

IMPACT OF MANGROVE REHABILITATION ON COMMUNITY INCOME AT LUBUK KERTANG VILLAGE

Roswita Hafni

Economics and Bussines Faculty at Muhammadiyah University of North Sumatera

roswita_ayu@yahoo.com

ABSTRACT

Extensive mangrove forest scattered on several islands in Indonesia amounted to 4,251,011 hectares. However, more than half the total area of mangrove forests that have turned out in a badly damaged condition. The mangrove forests of North Sumatra province located along the east coast with extensive of 199,478.32 hectares. Langkat has the most extensive mangrove area ie 50,650.93 ha, but since 2006 the mangrove forest has been converted into oil palm plantations. Economically natural resources is the source of income is reduced because it will be decreasing livelihoods of fishermen in six villages.

The aims of research was to determine of mangrove forests condition, and how mangrove rehabilitation impacts on the income of traditional fishing communities, specially on village of Lubuk Kertang Langkat District of West Brandan. This research is descriptive and the population in this study is the whole area of mangrove forest in the Lubuk Kertang's village as many 170 KK of fishermen. The number of samples with as many as 62 kk with slovin techniques. Data analysis technique used is the comparative analyses.

The results that: (1). The mangrove forests in the village of Lubuk Kertang with extensive damage reached 740 ha (61.67%) from the total 1200 ha of existing. Severe damage of mangrove forest of 528 ha (71.35%). (2). The destruction of mangrove forests negative impact on fishermen's income, with significant values of $0.020 < 0.05$. It is claimed that there is a correlation between before and after the rehabilitation of mangrove forests. Before damage occurs fishing communities adequate income to make ends meet, but after the damage occurred a huge decline of incomes.

Key words: Mangrove, Severe damage, Rehabilitation, Lubuk Kertang village

INTRODUCTION

Indonesia is one country in the world in the form of an archipelago that has about 17,508 islands and a coastline of over 81,000 km, in addition to the location is very strategic, Indonesia also has marine and coastal resources are abundant throughout the area around the coastline, both living and vegetable. One marine and coastal resources found in Indonesia is a mangrove forest ecosystems in almost every coastal areas and coastline of Indonesia. Mangrove forest ecosystem is an ecological system consisting of tropical coastal vegetation

communities dominated by several species of mangrove trees that can grow and thrive in the muddy coastal tidal areas (Bengen, 2001). Damage to the mangrove forest ecosystem is the biotic and abiotic physical changes in the mangrove forest ecosystem becomes no longer intact or damaged caused by natural factors and human factors (Tirtakusumah, 1994). In general, mangrove forest ecosystem damage caused by human activities in coastal areas utilization of natural resources is not concerned with sustainability, such as; felling for firewood purposes excessive, pond, residential, industrial and mining (Minister, 2004).

Extensive mangrove forest in Indonesia approximately 4,251,011 hectares spread over several islands, such as Sumatera, Java and Bali, Nusa Tenggara, Kalimantan, Sulawesi, Maluku, and Papua / Irian. But, more than half the total area of mangrove forest ecosystems in Indonesia was in a badly damaged condition, including 1.6 million hectares in forest and 3.7 million hectares outside forest areas. Extensive mangrove forests on the island of Sumatera \pm 657,000 ha. (Sunarto 2008). While the mangrove forest area in North Sumatra located along the east coast BP2HM based on data covering 199,478.32 hectares of degraded forests covering an area of 59 077 hectares, or 33 percent. The forest is spread over 17 districts / cities in the province.

Of the damaged forest land, an area of 47 868 hectares, or about 26 percent of the rehabilitated or repaired, Langkat has extensive mangrove most dominant namely 50650.93 hectares. Langkat ranks first most degraded mangrove forest land in North Sumatra, which is an area of 13 526 hectares, "Republika.co.id, Friday (29/4), or about 25 percent. Meanwhile, there is in moderate condition and 23 564 hectares in the rehabilitation process covering an area of 4,415 hectares.

The widest damaged and rehabilitated in the village of Lubuk Kertang Brandan west districts. The state of mangrove forests in the village with an area of 740 hectares of mangrove forest destruction (61.67%) of total area 1200 hectares of mangrove forest. Damage to mangrove forests classified as severe condition 528 ha (71.35%) of the total 740 hectares of mangrove forest destruction.

In North Sumatera, the expansion of oil palm plantations has destroyed 75 percent or 62,800 hectares of coastal area and the area of forest cover remaining 25 percent (Kompas, 30/01/2010). The expansion of oil palm plantations caused the fishing village so vulnerable to flooding, and they are increasingly hard to find fish and shrimp in the region tangkapnya own. Large-scale land conversion have raised various problems. Ecologically, the conversion has caused a decline in ecological functions of the area. Surrounding communities also have felt marginalized because of tenure and access to the area is getting closed. Economically they also feel aggrieved because natural resources are the source of their income, such as the economic value of mangroves, mud crab, shrimp, fish, etc., To be reduced significantly.

Since 2006, an area of 16 466 hectares of mangrove forests in the watershed (DAS) Tanjung Balai and Sei Babalan, Brandan west subdistrict, Langkat, in the village of Lubuk Kertang has been converted into oil palm plantations. As a result of the conversion of mangrove forests, the soil becomes damaged, the livelihoods of fishermen in six villages, namely Perlis, Kelantan, Lubuk Kasih, Lubuk Kertang, Alur Dua, as well as the Village of west Berandan and Sei Billah, dropped dramatically.

Actually, the most powerful pressure yes appetite of the man himself who is not grateful for the favors of God, of the community nebang the mangrove for firewood, building materials, charcoal. Then the investor-financier who made it to the fields of oil, to prevent widespread destruction of mangrove forests, awareness must emerge from society itself. Insight into the importance of mangrove forests for the balance of the ecosystem and humans also need to be continuously assessed. With the hope of the future, conversion of mangrove forests have become the land of oil, fish ponds immediately terminated. By doing so, this will gradually be restored again,

Rehabilitation of Forest Land Register 8 / L District of Brandan west Langkat East Coast of North Sumatera Province has finished doing the planting area of 308 H of the total area of 1200 ha which has been converted into oil palm plantations, that rehabilitation is possible through the support of the Central Management of Mangrove Forest region I field and Hall of Watershed Management Wampu Snake and Regent Langkat cq forestry service and the plantation districts Langkat, while on duty Marine and fisheries Langkat has yet to do anything related to rescue the coast as the potential of fisheries resources in the Register 8 / L Brandan west subdistrict. This activity involves the Coastal Communities Traditional Fishermen from 8 Village / Village, the Gulf Meku Village, Sei bar Village, Brandan west Village, Kelantan Village, Perlis Village, Lubuk Kasih Village, Pangkalan Batu Village, Lubuk Kertang which consists of three districts, namely Subdistrict Bababan, Sei Lapan, District West Brandan incorporated in auxiliaries of the Indonesian Traditional Fishermen Unity (Mangrove group Family Bahari, Mangrove Lestari, Tunas Baru-I) in doing since 20 september 2013, with the number of seeds planted as many as 1.025 million stems , rehabilitation is not an easy thing done so alone but still many challenges to be faced from the mafia that has converted the mangrove ecosystem registers 8 / L of 1200 ha is in the form of destruction of seedlings of 300,000 stems, burning lodge work twice and entirely has been reported to law enforcement authorities, but to date has not produced good result.

Rehabilitation rescue ecosystem of mangroves will continue to proceed to restore areas that have been converted into oil palm plantations, expansion of rehabilitation in Register 8 / L west districts Brandan important to do after coastal communities Traditional Fishermen prove capable of guarding the areas that have been rehabilitated this then urging

the government to immediately execute acreage converted into oil palm plantations into tasks that must be resolved Forestry Service of North Sumatera Province.

Seeing the condition of the forest transition Mangrove, Women fishermen in Langkat, North Sumatera, moves to save coastal ecosystems by planting 10,000 mangrove seedlings. Actions matter of background the importance of conserving coastal mangroves due to the large benefits to coastal communities. Planting mangrove conducted Thursday (10/08/2015) in the Lubuk Kertang Village, District Berandan west, along with the Brotherhood of Fishermen Women Indonesia (PPNI) Langkat, Purse Dhuafa, and the People's Coalition for Fishery Justice (KIARA).

Revenue will affect the socio-economic condition, as well as the village of Lubuk Kertang fishing communities. How does the income of fishermen before the damage occurs after the damage occurred? This lack of income due to the destruction of most of the mangrove ecosystem. The fishermen in the area are strongly opposed the opening of oil palm plantations and land clearing ponds that do not notice the environmental aspects. This has an impact on the economic conditions of coastal fishermen whose livelihood is fishing in the sea. Reduced catches lead to fish further from shore so that fishermen will bear the costs and risks incurred. Thus there are some fishing communities are turning to other livelihoods.

The purpose of this study are : (1). Conduct an analysis of the factors that caused the destruction of mangrove forests in the village of Lubuk Kertang Brandan Barat subdistrict Langkat. (2). Conduct analysis of the economic impact that caused his broken mangrove forests in the village of Lubuk Kertang. (3). Perform analysis undertaken efforts governments and communities in rehabilitating mangrove forests in the village of Lubuk Kertang. (4). Conduct analysis of different test in view of economic conditions in the community before and after the rehabilitation of mangrove forests in the village of Lubuk Kertang Brandan west of subdistrict Langkat.

LITERATUR REVIEW

a. The definition of Mangrove Forests

Mangrove is derived from the word mangal which shows a plant community (Dahuri R 2003) states that the word mangrove is a general term for trees that live in the muddy, wet and the water lies in the tidal tropics, (Arif, Arifin 2003) states that the mangrove forest is a forest that grows in coastal areas, usually located in the bay area and at the mouth of the river which is characterized by: (1). Not affected the climate; (2). Influenced by tides; (3). Land inundated by sea water; (4). The coastal lowlands; (5). Have no forest canopy structure; (6). The kinds of trees are usually composed of fires (*Avicenia Sp*), kike (*Sonneratia*), mangroves (*Rhizophora Sp*), lacang (*Bruguiera Sp*), nyirih (*Xylocarpus Sp*), palm (*Nypa Sp*) and others ,

The mangrove forest is a forest type that is naturally influenced by the tide, inundated during high tides and free from water-logging during low tide. The mangrove ecosystem is a

system that consists of biotic and abiotic environment interacting in a mangrove habitat. Mangrove forests are also called "Coastal Woodland" (coastal forests) or "Tidal Forest" (forest downs) / mangrove forests, which are the characteristic littoral plant formations found in the tropics (Saenger, 1983)

b. Functions and Benefits of Mangrove Forests

Saenger (1983); Salim (1986); and Naamin (1990) states that the function of mangrove ecosystems include: physical functioning; keeping the coastline in order to remain stable, protecting the coast from sea erosion (abrasion) and seawater intrusion; and processing of waste materials. Biological function; fish hatcheries, shrimp, spawning several aquatic biota; the breeding of birds; natural habitat for various types of biota. The economic function as a source of fuel (charcoal firewood), aquaculture, salt production site, and building materials.

Mangrove ecosystem, either individually or jointly with seagrass ecosystems and coral reefs play an important role in the stabilization of a coastal ecosystem, both physically and biologically, in addition, the mangrove ecosystem is a source of germplasm that is high enough (eg, mangrove in Indonesia consists over 157 species of higher plants and lower, 118 species of marine fauna and various types of land fauna (Kusmana, 2002). The mangrove ecosystem is also a coastal protection naturally to reduce the risk of tsunami hazards. Results of research conducted in the Gulf Grajagan, Banyuwangi, East Java, shows that on average there has been a reduction of mangrove ecosystems wave height of 0.7340, and the change of wave energy (E) = 19635.26 joule (Pratikto et al., 2002)

Because the characters are typical of mangrove trees, mangrove ecosystem serves as a buffer and storm surge, protective abrasion, mudguard, and trap sediment. In addition, the mangrove ecosystem is also the producer of detritus and is an area of care (nursery grounds), areas for foraging (feeding ground), as well as spawning areas (spawning ground) for various types of fish, shrimp, and other marine life. As well as a supplier of fish larvae, shrimp, and as a place of tourism.

According Hardjosento (1981) to Saenger (1983), the results of mangrove forests can be wood, chips, firewood, charcoal bark that produces tannins (substances tanner), building materials seperti: beams scaffolding, buildings, bridges, beams railroads, shipbuilding, milestones and roofs. Mats and even the fence was using the kind that comes from the mangroves. Food such as: pharmaceuticals and beverages, sugar alcohols, vinegar, medicines. Fisheries such as: poles for fish traps, buoys nets, drying fish, nets and floor. :, Farm as animal feed, fertilizer.

Production of various kinds of paper paper, etc., the ecological benefits of mangrove forests : (1).As protection from abrasion / erosion, waves or strong winds, (2). Controlling seawater intrusion. (3). Habitat for many species of fauna, (4). As foraging, spawning and

breeding various kinds of fish and shrimp, (5). Land developers through the process of sedimentation, (6). Controller malaria, (7). Maintaining water quality as meredukasi pollutant, water pollutant, (8). Absorbing CO₂ and O₂ producing relatively high compared to other forest types.

c. The Cause of the Destruction of Mangrove Ecosystems

Broadly speaking, the factors causing damage to mangrove forests : (1). The human factor which is the dominant factor causing damage to mangrove forests in terms of land use is excessive. Such as: a). The desire to make the ponds by open land in the hope of economical and profitable, because it is easy and cheap. b). Firewood for urgent household, because no other trees in the vicinity that could be cut down. c). Lack of public awareness of the various functions of the mangrove forest. d). Their social gap between traditional fish farmers with modern pond employers, resulting in a process of buying and selling land is not rational. (2). Natural factors, such as flooding, drought and pests, which have contributed to the relatively small (Tirtakusumah, 1994).

d. Conversion Mangrove Forests

Almost all forms of land use in coastal areas from the conversion of mangrove forests. Mangrove forests along the coast have been converted into residential areas, ponds, industrial areas, ports, salt lading and others. Most mangrove forest conversion into other forms of utilization has not been laid out based on the ability and the designation of development, resulting in less favorable conditions seen from the regional and national benefits.

Therefore, the utilization of the remaining mangrove forests or rehabilitation efforts must be in accordance with the potential and the plan to use the other by considering the ecosystem sustainability, economic benefits and technological mastery.

e. Rehabilitasi Mangrove Forests

According to the Forestry Minister's Regulation No.03 / MENHUT-V / 2004 rehabilitation of mangrove forests is an attempt to restore the function of degraded mangrove forests, to the conditions considered to be a good and able to function ecologically and economically. To restore and improve the functioning of protection, preservation function and the production function (Ministry of Environment, 1994). and has initiated since 1960 in the north coast of Jawa. Sekitar 20,000 ha of mangrove forests were damaged on the north coast of Java Island were reported to have successfully rehabilitated using main plant *Rhizophora* spp and *Avicennia* spp with grow percent results of plantings ranged from 60-70%.

Rehabilitation of mangrove forests are part of the mangrove forest management system that is an integral part of the integrated coastal zone management which is placed on the frame of the Watershed (DAS) as the balance of environment and water management.

f. Socio-Economic Problems

Increase the rate of population growth and development in coastal areas, causing an imbalance between demand for the necessities of life, the opportunity to supply the coastal natural resources that exist. Efforts to develop intensive agriculture (coastal agriculture) which do not optimal, and the activities and opportunities are still limited marine oriented development. As a result of these circumstances led to the increasing destruction of coastal and marine ecosystems, especially mangrove forests, in addition to the causes of land conversion to plantations or ponds - fish ponds.

g. The Income Theory

According Sukirno (2006: 47) income is the amount of income received by a resident on his performance during a given period, whether daily, weekly, monthly or yearly. Some classifications of income among other things: (1). Personal income, namely; all types of income earned without giving any activity that is acceptable to the population of a country. (2). Disposable income, namely; reduced personal income tax to be paid by the recipient of the income, the remaining disposable income is what is called disposable income. (3). The national income, namely; the value of all final goods and services produced by a country in a year. Revenue problem is not only seen from the numbers alone, but how the distribution of income received by the public. These days most of the sources of income of rural households not only from a single source, but from multiple sources or can be said households to diversify the job or has a variety of revenue sources (Susilowati et al, 2002). Farm household income is determined by the level of wages as an admission factor of production labor. The rental value of land as a productive asset acceptance of agricultural land tenure. Thus the income level of rural households is strongly influenced by the level of mastery of the factors of production.

According to Malian and Siregar (2000) household income of farmers outskirts of urban areas is also derived from the three main activities, including activities within the farm itself (on-farm), agricultural activities outside of farming alone (off-farm) and activities outside the agricultural sector (non-farm). For farmers who are in the countryside, the income derived from activities on-farm and off-farm generally achieve more than 90 percent.

CONCEPTUAL FRAMEWORK

In the framework of the management and conservation of mangroves, there are two main concepts that can be applied. Both of these concepts are basically gives legitimacy and understanding that is in need of mangrove protection and management in order to remain sustainable. Both of these concepts is the protection of mangroves and mangrove rehabilitation. The problem is how the income of fishing communities in the area.

For while the hypothesis was made as follows: $H_0, b = 0$ (There are differences in people's incomes Lubuk Kertang Brandan Barat subdistrict Langkat before the Mangrove Forest Rehabilitation after Mangrove Forest Rehabilitation) $H_a, b \neq 0$ (There are differences

in people's incomes Lubuk Kertang Brandan west subdistrict Langkat before the Mangrove Forest Rehabilitation after Mangrove Forest Rehabilitation)

METHODOLOGY

Operational definition is; Rehabilitation of mangrove forests and the income of people, while a study was conducted in the village of Lubuk Kertang Brandan west subdistrict Langkat. The study population namely the Regional Rehabilitation mangrove forest with a number of 170 families (KK). And the sample with slovin techniques, error 10% as many as 62 families, using simple random sampling technique. Techniques the collection of data used interviews, questionnaires, and secondary data. While data analysis technique is descriptive analysis and comparative analysis of two different test average.

RESULTS AND DISCUSSION

a) ANALIYSIS DESCRIPTIVE

1. The State of Mangrove Forest in the Lubuk Kertang Village

Based on the results of research in the field condition of mangrove forests in the village of Lubuk Kertang suffered very serious damage, with the efforts of local government to carry out maintenance of mangrove forests by selective logging. But because of the lack of public awareness that the importance of mangrove forests in the ecosystem caused dilaksanakan programs that the government does not run smoothly. Extensive mangrove forests in the village of Lubuk Kertang in 2010 is 1200 Ha.

Conditions of Mangrove Forests in the Lubuk Kertang Village : (1). Good approximately 235 ha (19.58%) in which the percentage of vegetation cover in the mangrove forests of mangrove forest land $\geq 75\%$ and \geq mangrove tree density of 1500 trees / ha (2). Conditions were approximately 225 ha (18.75%) in which the percentage of vegetation cover on land mangrove forests and mangrove forest area $\geq 50\%$ - $<75\%$ and mangrove tree density ≥ 1000 - <1500 trees / ha; and (3). The condition of damaged about 740 ha (61.67%) in which the percentage of vegetation cover on land area of mangrove forests and mangrove forest $<50\%$ and mangrove tree density <1000 trees / ha

2. Mangrove Forest Ecosystem Resources Resource Utilization

Mangrove Forest Ecosystem Resources Resource utilization of mangrove forest ecosystems by in the village of Lubuk Kertang District of Brandan West can be seen from the results of interviews with respondents from research samples totaling 62 KK is 100%, that is, it turns out that all resources of mangrove forest in the village of Lubuk Kertang District of Brandan west beneficial to society. With each utilization for timber, fruit, seeds and roots are there as much as 20%, while utilizing marine life contained in the mangrove forest ecosystem as much as 80%, This means that they were more dominant utilize marine life found in the forest ecosystem mangrove, they stated that the mangrove is the source of our life.

3. Cause Damage Mangrove Forests

The cause damage to mangrove forests, the exploitation is very large, as much as 80%, with mangrove land clearing for palm oil plantations pond and 20%. It turned out to be more dominant exploitation of mangrove forests in the village of Lubuk Kertang.

4.Effect of Mangrove Forest Destruction Against Traditional Fishermen

Damage to the mangrove forests of the traditional fishing greatly affect their catches to 100%. People really need to mangrove marine biota in the mangrove forest.

Mangrove Forest Destruction Affect Revenues Traditional Fishermen. Damage to mangrove forests affect the income of fishermen 100%, because, if they reduced the catch of their income was also reduced from their catch them.

5.Land Changes Being Mangrove Pond Nor Oil Palm Plantation

Changes in mangrove land into ponds and palm oil plantations initially 100% of the community is very disappointed. The destruction of mangrove forests in the village of Lubuk Kertang a result of illegal logging for charcoal raw materials and parts of mangrove forests have been changed into the area of aquaculture, and oil palm plantations, but people can not do anything due to act of some specific elements.

Of the five hamlets of the village is the hamlet Janggus, Paluh wasp, gandu Edge, Flow bees, and coconut six. Hamlet damaged mangrove forests of the most severe is Hamlet II is Paluh wasp which is 600 Ha, the next hamlet III Bank gandu 290 Ha and IV Flow hamlet bee 75 Ha. Level damage vary from these hamlets

6.Socio-Economic Circumstances

The pressure on the mangrove areas are generally caused by socio-economic factors, natural factors and policy factors. The most dominant factor as factors causing pressure on the mangrove areas are socio-economic factors. The need for livelihood and daily needs into the reasons for the pressure on mangrove areas continues. The livelihoods of fishing off the coast of the main jobs that do coastal communities (fishermen) or the local community (local communities where they are resident on the beach and its surroundings, both migrants and native penduduk).

There are three target locations where fishing, first, coastal areas and estuaries; The second and third coral reefs in the sea. Fishermen pick reefs as the location of the catch for a refuge and spawning fish or shrimp. In addition, in the land is relatively protected from the wind, especially when the North wind season and the waters are quite clear.

7.Benefits to the Fisherman's Mangrove Forests

Residents of the village of Lubuk Kertang most of livelihood as fishermen who depend on natural resources in the sea. The community fishermen. There is an assortment of fishermen in the village of Lubuk Kertang when it is based on a tool used to catch fish, there are fishermen who use nets, Cager, beranjang, fishing, portion, and others. Given the sea is a

source of income for the people of the village of Lubuk Kertang, mefreka highly dependent on the availability of fish in the waters of the village of Lubuk Kertang as a place to get fish.

Availability of fish is closely related to the mangrove forest because mangrove forests as areas in search of food (feeding ground) and spawning (spawning ground) various marine organisms (fish, shrimp and shellfish) both living in the coastal waters and offshore, Fishermen are well aware of the benefits of mangrove forests for the survival of himself as a fisherman. Because mangroves is where the fish are looking for food and as a spawning area. This means that when the existence of mangrove forests are not maintained and preserved means would threaten their viability as a fisherman.

The more so they were still traditional fishing. 62.5% that mangrove forests are very beneficial as foraging and nesting place for marine life that populations of marine life is maintained continuity. While 37.5% of mangrove forests as a buffer from abrasion so it does not flood when they catch fish

8.The Impact of Destruction Mangrove Forest for Fishermans in Lubuk Kartang Village

Mangrove forests are closely related to the fishermen though indirectly, the mangrove forest is where the fish are looking for food and as a spawning area. This means that when the existence of mangrove forests are not maintained and preserved means would threaten their viability as a fisherman. Fishermen feel that the more years of income as a fisherman goes down. One of the causes of the decline in earnings due to the increasing fishing area of mangrove forest in the village of Lubuk kertang. Due to the cultivation of fishponds Barudan illegal logging by local communities. Impact damage to mangrove forests that are in the waters are very conscious of fishing communities is very bad because the population of marine life on the wane and 50% damage to mangrove forests often cause flooding and the breakdown of those ponds so fish and crabs revenue decline

Damage to mangrove forests have a negative impact. It was felt by the entire community of fishermen affect their income. Their income has decreased 50% and even up to 75% of their income before mangrove forests damaged. This is consistent with that described by Dietriech G Bengen in his synopsis of Ecosystems and Natural Resources Coastal and Marine and Principles The management is that the destruction of mangrove forests leads to malfunction of the area in search of food and care for marine life and threaten the regeneration of stocks of fish and shrimp in the waters off the coast requiring mangrove forests. Mangrove forest that serves as a reproduction of marine life, such as shrimp, crab and fish almost evenly damaged encroached upon and converted to oil palm trees and ponds. Long-term impact of environmental degradation is estimated to worsen the socio-economic level of fishermen

9.Things are Become Major Problems and Causes Damage Mangrove Forests : a)

Pressure Population to Economic Needs so High that Demand for Mangrove Conversion are also Higher. Residents here are more concerned with their own needs than ecological importance and awareness of the environmental impacts. The number of parties who are not responsible also ask to convert the mangrove lands but once converted these lands they did not follow up. They would understand that the benefit to dikonversinya ponds and mangrove forests into oil palm plantations would be more profitable whereas if viewed in the long term benefits of mangrove forests would be more helpful. b). Planning and coastal resource management in the past is very sectoral. This sectoral management will cause severe damage to mangrove forests that will impact the future. Then the lack of public awareness about the conversion and mangrove ecosystem function

b). COMPARATIVE ANALYSIS

Based on the research results, the majority of fishermen aged > 50 years as much as 16%, 40% aged 41-50 years and 31- 40 years of age 30%, while for the age of 20-30 years 14%. Turns Fishermen male 81% and female fishermen or 19%. The level of education of fishermen Diploma / S1 5%, 36% high school, junior high school education 11% and the majority of fishermen are the primary level of 48%.

To find out if there is an impact of rehabilitation of mangrove forests to people's income before and after, are shown in the following table

Table Comparative Test

	Paired Differences					T	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 Income Before Rehability Mangrove Forest - Income After Rehability Mangrove Forest	-1.823	1.542	.196	-2.214	-1.431	-9.307	61	.000

Hypotheses Include : (1). $H_0: b = 0$, the average income of the fishing community in the village of Lubuk Kertang Brandan west subdistrict Langkat before and after rehabilitation of mangrove forests are the same. (2). $H_a: b \neq 0$, There is a difference in income of fishing communities in Lubuk Kertang Brandan west subdistrict Langkat before and after rehabilitation of mangrove forests, .-Paired Samplet Test with error level $\alpha = 5\%$, or 95% confidence level df (degree of freedom) or degrees of freedom is $n - 1$ or $62-1 = 61$. $t_{\text{arithmatic value}} = -9.307$, and if compared with the value table $= \pm t(\alpha / 2, n \text{ Furthermore}) = \pm 1,99962$, criteria for the test, it is not true $-1.99962 \leq -9.307 \leq 1.99962$, then reject H_0 , so

that it can be concluded that there are differences in people's incomes fishing village of Lubuk Kertang District of West Brandan Langkat before before and after rehabilitation of mangrove forests. from the following table,

Table Data Descriptive

	Mean	N	Std. Deviation	Std. Error Mean
Pair 1 Income Before Rehability Mangrove Forest	21.35	62	1.380	.175
Income After Rehability Mangrove Forest	23.18	62	1.385	.176

In this first part presents a description of the public revenue, the average pre mangrove rehabilitation 21.35 with 1.380 Standard Deviation and after rehabilitation of mangrove forests that are on average 23.18 with a standard deviation 1.385.

While the following table,

Table Comparative Test

	N	Correlation	Sig.
Pair 1 Income Before Rehability Mangrove Forest and Income After Rehability Mangrove Forest	62	.378	.002

The results show a correlation between Revenue Prior to the rehabilitation of mangrove forests and Income Mangrove Forest Rehabilitation After giving a number of 0.378 with sig value $0,020 < \alpha = 0.05$, which means that there is a correlation between before and after the rehabilitation of mangrove rehabilitation.

CONCLUSION

From the results of research conducted conclusion can be drawn: (1). The state of mangrove forests in the village of Lubuk Kertang Brandan Barat subdistrict with extensive damage to mangrove forests 740 ha (61.67%) of total area 1200 hectares of mangrove forest. Damage to mangrove forests classified as severe condition 528 ha (71.35%) of the area of 740 ha of mangrove destruction. (2). The destruction of mangrove forests negatively impacting bottom fishing village Kertang because their incomes are declining after the damage occurred in the village of Lubuk Kertang, before damage occurs to the fishing communities adequate income to make ends meet, but after the damage occurs revenues decreased fishing communities.

It is suggested; (1). The government immediately accelerate and process as well as overseeing the Mangrove Forest Rehabilitation problems that exist in the village of Lubuk Kertang Brandan west subdistrict Langkat. (2). Residents must maintain and preserve the mangrove forests in the village of Lubuk Kertang Brandan west subdistrict Langkat.

REFERENCES

- Bengen, D. G. 2001. Sinopsis Ekosistem Sumber Daya Alam Pesisir dan Laut. Pusat Kajian Sumber Daya Pesisir dan Lautan. IPB. Bogor. 62 p.
- Arief, Arifin. 2003. Mangrove Forest: Functions and Benefits, Publisher Kanisus. Yogyakarta
- Bakosurtanal. 2009. Mangrove Ecosystem Togean, Publisher Bakosurtanal.
- Panduan Valuasi Ekonomi Ekosistem Mangrove. Jakarta: Kementerian Negara Lingkungan Hidup.
- Dahuri, R. 2003. Marine Biodiversity. Jakarta: Gramedia Pustaka Utama. Ghufuran. M. H. Kordi K, 2012. Ekosistem Mangrove: Potensi, Fungsi dan Pengelolaan. PT Rineka Cipta. Jakarta.
- Harahap, Nuddin. 2010. Economic Valuation of Ecosystem Mangrove And Aplikasinya in Coastal Planning, Publisher Graha Science. Yogyakarta.
- Hasan, TWN. 2007. Daily Sinar Indonesia Baru (SIB). Mangroves in North Sumatra Damage Achieve 62, 83. 7 percent of the area of 550 hectares, (Online), (<http://hariansib.com/?p=10858>).
- Irwanto. 2008. Irwantoshut.com. Mangrove forests and Benefits, (online), 14 (http://irwantoshut.com/penelitian/hutan_mangrove/).
- Irwanmay, 2004. Impact Analysis of Land Transfer of Mangrove Forest Conservation interactions become Socio-Economic Circumstances Against Fishermen in the district of Tanjung Pura Langkat district. Thesis Terrain: Faculty of Social Sciences. UNIMED.
- Isma, 2009. Mangrove Ecosystem Conservation Efforts In the village Secanggang Secanggang Langkat. Thesis Terrain: Faculty of Social Sciences. UNIMED.
- Khiatuddin, Maulida. 2003. Conserving Water Resources with Artificial Wetlands Technology, Publisher Gadjah Mada University Press. Yogyakarta '