



The Potential of Mangrove Ecotourism Strategy in Driving Economic Sustainability in Pangkep Regency

Febriana Ludia Buling¹

¹ Hasanuddin University, Makassar 90245, Indonesia
bulingf123@student.unhas.ac.id

Abstract. The blue economy holds vast potential for advancing sustainable development, especially in coastal regions. Mangrove conservation ecotourism is a key coastal resource with significant development prospects. Bulu Cindea Village, located in Bungoro District, Pangkep Regency, South Sulawesi, is well-known for its abundant natural resources, particularly its mangrove forests. These forests have been transformed into ecotourism destinations. This study aims to assess the potential and appeal of mangrove ecotourism in Bulu Cindea Village, Pangkep Regency, for future development. The research employs quantitative methods, gathering data through field surveys and interviews conducted via questionnaires. SWOT analysis was used as the primary analytical method. The results of the study reveal that the strengths and opportunities for developing mangrove forests in Bulu Cindea include a high demand for nature tourism among Pangkajene residents, well-maintained roads with easy access from the city center, and robust government backing through village fund allocations. Additionally, support comes from mangrove planting programs led by PT Mars, the Indonesian Air Force, and the Police (Brimob), coupled with beach-cleaning initiatives organized by the environmental agency. However, several challenges and threats are identified, such as insufficient ecotourism infrastructure, low visitor turnout, a shortage of rest and dining facilities, and water pollution caused by the activities of a cement factory at Biringkassi Port.

Keywords: Mangrove Ecotourism, Coastal, SWOT

1 Introduction

Indonesia's coastal and marine areas hold significant importance due to their strategic value in terms of natural resources. These natural resources are expected to support Indonesia's economic growth both now and in the future [1]. One of the natural resources found in coastal areas is mangrove forests. Mangroves are a type of tropical rainforest that grow along the coastlines of tropical and subtropical regions, influenced by tidal movements [2]. Mangrove ecosystems can be utilized for ecotourism activities without damaging the environment. The use of mangrove forests as a tourist destination represents an alternative approach that can be implemented in coastal regions. Ecotourism provides economic benefits to both managers and local communities without harming the mangrove ecosystem. Additionally, mangrove-based ecotourism is a crucial effort in environmental conservation [3].

Ecotourism also serves as an alternative livelihood for coastal communities, providing them with an additional source of income. The involvement of stakeholders is vital in the management of ecotourism and the conservation of mangrove forests. Ecotourism projects in any area are more likely to succeed when stakeholders fulfill their roles in managing both ecotourism and mangrove conservation [4].

One region known for its natural wealth, particularly from the marine and coastal sectors, is Pangkep Regency (Pangkajene and Islands), a regency in South Sulawesi, Indonesia. The dominance of marine areas has made Pangkep rich in mangrove forests. One notable mangrove forest is located at Biringkassi Beach in Bulu Cindea Village. The natural tourism potential in this area has been continuously developed, with the management of the mangrove forest starting in 2019[5].

Biringkassi Beach has a coastline approximately 3,500 meters long, lined with mangrove forests along the shore and river estuaries, with a thickness ranging from 10 to 50 meters. These mangroves mostly grow naturally, with some areas being rehabilitated [6]. The area has been preserved and further developed by the local community to improve quality of life and support the livelihoods of residents. Rehabilitation efforts by the Bulu Cindea government aim to preserve the remaining mangrove forests through the creation of an ecotourism area. Bulu Cindea was chosen as a tourist destination due to its strategic location near Biringkassi Pier, offering scenic views, particularly at sunset.

The management of the mangrove ecotourism area is a joint effort between the government, the local community of Bulu Cindea, and private enterprises. Initial assessments of the area reveal dense mangrove forests, mangrove trekking paths, gazebos, and a variety of fauna, including swiftlets. However, there are still untapped opportunities. In response, the government and local community have implemented ongoing improvements, identified potential areas, and developed strategies for the Bulu Cindea mangrove ecotourism zone, aiming to transform it into a nature-focused tourist destination. Nonetheless, three major issues have emerged: unclear management, insufficient visitor facilities, and inadequate promotion, leading to low tourist interest. Additionally, the infrastructure and amenities in the ecotourism area remain lacking.

Given the current situation and the potential of the mangrove forests in the Bulu Cindea ecotourism area, a comprehensive study is necessary to evaluate the potential and appeal of the area and to formulate strategies for its development

2 Literature Review

2.1 Ecotourism

Ecotourism involves travel by individuals or groups from one location to another, aimed at experiencing and appreciating the natural surroundings and their resources, along with any available facilities. It represents a form of tourism focused on nature, enjoyed by tourists or visitors[7].

Ecotourism combines the enjoyment of natural beauty with the responsibility of conservation [8]. It has become an important method for promoting unique and well-preserved environments, while also functioning as a tourist attraction. The strength of ecotourism lies in its development model, which is based on principles of nature conservation and preservation [9].

2.2 Mangrove Ecotourism

Mangrove forests, consisting of coastal vegetation in tropical and subtropical areas, are dominated by various species of mangroves that grow in intertidal zones with muddy coastlines. These forests play a crucial role in human life, offering ecological, social, and economic benefits [10].

Mangrove ecotourism refers to areas specifically designated for conservation while supporting tourism. Mangrove forests are unique coastal ecosystems found at river mouths or estuaries [11]. These forests grow exclusively in tropical and subtropical climates and feature unique plant and associated species.[12]

2.3 SWOT Analysis

SWOT analysis is a methodical process for identifying factors to develop strategies. Typically, it starts with recognizing both opportunities and threats. Moreover, understanding internal strengths and weaknesses is vital to ensure effective and competitive progress toward goals [13].

Internal factors involve assessing or identifying strengths and weaknesses within a component, while external factors consist of outside forces that influence performance. The internal strategic factors focus on strengths and weaknesses, while external factors encompass opportunities and threats [14].

The process of performing a SWOT analysis includes identifying the elements representing strengths, weaknesses, opportunities, and threats; assigning weights to each element using a scale from 1.0 (most important) to 0.0 (least important); and calculating the scores by multiplying the assigned weights with the given ranking [15].

3 Method

The research was carried out at Biringkassi Beach in Bulu Cindea Village, Bungoro District, Pangkep Regency, located in South Sulawesi Province. The study lasted about one month and employed a quantitative approach through SWOT analysis. This analysis served to outline the Strengths, Weaknesses, Opportunities, and Threats concerning the development of mangrove ecotourism in Bulu Cindea Village. Both primary and secondary data sources were utilized for this research. Primary data were collected through various methods, including observations, completed questionnaires, and interviews. The questionnaire data provided insights into the local community's views on mangrove ecotourism, as well as their interests and potential involvement if such tourism were to be developed. The questionnaires were distributed using

purposive sampling, selecting respondents according to specific criteria. The participants included local residents, government representatives, fishermen, and visitors to Biringkassi Beach. In addition, secondary data were sourced from statistical information from the Pangkep Regency Tourism Office regarding tourist traffic at Biringkassi Beach, as well as from journals, research reports, articles, books, and online resources pertinent to the topic.

4 Results

The analysis of the mangrove ecotourism development strategy in the mangrove area of Bulu Cindea Village utilizes SWOT (Strengths, Weaknesses, Opportunities, and Threats) analysis. The stages of SWOT analysis used in further data analysis involve gathering all information that affects the ecosystem in the study area, both internally and externally. The strengths, weaknesses, opportunities, and threats are as follows in Table 1

Table 1. Table internal factor in developing mangrove ecotourism in Pangkep Regency.

Internal Factor	Score	Average	Accumulation
Strengths			
The Village fund has been fully maximized for the development of the mangrove ecotourism area	0,2	8,67	
The presence of a beach tourism management team formed by the village	0,18	8,33	
Government support for the development of conservation areas	0,16	6,67	
Mangrove planting initiatives by PT. Mars, the Indonesian Air Force, and the Police, as well as beach cleaning activities	0,13	6	
Collaboration with NGOs and university to promote tourist attractions.	0,11	4,67	6.31
Bulu Cindea Village has been designated as one of the tourist destinations in Pangkajene and the Islands Regency.	0,09	4	
Adequate and easily accessible road infrastructure from the city center	0,07	3,67	
The formation of TIM TANI, a group of agricultural advisors, by the Forestry Department.	0,04	2	
Natural resource potential that supports ecotourism development.	0,02	1,00	
Weakness			
Lack of supporting infrastructure and facilities for ecotourism.	0,2	-3,33	-4.39
The mangrove tracking path is still very short, only 10	0,18	-3,67	

meters in length.

Insufficient number of visitors to the ecotourism site.	0,16	-4,00
Limited involvement of the local community in managing the tourist attraction.	0,13	-4,67
The ecotourism area is still restricted in size.	0,11	-5,00
Difficulty in finding rest and dining facilities.	0,09	-5,33
The mangrove forest's density is still less than 50 meters.	0,07	-5,67
Limited land available for the construction of facilities.	0,04	-6,00
Lack of informative signage throughout the mangrove ecotourism site.	0,02	-7,33

Accumulation total **1.92**

Table 2. Table external factor in developing mangrove ecotourism in Pangkep Regency.

Internal Factor	Score	Average	Accumulation
Opportunities			
The local community's strong interest in nature tourism	0.67	1.67	1,56
The location of the tourist site being a route to various regions in South Sulawesi	0.33	1.33	
Thereats			
Water pollution from Biringkassi Port caused by cement factory activities,	0,5	-1.67	-2.01
Mangrove ecosystem pollution due to excessive waste	0,33	-2	
The lack of clean water supply	0.17	-3	
Accumulation total			0.45

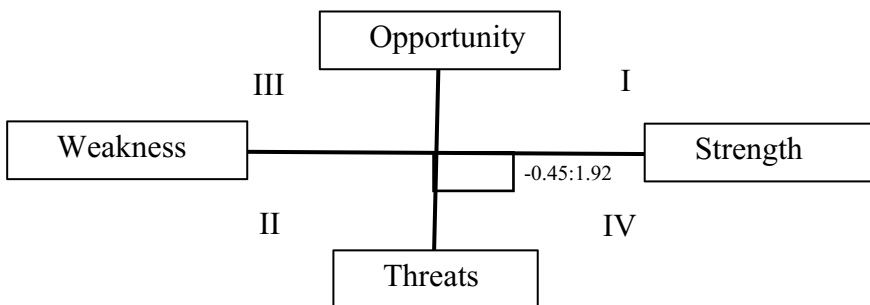


Fig. 1. The results of the SWOT matrix analysis, combining internal and external factors, indicate the utilization of the mangrove ecosystem as an ecotourism area.

The internal strategy shows that the strength component has a significant value of 6.31 in relation to the utilization of the mangrove ecosystem. Meanwhile, the weakness in the utilization of the mangrove ecosystem shows a value of -4.39. Thus, the accumulated value of the internal factors' influence is 1.92. The external strategy shows that the analysis of the opportunity component has a significant value of 1.56 in relation to the utilization of the mangrove ecosystem. Meanwhile, the threats to the utilization of the mangrove ecosystem show a value of -2.01. Thus, the accumulated value of the external factors' influence is -0.45.

Figure 1, which displays the results of the SWOT matrix analysis, namely IFAS (Internal Factor Strategic Evaluation) and EFAS (External Factor Strategic Evaluation), shows that the condition of the mangrove ecosystem in Bulu Cindea Village is in Quadrant 4, with values ranging from -0.45 to 1.92. This indicates that the mangrove ecosystem in Bulu Cindea Village can be further developed, both in terms of expanding the area and for specific uses based on the potential of the mangrove ecosystem resources [16].

The condition of mangrove ecosystem utilization in Bulu Cindea Village is positioned in Quadrant 4, which represents a strategy that supports diversification. This position indicates that the utilization of the mangrove ecosystem must develop strategies that minimize threats while maximizing strengths as optimally as possible. The diversification (ST) strategy includes ensuring an adequate and continuous supply of freshwater, strengthening monitoring and evaluation systems involving the local community and stakeholders in managing and protecting the mangrove ecosystem, and preventing pollution from organic and inorganic waste materials.

The success of mangrove ecotourism development is influenced by several factors, including the location's suitability for ecotourism and ease of access, having a well-planned concept and preparation, local community involvement in running ecotourism activities as a joint venture, good interpretation of nature and culture, the ability to create a sense of comfort, safety, and learning for tourists, and the establishment of sustainable working relationships with involved stakeholders [17].

5 Conclusion

The mangrove ecotourism management strategy for the mangrove ecosystem in Bulu Cindea Village that needs to be prioritized includes: ensuring an adequate and continuous supply of freshwater, establishing a monitoring and evaluation system that involves the local community and stakeholders in the management and protection of the mangrove ecosystem, and preventing pollution from organic/inorganic waste materials. As for the recommendations in my research, which could be useful for various parties, it is necessary to develop planned infrastructure to support ecotourism activities, as well as the involvement of the local community and government in the various planning processes for the management of the mangrove ecotourism area in Bulu Cindea Village.

6. References

1. Arief, Hutan Mangrove Fungsi dan Manfaatnya, Kanisius. 2003.
2. Rodiana, Ferdinan Y, and Sulistiono, "Kesesuaian dan Daya Dukung Ekowisata Berbasis Ekologi Mangrove di Teluk Pangpang, Banyuwangi," *JFMR-Journal of Fisheries and Marine Research*, vol. 3, no. 2, pp. 77–78, 2019.
3. M. Zulia, "Marine Tourism Development in Park Tourism Island of Pieh and Sea Surrounding. Kemampuan Koneksi Matematis (Tinjauan terhadap Pendekatan Pembelajaran Savi)," vol. 53(9), pp. 1689–1699, 2019.
4. K. , T. A. , & S. A. Hafsar, "Strategi Pengembangan Kawasan Ekowisata Mangrove di Sungai Carang Kota Tanjungpinang Kepulauan Riau," *Jurusan Ilmu Perikanan. Fakultas Ilmu Kelautan dan Perikanan. Universitas Hasanuddin.*, 2017.
5. A. , B. , & H. Hazard, "Persepsi dan Partisipasi dalam Program CSR Ekowisata Mangrove," *Jurnal Environmental Science*, vol. 3, no. 1, 2020.
6. A. , A. T. W. S. Saru, "Model Mitigasi Bencana Akibat Pengaruh Sedimentasi Pantai Biringkassi Kabupaten Pangkep. Kemampuan Koneksi Matematis (Tinjauan terhadap Pendekatan Pembelajaran Savi)," 2009.
7. Suryaningsih, "Ekowisata Sebagai Sumber Belajar Biolog," *Jurnal Bio Education*, vol. 3, no. 2, pp. 59–72, 2018.
8. Haryanto, "Model Pengembangan Ekowisata dalam Mendukung Kemandirian Ekonomi Daerah Studi Kasus Provinsi DIY," *Jurnal Kawistara*, vol. 3, no. 2, 2014.
9. Alfirah, "Identifikasi Potensi dan Strategi Pengembangan Ekowisata Mangrove pada Kawasan Suaka Margasatwa Mampie di Kecamatan Wonomulyo Kabupaten Polewali Mandar," *Universitas Hasanuddin, Makassar*, 2014.
10. Saputra and Agus, "Potensi Ekowisata Mangrove di desa Merak Belatung Kecamatan Kalianda Kabupaten Lampung Selatan," *Jurnal Sylva Lestari. Universitas Lampung.*, vol. 2, no. 2, 2014.
11. Mulyadi and Hendriyanto, "Konservasi Hutan Mangrove sebagai Ekowisata," *Envirotek : Jurnal Ilmiah Teknik Lingkungan*, vol. 1, no. 1, pp. 51–57, 2009.
12. Rini, Pratikto, and Sambodo, "The Characteristics of West Season Wind and Wave as well as Their Impacts on Ferry Cruise in The Kalianget-Kangean Cruise Route, Madura, Indonesia," *Pertanika J Sci Technol*, vol. 8, no. 2, pp. 60–70, 2021.
13. R. Modestus Ziku, "Partisipasi Masyarakat Desa Komodo Dalam Pengembangan Ekowisata Di Pulau Komodo," *Jurnal Master Pariwisata (JUMPA)*, Sep. 2015, doi: 10.24843/jumpa.2015.v02.i01.p01.
14. Irawan Setyabudi and Deril Aria Permana, "Evaluasi Kualitas Visual Lanskap di Kawasan Hutan Mangrove Sukadana Kabupaten Kayong Utara," *Aksen*, vol. 4, no. 2, 2020.
15. A. , Tuwo, *Pengelolaan Ekowisata Pesisirdan Laut: Pendekatan Ekologi, Sosial Ekonomi, Kelembagaan dan Sarana Wilayah*. Brillan Internasional, Surabaya., 2011.
16. A. Saru, "Kebijakan Pemanfaatan Ekosistem Mangrove Terpadu Berkelanjutan di Kabupaten Barru Propinsi Sulawesi Selatan. Disertasi Program Studi Pengelolaan Sumberdaya Pesisir dan Laut," *Sekolah pascasarjana Institut Pertanian Bogor. Bogor.*, 2007.
17. [Nuryamin, "Analisis Pengembangan Kawasan Ekowisata Mangrove di Kelurahan Untia Kota Makassar," Skripsi. Program Sarjana, Program Studi Ilmu Kelautan, Fakultas Ilmu Kelautan dan Perikanan Universitas Hasanuddin., 2018.

Open Access This chapter is licensed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits any noncommercial use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

