

DEVELOPMENT STRATEGY OF COASTAL VILLAGE BASED ON MARINE TOURISM POTENTIAL IN MUNJUNGAGUNG, TEGAL REGENCY, CENTRAL JAVA

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ABSTRACT

One of the coastal resource that has considerable potential but has not been appropriately managed is marine ecotourism resources. Munjungagung Village has beautiful beaches and is never empty of visitors during holidays. There is also a Fishing and Diving Spot. It can be a potential for marine ecotourism and has an excellent opportunity to develop into mainstay tourism. It is hoped that it can improve the community welfare. This research aimed to study the Coastal Village's plan, which was developed based on the potential for marine tourism in Munjungagung Village. This research used the descriptive method and was conducted from April to November 2021 to determine the potential for marine tourism, psychographics of tourists, the carrying capacity of the area, and a strategic development plan. The data were analyzed using Tourism Suitability Index (TSI), Regional Carrying Capacity, and SWOT. It showed that the tourist sites were still suitable for beach tourism activities, snorkeling, and diving. The TSI of this site is 94.05% which is interpreted as very suitable. The site also fulfills the carrying capacity of tourism, except during the peak holiday season. Based on the calculation, this site can accommodate 300 people per day, and 8 people for snorkeling and diving in an area of 5.0 ha.

Keywords: Marine Ecotourism, Regional Suitability, Carrying Capacity, Larangan Beach

INTRODUCTION

Coastal and marine resources are essential for economic development, and both nationally and globally have high value because of their biodiversity. However, in implementing this management, there are areas where the implementation has not been optimal, resulting in the protection and further utilization of natural resources cannot be reached. The causes are: a) the approach regarding knowledge in planning and management of coastal areas is considered lacking, b) there is limited information and data, which is the basis for making decisions on resource management, c) there is a lack of honesty in the distribution of resources, and d) people who are involved with the government in managing existing resources. So the destruction of these resources and degradation in the environment can affect most coastal communities (Rokhimin Dahuri, 2001).

Tegal Regency has the potential of a coastal area with three sub-districts and 12 coastal villages with a coastline length of 30 Km. The potential of coastal areas can produce and increase Regional Income, which can improve community peace. Marine tourism resources in this coastal area have great potential, but there is no good management yet (Nugroho *et al.*, 2022).

Munjungagung Village or *Larangan* is located in Kramat district, Tegal Regency. It is located on the coast of the Java Sea, which is bordered by Kramat (east), Bongkok (south) to Padaharja (west) villages. This fishing village is located on the district's coast and is known for the tradition of sea alms or *nyadran*, which is routinely held annually. This village is also known for its beautiful beaches, which many tourists visit during holidays, and there are Fishing and Diving Spots. It can be a potential for marine tourism and has an excellent opportunity to continue to be developed into mainstay tourism in Tegal Regency (Rencana Pembangunan

Jangka Menengah Daerah Kabupaten Tegal Tahun 2019-2024, 2019).

Dahuri *et al.*, (2004) stated that marine tourism has a sufficient contribution to boost the economy in Indonesia. Marine tourism also can build jobs and encourage other economic activities or a multiplier effect that can contribute to the country's foreign exchange.

Law Number 10 of 2009 concerning Tourism also explains that in developing tourism, it is necessary to encourage equal opportunities to own a business so that benefits can be obtained and meet challenges regarding changes in local, national, and global life. This activity can be confronted directly with the economic potential that has been damaged because it is not appropriately managed. Evidence has been found where environmental damage, lost biodiversity, pollution, poverty, and the exclusion of residents have been found. It is the result of a wrong conception of development. There is also no comprehensive development policy to understand this sustainable principle (Bumi Aksara, 2009).

Implementing development for the marine tourism sector requires step by step in

accompanying academic instructions. Efforts are needed in basic research so that this application can develop for baseline exploration of environmental and social data with the support of all stakeholders. These stakeholders must have the same point of view, attitude, and behavior in the development of tourism which can produce many benefits in social and environmental aspects.

MATERIALS AND METHODS

Research Design

This research used a descriptive method where research is carried out to present descriptive data with a systematic, factual, accurate description of the facts, nature, and relationships in the phenomenon (Nazir, 2014). This research method collects data in the form of surveys and interviews.

Research Sites

This research was carried out at *Larangan Beach*, located in the Coastal Village, Munjungagung Village, Kramat District, Tegal Regency, Central Java Province, in April - November 2021.

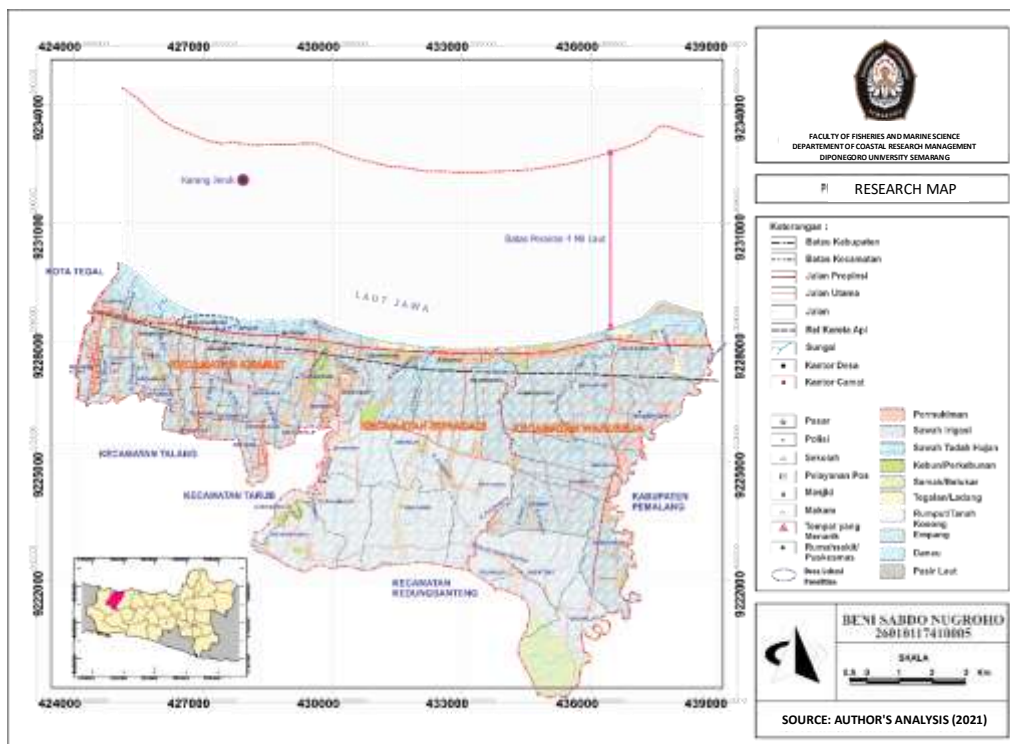


Figure 1. Map of research locations in Larangan Beach, Munjungagung Village, Tegal Regency

This research site was selected based on a review. Munjungagung Village is known for its beautiful beaches that are never empty of visitors, especially when the holidays arrive. There are Fishing and Diving Spots. It can be

potential marine ecotourism and has the opportunity to continue developing into mainstay tourism. It is hoped that this potential can improve the community's welfare.

The north coast of Munjungagung Village has a total coastline length of approximately 2.1 km, known as the *Larangan Beach*. *Larangan Beach* has developed into a beach tourist attraction in culinary tourism activities and

natural panoramas for quite long time. For culinary tourism activities on *Larangan Beach*, there are dozens of stalls on the beach (DKP Central Java Province, 2019).



Figure 2. Larangan Beach in Munjungagung Village, Tegal Regency; (a) View Beach from upward direction, (b) View Beach from west direction, (c) Landmark Larangan Beach, (d) Fishing Spot Location

Marine tourism is a tourist activity in nature with locations on the coast to the sea, which is summarized in coastal tourism, seascapes, and underwater. This tourist village is an area with a lot of potential for attractiveness in tourism by utilizing existing marine resources in marine tourism. The Directorate General of Marine Spatial Management of the Ministry of Maritime Affairs and Fisheries explained implementing the marine tourism village development program in 6 selected locations at the national level in 2021, and Munjungagung Village is one of the selected locations from the *Dewi Bahari* program.

Several villages are included in the coastal area of Kramat District, those are Dampyak, Padaharja, Munjungagung, Bongkok, Maribaya, and Kramat villages. Munjungagung Village was chosen as a marine tourism sector village. This village has a marine ecosystem which has a role in balancing the life of marine biota with capturing fisheries productivity. This ecosystem includes coral reefs with massive coral clusters. Their shape is similar to orange, so people call it "*Karang Jeruk*." In addition, another potential that exists in Munjungagung

Village is its beach tourism which is now starting to be crowded with tourists and is booming in the news, primarily through social media. The beach is "*Larangan Beach*."

Data collection

The data used are primary and secondary data. Secondary data consisted of general conditions, geographical location, topography, and demography from the various institute, namely BPS, BAPPEDA, Tourism Office, local government, and libraries that support research. Meanwhile, primary data consisted of a questionnaire on the assessment of the implementation of K3 in fishing ports; the results of the SWOT questionnaire that was sourced from direct observations in the field and interviews with managers and tourists of the *Larangan Beach*. Respondents who participated in this study were 145 people; 15 people from the Regency Government or Beach Managers, 30 people from the community, and 100 people from tourists so that the research results could be more representative.

Table 1. Data collection tools and materials

No	Tools	Materials
1	Stationary	Secondary and Primary data
2	Questionnaire	The questionnaire results related to the Regional Medium Term Development Plan (RPJMD) of Tegal Regency and the implementation of Coastal Strategic Plan in Tegal Regency
3	Digital Camera	
4	Laptop	

Data analysis

The data was analyzed used a descriptive analysis of the potential for marine tourism by paying attention to the results of the analysis of *Indeks kesesuaian wisata* (IKW) or tourism suitability index (TSI) and the analysis of regional carrying capacity and analysis of the development strategy of Larangan Beach in Munjungagung Village, Tegal Regency.

Tourism Suitability Index (TSI)

Yulianda (in Juliana, 2012) stated that the Tourism Suitability Index (TSI) method has a suitability matrix arranged for each size's interests in supporting activities in the area. The formula used in the suitability of this beach tourism is (Yulianda, 2010)

$$TSI = \sum \left[\frac{Ni}{N maks} \right] \times 100 \%$$

Description :

TSI = tourism suitability index (%); Ni = i-th Parameter Value (weight x score); N max = Maximum value of a tourism category (84)

Carrying Capacity Analysis (CCA)

Yulisa (2016) explained that the calculation of the carrying capacity of this area is a calculation of the power developed for marine ecotourism where the concept of regional carrying capacity is formulated as follows (Yulisa Noerma et al., 2016):

$$CCA = K \times Lp/Lt \times Wt/Wp$$

Description:

CCA = Carrying capacity Analysis; K = Ecological potential of visitors per unit area; Lp = area or length of the area utilized; Lt = Unit area for a certain category; Wt = Time provided by the area for tourism activities in one day; Wp = Time spent by visitors for each particular activity

Development Strategy Analysis

Analysis of *Larangan* Beach development strategy in Munjungagung Village used a SWOT analysis with the interview method to competent respondents (key person) using an in-depth questionnaire tool.

RESULTS AND DISCUSSION

Tourism Suitability Analysis

This similarity is characteristic, this is the criteria for resources and the environment used in meeting the needs of tourism development. In measuring the Tourism Suitability Index on the research locations shown in **Table 2**, the land suitability study is one of the elements in analyzing the strength of support in the area for tourism. The availability of land on *Larangan* Beach has been used for buying and selling activities such as food and drinks, toys, a large parking area, toilets, and public toilets.

Based on the questionnaire data processing results, the lands in *Larangan* Beach tourist area, Munjungagung Village are generally used to enjoy the natural scenery, fishing, and playing water.

Land suitability for marine tourism on Larangan Beach, Munjungagung Village will be explained descriptively. Descriptive analysis was obtained based on direct observations in the field and relevant oceanographic aspects for tourism activities. According to Yulianda (2010), there are several criteria in the regularity of this beach tourism, such as depth, beach width, Water base material, currents, beach slope, water transparency, the coastal land cover, hazardous biota, and Freshwater availability (Yulianda, 2010). The table below will explain the suitability of tourism on Larangan Beach, Munjungagung Village, Tegal Regency.

Table 2. Matrix of Suitability of Larangan Beach Tourism Area in Munjungagung Village

No	Parameters	Value	Larangan Beach		N _{maks}
			A	Score	
1.	Depth (m)	5	3	15	15
2.	Beach Types	5	3	15	15
3.	Width of Beach (m)	5	3	15	15
4.	Water base substrate	3	2	6	9
5.	Current (m/s)	3	3	9	9
6.	Slope (°)	3	3	9	9
7.	Brightness (%)	1	3	3	3
8.	Land cover	1	3	3	3
9.	Dangerous Biota	1	1	1	3
10.	Freshwater availability (km)	1	3	3	3
Total		:		79	84
Tourism Suitability Index (%)		:		94.05	
Category		:		S1	

Description: N_{Max} for beach tourism is 84

Depth (m)

The results of depth measurements at the research location showed that Larangan Beach, has a depth ranging from 0.28-1.5 m, with a depth range of 0.3-1 m. The varying depth range is measured from the shoreline to 100 m towards the sea. Tourists usually carry out beach tourism activities no more than a distance of 200 m and a depth of no more than 1.5 m. This depth and distance are considered safe for tourists visiting Larangan Beach, Munjungagung Village, Tegal Regency.

Beach Type

.The type of beach in the research location is a black sand beach. Beaches with black sand are generally less attractive to tourists than white, muddy, or rocky sands. The level of comfort of tourists in carrying out tourist activities influenced it, especially beach tourism. The color and type of sand provide its aesthetic value for tourists. Yulianda (2010), in her tourism suitability matrix, stated that the type of beach with white sand is more suitable for tourism activities than other types of beaches (Yulianda, 2010).

Width of Beach (m)

The width of Larangan Beach, Munjungagung Village, Tegal Regency varies, ranging from 11.35 to 48 m. The wider the beach, the better it is to be a tourist attraction. The tourists can use the beach to carry out activities from leisurely walking, sunbathing, documenting,

cycling, playing sand, and so on (Jimmy Margomgom Tambunan et al., 2013).

Water Base substrate

The water base material or substrate in Larangan Beach, Munjungagung Village, Tegal Regency is generally sand. Although there are some coral fragments, these waters are still worthy of tourism.

Current (m/s)

The Current conditions in Larangan Beach, Munjungagung Village, Tegal Regency are influenced by tidal currents and seasonal currents. This current has an order speed indicated at 0.01 to 0.9 m/sec, which states that this condition can be influenced by winds whose direction changes throughout the year, with two wind directions, namely southeast and southwest.

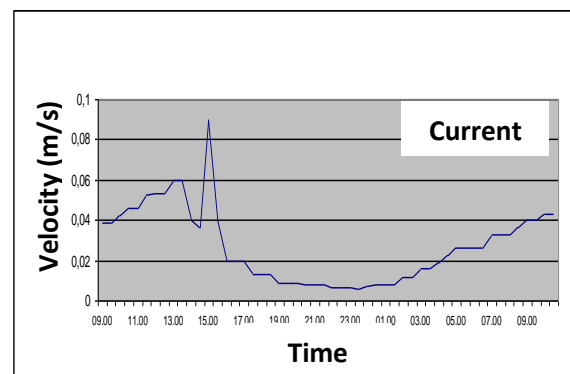


Figure 3. Graph of Current velocity of Larangan Beach, Tegal Regency (Source DKP Central Java Province, 2019)

Slope (°)

The slope at the research site ranges from 0.258° to 2.576°. This value belongs to the flat beach category. A flat beach will be more suitable for tourist areas. The beach slope <10° is in the flat beach category, while 10°-25° is in the sloping category, and >25° is in the steep category (Yulianda, 2010).

Brightness (%)

The results of study showed that the brightness reached 30%. It is because the waters of Larangan Beach and its surroundings include shallow waters in the north coast with sandy mud substrate so that light penetration cannot penetrate the bottom of the waters.

Land cover

Land cover on Larangan Beach, Munjungagung Village, Tegal Regency is open land, and there are several types of trees such as coconut, cypress, ketapang, hibiscus trees, and others. This location is still in the stage of improvement to be developed into an ecosystem-based marine tourism village object.

Dangerous Biota

Observation activities on this hazardous biota must be carried out by anticipating dangers that threaten tourists. The dangerous biota commonly found in Larangan Beach is jellyfish. Jellyfish are usually clustered and visible so that tourists can avoid them. Prevention can also be done through verbal warnings, as well as through warning boards.

Freshwater Availability

The availability of freshwater at Larangan Beach, Munjungagung Village, Tegal Regency, and surrounding areas is still sufficient. The distance from tourist sites is also relatively close (<100m). Freshwater availability is essential to support life, including tourism activities (Yulisa Noerma *et al.*, 2016).

Carrying Capacity Analysis (CCA)

The Tourism Suitability Index of *Larangan Beach* and its surroundings are appropriate (S2). This carrying capacity analysis was carried out to manage ecotourism areas. The results of the CCA calculation of the beach and snorkeling tours are presented in **Table 3**. It is shown that the ecological potential of tourists in beach activities is one person with a unit area of 50 m long beach. Meanwhile, snorkeling and diving tourism activities that have the ecological potential of tourists are one person with a unit area of 100 m². In doing activities on the beach, it can be assumed that each people spent the time for three hours, so the total time that tourists need is nine hours in a day. Then, the time spent by tourists doing snorkeling activities can be assumed for six hours a day. This time has been determined by the tourist area, which depends on the area's management. The information obtained is information from the tourism manager, who stated that this beach tourism activity is open at 06.00 - 17.00 WIB, in addition to snorkeling and diving activities starting at 06.00 - 12.00 WIB.

Table 3. Carrying Capacity of *Larangan Beach* Tourism Area

No	Location	K*	Lp (m ²)	Lt* (m ²)	Wt (Hour)	Wp* (Hour)	DDK (People/day)
Beach tourism							
1.	Larangan Beach	1	5.000	50	9	3	300
No	Location	K*	Lp (m ²)	Lt* (m ²)	Wt (Hour)	Wp* (Hour)	DDK (People/day)
Snorkling & Diving							
1.	South Side Spot of the Lighthouse	1	2.000	500	6	3	8

The accumulation of tourists in the location is caused by Larangan beach, a leading tourist icon in Munjungagung Village, Tegal Regency. Its strategic location is close to the north coast route. This location also sometimes experiences over-carrying capacity during

holidays and New Year. It is necessary to improve infrastructure, especially the road to Larangan Beach, Munjungagung Village, Tegal Regency. Later this location can be used as a tourist location with limited utilization while maintaining the sustainability of the ecosystem.

The research location for snorkeling and diving tourism, Larangan Beach, Munjungagung Village, Tegal Regency, is south of the lighthouse (Limited Utilization Zone) and has a utilization area of 2,000 m². The area of this utilization has an area carrying capacity of 8 people/day. With a total of 6 hours provided for one day, and the time used by visitors for snorkeling activities for 3 hours, the number of visitors that can be accommodated at that location is 16 people in one day.

According to Putra *et al.*, (2015), the analysis of tourism carrying capacity compares the area used by tourists with the average individual standard that has been determined with the efficiency of visiting time (Putra *et al.*, 2015). Hamzah (2012) stated that the area's carrying capacity is the maximum number of visitors that the area can physically accommodate at a particular time without causing disturbance to nature and humans (Hamzah, 2012).

The area's carrying capacity is different in each location, even at certain times and conditions. Rahadi *et al.*, (2017) stated that the carrying capacity of an area is not static (a fixed amount) but varies according to the bio geophysical (ecological) conditions of the area in question and also the human demand for natural

resources and environmental services (goods and services). Human activities and natural phenomena such as natural disasters can reduce the carrying capacity of an area. The area carrying capacity can also be maintained and even increased if the proper management or application of technology is carried out (Rahadi *et al.*, 2017).

Marine Ecotourism Development Strategy with SWOT Analysis

According to Damanik *et al.*, (2006), SWOT analysis is one of the methods used to identify the relationships of ecotourism resources with other resources. All parties, especially local communities, need to know the strengths and weaknesses of ecotourism areas and objects (Damanik & Weber, 2006).

The SWOT matrix connects four strategic possibilities, namely using strengths to take advantage of current opportunities (SO strategy), using strengths to overcome threats faced (ST), taking advantage of opportunities to minimize weaknesses (WO), and minimizing weaknesses to avoid threats (WT). Alternative strategies are outlined in the SWOT matrix in **Table 4**.

Table 4. Results of the SWOT matrix analysis

<p>Internal</p> <p>Eksternal</p>	<p><i>Strengths</i></p> <ol style="list-style-type: none"> 1. Attractive natural and underwater beauty 2. Economic growth from tourism activities 3. Number of tourist visits to Larangan Tinggi Beach 4. Strategic position near the Pantura Line and the city centre 5. Community-based tourism management and government support 6. Fairly good promotion and marketing strategy 7. Community organizations or institutions play a role in tourism management 	<p><i>Weakness</i></p> <ol style="list-style-type: none"> 1. Insufficient infrastructure 2. Insufficient tourism support facilities 3. There is no set entry fee for tourism objects 4. Limits of the carrying capacity of tourist areas 5. The professionalism of the workforce in the tourism sector is still low 6. Distinctive souvenirs and culinary tours at Larangan Beach do not yet exist
	<p><i>Opportunities</i></p> <ol style="list-style-type: none"> 1. The existence of other tourist objects around Larangan Beach 2. Government policy 3. UPT CDKWB DKP Prov. Central Java 4. The image of a good tourist attraction 	<p>S-O strategy</p> <ol style="list-style-type: none"> 1. Maintaining the sustainability of coral reefs and resources (S1, S3, S6, O1, O2, O4, O5) 2. Maximizing the potential management by adding attractions or education-based tour packages (S1, O1, O3, O4, O5,) 3. Increasing tourism promotion in tourist areas that are suitable

5. Tourist interest in sea tourism objects is high	and still empty of visitors (S2, S3, S4, S7, O1, O2, O5,)	carrying capacity in certain areas during peak season (W4, O1, O2, O3, O4, O5)
Threats 1. Environmental quality decline due to tourism activities 2. Dangerous biota 3. International market potential	S-T strategy 1. Socialization of coral community conservation programs to the public and tourists (S3, S6, T1, T2)	W-T Strategy 1. Prepare a local professional workforce in tourism through training (T3, W5, W6) 2. Efforts to prevent damage to coral reefs (W3, W4, W5, T1)

CONCLUSION and SUGGESTION

The conclusions that can be drawn from the research "Strategy for Coastal Village Development Based on Marine Tourism Potential in Munjungagung Village, Tegal Regency, Central Java Province" is this study showed that the tourist sites in the research area were still suitable for beach tourism activities, snorkeling, and diving. The suitability class of this site has an IKW value of 94.05% and is included in the S1 category (Very Suitable). The site also meets the carrying capacity of tourism, except during the peak holiday season. Based on the calculation, this site can accommodate 300 people per day, and eight people for snorkeling and diving in an area of 5.0 ha. The government and tourism managers should apply the concept of Regional Carrying Capacity (DDK) in a real way to avoid over carrying capacity. In addition, it is necessary to develop a business unit and a tour guide agent must meet the requirements to become a guide.

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REFERENCES

Rencana Pembangunan Jangka Menengah Daerah Kabupaten Tegal Tahun 2019-2024, (2019).
 Bumi Aksara. (2009). *Undang-undang Republik Indonesia Nomor 10 Tahun 2009 tentang Kepariwisataaan*.
 Damanik, J., & Weber, H. (2006). *Perencanaan Ekowisata: dari Teori ke Aplikasi*. Andi Offset.
 Dinas Kelautan Provinsi Jawa Tengah, 2019. Laporan Akhir Penyusunan Kajian Pencadangan Kawasan Konservasi di

Jawa Tengah Kawasan Konservasi Perairan Karang Jeruk Kabupaten Tegal. Hamzah. (2012). *Model Pengelolaan Pencemaran Perairan Pesisir Bagi Keberlanjutan Perikanan dan Wisata Pantai Kota Makassar* [Disertasi]. Institut Pertanian Bogor (IPB).
 Jimmy Margomgom Tambunan, -, Sutrisno Anggoro, -, & Hartuti Purnaweni, -. (2013). Kajian Kualitas Lingkungan dan Kesesuaian Wisata Pantai Tanjung Pesona Kabupaten Bangka. *Prosiding Seminar Nasional Pengelolaan Sumberdaya Alam Dan Lingkungan*. <http://www.psil.undip.ac.id>
 Moh. Nazir. 2014. Metode Penelitian. Bogor: Ghalia Indonesia
 Nugroho, B. S. , Purwanti, F. , Purnomo, P. W. , & Adlina, A. (2022). Coastal Village Development Strategy Based On The Potential Of Marine Tourism In Analyzing The Suitability Of Beach Tourism In Munjungagung Village, Tegal Regency, Central Java Province. *International Journal of Social Service and Research*, 2(3), 190–197.
 Putra, A. C., Anggoro, S., Kismartini, D., Lingkungan, M. I., Manajemen, D., & Pantai, S. (2015). Strategi Pengembangan Ekowisata Melalui Kajian Ekosistem Mangrove Di Pulau Pramuka, Kepulauan Seribu (Ecotourism Development Strategy with Mangrove Ecosystem Studies at Pramuka Island, Kepulauan Seribu). *Saintek Perikanan : Indonesian Journal of Fisheries Science and Technology*, 10(2), 91–97. <https://doi.org/10.14710/IJFST.10.2.91-97>
 Rahadi, B., Lusiana, N., & Elih Nurlaelih, E. (2017). Penentuan Status Daya Dukung Lingkungan Berbasis Kesesuaian Lahan Dan Keseimbangan Lahan Di Kota Batu, Jawa Timur, Indonesia. *Journal of Environmental Engineering and Sustainable Technology*, 3(2), 128–135.

<https://doi.org/10.21776/UB.JEEST.2017.003.02.9>

- Rokhimin Dahuri. (2001). Pengelolaan Ruang Wilayah Pesisir Dan Lautan Seiring Dengan Pelaksanaan Otonomi Daerah. *Jurnal Unisba*, 139–171.
- Yulianda, F. A. F. A. A. H. S. H. Kusharjani. K. S. H. (2010). *Pengelolaan Pesisir dan Laut Secara Terpadu*.
- Yulisa Noerma, E., Johan, Y., & Hartono, D. (2016). Analisis Kesesuaian Dan Daya Dukung Ekowisata Pantai Kategori Rekreasi Pantai Laguna Desa Merpas Kabupaten Kaur. *Jurnal Enggano*, 1(1), 97–111.
<https://doi.org/10.31186/JENGGANO.1.1.97-111>