

Strategy for the Development of Anggi Lake Tourist Attraction as a Sustainable Tourism Destination in Arfak Mountains Regency, West Papua Province

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ABSTRACT

This study aims to formulate tourism development strategies for Lake Anggi as a tourist destination in Pegunungan Arfak Regency, West Papua, using a Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis. The research method employed a qualitative descriptive approach with data collection techniques including in-depth interviews, observation, and documentation. A total of 30 respondents were selected through purposive sampling, consisting of traditional leaders, tourism business actors, village officials, and visitors. A structured questionnaire was used as the main instrument. Data were analyzed using the Internal Factor Analysis Summary (IFAS) and External Factor Analysis Summary (EFAS) matrices, and then mapped into the SWOT quadrant. The results show that Lake Anggi has great potential in terms of natural beauty, cultural values, and unique ecosystems, but faces constraints in infrastructure, limited promotion, and low capacity of tourism human resources. The main strategies recommended include community-based eco-tourism development, infrastructure improvement, digital promotion, and cross-sector collaboration. This research contributes to local governments, tourism actors, and communities in formulating sustainable management policies for Lake Anggi

INTRODUCTION

The development of natural tourism destinations and ecotourism in Indonesia has great potential, especially in areas that are still natural and have unique cultural characteristics, one of which is the Anggi Lake area located in the Arfak Mountains Regency, West Papua Province. This area is known for its stunning natural beauty, including the presence of two twin lakes – Danau Anggi Giji and Danau Anggi Gida – surrounded by mountains, cool air, and landscapes that are almost untouched by modern development. In addition, the local Arfak community's culture, such as stilt houses, traditional dances, and a still-strong kinship system, adds value that can enhance the appeal of community-based ecotourism.

In the context of sustainable tourism, Lake Anggi has an advantage due to its relatively natural environmental conditions, minimal pollution, and richness in endemic biodiversity. This uniqueness is an important asset for building Lake Anggi's image as a premier ecotourism destination in West Papua, which aligns with the global trend of increasing interest in nature tourism and ecotourism (Fandeli, 2011). Additionally, support from central and regional governments in developing the tourism sector in West Papua opens opportunities for integrated and inclusive destination management, involving various stakeholders such as local governments, indigenous communities, NGOs, academics, and the private sector.

However, behind its great potential, the Anggi Lake area also faces various fundamental issues. The main challenges are the limited basic infrastructure, such as difficult-to-access roads, minimal tourism-supporting facilities (accommodations, sanitation, and restaurants), and the absence of an integrated and sustainable tourism management system. The lack of trained local human resources in the tourism sector is also an obstacle, as well as the limited digital promotion and marketing. These problems are exacerbated by potential environmental threats, such as ecosystem damage due to uncontrolled tourism development, and extreme climate changes that affect the comfort and safety of tourists.

LITERATURE REVIEW

In addition to technical and ecological factors, socio-cultural aspects are also an important concern. Although local culture is a valuable asset, the influx of tourists without adequate regulation has the potential to erode original cultural values. Potential conflicts over customary land and misalignment among the community, government, and investors can hinder the smooth development of this area (Tebaiy et al., 2023). Therefore, the strategy for ecotourism development at Lake Anggi must consider a participatory approach, strengthen local capacities, and implement sustainability principles in social, economic, and ecological aspects. Based on these conditions, a comprehensive strategic study is needed to identify strengths, weaknesses, opportunities, and threats in the development of Lake Anggi ecotourism. SWOT analysis and IFAS-EFAS strategy matrices are used as analytical instruments to formulate appropriate strategies so that the development of this area can provide optimal benefits for local

communities, preserving environmental sustainability, and enhancing the competitiveness of destinations both regionally and nationally.

METHODOLOGY

Place and Time

This research is planned for 3 months, from April to June 2025, located at Lake Anggi in the Arfak Mountains, West Papua. The location map is shown in Figure 1.

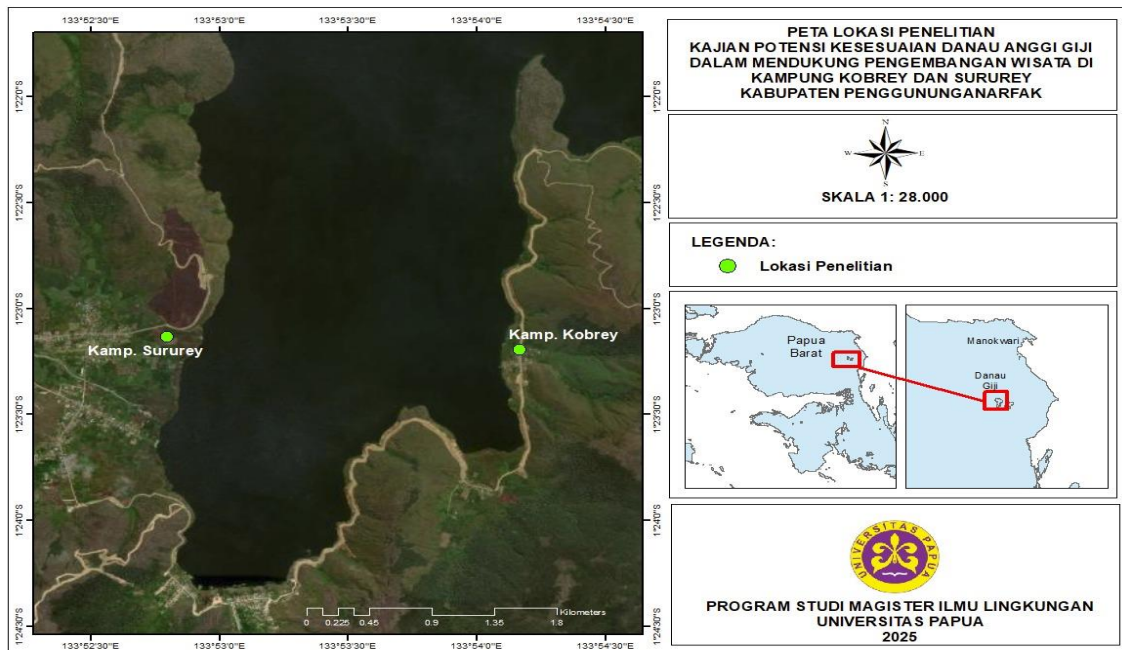


Figure 1. Research Location of Anggi Lake, Arfak Mountains Regency

Research Type

The research method applied in this study is a qualitative approach supported by SWOT analysis, which aims to describe the existing conditions, identify internal and external factors, and formulate strategies for development. The research method used is purposive sampling. Appropriate development strategies are carried out through analysis of internal factors (strengths and weaknesses) and external factors (opportunities and threats) using the SWOT approach (Strengths, Weaknesses, Opportunities, Threats). This analysis helps determine the most suitable strategic direction according to the destination's conditions and environmental potential. Below is an analysis of potential and obstacles through internal and external factors of each SWOT element in producing an appropriate strategy (Rangkuti 2006).

Population and Sample

The population focused on in this study includes all parties involved in the development of Anggi Lake tourism, such as local communities, tourists, tourism managers, NGOs, and the government, while the sample size is chosen from all relevant parties, taking 30 samples that represent the stakeholders.

Data Collection Techniques

The data used in this study comes from primary and secondary data. Primary data is obtained in the field using a questionnaire guide to gather complete information related to the policy strategy for Anggi Lake tourism development. Secondary data is used to explain the potential of Anggi Lake along with relevant references from previous policies and information about Anggi Lake. Data collection techniques are carried out through interviews and observations.

An interview is a verbal interaction that has a specific purpose and involves two parties, namely the interviewer who asks questions and the informant who provides answers. In the context of this interview, we focus on informants who have influence in their local communities. In addition, this study uses two methods in implementation, namely structured interviews, where the researcher conducts interviews with research subjects based on a list of questions previously prepared by the researcher, and observation. Field observation is conducted to examine the condition of infrastructure, natural beauty, and tourist activities around Lake Anggi, which are then presented in a descriptive narrative of Lake Anggi's potential.

Data Analysis Technique

The collected data is processed and analyzed descriptively using the SWOT analysis instrument with Microsoft Excel, which is a qualitative method to assess both internal and external factors. Internal factors include Strengths (power or potential) and Weaknesses (limitations or obstacles), while external factors consist of Opportunities and Threats. The purpose of SWOT analysis is to provide a fundamental understanding of the strategies required to achieve specific objectives.

According to Rangkuti (20015:19), the performance of a company or organization is influenced by the interaction between internal and external factors. Both factors must be considered in SWOT analysis. This analysis compares external factors, which include opportunities and threats, with internal factors, which encompass strengths and weaknesses. The combination of internal and external factors can be described as follows: 1. SO Strategy (Strengths Opportunities) is a strategy formulated by leveraging all strengths to seize and maximize existing opportunities. 2. ST Strategy (Strengths Threats) utilizes existing strengths to overcome faced threats. 3. WO Strategy (Weaknesses Opportunities) is established by taking advantage of available opportunities while reducing potential weaknesses. 4. WT Strategy (Weaknesses Threats) prioritizes defensive measures to minimize weaknesses and avoiding potential threats. Internal factors (strengths and weaknesses) and external factors (opportunities and threats) that have been analyzed are then used to calculate the total IFAS (Internal Factor Analysis Summary) and EFAS (External Factor Analysis Summary) scores.

Strategic positions are determined through a SWOT matrix depicted in the strategy quadrant, which then produces priority programs as development strategies.

RESULTS AND DISCUSSION

Analysis of Internal Factors: Strengths and Weaknesses

Lake Anggi has several prominent strengths: natural beauty, cool air, and the scenery of mountains and exotic twin lakes. The uniqueness of endemic flora and fauna also adds value to the ecotourism destination. The local Arfak culture, including stilt houses and traditional dances, enhances the community-based tourism experience. These strengths enable the development of tour packages that combine nature and cultural activities, such as trekking while learning local customs, birdwatching, and landscape photography. This potential also supports the branding of "Lake Anggi as a sky-high tourism destination," which is unique and can attract both domestic and international tourists.

Despite having many strengths, Lake Anggi still faces serious challenges. Difficult road access limits the flow of tourists. Accommodation, restroom, and dining facilities are very limited, reducing tourist comfort. The capacity of local human resources in tourism management is still low, and digital promotion of the destination is not yet optimal. Additionally, the absence of an integrated tourism management system has the potential to create fragmentation of roles between the government, the community, and business actors. External Factor Analysis: Opportunities and Threats The global trend of nature and eco-tourism is increasing, providing great opportunities to market Lake Anggi as a unique destination. Support from local and central governments, as well as the potential for collaboration with environmental NGOs, research institutions, and investors, can strengthen tourism development. Furthermore, the development of local MSMEs (handicrafts, culinary) offers additional economic opportunities for the community.

The main threats include the risk of environmental damage due to uncontrolled tourism development, extreme climate change, conflicts over customary land, and the influx of tourists that can erode cultural values. Dependence on external parties without building local capacity also poses a long-term risk. SWOT analysis shows that the development of Anggi Lake ecotourism has significant potential but also faces several challenges that need to be addressed. Based on the IFAS score (3.05) and EFAS score (2.85), Anggi Lake is in Quadrant I, indicating that an aggressive strategy (SO - Strengths-Opportunities) is the most appropriate to apply (Table 1). Tourism development is one of the regional economic development strategies oriented toward sustainable management of local potential. One area with great potential to be developed as a prime tourist destination is Anggi Lake, located in the Pegunungan Arfak Regency, West Papua. Anggi Lake consists of two twin lakes – Anggi Giji Lake and Anggi Gida Lake – located in a mountainous area with beautiful natural scenery, cool air, and the cultural richness of the Arfak community.

Table 1. Matrix analysis of internal and external factors for the development strategy of Anggi Lake tourist attractions in Arfak Mountains Regency

Internal Strategic Factors (IFAS)					
Strength		Weight	Relative Weight	Rate	Score
S1	Anggi Lake has unique and exotic natural beauty, including views of the twin lakes.	5	0,09	5	0,43
S2	The area around Anggi Lake is still natural and has minimal pollution.	5	0,09	5	0,43
S3	The local culture of the Arfak people, such as the thousand-legged houses and traditional customs, can be tourist attractions.	5	0,09	5	0,43
S4	The Anggi Lake area has high biodiversity potential, including endemic flora and fauna. The Anggi Lake area has high biodiversity potential, including endemic flora and fauna.	5	0,09	4	0,34
S5	The cool climate and clean air make this area suitable for nature tourism and relaxation.	5	0,09	4	0,34
S6	The local community shows enthusiasm for the development of community-based tourism.	4	0,07	4	0,28
					2,26
Weaknesses					
W1	The access road to Anggi Lake is still difficult to pass or damaged.	4	0,07	3	0,21
W2	Supporting tourist facilities such as accommodations, toilets, and dining places are still very limited.	5	0,09	1	0,09
W3	There is not yet an integrated and sustainable tourism management system at Anggi Lake.	4	0,07	2	0,14
W4	Human resources in the tourism sector are still undertrained.	4	0,07	2	0,14
W5	Digital promotion and marketing of Anggi Lake tourist	4	0,07	1	0,07

	destinations are still very minimal.				
W 6	Limited regional government budgets hinder the development of tourism infrastructure.	4	0,07	2	0,14
W 7	There are no regulations or zoning policies for the Anggi Lake tourist area yet.	4	0,07	1	0,07
			1,00		0,84
External Strategy Factor (EFAS)					
<i>Opportunities</i>					
O1	The trend of nature tourism and ecotourism is increasing both nationally and internationally.	5	0,08	5	0,38
O2	The central and regional governments provide tangible support for the development of tourism in West Papua.	4	0,06	3	0,18
O3	There are opportunities to establish cooperation with environmental NGOs and research institutions.	4	0,06	3	0,18
O4	The development of local MSMEs (such as handicrafts and culinary products) is very potential around Lake Anggi.	5	0,08	3	0,23
O5	Lake Anggi has the potential to be branded as a unique "tourism destination above the clouds"	5	0,08	5	0,38
O6	There is funding potential from companies (CSR) or state-owned enterprises to support ecotourism development.	4	0,06	4	0,25
O7	Social media and digital platforms can help widely promote Lake Anggi.	5	0,08	4	0,31
					1,92
<i>Threats</i>					
T1	Uncontrolled tourism development has the potential to damage the environment of Lake Anggi.	4	0,06	1	0,06

T2	There is a potential for conflicts related to customary or legal land boundaries in the Lake Anggi area.	5	0,08	4	0,31
T3	Extreme climate changes (fog, landslides, heavy rainfall) can disrupt tourism activities.	4	0,06	3	0,18
T4	A lack of synergy between the community, government, and investors hinders tourism development.	5	0,08	1	0,08
T5	The influx of tourists can threaten the preservation of local culture if not controlled.	5	0,08	2	0,15
T6	Dependence on external parties without building local capacity can become a long-term problem.	5	0,08	1	0,08
T7	Uneven tourism development risks creating regional disparities in the Arfak Mountains.	5	0,08	2	0,15
			1,00		1,02

Source: processed data (2025)

From the results of weighting and scoring the factors affecting the Development of Anggi Lake Tourist Objects, it is found that each factor, both internal (strengths and weaknesses) and ex-ternal (opportunities and threats), each influences the activities of Developing Anggi Lake Tourist Objects, with the internal factor ratio value, namely strengths and weaknesses, being 2.26:0.84, while the external factor ratio value, namely opportunities and threats, is 1.92:1.02 (Table 2).

This ratio value can be interpreted as the level of influence or significance of each factor on the development of the Anggi Lake tourism site in the Arfak Mountains Regency. Based on the value of each of these factors, it is evident that internal factors (strengths) and external factors (op-portunities) have a fairly significant impact on the development of the Anggi Lake tourism site, while other internal factors, namely weaknesses, and external factors (threats), have a less noticeable impact. A higher ratio value indicates a stronger influence on the issue at hand. Therefore, it can be said that internal factors (strengths) and external factors (opportunities) have a fairly significant in-fluence on the development activities of the Anggi Lake tourism site in the Arfak Mountains Re-gency.

The quadratic relationship between IFAS and EFAS is depicted using the SWOT quadrant model (Cartesian quadrant) as a quadratic graph used as a model to assess the interrelation of ele-ments in SWOT, such as the relationship

between strengths and weaknesses (internal factors) and opportunities and threats (external factors). The SWOT quadrant is formed to determine strategic alternatives based on the four main SWOT components.

The relationship between the interrelated elements is carried out to determine the coordinate axis of the strategy in the Cartesian quadrant. The strategies referred to in the quadrant are aggressive, di-versification, defensive, and turnaround strategies. Based on the calculation results to determine the position of alternative strategies for developing the Anggi Lake tourism object in the Arfak Moun-tains Regency, it shows that the X and Y axis coordinate positions in the SWOT quadrant are in the "Aggressive Strategy" with a comparison of IFAS (X) to EFAS (Y) ratios of 1.41: 0.91 (Figure 2).

Table 2. Weighted values of the development strategy for the Anggi Lake tourism object in Arfak Mountains Regency

Weighted value of strengths	2.26
Weighted value of weaknesses	0.84
<i>Positive Difference</i>	1.41
Weighted probability value	1.92
Weighted threat value	1.02
<i>Positive Difference</i>	0.91

SWOT analysis between IFAS and EFAS, where the results of the SWOT analysis are based on weighted data using a SWOT questionnaire in the form of quantitative data, and after performing a quadratic analysis for both internal and external factors, alternative strategies for the development of Anggi Lake tourist attractions in the Arfak Mountains Regency were found to be in quadrant I, which is an Aggressive strategy (growth-oriented strategy) (Figure 2).

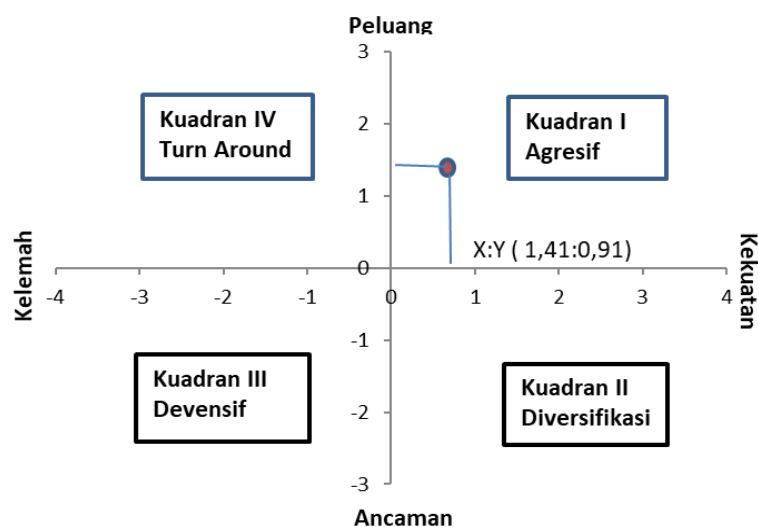


Figure 2. Cartesian Quadrant Position of the Development Strategy for Anggi Lake

Tourism Objects in Arfak Mountains Regency The figure above illustrates the quad-ratic relationship or interconnection of ele-ments. Based on the Cartesian Quadrant anal-ysis, the development position of Anggi Lake tourism objects is in Quadrant I, indicating that this destination has high internal strength as well as significant external opportunities. This position is very strategic as it allows the implementation of an aggressive strategy (Growth-Oriented Strategy), which is an ex-pansive, progressive, and proactive develop-ment strategy to rapidly and sustainably pro-mote the growth of the tourism sector. Anggi Lake has unique and extraordinary natural at-tractions, ranging from the twin lakes Anggi Giji and Anggi Gida surrounded by green hills, cool mountain air, and the cultural richness of the Arfak community, which remains highly authentic. This strength should be maximized by building supporting infrastructure, such as better access roads, tourist facilities, as well as the provision of communication means and eco-friendly accommodation. In terms of op-portunities, the increasing interest of tourists in natural and cultural destinations, especially in the West Papua region, is a momentum that needs to be utilized. In addition, the central government's attention to the development of eastern Indonesia also presents a great oppor-tunity to obtain budget support, promotion, and investment.

The Strategy for Developing Lake Anggi as a Leading Tourist Destination That is Sustainable and Competitive

The strategy for developing Lake Anggi as a leading tourist destination that is sustainable and competitive is very important because this strategy serves as a guide to ensure that Lake Anggi not only attracts many tourists but also continues to develop without damaging the local environment and culture. Based on the results of the Cartesian Quadrant analysis, the strategic position of Lake Anggi's tourism de-velopment in Pegunungan Arfak Regency falls under the aggressive strategy as it is in quad-rant 1. An aggressive strategy refers to a proac-tive, bold, and rapid approach to achieving ambitious goals. In the context of tourism de-velopment, this means not just waiting for tourists to come but actively creating attractive conditions and promoting them vigorously. Actions that can be taken in the development of Lake Anggi as a tourist destination in Pegunungan Arfak Regency include:

Strengthening Tourism Infrastructure and Accessibility

- Improving the quality and connectivity of roads leading to Lake Anggi from the city center (Manokwari or Arfak Mountains).
- Developing supporting facilities such as eco-friendly homestays, rest areas, tourist information centers, and natural photo spots.
- Encouraging infrastructure develop-ment based on environmentally friend-ly and low-carbon principles.

Digital Promotion and Branding of the Destination

- Building the image and narrative of Lake Anggi as a destination (destina-tion storytelling) as the "Hidden Gem of Papua" or "Heaven Above the Clouds".
- Optimizing social media, websites, and digital campaigns through influencers, travel bloggers, and nation-al/international media.

- Production of high-quality visual content: cinematic videos, short documentaries, and exotic photography of Lake Anggi.

Development of Leading and Sustainable Tourism Products

- Creating themed tourism packages: ecotourism, Arfak Tribe culture, trekking, camping, and environmental education tourism.
- Promoting local cuisine and handicrafts as additional attractions (economic-based tourism).
- Planning an annual event calendar: cultural festivals, cross-country running competitions, or nature photography expeditions.

Empowerment and Involvement of the Local Community

- Training the community in hospitality, guiding, homestay management, handicrafts, and local culinary processing.
- Encouraging village tourism cooperatives to manage destinations in a participatory and professional manner.
- Forming tourism-aware communities (Pokdarwis) to maintain cleanliness, safety, and environmental sustainability of tourist areas.

Strategic Collaboration and Partnerships

- Establish cooperation between local governments, the Ministry of Tourism and Creative Economy, and private parties (investors)
- Collaborate with environmental NGOs for the conservation of the Anggi Lake ecosystem as part of an ecotourism education package.
- Form partnerships with universities or NGOs for research, community assistance, and mapping tourism potential.

Integrated Nature and Cultural Preservation

- Designate the Anggi Lake area as a conservation and culture-based tourism zone.
- Draft local regulations on the governance and protection of Anggi Lake from massive activities that damage the ecosystem.
- Align tourism development with the preservation of Arfak Tribe culture through documentation, performances, and youth involvement.

Based on the SWOT quadrant I analysis, the development of Anggi Lake as a superior tourist destination is directed through an aggressive strategy approach that combines internal strengths with Optimally leveraging external opportunities. The exotic natural beauty of Lake Anggi, the rich culture of the Arfak Tribe, and the strong community participation are the main strengths that can be utilized to capture trends in sustainable tourism, government support, and potential investment in the tourism sector. This aggressive strategy aims to make Lake Anggi a leading sustainable tourism destination that is highly competitive and inclusive, capable of driving local economic growth, environmental preservation, and strengthening the cultural identity of West Papua. With a planned and participatory aggressive approach, Lake Anggi will not only become a tourist destination but also a symbol of development transformation based on local wisdom and sustainability.

The development strategy adopted includes environmentally conscious infrastructure improvements, strengthening the digital branding of the destination, developing culturally and ecotourism-based thematic tourism

products, empowering local communities as key actors, and multi-stakeholder collaboration in destination management. This approach aims not only to make Lake Anggi a competitive destination at the national and international levels but also to ensure that its management is inclusive, sustainable, and provides real benefits to local communities. With the implementation of a focused, consistent, and participatory aggressive strategy, Lake Anggi has great potential to grow as a sustainable tourism icon of West Papua, as well as a symbol of successful development based on local wisdom and environmental preservation.

CONCLUSIONS AND RECOMMENDATIONS

1. The internal and external factors displayed in the analysis matrix show that the internal factors are 6 strengths, 7 weaknesses, and 7 opportunities and 7 threats. The calculation results to determine the alternative development strategies for Lake Anggi in the Arfak Mountains Regency indicate that the X and Y axes in the SWOT quadrant are in the "Aggressive Strategy" with a ratio of IFAS (X): EFAS (Y) of 1.41: 0.91.
2. The six development strategies based on the aggressive strategy are: Strengthening tourism infrastructure and accessibility, Promotion and digital branding of destinations, Development of superior and sustainable tourism products, Empowerment and involvement of local communities, Collaboration and strategic partnerships, and integrated conservation of nature and culture.

FURTHER STUDY

This research still has limitations, so it is necessary to conduct further research related to the topic of Strategy for the Development of Anggi Lake Tourist Attraction as a Sustainable Tourism Destination in Arfak Mountains Regency, West Papua Province in order to perfect this research and increase insight for readers.

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