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Global Forest Journal

Sustainable mangrove management strategy in Sumber Nadi Village, Ketapang District, South Lampung Regency

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ARTICLE INFO

Article history:
Received 25 December 2023
Revised 11 January 2024
Accepted 18 January 2024
Available online 30 January 2024

E-ISSN: 3024-9309

How to cite:
R. W. Sahasrara, D. Iswandaru, I. Bantara, I. G. Febryano, "Sustainable mangrove management strategy in Sumber Nadi village, Ketapang district, South Lampung regency", *Global Forest Journal*, vol. 02, no. 01, January 2024

http://doi.org/10.32734/gfj.v2i01.15560

ABSTRACT

The sustainability of mangrove forests really depends on the involvement of communities in the areas surrounding the mangrove forests. If the mangrove environment is to be used in the long term, it must be managed and preserved. This research aims to determine strategies for sustainable mangrove management in Sumber Nadi Village, Ketapang District, South Lampung Regency. The method used in this research is a qualitative approach. Data was obtained through in-depth interviews involving key informants who were selected and determined using snowball sampling and analyzed using SWOT analysis of Strengths, Weaknesses, Opportunities and Threats, which includes Natural Resources and Human Resources. The results of this research show that the total value of the influence of internal strategies has a value difference of 0.32. Likewise, the external value has a difference of 0.11. Then, combining the two values of the difference between strengths and weaknesses and opportunities against threats, a coordinate point is obtained, namely the coordinate point (0.32; 0.11). The strategy that must be implemented in Sumber Nadi Village, Ketapang, is to support aggressive growth policies (growth-oriented strategy). Mangrove forest management strategies, as in the quadrant above, show a favorable situation. The relevant agencies, management and the community should support this management development strategy so that it can maintain the potential of existing mangroves.

Keyword*:* Mangroves, Management, Strategy, SWOT

1. Introduction

Mangroves are valuable coastal areas for various forest user actors and land developers, where each actor has incentives to claim and access them [1]. Mangroves are also an interaction and transition zone (Interface) between land and sea ecosystems, each of which has unique characteristics. The area of coastline holds a strategic place. Other environmental benefits and great biological productivity are also provided [2]. Natural resources offer significant benefits in various economic activities, including mining, forestry, fisheries, industry, tourism, etc. Hence, the resources possessed by coastal areas attract a lot of attention from various parties who use them directly or indirectly to regulate their use [3]. Mangroves function as a food chain in waters, not only providing food for aquatic biota but also creating a conducive climate and maintaining the balance of biological cycles in waters. Mangroves can also be a habitat for mammals and birds, so they play an important role in biodiversity. Mangroves also have value benefits, such as providing wood, medicine, leather tanning materials, boat materials, roofing materials, and eco-tourism areas [4].

The community's position is important in the development implementation process carried out by the government and stakeholders. The development will be considered successful if the development brings a change in welfare in society [5]. Mangrove forest management must involve many people who live around the forest. Community involvement as stakeholders in managing resources has an important position for the sustainability of mangrove forests [6]. There are two psychological signs in a group, namely a sense of bonding or feeling as part of the group (sense of belonging) and dependence on the results of each member so that they will be tied to each other. Groups are divided into several classes, namely primary and secondary groups. The primary group is a group that has relationships and cooperation. In contrast, the secondary group members do not have closeness in their relationships, are impersonal, and do not touch the heart [7].

A manager needs to implement strategic management to achieve what is desired by means of each part of the management organization being responsible for the tasks that must be carried out [8]. Mangrove ecosystem management strategies involving local communities are considered more effective than one-way management that only involves the government. Participation is a person's mental and emotional involvement in a group, which encourages him to be willing to contribute to the achievement of group goals and take responsibility for the efforts made by his group [9]. The strategy decided is to determine the function and long-term influence on an organization. For example, by developing a strategy, implementing an effective organizational structure, utilizing available information, mobilizing each organizational unit to carry out its responsibilities, and turning strategy into action [10]. This research aims to determine sustainable mangrove management strategies in Sumber Nadi Village, Ketapang District, South Lampung Regency.

2. Method

The research was conducted in September-October 2023. The research was conducted in Sumber Nadi Village, Ketapang District, South Lampung Regency, Lampung Province, Indonesia. The tools that will be used in this research are stationery, interview guide, voice recorder, and camera. The object of study is a group in Sumber Nadi village, Ketapang District, South Lampung. The material used is an in-depth interview question guide. This research uses a qualitative approach. Data was collected through in-depth interviews involving key informants who were selected and determined using snowball sampling. Next, the data was analyzed using SWOT analysis.

SWOT analysis [11] with indicators: Strength of mangrove group management, which refers to regulations. Weakness (weakness) Review the suitability of the interview results with the observation results. Opportunities (opportunities) Results that may be obtained from mangrove management. Threat (threat) Level of awareness of people who are not included in the mangrove management group. SWOT is an analysis of strategic planning methods for evaluating strengths, weaknesses, opportunities and threats in a business speculation or project. SWOT analysis is an analysis that separates internal strengths and weaknesses from external opportunities and threats and is the technique most often used in strategy making [12]. A map of the research location can be seen in Figure 1.

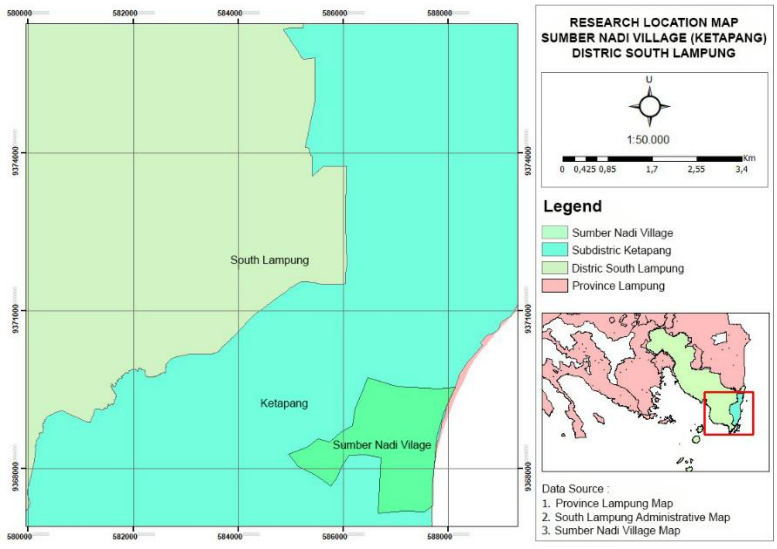

Figure 1. Map of Research Location

3. Result and Discussion

3.1. Overview of research locations

Based on profile data from Sumbernadi Village, Ketapang District, South Lampung Regency, Lampung Province, Indonesia. Geographically, this village is located between Longitude: 10577999 E Latitude: 0580694 S. Geographically, Sumbernadi Village is included in the lowland area category with a height of ± 150 meters above sea level. The boundaries of the Sumbernadi Village area are as follows:

a. To the north, it borders Pematang Pasir Village, Ketapang District
b. To the south, it borders Ketapang Village, Ketapang District
c. To the west, it borders Sri Pendowo Village, Ketapang District
d. To the east, it borders the Sunda Strait

Sumbernadi Village is an expansion village of the main Bangun Rejo Village whose residents come from the Bali area. Sumbernadi Village was originally the Main Village of Bangun Rejo, and in the year, it was expanded to become Sumbernadi Village in 1973. A colonization population of 45 families and 135 people came. In 1979, another 100 families came, equal to 325 people, for two consecutive years. The total population is 309 families, equal to 1146 people, clearing and cultivating land that has been provided by the government covering an area of 550 hectares. The area of Sumbernadi Village is 5.50 Km or 550 H, consisting of 110 Ha of rice fields and 300 Ha of non-rice fields/moorland.

The main sources of income for the residents of this village are farmers and others such as fishermen, entrepreneurs, private employees, laborers, traders and drivers. The population in this village is 1,246 people, with a ratio of 620 men and 591 women. As other villages in Indonesia have dry and rainy climates, this has a direct influence on mangrove management in Sumbernadi Village, Ketapang District. The available natural resources are quite extensive, such as rice fields, dry land, reservoirs, check dams, ponds and others. Hence, most people depend on their livelihood as farmers and fishermen. The development and development of Sumbernadi Village has received assistance from the government in the form of projects, both physical and non-physical and supported by community self-help. Many developments have been felt, such as infrastructure, namely transportation infrastructure (roads, bridges and culverts), marketing infrastructure (traditional markets), entrepreneurship, educational infrastructure, health infrastructure, places of worship, and application/electricity (State Electricity Company/PLN, generators and solar power). Regarding government administration, the Sumbernadi Village area is divided into two hamlets and 8 RTs, as listed in Table 1.

Table 1. Administration table for the population of Sumbernadi Village

No.	Hamlet name	RT	KK	Number of Souls		
				L	P	Total
1.	Lokasanti	1/2/3/4	186	350	328	678
2.	Mekar Jaya	5/6/7/8	150	289	274	568
	Total	8	336	620	591	1.246

3.2. Mangrove management strategy

Strategy plays a crucial role in the company's future growth, being the essential basis of resources and interactions that guide the deployment of the organization in accordance with current and planned goals. It includes market resources as well as various environmental factors [13]. Another view from a strategist states that strategy acts as an instrument to achieve goals, which include competitive characteristics [14]. In other words, companies seek to engage in activities that go beyond simply enhancing team member skills and other resource capabilities. Mangrove management strategies were analyzed using SWOT analysis (strong), (weak), (opportunities), and (threats) [15].

Weights start on a scale of 1.0 (most important) to 0.0 (not important). All these weights must not exceed a total score of 1.00. The ratings for strengths and opportunities are 1-4, where those who get a rating of 1 (not strong), rating 2 (not strong), rating 3 (strong), and rating 4 (very strong). On the weakness factor (weakness), and threats, the higher the weaknesses and threats, the smaller the rating and vice versa. In the second stage, the weights are multiplied by the rating or ranking to get the weighted score. Add up each weighted value obtained to get the weighted total of the strategy. Mangrove management is obtained.

3.2.1. Internal Strategi

SWOT is a strategic analysis that describes resource adequacy (benefits and costs) and environmental conditions (opportunities and threats). Compliance increases power and capacity and minimizes risk. According to [16], SWOT analysis is an effective tool in helping to structure problems, especially by conducting strategic environmental analysis, which is commonly referred to as the internal environment and external environment. Internal strategies influence the development of mangrove forest management [17]. The strength factors for sustainable mangrove management strategies in Sumber Nadi Village are as follows: (1). The condition of the mangrove forest is maintained and well managed by the community, as seen from the high percentage of living mangrove plants. (2). There is a zoning division in mangrove forests, namely protection zones and utilization zones. (3). High level of participation in mangrove management. (4). Have an annual work plan that includes outreach activities, guidance, empowerment, protection, utilization, supervision, enforcement and regulations. The weak factors in the mangrove management strategy in Sumber Nadi Village are as follows: (1). Lack of public understanding and knowledge about mangrove management. (2). Group organization is still not going well. (3). Limited budget. (4). Lack of facilities and infrastructure, one of which is a road that is quite difficult to reach. (4). Mangrove monitoring is erratic.

Table 2. Internal strategy factors (IFAS)

Internal strategy factors	Value	Rating	Score
Strength (S):			
1. The condition of the mangrove forest is maintained and well managed by the community, as seen from the high percentage of living mangrove plants.	0.40	3	1.2
2. There is a zoning division in mangrove forests, namely protection zones and utilization zones.	0.20	3	0.6
3. High level of participation in mangrove management	0.23	4	0.92
4. Have an annual work plan that includes outreach activities, guidance, empowerment, protection, utilization, supervision, enforcement and regulations.	0.17	2	0.34
Total Strength (S)	1.00		3.06
Weakness (W):			
1. Lack of understanding and knowledge among some communities regarding mangrove management	0.27	3	0.81
2. Group organization is still not going well	0.34	3	1.02
3. Limited budget	0.13	3	0.39
4. Lack of facilities and infrastructure, one of which is the road, which is quite difficult to reach.	0.13	2	0.26
5. Mangrove monitoring is erratic outside the scheduled work plan or program	0.13	2	0.26
Total Weakness (W)	1.00		2.74

In recent years, around 35% of the world's mangrove forests have been destroyed due to human activities [18]. There are human activities that can damage the mangrove forest ecosystem, such as industrial activities, residential development around the forest, excessive logging, agriculture and mining [19]. Based on the influence of these strength factors on mangrove management strategies, the most important weight value received a value of 0.40, namely the condition of the mangrove forest is well maintained and managed by the community as seen from the high percentage of living mangrove plants, and there has been no damage at all due to human actions. The weight that is not important gets a value of 0.17, namely having an annual work plan that includes activities for socialization, development, empowerment, protection, utilization, supervision, and enforcement. The rule for all these weights must not exceed a total value of 1.00. The importance of maintaining and managing mangrove forests well by the community is not only for environmental sustainability but also for their economic and social welfare. Conservation and sustainable management efforts can create a symbiotic relationship between humans and the coastal environment.

The weakness analysis is presented in Table 2. The level of community participation in managing the mangrove forest ecosystem is weak due to community welfare and mindset. The Lack of coordination between each stakeholder will affect mangrove forest management [20]. Based on these weak factors, the highest weight value was obtained at 0.34. Namely, that group organization is still not going well. Effective organization of mangrove groups requires cooperation, commitment and active participation from all

members. With a good organizational framework, this group can become an agent of positive change in mangrove conservation and management. The lowest weight value was obtained at 0.13, namely limited budget, lack of facilities and infrastructure, one of which is roads that are quite difficult to reach and erratic mangrove monitoring.

3.2.2. Externals strategi

The opportunity factors for sustainable mangrove management strategies in Sumber Nadi Village are as follows: (1). The community strongly supports the preservation of mangrove forests because there have never been cases of illegal logging practices. (2). There are village regulations regarding mangrove management. (3) There is a plan for eco-tourism. (4). There is a support program from BPDAS and KPH Way Pisang to help manage mangroves. The existing threat factors for mangrove management in Sumber Nadi Village are as follows: (1). Potential conflict between mangrove managers and pond managers. (2). some parties are disturbed by the addition of land. Environmental conflicts resulting from unequal power relations also arise in mangrove management. This can be seen from the complexity of planning and management, which is often reflected in government policies [21].

Table 3. External factors (EFAS)

Externals strategy factors	Value	Rating	Score
Opportunities (O):			
1. The community strongly supports the preservation of mangrove forests because there have never been cases of illegal logging practices	0.37	4	1.48
2. There are village regulations regarding mangrove management	0.37	3	1.11
3. There is a plan for eco-tourism	0.10	2	0.2
4. There is a support program from BPDAS and KPH Way Pisang to help manage mangroves	0.16	2	0.32
Total Opportunities (O)	1		3.11
Threat (T):			
1. Potential conflict between mangrove managers and pond managers	0.37	3	1.11
2. Some parties are disturbed by the addition of land	0.63	3	1.89
Total Threats (T)	1.00		3.00

The opportunity analysis is presented in Table 3. Based on these opportunity factors, the highest weight value was obtained at 0.37, namely that the community strongly supports the preservation of mangrove forests because there have never been cases of illegal logging practices. Without illegal logging practices, the mangrove ecosystem remains well maintained. The sustainability of this ecosystem supports biodiversity, maintains ecosystem balance, and provides sustainable ecological benefits and the existence of village regulations regarding mangrove management concerns the perception and participation of elements of human behavior that will influence how a human acts [22]. The lowest weight value was 0.10, namely the existence of a plan for eco-tourism. Mangrove management for eco-tourism requires careful and sustainable planning to ensure that tourism activities provide economic and social benefits without damaging the mangrove ecosystem. In developing a region, various aspects are needed which have an important role, especially for regional income. One of the regional incomes in coastal areas is the tourism sector [23].

The threat analysis is presented in Table 3. The highest weight value was obtained with a value of 0.63, namely the presence of parties disturbed by additional land. In contrast, the lowest weight value was obtained at 0.37, namely the potential for conflict between mangrove managers and pond managers. Conflicts between mangrove managers and pond managers can arise due to competition in coastal land use. Some potential conflicts that may arise between these two groups involve differences in interests in resource use and environmental impacts. If coastal land is limited, conflicts may arise regarding the use of resources such as water, land and pond products. These differences in resource allocation can create tension between the two groups.

3.2.3. SWOT diagram

Based on internal factors, namely strengths and weaknesses, as well as external factors, namely opportunities and threats, which have been explained above, a SWOT diagram can be drawn up. The

influence values are based on known scores. The difference for each will be calculated, namely by calculating the total difference between the influence of strengths and weaknesses and the value of the influence of opportunity difference on the threat value of the results shown in Figure 2.

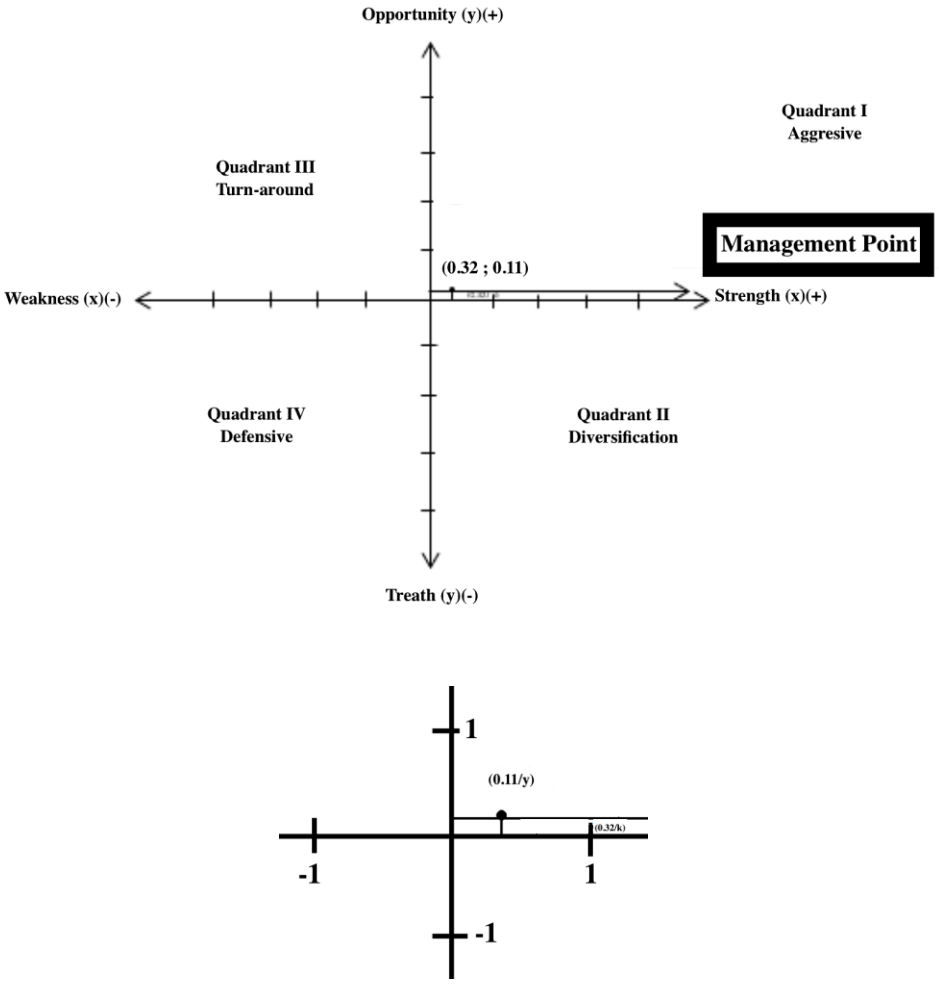

Figure 2. SWOT Diagram

The analysis results show that the strategy position diagram is depicted as being in Quadrant I, aggressively supporting mangrove management strategies. The value of the influence of internal strategy has an internal factor axis = S-W = 3.06 – 2.74 = 0.32 (X axis is 0.32). Likewise, for external values, the external factor axis = O-T = 3.11 –3.00 = 0.11 (Y axis with a value of 0.11). Then, combining the two values of the difference between strengths and weaknesses and opportunities against threats, a coordinate point is obtained, namely the coordinate point (0.32; 0.11). Depicting the point in question on the SWOT diagram, it is known that it is in the Aggressive Quadrant I, which is a very profitable situation.

3.2.4. SWOT matriks

IFAS	**Strenght (S)**	**Weakness (W)**
	1. The condition of the mangrove forest is maintained and well managed by the community, as seen from the high percentage of living mangrove plants. 2. There is a zoning division in mangrove forests, namely protection zones and utilization zones. 3. High level of participation in mangrove management 4. Have an annual work plan that includes outreach activities, guidance, empowerment, protection, utilization, supervision, enforcement and regulations.	1. Lack of understanding and knowledge among some communities regarding mangrove management 2. Group organization is still not going well 3. Limited budget 4. Lack of facilities and infrastructure, one of which is a road that is quite difficult to reach. 5. Mangrove monitoring is erratic outside of scheduled work plans or programs.
EFAS **Opportunities (O)**	**S-O**	**W-O**
1. The community strongly supports the preservation of mangrove forests because there have never been cases of illegal logging practices. 2. There are village regulations regarding mangrove management 3. There are plans for eco-tourism 4. There is a support program from BPDAS and KPH Way Pisang to help manage mangroves.	1. Optimizing community group participation in mangrove forest management 2. Implement village regulations optimally 3. Improved plans for eco-tourism by collaborating with multi-stakeholders 4. Optimizing support programs to implement work plans	1. Increased budget for managing mangroves from multi-stakeholders 2. Increasing the quality and quantity of extension workers
Threat (T)	**S-T**	**W-T**
1. Potential conflict between mangrove managers and pond managers 2. Some parties are disturbed by the addition of land	1. Increasing community compliance with mangrove management 2. Utilization of available land potential	1. Increasing regular outreach activities to increase community understanding and knowledge about mangrove management 2. Maintain communication with the community to avoid conflict.

Optimizing community participation in mangrove forest management is an important step to achieving sustainability of the mangrove ecosystem and ensuring its benefits for the environment and surrounding communities. It is important to involve local communities in mangrove management because they have local knowledge, traditional ecological understanding, and a direct interest in mangrove resources. The utilization of mangrove areas to be developed into eco-tourism areas is a very rational alternative use applied in coastal

areas because it can provide economic benefits and environmental services without exploiting mangroves [24]. Utilization of environmental services in the form of eco-tourism will encourage efforts to conserve mangrove ecosystems as buffer areas for conservation areas. Mangroves in Sumber Nadi Village also have the opportunity to be developed into an eco-tourism attraction. Eco-tourism products offered in mangrove areas must be safe and comfortable, in accordance with the potential of attractive, beautiful and natural resources, facilities and road conditions to tourist attractions that are easy to reach, can fulfill and provide desired satisfaction and experiences that are difficult for visitors to measure.

The development of eco-tourism products in the mangrove area of Sumber Nadi Village must be based on the cleanliness of the mangrove area, the uniqueness and uniqueness of the vegetation and animals of the mangrove ecosystem, facilities, infrastructure, area security, area status and as an effort to support sustainable mangrove preservation. Apart from that, the development of eco-tourism in mangrove areas can also be carried out for educational purposes such as bird watching and animal watching, enjoying the beauty of mangrove vegetation using a wooden bridge (boardwalk), fishing, and boating among the mangrove vegetation. (canoeing) and photographing the beauty and uniqueness of mangrove vegetation and animals as objects of interest.

Improvement of facilities and means for mangrove eco-tourism activities must be based on aspects of conservation, space, safety, and comfort and adapted to the eco-tourism activities offered to obtain the level of visitor satisfaction. Apart from that, offering eco-tourism products must be accompanied by a certain level of competence from the management with the availability of skilled personnel. Area managers must possess competency standards in developing eco-tourism activities, which include knowledge, skills and attitudes in carrying out an activity. Create a network through eco-tourism websites. As well as improving coordination with the District Government so that it is hoped that the mangroves in Sumber Nadi Village will be able to operate sustainably and provide benefits to the surrounding community.

4. Conclusion

The mangrove forest management strategy in Sumber Nadi Village shows quadrant 1 (Strengths-Opportunities), which is often referred to as "Aggressive Strategy", which describes the use of strength to capture or take opportunities. Implementation of this strategy by optimizing community participation in mangrove forest management to develop eco-tourism through multi-party collaboration.

References

[1] I.G. Febryano, D. Suharjito, D. Darusman, C. Kusmana, A. Hidayat, “View of the roles and sustainability of local institutions of mangrove management in Pahawang Island,” *Jurnal Manajeman Hutan Tropis*, vol. 20, no. 2, pp. 69-76. 2014.

[2] Sodikin, “Kelestarian hutan mangrove di Desa Pabean Ilir,” *Pendidikan Geografi GEA*, vol. 12, no. 1, pp. 40-48. 2012.

[3] S. Subekti, “Peran mangrove sebagai ketersediaan materi pangan,” *Prosiding Seminar Nasional Sains Dan Teknologi*, vol. 1, no 1, pp. 29-33. 2012.

[4] W.T. Gantini, S.N. Rahmasari, A. Firmansyah, “Keanekaragaman hayati di kawasan mangrove pantai mekar sebagai modal pengembangan ekowisata,” *Jurnal Resolusi Konflik, CSR, dan Pemberdayaan*, vol. 5, no. 1, pp. 45-51. 2020.

[5] N.L.G. Ratnaningsih, I.G.A.O. Mahagangga, “Partisipasi masyarakat lokal dalam pariwisata (Studi kasus di Desa Wisata Belimbing, Tabanan, Bali),” *Jurnal Destinasi Pariwisata*, vol. 3. no. 1, pp. 45-51. 2015.

[6] P.T. Yatmaja, “Efektivitas pemberdayaan masyarakat oleh kelompok sadar wisata (POKDARWIS) dalam mengembangkan pariwisata berkelanjutan,” *Jurnal Ilmiah Administrasi Publik Dan Pembangunan*, vol. 10, no. 1, pp. 27-36. 2019.

[7] F. Wonodihadrjo, “Komunikasi kelompok yang mempengaruhi konsep diri dalam komunitas cosplay “COSURA” Surabaya,” *Jurnal E-Komunikasi*, vol. 2, no. 3, pp. 1-10. 2014.

[8] C. Wijaya, M. Rifa’i, *Dasar-dasar manajemen mengoptimalkan pengelolaan organisasi secara efektif dan efesien*. Perdana Publishing, 2016. [Online]

[9] W.C. Adinugroho, I.N.N. Suryadiputra, B.H. Saharjo, L. Siboro, *Panduan pengendalian kebakaran hutan dan lahan gambut*. Wetlands International, 2004. [Online] Available: Wetlands International-Indonesia Programme.

[10] Z. Ritonga, *Buku Ajar Manajemen Strategi (Teori Dan Aplikasi)*. CV Budi Utama, 2020. [Online] Available: Books.google

[11] F. Rangkuti, *Analisis SWOT Teknik Membedah Kasus Bisnis*. Jakarta Gramedia Pustaka Utama, 2008. [Online] Available: Indonesia Onesearch
[12] P. Rauch, U.J. Wolfsmayr, S.A. Borz, M. Triplat, N. Krajnc, M. Kolck, R. Oberwimmer, C. Ketikidis, A. Vasiljevic, M. Stauder, C. Mühlberg, R. Derczeni, M. Oravec, I. Krissakova, M. Handlos, "SWOT analysis and strategy development for forest fuel supply chains in South East Europe," *Forest Policy and Economics*, vol. 61, no. 1, pp. 87-94. 2015.
[13] Z. Syaifuddin, D.R. Panuju, "Kesesuaian wisata mangrove di Taman Ekowisata Mangrove Kacepi, Desa Kacepi," *Jurnal Ilmu Tanah dan Lingkungan*. vol. 25, no. 2, pp. 71-77. 2023.
[14] Suriansyah, Makmun, Juwari, "Persepsi dan partisipasi masyarakat dalam pengelolaan hutan mangrove center kariangau graha indah balikpapan," *Jurnal CSR, Pendidikan dan Pemberdayaan Masyarakat*, vol. 4, no. 2, pp. 285-290. 2023.
[15] M. Lugina, I. Alviya, I. Indartik, M.A. Pribadi, "Strategy of mangrove management in Ngurah Rai Grand Forest Park," *Jurnal Analisis Kebijakan Kehutanan*, vol. 14, no. 1, pp. 61-77. 2017.
[16] R. Simbolon, Teori Analisis SWOT, Gramedia, Jakarta, 1999.
[17] A. Robilaong, L. Brillian, R. Dewi, "Analisis strategi pemberdayaan masyarakat petani dalam meningkatkan kesejahteraan ekonomi rumah tangga (Studi Kasus di Desa Jarangan, Kec.Rejoso, Kab. Pasuruan)," *Jurnal Ilmiah Ilmu Pertanian*, vol. 12, no. 1, pp. 30-40. 2022.
[18] A.C. Ferreira, L.D. Lacerda, "Degradation and conservation of Brazilian mangroves, status, and perspectives," *Ocean & Coastal Management*, vol. 125, pp. 38-46. 2016.
[19] S. Eddy, I. Iskandar, M.R. Ridho, A. Mulyana, "Restorasi hutan mangrove terdegradasi berbasis masyarakat lokal," *Jurnal Indobiosains*, vol. 1, no. 1, pp. 1-13. 2019.
[20] D. Wiharyanto, "Kajian pengelolaan hutan mangrove di kawasan perluasan lahan konservasi Desa Karang Rejo Kota Tarakan Kalimantan Timur", *Jurnal Harpodon Borneo*, vol. 4, no. 2, pp. 70-83, 2011.
[21] B.B. Walters, P. Ronnback, J.M. Kovacs, B. Crona, S.A. Hussain, R. Badola, G.F. Dahdouh, "Ethnobiology, socioeconomics and management of mangrove forests: A review," *Aquatic Botany*, vol. 89, pp. 220-236. 2008.
[22] I. Gumilar, "Participation of coastal peoples in the preservation of mangrove forest ecosystems (Case study in Indramayu Regency of West Java)," *Jurnal Ilmu-ilmu Sosial dan Humaniora*, vol. 20, no. 2, pp. 145-153. 2018.
[23] A. Asari, B.H. Toloh, J.R. Sangari, "Pengembangan ekowisata bahari berbasis masyarakat di Desa Bahoi, Kecamatan Likupang Barat, Kabupaten Minahasa Utara," *Jurnal Ilmiah Platak*, vol. 6, no. 1, pp. 29-41. 2018.
[24] E, Karlina, "Strategy of mangrove ecotourism development at Tanjung Baru Beach East Kutai, East Kalimantan," *Jurnal Penelitian Hutan dan Konservasi Alam*, vol. 12, no. 2, pp. 191-208. 2015.