



## THE POTENTIAL OF MANGROVE ECOTOURISM AS A SUSTAINABLE ECOTOURISM PRODUCT IN THE MANGROVE AREA OF KSS BEACH, TANGERANG DISTRICT

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### **ABSTRACT**

Mangrove forests have ecological, economic, research, educational and ecotourism functions. The decline in mangrove forest land has resulted in an increase in carbon in Indonesia and the loss of habitat for various types of marine biota and natural resources. Therefore, mangrove ecotourism is one way that can have a positive impact on protecting and preserving the environment and can improve the economy of the surrounding community. One of the potentials for mangrove ecotourism that can be developed is located at KSS Beach, Tangerang Regency. This research uses qualitative research by conducting observations, interviews and distributing questionnaires to the public and visitors at KSS beach. KSS Beach fulfills four elements in ecotourism, namely the element of education, the element of understanding, the element of conservation of natural resources and the element of increasing local community income, namely having mangrove forest exploration activities, mangrove education and mangrove planting. KSS Beach has three types of mangroves, namely Avicenniaceae, Rhizophoraceae, and Sonneratiaceae which can be a processed mangrove product that has sales value among the community. Therefore, KSS Beach requires further development and assistance from the government so that it can become a mangrove ecotourism that is widely known by the community.

**Keywords:** ecotourism, mangrove, KSS beach, mangrove ecotourism

## INTRODUCTION

Mangrove forests are forests in coastal areas that are inundated by sea water and influenced by tides, but not influenced by climate. Based on the National Mangrove Map which was officially issued by the Ministry of Environment and Forestry in 2021, it is known that the total area of Indonesian mangroves is 3,364,076 Ha or 20.77% of the world total as in **Figure 1 National Mangrove Map**. This has decreased because in 2018 around 1.82 million hectares of mangroves were damaged due to changes in land function as fish ponds, housing, etc. The mangrove ecosystem in Indonesia is also threatened with a decline of up to 52 thousand hectares every year if mangrove forests are not saved.



**Figure 1 National Mangrove Map**  
(Source: Kementerian Lingkungan Hidup dan Kehutanan, 2021)

The decrease in mangrove area has resulted in an increase in carbon in Indonesia. Based on data from the Ministry of Environment and Forestry, mangrove plants can store 3-5 times more carbon than other tropical forests. Globally, the estimated carbon storage in mangrove ecosystems in the world is on average around 1,023 tonC /ha. Mangroves also have various functions, namely ecological and economic. The ecological function is to serve as a residence for various types of living creatures, one of which is marine biota (Junialdi et al., 2019). Apart from ecological functions, mangrove plants also have an economic function, namely as a producer of household equipment, company needs and maintaining social relations in developing coastal areas into an activity to improve the economy (Martuti et al., 2019). Apart from that, mangrove forests are areas for research, education and ecotourism (Joandani et al., 2019). This can be used as an alternative travel option for tourists who want to experience the sensation of a travel experience that is one with nature, known as ecotourism. *The International Ecotourism Society* (2015) states that ecotourism is travel that is responsible for the environment by preserving the surrounding nature, improving the welfare of local communities, and providing general knowledge education to visitors. The concept of ecotourism is considered suitable for development because Indonesia has a variety of biodiversity and ecotourism focuses on natural resources. However, on the other hand, Indonesia is also experiencing the biggest threat, namely the loss of mangrove land and a decline in land and marine biodiversity. Therefore, appropriate

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strategies and facilities are needed that involve the concerns of various parties such as the community and government in order to minimize damage to nature. One strategy is to develop a mangrove area into a mangrove ecotourism potential.

One area with mangrove ecotourism potential is the beach KSS, Tangerang Regency, Banten (Kurniawansyah et al., n.d.). In 1996 it was stated that there was a mangrove forest area of 487.5 in Tangerang Regency (Asy'Ari et al., 2022). However, as time goes by, there is a decrease in the area of mangrove forests and only 182.14 ha remain (Marlianingrum et al., 2021); (TW et al., 2022). From this study, it was found that mangrove ecotourism can be a method and strategy for sustainable development that has a positive impact on protecting, preserving the surrounding environment and improving the community's economy (Surjanti et al., 2020). Seeing these conditions, the local community and the Nusantara Maritime Group are working together to replant mangroves so that the ecosystem's potential can be maintained and provide benefits to the surrounding community in the KSS Beach area (Mutolib, 2019).

### RESEARCH METHODS

This research was conducted as a qualitative type of research. According to (Sugiyono et al., 2019), this research method is often called a naturalistic research method because the research is carried out in real conditions. The data sources used in this research are primary data and secondary data. Primary data was obtained using data collection techniques in the form of direct surveys and observations at KSS Beach, Paku Haji District, Tangerang Regency, Banten. Then at this location an interview process was carried out with several sources, namely members of the Nusantara Maritime Group, the local community and a questionnaire was distributed to visitors to KSS Beach using the Guidelines for Ecotourism Development in the Region. Secondary data was obtained from the latest documentation and literature to support research.

### RESULTS AND DISCUSSION

Ecotourism is one method that can be implemented in coastal tourist areas with the aim of preserving and developing the potential of natural resources and maintaining the surrounding ecosystem (Mulyadi, 2020). Apart from maximizing the potential of natural resources in coastal areas, it is necessary to improve the maximum management and service of facilities and infrastructure so that mangrove ecotourism can attract visitors. (Kasim & Mukai, 2006) in (Wardhani, 2011)

#### A. General Conditions of Research Locations

KSS Beach is located at RT/01, RW/01, Sukawali, Paku Haji District, Tangerang Regency, Banten. KSS Beach has an area of  $\pm 0.5$  Ha and is one of the beaches included in the state forest area in Sukawali village with an area of  $\pm 112$  Ha. KSS Beach has natural tourism potential, namely in the form of beach tourism and the mangrove ecosystem on the beach which can be used as an ecotourism product. KSS Beach has three types of mangroves, namely *Avicenniaceae* by name api-api, *Rhizophoraceae* under the name bakau and *Sonneratiaceae* under the name pidada.



Figure 2 General conditions of the research location: (a) Mangrove plants; (b) Condition of KSS Beach (Source: Author Document,2023)

### B. Respondent Characteristics

Respondent characteristics were determined based on visitors who came to KSS beach, Tangerang Regency (Apriani et al., 2023). Based on the results of interviews and observations, the average number of visitors in one week is 260 visitors (Arnberger & Hinterberger, 2003). Based on Isaac and Michael's table with a margin of error of 1%, it is stated that the number of respondents needed is 187 respondents by distributing questionnaires in KSS homes. Apart from distributing questionnaires, interviews were conducted with KBN members and local communities about mangrove ecotourism.

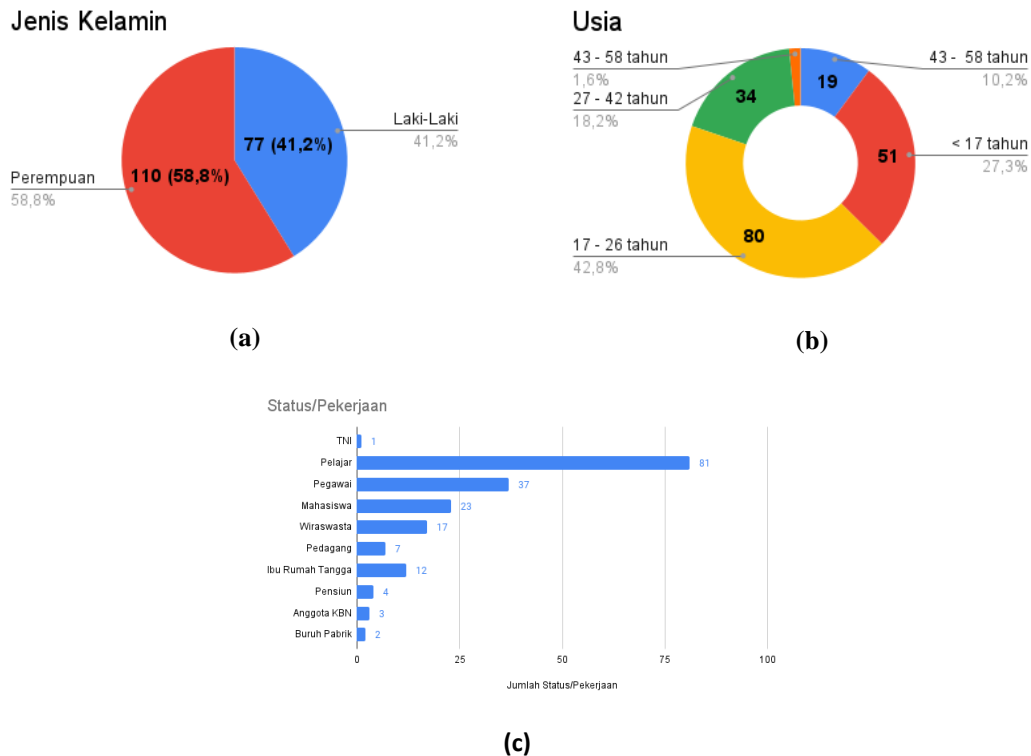


Figure 3 Respondent characteristics: (a) gender; (b) age; (c) status/employment

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(Source: Author's data processing results, 2023)

Based on the table above, the age group that visits KSS Beach the most is generation z aged 17 – 26 years (Paw Research Center, 2019) with 42.8% because generation z has the desire to explore the world, broaden their horizons, and experience various cultures, different from the millennial generation. Of the gender characteristics, the most dominant are women with 58.8% because women feel introspection, inspiration and transformation are good for themselves. Then, the level of education also influences interest in visiting, students with 81 or 43.3% make the most visits to KSS Beach on average per week.

**C. Educational Elements**

Mangrove ecotourism aims to provide education to visitors as a place to learn and understand about nature and the environment, such as exploring mangrove forests, types of mangroves, mangrove nurseries, mangrove planting, and the use of mangrove plants. Based on the results of observations, interviews and distribution of questionnaires, it is stated in **Table 1 Elements of Education**

**Table 1 Elements of Education**

No	Educational Elements	Scale	Number of Respondents	Percentage (%)
1.	There are adequate information facilities	Strongly Agree	56	29.9%
		<b>Agree</b>	<b>80</b>	<b>42.8%</b>
		Simply Agree	40	21.4%
		Disagree	7	2.1%
		Strongly Disagree	4	3.7%
		<b>Amount</b>	<b>187</b>	<b>100%</b>
2.	There are various attraction packages such as offering mangrove planting packages along with mangrove processing methods	<b>Strongly Agree</b>	<b>78</b>	<b>39.6%</b>
		Agree	61	18.7%
		Simply Agree	37	38.8%
		Disagree	8	2.7%
		Strongly Disagree	3	2%
		<b>Amount</b>	<b>187</b>	<b>100%</b>
3.	There are educational programs for tourists and local communities about the natural and cultural environment, such as how to plant mangroves and how to process them	<b>Strongly agree</b>	<b>74</b>	<b>39.6%</b>
		Agree	71	38.0%
		Simply Agree	35	18.7%
		Disagree	5	2.7%
		Strongly Disagree	2	1%
		<b>Amount</b>	<b>187</b>	<b>100%</b>

Based on **Table 1 Elements of Education**, it states that for the elements of education the majority of respondents stated that they strongly agreed with the second and third statements. As many as 39.6% of respondents strongly agreed with the diverse attraction package at KSS beach. This is supported by the results of observations and interviews that not only can you enjoy the beauty of nature, but if visitors who come want to learn about mangroves, the officers/POKDARWIS known as the Kelompok Bahari Nusantara (KBN) will provide direction or

education but must make an appointment first with the officers. there. As many as 39.6% said they strongly agreed with the statement that there were educational programs for tourists and local communities. This is supported by the results of observations and interviews that the Kelompok Bahari Nusantara (KBN) provides educational activities related to mangroves to visitors who have a desire to learn about mangroves, such as exploring the forest, general education regarding the types of mangroves, and planting mangroves. Then in the first statement, 42.8% of respondents agreed regarding adequate information (Hennessee et al., 2022). This is supported by observations and interviews that there are information boards related to KSS beaches, the Nusantara Maritime Group program, maps of coastal areas KSS, types of mangroves, etc. Then there is a gate which marks the entrance to KSS beach.



(a)



(b)



(c)



(d)

**Figure 4 Educational Elements: (a) Information Board; (b) KSS Beach Gate; (c) Mangrove Planting Attraction Package; (d) Educational Program for Tourists**  
(Source: Author Document, 2023)

#### **D. Elements of Understanding**

The government is a supporting force for the development of mangrove ecotourism in the region (Suyanto et al., 2019). The government's role is to make policies and provide a budget for a mangrove ecotourism site which is used as an effort to develop facilities and infrastructure, preserve ecotourism, provide training to residents or POKDARWIS. This is stated in **Table 2 Elements of Understanding**

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Tabel 2 Elements of Understanding

No	Understanding Elements	Scale	Number of Respondents	Percentage (%)
1.	There is support from the government such as legal aspects, zoning policies, budget provision, etc	Strongly agree	81	43.3%
		Agree	67	35.8%
		Simply Agree	34	18.2%
		Disagree	5	2.7%
		Strongly Disagree	-	-
		<b>Amount</b>	<b>187</b>	<b>100%</b>

No	Understanding Elements	Scale	Number of Respondents	Percentage (%)
2.	There is training for the community such as outreach and outreach about the concept of ecotourism or training to become <i>a guide</i>	Strongly agree	68	36.4%
		Agree	62	33.2%
		Simply Agree	39	20.9%
		Disagree	14	7.5%
		Strongly Disagree	4	2.1%
		<b>Amount</b>	<b>187</b>	<b>100%</b>

Based on **Table 2 Elements of Understanding**, the majority of respondents stated that they strongly agreed with two statements. As many as 43.3% of respondents said they strongly agreed because of support from the government. This is supported by the results of interviews that the government provides support in the form of providing a budget every year but local tourism awareness groups must provide an annual program to get a budget. Then the budget is used to create facilities and infrastructure and preserve ecotourism. Then as many as 36.4% said they strongly agreed because there was training for the community. Counseling and outreach are carried out by the government, one of which is the Ministry of Environment and Forestry. Apart from the government, outreach activities are also carried out by external organizations who are experts in fields such as public speaking, use of photo/video editing applications, graphic design, etc. Therefore, it can increase the ability of local communities or tourism awareness groups on the beach.

#### E. Elements of Natural Resources Conservation

Mangrove ecotourism functions in conservation efforts, namely to protect, preserve and sustainably utilize natural resources. Based on the results of distributing questionnaires to KSS beach visitors which are stated in **Table 3 Elements of Natural Resource Conservation**

**Table 3 Elements of Natural Resources Conservation**

No	Elements of Natural Resources Conservation	Scale	Number of Respondents	Percentage (%)
1.	There are fee rates for utilizing conservation efforts, such as being charged for entering mangrove areas	<b>Strongly agree</b>	<b>60</b>	<b>32.1%</b>
		Agree	49	26.2%
		Simply Agree	44	23.5%
		Disagree	21	11.2%
		Strongly Disagree	13	7.0%
	<b>Amount</b>	<b>187</b>	<b>100%</b>	
2.	There is ecotourism area certification	<b>Strongly agree</b>	<b>73</b>	<b>39.0%</b>
		Agree	55	29.4%
		Simply Agree	41	21.9%
		Disagree	12	6.4%
		Strongly Disagree	6	3.2%
	<b>Amount</b>	<b>187</b>	<b>100%</b>	
No	Elements of Natural Resources Conservation	Scale	Number of Respondents	Percentage (%)
3.	There are mangrove tree planting activities	<b>Strongly agree</b>	<b>82</b>	<b>43.9%</b>
		Agree	64	34.2%
		Simply Agree	34	18.2%
		Disagree	5	2.7%
		Strongly Disagree	2	1%
	<b>Amount</b>	<b>187</b>	<b>100%</b>	
4.	There is use of mangrove plant products as a food/drink product	<b>Strongly agree</b>	<b>78</b>	<b>41.7%</b>
		Agree	64	34.2%
		Simply Agree	33	17.6%
		Disagree	7	3.7%
		Strongly Disagree	5	2.7%
	<b>Amount</b>	<b>187</b>	<b>100%</b>	

Based on **Table 3 Elements of Natural Resource Conservation**, it is stated that the majority of respondents strongly agree with statements one to four of the elements of natural resource conservation. As many as 32.1% said they strongly agreed with the fee rates for utilizing conservation efforts. There is an entrance ticket to the KSS beach area of IDR 5,000/motorbike which is then used to utilize natural resources on the KSS beach. Apart from entrance tickets, income is obtained from submitting activity proposals to several companies operating in certain fields. As many as 39.0% said they strongly agreed with ecotourism area certification. According to the results of the interview, the KSS beach has been registered and coordinated with the Tourism Office, the Environment and Forestry Service of the Republic of Indonesia, the UMKM Service and Cooperatives. As many as 43.9% said they strongly agreed with the planting of mangrove trees at KSS Beach. A total of 18,051 mangrove plants have been planted on a total land area of 3,050 m<sup>2</sup> from May-August 2023. A total of 41.7% said they strongly agree with the use of mangrove plants. Products processed from mangrove plants can be tea bags from the use of tea, mangrove chips from the use of mangrove fruit, syrup, dodol, fruit juice from the use of Pidada mangrove type.

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**Figure 5 Elements of Natural Resources Conservation: (a) Entrance Ticket; (b) 2023 APBD; (c) Planting Mangrove Plants; (d) Mangrove Processed Products (Source: Author Document,2023)**

## F. Elements of Increasing Local Community Income

A tourist attraction really needs participation from the local community because it can increase the achievement of national and regional development goals. This shows that local community support can minimize the problem of gaps between the community and stakeholders. This is stated in **Table 4 Elements of Increasing Local Community Income**

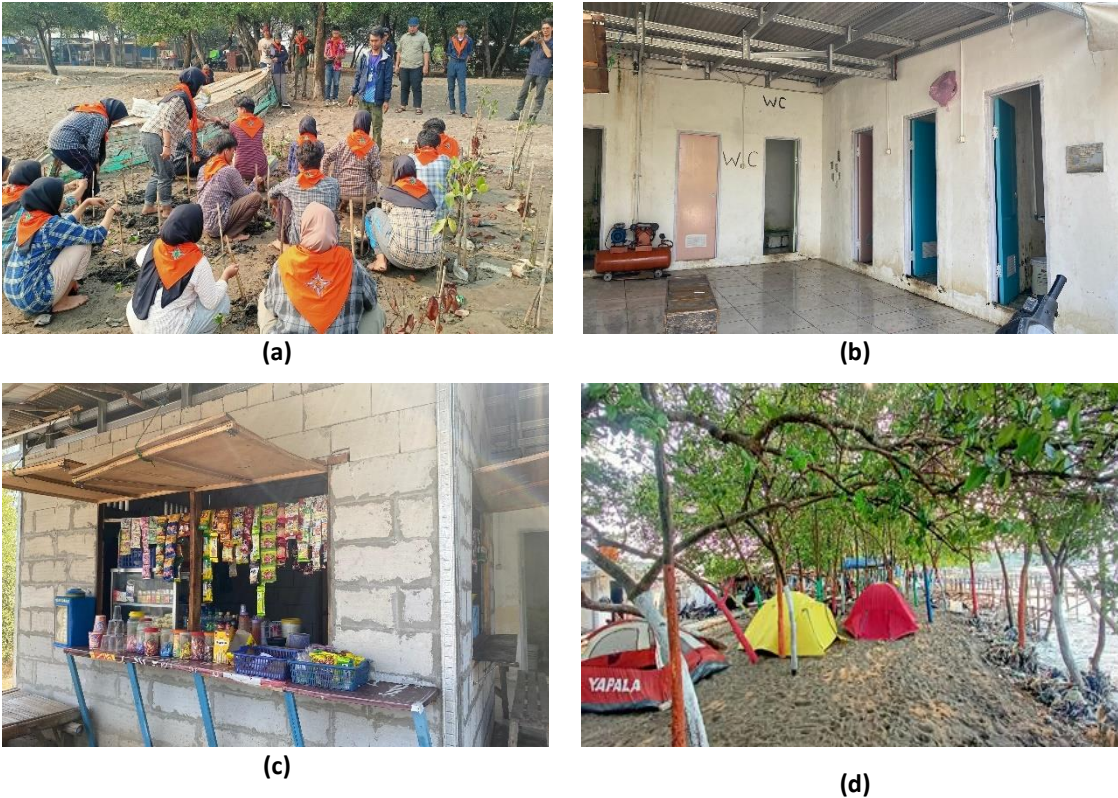
**Table 4 Elements of Increasing Local Community Income**

No.	Elements of Increasing Local Community Income	Scale	Number of Respondents	Percentage (%)
1.	There are <i>guides</i> /tour guides from the local community	Strongly agree	60	32.1%
		<b>Agree</b>	<b>68</b>	<b>36.4%</b>
		Simply Agree	42	22.5%
		Disagree	13	7.0%
		Strongly Disagree	4	2.1%
	<b>Amount</b>	<b>187</b>	<b>100%</b>	
2.	There is a Tourism Awareness Group (POKDARWIS)	Strongly agree	63	33.7%
		<b>Agree</b>	<b>73</b>	<b>39.0%</b>
		Simply Agree	38	20.3%
		Disagree	11	5.9%
		Strongly Disagree	2	1.1%

		<b>Amount</b>	<b>187</b>	<b>100%</b>
<b>3.</b>	There is a souvenir place	Strongly agree	18	9.6%
		Agree	22	11.8%
		Simply Agree	29	15.5%
		<b>Disagree</b>	<b>111</b>	<b>59.4%</b>
		Strongly Disagree	7	3.7%
		<b>Amount</b>	<b>187</b>	<b>100%</b>
<b>4.</b>	There is accommodation/lodging available	<b>Strongly agree</b>	<b>76</b>	<b>40.6%</b>
		Agree	46	24.6%
		Simply Agree	36	19.3%
		Disagree	20	10.7%
		Strongly Disagree	9	4.8%
		<b>Amount</b>	<b>187</b>	<b>100%</b>
<b>No.</b>	<b>Elements of Increasing Local Community Income</b>	<b>Scale</b>	<b>Number of Respondents</b>	<b>Percentage (%)</b>
<b>5.</b>	There are supporting facilities such as stalls , equipment rental, places of worship, toilets, etc	<b>Strongly agree</b>	<b>114</b>	<b>61.0%</b>
		Agree	47	25.1%
		Simply Agree	19	10.2%
		Disagree	4	2.1%
		Strongly Disagree	3	1.6%
		<b>Amount</b>	<b>187</b>	<b>100%</b>

Based on **Table 4 Elements of Increasing Local Community Income**, respondents agreed to statements one and two. As many as 36.4% of respondents stated that there was a tour guide who explained in general about the location and the mangroves at KSS Beach. The officers on duty at the beach always provide information to visitors who ask questions about mangroves and other activities. Then 39.0% agreed with the statement that there was a tourism awareness group/POKDARWIS. KSS Beach has a tourism awareness group called the Kelompok Bahari Nusantara (KBN) under the auspices of the Armanda 1 Command which was ratified on September 1 2023. KBN was formed into several clusters, namely the defense cluster, economic cluster, education cluster, health cluster, tourism cluster, environmental sector and the forestry sector. Activities that have been carried out include planting mangroves, cleaning beaches, constructing *breakwaters*, normalizing water channels, and building a secretariat. As many as 59.4% of respondents stated that they did not agree with the statement that there was a souvenir place. The KSS beach area is not yet known to the wider community and is still a new beach tourist spot, so the facilities at the beach do not yet provide souvenirs for visitors who come to KSS beach. However, KBN has development plans to provide a place for souvenirs made from mangroves. In statements three and four, respondents stated that they strongly agreed with 40.6% of the statement regarding the existence of lodging/accommodation. Based on observations, the form of accommodation is in the form of a residence for residents or visitors who can camp around the beach area. As many as 61.0% of respondents stated that they strongly agreed with the statement that there were supporting facilities. KSS Beach has provided several toilets, prayer rooms, stalls and seating that can be enjoyed by visitors who come to the beach.

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**Figure 6 Elements of Increasing Local Community Income: (a) mangrove planting guide; (b) public toilets; (c) local community stalls; (d) camping area**  
(Source: Author Document,2023)

### CONCLUSION

Based on the results of research at KSS Beach, Sukawali, Tangerang Regency has great potential, especially ecotourism in the form of beaches or mangrove ecosystems. There are 3 types of mangroves that can be found in the KSS Beach area, namely *Avicenniaceae* by name api-api, *Rhizophoraceae* under the name bakau and *Sonneratiaceae* under the name pidada. This type of mangrove can be processed into a product that has sales value and increases the income of local communities. The potential for mangrove ecotourism on this beach is quite good because if you look at the four elements, namely the education element, the understanding element, the element of natural resource conservation and the element of increasing local community income which has received a positive response from the community and visitors who enjoy and are enthusiastic about traveling while study at KSS Beach, especially during holidays. Suggestions for this research, to increase the potential for ecotourism at KSS Beach, include development such as adding tourism facilities such as fishing boats that can be used for taking selfies, mastering technology, mapping of mangrove areas and allocation of *events* to be held around Sukawali village so that we can achieve the common goal of not only traveling but also providing education to visitors who come to KSS Beach.

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