

Potential and strategy for ecotourism development in the coastal area of Paranggupito Sub-district, Wonogiri District, Indonesia

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Abstract. Afifah RN, Alfiyah LK, Bernadetta MP, Simanjuntak MPD, Setyaningrum M, Sunarto, Setyawan AD. 2025. Potential and strategy for ecotourism development in the coastal area of Paranggupito Sub-district, Wonogiri District, Indonesia. *Indo Pac J Ocean Life* 9: 12-25. Ecotourism emphasizes environmental conservation while supporting nature preservation and local community welfare. It arose as a response to the harmful effects of conventional tourism, such as ecosystem damage, biodiversity loss, and community disruption, aiming instead for responsible tourism that protects nature. This study aims to determine the management conditions of Karang Payung, Nampu, and Klothok Beaches in Paranggupito Sub-district, Wonogiri District, Central Java, Indonesia and the potential of TAO (Tourist Attraction Objects) that have been operating, as well as beach development strategies. Data collection was carried out by observation and interviews using simple random sampling method to 102 people throughout the beach, which was then analyzed by ADO ODTWA (Analysis of Operational Areas of Objects and Natural Tourism Attractions) method to determine the potential feasibility of the area, then continued with SWOT (Strengths, Weakness, Opportunity, and Threats) analysis as a development recommendation. The results of the ADO ODTWA analysis show that the accessibility aspect of Nampu Beach has a feasibility index on the facilities aspect of 59.50% (not feasible). The accessibility index of Karang Payung Beach is 60.29% (not feasible), and the facility index is 65.71% (not feasible). The results of this analysis indicate the necessity for improvement and development of attractions and accessibility. The results of the SWOT analysis on Nampu Beach and Karang Payung Beach necessitate the formulation of a strategic plan.

Keywords: ADO-ODTWA, nature tourism, SWOT, tourist attraction

INTRODUCTION

Ecotourism is a tourism model that emphasizes environmental sustainability by promoting conservation and improving the welfare of local communities (Nazwin and Hidayat 2022). Ecotourism aims to encourage responsible tourism where tourists do not merely enjoy nature but actively contribute to its preservation (Ritonga and Harahap 2024). This tourism approach is increasingly recognized due to pressing global issues such as climate change, deforestation, and biodiversity loss. Well-planned ecotourism reduces ecosystem pressure, protects endangered species, and ensures long-term environmental benefits (Hariani 2024). Despite its many advantages, implementing ecotourism poses challenges, particularly in balancing environmental conservation and economic benefits. Without proper management, this imbalance can lead to overexploitation of resources and ineffective area management (Wondirad 2020). However, when properly executed, ecotourism can also raise awareness among tourists and stakeholders about the importance of conservation efforts, creating lasting positive impacts (Khanra et al. 2021).

In Indonesia, Wonogiri District possesses significant ecotourism potential, particularly in Paranggupito Sub-district, known for its coastal beauty. Among its attractions are Nampu Beach, Karang Payung Beach, and Klothok Beach,

each offering unique coastal typologies (Cahyadi et al. 2017). Nampu Beach has a wide coast, in the form of white sand so that visitors play, walk, swim and do activities on the coast, this beach also offers beautiful sea views. The typology of this coast is the marine deposition coast type (Cahyadi et al. 2017). Marine deposition coast type areas are formed due to the accumulation of marine sediment material towards land carried by ocean waves which then settles along the coast (Giovani et al. 2018). In contrast to Nampu Beach, which has the bottom of the beach in the form of coral. As the name implies, Karang Payung beach is filled with large coral rocks shaped like umbrellas and sand on the coast so that visitors can only enjoy the beauty of the waves and corals. This beach has a wave erosion coast typology type because there is a stack of limestone rubble on the coastal wall/cliff by waves, the stack affects the shape of the beach, becoming irregular and steep (Wibowo et al. 2022). Klothok Beach is located far from Nampu Beach and Karang Payung Beach. The beach is surrounded by steep cliffs/rocks which are one of the characteristics of the Structurally shaped coast typology (Putranto 2020). Coral reefs can be found on the coast and this beach has a strong wave character so that it is equipped with a breakwater.

Beach ecotourism significantly impacts both visitors and local communities. For residents, ecotourism creates

economic opportunities, promoting their active involvement in tourism activities, such as hospitality and cultural preservation (Priambono et al. 2021). However, challenges persist, such as inadequate human resource capacity among managers and a lack of awareness about nature conservation within the local community. Educational and training gaps among managers remain critical obstacles to effective ecotourism development (Mu'tashim and Indahsari 2021). Furthermore, continuous interaction with diverse tourists often fails to increase local cultural and environmental awareness, emphasizing the need for clear policies to address these issues. Sustainable tourism management is essential for ensuring the long-term benefits of ecotourism, including environmental protection, economic stability, and community empowerment. It encourages local community participation, fostering social, cultural, and economic benefits through direct and indirect employment opportunities in tourism areas (Silviana and Mubarak 2022). Effective management also safeguards ecosystems and biodiversity, ensuring economic stability while providing a sustainable income source for future generations (Kiswantoro and Susanto 2020).

This study examines the management conditions and tourism potential of Nampu, Karang Payung, and Klothok Beaches in Paranggupito Sub-district. The goal is to identify sustainable development strategies that maintain natural and cultural resources while maximizing socioeconomic benefits for local communities. Sustainable tourism ensures future generations can enjoy these destinations without compromising environmental integrity (Putri and Idajati 2019). The study also aims to offer strategic recommendations for local governments and managers to develop Paranggupito's beaches into globally competitive and environmentally sustainable ecotourism destinations (Silviana and Mubarak 2020).

MATERIALS AND METHODS

Study area

This research was conducted in October 2024, with the research location in the ecotourism areas of Nampu Beach (270 m), Karang Payung Beach (65 m), and Klothok Beach (90 m) in Paranggupito Sub-district, Wonogiri, Central Java, Indonesia (Figure 1). In recent years, Nampu Beach has sometimes been divided into Nampu Beach (Central Java) and Nyawiji Beach (East Java), but we still refer to them as one unit with the original name of Nampu Beach. This research was conducted to provide an overview of the ecotourism development strategy of the coastal areas using qualitative methods, with research samples of tourists and ecotourism managers, besides that, the condition of the infrastructure in the area and the surrounding environment were also considered to be able to determine the level of local wisdom in the area around these beaches.

Procedures

This research used primary data and secondary data. Primary data was collected using direct observation, questionnaires, interviews, and documentation. Observation was carried out directly by observing the ecotourism conditions of each beach and the infrastructure available in the beach area to find out the actual conditions. Questionnaires were conducted using the simple random sampling method, which was distributed randomly to 35 respondents on each beach, resulting in 102 respondents who were visiting tourists aged over 17 years. Interviews were conducted also with the manager of each beach by asking questions to the resource person to get a direct explanation and more accurate information about ecotourism management development strategies. Secondary data were collected from literature studies to complement the primary data to be analyzed.

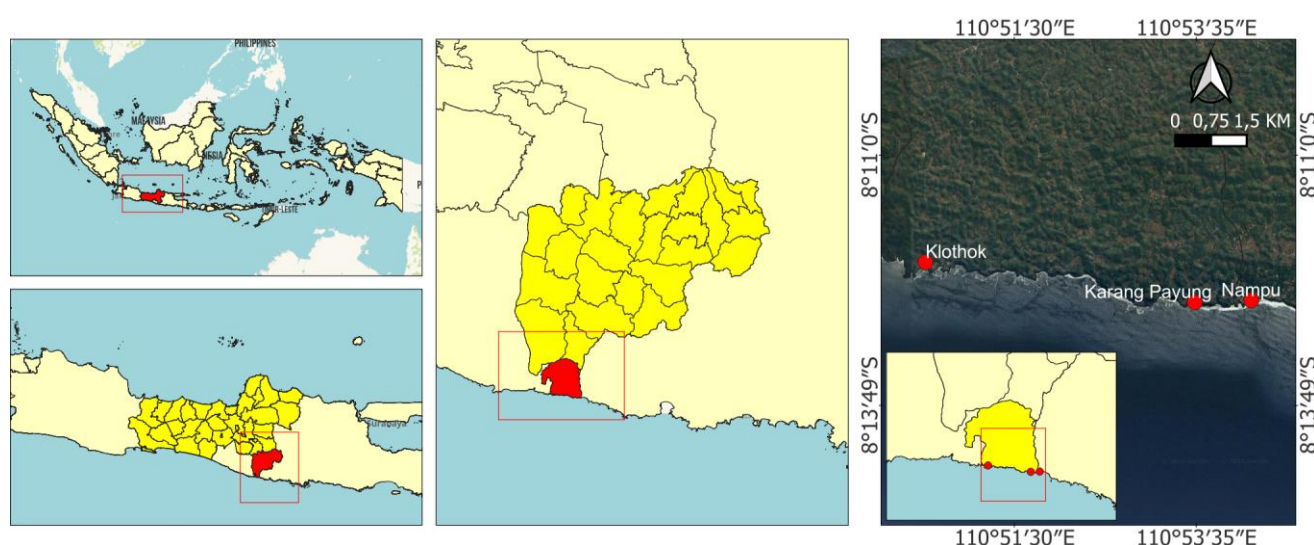


Figure 1. Location of Nampu Beach, Karang Payung Beach, and Klothok Beach in Paranggupito Sub-district, Wonogiri, Central Java, Indonesia

Data analysis

Data collection was carried out by observation and interviews at each beach, which was then analyzed using the ADO ODTWA method (Dirjen PHKA 2003) to determine the potential feasibility of the area, and continued with SWOT (Strengths, Weaknesses, Opportunities, Threats) analysis as a development recommendation. ADO ODTWA, or what is called the Analysis of Operational Areas of Natural Tourism Objects and Attractions, is a guideline that analyzes the feasibility level of criteria in the form of tourist attractions, ease of access, facilities and infrastructure, management and services, accommodation, and environmental conditions, carried out descriptively. We chose four of them, namely: attractions, accessibility, facilities, and perception on management and services. These criteria have a weight value on a scale of 1-6, the following weighting according to the ADO ODTWA guidelines: (i) The weight of the attraction criteria has a value of 6 because the attraction is the reason and cause of tourists visiting; (ii) The weight of the accessibility criteria has a value of 5, access is needed to encourage tourism potential; (iii) The criteria for facility and infrastructure conditions around the area are given a weight of 3; (iv) The perception on management and service criteria are given a weight of 4. Then, the weighting will be processed using the following formula (Dirjen PHKA 2003):

$$S = N \times B$$

Where: S: Score/value of a criterion; N: The sum of the values of the elements in the criterion; B: Weighted value.

The score obtained will be calculated as the level or percentage of eligibility for each variable. Calculating the feasibility index value can be done using the following formula (Purwoko et al. 2023):

$$\frac{\text{Criteria score}}{\text{Maximum total score}} \times 100\%$$

The maximum score in this study is shown in Table 1. The standard percentage of the feasibility index, namely (i) the feasibility level of more than 66.6%, means that an area has the potential to be designed as a natural tourist destination attraction; (ii) the feasibility level of 33.3-66.6% means that the area does not have the potential to be developed as a natural tourist attraction; and (iii) the feasibility level of less than 33.3% means that the area does not have the potential to be designed as a natural tourist destination attraction.

Table 1. Maximum total score for each variant

Variable	Weight	Max score (max value (5) x respondent (35))	Total aspects in the variable	Maximum total score
Attractions	6	175	2	2,100
Accessibility	5	175	2	1,750
Facilities	3	175	8	4,200
Perception	4	175	5	3,500

To systematically evaluate the internal and external factors influencing a tourist destination, the IFAS (Internal Factors Analysis Summary) and EFAS (External Factors Analysis Summary) matrices are applied (David 2011; Wheelen and Hunger 2012). The EFAS matrix evaluates the impact of external factors on a company by organizing them into opportunities and threats, while the IFAS matrix focuses on assessing internal factors by categorizing them into strengths and weaknesses (Papalapu et al. 2023). Both the weight and the overall IFAS value are included in the weighted IFAS value, which is the foundation of the IE matrix. According to weights, a total EFAS value of 1.0 to 1.99 is regarded as low, 2.0 to 2.99 as average or medium, and 3.0 to 4.0 as high. Similarly, a weak internal position is indicated by an IFAS value with a weight of 1.0 to 1.99, an average or moderate position is indicated by a value between 2.0 and 2.99, and a strong stance is indicated by a value between 3.0 and 4.0 (Suratini et al. 2019).

RESULTS AND DISCUSSION

Nampu Beach

Feasibility analysis of natural tourism objects

Attractions. The attraction criteria include two aspects, namely, the attractiveness of the beach and its comfort and cleanliness. The attraction itself refers to the attraction that makes people want to visit and see firsthand because of its natural beauty, uniqueness, the integrity of natural resources, and the recreational options available (Dzitse et al. 2024). In Table 2 the attraction criteria, Nampu Beach has a score of 1,602, with a feasibility index value of 76.29%, which indicates the potential to be designed as a natural tourist destination attraction. A higher feasibility index value suggests a greater potential for development. This beach offers a stunning natural panorama with clean white sand, clear sea water, and fairly large waves, making it an ideal destination for marine tourism lovers. In addition, the existence of coral cliffs surrounding the beach adds its charm, both for photography and nature exploration. Residents and managers of Nampu Beach themselves allow tourists to camp in the beach area, providing a closer experience to nature. However, tourists must bring their equipment as there are no camping equipment rental facilities around the location.

Accessibility. Conventionally, accessibility can be viewed from various perspectives, such as mobility, access, planning, and transportation systems. Accessibility is defined as the extent to which a system of transportation enables a group or individual to achieve its activities or goals (Jamei et al. 2022). Accessibility criteria include two aspects, namely road access and transportation, as well as the availability of road signs and instructions. In Table 2, the accessibility criteria, Nampu Beach has a score of 1,295, with a feasibility index value of 74%, which is included the potential to be designed as a natural tourist destination attraction. However, access to Nampu Beach still requires further attention, especially in terms of improving road conditions, some of which are still rocky and dirt paths, and improving public transportation facilities

for tourists who do not bring private vehicles. In addition, the availability of direction signs to the beach is still limited, so first-time tourists need to rely on digital maps or directions from residents. Improving accessibility by repairing roads, adding adequate public transportation, and installing clear signs will further improve tourist comfort and strengthen the position of Nampu Beach as a leading tourist destination in the Wonogiri region.

Facilities. Tourism facilities are an important element in providing services to tourists while in a tourist attraction and influence the development of tourist attractions. Facilities are facilities and infrastructure that support the operation of tourist attractions to accommodate all the needs of tourists. For instance, a well-maintained parking lot can attract more visitors, thereby boosting the local economy. While these facilities may not directly drive growth, they play a crucial role in the overall development of the tourist attraction, often developing at the same time or after the tourist attraction develops (Asnur and Manggara 2021). The criteria for facilities include several aspects, namely security posts, parking lots, toilets and clean water, food stalls, worship facilities, trash cans, hotels and inns, and electricity and telecommunications networks. At

Nampu Beach, one of the recent facility improvements is the addition of worship facilities, which were previously not available directly at the beach area. Before this facility was built, tourists who wanted to worship had to go to a resident's house, which was used as a temporary place of worship. Although the addition of this facility is a positive step in improving tourist comfort, the facilities at Nampu Beach as a whole are still relatively inadequate.

In Table 2 the facilities criteria, Nampu Beach has a score of 2,499, with a feasibility index value of 59.50%, so this criterion is included the accessibility criteria are at a level not yet feasible to develop. This is due to the low potential of facilities and infrastructure based on predetermined parameters and inadequate accessibility. The main factor influencing this low score is the limited facilities and infrastructure, such as the lack of availability of clean and adequate public toilets, the lack of trash bins scattered in the tourist area, and the limited number of inns around the beach that can accommodate tourists who want to stay overnight. In addition, inadequate accessibility, especially in terms of road conditions and limited telecommunications networks, is also an obstacle to improving the quality of tourist facilities in this area.

Table 2. Analysis of Nampu Beach attractions, accessibility, facilities, and perception

Variable	Sub variables	Weight	Score	Total score
Attractions	Beach appeal	6	137	822
	Comfort and cleanliness	6	130	780
			Total score	1,602
			Maximum total score	2,100
Accessibility	Road access and transportation	5	131	822
	Availability of road signs and guidance	5	128	780
			Total score	1,295
			Maximum total score	1,750
Facilities	Security post	3	125	375
	Parking lot	3	109	327
	Restrooms and clean water	3	118	354
	Food stalls	3	136	408
	Means of worship	3	102	306
	Garbage bins	3	86	258
	Hotel/lodging	3	114	342
	Electricity and telecommunication networks	3	43	129
			Total score	2,499
			Maximum total score	4,200
Perception	Affordable ticket	4	152	608
	Officer service	4	127	508
	Local community involvement	4	130	520
	Importance of sustainable ecotourism management	4	157	628
	Economic benefits to local communities	4	140	560
			Total score	2,824
			Maximum total score	3,500

Perception. Perception criteria include several aspects, namely ticket affordability, officer services, local community involvement, the importance of sustainable ecotourism management, and economic benefits to local communities. In Nampu Beach, the service aspect of the staff and the involvement of the local community are among the main advantages. Local communities not only play a role as economic actors around the tourist area but are also actively involved in beach management. This provides employment opportunities and increases public awareness of preserving the beach environment. In addition, the existence of an institution that specifically regulates the involvement of local communities in beach management ensures good coordination between the government, tourism managers and residents. Thus, this management system not only has a positive impact on improving the welfare of the community but also creates a sense of ownership and responsibility for the preservation of Nampu Beach.

Based on Table 2, Nampu Beach has a score of 2,824 with a feasibility index value of 80.69%, which indicates that this beach has a high potential to be developed as a sustainable natural tourism destination. This high index value reflects that tourists have a positive perception of ticket accessibility, officer services, and the benefits felt by the local community. Nevertheless, to increase tourist attractiveness, it is necessary to strengthen aspects of ecotourism management, such as implementing the concept of environmentally friendly tourism, improving supporting facilities for tourists, and strengthening conservation education for the community and visitors. With a more sustainable management strategy and active participation from local communities, Nampu Beach can continue to develop as a tourist destination that is not only aesthetically attractive but also provides long-term benefits for the environment and local economy.

Socioeconomic condition

Nampu Beach has socioeconomic conditions that reflect the lives of local people who rely on beach management and daily activities, such as sugar production. Although this beach allows activities such as camping and playing on the beach, due to its coral bottom, it cannot be used to lean or anchor boats. In the past, the Wonogiri government donated a boat, but it is now gone due to damage. This beach does not have tent or chair rentals, unlike Karang Payung Beach, which provides these facilities.

Infrastructure development, such as an additional *mushola* (means of worship) funded by community contributions and government assistance, shows cooperation. The community also manages revenue from the entrance ticket of Rp 5,000 per person, as well as parking for motorcycles at Rp 3,000 and cars at Rp 5,000, with funds going to the village, youth organization, and sub-district treasuries. The beach and parking lot managers receive payment, but the money is also shared for beach security and cleanliness, which is done in cooperation with residents.

Despite the recent decline in visitors due to the megathrust issue, Nampu Beach is usually bustling on weekends and major holidays. However, on weekdays, the

beach is quieter. This decline in the number of visitors has a significant impact on the local merchants, most of whom are local residents or from nearby villages. Vendors often clean the beach of trash carried by the waves, such as plastic and bottles, before starting their trading activities.

Customs such as the *Rasulan* ceremony, Javanese tradition after the harvest, are still maintained, with hamlet cleanup ceremonies and offerings as a form of respect to ancestors. However, there are still visitors who lack discipline in disposing of garbage, even though trash bins have been provided. Beach conditions are influenced by the seasons, with tidal phenomena that follow the Javanese calendar. Residents are keenly aware of the need for infrastructure development, especially roads and public facilities, to enhance Nampu Beach's appeal and attract more visits.

The strategy that can be done to connect Strength and Opportunity (SO) based on Table 3 is to carry out community-based development with the help of institutions and the government. Nampu Beach is a beach that many tourists visit, so it has the opportunity to improve the welfare of the community around the beach and has the potential to create new jobs. According to Maulani et al. (2024), the strategy to develop community-based beach ecotourism can be done by involving the community in promoting the beauty of the beach through social media, beautifying the facilities on the beach, making interesting photo spots for tourists, and submitting proposals to the government to advance the infrastructure of tourist attractions on the beach.

The strategy that connects Strength and Threat (ST) based on Table 3 is to work with the surrounding community to add cleaners during the holiday season. The increase in the number of visitors on holidays or weekends is in line with the increase in the amount of garbage on Nampu Beach, so the strategy that can be done to overcome this threat is to increase the number of janitors. In addition to keeping the beach clean, this can also provide employment opportunities for the surrounding community. Strategies that connect Weakness and Opportunity (WO), namely improving infrastructure to support beach cleanliness and holding community empowerment programs and coaching for MSME players. These programs are crucial as they not only empower the community but also play a significant role in the success of the project.

IFAS-EFAS analysis of Nampu Beach

Based on the IFAS analysis as presented in Table 4, it is known that the total scores for strengths and weaknesses are 2.684 and 0.868, so the total score of strengths on Nampu Beach is greater than the total score of weaknesses. The total weight score for strengths and weaknesses is 3.552. This shows that the Nampu Beach area is in an influential position to utilize its strengths to deal with the weaknesses contained in the Nampu Beach tourism area.

The EFAS analysis in Table 5 shows that the total scores for opportunities and threats are 2.043 and 0.782, so the total score of threats is smaller than the total score of opportunities. This indicates that opportunities have a more significant influence on Nampu Beach's tourism development

strategy. This is a positive indication and open up much potential for further development. Therefore, these opportunities must be utilized as well as possible in the development of tourism on Nampu Beach. The EFAS and IFAS rating scale uses a range of 1.0-4.0. Values below 2.0 indicate unfavorable conditions, from 2.0-2.99 indicate moderate conditions, and above 3.0 indicate very good conditions. Thus, a high EFAS value indicates many external opportunities, while a high IFAS value indicates internal strengths (Suratini et al. 2019).

Based on the results of the IFAS-EFAS analysis, the next step is to determine the development strategy to be used for Nampu Beach using the IFAS-EFAS quadrant. To determine the X and Y values, we calculate the X factor value by subtracting the total weakness score from the total strength score. This indicates the internal strategic factors that form the horizontal line. Similarly, we calculate the Y factor value by subtracting the total threat score from the total opportunity score. That also indicates the external strategic factors that form the vertical line obtained from

the difference between the total opportunity score and the total threat score (Azizah 2017).

$$X = \text{Strength} - \text{Weakness} = 2.684 - 0.868 = 1.816$$

$$Y = \text{Opportunities} - \text{Threats} = 2.043 - 0.782 = 1.261$$

The development strategy that can be used in the development of Nampu Beach is the rapid growth strategy in quadrant 1. This position is obtained from internal strength factors and very high external opportunities. The main objective of this strategy is to fully utilize existing strengths and opportunities to increase tourism growth quickly (Ratnawati 2020). This rapid growth strategy can involve the S-O strategy by adding or expanding tourism facilities and venues at Namu Beach to attract more visitors, improving other supporting facilities such as public services and game accommodation on the beach, and also cooperating with the government, private sector, and the surrounding community in the development of Nampu Beach development.

Table 3. SWOT factors of Nampu Beach

Internal Factors	Opportunities	Threats
	1. Welfare improvement in the local community 2. Creating new jobs.	1. During the holiday season, the waste generated by visitors also increases.
External Factors		
Strengths	Strategi S-O	Strategi S-T
1. Social aspects of the community that support the development of ecotourism activities. 2. Road to the beach that is friendly to 2-wheeled and 4-wheeled vehicles.	1. Community-based development with the assistance of institutions and government	1. Cooperate with the surrounding community to add cleaners during the holiday season.
Weakness	Strategi W-O	Strategi W-T
1. Placement of garbage cans that are not spread out and difficult to find 2. Lack of worship facilities	1. Improved infrastructure to support beach cleanliness 2. Community empowerment program and coaching for MSME players	1. A team was formed to develop tourism and cleanliness by the manager of Nampu Beach.

Table 4. Internal Factors Analysis Summary (IFAS) of Nampu Beach

Strengths	Weight	Score	Total score
Social aspects of the community that support development	0.315	4	1.263
Vehicle-friendly road access	0.315	4.5	1.421
Subtotal	0.631		2.684
Weakness			
Placement of trash cans that are not spread out	0.263	2.5	0.657
Lack of worship facilities	0.105	2	0.210
Subtotal	0.368		0.868
Total	1		3.552

Table 5. External Factors Analysis Summary (EFAS) of Nampu Beach

Opportunities	Weight	Score	Total score
Improved welfare of the surrounding community	0.260	4	1.173
Vehicle-friendly road access	0.217	4.5	0.087
Subtotal	0.478		2.043
Threats			
Generates much trash during the weekend	0.260	1	0.260
Competition with other beaches that have more complete facilities	0.260	2	0.521
Subtotal	0.368		0.782
Total	1		2.826

Karang Payung Beach

Feasibility analysis of natural tourism objects

Attractions. Attractions are the reason for tourists to visit a tourist attraction (Setyasih and Helmy 2021). The attraction criteria are the attractions provided that can be enjoyed by visitors as well as the comfort and cleanliness felt by visitors. Based on Table 6, Karang Payung Beach has a total score of 1,716, so it gets a feasibility index level of 81.71%, which is included in the potential to be designed as a natural tourist destination attraction. This beach's uniqueness lies in its camping facilities, which offer visitors the opportunity to enjoy an overnight stay by the beach, surrounded by stunning natural landscapes. Although camping is one of the facilities provided, the lack of promotion and awareness means that many visitors are not fully aware of this unique offering.

By developing this uniqueness, this beach has a uniqueness compared to Nampu Beach and Klohtok Beach, which only serve natural scenery, entertainment, and water amusements. The addition of camping as a primary attraction provides visitors with an immersive experience that blends adventure and relaxation, appealing to nature enthusiasts, families, and young travelers. This form of tourism also enhances the appeal of the beach as an eco-friendly destination, where visitors can experience the natural environment in a more personal and sustainable way. The uniqueness of a location can be highlighted, such as ecotourism located in Thailand providing bird watching, hiking, rafting, kayaking, and snorkeling activities (Tseng

et al. 2019). Similarly, Karang Payung Beach could promote its camping experience alongside other eco-activities, such as guided nature walks, beach clean up programs, and marine life observation, to create a unique ecotourism package. By developing and promoting these activities, Karang Payung Beach has the potential to attract more attention from both domestic and international tourists, thus positioning itself as a leading ecotourism destination within the region.

Accessibility. Accessibility criteria are one of the factors that determine whether a tourist attraction is easy to visit (Rematwa and Estikowati 2022). Based on the results of observations and responses from visitors to Karang Payung Beach, several improvements suggested to improve accessibility include widening the road to the location so that four-wheeled vehicles can access it more easily. In addition, several rocky roads leading to the beach are still in poor condition and require repair so that vehicles can pass smoothly without the risk of damage to the vehicle. In addition, the installation and enlargement of signposts are also necessary because tourists who are new to visiting often have difficulty finding the location of this fairly remote beach. Transportation access for 2-wheeled vehicles was only built in 2021; previously, getting to the location could only be done on foot. This criterion in Table 6 produces a total score of 1,055, which is then multiplied by 100 and divided by 1,750 to obtain a feasibility index level of 60.29%, so the accessibility criteria are at a level not yet feasible to develop.

Table 6. Analysis of Karang Payung Beach attractions, accessibility, facilities, and perception

Variable	Sub variables	Weight	Score	Total score
Attractions	Beach appeal	6	141	846
	Comfort and cleanliness	6	145	870
			Total score	1,716
			Maximum total score	2,100
Accessibility	Road access and transportation	5	101	505
	Availability of road signs and guidance	5	110	550
			Total score	1,055
			Maximum total score	1,750
Facilities	Security post	3	128	384
	Parking lot	3	147	441
	Restrooms and clean water	3	121	363
	Food stalls	3	136	408
	Means of worship	3	115	345
	Garbage bins	3	116	348
	Hotel/lodging	3	94	282
	Electricity and telecommunication networks	3	63	189
			Total score	2,760
			Maximum total score	4,200
Perception	Affordable ticket	4	165	660
	Officer service	4	154	616
	Local community involvement	4	126	504
	Importance of sustainable ecotourism management	4	161	644
	Economic benefits to local communities	4	135	540
			Total score	2,964
			Maximum total score	3,500

This condition shows that although there has been some progress, more needs to be done to improve the accessibility of Karang Payung Beach. To improve the feasibility of this tourist destination, improvements to the main road infrastructure leading to the beach, such as the repair of rocky roads, as well as the development of adequate public transportation, will greatly support the improvement of accessibility quality. In addition, the provision of adequate parking facilities, especially for four-wheeled vehicles, and an improved signage system will make it easier for visitors coming from outside the area and ensure faster and more convenient access to the beach.

Facilities. Facilities are included in the facilities and infrastructure that can support advanced tourism in providing comfort to tourists (Selitara et al. 2024). Karang Payung Beach has developed security infrastructure, namely the addition of cliff road barriers. The assessment of facility criteria in Table 6 obtained a total score of 2,760. With a feasibility index value of 65.71%, it is in the category the area does not have the potential to be developed as a natural tourist attraction. The availability of lodging is very little; it is difficult to find, making visitors travel back and forth every time they visit this beach. The provision of lodging is one of the potential tourism developments (Budiani et al. 2018) and makes it easier for long-distance visitors to travel. Research according to Setyasih and Helmy (2021), located on Maratua Island, which provides resort accommodation, inns, and homestays along the coast and on the island, will always experience overstay during long holidays. Based on the location of Karang Payung Beach, lodging does not need to be built along the beach, and the local community can open homestays or inns close to residential locations.

In response to those who claim that poor infrastructure could deter tourists and undermine ecotourism initiatives, it's important to recognize that while infrastructure investment is crucial, it must be developed in a way that aligns with ecotourism principles. This could include sustainable transport options, minimal environmental impact construction methods, and public-private partnerships to improve accessibility

without compromising the area's natural beauty. Promoting local experiences can also attract visitors who prefer authenticity over luxury.

Perception. Perception criteria may refer to management and service. Assessment of service quality refers to tourist satisfaction. According to Selitara et al. (2024) show that visitor satisfaction with services affects the development of a tourist attraction. The feasibility index for the perception criteria of Karang Payung Beach based on Table 6 obtained a value of 84.69%, in feasibility indicates the potential to be designed as a natural tourist destination attraction. This shows that community participation in the management and development of this beach is quite good due to the creation of jobs that can increase community income. If developed optimally, it can attract foreign tourists so that the use of local products will increase and increase, and the government will make improvements to transportation facilities to support (Amalu et al. 2018).

Socioeconomic conditions

Socioeconomic conditions are aspects that can be considered in tourism activities because they can support potential market value. A good social environment will provide comfort for visitors, allowing them to enjoy the beauty of nature better (Harianto et al. 2020). Tourism affects economic activities and creates jobs and local taxes that increase in number due to tourist visits. The management of Karang Payung Beach began in 2020 with makeshift conditions such as road access to the beach that can only be reached by foot, unavailability of shady places to rest, selling stalls, and proper toilets. However, the development was carried out jointly by local residents who are currently the administrators of Karang Payung Beach, with as many as 38 people. Not only that, there is a SAR team from the association for security patrols who stand guard around the beach when the waves are high and tide. Continuous development is carried out with funds coming from individuals and associations as well as the profits from entrance tickets (Table 7).

Table 7. SWOT factors of Karang Payung Beach

Internal Factors	Opportunities	Threats
	1. Karang Payung Beach coastal area can be used for camping activities 2. Social media platforms to promote the beauty of the beach.	1. Security and safety factors of visitors with the increasing number of visitors 2, competition with other beaches with better access
External Factors		
Strengths	Strategi S-O	Strategi S-T
1. Potential for good views and natural beauty preserved 2. Affordable beach entrance fee 3. Plenty of parking space for vehicles	1. Development of camping areas and procurement of equipment 2. Utilizing social media to promote and hold tour package programs	1. Additional facilities to improve visitor safety 2. Procurement of safety information signs 3. Providing micro-insurance for visitors
Weakness	Strategi W-O	Strategi W-T
1. Access road is rocky and narrow so that it can only be passed by two-wheeled vehicles 2. The local government has not managed the beach 3. There are many corals, so it is not possible to cross the ship	1. Improving road access and providing road signs 2. Create a nature-based camping tour package that is promoted on social media	1. Provide information on access conditions and safety for visitors 2. Establish communication with the government to get assistance in access improvement and management

Several beaches in Wonogiri, including Karang Payung Beach, are bypassed by traditional fishermen looking for lobsters departing from Watu Karung, Pacitan, East Java and Sadeng, Gunung Kidul, Yogyakarta, because the beach here is craggy with high tides making it dangerous for boats to lean on. Karang Payung Beach has not been able to become a source of permanent employment for the community even though visitors on weekdays can reach 50-60 people while on holidays, up to hundreds. This is because the land ownership status of the beach is still in dispute. The government also cannot intervene in overcoming this problem and has not provided any assistance to date. Government assistance in the form of additional lodging or photo spots can ease the burden on the management and add to the potential of the beach so that it can attract more visitors.

IFAS-EFAS analysis of Karang Payung Beach

The IFAS analysis of Karang Payung Beach in Table 8 shows that the total score for strengths is 1.851, and the total score for weaknesses is 0.72; hence, the total score for advantages is higher than the total score for weaknesses. High strengths mean that ecotourism has good capital to be developed because, from an internal perspective, the strengths are more dominant than the weaknesses (Saputro et al. 2024). Strategic steps that can be taken are to maximize the advantages while making efforts to mitigate existing weaknesses. Strengths with higher scores indicate that the beach has strong potential, either in terms of tourist attractions, natural ecosystems, or facilities. Effective strategies include developing superior aspects such as increasing tourism promotion that underscores the uniqueness of the beach and improving accessibility and infrastructure to attract more visitors.

The results of the EFAS analysis in Table 9 show that the total scores of opportunities and threats of Karang Payung Beach are 1.26 and 0.911. The total score of opportunities is higher than the total score of threats, which means that Karang Payung Beach has positive prospects to be developed with greater external opportunities, such as the potential of Karang Payung Beach to be used as a camping area and the potential of social media to promote

the beauty of the beach scenery. Promotion on social media can be tailored to market interests that are generally interested in the latest things (Mazaya et al. 2024). A lower threat score indicates that external challenges or obstacles are relatively under control, so this beach can focus more on utilizing existing opportunities to improve its attractiveness and tourism management.

$$X = \text{Strengths} - \text{Weaknesses} = 1.851 - 0.72 = 1.131$$

$$Y = \text{Opportunities} - \text{Threats} = 1.26 - 0.911 = 0.349$$

The development strategy that can be carried out on Karang Payung Beach is to use a rapid growth strategy to accelerate growth by utilizing the great potential of the natural attraction of Karang Payung Beach while still maintaining the principle of sustainability. An example is to conduct a digital campaign on social media to promote and describe the uniqueness and beauty of Karang Payung Beach and use social media, websites, and influencers that focus on tourism and the environment in order to accelerate the growth of tourist visits to Karang Payung Beach. In collaboration with the local government, they will build environmentally friendly facilities such as walking paths, tracking trails, and information centers made from recycled materials to accelerate tourist attraction while maintaining natural sustainability.

Attraction is the main aspect of attracting visitors attention to a tourist area, which can be in the form of highlighting the uniqueness of nature as a characteristic (Harianto et al. 2020). According to Cooper et al. (1998) in Harianto et al. (2020), the following are components of tourist attraction that can attract tourists, namely natural and man-made beauty, culinary, or local wisdom such as traditional events that are usually carried out. The attraction of Klothok Beach lies in its charming natural scenery, where visitors can enjoy the waves crashing against the exotic coral cliffs. This natural beauty, coupled with the gazebo provided for relaxing, makes this beach very friendly for family tourism. However, swimming at this beach is not allowed due to the condition of the large waves, tides, and the presence of rocks along the beach, which can endanger the safety of visitors.

Table 8. Internal Factors Analysis Summary (IFAS) of Karang Payung Beach

Strengths	Weight	Score	Total score
Potential scenery and natural beauty that is good and maintained	0.206	4	0.82
Affordable beach entrance fee	0.137	3	0.413
Plenty of parking lots	0.206	3	0.618
Subtotal	0.551		1.851
Weakness			
Narrow and rocky road access	0.172	1	0.172
The local government has not managed the beach	0.206	2	0.412
Craggy beach bottom	0.068	2	0.136
Subtotal	0.448		0.72
Total	1		2.571

Table 9. External Factors Analysis Summary (EFAS) of Karang Payung Beach

Opportunities	Weight	Score	Total score
Improved welfare of the surrounding community	0.260	4.5	1.173
Vehicle-friendly road access	0.217	4	0.087
Subtotal	0.478		1.26
Threats			
Generates a lot of trash during the weekend	0.260	1.5	0.39
Competition with other beaches that have more complete facilities	0.260	2	0.521
Subtotal	0.368		0.911
Total	1		2.171

Klothok Beach

Feasibility analysis of natural tourism objects

Attractions. Based on Table 10, Klothok Beach has a total score of 1,680, obtaining a feasibility index value of 80%, which is included in the potential to be designed as a natural tourist destination attraction. The stunning natural scenery, combined with the unique characteristics of the beach, can be used as the main attraction to attract more visitors, both local and international tourists. The potential to highlight the beauty and uniqueness of Klothok Beach is huge. If managed properly, this beach can become a tourist destination that not only offers natural beauty but also provides a different and interesting experience for tourists. In comparison, Balikpapan Bay is another example of a tourist attraction that emphasizes its biodiversity as the main attraction. The attractions offered by Balikpapan Bay include the presence of rare animals such as proboscis monkeys and dolphins, as well as the mangrove forest ecosystem, which is an important habitat for various species of cranes, small fish, turtles, and even fireflies. This biodiversity is a very strong attraction, which not only presents natural beauty but also provides education on the importance of environmental conservation. Willard et al. (2022) noted that the natural scenery combined with rich flora and fauna makes Balikpapan Bay a tourist destination with high ecotourism value. Similarly, Klothok Beach can highlight its natural wealth with a similar approach, such as preserving the environment, introducing biodiversity around

the beach, and offering tourists a more immersive nature experience.

Accessibility. Accessibility at Klothok Beach based on Table 10 obtained a total score of 875, a feasibility index value of 50%. Based on the results of this assessment, this area is not yet feasible to develop as eco-tourism, mainly due to the limited supporting infrastructure that affects the comfort and convenience of tourists in accessing the location. Tamrat (2016) emphasizes that infrastructure and tourist attraction development have a close relationship because, without good transportation planning and an adequate management system, a destination will be difficult to reach and potentially reduce visitor interest. This is the main challenge for Klothok Beach in increasing its attractiveness as a tourist destination.

In comparison, a study conducted by Setyasih and Helmy (2021) shows that Maratua Island, North Sulawesi, Indonesia has successfully improved its accessibility through the construction of paved roads and is supported by the existence of airports and seaports that allow tourists from various regions to visit more easily. The provision of adequate infrastructure, such as proper roads, not only facilitates the flow of tourists but also has a positive impact on the economic development of the surrounding community, both in terms of trade, transportation services, and accommodation. Currently, the road to Klothok Beach is still in a damaged condition, which is one of the main obstacles in attracting tourists.

Table 10. Analysis of Klothok Beach attractions, accessibility, facilities, and perception

Variable	Sub variables	Weight	Score	Total score
Attractions	Beach appeal	6	142	852
	Comfort and cleanliness	6	138	828
			Total score	1,680
			Maximum total score	2,100
Accessibility	Road access and transportation	5	61	305
	Availability of road signs and guidance	5	114	570
			Total score	875
			Maximum total score	1,750
Facilities	Security post	3	113	339
	Parking lot	3	143	429
	Restrooms and clean water	3	128	384
	Food stalls	3	135	405
	Means of worship	3	125	375
	Garbage bins	3	132	396
	Hotel/lodging	3	88	264
	Electricity and telecommunication networks	3	65	195
			Total score	2,787
Perception			Maximum total score	4,200
	Affordable ticket	4	132	528
	Officer service	4	126	504
	Local community involvement	4	137	548
	Importance of sustainable ecotourism management	4	164	656
	Economic benefits to local communities	4	138	552
			Total score	2,788
			Maximum total score	3,500

Therefore, road improvement by paving is a strategic step that needs to be considered by the local government and local tourism managers to improve accessibility and visitor comfort. In addition, the addition of direction signs, improvement of public transportation facilities to the beach, as well as the development of alternative modes of transportation, such as shuttle buses from the main access point, can be a solution to increase the affordability of the location.

Facilities. Facility criteria include several aspects, namely security posts, parking lots, toilets and clean water, food stalls, worship facilities, garbage bins, hotels and inns, and electricity and telecommunications networks. In the facility criteria based on Table 10, Klothok Beach has a score of 2,787, with a feasibility index value of 66.36%, so this criterion is included in feasibility indicates that an ecotourism area is not yet feasible to develop. Maratua Island has 24-hour health services and the availability of electricity networks by PLTD (Diesel Power Plant) so that tourist comfort is guaranteed (Setyasih and Helmy 2021). The addition of electricity networks and telecommunications networks can be done by asking for assistance from the Wonogiri District Government, supported by the requests of visitors during interviews. To improve the feasibility of Klothok Beach, the addition of electricity and telecommunication networks can be done in coordination with the district government and involving various stakeholders, including tourism managers and local communities. This support can be strengthened by requests from visitors, which show that tourists want better accessibility in terms of internet connectivity and electricity. In addition, the development of facilities such as community-based lodging (homestay), improved access to clean water, and the construction of proper sanitation facilities will further increase the attractiveness of Klothok Beach as a sustainable ecotourism destination. Investment in tourism infrastructure, if done by considering environmental aspects, can also support the principles of sustainable tourism. For example, the application of renewable energy sources such as solar panels or small-scale wind turbines can be an alternative solution to provide electricity without damaging the coastal ecosystem.

Perception. Perception criteria include several aspects, namely ticket affordability, officer services, local community involvement, the importance of sustainable ecotourism management, and economic benefits to local communities. In the perception criteria, Klothok Beach based on Table 10 has a score of 2,788, with a feasibility index value of 79.66%, which is included in feasibility indicates that an ecotourism area is not yet feasible to develop. The development of a tourist attraction will have an impact on the socioeconomic conditions of the local community (Olu et al. 2018). So, the more the community is involved in the development, the more it will produce a superior tourist attraction, able to attract more visitors so that the welfare of the community is guaranteed. The welfare of the local community will affect the services provided to visitors. The more the community is involved in development, the greater the chance of creating a

superior tourist destination, attracting more visitors and providing significant economic benefits to the local population. Improving the welfare of local communities has a direct correlation with the quality of services provided to tourists. If residents experience tangible economic benefits from the tourism industry, they will be more encouraged to provide friendly service, maintain cleanliness, and contribute to the management of tourist areas.

Socioeconomic conditions

The management of Klothok Beach is a testament to the power of community-driven initiatives. Led by the local community in collaboration with the Wonogiri District Government, the management team, which includes delegates from the local government and the local community, particularly the Polaris, a community-level institution, is dedicated to managing MCK and ensuring cleanliness. As Yatmaja (2019) highlights, Pokdarwis is a community-level institution where local tourism actors voluntarily contribute to the development of tourism in their area. The entrance ticket price is set at IDR 10,000/person for weekdays and IDR 15,000/person for weekends. A single ticket allows entry to both Klothok Beach and Sembukan Beach, with a visitor capacity of 20 people on weekdays and 500 people on weekends or national holidays (Table 11).

Development still needs to increase the attractiveness of the location to visitors. However, it is constrained by internal conflicts regarding disputed land, so that every development carried out needs the approval of two parties, namely the government as a subsidy for funds and the community who owns the land even though this tourism provides jobs for the people of Paranggupito Sub-district, Wonogiri District. The community has never been disadvantaged in the development of Klothok Beach tourism. Farming is the main livelihood of the local community, but it is seasonal, so it needs to wait for the rainy season; with the existence of Klothok Beach tourism, the community can sell while waiting for planting and harvesting time. Traditional values and historical heritage, referred to as well-preserved local wisdom, can be an attraction (Towoliu and Takaendengan 2015). The community continues to observe traditional customs, namely *Larungan*, which is performed during the *Suro* night (Islamic Hijri New Year calendar). This ceremony involves the symbolic release of cattle heads and feet into the waters off Sembukan beach (nearby Klotok Beach). *Larungan* is a Javanese tradition that involves throwing offerings (e.g. *tumpeng* or other food such as fruits, vegetables, and a head of buffalo or cow) into the sea or to a place considered sacred, representing gratitude, appreciation for life's gifts, and asking for salvation from Allah (Syamsi et al. 2024). Notable nights for this ceremony include the full moon (*malam bulan purnama*), Legi Friday night (*malam Jum'at Legi*), 1 Muharram night/1 Suro night calendar (*malam 1 Suro*) (Basalamah and Hariri 2020).

Klothok Beach development strategy and SWOT analysis

Klothok Beach is one of the beaches that many tourists visit in Wonogiri. However, Klothok Beach still needs to develop its facilities and beach conditions so that it can increase the number of visitors every day. Therefore, the community and the management of Klothok Beach are needed because they have a strategic role in helping to improve the quality of Klothok Beach.

IFAS-EFAS analysis of Klothok Beach

Based on the IFAS analysis as presented in Table 12, it is known that the total scores for strengths and weaknesses at Klothok Beach are 2.55 and 0.8, so the total score of strengths at Klothok Beach is greater than the total score of weaknesses. This means that Klothok Beach has strong internal capital for its development because the strength score is much higher than the weakness. Klothok Beach has promising potential because of its attractive scenery and beautiful and well-maintained beach atmosphere. These

advantages allow Klothok Beach to deal more effectively with existing weaknesses. Improvements in road access and bathroom facilities at Klothok Beach will increase visitor comfort and experience, which in turn can increase the attractiveness of the beach as a tourist destination. Visitors tend to have the intention to return if they are satisfied with the facilities, services, and experiences they get (Nugraha and Jerubun 2024).

The results of the EFAS analysis are in Table 13, show that the total scores of opportunities and threats of Klothok Beach are 2.1 and 0.7. The total opportunity score is higher than the total threat score, which indicates that more opportunities can be utilized compared to the threats that must be faced. Development by utilizing revenue opportunities for ecotourism potential, such as improving tourist facilities, better promotion, and developing community-based activities, Klothok Beach can strengthen its position as an attractive tourist destination.

Table 11. SWOT Factors of Klothok Beach

Internal Factors	Opportunities	Threats
	1. Income opportunities for the ecotourism potential of Klothok Beach through the sale of food and drinks provided by traders and the surrounding community. 2. The development of ecotourism at Klothok Beach into one of the regional assets will attract the attention of many visitors.	1. Competition with other beaches whose roads are easier to travel and more famous on social media. 2. Land ownership by outsiders
External Factors		
Strengths	Strategi S-O	Strategi S-T
1. The potential and attractiveness of ecotourism at Klothok Beach attract visitors 2. The beautiful and well-maintained atmosphere of Klothok Beach, as well as complete and clean facilities, are the reasons why visitors come to this beach.	1. Increased participation of the community, administrators, and local government in the development of Klothok Beach	1. Conducting promotions on social media by following existing trends to reach visitors from various groups. 2. Increasing awareness and strengthening community institutions.
Weakness	Strategi W-O	Strategi W-T
1. The access road to the beach is still rocky and potentially dangerous for visitors. 2. There is only one bathroom, and it is not strategically located.	1. Propose improvements to the road and access to the beach to the local government with the support of local managers.	1. Design and build facilities such as children's play areas or picnic areas with educational programs for visitors regarding safety when playing at the beach.

Table 12. Internal Factors Analysis Summary (IFAS) of Karang Payung Beach

Strengths	Weight	Score	Total score
The potential and attractiveness of ecotourism at Klothok Beach are interesting	0.3	4.5	1.35
The atmosphere of Klothok Beach is beautiful and well-maintained	0.3	4	1.2
Subtotal	0.6		2.55
Weakness			
Access road is still rocky	0.2	2	0.4
There is only 1 bathroom, and it is not strategically located	0.2	2	0.4
Subtotal	0.4		0.8
Total	1		3.35

Table 13. External Factors Analysis Summary (IFAS) of Klothok Beach

Opportunities	Weight	Score	Total score
Income opportunities for the ecotourism potential of Klothok Beach	0.3	4	1.2
The development of ecotourism at Klothok Beach into one of the regional assets will be interesting	0.3	3	0.9
Subtotal	0.6		2.1
Threats			
Competition with other beaches	0.2	1.5	0.3
Land ownership by outsiders	0.2	2	0.4
Subtotal	0.4		0.7
Total	0.2	1.5	0.3

$$X = \text{Strengths} - \text{Weaknesses} = 2.55 - 0.8 = 1.75$$

$$Y = \text{Opportunities} - \text{Threats} = 2.1 - 0.7 = 1.4$$

The conclusion drawn from the analysis indicates that Nampu Beach, Karang Payung Beach, and Klothok Beach possess tourist attractions that are both aesthetically pleasing and comfortable, and that these attractions have the potential for development. The results of the ADO ODTWA analysis show that the accessibility aspect of Nampu Beach has a feasibility index on the facilities aspect of 59.50% (not feasible). The accessibility index of Karang Payung Beach is 60.29% (not feasible), and the facility index is 65.71% (not feasible). Similarly, the accessibility feasibility index of Klothok Beach is 50% (not feasible). Improving road access and providing adequate transportation for visitors were identified as potential strategies to improve accessibility. In addition, the construction of facilities such as clean toilets and adequate parking areas are also recommended to improve visitor comfort. The SWOT analysis suggests different strategies for each beach. For Nampu Beach, a rapid growth strategy is recommended, focusing on empowering local communities and involving government support in tourism management; improving cleanliness is also crucial to ensure visitor comfort. For Karang Payung Beach, a rapid growth strategy includes improving road access, developing the area as a safe camping site, and gaining local government support. Klothok Beach requires a stable growth strategy that prioritizes better road access and improved restroom facilities, especially during peak holiday periods, to increase visitor satisfaction. By implementing tailored strategies, the development of these beaches can be tailored to their specific strengths, weaknesses, opportunities, and threats, ultimately improving their attractiveness and accessibility as ecotourism destinations.

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