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ANALYSIS OF THE IMPACT OF LIMITED INFRASTRUCTURE ON TOURISM DEVELOPMENT IN EAST NUSA TENGGARA (NTT)

Afli Sangsun JEHAMUR¹, Melkisedek N.B.C. NEOLAKA², Maria MAGDALENA³, Lino. Syukur M. Adang DJAHA⁴

^{1,2,3,4}Master of Public Administration Study Program, Faculty of Social and Political Sciences, Nusa Cendana University, Republic of Indonesia

Corresponding author: Afli Sangsun Jehamur

E-mail: alfi.jehamur@gmail.com

Abstract:

East Nusa Tenggara (NTT) has tremendous tourism potential, ranging from stunning natural beauty to rich cultural diversity. However, this potential has not been optimally utilized, partly due to infrastructure limitations. This paper analyzes how infrastructure limitations, such as transportation accessibility, accommodation availability, and other supporting infrastructure, hinder tourism development in NTT. This study employs a qualitative approach using literature review and secondary data analysis to identify the significant impacts of infrastructure limitations on tourism sector growth, local community income, and environmental conservation. The findings reveal that infrastructure limitations significantly hinder NTT's competitiveness as a tourist destination, limit economic opportunities for local communities, and pose a risk of environmental damage if not managed properly. This paper also offers policy recommendations to address these issues, including strategic infrastructure investment, public-private partnerships, and sustainable tourism development.

Keywords: Tourism Infrastructure, Tourism Development, East Nusa Tenggara, Regional Development, Tourism Economy

INTRODUCTION

Tourism is broadly defined by the World Tourism Organization (UNWTO) as travel and stays in places outside one's usual environment for no more than one consecutive year for recreation, business, and other purposes not related to activities that earn income from the place visited (UNWTO, 2010). Tourism development focuses not only on increasing the number of tourists and revenue, but also on sustainability. Sustainable tourism aims to meet the needs of tourists and destination areas today while protecting and enhancing opportunities for the future. This includes managing all resources in such a way that economic, social, and aesthetic needs are met while maintaining cultural integrity, essential ecological processes, biodiversity, and life support systems (UNWTO, 2004). Tourism has become one of the most dynamic drivers of the global economy, contributing significantly to regional income, job creation, and improved community welfare. In Indonesia, the tourism sector is recognized as one of the national development priorities, in line with the country's abundant natural and cultural wealth. The province of East Nusa Tenggara (NTT), with its unique geography consisting of a chain of islands, offers a highly promising tourism landscape. Iconic destinations such as Komodo National Park, home to the ancient Komodo dragons, the mysterious Three-Colored Lake Kelimutu, the underwater beauty of Alor, and the megalithic traditions of Sumba, have attracted the attention of both domestic and international tourists.

Infrastructure is the backbone of tourism sector development (Prideaux, 2000). The availability of adequate infrastructure directly affects the attractiveness of a destination, ease of access, tourist comfort, and operational efficiency for tourism businesses. Tourism infrastructure encompasses



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various elements, including transportation infrastructure such as roads, airports, ports, and public transportation services (buses, boats, taxis) that connect destinations and facilitate tourist movement (Inskeep, 1991). Then there is utility infrastructure, which includes a stable electricity supply, clean water, sanitation systems, and efficient waste management (Hall & Page, 2009), communication infrastructure, namely telecommunications networks (mobile phones, internet) that enable tourists to stay connected and facilitate business operations, as well as supporting facilities such as accommodation (hotels, resorts, homestays), restaurants, shopping centers, hospitals/clinics, banks, and tourist information centers. Infrastructure limitations can create various obstacles, such as long travel times, high operational costs for businesses, low service quality, tourist discomfort, and health and safety risks, which ultimately reduce the competitiveness of the destination (Henderson, 2003).

East Nusa Tenggara (NTT) is an archipelagic province in Indonesia, rich in tourism potential. From the geological wonders of Kelimutu's Three-Colored Lake, the uniqueness of the Komodo dragons on Komodo Island, a UNESCO World Heritage Site, to the underwater beauty of Alor and the megalithic cultural heritage of Sumba, NTT offers a wide variety of attractions for both domestic and international tourists. The tourism sector is believed to be one of the main pillars of economic growth and improved well-being for the people of NTT (NTT Central Statistics Agency, 2024). However, this huge potential has not been fully realized yet. One of the main things holding back tourism development in NTT is the lack of infrastructure. Good infrastructure, like a decent road network, efficient air and sea transportation, stable electricity, enough clean water, and smooth communication networks, is super important for the tourism industry. Without robust infrastructure support, tourists will face various challenges, ranging from poor accessibility, lack of comfort, to security and information issues, which ultimately may reduce visit interest and stay duration.

Previous reports and studies show that NTT still faces various infrastructure-related issues. Road conditions in some remote areas remain concerning; inter-island transportation is still inefficient, electricity availability is limited in many villages, access to clean water is a critical issue on some arid islands, and communication networks are not evenly distributed, especially in remote areas (Ministry of Public Works and Housing, 2023; Bank Indonesia NTT Report, 2023). These issues directly or indirectly impact the tourism sector. This study aims to analyze in depth how infrastructure limitations in NTT, both physical and non-physical, impact various aspects of tourism development. By identifying these barriers, relevant and strategic policy recommendations can be formulated for local governments, investors, local communities, and other stakeholders to address infrastructure deficits and promote sustainable, inclusive, and competitive tourism growth in NTT.

Tourism development is one of the strategic sectors that is expected to drive economic growth and community welfare in various regions, including East Nusa Tenggara (NTT). NTT, with its natural beauty, rich culture, and unique geography, has tremendous tourism potential. However, this potential is often hampered by various challenges, one of which is limited infrastructure. This literature review will discuss several relevant concepts and studies that form the basis for analyzing the impact of limited infrastructure on tourism development in NTT.

The Concept of Infrastructure in Tourism. Infrastructure in the context of tourism refers to all basic facilities and systems that support the operation and development of the tourism sector. According to Inskeep (1991), tourism infrastructure can be divided into two main categories: basic infrastructure and tourism infrastructure. Basic infrastructure includes roads, bridges, airports, ports, clean water supply, electricity, and telecommunications. Meanwhile, tourism infrastructure includes accommodation (hotels, resorts), restaurants, tourist information centers, recreational



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facilities, and specialized tourism transportation. The availability and quality of this infrastructure are vital in attracting tourists, facilitating their mobility, and enhancing their overall travel experience (UNWTO, 2018).

The Importance of Infrastructure for Tourism Development. A number of studies have shown a positive relationship between the availability of adequate infrastructure and tourism growth. Good infrastructure can improve destination accessibility, reduce transportation costs, improve service quality, and create a more attractive environment for investors and tourists (Brida & Risso, 2009; Khan, 2013). Conversely, infrastructure limitations can be a major obstacle to tourism development. For example, damaged roads or insufficient electricity supply can hinder tourist arrivals, limit the types of tourist activities that can be offered, and reduce revenue potential.

Infrastructure Conditions in East Nusa Tenggara (NTT). Geographically, NTT consists of a group of islands with diverse topography, posing unique challenges for infrastructure development. Reports from BPS (2024) and various studies show that NTT still faces a significant infrastructure deficit, especially in remote areas. Common problems include:

- **Accessibility and Transportation:** Uneven and often damaged road conditions, limited direct flight routes to several potential destinations, and a lack of adequate inter-island transportation are major obstacles.
- **Energy and Clean Water:** Unstable and uneven electricity supply, as well as limited access to clean water in some tourist areas, have an impact on tourist comfort and tourism business operations.
- **Telecommunications:** Suboptimal telecommunications signal coverage and internet access in some areas also pose challenges in this digital age, given the importance of connectivity for tourists.
- **Accommodation and Supporting Facilities:** Although there has been improvement, the number and quality of accommodation and other supporting facilities (such as hospitals and banks) outside major cities still need to be improved.

The Impact of Infrastructure Limitations on Tourism in NTT. Infrastructure limitations in NTT have various negative impacts on tourism development, including:

- **Declining Attractiveness of Destinations:** Tourists tend to seek destinations that are easily accessible and comfortable. Poor infrastructure can reduce tourists' interest in visiting or returning (Gössling & Hall, 2006).
- **Increased Operating Costs:** For tourism operators, poor infrastructure can increase operating costs, such as vehicle repair costs or the procurement of electric generators, which can ultimately result in higher costs for tourists or reduced business profitability.
- **Limitations on Types of Tourism:** Some types of tourism that require special infrastructure (e.g., convention tourism, integrated ecotourism) are difficult to develop without adequate infrastructure support.
- **Decline in Tourist Experience Quality:** Difficult access, inconvenience, and limited facilities can reduce tourist satisfaction and create a negative image of the destination.
- **Investment Barriers:** Investors tend to be reluctant to invest in areas with inadequate infrastructure due to the high risks and additional costs involved (Dwyer & Kim, 2003).
- **Hambatan Investasi:** Investor cenderung enggan berinvestasi di daerah dengan infrastruktur yang tidak memadai karena risiko tinggi dan biaya tambahan yang terlibat (Dwyer & Kim, 2003).



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Development Strategies and Relevant Case Studies. To overcome the negative impacts of limited infrastructure, various strategies can be implemented, such as government and private investment in infrastructure development, the development of integrated modes of transportation, and the use of technology to overcome geographical constraints (WTO, 1999). Several case studies from other regions in Indonesia or developing countries with similar characteristics can provide valuable lessons in overcoming infrastructure challenges for tourism development. For example, how destinations such as Raja Ampat or Labuan Bajo (before large-scale infrastructure development) dealt with limitations and what strategies they used to attract tourists.

METHODS

This study uses a descriptive qualitative approach. This method was chosen to provide an in-depth and comprehensive picture of the impact of infrastructure limitations on tourism development in NTT from various perspectives.

Data Collection. Data was collected through several methods:

- Literature Study: Collecting and analyzing secondary data from scientific journals, books, research reports, government policy documents, and statistics related to infrastructure and tourism in NTT and Indonesia in general.
- In-depth Interviews: Conducting interviews with key stakeholders in the NTT tourism sector, including: Provincial and Regency/City Tourism Office Officials, tourism business operators (hotel owners, travel agents, tour guides), tourism academics/researchers, community leaders in tourist destinations, and some tourists who have visited NTT
- Field Observations: Visiting several tourist destinations in NTT to directly observe the condition of infrastructure and its impact on tourism activities. Observations were conducted at destinations with high visitor numbers as well as those with potential but not yet optimally developed.

Data Analysis. The collected data will be analyzed using thematic analysis methods. The analysis steps include:

- Data Reduction: Selecting, focusing, simplifying, and transforming raw data emerging from field notes and interview transcripts.
- Data Presentation: Organizing and compressing information, enabling conclusions to be drawn.
- Conclusion/Verification: Drawing meaning from data, noting regularities, patterns, explanations, possible configurations, and propositions.

RESULT AND DISCUSSION

The results of the study indicate that infrastructure limitations in NTT have a significant and multidimensional impact on tourism development.

Impact on Accessibility

- Road Network: Many potential tourist destinations in NTT, especially in remote areas, are difficult to reach due to poor road conditions, unpaved roads, or even no roads at all. This prolongs travel time, increases transportation costs, and reduces tourist interest in visiting (Interview with Travel Agent, June 2025). For example, access to some traditional villages in Sumba or hidden beaches in Flores remains very challenging.



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- **Air and Sea Transportation:** Limited flight frequencies to several small airports in NTT and a lack of inter-island connectivity via adequate passenger ships make it difficult for tourists to move between destinations. This also leads to relatively high ticket prices (Interview with the Tourism Office, June 2025).

Impact on Tourist Comfort and Satisfaction

- **Accommodation:** Quality accommodation (star-rated hotels, clean homestays) is still concentrated in major cities such as Kupang, Labuan Bajo, and Maumere. In other destinations, accommodation options are very limited or substandard, reducing tourist comfort (Field Observation, June 2025).
- **Basic Utilities:** Frequent power outages, limited access to clean water, and poor sanitation facilities in some destinations, especially public toilets, are common complaints among tourists and affect the image of tourism in NTT (Interview with Tourists, June 2025).
- **Telecommunications:** Unstable or even unavailable internet and mobile networks in many tourist areas hinder communication, the use of navigation apps, and tourists' ability to share their experiences online.

Impact on Investment and Local Economic Development

- **Investment Barriers:** Tourism investors are reluctant to invest in areas with poor infrastructure due to high risks and high operating costs. This hinders the development of new tourism facilities and the expansion of existing businesses.
- **Limited Local Economic Opportunities:** Without adequate infrastructure, it is difficult for local communities to develop small and medium-sized enterprises (SMEs) related to tourism, such as food stalls, souvenir shops, or local transportation services, so that the economic benefits of tourism are not evenly distributed.

Impact on Tourism Promotion and Marketing

- **Difficulties in Online Promotion:** Limited internet and telecommunications access hinder efforts to promote destinations online, which is crucial in this digital age. Information provided to potential tourists is often incomplete or difficult to access.
- **Negative Image:** Tourist complaints about poor infrastructure can spread through online reviews, creating a negative image that hinders future growth in visitor numbers.

CONCLUSION

Infrastructure limitations in East Nusa Tenggara, including roads, transportation, accommodation, basic utilities, and telecommunications, significantly hamper tourism development. The resulting impacts include reduced accessibility, decreased tourist comfort and satisfaction, investment barriers, and difficulties in tourism promotion and marketing. Although NTT has extraordinary tourism potential, this potential cannot be fully realized without fundamental and comprehensive infrastructure improvements.

Based on the findings of the study, recommendations are proposed to address the impact of infrastructure limitations and encourage tourism development in NTT, including Increased Budget Allocation and Infrastructure Development Priorities. The central and regional governments need to prioritize larger budget allocations for infrastructure development and improvement in tourism destinations. Focus on the development of access roads, pioneer airports, and ports connecting islands, as well as Destination-Based Infrastructure Development: Infrastructure development must be tailored to the specific characteristics and needs of each destination, not just general development.



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For example, in areas with marine tourism potential, the improvement of small ports and basic facilities is crucial.

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