



THE CAPACITY OF AGENCIES ON LOCAL ECOTOURISM DEVELOPMENT: LESSONS FROM KENYIR LAKE, TERENGGANU, MALAYSIA

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ABSTRACT

The sustainable development of Kenyir Lake, Malaysia depends on the synergy between local communities and implementing agencies. This study aims to examine the roles of six public sector agencies, namely KETENGAH, PDHT, PLANMalaysia, DOF, PERHILITAN, and TEKUN Nasional, in fostering community empowerment and ecological preservation in the Kenyir Lake region. Although previous studies have identified development challenges in Kenyir Lake, there remains a significant gap in the understanding of the specific roles and the extent of coordination among implementing agencies, which are critical factors for the success of sustainable development. Through structured interviews and field observations, the research reveals the agency's contributions to infrastructure development, community engagement, and natural resource management. Findings highlight the economic reliance of lakeside communities on traditional activities like fishing and agriculture, yet low community participation in agency programs indicates communication gaps and accessibility barriers. The study underscores the need for cohesive policies to balance ecological conservation with socio-economic progress, aligning with Sustainable Development Goals (SDGs) 8, 12, 14, and 15. Challenges include marginalisation perceptions among locals who feel excluded from development benefits and a lack of inter-agency coordination. Recommendations advocate for a bottom-up approach, enhanced outreach, and inclusive planning to ensure equitable benefits and environmental sustainability. This research contributes insights into fostering collaborative frameworks for sustainable lake-based development that emphasises community involvement to safeguard Kenyir Lake's ecological integrity while promoting economic resilience.

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Introduction

Ecotourism is globally recognised as a vital tool for sustainable development in balancing economic growth with environmental conservation and community well-being. In Malaysia, natural destinations like Kenyir Lake hold significant potential to become models of ecotourism that align with the national commitment to the Sustainable

Development Goals (SDGs). Kenyir Lake represents a multifaceted resource with significant ecological, cultural, and economic significance, which makes it a crucial area for sustainable development. To provide a regulatory framework, PLANMalaysia has issued the Guidelines for the Conservation and Development of Environmentally Sensitive

Areas (KSAS). These guidelines assist state governments and local authorities in determining permitted and prohibited development activities.

The sustainable development of Kenyir Lake is highly dependent on the synergy between local communities and implementing agencies. Communities living around the lake depend on traditional economic activities such as fishing and agriculture, which are often small-scale and based on traditional methods. Although the community is situated within an area of abundant natural resources, they are generally classified as a low-income and rural population. This context creates concerns that uncontrolled economic activities could lead to the unsustainable exploitation of natural resources. Furthermore, sustainable development in such sensitive lake ecosystems faces inherent challenges as human activities easily threaten them.

To translate national guidelines into effective local action, Community-Based Ecotourism (CBE) is a commonly used approach that aims to conserve natural resources and enhance the quality of life for local communities. However, despite its great potential, ecotourism management at Kenyir Lake faces various challenges, including unplanned development and limited community involvement. Studies reveal that the outreach efforts of government and private agencies have not sufficiently translated into community awareness, which is evidenced by low participation in sustainable resource management and economic incentive programs. This indicates a significant communication gap and barriers to access. Compounding this issue is a perceived marginalisation among residents who feel excluded from the benefits of development.

Previous studies have identified these issues, but a critical gap remains in the in-depth understanding of the specific roles and the level of coordination among the involved government agencies. This coordination is a critical factor in determining the success of sustainable development in the area. Consequently, this article aims to examine the roles of six public sector agencies, namely KETENGAH, PDTHT,

PLANMalaysia, the Department of Fisheries (DOF), the Department of Wildlife and National Parks (PERHILITAN), and TEKUN Nasional in fostering community empowerment and ecological conservation. Specifically, this study investigates their contributions to infrastructure development, community engagement, and natural resource management to identify existing challenges and obstacles.

This study contributes important insights for building a collaborative framework for sustainable lake development. The findings highlight the need for more cohesive policies to balance ecological conservation with socioeconomic progress, in line with SDGs 8, 12, 14, and 15. The proposed recommendations support a “bottom-up” approach, enhanced outreach, and inclusive planning to ensure equitable benefits and environmental sustainability. This article is structured to discuss these findings and subsequently provides recommendations focused on an inclusive and collaborative approach for the development of ecotourism at Kenyir Lake. A conceptual framework guiding the analysis of agency roles and their interrelationships is presented in the Materials and Methods section.

Materials and Methods

This study used primary and secondary data to examine the roles of implementing agencies in the development and preservation of the Kenyir Lake community and its natural ecosystem. Primary data were collected through structured interviews with six key informants selected from government officials and representatives of agencies involved in the development of Kenyir Lake.

The selection of these key informants was conducted using purposive sampling. This method was chosen to ensure that the individuals selected possess deep knowledge and direct involvement in the planning and implementation of development at Kenyir Lake based on their official roles within the respective agencies. These agencies included

the Central Terengganu Development Authority (KETENGAH), District and Land Office of Hulu Terengganu (PDHT), Town and Country Planning Department (PLANMalaysia), Department of Fisheries (DOF), Department of Wildlife and National Parks (PERHILITAN), and National Entrepreneurial Group Economic Fund (TEKUN Nasional).

Secondary data were sourced from government documents, official websites, agency publications, and scholarly publications to provide additional context and insights into the roles of these agencies. The study focuses on the Kenyir Lake region, located in Terengganu, Malaysia. Kenyir Lake is a significant area for both community development and environmental conservation, managed by multiple government agencies. The scope of the study encompasses the roles of these agencies in infrastructure development, community welfare, and the preservation of the local ecosystem.

Through qualitative approach, this research gathered data via structured interviews with six key agency informants. The objective is to examine their contributions to reconciling

development initiatives with the conservation of Kenyir Lake's natural environment and the well-being of its local communities. The interview questions were designed to elicit detailed insights into the agencies' roles and strategies. The design of the interview questions was validated through a dual process of expert review by two field scholars and a pilot test with a non-participating official.

Data from the structured interviews and observational notes were analysed using thematic analysis. The process involved several stages, including familiarisation with the data by repeatedly reading the transcripts and notes, generating initial codes from the data, searching for themes by collating codes into potential themes, reviewing, and defining the themes. This systematic approach allows for the identification of key themes and patterns related to the roles and capacities of the agencies in the development of ecotourism at Kenyir Lake. The main themes related to the role of agencies in ecotourism development are presented systematically in Table 1.

Table 1: Main themes of the agency's role

Variable/Theme	Description/Indicators	Related Agencies
1. Role of Agencies and Development Initiatives	- Development of tourism products (nature, culture, recreation) - Implementation of physical and community development projects - Enforcement of planning acts and preparation of Environmental Sensitive Area (ESA) Guidelines - Fisheries resource management and protection of endangered species - Wildlife management and enforcement of the Wildlife Conservation Act 2010 - Provision of financial schemes for entrepreneurs	KETENGAH, PDHT, PLANMalaysia, DOF, PERHILITAN, TEKUN Nasional
2. Level of Community Participation	- Number of registered aquaculture entrepreneurs (21 individuals) - Number of TEKUN borrowers from the Kenyir Lake area (17 individuals) - Lack of environmental awareness programs specifically targeted at residents - Very limited loan applications for nature-based businesses	DOF, TEKUN Nasional, KETENGAH

3. Community Perception and Benefits	• Feeling marginalised and not directly benefiting from development • Tendency to prioritise daily economic needs over long-term environmental conservation • Development perceived as meaningless due to no direct impact on daily life • Traditional cultural practices are increasingly eroded due to financial constraints	PDTHT
4. Governance and Conservation Strategies	• “Bottom-up” approach to involve the community in planning • Enforcement of wildlife laws through patrols and penalties • Fishing bans to protect species populations • Implementation of Special Area Plan (RKK) as a guide for sustainable development	PLANMalaysia, PERHILITAN, DOF

According to Figure 1, a proposed conceptual framework was developed to examine the roles of key implementing agencies and stakeholders involved in the sustainable development of Kenyir Lake. Six agencies such as KETENGAH, TEKUN, PERHILITAN, DOF, PLANMalaysia, and PDTHT are responsible for policy and role implementation to drive the development objectives. These objectives are focused on achieving environmental conservation, community development, and alignment with the SDGs. The outcomes from this development aim to enhance the local

economy, preserve natural ecosystems, and promote sustainable community development. Ultimately, these efforts converge to generate positive outcomes in sustainable development that benefit both the community and the environment.

Ethical considerations were strictly observed throughout this study. Informed consent was obtained from all participants before the interviews commenced. They were assured of the confidentiality and anonymity of their responses and that the data collected would be used solely for academic purposes.

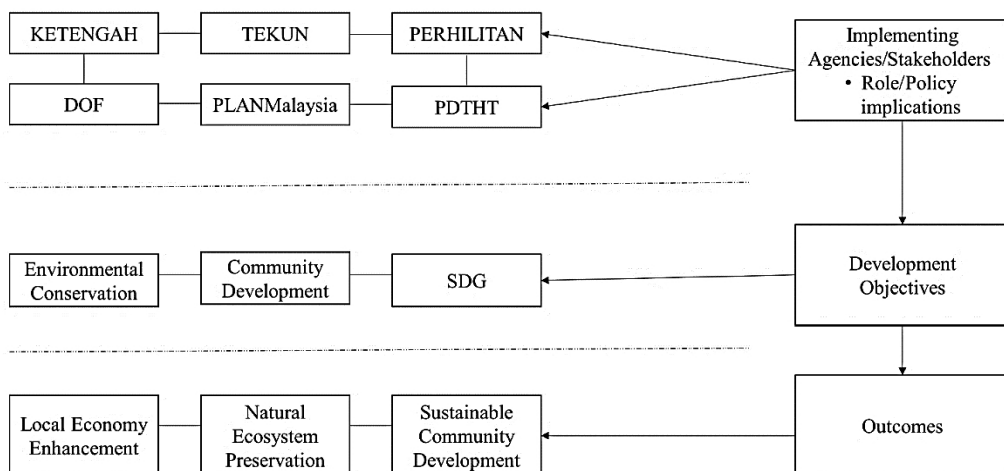


Figure 1: Conceptual framework

Results

This section presents the results of the thematic analysis of interview data from six government agencies involved in the development of Kenyir Lake. The analysis revealed the key roles, strategies and challenges of each agency in developing the community, and conserving the environment at Kenyir Lake.

Theme 1: Agency Roles and Development Initiatives

Each agency demonstrates a clear focus on its respective mandates. KETENGAH concentrates efforts on developing tourism products based on natural resources, culture, and recreation. They have developed various attractions such as the Kelah Fish Sanctuary, Herb Garden, and Kenyir Elephant Conservation Village to attract tourists. PDHT, on the other hand, plays a role in planning and implementing physical and community development projects around Kenyir Lake, in line with the government's goals of creating a socially and economically balanced community. On the part of PLAN Malaysia, they function as advisors for urban and rural planning to the state government, with the specific responsibility of implementing the Town and Country Planning Act 1976. They have introduced Special Area Plan (RKK) Studies to regulate development in Environmentally Sensitive Areas (ESAs) like Kenyir Lake.

The Department of Fisheries (DOF) acts as a leader in modernising the fisheries sector. Their initiatives include enforcing regulations to protect endangered fish species like *Arowana* and *Temoleh*, as well as offering courses and training to aquaculture entrepreneurs. PERHILITAN is responsible for managing flora and fauna resources, including issuing licenses for activities in National Parks and conducting enforcement patrols to combat wildlife smuggling in accordance with the Wildlife Conservation Act 2010. Meanwhile, TEKUN Nasional provides easy and fast financial assistance to Bumiputera entrepreneurs to start

or expand businesses, including in the tourism, retail, and aquaculture sectors around Kenyir Lake.

Theme 2: Low Level of Community Participation

The interview results also showed that a key challenge highlighted by several agencies was the low level of local community involvement in the programs offered. The Department of Fisheries stated that although encouragement has been given, residents' participation in aquaculture remains limited, with only 21 entrepreneurs registered with the department while TEKUN Nasional reported that the number of borrowers from the Kenyir Lake area is very small, with only 17 people. Loans for natural resource-based businesses like agriculture and aquaculture were also reported as "limited or almost non-existent". KETENGAH also acknowledged that although many community programs such as cultural festivals have been implemented, awareness programs about natural resource conservation for local residents have not yet been conducted.

Theme 3: Marginalised Community Perceptions and Economic Priorities

Analysis of the interview data revealed that the local community feels marginalised from the benefits of development and prioritises economic survival over environmental conservation. According to PDHT, the main issue for the community is not conservation of natural resources but limited access to benefits from existing development initiatives. Consequently, villagers give less priority to environmental considerations. Some communities feel that the development happening around them does not have direct impact on their lives, causing the development to be considered meaningless. PDHT also reported that traditional cultural practices are decreasing due to financial constraints and are now only held on special occasions.

Theme 4: Community-centred Governance and Conservation Strategies

Several agencies indicated a shift towards more inclusive approaches and stricter enforcement of regulations to ensure sustainability. PLANMalaysia, for example, has stated a commitment to using a “bottom-up approach” by going down to the villages to give briefings and obtain community feedback before a project is implemented. PERHILITAN is strict in enforcing laws through patrols and operations to catch offenders with fines of up to RM50,000.00 imposed on those using snares. The Department of Fisheries also enforces bans on catching certain fish species for a period of time to prevent extinction.

Discussion

Analysis of this study’s findings reveals several critical issues affecting the sustainability of development at Kenyir Lake, particularly a significant gap between agency planning and the reality faced by the local community, although the agencies studied demonstrated commitment to their respective mandates encompassing tourism product development, conservation enforcement, and provision of financing.

The results consistently indicate that these initiatives have failed to translate into equitable socio-economic benefits and meaningful community engagement. Therefore, this section will discuss in depth three main issues emerging from the findings: (i) the gap between development implementation and community benefits; (ii) communication barriers contributing to low participation; and (iii) weak inter-agency coordination affecting the overall effectiveness of sustainable development initiatives.

Gap between Development and Community Benefits

Although various physical development and tourism projects have been implemented by agencies such as KETENGAH, the key finding shows that the local community feels

marginalised and does not directly enjoy the benefits of development. This perception supports the study by Ishmael (2017), which highlighted the challenges of community-based ecotourism where economic benefits are often not distributed fairly to residents. When communities feel excluded, their involvement in conservation efforts is affected because their priority is daily economic survival rather than long-term conservation (Siow *et al.*, 2013). This situation contradicts the goals of ecotourism to improve community quality of life as suggested by Spenceley and Snyman (2012).

Communication Barriers and Low Participation

Minimal community involvement in entrepreneurship programs by the Department of Fisheries (21 participants) and TEKUN Nasional (17 borrowers) indicates significant communication barriers or engagement conditions that make it difficult for the community. These barriers likely include a digital divide that limits access to information, excessively complex bureaucratic procedures that discourage applications, and a lack of active outreach from the agencies. Together, these issues create a difficult environment for potential participants and limit involvement to only a small part of the community.

While the total target population is not formally documented, these figures in the context of the numerous lakeside villages represent a very small fraction and underscore the minimal reach of these programs. Failure to mobilise the community directly affects the achievement of Sustainable Development Goal (SDG) 8, which is to provide decent work and economic growth. As supported by other studies, when the community has poor participation rates, the programs implemented may not address their real needs, thereby limiting the impact on economic growth and employment opportunities.

Weak Inter-agency Coordination

This study reveals that although each agency has a clear role, there is a lack of synergy and coordination in programs targeting the community and environment. For example, KETENGAH focuses on physical tourism product development, PDTHT addresses issues of marginalised communities while PERHILITAN and the Department of Fisheries focus on enforcement and conservation. These separate efforts lead to suboptimal outcomes such as fragmented development projects that fail to address community needs holistically and conservation rules that are enforced without providing alternative livelihoods.

The study by Li and Yi (2020) also mentioned that lack of coordination between agencies often results in isolated actions that reduce the effectiveness of sustainability initiatives. As highlighted by previous research conducted by Young (1999) and Kipkoech *et al.* (2019), excluding communities from conservation programs often results in unequal distribution of benefits, worsening poverty, and weakening their willingness to support conservation work. Therefore, there is an urgent need for a more integrated coordination mechanism to ensure economic, social, and environmental development move in tandem.

Implications for Sustainable Development Goals (SDGs)

Development at Kenyir Lake is closely linked to several SDGs. Efforts by agencies such as KETENGAH and TEKUN Nasional contribute to SDG 8 (Decent Work and Economic Growth), but their impact is limited due to insufficient community engagement. Conservation initiatives by the Department of Fisheries and PERHILITAN directly support SDG 14 (Life Below Water) and SDG 15 (Life on Land). However, without active community involvement, the long-term sustainability of these efforts is at risk. The “bottom-up” approach advocated by PLANMalaysia is crucial to ensuring more equitable and sustainable

development, in line with the principles of community engagement emphasised by Tosun (2002).

Conclusions

This study aims to analyse the role and coordination of government agencies in the development of sustainable ecotourism at Kenyir Lake. The main findings reveal an imbalanced approach, where economic and infrastructure development are prioritised over conservation, coupled with passive community involvement and weak, fragmented inter-agency coordination. Specifically, the study found that while KETENGAH focuses on tourism infrastructure and PERHILITAN on conservation and enforcement, there was little evidence of joint planning with PDTHT which deals with community marginalisation. This fragmented institutional approach meant that conservation efforts were often disconnected from community livelihood programs, leading to local resistance and limited conservation success and sustainability.

Therefore, the findings demonstrate that the current governance model at Kenyir Lake neglects core principles of sustainable ecotourism, particularly equitable benefit-sharing and meaningful stakeholder participation. The primary implication of these findings is the urgent need for a paradigm shift towards an integrated governance model that places conservation and community engagement at the core of planning.

This study recommends further research to develop and test a co-management framework that can realise synergies between agencies and local communities. This study has several limitations which the findings are based on the perspectives of agency officials and incorporating a larger number of community voices would provide a more balanced view through large-scale surveys or ethnographic studies. Furthermore, the focus on six key

agencies while necessary for depth, may have omitted the roles of other smaller stakeholders. Future research should address these limitations to further validate the proposed co-management framework.

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Conflict of Interest Statement

The authors declare that they have no conflict of interest.

References

- Adam, S. M., Shuib, A., Ramachandran, S., & Kunasekaran, P. (2019). Impacts of ecotourism development in Kenyir Lake on the quality of life as perceived by the local community. *Journal of Sustainability Science and Management*, 14(3), 100–109. <https://jssm.umt.edu.my/wp-content/uploads/sites/51/2020/05/bab-12.14.3.pdf>
- Engku Hassan, E. N. K., Shuib, A., Kunasekaran, P., Johari, S., & Adam, S. (2018). Local community participation in ecotourism development in Tasik Kenyir, Malaysia. *World Applied Sciences Journal*, 36(1), 85–92. [http://idosi.org/wasj/wasj36\(1\)2018.htm](http://idosi.org/wasj/wasj36(1)2018.htm)
- Ishmael, M. (2017). Benefits and challenges of community-based ecotourism in park-fringe communities: The case of Mesomakor of Kakum National Park, Ghana. *Tourism Review International*, 21, 81–98.
- Kipkoech, E., Ipara, H., & Koskey, J. (2019). Community involvement in conservation and its implication on poverty alleviation. *African Journal of Biomedical Research*, 5, 59–66. <https://ajest.org/index.php/ajest/article/view/116>
- Li, W., & Yi, P. (2020). Assessment of city sustainability—Coupling coordinated development among economy, society and environment. *Journal of Cleaner Production*, 256, 120453. <https://doi.org/10.1016/j.jclepro.2020.120453>
- Siow, M. L., Ramachandran, S., & Ahmad, M. N. (2013). Residents’ perceptions of Terengganu, Malaysia. *The Malaysian Forester*, 76(1), 27–39.
- Spenceley, A., & Snyman, S. (2012). High-end ecotourism’s role in assisting rural communities in reaching the Millennium Development Goals. In Bricker, K. S., Black, R., & Cottrell, S. (Eds.), *Sustainable tourism and the Millennium Development Goals: Effecting positive change*. Jones & Bartlett Learning.
- Tosun, C. (2002). Host perceptions of impacts: A comparative tourism study. *Annals of Tourism Research*, 29(1), 231–253. [https://doi.org/10.1016/S0160-7383\(01\)00039-1](https://doi.org/10.1016/S0160-7383(01)00039-1)
- Young, E. (1999). Local people and conservation in Mexico’s El Vizcaino Biosphere Reserve. *Geographical Review*, 89(3), 364–390. <https://doi.org/10.1111/J.1931-0846.1999.TB00224.X>