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## Suitability evaluation of the potential of Ria Kenjeran Beach as marine ecotourism in Surabaya City

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**Abstract.** Ria Kenjeran Beach (Ken Park) is a beach that has been developed with various types of various and modern attractions for marine tourism in the city of Surabaya. The limited number of ecotourism and the need for recreation to increase and the large population of Surabaya is a great opportunity. This study aims to evaluate 1) potential seen from attractiveness, accessibility, infrastructure and promotion, 2) coastal area suitability, and 3) development strategies. This study was survey research. The samples selected 100 tourists by using accidental random sampling. Data sources were taken from the result of interviews of respondents and parties involved in managing this area. Data analysis for potential data conducted in scoring, suitability evaluation applied a matrix analysis and strategy of development used SWOT analysis. The results obtained a score of 13,135 in the high category. The value of conformity matrix was 50 including the corresponding criteria (S1). Priority strategies used for ecotourism development are: Increasing the quantity and quality of attractions, Creating rides packages at affordable prices, Improving potential (attractiveness, accessibility and infrastructure), Improving the quality of human resources, Improving promotion, Establishing cooperation with several parties, Improving facilities Infrastructure, Developing attractions that promote local value and are environmentally friendly, Renew attractions and improve quality in order to compete, Improve security, Build integrated cooperation to develop ecotourism, Form a responsible supervisory group. Keyword: suitability evaluation, potential, ecotourism.

### 1. Introduction

The State of Indonesia has an area of territorial waters covering 6,315,222 km<sup>2</sup>, with a coastline length of 99,093 km. Ownership of natural resources can be capital for an area to be managed wisely. The management and utilization of natural resources is a true hope for all nations in an effort to achieve the welfare of the community and the environment in order to stay awake [1].

The wealth of natural resources on the coast can be utilized for ecotourism. According to [2], ecotourism is an effort to promote responsible tourism, preserve the environment and improve welfare. Ecotourism is a sustainable development tool and provides social, environmental and economic benefits [3]. Ecotourism is responsible Travel to natural areas which conserves the environment and improves the welfare of the local people. Based on sustainability principle, it primarily focuses on experiencing and learning about nature, is ethically managed, non-consumptive, locally oriented and contributing to conservation and preservation of such areas [4][5][6]. Surabaya is a city located in the coastal area with a length of 47.4 km (Surabaya City Marine Service, 2016). Although the type of beach is muddy, the manager develops according to the characteristics of the beach into a tourist area of Ria Kenjeran Beach. Since 1975 began to build accessibility, infrastructure, and attractions by using the concept of Chinese culture. Available attractions such as a waterpark, a monument of the god chess advance, grand studio, sky palace building, building KEP, pet ground, atlantisland, mandarin



courses, kya-kya shio, circuits, boating, horse riding and more. This tourist attraction seems spacious, beautiful, comfortable and quiet with an area of about 100 ha (Manager, 2017). Ria Kenjeran Beach visitor data from year to year shows an increase. In 2014 there were 715,918 visitors, in 2015 there were 715,690 visitors, and in 2016 there were 740,800 visitors [7].

The city of Surabaya has limited tourism objects and certainly has a great opportunity to visit, especially the shift of interest in the community to choose natural attractions. [8] states that tourism has become the trend of modern life because human activities have broad dimensions, ranging from the need to have fun so that it creates economic, social and cultural activities, educational, religious, sports and scientific activities. In addition to these factors, the increase in demand was also influenced by population growth which increased by 5211,025 people [9]. Ria Kenjeran Beach was developed into marine ecotourism. Marine tourism is a tourism activity based on coastal and marine resources by including aspects of education and interpretation of the environment and community culture. The beach aims to reach a wider market that includes all levels of society, age groups with choices of attractions. Ticket prices are relatively cheap between Rp. 15,000 - Rp. 20,000, so this factor is also a magnet for people to visit.

Ria Kenjeran Beach has a fairly large area with various types of attractions, ticket prices are relatively cheap, the number of natural attractions is limited, the population is quite large but the number of visits shows not in line with expectations even though there is an increasing trend. This can be seen from the lack of every attraction found in the area of the tourist attraction. That factor is the background of the need for research by evaluating the suitability of potential as marine ecotourism in the city of Surabaya.

## 2. Method

This paper was a survey research. Samples obtained by 100 tourists were taken by accidental random sampling. Data sources come from interviews of respondents and parties involved in managing this area. Analysis techniques to evaluate potential by using scoring techniques from Likert scale, conformity matrix from [10] and SWOT analysis to determine the development strategy.

### 2.1. Potency

This analysis is carried out to determine the potential that exists in objects that include attractiveness, accessibility of infrastructure and promotion. To measure variables that are prepared based on the potential of using scoring with a Likert scale. Potential objects are measured using 50 questions. Each question is given 4 choices (very good, good, bad and very bad). The minimum total score obtained is 5000 while the highest score obtained is 20,000. The indicators include the attractiveness of 20 questions, accessibility of 5 questions, infrastructure facilities of 20 questions and promotion of 5 questions. Potential criteria are grouped into 4, namely: 1) very low potential if the score is between 5000-8750, 2) low potential if the score is between 8751-12500, 3) high potential if the score is between 12501-16250, and the potential is very high if the score is between 16251 - 20000.

### 2.2. Marine Ecotourism Suitability

The assessment is carried out based on the weighting and the value indicated in the magnitude of the score. Furthermore, a combination of different class values was used to determine the maritime ecotourism suitability classification. The analysis was carried out using a conformity matrix that was arranged based on the importance of each parameter. The following is the formula for tourist suitability of [10] as shown in table 1.

**Table 1.** Land Suitability Index for Marine Ecotourism (Beach Recreation)

Parameter	Score	Category	Score	Category	Score	Category	Score	Category	Score
1 Depth of water (m)	4	0-5	4	>5-10	3	>10-15	2	>15	4
2 Brightness (%)	4	>75	4	>50-75	3	>25-50	2	<25	4
3 Basic water material	4	Sand	4	Sandy coral	3	Muddy Sand	2	Mud	4
4 Beach type	7	Sandy	4	Sandy, a	3	Sand and	2	Mud, steep	4

					little coral		coral a little steep		reefs, mangroves	
5	Land cover	3	Coconut tree, open field	4	Scrub bush, savanna	3	Tall bush	2	Mangroves, settlements, ports	4
6	Distance of availability of fresh water (m)	3	<500	4	500-1000	3	>1000- 2000	2	>2000	4

Source: Cahyadinata (2009)

### 2.3. SWOT Analysis

The strategy for developing mangrove ecotourism is done using SWOT analysis. SWOT analysis is the identification of various factors that can be systematically used to formulate organizational strategies [11]. This analysis is based on the logic that can maximize strengths and opportunities but simultaneously can minimize weaknesses and threats. The use of SWOT analysis to compare external factors and internal factors. External factors consist of opportunities and threats, while internal factors consist of strengths and weaknesses. Besides that, SWOT analysis can also be used to determine the priority of a tourism object development strategy.

## 3. Results and Discussion

Ria Kenjeran Beach or Ken Park or Kenjeran Baru is located on Sukolilo street number 100, Kenjeran Village, Bulak Surabaya District. In 1975 developers of Ria kenjeran Beach organized accessibility, attractiveness, infrastructure, and promotions so that the longer visitors increased. The increase in the number of visitors is due to the needs of the community and the limited number of natural tourism objects.

Ria Kenjeran Beach which is managed by PT. Ginting Jaya, located in an area of 100 ha which currently has a variety of attractions. Attractions provided make use of the coastal environment as a backdrop, such as the Waterpark, Sanggar Agung Temple with a statue of the Kwan I'm Goddess on the seashore, the Palace of Heaven building, the Front Chess God Statue in front of the temple, KEP Building, Kya-kya Shio, Pet Ground, Circuits, Chinese language courses, boating, horse riding, outbound, futsal courts, mini trains that can be used to tour the Kenpark area, and others. Ken Park, which is open 24 hours, is also equipped with motel accommodations [7].

### 3.1. Marine Ecotourism Potential

The results of the research related to the potential by using indicators of attractiveness, accessibility, infrastructure, and promotion obtained a total score of 13,135, including the high category. The total score was obtained from the attraction of 5,474 high categories, accessibility of 1,315 high categories, the infrastructure of 5,218 high categories and promotion of 1,128 low categories.

The attraction of this beach attraction includes high categories. This attraction is influenced by various attractions in tourist attractions. Visitors are more pleased with the choice of many attractions because they can more freely choose the attractions they like. Another attraction is the area is quite wide, with an area of 100 ha and many trees make this tourist area feels beautiful, shady and comfortable so that visitors can linger for a long time. There is ample parking space in several places that can accommodate various types of vehicles. Parking lots are found in every type of attraction quite broadly.

The value of attraction in this tourist attraction still needs to be improved because in some buildings it looks damaged and dirty so it needs to be repaired. Some buildings that need to be repaired include motels, circuit venues, horse racing, sky palace buildings, kya-kya shio, face chess statue in front of the pagoda and KEP Building. Managers need to make immediate repairs to increase the number of visitors.

In addition to the attraction of attractions, a high potential is obtained from easy accessibility. The distance is around 10 km from the city center, the road is wide asphalt and can be passed by all

types of vehicles both private and public. Close distance and good road conditions so as to minimize travel while saving travel time.

Infrastructure facilities are categorized as high because in this tourism object has the complete infrastructure needed by visitors. Infrastructure facilities complement all attractions that are far apart. Although included in the high category, the infrastructure facilities are still not suitable for use, so it needs a lot of attention. The promotion has been carried out by the manager through the print and electronic media. However, the promotion carried out so far is still lacking in frequency, less extensive and less diverse. This causes the results to be less than optimal so that promotions are categorized as low. In addition, it seems that what is conveyed with reality is not the same so that visitors tend to be disappointed. Overall, the potential of the Kenjeran beach tourism object is high but still needs to be considered in several components.

The attraction of this tourist attraction needs to be improved, among others, by planting mangroves to expand the mangrove area. This is because the type of beach is muddy which makes it easy for mangroves to live well. If the mangrove area grows wider it can be used for various purposes such as education, research, and conservation. Conservation approach is a characteristic of marine ecotourism development[12]. [13] argues that marine ecotourism is a form of tourism managed by a sustainable approach, where: 1) natural management is directed towards the preservation of coastal and marine resources, 2) cultural management directed towards the welfare of coastal communities, 3) activities conservation is directed to maintain the sustainable use of resources that are owned in a sustainable manner.

The application of maritime ecotourism is a program that utilizes the environment with multiple advantages, namely to gain economic benefits and benefit from the sustainability of natural ecosystems[14]. The management of urban settings has become very relevant to the environment and is very relevant to, but it is very relevant to, but it is now very relevant to, but it is very relevant to the environment [15]. The results of the research from [16] stated that in Kangean Island, it has high potential to be developed as marine ecotourism with an attractive indicator of the attractive category of 62.5%. The attraction due to the condition of the waters on Kangean Island is very beautiful with white sand, coral reefs are still good, there is a relatively calm current even though there are sometimes big but clear waves.

### 3.2. Land Suitability for Marine Ecotourism

This marine ecotourism area will be developed with the aim of adding insight, experience, outbound, educational and recreational facilities. To support this program, the suitability of the ecotourism area is evaluated as a marine ecotourism by using the suitability index of [10]. Based on the calculation of the regional suitability index (IKW), the marine ecotourism area of Ria Kenjeran Beach obtained a value of 50 with the appropriate criteria (table 2).

**Table 2.** Land Suitability Index for Marine Ecotourism (Beach Recreation)

	Parameter	Score	Category	Score	Total Value
1	Depth of water (m)	4	0-5	4	16
2	Water Brightness (%)	4	>25	1	4
3	Basic water material	4	Muddy Sand	2	8
4	Beach type	7	Mud, coral, steep, mangrove	1	7
5	Land cover	3	Mangroves, settlements, ports	1	3
6	Distance of availability of fresh water (m)	3	<500	4	12

<b>Total</b>	<b>50</b>
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Information : The IKW (Travel Suitability Index) value is 75-100% very suitable, 50-74% is suitable, 25-49% is not suitable, IKW <25% is not suitable.

The total value shows that the ecotourism area is suitable for development as a marine ecotourism in the city of Surabaya. Tourist activities for beach recreation do not use the beach directly because the types of beaches are muddy, the only beach activity that is directly boating. The manager provides several boats for visitors who wish to boat to Pasir Island, which is about 6 km away and costs Rp. 15,000.

Managers provide more varied attractions by using the background of the coastal area. Like the view of the mangrove forest, the view of the statue of the goddess Kwan im that can be seen at the full moon. Atlantis line is an attraction planned to be built by utilizing the coastal environment. Aswita's research, D., and others conducted at Teupin Layeu Beach Iboih obtained an IKW value of 73%. This value indicates that the beach is suitable as a marine ecotourism area for beach recreation. Activities on the beach are sunbathing, playing sand, playing water, swimming, and snorkeling for children and beginners.

### 3.3. SWOT Analysis

**Table 3. I-FAS Ecotourism Bahari**

No	Internal Factors	Score	Rating	Score
<b>Strength (S)</b>				
S1	Beach area is very wide	0.20	4	4
S2	High and Variative Attraction	2.15	3	1
S3	High accessibility	0.13	3	2
S4	Complete infrastructure	0.14	3	1
S5	Land suitability	0.12	4	1
S6	Community support	0.13	2	4
S7	City government support	0.13	2	0.26
<b>Total Score</b>		<b>1.00</b>		
<b>Total Strength</b>				<b>3.00</b>
<b>Weakness (W)</b>				
W1	Low human resource quality	0.12	-2	<b>-0.24</b>
W2	Governance is not right	0.14	-2	<b>-0.28</b>
W3	Estimated negative impact	0.13	-2	<b>-0.26</b>
W4	Less promotion	0.28	-3	<b>-0.84</b>
W5	Some infrastructure is dirty, damaged, poorly maintained	0.19	-3	<b>-0.57</b>
W6	Lack of cooperation with other fields	0.14	-2	<b>-0.28</b>
<b>Total Score</b>		<b>1.00</b>		<b>-2.47</b>
<b>Total Strength</b>				
<b>Total Strength-Weakness</b>				<b>0.53</b>

**Table 4. E-FAS Ecowisata Bahari Ria Kenjeran Beach**

No	External Factors	Score	Rating	Score
<b>Strength (S)</b>				
O1	Increasing interest in natural tourism	0.10	4	0.40

O2 Policies related to marine ecotourism development	0.10	3	0.30
O3 Everyone's basic needs	0.12	3	0.36
O4 Increasing community employment opportunities	0.11	3	0.33
O5 Increased community income	0.11	3	0.33
O6 The type of ecotourism in the city is limited	0.13	4	0.52
O7 Large population	0.12	3	0.36
O8 The existence of nearby tourism objects	0.12	3	0.36
O9 Ports and airport are available	0.05	2	0.10
O10 Increasing number of foreign tourists	0.04	2	0.08
<b>Total Score</b>	<b>1.00</b>		
<b>Total Strength</b>			<b>2.81</b>
<b>Weakness (W)</b>			
W1 Weakening local values	.21	2	-0.42
W2 Environmental damage	0.19	-2	0.38
W3 The emergence of new tourism	0.23	-3	-0.69
W4 Weak coordination between sectors	0.15	-2	-0.30
W5 Visitor behavior	0.22	-3	-0.66
<b>Total Score</b>	<b>1.00</b>		
<b>Total Weakness</b>			<b>-2.45</b>
<b>Total Strength-Weakness</b>			<b>0.36</b>

Information : Rating 1 = very weak, 2 = weak, 3 = strong, 4 = very strong, -1 = very strong, -2 = strong, -3 = weak, -4 = very weak.

**Table 5.** SWOT Matrix of Marine Ecotourism Development Strategy of Ria Kenjeran Beach

Table 3: SWOT Matrix of Marine Ecosystems Development Strategy of Raja Kenjeran Beach			
		Strength	Weakness
<div> <div>Internal</div> <div>Eksternal</div> </div>	Opportunity (O)	Area of the coastal area	Low Human Resources quality
		High attraction	Unstable number of visitors
		High accessibility	Estimated negative impact
		Complete infrastructure facilities	Less promotion
		Land suitability	Some infrastructure is not feasible
		Community support	Lack of cooperation with other fields
		City government support	Many buildings that seem dirty, damaged are not well maintained
		Estimated positive impact	
			Strategy SO

Increasing interest in natural tourism	1. 1. Increase the number and quality of attractions	1. Improve the quality of human resources
Government policy related to the development of marine ecotourism	2. Make a ride package at an affordable price	2. Increase promotion
Basic needs for everyone	3. Improvement of potential (attractiveness, accessibility, and infrastructure)	3. Cooperating with several parties
Increasing community employment opportunities		4. Repair of infrastructure
Increased community income		
The type of ecotourism in the city is limited		
Large population		
The existence of other nearby tourism objects		
There are ports and airports		
Increasing number of foreign tourists		
Threat (T)	Strategy ST	Strategy WT
The weakening of local cultural values	2. 1. Development of attractions that prioritize local values and are environmentally friendly	3. 1. Building an integrated collaboration to develop ecotourism
Environmental damage	2. Renew attractions and improve quality in order to compete	2. Form a responsible group of respondents
The emergence of ecotourism	3. Improve security	
Weak coordination between sectors		
Visitor behavior		

**Table 6.** Priority strategies for the development of marine tourism in Ria Kenjeran Beach

No.	Strategi	Bobot	Rating	Jumlah Nilai	Prioritas
1.	Increase the number and quality of attractions	0.12	3	0.48	1
2.	Make a ride package at an affordable price	0.11	4	0.44	2
3.	Improvement of potential (attractiveness, accessibility and infrastructure)	0.13	4	0.42	3
4.	Improve the quality of human resources	0.04	2	0.08	11
5.	Increase promotion	0.10	3	0.30	4
6.	Collaborating with several parties	0.06	1	0.06	12
7.	Improvement of infrastructure	0.09	2	0.18	7
8.	Development of attractions that promote local values and are environmentally friendly	0.06	2	0.12	9
9.	Renew attractions and improve quality in order to compete	0.07	3	0.21	6
10.	Improve security	0.05	2	0.10	10
11.	Building integrated collaboration to develop ecotourism	0.09	3	0.27	5
12.	Establish responsible supervisory groups	0.08	2	0.16	8



Based on the calculation of the I-EFAS value, it can be seen that the development of this coastal marine ecotourism is in the 1st quadrant. Quadrant 1 indicates the growth in ecotourism. Although it is in a position of growth or strong attention to the management, especially in terms of developing promotions through packages in the vehicle at Ria Kenjeran Beach at an affordable price. Before conducting promotional activities there must be ready for visitors to visit. Increased attractiveness through additional new attractions and improving buildings and improving the quality of infrastructure so that they do not appear dirty, damaged and poorly maintained. The management said that for the next plan, a new vehicle will be opened in the form of Mini Theme Park and Atlantis Line like in Singapore.

Research conducted by Rini [16], in Kangean Island, obtained priority scales, the need for 1) managing community-based marine tourism, 2) increasing promotion and publication, 3) improving access to transportation, 4) nurturing and training in marine tourism, 5) enhancing stability in regional security, 6) zoning division of fisheries and tourism utilization and 7) increasing cooperation between related sectors to face high competition.

#### 4. Conclusion

The results showed that the marine ecotourism of Ria Kenjeran Beach had high potential to be developed as ecotourism with a total value of 13,135. Conformity value by using the Travel Suitability Index from [10] including the category corresponding to a total value of 50. Priority strategies using SWOT analysis are: 1) Increasing the number and quality of attractions, 2) Making vehicle packages at affordable prices, 3) Improving potential (attractiveness, accessibility, and infrastructure), 4) Improving the quality of human resources, 5) Increasing promotion, 6) Cooperating with several parties, 7) Improving infrastructure facilities, 8) Developing attractions that promote local values and being environmentally friendly, 9) Renewing attractions and improving quality in order to compete, 10) Improving security, 11) Building integrated cooperation for developing ecotourism, 12) Forming responsible supervisory groups.

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