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# Mangrove Forest Ecotourism Program Development Tongke-tongke in Sinjai Regency

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**Abstract:** The growth of tourism as an industry has recently shown a very increasing graph and has even been able to boost Indonesia's economic growth for the better. The development of mangrove ecotourism is an effort to utilize environmental services from coastal areas in a sustainable manner. This research is to find out the potential and problems as well as a SWOT analysis of ecotourism in the Tongke-tongke Mangrove Forest in Sinjai Regency so that a better and more sustainable ecotourism program can be developed. The findings show that there are potentials and problems in Mangrove Forest ecotourism in terms of public facilities, biological aspects, recreational aspects, educational aspects, conservation aspects, and accessibility aspects. Strength (strength) is the existence of a variety of mangrove species, large land area, facilities, and accessibility that are easy to reach. Weaknesses, namely low marketing activities, some facilities that are not maintained, and aesthetic factors that are still lacking. The opportunities are strategic locations, creative community empowerment, and government support, while the threats are beach abrasion, land conversion, negative impacts of ecotourism activities, competition with other tourism objects, and logging of mangrove trees. The type of research used in this research is descriptive with qualitative techniques.

**Keywords:** Ecotourism; Mangrove forests; Tongke-tongke.

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## Introduction

The growth of tourism as an industry has recently shown a very increasing graph and has even been able to boost Indonesia's economic growth for the better. In recent years there has been a change in consumer behavior patterns or consumption patterns from tourists to higher types of tourism (Toubes et al., 2021), namely enjoying cultural products or creations and historical heritage, as well as nature or eco-tourism from an area or region. country. As a country laden with a large number of historical relics, a wealth of very diverse cultural attractions unique, nature, and ecotourism which are spread in almost all corners of the archipelago,

Indonesia's opportunity to become a destination for foreign tourists is getting bigger. Ecotourism is tourism with a concept of environmental ecology while maintaining the beauty of its territory which is sustainable and has the aim of helping the economy as well as community participation so that the benefits can be felt by the government and local communities. The development of mangrove ecotourism is an effort to utilize environmental services from coastal areas in a sustainable manner (Hartati & Pin, 2021). Ecotourism in mangrove forests is seen as synergizing with real forest ecosystem conservation measures (Khakhim et al., 2021). Sinjai Regency has quite promising potential for sea, land, and mountains with an area of 223 km<sup>2</sup> and a

population of 238,099 people who hold very promising potential tourism artifacts as a source of income, so the tourism sector is expected to contribute by increasing local income (PAD). One of the advantages possessed by Sinjai Regency is because the condition of the area is under the foot of Mount Bawakaraeng so it has quite beautiful natural scenery and several coastal areas have beaches that are no less stunning. In Sinjai Regency there are also tourist sites managed by the local government and which are icons of the Sinjai district, namely "Tongke-tongke Sinjai Mangrove Forest".

Mangrove forest as a tropical coastal vegetation community is dominated by various types of mangrove trees that can grow and develop in muddy coastal tidal areas (Serosero et al., 2020). Mangrove forest is a type of tropical forest that typically grows along beaches or river mouths that are affected by tides (Krauss & Osland, 2019). Mangroves are often found on brackish, shallow, deltaic, and protected bay coasts. Mangroves grow optimally in coastal areas that have large river mouths and mud substrates (Yatno et al., 2019). whereas in coastal areas that do not have river mouths, mangrove forests do not grow optimally.

Tongke-tongke Village is one of the villages in the East Sinjai District. the area which has an area of 2.25 km<sup>2</sup> is generally a mangrove forest conservation area and an agricultural area. This area is divided into 5 (five) hamlets including Babana Hamlet, Baccara Hamlet, Bentengge Hamlet, Cempae Hamlet, and Maroa Hamlet. Topographically, Tongke-Tongke Village is a lowland area with an altitude of ± 0-500 meters above sea level, with an area of ± 4.75 km. One of the areas that have a fairly extensive mangrove forest area, where the existence of this mangrove forest area has existed since before this village was formed and as a source of livelihood for the people around the mangrove forest.

In its development, the mangrove forest (mangrove) in Tongke-tongke Village has become a tourist object that is in great demand, both by domestic and foreign tourists, especially scientists who like to do research. Tongke-tongke village with its rich mangrove forests is nicknamed the South Sulawesi mangrove laboratory. The development of the mangrove forest which is located on the east coast of Sinjai Regency has an area of approximately 786 ha which was developed with genuine community self-help. Visiting the mangrove forest in Tongke-tongke Village means that you will also be entertained by various sounds from the sounds and screeching of animals in the morning accompanied by natural scenery in the form of thousands of bats hanging on the mangrove trees during the day.

The government's role in managing mangrove forest areas in the rehabilitation of mangrove forests (Roslinda et al., 2021) in Tongke-Tongke Village has

been carried out. community by replanting through a collaborative program with non-governmental organizations. The importance of rehabilitation or replanting to maintain damaged mangrove ecosystems can function according to its function as a protector and has its charm as ecotourism to be maintained (Ellison et al., 2020). This study aims to determine the potential and problems, SWOT analysis and, development strategies for the Tongke-tongke Sinjai Mangrove Forest ecotourism program.

## Method

The type of research used in this research is descriptive with qualitative techniques (Doyle et al., 2020). This study, it involved a field observation process to observe certain aspects more specifically to obtain data by the problem at hand, where the data was processed, analyzed, and further processed based on the theories that had been studied so that the data and a conclusion can be drawn. This research lasted for 1 (one) month and was located in the Tongke-tongke Mangrove Forest Area, Pasimarannu Sinjai Timur District, Sinjai Regency, South Sulawesi Province.

## Result and Discussion

### Potential and Problems

From the results of observing the potential and problems in the mangrove forest ecotourism development area, many aspects have the potential to be developed from various problems. Among them are aspects of public facilities, biological aspects, recreational aspects, educational aspects, conservation aspects, and accessibility aspects.

### Facility aspect

So far ecotourism in the Tongke-tongke mangrove forest has facilities but not yet adequate. Tourist facilities in the Tongke-tongke Mangrove Forest include roads, gates, parking lots, mosques, counters, trash cans, mangrove tracks, shelters, cafes/restaurants, information booth, hatcheries. By looking at the existing facilities in the Tongke-tongke mangrove forest area, of course, this is a problem, therefore there is a need for better arrangement and planning of facilities for the convenience of tourists visiting the planning location (Hartati & Pin, 2021).

### Biological Aspect

Mangrove forest is a coastal ecosystem unit that is rich in biodiversity, biodiversity is explained in detail by type, namely (Cahyaningsih et al., 2022a): 1) Flora Types of mangroves that are self-supported by the local community, namely mangrove species (Ryzhopora

5 mucnorata, Avenicia, and Niva fructans). 2) The fauna associated with the 5 Tongke-Tongke mangrove environment is arboreal fauna such as insects, tree snakes, bats, storks, and grouse and marine fauna such 5 oysters, fish, mangrove crabs, and shrimp. there are 27 species of fish and 4 species of shrimp and at least 8 species of gastropods, there are also 8 species of bivalves that live permanently in the mangrove area 3) by looking at the potential from the biological aspect in the Tongke-tongke mangrove forest area, of course, this is a problem because there is no better arrangement or planning in the area.

#### Conservation Aspect

Mangrove forest conservation is an effort to protect, and preserve nature in the form of setting aside areas as nature reserve areas (Amiruddin 3 al., 2021), both marine, coastal, and mangrove forests. The Tongke-tongke mangrove forest with a large area and the support of the Sinjai district tourism government and KKP (Ministry of Maritime Affairs and Fisheries) can be made into a conservation area with mangrove plant nurseries that can be used as business land. However, there is no better direction for structuring or conservation planning, which of course is a problem in mangrove areas (Cahyaningsih et al., 2022b).

#### Educational Aspect

The mangrove forest that stretches along the east coast of Sinjai, which is located in Tongke-tongke Village or commonly known as the mangrove laboratory in South Sulawesi, is an excellent place to study mangrove forests, even the KKP (Ministry of Maritime Affairs and Fisheries) has launched a mangrove forest education program in this area. The Tongke-tongke mangrove area is good for teaching students and visitors who come to only one place of learning and even Then only a place for information to be used, of course this is a problem. therefore the need for better arrangement or planning.

#### Recreational Aspect

The Tongke-tongke mangrove forest area is a good tourist/recreation place to visit as an educational place (Amiruddin et al., 2021), apart from that many tourist attractions can be done such as enjoying the sunrise view while walking around the mangrove track which is surrounded by mangroves, besides that there is also a fishing area and mangrove 3 nurseries. we can also find several restaurants/cafes in the Tongke-tongke mangrove 17 rest area. By looking at the tourist attractions in the Tongketongke mangrove forest area, it is necessary to have better arrangements and planning so that tourists who come enjoy the tourist attractions.

#### Accessibility aspect

The accessibility aspect of the Tongketongke Mangrove Forest is located in Sinjai Regency, East Sinjai District, Tongke-tongke Village. To reach this location from big cities such as Makassar, Gowa, Bone and Bulukumba itself is not difficult, but there are several obstacles for tourists with long distances such as passing through the Makassar-Bulukumba route 220 km with a travel time of about 7 hours, while passing Makassar-Maros-Bone is 186 km with a travel time of 4 hours and while passing Makassar-Gowa is 164 km and a travel time of 3 hours, from the capital city itself it is 7 km You can use public transportation while walking along smooth asphalt roads, passing typical fishing villages with various boats and ponds.

#### SWOT analysis

##### Strength

Strength referred to in this case is to develop the potential that is owned for the future. Strengths that support the development of Tongke-tongke Mangrove Forest ecotourism include (Amiruddin et al., 2021):1) It has quite diverse types of mangroves, 2) There is a large area of land, 3) There are facilities, such as tracking, gazebo, boats, parking lots, 4) The readiness of the local government and the Tourism and Culture Office of the Sinjai Regency in carrying out the mangrove rehabilitation program and improving the community by producing products. 5) Accessibility is easy to reach.

##### Weaknesses

Weaknesses in questionnaire deficiencies or obstacles 23 in the development of mangrove ecotourism areas. The mangrove ecosystem is a natural resource with the potential to be used as a tourist destination. Ecotourism is a form of responsible activity in pristine areas with the objectives of conserving or preserving the environment, while at the same time providing livelihoods for local residents and involving elements of education. This study aims to determine the suitability and carrying capacity of Jailolo Bay mangrove area for ecotourism. Mangrove data collection was carried out using the spot-check method. Fish were collected using gill nets. Socio-economic data were obtained through interviews. The study found that Jailolo Bay mangroves are in the appropriate/feasible category for ecotourism development at five stations (villages of Guaimaadu, Gufasa, Gam Lamo, Porniti, Tuada, and Matui), while at one station (Guaria Village) the mangroves are in the less suitable (inappropriate) category. The area carrying capacity (ACC) for ecotourism activity of Jailolo Bay is 2632 people per day consisting of tracking activities (489 people per day), fishing (100 people per day), boating (1797 people per day), bird watching (59 people per day), picnic (175 people per day), and camping (15

people per day). The highest ecotourism ACC by the station (village) was found at Matui Village, with 568 people per day, followed by Gam Lamo Village (488 people per day), Porniti Village (445 people per day), Tuada Village (441 people per day). Weaknesses of mangrove ecotourism in Tongke-Tongke Village include: 1) There is trash scattered around, 2) There are several damaged facilities, 3) There is no information center yet, 4) Low marketing activities, 5) There are no clear regulations relating to mangrove conservation

#### Opportunity

The opportunities referred to in this case are the supporting factors of the development of mangrove ecotourism (Harto et al., 2021). Opportunities from mangrove ecotourism in Tongke-tongke Village include cooperation between the government and Pokdarwis of Tongke-Tongke Village, increasing community income, strategic location, and creating a creative community.

#### Threats

The threat in question is the factors that hinder the development of mangrove ecotourism (Harto et al., 2021). Threats from mangrove ecotourism in Tongke-Tongke Village include beach abrasion, land conversion, negative impacts of ecotourism activities (garbage, activities that damage the ecosystem), competition with other tourism objects, and mangrove felling.

Based on the results of the mangrove ecotourism development strategy using SWOT analysis. The SO strategy is to develop existing mangrove vegetation, by increasing mangrove planting (Handayani et al., 2021), increasing government commitment to mangrove development, creating economic income opportunities by increasing production of handicrafts, adding to existing facilities such as adding souvenirs, optimizing the maintenance of infrastructure facilities, by utilizing the role of community resources. The WO strategy is to add trash cans and inform visitors not to litter, the local government can promote promotions about mangrove ecotourism (Febriyanto, 2020), and create an official website so that visitors can increase even more, optimize government cooperation with several agencies to conduct counseling related to the benefits of mangroves (R. Achmad Djazuli et al., 2021) so that community participation increases, the local government provides public transportation, managers and the community are more active in planting mangroves.

The ST strategy is to increase mangrove planting so that abrasion does not occur, make rules or penalties (Rudianto et al., 2020) so that land conversion and logging do not occur for personal gain, provide environmental/conservation education to every tourist, maintaining cleanliness in tourist attractions, maintaining mangrove ecotourism while still taking into

account the carrying capacity of the region. WT's strategy is to optimize the existence of trash cans in every corner of mangrove ecotourism so as not to damage the ecosystem (Sumarmi et al., 2022), improve facilities and infrastructure, and repair damaged facilities. To be able to compete with other tourism objects, optimizing the existence of a service center to provide information and regulations that apply to the Tongke-Tongke mangrove ecotourism, Sinjai Regency.

#### Program Development Strategy

Program planning is determined by analyzing descriptively the planned activities in each zone. This planning is carried out to find out the planning related to the planned activity programs in the Tongke-tongke mangrove forest area including conservation programs, recreation programs, and educational programs.

#### Conservation Program

The mangrove forest conservation program will further highlight the educational and preservation functions of protecting the mangrove forest environment as well as planting and cultivating mangroves (Worthington et al., 2020). With this, it is hoped that this conservation program will maintain the ecotourism, and ecological value of the Tongke-tongke mangrove forest. 1) Nurseries and planting of mangroves. Mangrove nursery and planting are one of the programs that provide protection for mangrove resources in the Tongke-tongke mangrove forest area and maintain the ecological processes of the Tongketongke Mangrove Forest area, 2) Natural interpretation. Natural interpretation is an educational activity that aims to reveal meanings and relationships through the use of real objects and first-hand experience and using illustrations (Juma & Khademi-Vidra, 2022), rather than simply communicating factual information. so with this activity, we can educate mangroves by observing mangrove trails of animals (Saru et al., 2020), views, and photo hunting in the Tongke-tongke mangrove forest area.

#### Recreation Program

Recreation is an activity carried out by people intentionally as fun or for satisfaction, usually, in their spare time, recreation has many forms of activity (Gula, 2021). With this, with the existence of a program of recreational and educational activities, it is hoped that this program can be packaged in such a way that recreational activities are more useful with educational activities in them. 1) Walk through the Mangrove. Mangrove walking is an activity to enjoy the panoramic view of the mangroves, you can walk or you can use a speedboat/boat. 2) Fishing. Fishing is an activity of catching fish which can be a job, hobby, outdoor sport,

or activity on the seafront, river, or lake. 3) Viewing, Viewing is a recreational activity by looking at the scenery at a certain spot. 4) Mangrove planting and nurseries, Mangrove planting and nurseries are recreational activities while studying or as an effort to educate tourists about preserving mangrove forest areas (Wopa et al., 2022). 5) Mangrove viewing tower. The view tower is a spot or tower that is high in size to see panoramic views of the beach and mangroves from above. 6) Cafeteria, Cafeteria is an activity of buying and selling food and drinks as well as souvenirs for the memories of tourists. 7) Mangrove education house, the mangrove educational house is a learning activity located in the Tongke-tongke mangrove forest area so that tourists can learn about the potential for preserving mangroves (Kissinger et al., 2020). 8) Camping, Camping is a camp or camping activity in the mangrove forest area to educate students and young people about how to preserve mangroves in the Tongke-tongke mangrove forest area.

#### Education Program

The mangrove forest that stretches along the east coast of Sinjai which is located in Tongke-tongke Village or commonly known as the mangrove laboratory in South Sulawesi is an excellent place to study mangrove forests. KKP (Ministry of Maritime Affairs and Fisheries) has launched a mangrove forest education program.

#### Conclusion

The ecotourism potential of the Tongke-Tongke mangroves which consists of various types of flora, fauna, and natural panoramas has an attraction for the development of ecotourism in Sinjai Regency, South Sulawesi. The results of determining the strategy for developing mangrove ecotourism using SWOT analysis include: developing mangrove ecotourism by increasing mangrove planting, increasing community participation in the importance of protecting mangrove areas (Kurniawati et al., 2022), creating opportunities for economic income by increasing production from handicrafts, increasing promotion of ecotourism mangroves, and creating an official website, adding to existing facilities such as adding huts and optimizing the maintenance of infrastructure there, by utilizing the role of community resources. maintaining mangrove ecotourism while still paying attention to the carrying capacity of the area so that visitors can increase more.

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