}{\text{number of respondents}} \text{ x } 100 \quad (1)$$

$$\text{How to get an average score} = \frac{\text{total score}}{\text{number of respondents}} \quad (2)$$

$$\text{How to get categories} = \frac{\text{total score}}{\text{number of questions}} \quad (3)$$

A maximum of 3 and a minimum of 1 are required for the overall score to determine the farmer group participation ranking. After adding each respondent's score, a ranking is determined using the following rating scale:

$$\text{Category differences} = \frac{\text{highest score} - \text{lowest score}}{\text{number of categories}} \quad (4)$$

$$= \frac{3-1}{3} \qquad = 0.67$$

Based on the formula above, the level of value for each can be seen as in Table 2. As follows:

Table 2. KTH participation level using likert scale [5]

KTH Paticipation Level	
Level	Category
High	2.36-3.00
Medium	1.68-2.35
Low	1.00-1.67

2.3.2. Evaluation of forest and land rehabilitation

2.3.2.1. The first step in multicriteria analysis is to arrange a hierarchy by FLR principles and then explain it into criteria and indicators. The following are the steps taken in compiling a hierarchy:

1. Identify the main objectives of the FLR that have been carried out. These objectives form an umbrella for criteria, indicators, and gauges.
2. Identify the parts of the goal. Every main goal is always faced with several limitations or problems. These limitations or problems are called sub-goals or factors that influence the goal.
3. Identify criteria and indicators clearly and in detail.
4. Identify indicators, which are components or variables that reflect or influence the criteria. These indicators are assessed as something special that can be assessed about the criteria, which can be seen in Figure 2.

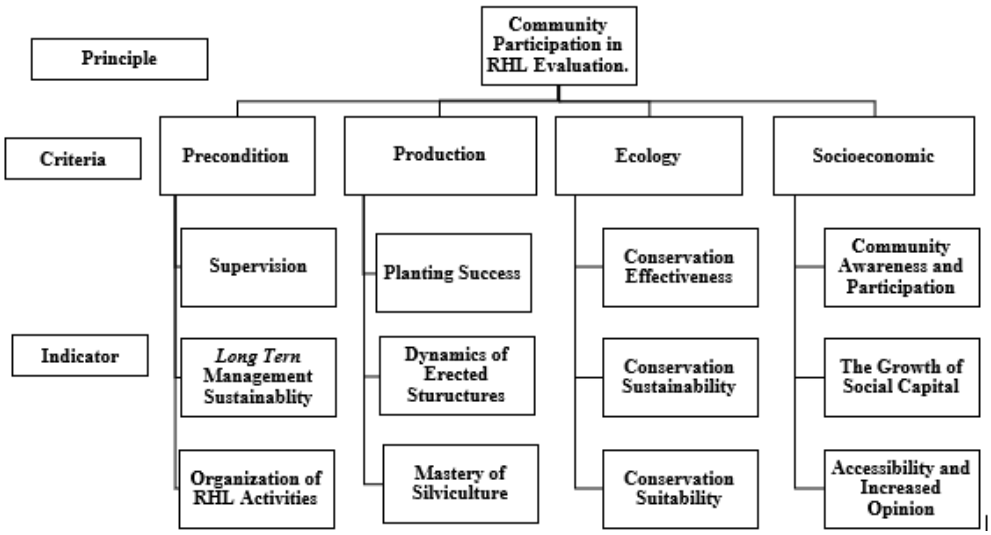

Figure 2. Hierarchical structure of FLR success evaluation

5. Identify gauges, which are the data or information needed to assess indicators. The gauge is the information that needs to be collected to assess the indicator. Referring to the steps mentioned, in this research, the hierarchy is arranged based on the objectives of FLR activities, derived from FLR principles, then translated into criteria and indicators so that a hierarchy is set, as in Figure 2.

2.3.2.2. Determining criteria and indicators in multicriteria analysis is very basic. The selection of criteria and indicators is based on the following considerations:

1. Simple, so easy to understand.
2. Criteria and indicators must have a scientific basis that can be justified.
3. Capacity to integrate data regarding indicators and criteria. It must address a particular or more general issue. The requirements must address particular issues and can be integrated to form a unity with a more expansive meaning.
4. Ease of obtaining data.

2.3.2.3. Pairwise comparison to obtain the weight of criteria and indicators. The pairwise comparison was carried out by distributing AHP questionnaires to resource persons who included experts, FFG, and stakeholders.

2.3.2.4. Calculation of consistency index

The weights obtained from the results of pairwise comparisons must be consistent, namely <10. If the consistency index value is >10% then the research needs to be evaluated and conducted interviews again with sources regarding comparisons between elements [6].

2.3.2.5. Make decisions based on the results of data processing using expert choice 11 software

The following percentage classes and FLR success predicates can be seen in Table 3 below:

Table 3. Class percentage and Predicate of FLR Success

Presentation class	Predicate
91-100 %	Verry well
76-90 %	Good
55-75 %	Moderate
<55 %	Not enough

3. Result and Discussion

3.1. Respondent characteristics

Characteristics of respondents in this study include age, occupation, and education. Respondents are villagers who experience the effects of conflict between humans and tigers. Analysis of the characteristics of the respondents is presented in Table 4.

Tabel 4. Respondent characteristics

No	Characteristics	Maju Bersama community		Forest Unit Management Region 1 Stabat		Lecturer, Faculty of Forestry, Universitas Sumatera Utara	
		Frequency	(%)	Frequency	%	Frequency	(%)
1	**Age (Year)**						
	a. 26-35	2	8.69	0	0	0	0
	b. 36-45	10	43.47	0	0	0	0
	c. 46-55	4	17.39	3	60	2	100
	d. 56-65	5	21.73	2	40	0	0
	e. 66-75	2	8.69	0	0	0	0
	Total	23	100	5	100	2	100
2	**Education**						
	a. Elementary school	19	82.60	0	0	0	0
	b. Junior high school	2	8.69	0	0	0	0
	c. Senior high school	2	8.69	2	40	0	0
	d. Bachelor	0	0	3	60	0	0
	e. Graduate	0	0	0	0	0	0
	f. Postgraduate	0	0	0	0	2	100
	Total	23	100	5	100	2	100
3	**Occupation**						
	a. Vegetable farmer	1	4.34	0	0	0	0
	b. Fisherman	15	65.21	0	0	0	0
	c. Fish farmers	7	30.43	0	0	0	0
	d. Government employees	0	0	5	100	2	100
	Total	23	100	5	100	2	100

Based on research and interviews with respondents, including FFG Reforestation Maju Bersama, Forest Unit Management (FMU) Region 1 Stabat, and lecturers from the Faculty of Forestry at USU, it was found that the age group of respondents ranged from 26 to 75 years. The forest farmer group engaged in advanced reforestation primarily falls within the age range of 36 to 45 years, constituting the largest age group at 43%. Meanwhile, FMU Region 1 Stabat has the highest proportion of respondents aged 46 to 55 years, accounting for 60% of their participants. Among the USU Faculty of Forestry lecturers, all respondents fall within the age range of 46 to 55, resulting in a 100% representation in this category.

Regarding educational levels, from no schooling to postgraduate, FFG Maju Bersama had 19 out of 23 respondents who had completed elementary school, comprising 82.60% of the participants. In FMU Region 1 Stabat, 5 respondents held a Bachelor's degree, representing 60% of the respondents in that category. Furthermore, among the two respondents who were lecturers at the USU Faculty of Forestry, both held Doctoral degrees, achieving a 100% representation at the Doctoral level.

Based on the research results and interviews conducted with respondents, FFG Maju Bersama, FMU Region 1 Stabat, and USU Forestry Faculty Lecturers were assessed in the context of the FLR program. Among the participants of FFG Maju Bersama, the predominant profession was fishing, with 15 individuals accounting for 65.21%. In contrast, FMU Region 1 Stabat had the highest concentration of respondents working in the civil servant profession, with 5 participants totaling 100%. Similarly, among the USU Faculty of Forestry Lecturers, two individuals held the civil servant profession, representing 100% of this group.

3.2. The participation of the FFG (Forest Farmer Group) in Reforestation and land rehabilitation (RaLR) or tree planting activities.

FFG participation in RaLR/Mangrove Forest planting activities in Pasar Rawa Village, Gebang District, Langkat Regency is divided into four parts, namely Participation in planning, implementation, monitoring and evaluation, and post-planting for the following explanation:

3.2.1. Participation in planning

Participation in planning involves the community in the planning stage of FLR activities. In this case, FFG plays an active role in carrying out activities, including participation in planning meetings for managing planting locations, participation in joining farmer groups in planting activities, involvement in providing ideas at planting planning meetings, and participation in making decisions at planting planning meetings.

This can be seen in Table 5. FFG participation in Mangrove FLR Planning in Pasar Rawa Village, Gebang District, Langkat Regency, the average score of 2.5 is in the high category. A high level of participation was obtained at 63.10% due to the involvement of all farmer group members in the planning process. Several factors support the high participation value, namely a sense of ownership, improving quality, increasing communication and cooperation, increasing member satisfaction, increasing responsibility. and increasing effectiveness and efficiency [7].

Table 5. Recapitulation of FFG participation in mangrove FLR planning in Pasar Rawa Village, Gebang District, Langkat Regency

No	Questionnaire	S (3)	NS	KK (2)	NS	T (1)	NS	Total score	Avarage
1	FFG participation in planting location management planning meetings	14	42	9	18	-	-	60	2.60
2	FFG participation in joining to farmer groups for planting activities	15	45	8	16	-	-	61	2.65
3	FFG participation in planting location inspection activities	11	33	9	18	3	3	55	2.39
4	FFG participation in providing ideas at planting planning meetings	11	33	10	20	2	2	55	2.39
5	FFG participation in providing decisions at planting planning meetings	14	42	6	12	3	3	57	2.47
								Amount	12.5
								Category	2.5

3.2.2. Participation in implementation

Participation in the implementation of FLR/planting activities in mangrove forests includes participation in mangrove cultivation and planting activities, participation in cultivation (planting) training provided by the government, participation in marking planting location activities, participation in selecting plant types, participation in preparing seeds for planting, participation in seeking information regarding the cultivation of mangrove forest plants, participation in the preparation of tools and materials for cultivation, participation in land preparation activities, participation in nursery activities and procurement of seeds, participation in providing labor donations in planting activities, participation in providing material donations in planting activities, and participation in plant maintenance activities.

Table 6. Recapitulation of FFG participation in the implementation of mangrove FLR in Pasar Rawa Village, Gebang District, Langkat Regency

No	Questionnaire	S (3)	NS	KK (2)	NS	T (1)	NS	Total score	Average
1	FFG participation in activities plant cultivation and planting mangrove plants	13	39	9	18	1	1	58	2.52
2	FFG participation in cultivation training (planting) provided by the government	6	18	8	16	9	9	43	1.86
3	FFG participation in plant type selection activities	12	36	11	22	-	-	58	2.52
4	FFG participation in seed preparation activities for planting	22	66	1	2	-	-	68	2.95
5	FFG participation in seeking information regarding the cultivation of mangrove forest plants	8	24	14	28	1	1	53	2.30
6	FFG participation in preparation of tools and materials for cultivation	7	21	12	24	4	4	49	2.13
7	Community participation in land preparation activities	23	69	-	-	-	-	69	3
8	FFG participation in nursery and seed procurement activities	20	60	3	6	-	-	66	2.86
9	FFG participation in providing labor contributions for planting activities	16	48	7	14	-	-	62	2.69
10	FFG participation in plant maintenance activities	19	57	4	8	-	-	65	2.82
								Amount	25.65
								Category	2.56

Table 6 shows FFG participation in Mangrove FLR Planning in Pasar Rawa Village, Gebang District, Langkat Regency, with an average score of 2.56, which is in the high category. FLR in the Probolinggo City environmental agency's successful participation in implementing FLR is caused by several factors. The first factor is that active community participation plays an important role, the second factor is that coordination between environmental agencies and government institutions plays a supporting role, and the third is that cooperation with the private sector also makes a high contribution [8].

3.2.3. Participation in monitoring and evaluation

Participation in monitoring and evaluation involves the community monitoring and evaluating the results of planting activities. FFG Reforestation Maju Bersama plays an active role in monitoring the implementation of planting, monitoring forest and land conditions, providing criticism to groups regarding problems monitoring forest and land conditions, providing advice to groups regarding problems monitoring forest and land conditions, and participating in surveys of potential planting locations, At this stage, the level of participation in each activity will be measured to evaluate the extent to which individuals or groups are involved in the monitoring and evaluation process.

Table 7 below shows FFG participation in monitoring and evaluating Mangrove FLR in Pasar Rawa Village, Gebang District, Langkat Regency, with an average score of 2.70, which is in the high category. The success of FLR activities is determined by the monitoring system itself and the commitment and capacity of the individuals and organizations involved in the monitoring process. Adequate training and resources, as well as clear roles and responsibilities, are important to ensure the success of monitoring activities. Still, the success of monitoring activities can be evaluated based on the quality of the monitoring system, utilization of monitoring results, and achievement of desired results and impacts. Regular evaluation and feedback mechanisms should be established to continually improve processes and monitoring and ensure their effectiveness [9].

Table 7. Recapitulation of FFG participation in monitoring and evaluating Mangrove FLR in Pasar Rawa Village, Gebang District, Langkat Regency

No	Questionnaire	S (3)	NS	KK (2)	NS	T (1)	NS	Total score	Average
1	FFG participation in monitoring planting implementation	15	45	7	14	1	1	60	2.60
2	FFG participation in forest and land condition monitoring activities	20	60	3	6	-	-	66	2.86
3	FFG participation in providing criticism to groups regarding problems monitoring forest and land conditions	20	60	3	6	-	-	66	2.86
4	FFG participation in providing advice to groups regarding problems monitoring forest and land conditions	14	45	9	18	-	-	63	2.73
5	FFG participation in site potential survey	13	39	8	16	2	1	57	2.47
								Amount	13.52
								Category	2.70

3.2.4. Participation after planting

Participation in the post-planting stage includes participation in receiving appropriate income in planting activities, participation related to planting and cultivation increasing income, participation in gaining new knowledge after participating in planting activities, participation in utilizing natural resources of mangrove and non-timber forests (catching fish, crabs and shrimp), participation in receiving income from Social Forestry Business Group (SFBG) silvofishery at this stage. The level of participation in each activity will be measured to evaluate the extent to which individuals or groups are involved in the monitoring and evaluation process. It can be seen in Table 8. FFG participation in mangrove FLR planning in Pasar Rawa Village, Gebang District, Langkat Regency, the average score of 2.70 is in the high category.

Table 8. Recapitulation of FFG participation in post planting in Pasar Rawa Village, Gebang District, Langkat Regency

No	Questionnaire	S (3)	NS	KK (2)	NS	T (1)	NS	Total score	Average
1	FFG participation in receiving appropriate income in planting activities	20	60	3	6	-	-	66	2.86
2	FFG participation in planting and cultivation activities increases income	-	-	23	46	-	-	46	2
3	FFG participation in gaining new knowledge after participating in planting activities	17	3	6	12	-	-	63	2.74
4	FFG participation in utilizing TFP (Timber Forest Products) and NTFP (Non-Timber Forest Products)	23	69	-	-	-	-	69	3
5	FFG participation in receiving income from ecotourism activities	10	30	12	24	1	1	55	2.39
6	FFG participation in receiving income from SFBG (Social Forestry Business Group) silvofishery	18	54	5	10	-	-	64	2.78
7	FFG participation in receiving results in the form of changes in the mangrove forest environment after planting	20	60	3	6	-	-	66	2.86
8	FFG participation in replacing dead mangrove plants with new plants	21	63	2	4	-	-	67	2.91
								Amount	21.55
								Category	2.70

3.3. Evaluation of the success of mangrove forest and land rehabilitation

The criteria and indicators used as measuring tools in evaluating FLR success have different levels of importance. The level of importance and indicators are assessed or shown by the weight of the criteria and the weight of the indicators. Experts were given the AHP questionnaire to use in pairwise comparisons to determine the weight of the indicators and criteria. From the results of calculations using the AHP method, the weights of each criterion and indicator are obtained in Table 9.

Table 9. Tools and weights of criteria and indicators for the success of FLR in Pasar Rawa Village, Gebang District, Langkat Regency

No	Information	Wiight
1	Prerequisite (k)	0.387
	a. Organization of FLR activities (i)	0.538
	b. Management sustainability long term (i)	0.331
	c. Supervision (monitoring and evaluation (i)	0.131
2	Production (k)	0.090
	a. Dynamics of stand structure (i)	0.106
	b. Planting success (i)	0.429
	c. Mastery of silviculture (i)	0.465
3	Ecology (k)	0.325
	a. Conservation suitability (i)	0.436
	b. Conservation sustainability (i)	0.248
	c. Conservation effectiveness (i)	0.316
4	Soscio-economic (k)	0.197
	a. Community awareness and participation (i)	0.705
	b. Growth of social capital (i)	0.119
	c. Accessibility and increased revenue (i)	0.176

Overall inconsistency = 0.01

Based on internal weight. Table 9. shows that the prerequisite criteria have the highest score, namely 0.387, then the ecological criteria with a weight of 0.325, then the socio-economic criteria with a weight of 0.197, and finally, production with a score of 0.90. Regarding the prerequisite criteria, the alternative organization for FLR activities is at the top with a value of 0.538, followed by long-term management sustainability with a value of 0.331, and supervision (monitoring and evaluation) with a value of 0.131. Then, in the production criteria, it can be seen that the silviculture mastery alternative gets the highest value, namely 0.465, followed by planting success, which gets a value of 0.429, and the lowest is 0.106.

Furthermore, from the ecological criteria, it can be seen that the conservation suitability alternative has the highest ranking, namely with a value of 0.436, followed by conservation effectiveness with a value of 0.316, and sustainability of conservation with a value of 0.248. Furthermore, from socio-economic criteria, it can be seen that the alternative of community awareness and participation is at the top with a value of 0.705, followed by accessibility and increase in income with a value of 0.176, and growth of social capital with a value of 0.119. A score for each indicator is also required to carry out analysis with AHP, apart from determining the weight of criteria and indicators. After assessing field conditions based on indicator verifiers, it can be obtained for each indicator; the score for each indicator is presented below. Table 10, as follows:

Table 10. Scoring results of FLR success indicators in Pasar Rawa Village, Gebang District, Langkat Regency

No	Information	Score	Normalized score
1	Prerequisite (k)		
	a. Organization of FLR activities (i)	2	0.66
	b. Management sustainability long term (i)	3	1
	c. Supervision (monitoring and evaluation) (i)	2	1
2	Production (k)		
	a. Dynamics of stand structure (i)	3	1
	b. Planting success (i)	3	1
	c. Mastery of silviculture (i)	3	1
3	Ecology (k)		
	a. Conservation suitability (i)	3	1
	b. Conservation sustainability (i)	3	1
	c. Conservation effectivenes (i)	3	1
4	Socio-economi		
	a. Community awareness and participation (i)	2	0.66
	b. Growth of social capital (i)	3	1
	c. Accessibility and increased revenue (i)	3	1

Based on the calculated scores obtained and considering the weight of the criteria and indicators, the FLR success score in Pasar Rawa Village, Langkat Regency, is 0.94. In the score range of 0.66-1. The score is then converted into a percentage so that it is known that the success percentage of FLR in Pasar Rawa Village is 82.3%. Based on the percentage class of success predicate in this research, the success of FLR in Pasar Rawa Village received the predicate "good," so improvements are still needed in FLR activities in the future. Efforts to improve FLR activities in the future that can be carried out for each criterion are as follows:

Prerequisite criteria: Based on a review of the prerequisite criteria, the problem is that supervision can only be perfect if monitoring activities involve areas difficult for farmer groups to reach. This cannot be used as a measure to determine whether FLR activities have been successful. If we look at the existing conditions, there is hope that in the future, monitoring and evaluation activities will be achieved if they are provided with tools for mangrove forest monitoring activities.

Production criteria: Based on an overview of the production criteria, the problem is that the stands cannot guarantee sustainability. This cannot be used as a measure to determine whether FLR activities have been successful. However, if we look at the conditions in the field, there is hope that forest sustainability will be achieved in the future. High participation in the implementation of planting activities carried out by FFG requires replanting by replacing dead plants with new plants so that sustainability can be achieved.

Apart from the problem of stand dynamics, there need to be more indicators, namely mastery of silviculture, which is important to pay attention to. This is because FFG's mastery of silviculture techniques still needs to improve. To increase the success of FLR activities, efforts are required to enhance mastery of silviculture techniques, including outreach activities and field training.

Ecological criteria: FLR activities in Pasar Rawa Village only consist of planting activities. Even though, in terms of ecological criteria, it has achieved the maximum score and meets the requirements for achieving successful FLR in mangrove forests, there are still several aspects that need attention:

1. Further attention is needed regarding limited resources. This involves the appropriate allocation of funds, labor, and equipment required to carry out FLR activities effectively.
2. Environmental and climate change uncertainty is also an important factor that must be considered. In this case, climate change is continuing; it is necessary to adjust the FLR strategy for mangrove forests so that they can be a challenge that may arise in the future.
3. There is a need to increase knowledge regarding mangrove forest conservation activities among the community and actors involved in FLR activities.

Increasing awareness and understanding of the importance of mangrove forest restoration and its benefits for the environment and society is very important to maintain the sustainability of FLR.

Socio-economic Criteria, viewed from a socio-economic perspective, the problem that must be resolved is community awareness in carrying out FLR activities. People already know the importance of planting activities and have been moved to plant trees, but only some have. Therefore, it is necessary to raise awareness about the importance of FLR for the environment and for life and take concrete action to implement FLR activities. The institutional aspect is also important to improve because the stronger and better an institution, the stronger the ties between FFG and the community.

4. Conclusion

The level of FFG participation in Pasar Rawa Village, Gebang District, Langkat Regency, which is in the high category in every activity such as planning, implementation, monitoring and evaluation, and post-planting, illustrates that FFG in the village is very active in various activities, this shows the great concern they have for the environment around the mangrove forest. Based on the criteria: prerequisites, production, ecology, and socio-economic, weights of 0.387, 0.090, 0.325, and 0.197. Based on these weights, prerequisites and ecology have a large contribution to FLR then based on the criteria and indicators in this research, the percentage of success rate for FLR activities in Pasar Rawa Village, Gebang District, Langkat Regency is 82.3%, including the predicate "good" so it is still it is necessary to improve FLR activities.

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