

# Implications of Ecotourism Activities on the Local Community and Natural Environment in Jeli, Kelantan

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## Abstract

This study examines the implications of ecotourism on the local community and natural environment in Jeli, Kelantan, focusing on socio-economic and environmental aspects. A quantitative approach was employed through a structured questionnaire involving 308 visitors at four major ecotourism sites. Data were analyzed using SPSS, including descriptive statistics and inferential analyses such as Pearson correlation and regression analysis. Findings indicate that 68% of respondents agreed that ecotourism provides economic benefits, particularly in employment and small businesses, but only 45% stated that profits are distributed fairly. Socially, 60% agreed that ecotourism enhances cultural awareness, while 40% believed it leads to negative lifestyle changes. Environmentally, 72% reported increased pollution, with Pearson correlation showing a significant relationship between tourist influx and pollution ( $r = 0.73$ ,  $p < 0.05$ ). The study suggests strategic measures for sustainable ecotourism, including more effective environmental management, inclusive tourism policies, and greater community participation in relevant policymaking. These findings can assist policymakers in formulating more sustainable ecotourism development strategies in Malaysia.

**Keywords:** Ecotourism, Socio-Economic Impact, Sustainability, Malaysia, Environmental Management

## Introduction

Ecotourism has emerged as a vital pillar of sustainable tourism development worldwide, offering a model that seeks to balance environmental protection, socio-cultural preservation, and economic growth. As the global tourism industry continues to evolve, ecotourism provides an alternative that emphasizes responsible travel to natural areas, promotes

conservation, and supports the well-being of local communities (El Moslem Badr, 2022). According to the United Nations World Tourism Organization (UNWTO), ecotourism involves nature-based travel aimed at appreciating nature and local cultures, promoting environmental preservation and responsible tourism and among the fastest-growing tourism segments. The global ecotourism market was valued at USD 216.49 billion in 2023 and is expected to reach USD 759.93 billion by 2032, growing at a CAGR of 14.31% (Fortune Business Insights, 2025). The ecotourism market in the Asia Pacific region is projected to reach USD 183.06 billion by 2030, with an expected compound annual growth rate (CAGR) of 16.8% from 2024 to 2030 (Grand View Research, 2024).

According to national development plans, ecotourism in Malaysia has been identified as a strategic industry that makes major contributions to environmental education and the rural economy. The nation is a top destination for nature-based tourism since it is home to a diverse range of habitats that are rich in biodiversity (Manohar et al., 2020). Particularly, the district of Jeli in the state of Kelantan is gaining popularity due to its potential for ecotourism. Natural sites including Lata Kashmir, Lata Janggut, Lata Renyuk, and Gunung Reng provide locals with economic options in addition to natural splendour and leisure activities. If maintained properly, these ecotourism destinations can preserve ecological resources, promote community growth, and help create a more equitable regional economy (Mahadzir et al., 2020).

However, the rapid growth of ecotourism in Jeli also raises critical concerns regarding environmental degradation, cultural erosion, and unequal distribution of economic gains. Studies have shown that unmanaged tourism activities can lead to negative externalities such as pollution, deforestation, and loss of biodiversity (James & Hussin, 2021). Moreover, the absence of inclusive planning often results in local communities being sidelined from decision-making processes and failing to reap the full economic benefits of tourism. For instance, tourism in other parts of Malaysia, such as Taman Negara, has shown that unchecked development can severely damage the environment and deter repeat visitors (Hassan, 2013). Jeli faces a similar risk if proactive and sustainable ecotourism management strategies are not implemented.

This study was conducted in response to the urgent need to evaluate and better understand the implications of ecotourism in Jeli, Kelantan. It aimed to explore both the positive contributions and the adverse effects of ecotourism on the human and natural environments. Specifically, it investigated how tourism affected the local economy, social structures, and environmental conditions while assessing community awareness of sustainability and the effectiveness of existing policy interventions (Kelantan State Economic Planning Unit, 2019). The selection of Jeli as the study site was based on its growing popularity as an ecotourism destination, the richness of its natural landscapes, and the observable tensions between tourism development and environmental stewardship.

This study is important because it has the ability to provide data-driven insights that can be immediately applied to resource management and policy formation. Community organisations, tourism operators, environmental planners, and local government agencies will all benefit from the findings. The findings can be used by these stakeholders to create more efficient plans that guarantee Jeli ecotourism benefits the local population while

maintaining the region's ecological integrity. Additionally, by emphasising local-level dynamics that are frequently disregarded in the larger tourism discourse, the study advances the national agenda on sustainable tourism.

Adopting a quantitative approach, this study gathers primary data using structured questionnaires and uses statistical analysis to pinpoint trends, connections, and important areas of concern. The ultimate objective is to make strategic suggestions that improve the sustainability, equity, and efficacy of Jeli's ecotourism industry. This study aims to make a significant contribution to the expanding body of research on sustainable tourism by examining the connections among ecological preservation, economic growth, and social well-being. It also intends to function as a useful manual for the future development of ecotourism in Malaysia.

### **Literature Review**

Ecotourism has become a rapidly growing form of tourism in Malaysia, particularly in areas rich in natural resources such as Jeli, Kelantan. According to Neto (2002), ecotourism not only provides economic benefits to local communities but also has the potential to enhance environmental conservation awareness. Previous studies have shown that unsustainable ecotourism practices can lead to negative environmental impacts such as solid waste pollution and biodiversity degradation (Eshun & Tonto, 2014). Therefore, research on the socio-economic and environmental impacts of ecotourism is crucial for formulating more sustainable development strategies.

Several studies have assessed the role of local communities in the ecotourism industry. Mahadzir et al. (2020) found that community involvement in ecotourism in Negeri Sembilan is a key factor in ensuring the sustainability of such activities. This study emphasized that without active participation from local communities, the economic benefits of ecotourism cannot be fully realized. For example, in the context of Jeli, there are concerns regarding the imbalance in profit distribution between local communities and large operators, which remains a major challenge in ensuring economic fairness in this sector.

Additionally, research on the impact of ecotourism on cultural awareness has also gained attention. Jemali and Syafinie (2022), in their study on river conservation programs in Lata Janggut, Kelantan, found that ecotourism initiatives in the area successfully increased community awareness of natural resource conservation. However, the study also highlighted that despite the rise in awareness, challenges persist in ensuring the sustainability of ecotourism due to a lack of control over unethical tourism activities.

From a methodological perspective, previous studies have largely employed quantitative approaches to assess the impact of ecotourism. According to Chua (2006), the quantitative approach is suitable for social studies as it allows researchers to systematically analyze relationships between various variables. This study also utilizes survey methods, which have been proven effective in obtaining data that represents the population comprehensively (Ponto, 2015). Accordingly, this research continues that approach by applying statistical analyses such as Pearson correlation to determine the relationship between tourist influx and environmental impact.

Overall, this literature review suggests that ecotourism has significant potential to contribute to sustainable development if implemented with effective strategies. However, challenges related to the distribution of economic benefits, negative environmental impacts, and the importance of local community involvement must be addressed to ensure the long-term success of the industry. Therefore, this study aims to bridge existing knowledge gaps by examining in greater depth how ecotourism influences the socio-economic and environmental aspects of the study area.

### **Methodology**

This study employs a quantitative approach using a survey method to assess the impact of ecotourism on local communities and the environment in Jeli, Kelantan. Fink (1995) defines a survey as a method for generating information to describe, compare, and predict specific factors based on respondents' records. A survey-based study is suitable when researchers aim to collect large-scale data at a lower cost and within a shorter timeframe. The data used in this study includes both primary and secondary data. Primary data is obtained through questionnaires distributed to respondents, consisting of visitors at selected ecotourism sites. Secondary data is sourced from official reports, journal articles, academic books, and online resources relevant to this study.

### *Study Area*

This study was conducted in the Jeli district of Kelantan, an area that is increasingly gaining recognition for its natural ecotourism attractions, which are easily accessible to both local and international tourists. The district's topography consists of approximately 82% natural landscapes, including hills, dense forests, and numerous river cascades. Jeli is situated at an elevation of 90m to 500m above sea level and is bordered by several rivers, including Sungai Pergau, Sungai Renyut, Sungai Suda, and Sungai Balah. This study focuses on key ecotourism destinations such as Lata Kashmir, Lata Renyuk, Lata Janggut, and Gunung Reng, which were selected as study sites due to their well-preserved natural environments and popularity among ecotourism visitors (Figure 1).

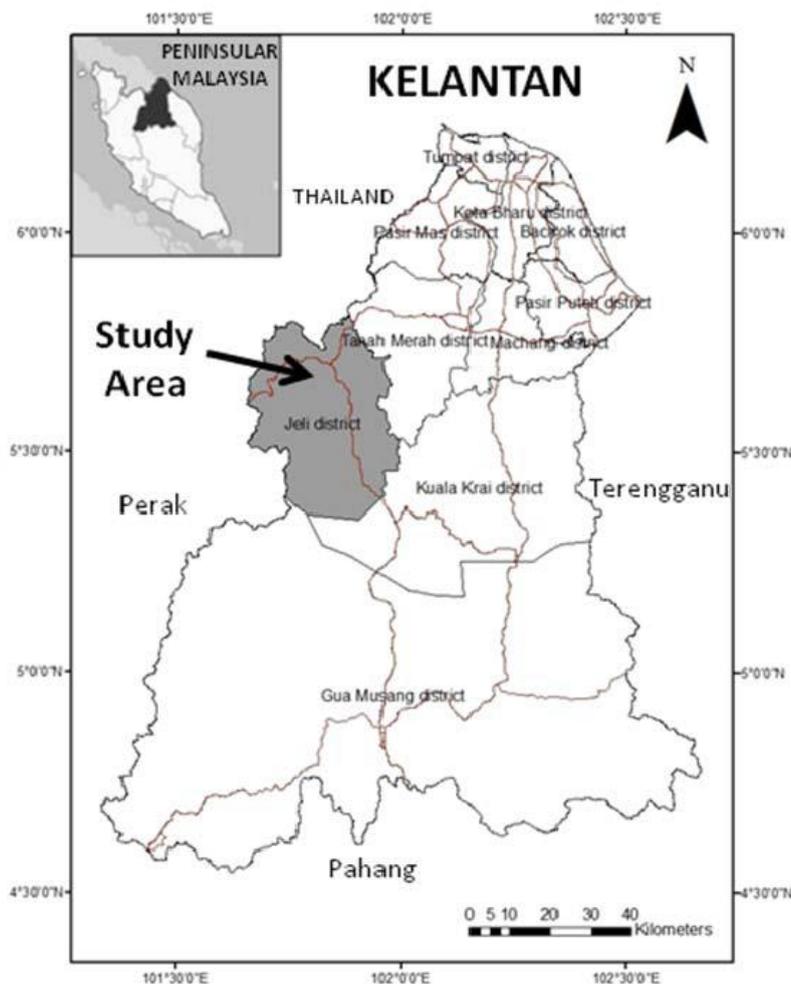


Figure 1. Study area

Source : Adriansyah et al. (2015)

### Questionnaire Structure

The main instrument of this study is a questionnaire designed based on literature review and research objectives. The questionnaire consists of several key sections:

#### Section A: Demographic Information

Includes age, gender, education level, occupation, and frequency of visits to ecotourism sites.

#### Section B: Perception of Ecotourism

Questions related to the economic, social, and environmental impacts of ecotourism, using a five-point Likert scale.

#### Section C: Community Involvement

Measures the level of community participation in ecotourism activities and awareness of environmental sustainability.

#### Section D: Recommendations for Ecotourism Improvement

Respondents' opinions on strategies to enhance the effectiveness and sustainability of ecotourism in Jeli.

To ensure the accuracy of this instrument, the researcher conducted a reliability test using Cronbach's Alpha coefficient. The results indicated that the Cronbach's Alpha values for the main sections of the questionnaire exceeded 0.70, signifying high reliability.

*Data Collection and Potential Respondents*

This study involved 303 respondents who were visitors to ecotourism sites in Jeli, Kelantan. The sampling technique used was convenience sampling, where respondents were selected based on their willingness to answer the questionnaire distributed at the study location. The data collection period lasted for seven days, during which questionnaires were distributed directly to visitors at the study sites. Additionally, the study also included informal interviews with several local business owners and relevant officials to gain additional perspectives on the impact of ecotourism.

*Research Instrument and Statistical Tests*

This study employs both descriptive and inferential analysis methods to analyze the collected data. Descriptive analysis is used to summarize trends and patterns in the data through mean, standard deviation, and frequency distribution. To examine relationships between variables, the Pearson correlation test is conducted to determine the link between the number of tourists and the economic and environmental impacts. The results indicate a significant positive correlation between the increase in tourist numbers and environmental pollution ( $r = 0.73$ ,  $p < 0.05$ ). Additionally, multiple regression analysis is performed to assess the key factors influencing visitor satisfaction with ecotourism in Jeli. The findings reveal that tourism services and environmental sustainability have a significant impact on visitor satisfaction ( $p < 0.01$ ). To ensure the validity and reliability of the data, a reliability test using Cronbach's Alpha coefficient is conducted, with all sections of the questionnaire achieving values above 0.70, indicating a high level of reliability.

**Result and Discussion***Demographic Profile of Respondents*

Table 1

*Demographic Profile*

Profile	Frequency (n)	Percentage (%)
Gender		
Male	163	52.9
Female	145	47.1
Ethnicity		
Malay	295	95.8
Chinese	8	2.6
Others	5	1.6
Religion		
Islam	298	96.8

Profile	Frequency (n)	Percentage (%)
Buddhism	2	0.6
Christianity	7	2.3
Others	1	0.3
<b>Marital Status</b>		
Married	-	-
Widower/Widow	-	-
Single	-	-
<b>Education Level</b>		
Primary School	10	3.2
SPM (Malaysian Certificate of Education)	120	39.0
STPM/Diploma/Equivalent	82	26.6
Bachelor's Degree and above	90	29.2
Others	6	1.9
<b>Monthly Income</b>		
Less than RM 2499	253	82.1
RM 2500 – RM 3969	22	7.1
RM 3970 – RM 7099	21	6.8
RM 7100 – RM 15039	8	2.6
More than RM 15040	4	

This study involved 308 respondents, consisting of visitors to ecotourism areas in Jeli, Kelantan (Table 1). Based on descriptive analysis, the majority of respondents were male (52.9%), while females made up 47.1% of the total sample. A study by Sidi et al. (2018) found that activities such as mountain climbing and camping were more favored by male visitors compared to females. The study results indicated a higher interest among males in these activities, with the mean score for mountain climbing being 4.28 for males and 3.86 for females, while for camping, the mean score was 4.41 for males and 3.83 for females. In terms

of age, 30.5% of respondents were between 21 and 30 years old, followed by 29.2% aged between 31 and 40 years. Additionally, a study by Choy and Lazim (2013) in Lata Jarum, Raub, Pahang, found that the level of ecotourism understanding among the local community was moderate. Although this study did not directly discuss gender differences in ecotourism participation, it emphasized the importance of education and awareness in enhancing community involvement in ecotourism.

#### *The Impact of Ecotourism on the Local Economy*

A total of 68% of respondents stated that ecotourism has boosted the local economy by creating more job opportunities and benefiting small and medium enterprises. However, 45% of respondents indicated that the profits from ecotourism are not distributed fairly, as larger businesses tend to gain more profit compared to small enterprises (Figure 2). Pearson correlation analysis showed a positive relationship between the increase in tourist numbers and the rise in local community income ( $r = 0.67, p < 0.05$ ). However, if not managed properly, unbalanced development could lead to socioeconomic disparities between regions. An analysis of development imbalances among states in Malaysia revealed that high-income states are primarily industrialized, while low-income states are among the main contributors to Malaysia's agricultural sector (Sieng & Kamarudin, 2021).

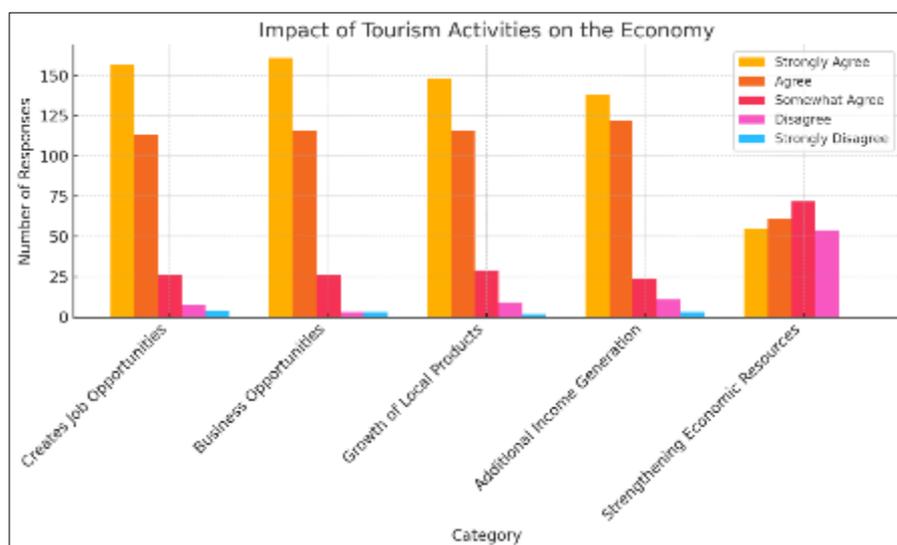


Figure 2. Impact of Tourism on Economy

#### *The Implications of Ecotourism on Society*

The study found that 60% of respondents believe that ecotourism increases awareness of local culture through interactions with the local community and the promotion of local products. However, 40% of respondents believe that the development of ecotourism also brings negative effects, such as changes in cultural values and an increase in the cost of living for local residents.

Regression analysis results indicate that the most influential factors affecting community acceptance of ecotourism are ecotourism education and community participation in tourism planning ( $\beta = 0.42, p < 0.01$  (Figure 3)). A study by Anas et al. (2018) on post-disaster tourism recovery found that community participation in the planning and management of ecotourism not only enhances local economic resilience but also helps preserve the authenticity of local

culture. This study highlights the importance of the community’s role in shaping sustainable tourism development.

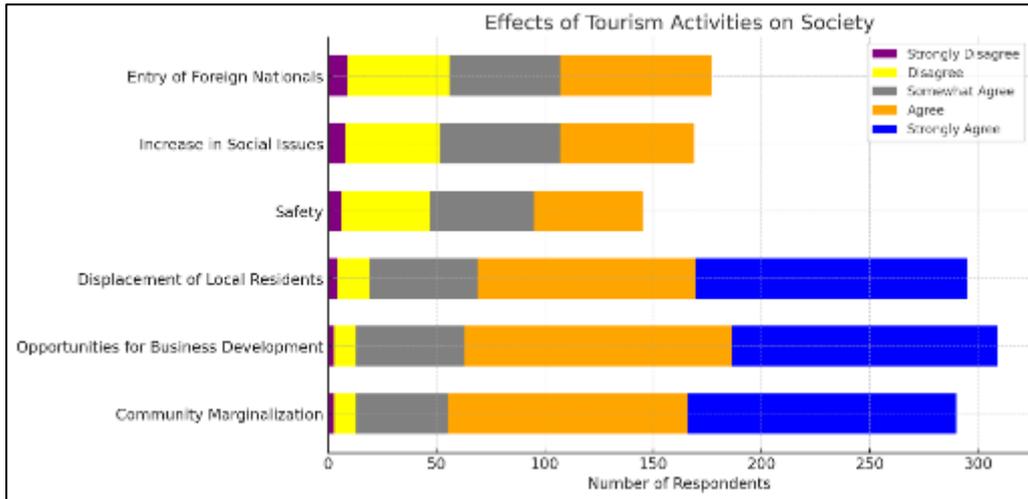


Figure 3. Effect of Tourism on Society

*The Impact of Ecotourism on the Environment*

A total of 72% of respondents agreed that ecotourism contributes to an increase in solid waste pollution, especially in waterfall areas and camping sites (Figure 4). Pearson correlation analysis indicates a significant relationship between the increase in tourist numbers and environmental pollution levels ( $r = 0.73, p < 0.05$ ).

The lack of effective waste management can lead to increased water pollution and uncontrolled deforestation due to the rise in tourists. However, issues such as water pollution and deforestation caused by human activities, including tourism, have been discussed in various sources. For example, the *Malaysia Innovation 2022* document by the Ministry of Economy highlights the worsening problem of water and air pollution due to human activities (Ministry of Economy Malaysia, 2022).

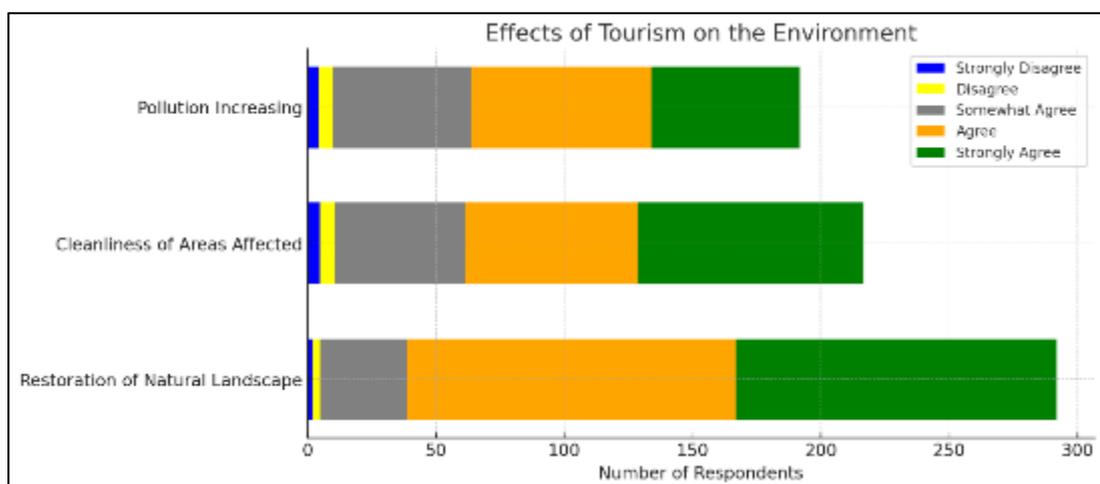


Figure 4. Effect of Tourism on Environment

## Needs Analysis for Improving Ecotourism Activities

### *Preserving Ecotourism Areas*

The study shows that the majority of respondents (76.0%) agree that improving existing tourism facilities is a key step in sustaining recreational parks. Comprehensive and high-quality facilities such as clean restrooms, prayer rooms, safety gear, food stalls, well-maintained roads, and spacious parking areas can enhance tourism appeal. For instance, Lata Janggut, which is equipped with various amenities, has successfully attracted more visitors. A study by Mayan & Nurul (2017) also states that the development of local facilities benefits rural communities that were previously overlooked. Ecotourism activities such as mountain climbing, river trekking, and homestay programs are becoming increasingly popular as they offer unique experiences at affordable prices, thereby contributing to the sustainable growth of the ecotourism sector (Figure 5).

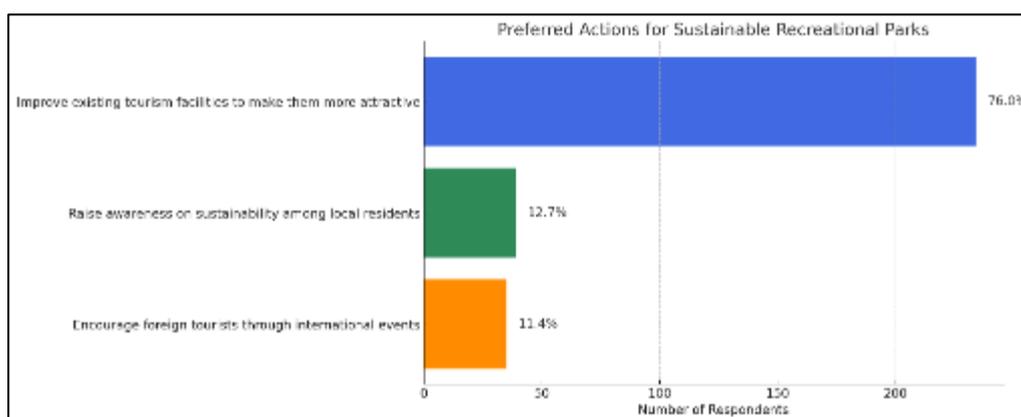


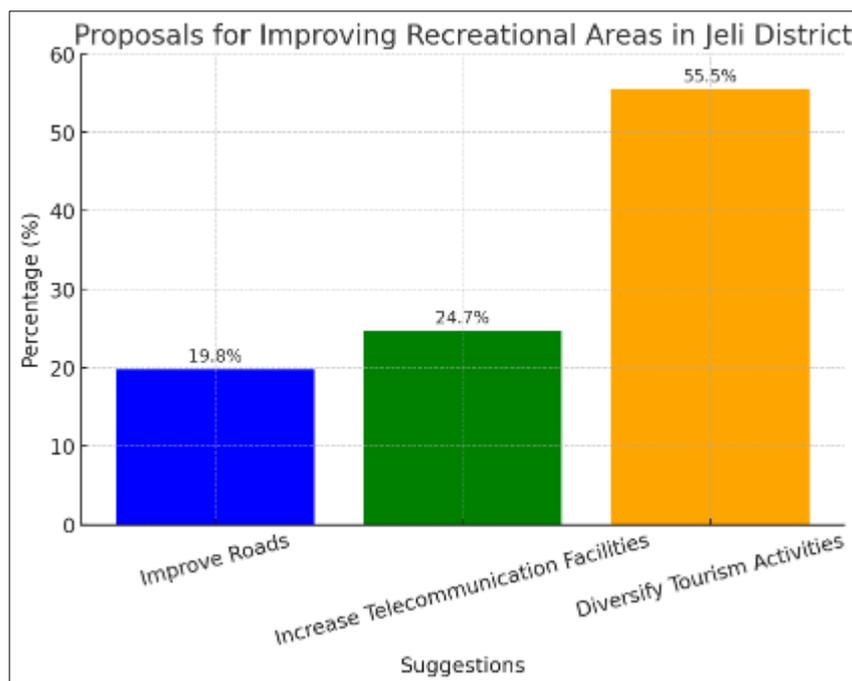
Figure 5. Preferred Action for Sustainable Recreational Parks

Additionally, environmental sustainability awareness is also recognized as crucial by 12.7% of respondents, who believe that education and campaigns play a vital role in preserving nature alongside development. Research by Heng et al. (2011) indicates that environmental knowledge and a positive attitude toward ecotourism can enhance community participation in its management. Furthermore, 35 respondents agreed that organizing international activities could attract more foreign tourists. The Official Website of the Kelantan Tourism Information Center (2024) also reported that annual programs such as Visit Kelantan 2024 aim to promote the state's tourism sector internationally. Therefore, collaboration between stakeholders and policymakers is essential to ensure that the ecotourism sector develops competitively and sustainably.

### *Improving Facilities in Ecotourism Areas*

Based on Figure 6, the majority of respondents have chosen diversifying tourism activities as the best alternative to improve recreational areas in Jeli District. This is evident as a total of 171 respondents, representing 55.5%, agreed with this statement. The researcher believes that by diversifying tourism activities such as kayaking, hiking, and others, it will attract both local and international tourists to participate in these activities. Additionally, this is also supported by a study conducted by Enea & Tanasoiu (2009), which stated that the quality of the local population and the development of tourist areas can be enhanced through various tourism activities, such as relaxation, recreation, leisure, and gaining knowledge in

appreciating natural beauty and environmental aesthetics. This situation demonstrates that diversifying tourism activities can enhance the competitiveness of recreational areas.



**Figure 6.** Suggestion to Improve Recreational Areas

Furthermore, respondents also suggested improving telecommunication facilities as a proposal to enhance recreational areas in Jeli District, with 76 respondents supporting this idea. This may be due to the belief that telecommunication networks play a crucial role in connecting individuals with one another. As evidence, according to the village head of Lata Renyuk, he mentioned, "If you are in Renyuk, there is no internet connection, which causes many problems." Therefore, it is reasonable to develop telecommunication facilities to further enhance the development of recreational areas.

This is further supported by a study conducted by Rosniza Aznie CR et al. (2012) titled "Potential of Recreational Ecotourism Attractions at Taman Rekreasi Air Panas (TRAP) Sungai Klah, Perak," in which the findings indicate that besides transportation, communication facilities should also be given attention, such as providing WiFi zones, public telephones, and other amenities to ensure comfort and convenience for visitors. This indirectly contributes to the growth and development of recreational areas in Jeli District.

#### *Actions to Ensure the Sustainability of Recreational Areas*

Based on Figure 7, the majority of respondents chose the "Love Our Area" campaign as the most effective recommendation to ensure the sustainability of the recreational park. The data recorded shows that 165 respondents, representing 53.6%, agreed with this statement. The researcher believes that campaigns are an excellent alternative for providing information and raising awareness among the local community about the importance of preserving natural sustainability in the ecotourism sector. Natural heritage is a valuable asset that makes an area unique and attractive.

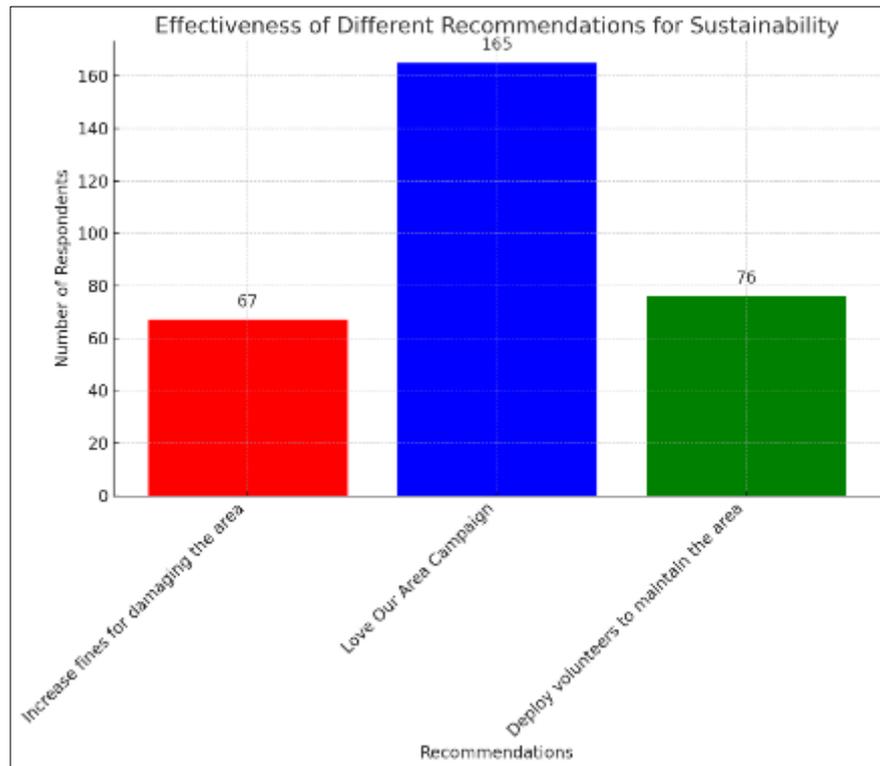


Figure 7. Recommendation for sustainability ecotourism

This is further supported by the Official Portal of the Ministry of Tourism, Arts, and Culture (2010), which states that the Ministry of Tourism introduced an innovation in tourism to ensure sustainability through the “1Malaysia Green Tourism, 1Malaysia Clean” campaign. This campaign aims to instill a sense of love for the beauty and cleanliness of nature, especially in locations that attract both local and international tourists. Furthermore, this campaign also raises community awareness about its impact on the tourism industry and encourages them to take responsibility for maintaining the cleanliness of the natural environment to preserve its sustainability. Additionally, respondents also selected the placement of volunteers to maintain the area as one of the most effective recommendations for ensuring the sustainability of the recreational park, with 76 respondents agreeing. The researcher believes that having volunteers stationed in ecotourism areas would make these locations better managed in terms of security, cleanliness, and overall maintenance.

According to a study conducted by Mohd Alif Jasni & Noralina Omar (2022), titled *The Role of Volunteering in Creating a Safe City*, volunteers play a crucial role in supporting national development agendas, such as increasing public awareness and providing social services in various aspects, including welfare, consumer rights, environmental sustainability, and safety. With the cooperation and commitment of volunteers, ecotourism areas can be well-maintained, particularly in ensuring cleanliness and visitor safety. This, in turn, contributes to the realization of a sustainable recreational park for both visitors and the natural environment. Therefore, collaboration between ecotourism developers and volunteers should be established to implement and sustain sustainable development, ensuring benefits for future generations.

**Suggestions and Recommendations**

The findings of this study confirm that ecotourism in Jeli has positive economic and social impacts but also poses challenges in terms of environmental sustainability. In response, several strategic recommendations have been proposed to ensure that this sector develops sustainably and provides comprehensive benefits to all stakeholders. First, promoting a more equitable economic model by providing incentives to small entrepreneurs and local traders to help them compete fairly in the tourism industry. This includes access to financial support, entrepreneurship training, and the promotion of local products as key attractions for tourists. Second, strengthening environmental regulations by introducing penalties for illegal waste disposal and enforcing compliance with sustainable tourism practices. Local authorities can implement environmental monitoring programs and raise awareness among tourists about the impact of their activities on natural ecosystems. Third, enhancing education and community awareness through continuous ecotourism awareness campaigns and training for local residents. These programs aim to increase understanding of the importance of conserving natural resources and expose the community to ways they can actively participate in the ecotourism industry. Fourth, improving green infrastructure by introducing green technologies such as solar energy and wastewater treatment systems to reduce negative environmental impacts. The development of eco-friendly tourism facilities will help control pollution and maintain ecological balance in ecotourism areas.

These findings align with a study by Mohd Noh et al. (2020) in Kampung Selai, Bekok, Johor, which identified five key factors for ensuring sustainable ecotourism development, including community involvement in planning and implementation phases, as well as the preservation of natural resources. Therefore, all stakeholders must play their respective roles in supporting ecotourism initiatives based on sustainability principles to ensure long-term benefits for both the community and the environment.

**Conclusion**

This study examined the implications of ecotourism on the human and natural environment in Jeli, Kelantan. The findings indicate that ecotourism provides significant economic benefits to the local community, particularly by creating job opportunities and boosting the income of small businesses. However, the study also revealed an imbalance in the distribution of economic benefits, where larger operators tend to dominate over small-scale traders. From a social perspective, ecotourism is seen as an effective tool for enhancing cultural awareness and promoting the identity of the local community. Nevertheless, negative effects also emerge in the form of social and cultural changes due to increased interaction between tourists and local residents. Therefore, active community participation in ecotourism planning is crucial to ensure a more equitable distribution of benefits.

The study also found that ecotourism places pressure on the natural environment, particularly in terms of solid waste pollution, ecosystem disruption, and increased use of natural resources. Pearson correlation analysis showed a significant relationship between the rise in tourist numbers and environmental pollution, confirming the need for stricter control measures to ensure ecosystem sustainability. Based on the findings, several recommendations were proposed, including strengthening ecotourism management policies, increasing community involvement, and introducing green technology in the tourism sector. The implementation of more inclusive and sustainable strategies will help ensure a balance

between economic development and environmental preservation in Jeli. In conclusion, this study emphasizes that ecotourism in Jeli has the potential to continue growing sustainably, provided that economic, social, and environmental management aspects are given due attention. Further research is recommended to assess the long-term impacts of ecotourism and to compare more effective management strategies within a global context.

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