

Land utilization of hydroelectric power from Koto Panjang reservoir becoming a tourist destination in Kampar District, Riau Province

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ABSTRACT

This study examines land utilization of the Koto Panjang Hydroelectric Power Reservoir as a tourist destination in Kampar Regency, Riau Province, with an emphasis on sustainable tourism development. A qualitative descriptive approach was employed through field observations and in-depth interviews to capture existing land-use practices, tourism activities, and stakeholder perceptions. The findings reveal that the reservoir possesses significant tourism potential, particularly in scenic-based tourism supported by natural landscapes, reservoir waters, and surrounding forest areas. However, current utilization remains suboptimal, with limited development in water tourism, culinary attractions, and resting facilities. Furthermore, tourism development faces challenges related to environmental degradation, weak governance, and conflicts with the reservoir's primary function as a hydropower and water resource system. From a sustainability perspective, tourism utilization has not fully achieved a balance between economic benefits, social acceptance, and ecological preservation. This study concludes that tourism development in the Koto Panjang Reservoir should prioritize ecotourism-based scenic tourism, strengthen community participation, and integrate environmental protection to support sustainable regional development without undermining the reservoir's core functions.

Keyword: Koto Panjang Reservoir; land utilization; sustainable tourism; ecotourism development; regional development

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1. INTRODUCTION

The Koto Panjang Reservoir Hydroelectric Power Plant was constructed in 1992 and completed in 1997. It has a weir height of 96 m and an inundation area of approximately 12,400 ha, with water depths ranging from 73 to 85 m. The reservoir receives its main water supply from the Kampar River and the Batang Mangat River, which originate in West Sumatra Province (PLN, 2002). The reservoir area is partly bordered by community-owned land that has been managed since before its construction and partly by forest areas. After the completion of the reservoir, the extent of land managed by the community in the catchment area for agriculture and plantation activities has continued to increase, while the reservoir waters have been utilized for floating net cage aquaculture activities (*keramba jaring apung* / KJA).

The existence of the Koto Panjang Reservoir as one of the inland water resources in Kampar Regency, Riau Province, presents interesting aspects for academic and empirical study. With proper and effective management, the reservoir has the potential to develop into a new tourism center for surrounding communities. In addition, its utilization as a water-based tourism destination and a sustainable aquaculture area can serve as an alternative source of income for local communities, thereby improving their economic conditions and contributing positively to regional development.

The characteristics of the Koto Panjang Reservoir represent a significant potential for the creation of new tourism activity centers, while simultaneously supporting community-based economic activities and enhancing local welfare. The utilization of the reservoir as a water tourism destination and aquaculture area can function as an instrument for tourism development through the optimal use of existing natural resources.

Such utilization should be guided by the three pillars of sustainable development, namely economic viability, social acceptability, and environmental sustainability (Asdak, 2012).

Based on these conditions, a more specific study is required to examine *“The Influence of Sustainable Tourism Sector Development on Regional Development Through the Utilization of the Koto Panjang Reservoir in Kampar Regency, Riau Province.”* This study not only analyzes the existing conditions of management and utilization of the Koto Panjang Reservoir as a potential water tourism and fisheries area but also seeks to identify strategies that can ensure the reservoir’s development contributes positively to community economic improvement and regional growth.

To achieve the objectives of the study, an evaluation of the current management and spatial arrangement of the Koto Panjang Reservoir as a tourism destination utilizing inland water resources in Kampar Regency is essential. Identifying existing problems and integrating them with the needs and expectations of visiting tourists will generate alternative development models for inland water resource-based tourism. An appropriate development and management model is expected to enhance the tourism value of the Koto Panjang Reservoir. The findings of this research are anticipated to provide both direct and indirect benefits to local communities, particularly in supporting sustainable tourism development.

2. LITERATURE REVIEW

Every tourism destination is required to have a clear and attractive concept in order to survive and remain sustainable. Tourism development will not be sustainable without a well-defined conceptual foundation. Therefore, sustainability in tourism must be supported by several key concepts. One of the concepts of sustainable tourism as described by Muta’ali (2012) includes the following dimensions:

1. Economically sustainable concept

Economic sustainability is related to the continuity of economic growth, considering that the environment and its various elements are interconnected and possess economic value. Sustainable economic development emphasizes the effective and efficient management of environmental and natural resources while maintaining a fair balance among public, governmental, and private sector interests. A tourism destination can develop and remain sustainable only if it has a clear and well-managed economic growth concept.

2. Socially sustainable concept

Socio-cultural sustainability relates to the implications of development on the formation of new socio-cultural values, changes to existing cultural systems, and the influence of sustainable development on political stability. Community participation is essential in environmentally sound economic development and in reducing disparities in community welfare. From a sociological perspective, socio-cultural sustainability emphasizes human resources as the key to successful development through empowerment, the strengthening of social organizations, and participatory approaches. Community acceptance of tourism activities is a crucial factor in ensuring the long-term sustainability of a tourism destination.

3. Environmental sustainability (ecological concept)

Environmental sustainability concerns the continuity of ecological systems that support economic development. Balance must be maintained between the natural and built environments. Efforts to achieve sustainability include minimizing environmental impacts, utilizing renewable natural resources, reducing waste, and increasing the use of clean technologies. Tourism development must incorporate environmental conservation principles to ensure its long-term viability.

Sustainable tourism is a term used to classify tourism products that are environmentally friendly in nature (Vellas & Becherel, 2008:176). It aims to support environmental conservation efforts and increase community participation in tourism management (Supriatna, 2008:163). Tourism Canada defines sustainable tourism development as the management of all resources in such a way that economic, social, and aesthetic needs can be fulfilled while maintaining cultural integrity, essential ecological processes, biological diversity, and life-support systems (Vellas & Becherel, 2008:176).

According to Suardana (2011), sustainable tourism is tourism that meets the needs of tourists and destination areas while simultaneously enhancing opportunities for future generations. The World Tourism Organization (WTO) explains that sustainable development includes efforts to improve the quality of life of local communities, provide high-quality experiences for tourists, and protect environmental resources utilized by the tourism system. Therefore, sustainable development must be based on strong relationships among the tourism industry, environmental stakeholders, and local communities. This relationship reflects three principles of sustainable development (Vellas & Becherel, 2008:177): (1) ecological sustainability, ensuring the maintenance of ecological processes, biodiversity, and biological resources; (2) social and cultural

sustainability, strengthening human control over development in accordance with local values and cultural identity; and (3) economic sustainability, ensuring efficient resource management to support present and future generations.

The development of tourist destinations is highly dependent on sustainable development principles. Sustainable development is defined as a development process that meets present needs without compromising the ability of future generations to meet their own needs.

Referring to Damanik (2006), tourism can only be sustainable if tourism actors base their activities on achieving optimal benefits while ensuring that tourism products and services remain sustainable and well managed. Several requirements must be fulfilled, including: (1) tourists selectively consuming tourism products and services to avoid excessive resource exploitation; (2) the promotion of environmentally friendly tourism products; (3) tourism activities that prioritize environmental conservation and cultural sensitivity; (4) active community involvement in planning, implementation, and monitoring; (5) equitable distribution of benefits to local communities; and (6) increased bargaining power of local communities in tourism resource management.

3. RESEARCH METHOD

The research design employed in this study is a descriptive method with a qualitative approach. The primary consideration for using a qualitative approach is that the researcher seeks to explore meaning, interpretation, and understanding of a phenomenon, event, or aspects of human life through direct and/or indirect involvement in the research setting. This approach allows the phenomenon to be examined contextually and comprehensively, enabling a deeper understanding of the realities being studied.

4. RESULTS AND DISCUSSION

A. Condition of the Koto Panjang Hydropower Reservoir

The Koto Panjang Hydropower Reservoir plays a crucial role in electricity generation, transportation, and tourism in the surrounding area. In addition, the reservoir is utilized by local communities for fishing, transportation, agriculture, and sanitation activities (MCK) (Anonymous, 2009).

The vegetation surrounding the Koto Panjang Hydropower Reservoir is dominated by tropical forest flora, including tree species such as *Kempas*, *Keruing*, *Meranti*, *Resak*, *Jelutung*, and *Rengas*. Pioneer species such as *Mahang*, *Senduk-senduk*, *Medang*, and *Terap* are also still commonly found. The fauna inhabiting the area consists of various protected wildlife species, including squirrels, hedgehogs, slow lorises, tigers, and diverse bird species. In addition, the presence of various fish species in the reservoir contributes to the overall biodiversity of the Koto Panjang Hydropower Reservoir ecosystem.

Construction of the reservoir project, which is located on the border between Riau Province and West Sumatra Province, began in January 1993. The dam structure was completed in March 1996, followed by initial water inundation trials. Official water impoundment was conducted on February 28, 1997, coinciding with the 100th day of the Indonesian Environmental Dynamics Program (Anonymous, 2009).

At present, the Koto Panjang Hydropower Reservoir functions not only as a major source of electricity for Riau Province but also as a tourist attraction. The area offers a scenic natural panorama characterized by rows of forest-covered hills, with the Bukit Barisan mountain range visible in the distance as the primary watershed of the reservoir. The blue waters of the reservoir attract visitors to explore the area using boats or traditional *pompong* vessels.

Tourism activities developed around reservoirs are generally categorized as nature-based tourism or ecotourism. The natural landscape surrounding the reservoir serves as a strong attraction for visitors. Water-based recreational activities such as fishing, rowing, and water skiing also enhance the tourism potential of the area. Furthermore, the existence of the reservoir has influenced the socio-cultural conditions of surrounding communities. Changes in livelihood patterns have occurred, particularly among residents who previously depended on agriculture but have shifted to fishing or aquaculture activities due to the submergence of agricultural land following reservoir inundation (Puspita et al., 2005).

Potential tourism markets for the Koto Panjang Reservoir include local communities, visitors from within Riau Province, and regional tourists from neighboring provinces such as West Sumatra and North Sumatra. The high mobility of travelers along the West Sumatra–Riau corridor presents an opportunity for the reservoir area to be developed as a rest area or stopover destination, particularly as an alternative resting point after Lubuk Bangku in Payakumbuh.

However, current utilization of the reservoir area by local communities and business actors has largely neglected sustainability considerations. This has resulted in progressive environmental degradation caused by uncontrolled floating net cage aquaculture, mountain rock mining, forest burning for agricultural and plantation expansion, illegal logging, and the disposal of household and industrial waste into the reservoir.

Limited attention from government authorities and relevant stakeholders has further contributed to the decline in the environmental quality of the Koto Panjang Hydropower Reservoir. These conditions have negatively affected hydropower operations, as evidenced by flooding during the rainy season and reduced water discharge during the dry season, leading to decreased electricity generation capacity.

If properly managed, the Koto Panjang Hydropower Reservoir holds substantial potential as a tourism destination due to its combination of water-based and forest-dominated land-based attractions. According to the Riau Province Tourism Destination Database (2010), the Koto Panjang Hydropower Reservoir is identified as a tourism object requiring continuous development. Therefore, this research aims to examine the general conditions of the reservoir area as a tourist attraction, analyze its ecotourism potential, and formulate appropriate strategies for sustainable ecotourism development in the Koto Panjang Hydropower Reservoir area.

B. Land Utilization of Hydroelectric Power as a Tourist Destination

The development of the Koto Panjang Reservoir as a tourist destination is based on the concept of sustainable tourism, which is formed by two main aspects: attractions and accessibility. These two aspects serve as the foundation for tourism sustainability in the Koto Panjang Reservoir area. Therefore, the tourism development variables examined in this study are derived from the conditions of these two aspects that support sustainable tourism. Each aspect is evaluated using five tourist destination indicators, namely scenery, culinary tourism, selfie tourism, rest tourism, and water tourism.

The first aspect evaluated in the tourism development construct is attraction. In this study, attraction refers to the main appeal of a tourist destination, which constitutes the primary capital of tourism resources. Tourist attractions may originate from various sources and generally possess unique characteristics that distinguish them from other destinations. In the case of the Koto Panjang Reservoir, its attraction lies primarily in its scenic views, local culinary offerings, and its function as a comfortable resting area. However, the findings of this study indicate that the current condition of the Koto Panjang Reservoir as a tourist destination has not yet been optimally reflected in water-based tourism activities and selfie tourism.

The second aspect examined in the development of the Koto Panjang Reservoir as a tourist destination is accessibility. Accessibility in this study refers to the ease of movement or transportation to and within the tourist destination. Accessibility was evaluated based on the ease of access to the five tourism indicators, namely scenery, culinary tourism, selfie tourism, rest tourism, and water tourism. However, the assessment of accessibility in this study focuses primarily on viewpoints, culinary areas, and resting facilities.

The utilization of the Koto Panjang Reservoir is analyzed based on three sustainability dimensions: economic sustainability, social sustainability, and environmental (ecological) sustainability. Theoretical perspectives suggest that optimal utilization should contribute to improving the local economy, strengthening community empowerment, and maintaining environmental balance. However, the results of this study reveal a negative perception regarding the optimization of the Koto Panjang Reservoir as a tourist destination in relation to its primary function as a hydropower reservoir.

In other words, the development of the Koto Panjang Reservoir as a tourist destination introduces several elements that potentially conflict with the reservoir's primary function. From the visitors' perspective, tourism development is perceived as contributing to a decline in environmental utilization, despite its potential to enhance the aesthetic value and environmental existence of the reservoir. Consequently, tourism development in the Koto Panjang Reservoir area is closely linked to regional development processes that may reduce environmental functions.

Previous studies support this concern. Warsa (2019), in research on the utilization of the Tilong Reservoir in East Nusa Tenggara, emphasized that reservoir optimization should prioritize ecosystem preservation and aquaculture development. Similarly, Ahadunnisa, Anwar, and Margini (2015) found that reservoir optimization should primarily support irrigation, water supply, and hydropower generation. These findings indicate that tourism development is not the primary objective of reservoir management.

Nevertheless, other studies have explored reservoir-based tourism development in various regions (Djuwendah et al., 2017; Indah & Pati, 2013; Prayuda et al., 2018), demonstrating that ecotourism can be developed by maintaining environmental sustainability while enhancing tourism potential, particularly water tourism. However, the results of this study do not fully support those findings. Although the observed impact

is relatively small, the development of the Koto Panjang Reservoir as a tourist destination is shown to reduce the overall optimization of the reservoir's primary functions.

5. CONCLUSION

The utilization of the Koto Panjang Reservoir as a tourist destination should place greater emphasis on scenic tourism, as it is a key factor in the successful development of the area. Several tourism potentials of the Koto Panjang Reservoir remain underdeveloped, particularly culinary tourism and rest tourism. The findings indicate that both culinary and resting facilities have not yet been optimally explored.

Culinary tourism can be enhanced through the development of distinctive local food products that create a memorable experience for visitors and reflect the identity of the region. Meanwhile, in terms of rest tourism, existing infrastructure remains inadequate and requires further improvement to support visitor comfort and satisfaction.

In the context of regional development, optimization of resource utilization requires greater attention, as it plays a crucial role in achieving the objectives of this study. To improve this optimization, the development of ecotourism-based tourism is necessary, ensuring that tourism growth remains aligned with environmental preservation. This approach represents a key strategy for strengthening tourism-based regional development in the Koto Panjang Reservoir area.

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