

The Impact of Mangrove Restoration on the Social Economy of the Community of Batu Panjang Village, Rupert Island, Riau Province

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ABSTRACT

Mangrove restoration is an effort to restore degraded mangrove ecosystems with the aim of increasing environmental sustainability, biodiversity conservation and providing social and economic benefits for the community. This research aims to determine the extent to which mangrove restoration can influence the socio-economic life of the community in Batu Panjang Village, Bengkalis Regency. The research method used is descriptive qualitative by systematically analyzing and processing data based on the results of observations and interviews with farmer groups, village officials and stakeholders in Batu Panjang Village. The results of this research show that restoration activities provide (1) a positive impact on increasing community knowledge and understanding regarding the function and role of mangroves in coastal area conservation efforts, (2) community empowerment has been carried out by forming a farmer group, namely the Jeram Batu Panjang (JBP) group and the STYA group which plays a role from the land clearing stage, to the planting stage, (3) but has not yet provided/shown a significant impact in increasing income which will affect the social and economic conditions of the community in Batu Panjang Village, Rupert District. This is shown by the research results that the income earned by the community from mangrove restoration activities from the land clearing stage to the planting stage is only around IDR 475,000 on average, still far below the Bengkalis Regency Minimum Wage of IDR 3,599,029.72.

KEYWORDS

Coastal areas; mangrove restoration; community empowerment

INTRODUCTION

Indonesia is the largest archipelagic country in the world with 17,506 large and small islands. Indonesia's total coastline is estimated to reach 81,000 km, therefore Indonesia is also the country with the second longest coastline in the world, after Canada with such a long coastline. Indonesia has a coastal area, which is a fairly large transition area between land and sea. This coastal area has unique characteristics such as mangrove forests, coral reefs and estuaries whose ecosystems face directly the crashing waves and the dangers of coastal erosion. Marine and coastal areas are very important areas for the majority of the Indonesian population. More than fourteen million people or around 7.5% of Indonesia's total population depend on activities in this area. Around 26% of Indonesia's total Gross Domestic Product (GDP) is contributed from marine and coastal activities and resources.

Apart from that, coastal areas are also widely used as residential areas. Ironically, the pressure on coastal areas today is very heavy along with the increase in population and rapid

development. Abrasion that occurs in coastal areas, apart from being caused by large waves, is also often caused by reclamation of coastal areas because these areas are strategic areas for the development of fishing, aquaculture, industrial and residential activities. Abrasion will get worse because there is no natural protection (green belt) due to uncontrolled felling of mangrove forests along the coast for other reasons, especially for clearing aquaculture areas and utilizing mangrove wood to meet the need for building wood and firewood (Cahyaningrum, D., 2011).

Mangrove forests are a type of forest that grows in tidal areas, especially sheltered beaches, lagoons and river estuaries that are flooded at low tide and whose plant communities tolerate salt. The area of mangrove forests in Indonesia in 1999 reached 8.60 million Ha and around 5.30 million Ha were damaged. Mangrove damage can occur naturally or through pressure from the surrounding community. Naturally, the level of damage is generally much smaller than damage caused by human activity. Natural damage occurs due to natural events such as hurricanes or storms and prolonged dry climates which cause the accumulation of salt levels in plants. Meanwhile, damage that occurs due to community pressure or human activity is caused by the large number of human activities around the mangrove forest area which results in changes in the physical and chemical characteristics of the mangrove habitat. So that this place is no longer suitable for the life and development of mangrove forest flora and fauna. Apart from that, damage caused by human activities is the use of mangrove wood for various purposes, making ponds, settlements, industry, and so on (Ario et al., 2015).

Protection and restoration of mangrove ecosystems is an important step for Indonesia in mitigating climate change. The existence of a good mangrove ecosystem in coastal areas can also increase the resilience of coastal communities to climate change. Mangrove damage is caused by two factors, namely human factors and natural factors. Human factors are the dominant cause, namely lack of environmental awareness and excessive land use, while natural factors are caused by abrasion and plant pests. Mangrove conservation can be pursued in every region. Mangrove is a tree that has various benefits for the environment. Mangroves or what are usually called mangrove trees, are plants that grow a lot in coastal areas.

Mangrove forests are one of the tropical natural resources which have broad functions and benefits in terms of economic and ecological aspects. The ecological function of mangroves can be seen from physical, chemical and biological aspects. The economic function of mangrove forests is related to the utilization of mangrove forest products which can be traded, both wood (firewood, building materials, charcoal, pulp and tannin) and non-wood (medicine). -medicine and fish), use for recreation (nature tourism) and education. Some of the main factors causing mangrove destruction are: pollution, mangrove forest conversion that does not pay attention to environmental factors, and excessive logging. According to Anwar and Gunawan (2006) in (Eddy et al., 2019), mangrove forest ecosystems are complex and dynamic, but unstable. It is complex because the ecosystem is filled with vegetation and is also a habitat for a variety of animals and aquatic biota. Its dynamic nature is shown by its ability to be able to grow and develop continuously and experience succession following changes in its natural habitat. Its condition is easily damaged due to disturbances and difficult to recover again. unstable of this ecosystem. Mangrove forests as the main ecosystem supporting important life in coastal areas have functions, among others, as protecting coastal areas and small islands from the onslaught of waves, coastal erosion and sea water intrusion; maintain the existence of marine animal species and vegetation; functions as a sedimentation controller; provider of raw materials for humans in production, such as wood, charcoal, food ingredients, cosmetic ingredients, dye

ingredients, leather tanners and sources of animal feed (Ritohardoyo and Ardi, 2011) in (Eddy et al., 2019).

Mangroves are a rare ecosystem, because they only cover 2% of the earth's surface. With this area, the mangrove ecosystem has an ecological, socio-economic and socio-cultural role which is very important for life around it, for example maintaining coastal stability from abrasion, a source of fish, shrimp and other biodiversity, a source of firewood and building wood, and has a function conservation, education, ecotourism and cultural identity. The level of damage to the world's mangrove ecosystem, including Indonesia, is very fast due to illegal opening of ponds, logging of mangrove forests, environmental pollution, reclamation, sedimentation, mining, and other natural causes such as storms or tsunamis. Mangrove restoration has received widespread attention considering the high socio-economic and ecological value of this ecosystem. Restoration can increase the value of mangrove biological resources, provide livelihoods for residents, prevent coastal damage, protect biodiversity, fisheries production, and so on.

The success of restoration activities is largely determined by the role of the community around the restoration area. In this study, research respondents included village leaders, community leaders, related business actors, leaders of coastal community organizations and representative coastal communities. Socio-economic parameters that are often used to assess damage to mangrove ecosystems 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 can also be categorized into several aspects, namely education level, age, gender, livelihood, length of residence, income, type of NTFP use and empowerment activities carried out.

Batu Panjang is the capital of the Batu Panjang sub-district which has an area of 32.00 km² in accordance with the enactment of Law Number 12 of 1956, State Gazette Number 25 of 1956. The Batu Panjang community consists of several tribes, the original tribe being Malay. Meanwhile, the immigrants are Javanese and Chinese. These three tribes color their daily lives and continue to maintain the customs of each tribe, respecting each other's customs and beliefs held by each group.

With the diversity of the Batu Panjang community, there are various socio-economic activities ranging from farmers, fishermen and traders. Apart from that, the condition of the Batu Panjang Village area, where almost the entire area is used as oil palm plantation land, means that the activities of the Batu Panjang community make commodities from palm oil plantations the main income for the community. Almost every community has an oil palm plantation in the Batu Panjang area. Apart from that, apart from the oil palm plantations owned by the Batu Panjang community, Batu Panjang village is surrounded by coastal areas which are grown by a diversity of mangrove plant ecosystems, making the Batu Panjang community also direct their economic activities to a large extent towards coastal products such as those who use the results. nature from the mangrove ecosystem such as catching fish, crabs, and others.

However, with the diversity of the mangrove ecosystem, it is not uncommon to find land in Batu Panjang Village being converted into oil palm plantation land, so that this land conversion becomes a problem that has a big impact on the economic situation of the Batu Panjang community which does not have oil palm plantations and economic activities. focusing on coastal products causes the mangrove ecosystem to become damaged and disturbed.

Restoration of degraded mangrove forests is not easy to do, because apart from requiring large costs and energy, it also takes a long time. Mangrove forest restoration can be divided based on time, namely long term (>20 years) and short term (<20 years). For this reason,

before greater damage occurs to the mangrove forest area, restoration efforts need to be carried out. Local communities living in coastal areas are the spearhead in carrying out mangrove forest restoration. Apart from requiring the existence of sustainable mangrove forests to meet their needs, they also have local wisdom that has been tested for a long time in maintaining the sustainability of the area. Therefore, several mangrove restoration efforts have been carried out by related parties, such as the government, NGOs, and local community. It is hoped that this mangrove restoration can restore the ecological function of mangrove forests and improve the socio-economic conditions of the surrounding community.

Apart from that, due to the existence of the mangrove ecosystem in Batu Panjang Village, the community is not yet fully aware of the benefits of the mangrove ecosystem on the coast of Batu Panjang Village. There are still some people who cut down mangrove trees to meet their economic needs. Meanwhile, the Batu Panjang Village government has given a verbal warning not to cut down mangrove trees carelessly. This is a problem for the mangrove ecosystem in Batu Panjang Village. For this reason, it is necessary to provide knowledge and training regarding the impacts and benefits of the presence of mangroves in Batu Panjang Village with mangrove restoration efforts which aim to maintain the ecological function of the mangrove forest ecosystem and provide impacts in the form of economic functions to the community in Batu Panjang Village so that they can be more know the importance of the existence of the mangrove ecosystem.

For this reason, research on the impact of mangrove restoration on the socio-economic life of the community in Batu Panjang Village was carried out to determine the extent to which mangrove restoration can influence the socio-economic life of the local community. It is hoped that this research can provide information and an overview of the success of mangrove restoration in this area and at the same time provide input for related parties to continue mangrove restoration efforts in coastal areas of Indonesia, especially in Batu Panjang Village, Batu Panjang District, Bengkalis Regency.

LITERATURE REVIEW

Mangrove forest restoration is an effort to improve the ecological function of mangrove forests that have been degraded so that they can return to their original state (Eddy et al., 2019). Sustainable restoration and maintenance of natural succession of mangrove forests aims to return the condition of forest vegetation to its climax condition (primary forest) through a succession process as a conservation effort. Biodiversity conservation has developed as an effort to deal with the biodiversity crisis, including biodiversity in mangrove forests. One of the goals is to study the impact of human activities on species, communities and ecosystems, and to seek approaches to avoid species extinction and return threatened species to functioning ecosystems (Primack et al., 1998).

Mangrove forest restoration has important potential in increasing mangrove forest resources, protecting coastlines and increasing biodiversity and fisheries productivity (Kairo et al., 2001). Alwidakdo et al. (2014) identified five factors that influence the success of mangrove forest restoration, namely: (1) pests and diseases, (2) sea tides, (3) planting techniques, (4) internal and external plant factors, and (5) suitability zoning by plant type.

Sustainable restoration programs and maintaining the natural succession of mangrove forests should involve local communities because they have better knowledge of the surrounding environmental conditions, as well as having local wisdom in preserving forests. According to Bosire et al. (2008) that mangrove forest restoration depends on site conditions and an emphasis on community involvement, as well as ecosystem level monitoring as an integral component of the restoration project. Apart from that, mangrove forest restoration

can be carried out by first knowing the level of succession that occurs. According to Dat and Yoshino (2013), mangrove restoration programs can show success if management is carried out based on the community and in collaboration with the local government.

According to Kusmana (2009), efforts to conserve mangrove forest ecosystems have urgency, namely: (1) Mangrove forest ecosystems are unique ecosystems because they are located in coastal areas which are a transition between land ecosystems and ocean ecosystems, (2) the characteristics of mangrove forest ecosystems are very influenced by processes that occur, both natural processes and anthropogenic processes on land, watersheds and oceans, (3) the existence of complex ecological interactions between coastal ecosystems, in this case mangrove forests, seagrass beds and coral reefs, and (4) the various economic benefits and ecological benefits of mangroves which are useful for fulfilling and improving people's welfare and maintaining the sustainability of the function of coastal ecosystems. According to Kelompok Kerja Mangrove Tingkat Nasional or called in English the National Level Mangrove Working Group (2013), referring to ecological, socio-economic, cultural and institutional conditions, there are several important things that serve as references in the management of Indonesian mangrove ecosystems, including: (1) The use of mangrove ecosystems must be balanced with restoration activities and conversion of mangrove ecosystems must be controlled so that the principle of no net loss is achieved, (2) Management of mangrove ecosystems requires political commitment and strong support from the central government, regional governments and related parties, (3) Community-based management of mangrove ecosystems is carried out to preserve important ecological and economic values and socio-cultural, in order to increase community income and support sustainable development, (4) Regional governments have the authority and obligation to manage mangrove ecosystems in accordance with local conditions and aspirations, and the national strategy for managing mangrove ecosystems, (5) Development of research, science and systems information is needed to strengthen sustainable mangrove ecosystem management, and (6) Mangrove ecosystem management is carried out through a partnership pattern with the support of international parties and the community. Good restoration activities must consider appropriate utilization of mangrove types and uses, appropriate mangrove management, and maintaining existing mangroves. Proper management and use of mangroves can increase the level of welfare of communities in coastal areas, especially in Batu Panjang Village.

RESEARCH METHODS

This type of research is qualitative descriptive research. This research was carried out in Batu Panjang Village, Rupert District, Bengkalis Regency, which is astronomically located at 01° 42' 53.9" N - at 01° 42' 57.4" - 101° 31' 30.2" E - - 101° 31' 34.3" BT with an area of 32 km². A map of the research area can be seen in Figure 1 below. The population in this research is all people who joined the mangrove farming group in Batu Panjang Village with a total of 25 people and also served as samples. The sampling technique uses Total Sampling, that is, the entire population is sampled in this research. Data collection techniques are by means of observation and interviews. 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, so that it can provide an overview of the impact of mangrove restoration on the socio-economics of the Batu Panjang Island Rupert village community. Riau Province.

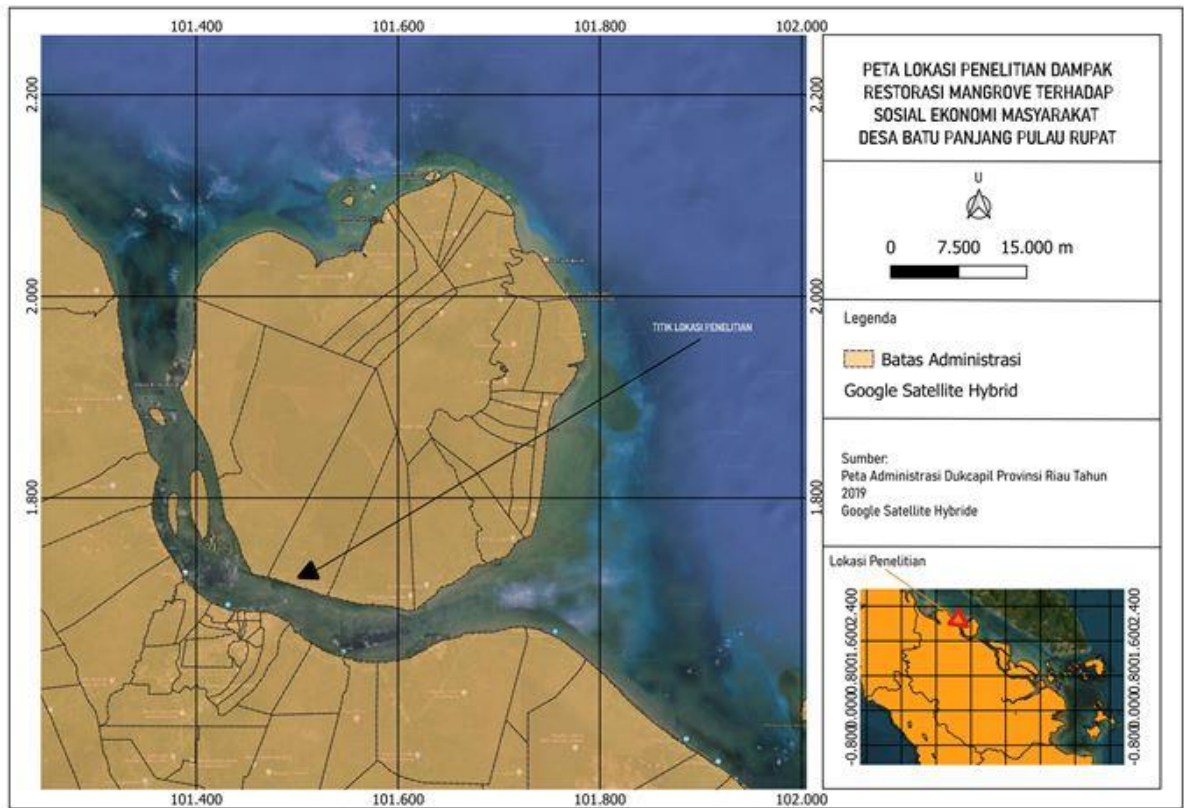


Figure 1. Map of Research Locations on the Impact of Mangrove Restoration on Socio-Economics in Batu Panjang Village, Rupa District
Source: Data Analysis, 2023

RESULTS AND DISCUSSION

Involvement of Respondent Groups in Restoration Activities

Overview of Restoration Group Organization

There are 2 (two) groups involved in Mangrove restoration activities in the Batu Panjang area, Rupa District, namely KTH JBP and KTH STYA with 10 members each. For more details, see table 1.

Table 1. Membership of the Mangrove Restoration community group in Batu Panjang

No	District	Group Name	Chairman	Committee	Male	Female	Group Name
1	Batu Panjang	KTH JBP	Ahmad	10	9	1	1.Ahmad 2. Syahroni 3.Wulandari 4.Herman 5.Kamaruddin 6.Samsulihan 7.Atno 8.Adi 9.Awi 10.Sujari

							1.Jamiludin
							2.Ferry Riando
							3.Santika Dewi
							4.Mirza Azmi
							5.Ainal Bazar
2	Batu Panjang	KTH STYA	Jamiludin	10	9	1	6.Jeprizal
							7.Abdul Razak
							8.Budo Suherman
							9.Syawal
							10.Norman

Source: Yakopi Office, 2023

In carrying out restoration activities, the role of the community is very much needed and will certainly greatly contribute to the success of mangrove area restoration. Even though it takes a relatively long time, the return or recovery of resources carried out through restoration activities will be successful with appropriate assistance by various stakeholders, especially the community. However, the community as coastal residents who live side by side with mangrove areas have a big role, especially in protecting mangrove areas to avoid various undesirable things. Apart from that, the involvement of coastal communities is very important considering that they are the ones who visit and interact with plants and planting locations every day (Manurung, et al. 2012).

This involvement starts from participation in outreach activities to strengthen knowledge and understanding regarding the importance of mangrove function and restoration for the purposes of environmental maintenance and conservation to sustainable maintenance activities. For socialization activities, all respondents were actively involved, but for land clearing and cultivation activities, involvement was still limited to members of the second group of communities. Respondents' participation in socialization can be seen in Figure 2.



Figure 2. Implementation of socialization in the Batu Panjang Village Hall

For further stages such as seeding and planting and seeding locations can be seen in figure 3, figure 4 and 5;



Figure 3. Cultivation for Mangrove Restoration in Batu Panjang



Figure 4. Planting for Mangrove Restoration in Batu Panjang

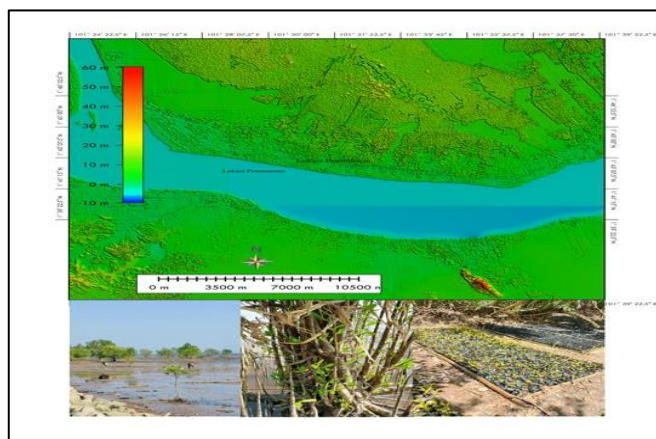


Figure 5. Cultivation of Location Points for Mangrove Restoration in Batu Panjang

Referring to the membership of the groups that have been formed, it turns out that in mangrove restoration activities not all group members are directly involved, many are represented by family members such as wives or other family members. For the KTH JBP group, only 2 registered group members (20%) were directly involved, the remaining 8

people (80%) were carried out by other people outside the group members. Meanwhile, for the KTH STYA group, 8 group members were directly involved (80%) while the rest was carried out by other people. This shows that the participation/involvement of group members is not optimal, while the aim of forming this community is so that all members have a cohesive role in carrying out mangrove restoration in their area.

Based on the data obtained in general, generally group members are not involved in just 1 (one) activity stage but some are also involved in 3 to 4 activity stages. In general, most people are involved in the cultivation stage, because the seed target and planting area is high, or also because generally respondents can do it and it doesn't really require special skills and can be done in between other activities. For more details about the involvement of respondents (group members) in mangrove restoration activities, see tables 2 and 3.

Table 2. Involvement of respondents (group members) according to the activities carried out.

No	Kind of Involved	Frequency Percentage	
		(People)	(%)
1	Land Clearing, Searching for Seeds, Seeding, Planting	1	5,00
2	Search for seeds, Seeding, Planting Seed Search, Planting	2	10,00
3	Seed Search, Planting	13	65,00
4	Seed, Planting	1	5,00
5	Only in Nurseries	1	5,00
6	Planting Only	2	10,00
Total		20	100,00

Source: Processed Primary Data, 2023

Table 12 shows that group members (respondents) did not only carry out 1 (one) stage of the activity. There are those who play a role from land clearing to planting, although the percentage is small (5%). Generally, in Cultivation and Planting activities (65%). If we look at the respondents' involvement in the stages of activities, the highest involvement was in cultivation activities (46.15%). For details, see table 3.

Table 3. Frequency of Respondents' Involvement in Mangrove restoration activities in Batu Panjang

No	Kind of Involved	Frequency of involvement according to activity (People)	
		Percentage (%)	
1	Land Clearing	1	2,56
2	Seed Searching	15	38,46
3	Cultivation	18	46,15
4	Planting	5	12,82
Total		39	100,00

Source: Processed Primary Data, 2023

Table 3 shows that respondents' involvement is still only in land clearing up to the planting stage, not yet at the maintenance stage. This is because when the research was carried out, activities carried out in the field were only at the planting stage. Of course, in order for the success rate of restoration to be high, maintenance is very important to do. Currently, maintenance may have been carried out, but this has not been reflected in this research, because at the time of the research, only the planting stage was being carried out.

Group Income from Mangrove Restoration Activities

The income from involvement in restoration activities received by the community varies depending on the restoration activities they carry out. So that wage payments are made based on participation carried out by the community. Respondents' income was in the range of Rp. 200,000 – Rp. 1,500,000. For more details, see table 4 below:

Table 4. Total Income of Respondents from Mangrove Restoration Activities in Batu Panjang

No	Name	Activities				Total (Rp)
		Land Clearing (Rp)	Seed Searching (Rp)	Cultivating (Rp)	Planting (Rp)	
1	Nuryana	0	200.000	200.000	0	400.000
2	Siti Rahma	0	200.000	200.000	200.000	600.000
3	Fatma Riyani	0	200.000	200.000	0	400.000
4	Wulan	0	200.000	200.000	0	400.000
5	Mei-Mei	0	200.000	200.000	0	400.000
6	Siti Rohani	0	200.000	200.000	0	400.000
7	Nurhayati	0	200.000	200.000	0	400.000
8	Jamaludin	500.000	200.000	200.000	600.000	1.500.000
9	Ahmad	0	200.000	200.000	0	400.000
10	Feri Riando	0	0	400.000	500.000	900.000
11	Bukhari	0	0	300.000	0	300.000
12	Wardi	0	0	0	600.000	600.000
13	Ratna Jurniati	0	0	200.000	0	200.000
14	Fesilia	0	0	0	200.000	200.000
15	Santika Dewi	0	200.000	200.000	0	400.000
16	Mirza Azmi	0	200.000	200.000	0	400.000
17	Ainal	0	200.000	200.000	0	400.000
18	Jeprizal	0	200.000	200.000	0	400.000
19	Syawal	0	200.000	200.000	0	400.000
20	Norman	0	200.000	200.000	0	400.000
Total		500000	3000000	3900000	2100000	9500000
					Average	475.000

Source: Processed Primary Data, 2023

Table 5 shows that the income earned by respondents ranges from IDR 200,000 – IDR 1500,000, with an average of IDR. 475,000,-. If the income obtained by respondents is grouped, it can be seen in table 5, visually seen in figure 6.

Table 5. Income Groups from Mangrove Restoration Activities

No	Income from Restoration Activities	Total	Percentage (%)
1	Rp. 200.000 - <Rp. 500.000	17	85.00
2	Rp. 500.000 - < Rp. 1.000.000	2	10.00
3	Rp. 1.000.00 - <Rp. 1.500.000	1	5.00
	Total	20	100.00

Source: Data Primer, 2023

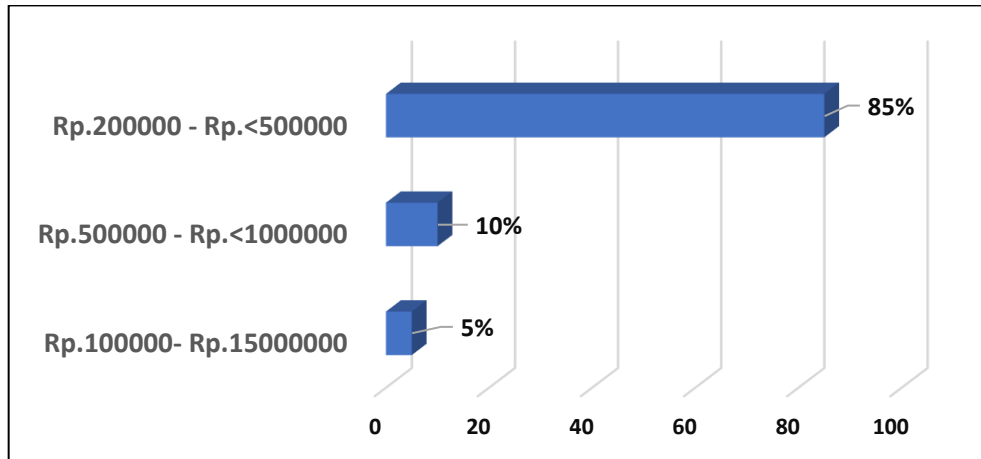


Figure 6. Graph of Income from Mangrove Restoration Activities

The research results show that there are two farmer groups, namely STYA and JBP (Jeram Batu Panjang). Mangrove planting has been carried out by the STYA group. The most restoration activities carried out by the community are nurseries with the total community income from these activities amounting to IDR 3,900,000. Data on community income from contributions from mangrove restoration activities can be seen from table 5 and figure 6.

Table 5 shows that there are 20 communities participating in mangrove restoration activities in Batu Panjang Village. There are 5% of the community participating in all restoration activities, namely land clearing, searching for seeds, seeding and planting, there are 10% who participate in 3 restoration activities, namely searching for seeds, seeding and planting. As many as 65%, namely 13 people, participated in searching for seeds and planting. In land clearing activities there was 1 (5%) person. A total of 1 (5%) community members participated only in cultivation activities and (10%) 2 community members only participated in the planting process.

Table 6. Recapitulations of Community Income from Mangrove Restoration Activities

No.	Restoration activities	Society's Income Total	Frequency	Percentage (%)
1	Land Clearing	500.000	1	2,56
2	Seed Searching	3.000.000	15	38,46
3	Cultivation	3.900.000	18	46,15
4	Planting	2.100.000	5	12,82
Total		9.500.000	39	100,00

Source: Processed Primary Data, 2023

Table 16 shows that at the 4 stages of activities carried out the total income received was around Rp. Rp. 500,000 to 3,900,000 with a total amount of Rp. 9500000. The details are as follows: There was 1 person (2.56%) who participated in land clearing with an income of IDR 500,000. There were 15 people (38.46%) who participated in the search for seeds with a total income of IDR. 3,000,000. In the cultivation activities there were 18 people (46.15%) who participated with a total income of IDR 3,900,000. And the planting was carried out by 5 people (12.82%) with a total community income of IDR 2,100,000. Visually, it can be seen in Figure 13.

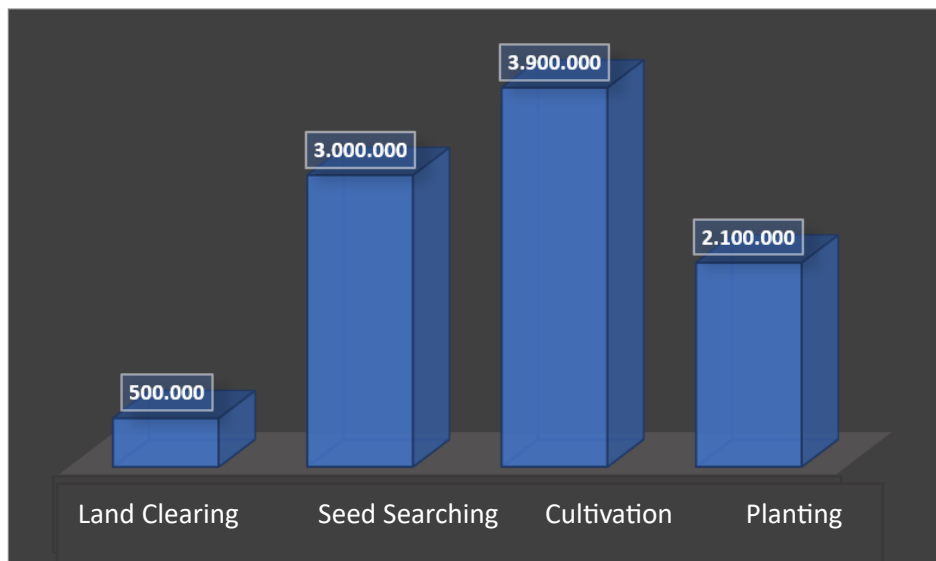


Figure 7. Graph of Total Community Income from Mangrove Restoration Results according to type of activity

Community Use of Mangroves

Mangroves are an ecosystem that provides a variety of resources that can be utilized by humans. In general, coastal communities often use mangrove ecosystems as a source of life, such as a place to find fish, shrimp, crabs and other biota. However, the fact is that not all coastal communities utilize the mangrove ecosystem optimally. From the data that has been collected, the most common form of mangrove utilization is the use of wood, leaves, timber, ecotourism and fisheries resources.

Table 7. Community Use of Mangroves

No	Community Use of Mangrove	Total
1	Taking Fisheries Elementary School	20
2	Take fruit	20
3	Pick up leaves	20
4	Take wood	20
5	Ecotourism	20
6	Taking Birds	0
7	Other uses	0

Source: Data Primer, 2023

The people of Batu Panjang Village use mangroves in the form of taking fisheries resources to be processed into a source of food in daily life. People also take mangrove fruit, a type of blooming fruit, to make jam. People also take the leaves and wood as crafts or building materials. Apart from that, people also use mangroves as ecotourism to improve the economy of communities around the mangrove area.

Community Empowerment Activities

The community empowerment activity that has been carried out is coaching the community to be able to process mangrove fruit, namely flowering fruit which is processed into jam which can be used in pastries or sponge cakes.



Figure 8. Homemade jam from the use of kedabu fruit

Community Ability to Seed and Plant Every Day

The ability of the community to seed and plant per day in Batu Panjang sub-district varies between individuals, this can also be influenced by land conditions in each area. The average capacity for seeding by each respondent is 500 polybags per day. Meanwhile, 4 respondents planted 100 polybags per day.

Community Perception of the Existence of Mangrove Forests

Frequency of Respondents Based on Perceptions of the Existence of Mangrove Forests

The research results show that all (100%) respondents have a good perception regarding the existence of mangrove forests, especially regarding their function as a breeding ground for marine animals, especially fish and the like, which can be used for family consumption and a source of income for the community.

Community perception of the existence of mangrove forests is influenced by the intensity and relationship and interaction of communities with mangrove forests in their daily lives. This is because the community realizes that their lives are always side by side and dependent on the resources available in the mangrove forest. The community understands the function and benefits of mangrove forests for their lives, but is not yet able to manage existing resources optimally.

Impact of Restoration Activities on Environmental and Socio-Economic Conditions of the Community

Impact of Restoration Activities on Environmental Conditions

Of all the villages involved in restoration activities, most of the mangrove forests in the area were damaged. This damage can be seen on empty land which used to be mangrove land. This is caused by a lack of public awareness in protecting mangrove forests, apart from that there are forest logging activities carried out arbitrarily without any responsibility for carrying out rehabilitation. After the restoration activities were carried out, although it did not have a big impact, the empty land which was previously mangrove land has been repaired and mangroves have been planted again.

Impact of Restoration Activities on Community Economic Conditions

Employment opportunities are the availability of employment opportunities to accommodate the workforce. Job opportunities are an important indicator of an economy. Widespread employment opportunities reduce the number of unemployed people, increase population productivity and increase production and national income. Job opportunities or labor demand is a derived demand from the demand for goods and services (Situmorang, 2005) in (Pambudi, 2020).

Restoration activities carried out in all Reforest Action project villages apart from having an impact on the environment also have an impact on people's income. Especially for people who don't have jobs or are housewives, this project allows people to have activities and activities that generate economic value. Even though the income contribution provided is still relatively small because the project has not been implemented for long, the community is quite satisfied with the existence of the project. The majority of respondents contributed to the search for seeds and nurseries, if you look at the Bengkalis Regency Minimum Wage of IDR 3,599,029.72 if you look at the income of farmer groups involved in restoration activities, it is still far below the UMK, because on average what can be obtained from activities The restoration only amounted to IDR 475,000 (Table 5.10). This means that the income obtained from this activity is still not able to support the economy of the people in Bengkalis Regency, especially on Rupat Island. This can be understood because mangrove restoration activities in this area are still in the early stages of restoration activities and in the future it is hoped that the community will take part in the activities planned by YAKOPI so that the planned mangrove restoration goals will have a

Positive Impact on the Community and at the Same Time the Environment As Part of Sustainable Conservation.

Impact of Restoration Activities on Community Social Conditions

The mangrove ecosystem is a wetland resource in coastal areas and a life support system and natural wealth whose value is very high, therefore it requires efforts to protect, preserve and use it sustainably for the welfare of the community (Presidential Decree, 2012).

From the results of filling out the questionnaire by all respondents, it was found that the mangrove restoration activities carried out had an impact on the social conditions of the community. Most of the community felt that this activity established a cooperative relationship between group members and with the village government in preserving mangrove forests. Apart from that, this restoration activity also has a positive impact on people who are not yet familiar with the resources found in the mangrove ecosystem, thus providing a great opportunity for the community to utilize and process mangrove ecosystem resources into economic value.

The impact of this restoration is very positive in terms of increasing knowledge and understanding, but it is not yet significant for increasing the income of the people on Rupat Island, because donations from this activity only average around IDR 475,000 in one stage, and it is hoped that it can increase further.

CONCLUSION

Based on the results of research regarding the impact of mangrove restoration on the socio-economic conditions of the community in Batu Panjang Village, Rupat District, it can be concluded that:

First, results of research related to socialization activities carried out among the community to build understanding and knowledge of the function and role of mangroves as

a coastal area conservation effort show that all (100%) of the community have good knowledge and understanding of the function and role of mangroves as part of the environment. conservation to maintain the condition of coastal areas in a protected environmental condition. Second, community empowerment has been carried out by forming farmer groups, namely the Jeram Batu Panjng (JBP) group and the STYA group which plays a role from the land clearing stage, to the planting stage, Third. The people involved receive wages according to the stages carried out, where the wages given depend on the type of activity carried out. However, the wages received have not shown a significant impact in improving socio-economic conditions with an average income of around IDR 475,000, which is still far below Bengkalis Regency Minimum Wage of IDR 3,599,029.72. This condition is actually caused by the fact that the mangrove restoration activities carried out in Batu Panjang village have only just begun, so community involvement and the area planted are still limited, and the activities carried out during the research have only reached the planting stage, not yet at the maintenance stage. Areas that are still at the planting stage, of course, have a low level of diversity, meaning that other types of biotas such as shrimp, crabs and fish are still very lacking even though these can be caught by fishing communities which will increase their income. However, it is hoped that in the future mangrove restoration will have a positive impact in increasing income which will have an impact on the socio-economic conditions of the community which will have an effect on improving the quality of life of the community because the mangrove ecosystem has an important role in maintaining environmental sustainability, including in maintaining the availability of clean water. reducing the impact of natural disasters, and so on. Therefore, it is necessary to build synergy between the community, support from the government and other stakeholders, including the hard efforts made by Yakopi. Research still needs to be carried out to evaluate and optimize the impact of mangrove restoration on improving the socio-economic conditions of the community.

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