

## Feasibility Analysis of the Attractiveness of Lake Ngade Tourism in Ternate City, North Maluku

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Article History	Abstract
Received: 27 November 2025 Accepted: 02 Desember 2025 Published: 10 December 2025	<p><i>This study analyzes the feasibility of the natural tourism attraction of Danau Ngade in Ternate, Indonesia, by evaluating eight key criteria: attractiveness, accessibility, accommodation, visitor facilities, market potential, clean water availability, environmental conditions, and management quality. A descriptive-exploratory qualitative approach was employed, supported by a scoring technique based on the modified ODTWA guidelines of the Directorate General of PHKA (2003) and the feasibility calculation formula by Putri et al. (2019). Data were collected through field observations, in-depth interviews, and documentation. The results show that Danau Ngade achieves an overall feasibility score of 78.898%, indicating that the destination is generally feasible and holds high development potential. Components such as attractiveness, accessibility, accommodation, visitor facilities, and environmental quality obtained high scores, demonstrating strong physical and ecological potential. However, the management, maintenance, and service components recorded low feasibility, highlighting weaknesses in organizational structure, service quality, and facility upkeep. The study concludes that while Danau Ngade has significant natural and market advantages, strengthening institutional capacity and improving service standards are essential to ensure sustainable development. These findings contribute to the understanding of feasibility assessment in small lake-based destinations and provide practical insights for improving tourism management and planning.</i></p> <p><b>Keywords:</b> <i>tourism feasibility; danau ngade; natural attraction; sustainable tourism; destination management; environmental assessment.</i></p>



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### INTRODUCTION

Lake Ngade is one of the most prominent natural tourist destinations in Ternate City because it offers an exceptionally unique panorama where a freshwater lake, the open sea, and Tidore Island appear simultaneously within a single visual frame. This rare landscape composition often described by visitors as a “three-layered vista” creates a distinctive scenic value that distinguishes Lake Ngade from other nature-based attractions in North Maluku. The combination of volcanic terrain, coastal waters, and the silhouette of Tidore’s Kiematubu Mountain forms a panoramic corridor that is highly appealing for photography, sightseeing, and immersive nature experiences. The increase in visits in recent years shows that this area has a strong appeal, especially amid the growing trend of nature-based tourism and landscape

photography (Latupapua, 2021). However, this rapid tourism development has also given rise to new dynamics within the community, such as the growth of selfie spots, small food stalls, and privately constructed gazebos. These unregulated changes in land use are not always aligned with the ecological sensitivity of the area and often raise issues related to planning, sustainability, and destination management regulations.

In addition to its visual uniqueness, Lake Ngade faces several critical management challenges that underline its importance as a case study in Ternate and North Maluku. One of the most pressing issues is the status of land ownership, where mixed arrangements between private, customary, and community-controlled lands complicate destination governance and limit the authority of the local government to enforce spatial planning regulations. At the same time, the lake ecosystem is increasingly exposed to pressures from tourism activities—ranging from waste accumulation, disrupted water quality, and stress on riparian vegetation to the potential impacts on local aquaculture practices traditionally carried out by the community. These challenges highlight a complex interplay between ecological vulnerability, community-based tourism entrepreneurship, and the absence of a unified management framework.

Based on field conditions, several aspects of Ngade Lake's destination feasibility require urgent attention. In terms of its core appeal, the iconic panoramic landscape is still not supported by interpretive narratives, curated viewpoints, or structured supporting attractions. Accessibility to the location is relatively good, but some road segments need improvement in terms of comfort and safety. Accommodation around the area is limited, resulting in predominantly short visits rather than extended stays. Visitor facilities such as viewing points, parking areas, rest areas, and sanitation infrastructure are not yet optimally organised, affecting the overall quality of the tourist experience (Malik & Yusuf, 2022). In addition, the availability of clean water to support tourism activities is still minimal, while the condition of the lake environment is under pressure due to increased visitor intensity and spontaneous infrastructure development.

From an economic perspective, Lake Ngade has strong market potential because it is frequently promoted on social media and has become a favoured location for photography, pre-wedding shoots, and family tourism. However, this potential has not been matched by adequate management and service quality. The organisational structure of destination management remains unstable, resulting in spontaneous facility development without clear standards or long-term planning (Sinaga, 2013). Basic tourism services including cleanliness management, visitor information, and safety are still not coordinated, while maintenance capacity is limited. Consequently, some facilities quickly deteriorate, reducing the overall quality of the destination and its competitiveness.

Recent studies on nature-based tourism in small island settings, including those in Maluku and Eastern Indonesia, emphasize the importance of integrating landscape uniqueness with sustainable destination governance (Latupapua, 2021; Malik & Yusuf, 2022). Existing literature highlights how scenic resources require management frameworks that balance community participation, ecological integrity, and visitor experience. However, most studies tend to focus either on general tourism potential or on community empowerment models, with limited attention to destinations that feature multi-layered visual landscapes like Lake Ngade. Moreover, research on Ternate's tourism development has predominantly addressed heritage

sites and coastal attractions, leaving freshwater–marine hybrid landscapes underexplored despite their growing popularity. Lake Ngade thus occupies an important scientific niche because its aesthetic value is intertwined with spatial, ecological, and institutional complexities uncommon in conventional lake tourism studies.

Despite increasing tourist interest, there is still a lack of empirical research that specifically examines how Lake Ngade’s unique panorama and management challenges shape its current destination readiness. Studies have not adequately explored how conflicting land ownership, unregulated construction, and environmental strain affect the sustainability of a landscape where freshwater, marine, and island geographies converge. Additionally, there remains limited analysis of how community initiatives, local government policies, and visitor behaviour interact within this sensitive environment. This gap is significant because it prevents the development of an evidence-based management model tailored to Lake Ngade’s distinctive characteristics. Therefore, a comprehensive assessment that integrates physical attractiveness, infrastructure readiness, environmental vulnerability, and governance challenges is needed to support sustainable tourism development in Lake Ngade and to guide policy interventions in similar destinations across Ternate and North Maluku.

## RESEARCH METHOD

Data analysis in this study was conducted using quantitative–descriptive scoring techniques based on the criteria of object feasibility and natural tourism appeal. The scoring procedure referred to the ODTWA Analysis Guidelines published by the Directorate General of PHKA (2003), which were then adjusted to the needs of the study to describe the actual conditions of Lake Ngade. Adjustments were made to the weighting system, assessment intervals, and interpretation of score values so that the analysis results were more relevant to the characteristics of the destination under study.

Each assessment component including attractiveness, accessibility, accommodation, visitor facilities and infrastructure, market potential, clean water availability, environmental conditions, and management, maintenance, and service aspects was evaluated using a scoring system with predetermined parameters. Scores were obtained through field observations, structured interviews, and supporting documentation. The collected values were then analysed using a feasibility assessment equation adapted from Putri et al. (2019) to convert raw scores into standardised feasibility values.

Feasibility calculations were performed using the following formula:

$$\text{Feasibility (\%)} = (\Sigma \text{ Actual Score} / \Sigma \text{ Maximum Score}) \times 100\%$$

(Putri et al., 2019)

The formula was used to determine the feasibility level for each criterion and to produce a final feasibility score for the destination. The scores obtained were subsequently classified into specific categories based on a modified assessment range from the ODTWA guidelines. This scoring approach enables a systematic and objective analysis of the physical, social, and managerial aspects influencing the feasibility of Lake Ngade as a natural tourism destination.

Key informants were selected using purposive sampling to ensure representation from stakeholder groups directly involved in or affected by tourism activities at Lake Ngade. The

selection criteria included:

1. Representatives of BUMDes or Pokdarwis—individuals who oversee community-based tourism management and possess operational knowledge regarding visitor flow, facility use, and on-site management challenges.
2. Representatives of the Ternate City Tourism Office—officials responsible for tourism planning, regulatory oversight, and destination development policies, providing perspectives on compliance with regional tourism standards and infrastructure priorities.
3. Representatives of local communities, particularly landowners and residents living around the lake—individuals who understand customary land-use practices, environmental changes, and socio-cultural dynamics influenced by tourism development.

Their perspectives were used to contextualize and interpret the quantitative feasibility scores. For example, community representatives helped clarify issues related to land ownership, clean water availability, and environmental pressures, which influenced scoring decisions in the environmental and management criteria. BUMDes/Pokdarwis members provided insights into facility conditions, maintenance practices, and visitor behavioural patterns, which were essential for interpreting scores related to services, infrastructure, and attractiveness. Meanwhile, the tourism office contributed to validating accessibility assessments, regulatory compliance, and alignment with destination development policies. These triangulated insights ensured that the scoring results were not only numerically accurate but also aligned with socio-cultural realities and managerial conditions at Lake Ngade.

## RESULT AND DISCUSSION

Lake Ngade is one of the prominent natural tourist destinations in Ternate City, North Maluku, known for its beautiful panorama and distinctive landscape. Located in Ngade Village, this freshwater lake is not far from the coastline, offering a unique view of the calm lake water combined with the expanse of blue sea and the islands of Maitara and Tidore in the background. This visual combination makes Lake Ngade one of the locations with the highest aesthetic value in the Ternate area.



Figure 1. Lake Ngade  
Source: Personal Documentation, 2025.

Of all the marine tourism attractions in Ternate City, Lake Ngade deserves to be one of the development priorities that should be taken into account. Although it does not yet have adequate facilities to support tourism activities, the natural beauty and rich biodiversity of Lake Ngade are valuable assets that deserve attention. The uniqueness and beauty of this lake create great potential for it to be developed as a fishing tourism destination. Fishing tourism is an interesting concept that combines fishing and barbecuing activities with tourism. The existence of Ngade Lake as the only tourist attraction in Ternate City that can be developed into a fishing tourism destination, thereby adding a new attraction to the range of tourist options for visitors, is a reason to designate this tourist attraction as a development priority. In addition, the lake is also very close to the city centre, making it more accessible to tourists.

Table 1. Results of the assessment of the feasibility of natural attractions and tourist appeal at Lake Ngade

No	Criterion	Weight	Score	Max Score	Eligibility Index (%)	Class	Potential Class
1	Attraction	6	930	1080	86,11	Eligible	Height
2	Accessibility	5	550	600	91,67	Eligible	Height
3	Accommodation	3	180	180	100,00	Eligible	Height
4	Visitor Facilities and Infrastructure	3	300	300	100,00	Eligible	Height
5	Market Potential	2	430	550	78,18	Eligible	Height
6	Availability of Clean Water	2	340	400	85,00	Eligible	Height
7	Environmental Conditions	5	875	1000	87,50	Eligible	Height
8	Management, Care and Service	4	332	880	37,73	Not Eligible	Low
	- Organizational Stability/Management	4	192	560	34,29	Not Eligible	Low
	- Service Quality	4	80	180	44,44	Not Eligible	Currently
	- Facilities of Care & Service	4	60	140	42,86	Not Eligible	Low
Level of Development Feasibility			3937	4990	78,898	Eligible	Height

Source: Author's analysis (2025)

The results of the study show that Lake Ngade has a feasibility score of 78.898%, placing it in the *Feasible* category with strong development potential. Several components particularly attractiveness, accessibility, market potential, visitor facilities, clean water availability, and environmental conditions received high scores. These results confirm that Lake Ngade possesses significant physical and market advantages that align with classic destination development theory, which identifies attractions, accessibility, and amenities as the core pillars of destination competitiveness (Gunn, 1994; Butler, 1980). The unique panorama of Lake



Ngade, where visitors can simultaneously see the lake, the sea, and Tidore Island, further reinforces its strong value as a high-quality nature-based tourism resource.

Environmental conditions and clean water availability also scored high, indicating that Lake Ngade still maintains an ecologically viable condition for tourism activities. This is consistent with sustainable tourism principles emphasizing the need for natural resource integrity as the foundation of nature tourism (Buckley, 2012). Previous studies (Sinaga, 2013; Nur, 2020) similarly highlight that good environmental quality enhances destination feasibility. However, even with these positive indicators, increasing visitation and unregulated land-use changes around the lake signal emerging ecological pressures that require proactive governance to prevent degradation.

### **Contrasting Scores: High Physical Potential vs. Weak Governance Structure**

In sharp contrast to its strong physical attributes, the aspects of management quality, maintenance, and service delivery received low scores and were classified as *Unsatisfactory*. Weak institutional organization, limited coordination between stakeholders, unclear authority over land use, and the absence of structured maintenance routines indicate that the governance system of Lake Ngade is not yet functioning effectively. The discrepancy between high physical potential and low governance performance is critical because it places the destination at risk of sustainability decline, a pattern widely discussed in tourism governance literature (Bramwell & Lane, 2000).

The implications of this contrast are substantial. Without strong management, Lake Ngade's exceptional attractiveness could lead to overcrowding, waste accumulation, visual pollution from unregulated structures, and long-term ecological stress. High accessibility may further accelerate these risks by increasing visitor volume without adequate control mechanisms. Thus, Lake Ngade illustrates a classic paradox: *a destination with high physical appeal but weak management may experience faster degradation than destinations with moderate attractiveness but strong governance*. This reinforces the argument that governance and managerial capacity act as critical mediators between physical potential and long-term destination sustainability.

### **Evidence-Based Solutions: Governance Model and Maintenance SOPs**

Given the low scores in management and maintenance, the findings indicate a pressing need for a multi-stakeholder governance model specifically adapted to the socio-spatial context of Lake Ngade. A realistic governance structure should involve:

1. Ternate City Tourism Office—regulatory oversight, zoning enforcement, and development planning;
2. BUMDes or Pokdarwis—operational management, visitor services, and facility coordination;
3. Local landowners and community leaders – negotiation of land-use agreements and participation in environmental stewardship;
4. Village Government—integration of tourism governance with customary rules and community needs.

Such a collaborative governance model is crucial to address overlapping land

ownership, strengthen decision-making clarity, and ensure that facility development follows clear design and environmental standards. Research in Indonesia's community-based tourism settings has shown that multi-stakeholder governance improves accountability, environmental protection, and visitor experience quality (Hilman & Aziz, 2020; Junaid et al., 2022).

In terms of maintenance, the low score highlights the need for structured daily and periodic SOPs, such as:

1. Daily waste collection and segregation routines supervised by BUMDes/Pokdarwis.
2. Regular cleaning schedules for viewing platforms, parking areas, and rest areas.
3. Weekly environmental inspections of riparian zones and lake water quality.
4. Monthly maintenance of signage, gazebos, and visitor infrastructure.
5. Visitor capacity monitoring during peak periods to prevent overcrowding.

These SOPs must be backed by a clear division of tasks and funding mechanisms to prevent facility deterioration—a recurring problem indicated by the scoring results.

### **Interpretation of Findings within the Broader Context**

This study contributes to the growing body of literature on feasibility assessment in small island and lake-based tourism destinations. While previous research predominantly emphasises the physical components of attraction and service availability, the present findings highlight that institutional capacity and governance quality serve as decisive factors that determine whether physical potential can translate into long-term destination success. The case of Lake Ngade demonstrates that feasibility assessments must integrate both physical/ecological indicators and institutional/managerial indicators to generate an accurate representation of destination readiness.

### **Practical Implications**

From a practical perspective, the findings assert that improving management effectiveness, restructuring the maintenance system, and developing capacity among local tourism actors should be top priorities. Carrying capacity planning, zoning arrangements, and an integrated management plan are urgently needed to balance tourism growth with environmental sustainability. Without these interventions, the destination's high physical attractiveness risks being undermined by unmanaged visitation and declining service quality.

Overall, this study highlights that the success of Lake Ngade as a nature-based tourism destination is determined not merely by its exceptional physical assets but, more critically, by the quality of governance and maintenance practices supporting those assets. The contrast between high physical scores and low managerial scores underscores the urgent need for institutional strengthening. The findings serve as an important reference for designing governance reforms and operational strategies aimed at ensuring that Lake Ngade remains both competitive and sustainable in the long term.

## CONCLUSION

The results of the study indicate that Lake Ngade has a feasibility rating of 78.898%, placing it in the Feasible category with high development potential. Scoring analysis of the eight main criteria shows that the physical aspects of the destination, including attractiveness, accessibility, accommodation, visitor facilities, market potential, availability of clean water, and environmental conditions, received high scores. Meanwhile, the aspects of management, maintenance, and service are the only components with low scores, making them the main limiting factors in the development of the destination. These findings are in line with the research objective to comprehensively assess the suitability of the destination and identify components that require priority intervention.

For further research, it is recommended that this study be expanded into a comparative analysis between destinations to test the consistency of the modified ODTWA feasibility assessment model. Longitudinal research is needed to monitor changes in feasibility after institutional interventions are implemented. Subsequent research could also integrate more comprehensive quantitative measurements, such as economic valuation, water quality analysis, and environmental carrying capacity models. In addition, a participatory approach that involves the community in designing management models can be a strategic alternative to increase the legitimacy and effectiveness of destination management. Thus, further research is expected to overcome existing limitations while strengthening the contribution of science and sustainable nature tourism management practices.

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