

Restoration Program Effect through Conservation of Mangrove Forest in Kwala Gebang Village, Gebang Sub-District, Langkat District

DOI: <https://doi.org/10.47175/rissj.v4i4.819>

| Novida Yenny^{1,*} | Restu² | Muhammad Arif³ | Dwi Wahyuni Nurwihastuti⁴ |
| Mulhady Putra⁵ |

^{1,2,3,4,5} Geography Education

Department, Social Science
Faculty, Universitas Negeri
Medan

*novidayenny.geo@gmail.com

ABSTRACT

The restoration program aims to provide assistance to coastal communities in preserving mangrove forests and at the same time provide knowledge to the community about the importance of mangroves and the benefits that can be obtained from mangrove plants, so that mangroves can also help improve the socio-economic development of the community. The data collection techniques used in research are observation, interviews and documentation. The data analysis technique used in this research is descriptive qualitative, used to analyze and systematically process facts obtained from the field assisted by frequency tables. The limit of this research especially analyzed the effects of the socio-economy. The economic impact cannot be separated from activities involving the community starting from clearing land, searching for seeds, nurseries, planting and maintenance. The amount of work done by group members determines the results or income they will obtain. From the results of the data in the field, apart from the social impact that fosters concern for mangrove preservation and mutual cooperation created from togetherness in groups, it can also be seen that the influence of restoration activities on the economy is the involvement of farmer group members, most of whom are involved in seeding and planting. Work is carried out in groups, especially for planting. If you look at the highest income obtained from restoration activities, it is around IDR 401,000 – IDR 500,000 per activity and this is only obtained by 1 person (head of the farmer group), and the majority earn IDR 201,000 – IDR 300,000 (43.47%).

KEYWORDS

mangrove restoration; community socio-economics; Kwala Gebang

INTRODUCTION

Indonesia's geographical characteristics influence the presence of mangroves in Indonesia so that Indonesia is recorded as having the largest mangrove area in the world (Asbi, A. M., & Rauf, R. A., 2019; Lestari, R. A., Amirullah, A., & Ahmadin, A., 2019). According to the Ministry of Environment and Forestry (KLHK), in 2021 the total area of mangrove forests in Indonesia is 3,364,076 (25% of the world's mangroves) and with the highest diversity in the world. Based on the total area of existing mangroves, 93% (3,121,239 Ha) is classified as dense. 1,88,363 Ha (5%) is classified as moderate condition, and 54,474 Ha (2%) is classified as rare mangrove condition.

The existence of a well-maintained mangrove ecosystem in coastal areas can have a positive impact on the economy of coastal communities, most of whom earn their living as

fishermen. Mangroves function as a breeding ground for marine biota such as fish, shrimp, crabs, and can also be used as raw material for making charcoal which has quite high economic value. Besides the function of mangroves as conservation, they can also be used as tourism/ecotourism objects and for the development of science (Litiloly, L. I., Mardiatmoko, G., & Pattimahu, D. V., 2020).

This research was conducted in Kwala Gebang Village, Gebang District, which is one of the villages in the coastal area that received a Restoration activity program from YAKOPI, an NGO that is very concerned with protecting Mangroves. Kwala Gebang was chosen as one of the locations for restoration by Yakopi because this area has seen changes in land use to oil palm land so that the mangrove area is reduced.

This program aims to provide assistance to coastal communities in preserving mangrove forests and at the same time provide knowledge to the community about the importance of mangroves and the benefits that can be obtained from mangrove plants, so that mangroves can also help improve the socio-economic development of the community (Nanlohy, L. H., & Masniar, M., 2020; Rahim, S., 2017). Related to the implementation of the restoration program that has been implemented, researchers want to know the socio-economic impact of the mangrove restoration program on society. This research involved village leaders, community leaders, leaders of community organizations, farmer groups, and Kwala Gebang community, and farmer groups directly involved in restoration activities were considered very representative as sources of informants as well as research subjects.

The socio-economic parameters used to assess the impact of mangrove restoration are population size, education level, type of work and community perception of mangrove forests. Therefore, a community institutional approach is also needed in dealing with mangrove damage. Respondent characteristics were categorized into several aspects, namely education level, age, gender, livelihood, length of residence, income, type of NTFP use and empowerment activities carried out.

RESEARCH METHODS

Research Location

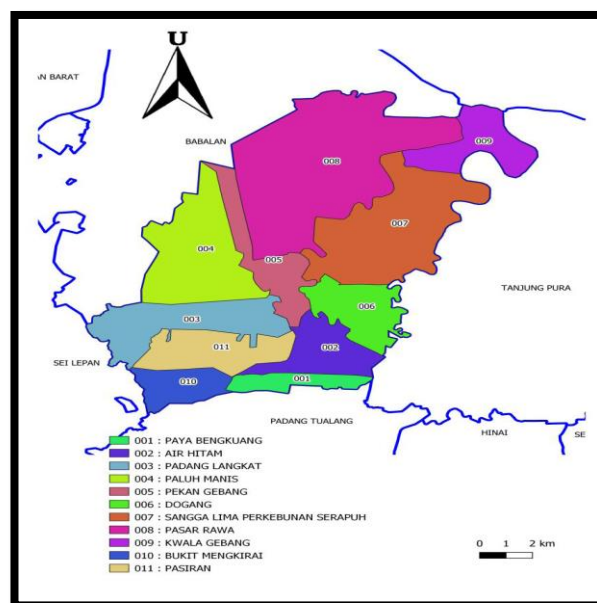


Figure 1. Research Map of Kwala Gebang District

This research was conducted in Kwala Gebang Village which is located in Gebang District, Langkat Regency.

Population and Sample

The population in this research is the people who are members of the mangrove farmer group in Kwala Gebang Village with a total of 46 people. Since the population is not that large, the sample was taken using the Total Sampling technique, so that the entire population became the sample in this study.

Data Collection Techniques

The data collection techniques used in the research are as follows:

Observation

Observation techniques or direct observations were carried out on objects that were research samples in Kwala Gebang Village, Gebang District, Langkat Regency to collect data related to program implementation, and the results obtained from the implementation of programs that had been implemented.

Interview

Interviews are data collection techniques carried out by conducting direct dialogue with respondents/informants and structured interviews using questionnaires. In the research, researchers conducted interviews with informants who were divided into three types, namely:

1. Key informants included: Farmer groups involved in mangrove restoration.
2. Main informants included: Head of Kwala Gebang Village,
3. Additional informants included: Community in Kwala Village Gebang.

Documentation

Documentation in this research is used to collect data about research photos and activities carried out. The data/documents will be analyzed according to the needs of the researcher.

Data Analysis Techniques

The data analysis technique used in this research is descriptive qualitative which is used to analyze and process facts systematically, obtained from the field assisted by frequency tables. The data analysis steps are carried out in accordance with the concept developed by Milles Huberman, namely through the following stages. following:

1. Data reduction, namely selecting data that has been collected by selecting data, simplifying, grouping and transforming rough data that emerges from field notes. Next, it is written in the form of a description that provides meaning that is focused on the main things so that its suitability is tested.
2. Data presentation, namely the presentation of a structured set of information in the form of brief descriptions, charts, relationships between categories that enable conclusions to be drawn and action taken.
3. Verification/drawing conclusions, namely drawing final conclusions that are supported by valid and consistent evidence.

RESULTS AND DISCUSSION

Gender

The research respondents were dominated by female respondents, where based on the percentage, the female gender was 38 people while the male gender was 8 people. With a total of 46 respondents. The highest proportion of respondents involved was female with a percentage (82.60%) and male with a percentage (17.39%).

Table 1. Group Involvement and Income in Restoration Activities.

No	Activities	Number of activities involved	%	Total Activity Income (Rp)	Number of Individual Activities	%
1	Land Clearing	1	2,17	100.000	1	2,17
2	Seed Search	10	21,7	50.000	4	8,6
				100.000	6	13,04
3	Seeding	37	80,43	50.000	8	17,3
				100.000	16	34,78
				150.000	12	26,08
4	Planting	38	82,60	50.000	4	8,6
				100.000	19	41,3
				150.000	13	28,2
				500.000	2	4,3
5	Maintenance	2	4,34	150.000	2	4,3

Source: *Processed Primary Data 2023*

Length of residence

Based on the research results, the highest length of residence for respondents involved in restoration activities was found in the range 10-20 years (30.34%) Respondents. Furthermore, respondents who have lived for more than 50 years (28.26%), this shows that they are usually local natives who have lived in the Kwala Gebang area since birth.

Education

Education can influence a person's attitude to life and participation in their environment, education can also influence the welfare of all people. The level of education in Kwala Gebang Village is quite varied. The highest proportion of general education in Kwala Gebang village is elementary school (52.17%), while the lowest is tertiary education (2.17%).

Employment

All respondents who were involved in restoration activities were predominantly fishermen (43.47%) and housewives (43.47%). This data shows that there are quite as many respondents who work as housewives as fishermen and the lowest number of main jobs is Civil Servants (4.34%). Apart from that, the largest number of side jobs of respondents in the research location were as farmers, 25 people (54.34%), next as entrepreneurs, 16 people (34.78%) and the fewest side jobs as fishermen (10.86%).

Income

The main income range for respondents was IDR 1,000,000 – IDR 2,000,000, namely 86.95 percent. The highest side income is 200,000 – 300,000 (93.47%), while the smallest income is 100,000 – 200,000 (6.52%).

The largest involvement of group members in restoration activities was in the nursery and planting processes, 37 people each (80.43%). and 38 people (82.60%). Meanwhile, community involvement in restoration activities showed the smallest percentage in land clearing activities, only 1 person (2.17%). The high level of community involvement in restoration activities related to seeding and planting is because the high target for seeds and planting area will influence the income/wages that will be received, this of course affects the participation of the community involved in the restoration program. Meanwhile, the search for seeds is mostly carried out by the heads of farmer groups. The community in Kwala Gebang Village is able to seed and plant per day with the largest frequency being 300-400 seeds per day with a percentage of (21.73%). Meanwhile, the smallest number of nurseries and plantings per day was < 100 seeds per day (8.69%), and the highest number of nurseries and plantings was > 800 per day (10%).

The income that communities receive from involvement in restoration activities varies depending on the restoration activities they carry out. Based on the data obtained according to their involvement in the group, the majority of respondents earned an income ranging from IDR 201,000 - IDR 300,000 as much as (43.47%) and the least was an income of IDR 301,000 - IDR 400,000 and an income of IDR 401,000 - IDR 500,000 with a frequency of (2.17 %). This income is included in all activities starting from searching for seeds, breeding and planting.

Use of Mangroves by the Community

Data obtained from all respondents shows that the most common forms of utilization are taking fisheries resources (34.78%), using mangrove wood (28.26%), taking mangrove fruit (26.08%) and using the leaves (10.86%). And there are no people who use mangroves as ecotourism objects, educational facilities and so on.

Table 2. Use of Mangroves by the Community

No	Utilization of Mangroves	Total	Percentage (%)
1	Taking Fishing	16	34,78
2	Taking Fruit	12	26,08
3	Picking up Leaves	5	10,86
4	Taking Wood	13	28,26
5	Ecotourism	0	0
	Total Overall	46	100

Community Empowerment

Apart from the mangrove restoration activities carried out, Yakopi also provides community empowerment activities to utilize the resources owned by the area around the mangrove restoration activities in Kwala Gebang village which have economic value such as the production of palm sugar (10.86%). According to information obtained in the field, the production of nipa palm sugar is still made passively because it experiences obstacles from nature, such as the sedimentation of nipa palm water which always fails to be produced due to interference by wild animals such as monkeys, so that the results of making nipa palm sugar do not yet have significant economic value. significant for the community in Kwala Gebang Village, so that it cannot be produced as it should be, further action is needed to

improve community skills to improve quality and other activities that have the opportunity to be developed.

Tabel 3. Community Empowerment Activities

No	Community Empowerment	Total	Percentage (%)
1	Mackerel Fish Nuggets	0	0
2	Nipah Sugar	5	10,86
3	Eco-Tourism	0	0
4	Mangrove Honey	0	0
5	Batik	0	0
6	No Empowerment	41	89,13
	Total	46	100

Source: Primary Data Processing 2023

Environmental changes and restoration activities

The conversion of mangrove land is often seen for palm oil plantation activities, this is because in terms of economic value, people feel more direct benefits from the palm oil products they cultivate, either as owners or as workers who receive wages. Likewise with shrimp farming activities, some of which are located in areas that should be mangrove forest areas. If we look at the results of processed data related to work, 54.34% have a side job as farmers, and only 43% have a main job as fishermen. The characteristics of a region with all its potential will influence the activities of its population. This data is significant enough to understand why there is a lot of conversion of mangrove land, and more people are carrying out agricultural activities related to oil palm plantations. So, this activity has an impact on reducing mangrove land.

Impact of Mangrove Restoration Activities on Social Community

If we look at the processed data related to side jobs, it shows that 25 respondents (54.34%) have a side job as farmers, and only 43% make it their main job. This data is significant enough to understand why many mangrove land conversions occur (Franks and Falcover, 1999). Likewise with shrimp farming activities, some of which are located in areas that should be mangrove forest areas. From the following picture you can see the situation of the village. On either side of the road starting from entering the village gate, you can see oil palm plantations lined up towards residential areas near the beach.



Figure 2. Village road filled left and right with oil palm plantations.

The results of research on farmer groups involved in mangrove restoration show that restoration activities have a positive impact on community behavior (Soekanto, 1982). Through the results of the interviews, it is clear that the community's understanding is quite good. This can be seen that there is almost no use of mangroves currently carried out by the people of Kwala Gebang Village for things that are destructive, although there are people who take mangrove wood, but what they take is only of old or dead trees (28.26%), this shows that the level of public awareness has been raised by restoration activities. This change in community behavior was created because the implementation of restoration activities began with socialization activities related to the aims and objectives of why it is important to carry out mangrove forest restoration activities.

The community welcomed this activity enthusiastically, as seen from their concern for each other, the establishment of family relationships and better communication, creating an attitude of mutual cooperation or working together in one group with the same goal, namely restoring the existence of mangrove forests and besides that, they received wages from this work. This fairly high level of community concern/participation can be seen from their willingness to take part in restoration activities.

Apart from that, a person's attitudes and behavior can be influenced by education, environment, the length of time a person has lived or resided in that place and their experience interacting with the mangrove environment. The longer one lives in a particular environment, the more one's sense of belonging to the environment tends to be seen in greater participation in every activity in that environment. The data obtained in the field shows a fairly high level of concern, as in the community's willingness to discuss mangroves at a meeting which can be seen from the enthusiasm of the community in attending the meeting. The image below shows this condition.



Figure 3. Community Participation in Preparation for Mangrove Restoration Activities.

Furthermore, the ability and concern of the community can be seen from the results of the questionnaire given regarding their knowledge and attitudes towards mangrove forests and shows that the farmer group has a good understanding of the mangrove ecosystem around them in relation to the mangrove restoration activities that have been carried out. From the sixteen questions asked regarding the function and impact of mangroves, it can be seen that 100% of the community understands them. This level of good understanding will of course also influence public awareness.

Impact of Restoration Activities on the Economy

Apart from social impacts, mangrove restoration activities are also expected to have an impact on the community's economy. The economic impact cannot be separated from activities involving the community starting from clearing land, searching for seeds, nurseries, planting and maintenance. The amount of work done by group members

determines the results or income they will obtain. From the results of field data, most of the farmer group members are only involved in seeding and planting. Work is carried out in groups, especially for planting. If you look at the highest income obtained from restoration activities, it is around IDR 401,000 – IDR 500,000 per activity and this is only obtained by 1 person (group leader), and the majority earn IDR 201,000 – IDR 300,000 (43.47%).

Apart from the main activities related to restoration activities, Yakopi also provides empowerment programs such as training in making nipa palm sugar. From this activity it turns out that this empowerment activity cannot be maximized, because the process of making nipa palm sugar is hampered by the deposition of nipa sugar which is hampered by wildlife. like monkeys, so they do not provide maximum added economic value to respondents.

If you look at the income contribution obtained by farmer groups, it is still inadequate, but this is enough to provide additional income as a side job. Restoration activities cannot yet be used as a permanent job because until now restoration activities are still periodic according to needs and only involve a small portion of the community, not evenly involving the number of community members. However, based on the information obtained from the group leader, YAKOPI will also provide an assistance program to the community in the form of equipment for processing shrimp paste and crackers according to the village's potential. With future programs that can improve the community's economy better, it will certainly increase community participation better as well.

From the results of research to improve the community's economy, empowerment activities that have been carried out by Yakopi, such as training in making nipah sugar, have not been able to produce maximum results from this empowerment activity, because the process of making nipa palm sugar is hampered by the deposition process of nipa palm sugar caused by wild animals such as monkeys, so it cannot be produced properly so it does not provide significant economic value.

Based on the research results obtained, for the sustainability of the restoration program carried out by Yakopi, it is necessary to plan future programs that involve more community members because the participation of the local community really determines the success of the program. Local communities with their local wisdom will be very helpful in protecting their environment and of course this is also accompanied by providing economic empowerment programs in providing added economic value related to the use of mangroves to be processed into various kinds of products with economic value through training/community empowerment programs so that they can improve the economy. a better society which in the end will certainly increase better community participation. (Goldsmith and Blustain in (Ndraha, 1990)

CONCLUSIONS

Based on the results of research regarding the impact of mangrove restoration in Kwala Gebang Village, Gebang District, Langkat Regency, it can be concluded as follows:

1. With mangrove restoration activities, community awareness and concern can be raised properly, this is because the community is aware of the impact of restoration activities that will be obtained directly, namely being involved in activities that can increase income. And the indirect impact of the activity is that the community understands the function of mangroves to maintain the stability of marine animal habitats and the coastal environment.
2. Restoration activities have a positive impact on social life, because restoration activities can build togetherness among community members, mutual cooperation/kinship and good communication between people.

3. Mangrove restoration has a positive economic impact in increasing family income, although the impact is still small, especially on the community economy, because the restoration activities carried out have only lasted approximately one (1) year, still involve a small number of community members and, the activities are periodic. depending on the need for the area to be restored, the number of available seeds, and the weather.
4. Mangrove restoration also depends on various factors such as the initial condition of the mangrove ecosystem, community participation, support from the government, and the private sector as working partners.

Suggestions

Based on the research results and conclusions that have been presented regarding the impact of mangrove restoration on the socio-economic conditions of the community, there are several suggestions that need to be considered, namely:

1. Continuous community participation and concern is needed in protecting and maintaining the existence of mangroves, especially in areas that have just been planted so that mangrove growth can grow and develop well, by involving more community members in restoration activities and other productive activities on an ongoing basis. , so that society will feel the impact economically, socially and environmentally.
2. Increasing community participation in mangrove restoration programs by developing other community empowerment programs through education in schools in coastal areas so that an early understanding is formed in the younger generation about the importance of maintaining mangroves in a sustainable manner.
3. Hold targeted and well-planned outreach and training in accordance with the potential of the coastal areas in Kwala Gebang. This can be done through Yakopi's collaboration with related parties such as government institutions, NGOs and local communities.
4. Yakopi can help optimize the use of results from mangrove restoration to increase community income, by developing various economic activities such as tourism, fish cultivation, processing of fish catches by differentiating processed fish products, handicrafts, and so on.
5. Increase the government's support and role in the mangrove restoration program, both through the provision of funds, supportive policies and regulations, as well as ongoing monitoring and evaluation. The government can also provide incentives for the community to get involved in mangrove restoration programs.
6. Restoration activities must be carried out continuously by monitoring and evaluating the activities carried out so that activities can be improved and sustainable. In this way, it is hoped that the mangrove restoration program can have a more significant positive impact on the socio-economic conditions of the community, and can strengthen community capacity in sustainable management of natural resources.

REFERENCES

- Asbi, A. M., & Rauf, R. A. (2019). Pengaruh Eksistensi Hutan Mangrove terhadap Aspek Sosial, Ekonomi dan Kearifan Lokal Masyarakat Pesisir di Desa Jaring Halus, Kecamatan Secanggang, Kabupaten Langkat. *Jurnal Ilmiah Universitas Batanghari Jambi*, 19(3), 666. <https://doi.org/10.33087/jiubj.v19i3.709>
- Franks T. and Falcover R. (1999). Developing Procedure for The Sustainable Use of Mangrove System. *Elsevier: Agricultural Water Management* (40): 59 – 64.

- Lestari, R. A., Amirullah, A., & Ahmadin, A. (2019). Sejarah Hutan Mangrove Tongke-Tongke di Kabupaten Sinjai. *Jurnal Patingalloang*, 6(1), 91. <https://doi.org/10.26858/patingalloang.v6i1.10687>
- Litolily, L. I., Mardiatmoko, G., & Pattimahu, D. V. (2020). Analysis of Mangrove Forest Economic in Kotania Bay, West Seram District. *Jurnal Hutan Pulau-Pulau Kecil*, 4(1), 22–30. <https://doi.org/10.30598/jhppk.2020.4.1.22>
- Nanlohy, L. H., & Masniar, M. (2020). Manfaat Ekosistem Mangrove Dalam Meningkatkan Kualitas Lingkungan Masyarakat Pesisir. *Abdimas: Papua Journal of Community Service*, 2(1), 1–4. <https://doi.org/10.33506/pjcs.v2i1.804>
- Ndraha, Taliziduhu. (1990) Pengembangan Masyarakat : Mempersiapkan Masyarakat Tinggal Landas. Jakarta, Rineka Cipta.
- Rahim, S. (2017). Hutan Mangrove dan Pemanfaatannya (1st ed.). CV Budi Utama.
- Soekanto. (1982). Kesadaran Hukum & kepatuhan Hukum. Jakarta: Jakarta Rajawali Press