



THE DEVELOPMENT OF ECOTOURISM WITH COMMUNITY-BASED TOURISM (CBT) IN CLUNGUP MANGROVE CONSERVATION (CMC) OF TIGA WARNA BEACH FOR SUSTAINABLE CONSERVATION

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Abstract

Clungup Mangrove Conservation (CMC) of Tiga Warna beach is located in Tambakrejo Village, Sumbermanjing Wetan District, Malang Regency has a beautiful view and offered conservation and educational activities. The research purpose was to determine (1) tourism potential in the CMC in Tiga Warna beach, (2) ecotourism in the CMC for conservation and education purpose, (3) community role in the community-based tourism (CBT) to make sustainable conservation activities. The research design used quantitative and qualitative methods with analysis using a SWOT assessment. Primary data was collected through the rapid integrated survey, interviews, observations, and group discussion forums (FGD). Secondary data was collected from the documentation of CMC management in Tiga Warna beach. The results showed that the CMC in Tiga Warna beach has a high potential to be developed. The management of CMC in Tiga Warna beach applied a reservation system by limiting the number of visitors to 100 people per session or 10 groups per day. Tourists are required to make reservations in advance using social media or by phone. Also, the tour guide must accompany group to check the waste brought by visitors. All activities were done for the sustainability of the CMC ecotourism.

Key words

Ecotourism, Community-based Tourism, Conservation.


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INTRODUCTION

One of tourism aspect that can accomplish sustainable ecosystem management is through the development of ecotourism (Fandeli, 2002). The development of coastal ecotourism is an environmental service that provides benefits to someone satisfaction because it contains certain aesthetic values (Ali, 2004). A place can be developed into a tourist destination needed to fulfil 4 (four) components of tourism called 4A, which are Attraction, Accessibility, Amenities and Ancillary (Sugiyama, 2014; Odum, 2018).

The development of tourism potential needs to consider the ecology in each development program and integrated conservation (integrating conservation and development program) classified as ecotourism (Borlido and Coromina, 2018). It includes taking the carrying capacity of the environment (carrying capacity). Ecotourism activities can minimize the negative impact on environmental damage because of mass or conventional tourism activities (McIntyre, Hetherington and Inskip, 1993; Andronicus, Yulianda and Fahrudin, 2016).

The management that has the opportunity to implement effectiveness is community-based management. Community participation in management is better known as *Pengelolaan Berbasis Masyarakat* (PBM) or Community based management (CBM). Community-Based Resource Management (CBRM) is a strategy to achieve human-centered development, where the decision making of sustainable resources and environments is in the organizations within the community in the area (Dahuri, 2003).

The tourism development should have a direct impact on society. Communities around tourist objects have an important role in supporting the sustainable tourism. The impact including to increase community's income around tourist sites (Sumarmi et al., 2020; Matlovičová et al., 2016). The tourism development was focused on three groups, namely: (1) economic benefit strategies for the community, (2) strategies for improving profit for the community, (3) policy strategies in tourism management (Matlovičová et al., 2016; Untari and Suharto, 2020).

Development of tourism areas can also be formulated based on tourism concept and territorial marketing. The paradigm offers competencies for tourism actors to develop cognitive abilities such as knowledge, skills and related competencies (Matlovič and Matlovičová, 2016). Geographical cognitive abilities are needed to find the relationship between physical conditions of human and nature in the spatial context of tourism development (O'tahel et al., 2019).

Tiga Warna beach has a natural view because it is in a protected forest conservation area. It has a uniqueness of seawater that has three gradations (shades of reddish-brown, dark green and deep blue) to attract visitor. The color appears due to specific reasons, such as the reddish-brown color that arises due to the ability of sunlight to penetrate this beach water to a depth of 20 meters, the green color



obtained from siltation mixed with plankton in large amounts, while the blue color indicates the depth of seawater. The combination looks beautiful with the brown sand beach alloys.

Many tourists visit Tiga Warna beach, because of the fine white sand, coral reefs under the sea, different colors of seawater, and surrounded by protected forests as a conservation area. Tourists can enjoy the natural view of land and sea surface and snorkel to enjoy the seaview. Tiga Warna Beach has a coral reef ecosystem and is included in a conservation area of mangrove plants and the MPA (Marine Protective Area). Therefore, the number of tourists entering is limited in number and time of visit in 2 hours. It is intended to preserve the natural environment in the conservation area. Tourists visiting the tourist area must be accompanied by a local tour guide to guide and at the same time supervise.

The supervision is very important to maintain environmental sustainability and ecotourism activities. Marine ecotourism activities can cause various threats on the environment or existing ecosystems. Negative impacts occur because of poor planning and management, for example planning the development of tourism activities that ignore to carrying capacity (environmental carrying capacity) and lack of awareness, as well as public and tourist knowledge of environmental sustainability (Dahuri, 2003).

The high tide moment of seawater is the best time to fully enjoy the beach view. Gradations of color on the beach will be seen not only dark blue and light blue but also green. The preservation is very much maintained as conservation, also due to the richness of the ecosystem. In addition to swimming, snorkeling, and diving activities, the visitor can ride along the mangrove by boat, canoeing, visit floating homes or do conservation activities such as planting mangrove seedlings, releasing turtles and installing artificial coral reefs for the fish. Because of that, the manager limits the number of visitors, and always maintains beach cleanliness. Every visitor is required to use floats and snorkeling equipment, to maintain safety and protect coral reefs from being trampled by tourists.

Located 72 km from the center of Malang, Tiga Warna beach can be reached in approximately 2 hours on the road. Visitors can start from the CMC front office, then choose 2 paths to the beach, through the eastern sector which is the fastest access because it uses a boat or the western sector where visitors must walk through the main post then along the mangrove forest and past the Clungup beach and Gatra beach.

OBJECTIVES

Based on the background problems found during the observation, this study aimed to determine 1) tourism potential on Tiga Warna Beach, 2) CMC ecotourism management towards conservation and education, 3) the actor role in community-based tourism to actualize the sustainable conservation in Tiga Warna Beach.



THEORETICAL FRAMEWORK

The key factor in managing tourism is the community-based tourism (CBT) (Sumarmi et al., 2020). The main components include the community, local governments, non-governmental organizations, fund raiser, entrepreneurs and tourists (Matlovičová et al., 2016; Kurniawati et al., 2020). Besides, tourism can bring positive impact supported by large investments. The investment can support to construct the tourism facilities. Good communication between in the CBT management is needed to facilitate decision making and development strategies (Untari and Suharto, 2020).

Several approaches were taken to conduct tourism planning, including (1) continuous incremental, and flexible approach, (2) system approach, (3) comprehensive approach (4) integrated approach, (5) environmental and sustainable development approach, (6) community approach (7) implementable approach, (8) application of systematic planning approach (McIntyre, Hetherington and Inskeep, 1993). Ecotourism development is carried out by making a formulation of well planning and management. Marine ecotourism activities have potential value to support wildlife conservation. Also, it can encourage research to reduce the negative impacts of marine ecotourism activities. Therefore, to ensure the preservation of marine and coastal resources and wildlife conservation, it was necessary to develop an ideal and integrated marine ecotourism management concept (Asmit and Syahza, 2020; Untari and Suharto, 2020).

The three main principles in sustainability development are (1) ecological sustainability to ensure development following the ecological, biological, and diversity of existing ecological resources, (2) social and cultural sustainability to ensure that the development has a positive impact for the surrounding community along with the culture and values that applied to the community, (3) economic sustainability to ensure it is economically efficient and the resources used can stand for future needs (McIntyre, Hetherington and Inskeep, 1993; Organization, 1998; Borlido and Coromina, 2018).

The principles of ecotourism are 1) minimizing negative impacts, 2) building awareness and respect for the environment and culture, 3) providing positive experiences to visitors and hosts, 4) providing direct financial benefits for conservation needs, and gaining political sensitivity (The International Ecotourism Society, 2020). There are five core principles of ecotourism that are (1) nature-based with a focus on biological, physical or cultural uniqueness, (2) sustainable ecology, (3) environmental education, (4) local benefits, and (5) gives satisfaction to visitors (Dowling, 1998; Dowling, 2003).

Ecotourism works well with collaboration between the government, the private sector and local communities. Resource management has several types, which are (1) managed by communities that have characteristics, such as a) have customary



rights/law; b) are informal leaders, such as Sasi, Awig, Panglima Laot, Nyale, (2) managed by governments that have characteristics, such as a) have state-owned resources, b) have a top-down approach, (3) collaboration, that has characteristics a) resources are public property, b) government as regulator (manager), c) community as users. In general, the roles of stakeholders that can increase the potential of marine ecotourism in Indonesia can be seen in the following table 1.

Tab. 1 Role of Stakeholders in Tourism Development

| No | Stakeholder | Roles |
|----|---|---|
| 1 | Government Institutions | 1. Make regulations regarding marine ecotourism 2. Allocate tourism development funds 3. Form a tourism driving group 4. Provide education and training 5. Coordinate the development of activities 6. Directing the local community |
| 2 | Management Center | 1. Make rules and laws 2. Supervise marine ecotourism areas 3. Provide a supporting infrastructure system 4. Coordinate the program 5. Preserve the environment and culture of the region 6. Develop activities 7. Directing tourists |
| 3 | Tourism Industry | 1. Develop marine ecotourism activities 2. Marketing 3. Carry out assistance and cooperation 4. Opening job opportunities 5. Directing tourists |
| 4 | Research Institutions | 1. Conduct an inventory of the potential of marine ecotourism areas 2. Provide education and training 3. Conduct ongoing research |
| 5 | Non-Governmental Organizations (NGOs) and Community | 1. Conduct development of marine ecotourism activities 2. Provide support and commitment 3. Volunteer 4. Supervise the area |

Source: Arlin (2015) in (Yulius et al., 2018)

Development of marine tourism has the main components, includes culture of 60%, nature of 35%, and manmade of 5%. From the nature component, there are three sub-components, which are ecological tourism, marine ecotourism, and adventure tourism. Marine ecotourism consists of three tourism zones, that are coastal zone, marine zone, and underwater tourism (Yulius et al., 2018), as shown in the following table 2.



Tab. 2 Attractions, Activities and Tourism Facilities

| Tourist Area | Attractions | Activities | Facilities | | Tourism Products |
|--------------|---|---|--|--|---|
| | | | Public | Private | |
| Coastal | 1. Tradition / lifestyle in the Coastal / Fisherman Village 2. Seascapes 3. Beach/sand 4. Cultivation 5. Mangrove Forest | 1. Swim 2. Sunbathe 3. Cross-culture 4. Mangrove exploration 5. Research 6. Other beach activities | 1. First Aid 2. TIC 3. Coast guard 4. Toilets 5. Etc. | 1. Disability 2. Elderly 3. Children | 1. Culture 2. Beach Sports 3. Entertainment 4. Health 5. Ecotourism |
| Marine | 1. Waves 2. Wind 3. Reef 4. Seagrass | 1. Surfing 2. Sail 3. Fishing 4. Skiing / Jetski 5. Paragliding 6. Snorkeling 7. Subglass bottom 8. Etc. | 1. First Aid 2. TIC 3. Coast guard 4. Toilets 5. Etc. | 1. Disability 2. Elderly 3. Children | 1. Sports 2. Entertainment 3. Adventure 4. Ecotourism |
| Submarine | 1. Flora Fauna a. Coral b. Seagrass beds c. Sea animals 2. Cultural heritage a. City b. Dock c. Shipwreck 3. Natural symptoms | 1. Fun Dive 2. Diving 3. Research dive 4. Underwater 5. Archeology 6. Research 7. Etc. | 1. First Aid 2. TIC 3. Dive center 4. Toilets 5. Hospital 6. Dive Instructure 7. Equipment Dive 8. Etc. | 1. Professional 2. Amateur 3. Beginner | 1. Culture 2. Sports 3. Diving 4. Adventure 5. Ecotourism |

Source: (Yulius *et al.*, 2018)

Tab. 3 Tourism Activities That Can Be Developed

| Marine Tourism | Beach Tourism |
|---|---|
| 1. Beach recreation 2. Panorama 3. Resort / resort 4. Swim, sunbathe 5. Beach sports (beach volleyball, beach road, discus throwing, etc.) 6. Boating 7. Fishing 8. Mangrove tourism | 1. Beach and sea recreation 2. Resort / resort 3. Diving and snorkeling tours 4. Surfing, jet skiing, banana boat, glass boat, submarine 5. Seagrass ecosystem tourism, fishing tourism, island tourism, educational tourism, fishing tourism 6. Animal tourism (turtles, dugongs, whales, dolphins, birds, mammals, crocodiles) |

Source: (Yulianda, 2007).



Ecotourism can be grouped into beach tourism and marine tourism (Yulianda, 2007). Beach tourism is a tourism activity that prioritizes coastal resources and the culture of coastal communities, such as recreation, sports, and the view and climate. In comparison, marine tourism is a tourism activity that prioritizes underwater resources and seawater dynamics (Yulianda, 2007).

DATA AND METHODS

The research used descriptive methods with quantitative and qualitative analysis techniques. The primary data were obtained through interviews with visitors, tour guides, coast guards, conservation actors, observations of locations and visitors, and Focus Group Discussions (FGD) with the Bhakti Alam Foundation's management in Sendang Biru, which manages tourism, village, and sub-district governments. The secondary data were obtained from the village and sub-district government offices.

Data were analyzed using SWOT analysis related to tourism management and conservation of mangroves, coral reefs, and seagrass areas. The results were used as guidelines to make policies. The policy was then used to realize sustainable tourism in Malang Regency. Based on research and coastal development plans, three groups of strategies can be drawn. Conservation of mangroves, coral reefs, and seagrass areas helped sustainably produce fish and empower communities in tourism management. The strategy was (1) aimed to conserve mangroves, coral reefs, and seagrass areas to increase sustainable fisheries products, (2) ensured the cleanliness of the beach at CMC Tiga Warna by checking visitor luggage so that the beach area can be used for snorkeling activities, (3) ensured community empowerment in tourism management to improve welfare. One of the policies is to limit visits to 2 hours and close the area every Thursday. SWOT analysis is carried out before determining the policy to be suggested, with the following formula:

SO = Using the maximum strength to find opportunities.

ST = Using the maximum strength to anticipate threats and to make opportunities.

WO = Minimizing weaknesses to take opportunities.

WT = Minimizes weaknesses to avoid threats

(Source: Damanik and Weber, 2006)

RESULTS AND DISCUSSION

Potential of Tiga Warna CMC

(Tiga Warna Beach, Gatra Beach and Clungup Beach)

Beaches included in the Clungup Mangrove Conservation (CMC) are Tiga Warna beach, Gatra beach and Clungup Beach. The Clungup Mangrove Conservation Area (CMC) is managed by the Gatra Olah Alam Lestari (GOAL) Community Supervisory Group (POKMASWAS) under the auspices of the East Java Provincial Maritime and



Fisheries Office. The CMC tourism object is located in Tambakrejo village, Malang district, Indonesia, ± 72 km from the city center to the south. The location of the beach is shown in Figure 1 below.

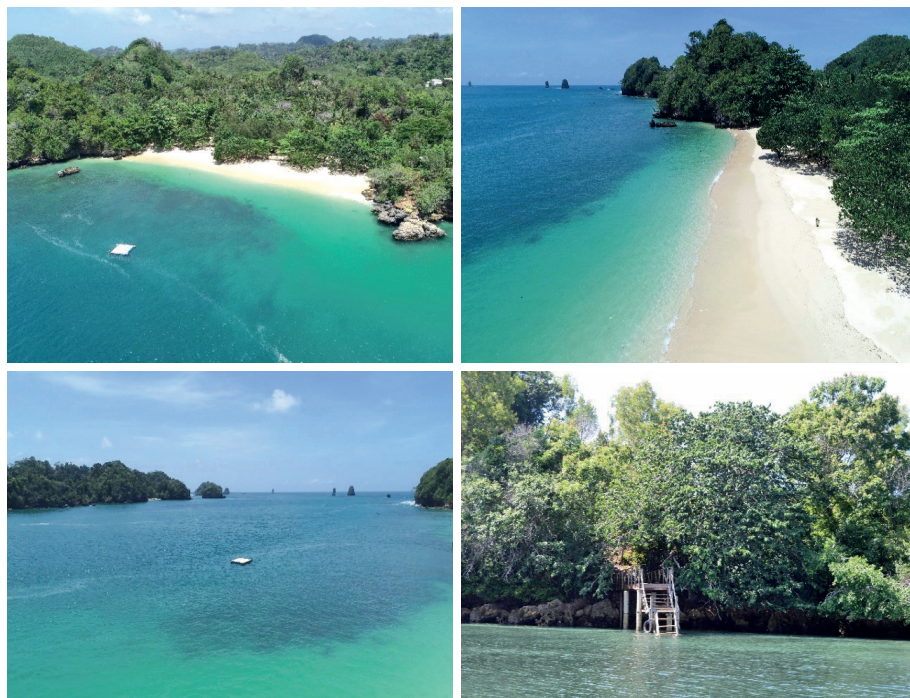


Fig. 1

The View of the Tiga Warna Beach

Author: Sumarmi

Analysis of resources in the CMC of Tiga Warna Beach has used SWOT analysis. The results of IFAS and EFAS matrix rating weights were shown in table 4.

The quadrant diagram of the results of the SWOT analysis on the CMC of Tiga Warna beach can be seen in the following figure 2.

The CMC of Tiga Warna beach was located in quadrant 1, with an x value of 0.5 and y of 0.45. The value of x is an internal factor obtained from strength (S) minus weakness (W), while the value of y is an external factor obtained from opportunity (O) reduced by threat (T). The CMC of Tiga Warna beach attractions was in quadrant 1 means that the object is in developing status. The position of the area is in the Stable Growth Strategy, which is a stable growth strategy where the development is carried out in stages, and the target is adjusted to the conditions. The SO (White Area) strategy in The CMC of Tiga Warna beach means that the beach has prospective opportunities and also has advantages and opportunities


Tab. 4 The Tiga Warna Beach IFAS and EFAS CMC Matrix

| Internal factors | Weight | Rating | Score |
|---|--------|--------|-------------|
| Strength | | | |
| 1. View and well-maintained cleanliness | 0.15 | 5 | 0.75 |
| 2. Security that is maintained conducive | 0.10 | 5 | 0.50 |
| 3. Education on plastic waste management with the eco break | 0.15 | 5 | 0.75 |
| 4. Beautiful mangrove conservation | 0.15 | 5 | 0.75 |
| 5. Conservation of the reef | 0.15 | 5 | 0.75 |
| 6. There are beach sports areas (swimming, snorkeling, and diving) | 0.05 | 4 | 0.20 |
| 7. Community involvement as beach manager | 0.15 | 5 | 0.75 |
| 8. Use of social media for communication with potential visitors | 0.10 | 3 | 0.30 |
| Total | | | 4.75 |
| Weakness | Weight | Rating | Score |
| 1. Unclear entrance gate | 0.20 | 5 | 1.00 |
| 2. Access roads that difficult and far | 0.25 | 4 | 1.00 |
| 3. Tourism support infrastructure is still limited | 0.20 | 4 | 0.80 |
| 4. Limited promotion by The Tourism Department Lack of direction sign | 0.15 | 3 | 0.45 |
| | 0.20 | 5 | 1.00 |
| Total | | | 4.25 |
| X= Strength-Weakness | | | 0.50 |
| External Factors | | | |
| Opportunity | Weight | Rating | Score |
| 1. The beach with three colors at high tide | 0.20 | 4 | 0.80 |
| 2. Providing opportunities for research related to conservation | 0.25 | 5 | 1.25 |
| 3. There are already regulations that govern the development of coastal tourism | 0.10 | 4 | 0.40 |
| 4. As a special interest tour for beach sports | 0.10 | 4 | 0.40 |
| 5. The involvement of local communities is good | 0.10 | 5 | 0.50 |
| 6. The number of visitors is already a lot | 0.10 | 4 | 0.40 |
| 7. Conducting snorkeling and diving national level competition | 0.15 | 5 | 0.75 |
| Total | | | 4.50 |
| Threat | Weight | Rating | Score |
| 1. There are no investors yet | 0.20 | 3 | 0.60 |
| 2. The threat of garbage from the river mouth and TPI during the rainy season | 0.25 | 5 | 1.25 |
| 3. Collection of mangrove wood for fuel | 0.20 | 4 | 0.80 |
| 4. Attraction of other beaches with easier access | 0.15 | 4 | 0.60 |
| 5. Lack of awareness of visitors to do conservation | 0.20 | 4 | 0.80 |
| Total | | | 4.05 |
| Y=Opportunities-Threats | | | 0.45 |

Author: Sumarmi

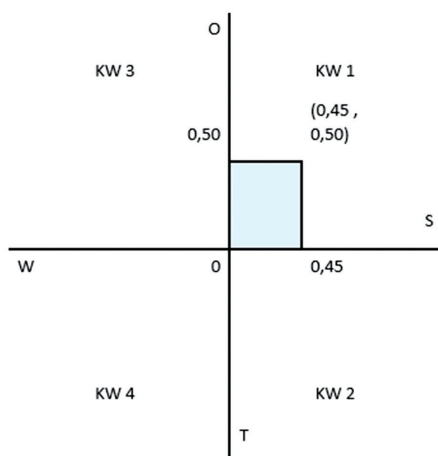


Fig. 2
Quadrant Results of SWOT Analysis
Author: Sumarmi

for developing existing potential. The strategy that must be applied in this condition is to support an aggressive growth policy (Growth-oriented strategy). Based on these conditions, the CMC of Tiga Warna beach must carry out a development strategy with a good conservation strategy for the CMC (Tiga Warna beach, Gatra beach, and Clungup beach).

Ecotourism Development in the CMC of Tiga Warna Beach for Conservation and Education

In addition to providing natural view, the Tiga Warna beach also has conservative and educative regulations for tourists. The regulation educated tourists to maintain cleanliness and nature conservation was a crucial and mandatory thing to do. The beach is included in the rehabilitation and conservation area of Mangroves, Coral Reefs and Protection Forest of Sitiarjo Village, Sumber Manjing Wetan District, Malang Regency. The beach has 15 characteristics, which are (1) has 3 colors of seawater, (2) coral reefs and marine life are maintained, (3) beautiful snorkeling areas, (4) must use floats when snorkeling, (5) has white clean sand (6) can only be visited by 100 people per day, (7) must book before visiting, (8) every visitor must be accompanied by a guide, (9) discipline was rigorous relating to waste, (10) the visit time is only 2 hours, (11) only walking distance from the parking location, (12) no camping, (13) surrounded by forest, (14) no public transportation, (15) being in an area with another beach (Tiga Warna beach, Gatra beach, Clungup beach).



(1)



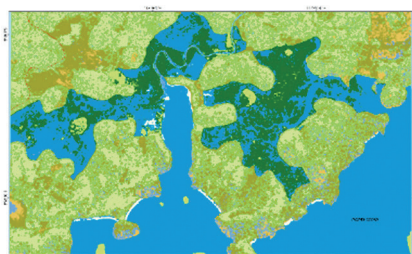
(2)

Fig. 3

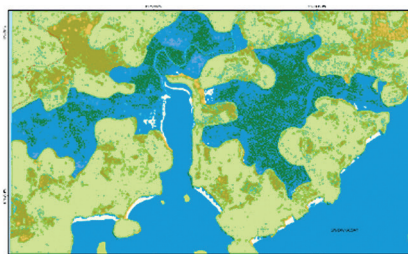
Activities Mangrove Conservation on the Clungup Beach

Author: Sumarmi

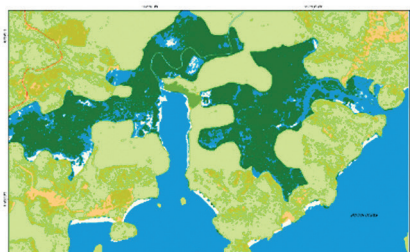
Mangrove conservation has succeeded in changing land cover from year to year, as shown in the map of 2010, 2015, and 2020.



Year 2010



Year 2015



Year 2020

LAND COVER CHANGE MAP

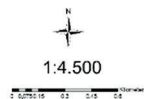
Year 2010 - 2015 - 2020

CMC Area (Clungup Mangrove Conservation)

Legenda :

Land Use

- Sea Water
- Mangrove
- Sand/Beach
- Agricultural Land
- Scrub
- Settlement
- Street
- River



1:4.500



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Fig. 4

Map of Tiga Warna Beach, Clungup Beach and Gatra Beach

Author: Sumarmi

Besides the conservation of mangroves, this area also transplants coral reefs.



Fig. 5
Coral Reefs Transplantation on the Tiga Warna Beach
Author: Sumarmi

The management of Tiga Warna Beach applied a reservation system for only 100 visitors per session or 10 groups per day. The tourists are required to make reservations in advance through social media application and or by phone before visiting. Also, visitors must use a local tour guide service to accompany and at the same time, be an example while in the Tiga Warna beach. The tour guide will also remind if tourists do things that can damage the preservation of nature in Tiga Warna Beach. The manager checked travelers' bag, especially packaged food and drinks that can cause trash. All items will be rechecked when tourists leave the location. It is done to ensure the cleanliness and sustainability of the beach.

Also, visitors were required to pay an entrance ticket worth 1 mangrove tree of Rp. 10,000 and Rp 100,000 for tour guide services. Since the beginning of September 2015, the management has implemented a system of one day a week off every Thursday. This holiday is used by managers and residents around to clean the village in the tourist area. Each group is only given 2 hours to enjoy all the view at Tiga Warna Beach, and the tour guide will remind when the time is up.

Though sacrificing economic value, the decision was taken in order to maintain the balance of the ecosystem. During the long holiday, such as at the new year or Eid al-Fitr, CMC Tiga Warna will close entirely from tourist visits. According to the management, human intervention during the peak season will be dangerous to the ecology in the surrounding area. For the ongoing rehabilitation process, the manager of the CMC of Tiga Warna beach provided an opportunity for nature to 'rest' from tourist visits. Not only economic value is prioritized, but also the sustainability of a natural tourist attraction (Odum, 2018). So, during the pandemic of COVID-19 and after, this tourist area remains closed to visitors.

Gatra Beach is also included in the Clungup Mangrove Conservation Area. The trip to the beach through the hills that are not too high with a very charming and



beautiful view. Gatra Beach is included in the conservation area so that not just anyone can enter the beach. Tourists who want to enter the Tiga Warna beach must obtain a permit from the Clungup Mangrove Conservation as the manager. It is done to maintain the cleanliness and view of the beach. Therefore, the beach remains clean from trash and beautiful view.

The Community Role in Community-Based Tourism to Make Sustainable Conservation Activities

Community participation in the existing tourism system is closely related to 2 main organizations that have a significant role in the South Malang tourist destination, that are Perhutani (a government-owned corporation that manages forest in Indonesia) Malang and the Malang District Tourism Office. Based on the interviews with the Head of Promotion of PD Jasa Yasa, it is known that there are a management agreement and a tourism partnership between the community and the organizations. The partnership is divided into 2, between the community in collaboration with the Government of Malang Regency through the POKDARWIS (Tourism Awareness Group) and the community in partnership with Perhutani Malang through LMDH (Forest Village Community Institution). The majority of tourism destination management is carried out by LMDH under Perhutani, while POKDARWIS functioned when there are events held by the Malang Regency Tourism Office. Some of them are the Clungup Mangroove Conservation (CMC) group which oversees several beach destinations (Ramanda, Hakim and Pangestuti, 2020). Coastal Forest Conservation Unit and MPA were doing plantations, mangrove planting, care of protected plants and mangroves, coral transplantation, maintenance of coral reefs, floating net cages, construction and management of fish apartments, community service in CMC conservation areas every Thursday, socializing to the encroachers the forest about the importance of coastal conservation.

DISCUSSION

Since 1990, three-color CMC has undergone many changes. In 1998-2003, there was a shift function of the protected forest to a pond and plantation area which was motivated by the monetary crisis in Indonesia. The year 2005 was the start of the movement by Mr P. Saptoyo and friends to plant mangroves on Clungup Beach, and the POKMASWAS was established with the chairman of Mr Praminto to expand the Protection and Conservation Areas to the Tiga Warna beach.

In 2012, the Gatra Olah Alam Lestari Supervisory Community Group (GOAL POKMASWAS) was formed to map identification of mangrove damage, replant mangroves, approach farmers and pond owners, provide information on Law No. 27 of 2007 about Coastal and Small Islands Management and outreach rehabilitation/restoration of the land. Also, strengthening supervision of natural resources



by banning bird hunters, bombers and fish scavengers, fishermen who dump oil into the sea, poachers of wildlife and illegal loggers.

In 2013 there was a change in cropping patterns for annual crops such as corn, cassava, sugar cane into banana plants. The manager also made a donation system of IDR 6,000 for the mangrove tree. The tour guide income was given a maximum of Rp 300,000 per month, which was named "Salary from Nature for us". Also, checking the visitor trash constantly so it will not damage the mangroves. In 2015 community empowerment became wider so that people who previously disagreed now understood. Some groups are involved in plantings, such as the Santri Masjid group, the GKJW Youth Group, and Conservation Education activities that can rehabilitate 8 hectares of land per year.

Also, in 2015, the mangrove donation system was eliminated into a ticket system for IDR 5,000 per person. The system rises because of the lack of visitor awareness to engage in mangrove recovery. On 21 September 2015, it was agreed as the birth of a shared passion for rehabilitating and conserving mangroves and coral reefs by GOAL POKMASWAS. The activity marked by an offering ceremony with the theme "Ngupadi Tirta Wening" (preserving clear water). The theme was taken to provide awareness to the entire community to protect clean water so that the coral reefs in the CMC of Tiga Warna area can be well preserved.

Furthermore, the change of the Clungup Mangrove Conservation branding becomes CMC Tiga Warna consisting of 8 beaches, which are Clungup beach, Gatra beach, Bangsong beach, Asmoro beach, Sapana beach, Mini beach, Batu Pecah beach, Tiga Warna Beach, and Floating House. In 2016, ecotourism guide certification was carried out for the CMC Tiga Warna Crew to improve the quality of services in collaboration with the Department of Maritime Affairs and Fisheries (DKP) of Malang Regency, as well as access to mining boats that usually transport guests to Sempu Island began to be used to transport guests to Tiga Warna beach.

The coastal area of Malang Regency is one of the regions in East Java that has a lot of marine and fisheries potential. The potential resources in Malang Regency are still not optimally documented. It is due to several obstacles such as equipment and competent personnel to manage the damage, prevention and repair. So, the Technical Implementation Unit of the Port and the Management of Marine and Fisheries Resources 'Pondok Dadap' carried out ecosystem monitoring to manage the potential and richness of coral reef ecosystems in Malang Regency. The purpose is to build a database of coral reef potentials, varying from areas to species distribution as a basis for determining the direction of community-based coral reef development and management. The method of monitoring used the direct observation method. The data taken include data on the coral growth and types of coral fish and another biota that live around the Kondang Buntung reef area. Monitoring equipment is underwater cameras, scuba sets, boats, and Google earth.



The results obtained showed that the bottom waters in the location are rocky. In shallow areas, the bottom of sandy waters is mixed with clay whereas, in deeper areas, the contours of the bottom waters are slightly steep. The Coral Reef area has a depth of 2-8 m contained coral in the large size. At depths of > 8 m with a sandy substrate, there are artificial coral reefs and fish houses. Observation obtained showed 7 dominants of coral growth in the Tiga Warna beach of the Sempu strait, which are (a) branching, (b) foliose (sheet), (c) tabulate *Acropora*, (d) *Fungi*, (e) massive (solid), (f) encrusting, (g) soft coral. Directions for management of coral reef areas include (a) prevention of destruction of coral reefs, (b) utilization of marine resources that do not damage coral reefs, (c) rehabilitation of damaged coral reefs, (d) research and tourism development, and (e) expansion of artificial coral reefs (Fandeli, 2002; Dahuri, 2003; Yulianda, 2007).

In addition to providing natural view, the CMC of Tiga Warna also has educative regulations for tourists to maintain the cleanliness and preservation of nature. The CMC of Tiga Warna area is included in the rehabilitation and conservation area of Mangrove, Coral Reef and Protection Forest of Sitiarjo Village, Sumber Manjing Wetan District, Malang Regency. The management of Tiga Warna beach applied a reservation system, and there are visitor restrictions.

The characteristics of the CMC of Tiga Warna ecotourism were beaches with soft white sand, clear seawater with 3 colors, coral reefs and surrounded by protected forests. There is protected forest conservation managed by the Bhakti Alam Foundation and managed directly by residents around the coast. Management of CMC ecotourism managed the development of tourist objects consisting of 1) tourist objects and attractions 2) existing facilities and infrastructure in tourism 3) marketing and tourism promotion 4) human resources around the CMC of Tiga Warna (Yachya, Wilopo and Mawardi, 2016; Darmawan, 2017).

The CMC management of Tiga Warna involves the surrounding community to protect the environment so that the tourism area can stay and be enjoy by the next generation. Also, regional tourism management will improve the economy of the surrounding community. Bakti Alam Foundation implements a conservation system in the management. It showed from the income from ticket sales used for planting trees around the beach tourism area. Besides, it also maintains the cleanliness of tourist objects and sets a limit on the number of visitors each day. Bakti Alam Foundation also manages the coastal area with the help of non-governmental organizations to increase income and create jobs for the surrounding community.

The results showed that the application of CBT in the TCMC of Tiga Warna area was very well, seen from the participation of group members in all aspects, such as improving the quality of life of group members and environmental sustainability. Also, the economic impact felt by the surrounding community has been well seen



from the funds for groups, job creation, increased income of local communities, and the distribution of profits fairly.

The results showed that in general the 5 principles of community-based ecotourism had been implemented well in the management of the CMC of Tiga Warna area, although current conditions still needed to be improved. The principle of nature conservation has been taken seriously in management considerations. The principle of cultural conservation still needs to be maximized. The principle of community participation is good and needs to be maximized through collaboration with all levels of the local community (Asmit and Syahza, 2020). Economic principles in management have provided economic improvement from ecotourism activities so that welfare has increased (Kurniawati, Sumarmi and Aliman, 2020). The principle of education has been going well, one of which is creating creations from waste management, conserving mangroves, and conserving coral reefs and popularizing regional uniqueness and local wisdom (Sumarmi et al., 2020; Sumarmi, Kurniawati and Aliman, 2020). The provision of supporting facilities needs to be improved by making standard operating procedures (Pendit, 1986; Demartoto, 2009; Husamah and Hudha, 2018).

There are three alternative strategies to develop these attractions, which are (1) optimizing all available potentials, to realize sustainable tourism management, (2) involving various parties to collaborate in efforts to improve, maintain and optimize ecotourism, (3) increase the existing tourist attraction by increasing the quality of integrated facilities and infrastructure to increase competitiveness in attracting tourist visits, and (4) building tourism partnerships to increase the acceleration of economic growth in supporting regional income (Yoety, 1997; Senoaji, 2009; Domo, Zulkarnaini and Yoswaty, 2017; Insani et al., 2019).

CONCLUSIONS

Based on the results of the Three-Color CMC analysis, it has high potential and prospective opportunities for the development of existing potential. The management of Tiga Warna Beach applies a reservation system, and there are visitor restrictions. The quota for admission to tourist sites may not exceed 100 people per wave, and the maximum quota per group is 10 people. Prospective Three-Color Beach tourists are required to make a reservation in advance using the application of social media and telephone before visiting this beach. When visiting, a tour guide must be accompanied by a rubbish checklist. Activities are undertaken by the Coastal Forest Conservation Unit and MPA Nurseries: Mangrove Planting, Care of protected plants and Mangroves, Coral reef transplantation, Care of coral reefs, Floating Net Cages, Making and managing Fish Apartments, Community Service in CMC conservation areas every Thursday, socializing to the forest encroachers. All activities are carried out for the sustainability of the CMC Tiga Warna Ecotourism.



The management of the Three-Color CMC can be used as a model for managing coastal ecotourism that promotes sustainability.

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