

The Role of Management Institutions and Community Capacity and Their Suitability to the Needs of Gili Ketapang Conservation Area

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Abstract: - This research was conducted to increase community participation and related institutions in the management of the Gili Ketapang Island Marine Protected Area with the approach of the economic incentive concept where this concept develops economic benefits owned to preserve biological resources. The main objectives of this research are to calculate the value of Total Economy Value (TEV) while qualitative methods were used to find out about conservation area management institutions and analyze the suitability of community capacity with the needs of conservation areas management. This study used 67 respondents. The results of the calculation obtained the average production value obtained by fisher of Rp 229,441,270.21 / year from an average total production of 1,993 tons /year. The total economic value of coral reef resources in the marine conservation area is Rp 9,986,368,558. There are only six out of 17 conservation area management needs owned by the Gili Ketapang Conservation Area. This shows that there is still a lack of competent resources, which has an impact on the economy and sustainability of the Gili Ketapang Conservation Area.

Key-Words: - Community Capacity, Gili Ketapang, Institutional Role, Management Institutions, Marine Protected Area, Total Economic Value.

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1 Introduction

Most of the people of Gili Ketapang Island have a livelihood as fishermen so the existence of coral reefs in this area needs to be maintained and preserved. Natural efforts to maintain and preserve resource ecosystems have been made by the government through the establishment of water areas and Gili Ketapang Island as a

marine protected area. Since 2020, the waters of Gili Ketapang Island have been designated as a marine protected area as stipulated in the PERMEN KP No. 64 Th 2020 document with the focus of managing the area divided into 4 zones including core zones, utilization zones, sustainable fisheries zones, and other zones. Program priorities carried out in the Gili

Ketapang Island conservation area are carried out through strategies: 1) strengthening institutions, 2) strengthening regional resource management, and 3) strengthening social, economic, and cultural conditions, [1].

However, coral damage on Gili Ketapang Island can be categorized as poor or damaged condition. Based on the results of the coral cover assessment conducted by the Ministry of Marine Affairs and Fisheries stated that Gili Ketapang Island has a coral cover of 36.91% where this value has a value of less than 50%, [2]. Efforts to establish the Gili Ketapang Island Marine Protected Area will not produce significant results without the role of institutions and community participation. In the management of conservation areas, community participation is considered a viable degree to ensure the eco-environment and to progress people's employments in conservation areas. In any case, it has not gotten sufficient consideration at the viable level in most creating nations, and it is vague how vital it is in fortifying locals' pro-environmental behaviors to realize eco-environmental assurance objectives, [3]. The role of protected area management institutions is critical to ensure the effectiveness of management and marine protected areas. These institutions play an important role in balancing conservation objectives with the welfare of local communities so that sustainable outcomes can be achieved, [4], [5].

On the other hand, institutions play an important role in ensuring the success of conservation efforts by providing a framework for community participation and management and effective support by ensuring that regulations and policies facilitate community involvement and empower local communities, [6], [7], [8]. Community participation itself is critical to the success of conservation areas. Community participation ensures the involvement of local communities in the management and conservation of natural resources. Community participation can take many forms, including collaborative management, co-management, and community-based conservation, [7], [8]. Thus, the role of institutions and community participation is an

important part of conservation area management.

Thus, this research was conducted to increase community participation and related institutions in the management of the Gili Ketapang Island marine protected area with the approach of the economic incentive concept where this concept develops economic benefits owned to preserve biological resources. So that the main objectives of this research are 1) calculating the value of Total Economy Value (TEV); 2) Analyzing the role of institutional management of Gili Ketapang Conservation Area; and 3) Analyzing the suitability of community capacity with the needs of conservation area management.

2 Methodology

This research was conducted in the Gili Ketapang Island Marine Protected Area located in Gili Ketapang Village, Sumberasri District, Probolinggo Regency, East Java. This research was conducted in May-November 2023. The research method used quantitative and qualitative approaches. Quantitative methods were used to calculate the value of coral reef resource areas (Total Economy Value) while qualitative methods were used to find out about conservation area management institutions and analyze the suitability of community capacity in managing conservation areas.

The data sources used in this research are primary data and secondary data. Primary data was obtained directly through the distribution of questionnaires and structured interviews. Primary data is taken in the form of data or information related to the price of fish commodities, the length of time at sea, the number of fish catches, the amount of fish production, the cost of travel during tourism, and the cost of building break water infrastructure. Secondary data is taken from reports or documents from related institutions such as the Maritime and Fisheries Service, the Central Bureau of Statistics, and other literature sources.

The respondents of this study were the people of Gili Ketapang Island who were involved in the Marine Protected Area,

including small-scale fishermen (non-vessel line fishermen, small-scale non-machine fishermen, and fishermen with motorized engines <5GT), fishermen, cultivators and tourism groups, fisheries supervisory community groups, village officials and the Marine and Fisheries Service as the manager of the Marine Protected Area of Gili Ketapang Island. Data collection was conducted using a purposive sampling technique with criteria: male/female, age >17 years, and education \geq elementary school (SD). Management institutions with criteria: have positions according to experts in their fields.

Economic value analysis using Total Economic Value (TEV) calculation. TEV can be done for improvements to aquatic ecosystems [9] and calculates the economic value of resources from the conversion results in each benefit obtained. TEV is formulated as follows:

$$TEV = TUV + TNUV + TOV \quad (1)$$

where

TEV: Total Economic Value

TUV: Total Use Value

TNUV: Total Non-Use Value

TOV: Total Option Value

Qualitative analysis uses the Miles and Huberman model. This model provides guidelines for the stages of qualitative analysis including the process of data collection, data reduction, data display, and conclusions or verification.

3 Results and Discussion

3.1 Overview of the Research Location

Gili Ketapang Island is the name of a village located in the Madura Strait at 12 km from the north coast of Probolinggo and has an area of 61 hectares. Gili Ketapang Island has a population of 8,500 people with most of their livelihoods as fishermen (either boat captains or crew members). The education level of the Gili Island community is low, where the population with education below high school / high school/equivalent has a higher number than the population who have graduated from at least high school / high school/equivalent. This often causes the people of Gili Ketapang Island to be less open to

thoughts in the form of rules or policies aimed at developing the potential resources of Gili Ketapang Island.

The waters of Gili Ketapang Island are various types of fish groups dominated by major fish species (fish with small sizes between 5 and 25 cm with various colors and are often referred to as ornamental fish) and target fish consisting of the *Serranidae*, *Chaetodontidae*, *Acanthuridae*, *Lethrinidae*, *Pomacentridae*, *Haemulidae*, *Caesionidae* families. In the southwest area of Gili Ketapang Island, which is used as a conservation area, 18 species of fish have been recorded and in the waters of Gili Ketapang Island, a whale shark species has been found stranded on the coast of Probolinggo. This large fish species will usually appear during the rainy season with a vulnerable time between December and March each year. Not only, besides being rich in fish diversity, these waters have various types of Mollusca in the form of bivalves and gastropods. Echinodermata in the form of sea urchins, Christmas tree worms (*Spirobranchus giganteus*), and plankton consisting of 55 types of plankton including *Acartia*, *Anabaena*, *Anacystis*, *Chorella*, *Daphnia*, *Spirulina*, *Skeletonema*, *Ulna*, *Tetrapedia* and others. In a body of water, the presence of sea urchins is often an indicator of water pollution, the more sea urchins it can be said that the higher the level of pollution that occurs in the waters. these types of fish are often used as the target catch of fishermen because these types of fish have a profitable economic value.

3.2 Total Economy Value (TEV) of Coral Reef Resources

The results of the study related to the total economic value of coral reef resources in the Gili Ketapang Island marine conservation area are described based on: the economic value of direct benefits (DUV), indirect benefits (IUV), and option value (OP).

a) Direct Benefits

Direct benefits of coral reef resources in the Gili Ketapang Island marine conservation area consist of capture fisheries, aquaculture, and tourism. The calculation of the value of fisheries resource utilization in the conservation area of Gili Ketapang Island is adjusted to the amount of production in one year with the market price of the catch. The fishing

gear operating in the waters of Gili Ketapang Island that specifically catches in conservation areas are Mini Purse Sain and *Payang*. The types of fish caught are rice anchovy (*Stolephorus commersonii*) and large anchovy (*Engraulis sp.*). The selling price for anchovy rice is RP 18,000/Kg and big anchovy RP 10,000/Kg. The total production produced by these two fishing gears is 2,401.75 tons/year with details of mini purse seine fishing gear 2,329 tons/year with a value of RP 22,216,082,000, - and *payang* 72.6 tons/year with a value of RP 543,920,000, -. Thus, the economic value of capture fisheries sub-resources for fishing gear operating around the conservation area is RP 22,760,002,000.

Aquaculture is known as a production process carried out in a practice of enlargement, maintenance, and management of aquatic organisms with the hope of maintaining a stable amount of production during the harvest process. The waters of Gili Ketapang Island have a marine aquaculture sustainable fisheries utilization zone with an area of 23, 50 Ha consisting of 200 fishers and the number of ponds owned by the average cultivator is 3 sets of floating net cages. The type of fish commodity cultivated in the waters of Gili Ketapang Island is grouper with the length of the harvest process in one cycle of grouper cultivation takes about 9-11 months to reach consumption size (L) / market demand. This study used 67 respondents. The results of the calculation obtained the average production value obtained by fisher of RP 229,441,270.21 / year from an average total production of 1,993 tons/year. This means that the economic value of floating net cage aquaculture resources in the waters of Gili Ketapang Island is Rp 45,888,254,042.29/year.

The economic value of marine tourism on Gili Ketapang Island can be calculated using the Travel Cost Method. This method can calculate the amount of consumer surplus value of each individual per visit. Getting the value of consumer surplus, first is to form a demand function. The demand function can be written as follows:

$$Y = \alpha_0 + \alpha_1 X$$

$$Y = 4,295 + 0,00002835(125.472)$$

where

Y : Visit Frequency

α_0 : Constant

α_1 : Regression coefficient

X : Individual travel costs

In one year, only 73 out of 35 Gili Ketapang tourists responded. Respondents collected as a sample had visited Gili Ketapang at least once in the past year. Travel cost coefficient: 0,00002835. Consumer surplus was calculated by dividing total respondent participation by two travel costs. Individual respondents' surplus amounted to RP 36,785 per visit. Based on data from the tourism manager of Gili Ketapang Island, 18,793 visitors joined in 2022, resulting in a large consumer surplus. The economic value of the Gili Ketapang Island tourist attraction is RP 691,302,091.

b) Indirect Benefits

The existence of coral reefs provides influence and protection to the condition of the coastline from the waves of seawater to reduce the impact of coastal erosion. The waters of Gili Ketapang Island have an area of 15.87 Ha of coral reef resources consisting of *Acropora* groups including *Acropora Branching*, *Acropora Tabulate*, *Acropora Submassive*, *Acropora digitifera*, and *Acropora humilis*. While the non-*acropora* group consists of *Branching*, *Massive*, *Encrusting*, *Submassive*, *Coral mushrooms*, and *Millepora*. The other species consist of algae groups, *Soft Coral*, *Sabella species*, *Ascidian*, *Anemone*, *Sponge*, *Diadema*, *Zoanthidian*, and *Tubifora musica*. At the same time, coral reefs can be used as an additional source of supplies and medicines for human health. Coral reefs can increase the production of fishery resources, which from a social and economic point of view represent a source of income for communities, especially coastal areas. In the context of marine ecotourism, attractive and well-preserved coral reef ecosystems are now of economic value, [10]. So, the waters of Gili Ketapang Island based on the calculations made by coral reef resources as coastal protection have an economic value of RP 67,422,465.075 / year.

c) Option Value

Coral reef resources of Gili Ketapang Island are spread throughout the zoning of conservation areas consisting of core zones, rehabilitation zones, capture fisheries zones, aquaculture zones, tourism zones, and other zones. Therefore, it can be concluded that the area of coral reef resources in the waters of Gili Ketapang Island is 374.04 Ha, where

based on the benefit transfer method, the value of coral reef profits /Km² per year has a value of US. 100/H. Then the value of the choice of coral reef resources as a source of life and nursery ground IDR 579,387,960, -.

The overall economic valuation of coral reef resources consisting of direct benefits, indirect benefits, and optional benefits is shown in Table 1.

Table 1. Economic Value of Coral Reef Resources in Gili Ketapang Conservation Area

Benefit Type	Value (RP/Year)	Contribution (%)
Direct Benefits		
Capture Fisheries	2.760.002.000	28
Aquaculture	5.999.2544.043	59
Tourism	691.302.091	7
Indirect Benefits	67.422.465	1
Benefits of Choice	579.387.960	6
Total Economic Value	9.986.368.558	100

Based on Table 1, the economic value of direct benefits is the greatest value. This shows that the Gili Ketapang Conservation Area has enormous benefits in terms of economic value that can be utilized directly by the community. This is in line with the research of [11] which states that the existence of a conservation area tourism village in Gili Ketapang has a positive impact on development and increases income and added value for the community. In addition, the existence of the Gili Ketapang conservation area can improve the condition of coral reefs, become an educational area, and preserve biodiversity, [12]. This can be a strategy to reduce community dependence on marine resources and to create alternative livelihoods for communities living around marine protected areas, [13].

3.3 Institutional Role of Gili Ketapang Conservation Area Management

There are various institutions (stakeholders) involved in the management of the Gili Ketapang Conservation Area. These stakeholders are identified to play a role in protection, aquaculture, and utilization. The role of each stakeholder is presented in Table 2 (Appendix).

The Ministry of Marine Affairs and Fisheries (KKP) is the party that makes policy on conservation areas. The Ministry of Marine Affairs and Fisheries has a general duty to plan, organize, mobilize, and control biodiversity conservation efforts. The role that has been carried out by KKP is

to make regulations on conservation areas and delegate some of its authority to the Regional Government of East Java Province for the management of the Gili Ketapang Marine Tourism Park and its Surrounding Waters in East Java Province. The KKP of East Java Province periodically visits Gili Ketapang Island to carry out management tasks, especially supervision and monitoring functions. The KKP coordinates with the local government for the division of authority so as not to overlap in both management which has great potential to cause conflict between stakeholders.

The Marine and Fisheries Service of Probolinggo Regency is the local government agency in charge of managing the Gili Ketapang conservation area. The duties of the Marine and Fisheries Service of Probolinggo Regency include the realization of the preservation of coral reefs and the biota living around them, increasing the development of biota based on the conservation of coral reefs and surrounding biota, increasing the social and culture of the surrounding community (Branch of the Marine and Fisheries Service of Situbondo Regency).

Based on the Regulation of the Minister of Maritime Affairs and Fisheries of the Republic of Indonesia Number 31/PERMENKP/2020 concerning Conservation Area Management, in Article 1 Paragraph 22, it is stated that the Management Organization Unit hereinafter referred to as SUOP is a unit that carries out the management of Conservation Areas. The Conservation Area Manager is authorized to manage the national Conservation Area, while the Governor is authorized to manage the regional Conservation Area. Conservation Areas that have been designated are managed by SUOP, which can take the form of a central implementing unit, OPD, regional implementing unit, or branch office. Until now, there is no information about the management of the Gili Ketapang Island Conservation Area. Based on data in the field so far, the Conservation Area Manager is the Situbondo Fisheries Service Branch located in Probolinggo. The Service Branch has not yet taken this step, because there is a tug of war with the East Java Provincial Maritime and Fisheries Service.

Himpunan Nelayan Seluruh Indonesia Pulau Gili Ketapang (HNSI), *Himpunan Nelayan Seluruh Indonesia* (HNSI) is an organization that represents and fights for the interests of fishermen. The waters of Gili Ketapang Island have an HNSI organization. The role of HNSI is not only in the needs of fishermen (boat licensing) but also in maintaining the stability of life in the fishing community. Based on the results of interviews conducted with the head of HNSI (Mr. Sugito) said that:

"I am here as the chairman of HNSI, in addition to accommodating our ship licensing process, whenever there are problems in the community, we always coordinate and deliberate related to problems to get the best solution".

Although HNSI is one of the government's partner organizations, its role in society is very broad. HNSI is one of the institutions where when there is information coming from government/non-government agencies, it must be forwarded through HNSI. The role of HNSI in conservation area management includes being involved in the process of establishing conservation areas, and participating in monitoring activities related to conservation area management. Assisting the government in conveying information and providing understanding to the community when there are new rules in effect so as not to cause pros and cons.

The tourism product offered in Gili Ketapang Island tourism is coral reef resources. Pokdarwis Gili Ketapang, known as Gili Bahari, has 16 members in the institution where these members are the people of Gili Ketapang Island who open tourism services independently with various tourism service names such as Dewa Snorkeling, Anak Pantai, Iwan Snorkeling and others. Because of the reason for the establishment of a conservation area due to damage to coral reefs. Pokdarwis also play a role in preserving the environment. Pokdarwis will appeal to tourists not to do water tourism activities that cause damage to coral reefs. Anyone who commits damage will get a warning and sanctions agreed upon by Pokdarwis.

As conveyed by the chairman of the Pokdarwis (Mr. Sugito) said that:

"Reprimands and sanctions given to tourists for damage to natural resources / especially coral reefs are imposed solely to maintain their sustainability so that we hope that this tourism activity can be sustainable. because after all this tourism activity is one of the sources of livelihood for the people of Gili Ketapang Island".

Overall, the institutions involved in the management of the Gili Ketapang conservation area have tried to develop the potential of the area by their respective main tasks and functions. However, from the results of the evaluation, several things still need to be developed in its management, including more intensive coordination and communication between related institutions to synergize with each other for development. In addition, the potential for conflict still exists, especially between communities so those who have the authority need to educate and assist the community to prioritize conservation in the economic and social utilization of natural resources in the Gili Ketapang conservation area.

3.4 Analysis of the Suitability of Community Capacity with Needs in Conservation Area Management

Community capacity is a capability possessed by a community that has the specific power to take certain actions. This ability has a relationship to several community functions related to maintaining the welfare of the community/group/organization or other social networks. The competence possessed by the community provides benefits to the actions taken to solve a problem. Therefore, to support the management of conservation areas, it is necessary to match the capacity/ability of the community. In this case, to assess the capacity of the community, it will be juxtaposed with the activities (work and business) that exist on Gili Ketapang Island against the utilization zones including the capture fisheries zone (Fishermen), Aquaculture Zone (White snapper, red snapper, milkfish, pearl clams, lobsters and sea cucumbers) and tourism zone (Lodging / Home stay tourists, Diving, sea walkers, tour boats, glass boats, jet skis and canoes).

Activities in the Gili Ketapang Island Waters conservation area based on the utilization zone are described in Table 3.

Table 2. Activities (Work and Business) in Conservation Area Management

No.	Capture Fisheries Utilization Zone	Aquaculture Utilization Zone	Tourism Utilization Zone
1.	Fisherman	Grouper	Lodging / Homestay
2.		White Snapper,	Diving
3.	-	Red snapper,	Sea walker
4.	-	Milkfish,	Glass boat,
5.	-	Pearl shells,	Jet ski
6.	-	Lobster	Kano
7.	-	Sea Cucumber	Snorkeling
8.	-	-	Banana boat
9.	-	-	Photography

Source: Primary Data, 2023

Based on Table 3, the conservation area of Gili Ketapang Island has been utilized by the utilization zones set by the government such as the capture fisheries zone, aquaculture zone, and tourism zone. In the capture fisheries zone, the community has utilized the waters as a source of livelihood through fishing using nets, fishing rods, and bubu (traps). The fishing community on Gili Ketapang Island has almost all skills sourced from the understanding and experience of parents to their children, this is because since the age of 15-and 16 years old children on this island have been taught to participate in fishing at sea so that when they grow up Gili Ketapang Island children have reliable skills both in preparing fishing equipment, making boats and catching fish. Capture fisheries zones tend to be carried out for generations so that the sustainability of the utilization of capture fisheries will always exist. However, an improvement is needed in terms of fishing gear, because fishermen tend to use traditional fishing gear, so the catch of fish is less than optimal.

The utilization of floating net cage cultivation resources began before many aquaculture business owners. The first cultivators used to just try and learn from the failures that often occur and then become material for improvement to achieve the cultivation harvest target. Over time, these failures could be overcome with the effort to find information on handling problems in grouper farming. Time has gone on until now,

and more and more people are interested in the floating net cage cultivation business by studying with experienced Gili Ketapang Island fishers. At the beginning of the floating net cage cultivation business, there was no training or assistance provided by the government, but after it developed, the government occasionally came in and aided and training to the floating net cage cultivation community. For now, the types of commodities cultivated include 2 types of grouper fish, namely *cantang* grouper and *cantik* grouper.

Utilization of community tourism on Gili Ketapang Island has been running since around 2015 with a total of 16 managers (tour operators) who come from the people of Gili Ketapang Island itself. tourism products offered by the community include snorkeling packages, banana boats, and photography/videography documentation services. The competence of the tour operators of Gili Ketapang Island comes from the experience of the people of Gili Ketapang Island who used to migrate inside/outside Probolinggo Regency/City and then understand technology/innovation in the management of the tourism sector. From there the community began to apply it on Gili Island which has beautiful natural resources. Not only that, but the competence of each tour operator team is also obtained from parents from generation to generation in terms of understanding tidal patterns, waves, and ocean currents. So that with this ability the guide can give good directions when the best time can do snorkeling/ banana boat.

Based on this, there is a lot of tourism potential owned by the Gili Ketapang Conservation Area. However, so far there has been no training provided by the government to increase the competence of tour operators in tourism management. everything comes from the experience of the community itself. Thus, the analysis of the incompatibility of community capacity with the management needs of the Gili Ketapang Conservation Area in the utilization of the 3 zones of the marine protected area is shown in Table 4.

Table 3. The discrepancy between Community Capacity and Management Needs of Gili Ketapang Conservation Area

No.	Type of Activity	Competence	
		Owned	Not Owned
1.	Fisherman	√	-
2.	Grouper Cultivation	√	-
3.	White Snapper Farming	-	√
4.	Red Snapper Cultivation	-	√
5.	Milkfish Farming	-	√
6.	Pearl mussel farming	-	√
7.	Lobster Farming	-	√
8.	Sea Cucumber Cultivation	-	√
9.	Lodging Services / Homestay	-	√
10.	Diving Activities	-	√
11.	Sea walker activity	√	-
12.	Glass Boat Activity	-	√
13.	Jet ski activity	-	√
14.	Kano Activity	-	√
15.	Snorkeling Activities	√	-
16.	Banana boat activity	√	-
17.	Photography Activity	√	-

Source: Primary Data, 2023

Based on Table 4, there are still many shortcomings in human resource competencies related to resource management in conservation area utilization zones. The lack of capacity that occurs can be reduced by the existence of training/provision of knowledge either carried out by the government or non-government massively with consideration of good environmental impacts. As in the research [14] which states that training has a significant effect on performance, increased capabilities, capacities, and competencies. By increasing the capabilities of human resources, it can also improve the quality of conservation area management.

Community involvement is very important for the successful management of conservation areas. Communities will always be involved in planning, implementation, and monitoring efforts to achieve common goals. Providing training and education to local communities is essential to increase their capacity in conservation area management, including skills in resource management, post-harvest processing, and alternative livelihood

development, [15]. That way the community's economic incentives can be achieved and will be able to increase employment opportunities and the economy of the Gili Ketapang Island community.

4 Conclusion

The calculation of total economic value of coral reef resources is calculated by looking at its direct economic benefits (capture fisheries, aquaculture, and tourism) with an economic value of Rp 2,760,002,000; Rp 5,888,254,042; and Rp 691,302.091; indirect benefits (as coastal protection) with an economic value of Rp 67,422,465 and optional economic benefits (as biota life and nursery ground) with an economic value of Rp 579,387,960. So, it can be concluded that the economic value of coral reef resources on Gili Ketapang Island is Rp 9,986,368,558 / year.

There are community institutions that play a role in the management of conservation areas, the involvement of these institutions then plays a role in providing protection, as well as the utilization of Gili Ketapang Island resources. related agencies consist of government, non-government and community groups, among others: Ministry of Marine Affairs and Fisheries (KKP), Probolinggo Regency Marine and Fisheries Office, Probolinggo Regency Youth, Sports and Tourism Office (Dispar), Probolinggo Regency Regional Planning and Development Agency (Bapedda) which plays a role in policy formation, training, and supervision, Navy (TNI-AL), Gili Ketapang District Sector Police (Polsek), Water Police (Polair) as a law enforcement agency, Gili Ketapang Village, Environmental Lovers Community (KPLH), Gili Ketapang Island All Indonesian Fishermen Association (HNSI), Group Tourism Community (POKDARWIS), Floating Net Cage Cultivation Community Group (KMB-KJA), POKMASWAS Group, Unit Operations Unit (SUOP) as the manager and beneficiary of the Gili Ketapang conservation area, and Brawijaya University from the education sector which plays a role in education, training, and research. These institutions play a role in the sustainability of Gili Ketapang Conservation Area management.

There are only six of the 17 conservation area management needs that Gili Ketapang has. This shows that there is still a lack of competent resources that can impact the economic condition and sustainability of the Gili Ketapang Marine Protected Area. Therefore, it is necessary to have assistance from the government to organize training to improve the competence of the managers of the Gili Ketapang Marine Protected Area to create sustainability and success in the establishment of the Gili Ketapang Marine Protected Area.

Future research is expected to research the influence of existing conditions in conservation areas on the management of conservation areas. It is expected that the most influential conditions in the management can be known so that it can be improved in certain sectors to improve the management of conservation areas.

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- Erlinda Indrayani, compiling and conducting research.
- Harsuko Riniwati, Rosihan Asmara, Solimun guide and provide direction to the main author.
- Edi Susilo, formulating ideas and being responsible for activities.
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Conflict of Interest

The authors have no conflicts of interest to declare.

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APPENDIX

Table 4. Stakeholders and Roles of Gili Ketapang Conservation Area

No.	Institution	Category	Protection	Cultivation (Aquaculture)	Utilization
1	Ministry Marine and Fisheries (KKP)	Government	√	√	√
2	Marine and Fisheries of Probolinggo Regency	Government	√	√	√
3	Department Youth, Sports and District Tourism Probolinggo (Dispar)	Government	√		√
4	District Planning and Development Agency Probolinggo (Bapedda)	Government	√		√
5	Indonesian Navy (TNI-AL)	Government	√		
6	Sector Police Gili District Ketapang (Polsek)	Government	√		
7	Marine Police (Polair)	Government	√		
8	Gili Ketapang Village	Government	√	√	√
9	Community Lovers Environment (KPLH)	Community	√		√
10	All Indonesia Fishermen Association Gili zetapang Island (HNSI)	Community	√		√
11	Group Tourism Society (POKDARWIS)	Community	√		√
12	Group Community Cultivation Net Cage Floating (KMB-KJA)	Community	√	√	√
13	Group POKMASWAS	Community	√		√
14	Unit of Operations (SUOP)	Government	√		
15	Brawijaya University	Higher Education	√	√	√