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Optimizing the Ecotourism Potential of Bukit Matoa by Empowering Tourism Awareness Groups (*Pokdarwis*) in Sanitation and Safety Management through Socialization

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ABSTRACT

Ecotourism integrates natural beauty, conservation, and the welfare of local communities. Bukit Matoa, located in Padang City, West Sumatra, presents promising ecotourism potential but faces challenges related to sanitation and visitor safety. Identified issues include domestic waste accumulation, lack of firefighting infrastructure, unsafe trekking routes, and inadequate first aid facilities. An empowerment program targeting the Tourism Awareness Group, called as *Pokdarwis,* was conducted to address these challenges. The activities involved education on waste composting, mosquito vector control, ergonomic trekking route design, and basic firefighting techniques. The target of Socialization was cadres who were members of the Tourism Awareness Group. The activity was conducted at the *Pokdarwis* chairman's house in the Bukit Matoa area. The results of the socialization showed that a team was formed to improve the design of new stairs, there was planning for toilet repairs along with the cleaning responsible person, increased knowledge of cadres about how to use fire extinguishers and reducing the fire risk in ecotourism, as well as there is a plan to create a location for collecting household waste for making compost. Furthermore, continuous stakeholder engagement and program execution are recommended to optimize the site's potential.

Keywords: community empowerment, ecotourism development, sustainable tourism practices

INTRODUCTION

In 1996, the World Conservation Union defined the concept of ecotourism as travel activities aimed at visiting and appreciating areas where natural beauty and environmental integrity are still preserved, including the conservation of local culture (IUCN, 2024). Indonesia's Ministry of Home Affairs Regulation No. 33 of 2009 on Guidelines for Regional Ecotourism Development also outlines ecotourism as a nature-based tourism activity, emphasizing natural resource conservation efforts and enhancing local community income. Furthermore, ecotourism is recognized as sustainable tourism designed to preserve the environment while empowering local communities (Novianti et al., 2022). It involves minimizing the negative impacts of tourism on the environment (Sánchez-Prieto et al., 2021). The core criteria of ecotourism include nature appreciation, learning, and sustainability (Beaumont, 2011).

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Ecotourism has been acknowledged for its potential to distribute income equitably to underserved areas and ensure that tourism directly benefits local communities (Yorganci & Emin, 2022). It amplifies positive effects by promoting environmental conservation, cultural preservation, and community engagement (Titaley, 2023; Kia, 2021). Community-Based Ecotourism (CBET) focuses on environmental preservation and empowers communities by actively involving them in tourism projects (Fiorello & Bo, 2012). Implementing ecotourism principles, such as minimizing environmental impacts and utilizing local resources, significantly contributes to the sustainability of ecotourism operations (Sudiarta et al., 2022).

Sustainable ecotourism can be achieved by integrating local resources, community involvement, and applying responsible tourism practices (Tsaur et al., 2006). Ecotourism development not only aids in preserving ecosystems but also enhances local communities' welfare through tourism's economic impacts (Azwar et al., 2019). Scenic ecotourism sites offer considerable economic value and development potential, attracting tourists while emphasizing environmental conservation (Liu, 2019).

Tourism has become one of the key sectors driving the global economy, including in Indonesia (GFC, 2024). According to a press release by the Ministry of Environment and Forestry, in 2022, there were 5.29 million recorded visits to natural conservation areas, comprising 5.1 million domestic tourists and 189 thousand international visitors. The number of visits in 2022 doubled compared to 2021, generating a non-tax state revenue (PNBP) of IDR 96.7 billion through entrance fees to natural tourism sites (Kepala Biro Hubungan Masyarakat, 2022).

In the western region of Indonesia, specifically in Sumatera Barat Province, Padang City, Padang Selatan District, Kelurahan Mato Air, there is a strategic area for tourism development known as Bukit Matoa. Bukit Matoa is a newly emerging tourist attraction in Kelurahan Mato Air with significant potential to be developed into an ecotourism destination. This potential is based on its unique offering of panoramic views from an elevation of approximately 700 meters, allowing visitors to observe all corners of Padang City. Along the route to the summit, visitors are also treated to the lush greenery of trees flanking the path on both sides. Bukit Matoa's ecotourism management and development are handled entirely by members of the Bukit Matoa Tourism Awareness Group (*Pokdarwis*), consisting of residents with a strong commitment and passion for nature-based tourism.

However, several challenges and issues were identified during Bukit Matoa's ecotourism development. Based on surveys and interviews with *Pokdarwis* members, several problems related to sanitation and safety were found in the area. The first issue concerns domestic waste, such as leftover food from surrounding settlements, which is often accumulated in the tourist area, compounded by the abundant fallen leaves typical of ecotourism sites. This situation risks attracting disease-transmitting organisms (pathogen vectors), particularly mosquitoes and flies, which could affect the community and visitors.

Secondly, the toilet facilities are dirty and consist of portable units, with no regular personnel assigned to cleaning and maintenance tasks. The third issue is the absence of basic firefighting equipment and a lack of knowledge among site managers regarding basic firefighting techniques, despite the clear fire risk posed by dry leaves, especially during the dry season.

The fourth problem pertains to inadequate trekking routes, including stairs too small for standard foot placement, increasing the risk of falls, and railings too narrow to be gripped comfortably. These conditions pose significant risks to both visitor enthusiasm and climber safety. The final issue is the absence of adequate first aid equipment (P3K) at the tourist site or any emergency post, where only a basic kit box is available.

Despite these challenges, ecotourism development is crucial in promoting environmental conservation, supporting local communities, and offering sustainable travel experiences. By adhering to sustainability principles, engaging local communities, and prioritizing conservation efforts, ecotourism can continue to grow as a responsible and impactful form of tourism.

Given the positive potential of Bukit Matoa ecotourism for both the local community and government, there is a critical need for increased awareness and collaborative support from various stakeholders. The most urgent assistance required is to address the primary challenges of waste management and enhance the safety of the tourism area. Therefore, an empowerment program was designed and implemented through socialization activities for the Bukit Matoa Tourism Awareness Group (*Pokdarwis*). These activities focused on promoting waste management practices, specifically composting dry leaves and household waste, introducing mosquito vector prevention and eradication methods, providing recommendations for ergonomic stair and seating designs, and offering education on the proper use of portable fire extinguishers (APAR).

This socialization initiative aimed to enhance the awareness, knowledge, and skills of *Pokdarwis* members, enabling them to process the dry leaves scattered along the Bukit Matoa hiking trail into compost with high utility value. Waste accumulation could occur without proper waste management and vector control measures at the tourist site, leading to increased disease-carrying vectors, such as mosquitoes and flies. This situation may trigger outbreaks of diseases such as malaria, dengue fever, and diarrhea, which could ultimately damage the reputation of Bukit Matoa and cause significant losses.

Through this socialization program, it is also expected that *Pokdarwis* members will develop greater awareness, knowledge, safety planning skills, and technical abilities to design more ergonomic tourist areas, particularly regarding stair dimensions and rest area seating on the hill. Moreover, the program aims to enhance their capacity to extinguish fires using APAR. The socialization activities conducted by the team represent a strategic effort to optimize Bukit Matoa's potential as a leading ecotourism destination in West Sumatra and Indonesia.

METHOD

This socialization activity was part of a community service program under the "Merdeka Belajar Membangun Desa" initiative organized by the Faculty of Public Health, Andalas University. The activity was conducted at the Bukit Matoa Tourism Area, located in Kelurahan Mata Air, Padang Selatan Subdistrict, Padang City, West Sumatra. The duration of the program, from planning to the main activity, spanned four months, starting from September to December 2023.

The activities commenced with a preparation phase, including obtaining permits from the Kelurahan Mata Air authorities and local neighborhood associations (RT/RW). Subsequently, the team conducted an initial site assessment at Bukit Matoa by designing a questionnaire based on the Ministry of Health Regulation No. 2 of 2023 and the Ministry of Tourism and Creative Economy Regulation No. 13 of 2020. The initial assessment and survey results were analyzed to formulate recommendations and strategies for developing Bukit Matoa's ecotourism.

Based on the analysis, a targeted educational program was designed to address the primary issues of sanitation, hygiene, and safety within the ecotourism area. After agreeing on the schedule, the team determined that the education methods would include lectures for material presentation, discussions and Q&A sessions, video screenings, and providing design input. The lectures focused on the future potential of Bukit Matoa as an ecotourism

destination, the problems identified during the preliminary survey, and possible solutions. The video screenings demonstrated the techniques for composting dry leaves and the correct use of fire extinguishers (APAR). Design recommendations included blueprint examples for ergonomic staircases and seating suitable for the Bukit Matoa ecotourism area.

Additionally, the team distributed leaflets summarizing the educational content to the participants. Furthermore, the team provided supporting equipment such as a blood pressure monitor (tensiometer) and a rescue stretcher to facilitate first aid in case visitors or community members required emergency assistance.

RESULTS AND DISCUSSION

The socialization activities were delivered to several members of the Tourism Awareness Group (*Pokdarwis*) in Kelurahan Mata Air, Padang Selatan Subdistrict, Padang City. Before implementing the empowerment activities for *Pokdarwis*, the team conducted a series of preliminary steps, including site observation, problem identification, and planning related to the conditions of the Bukit Matoa Ecotourism Area.

The initial phase of the activities began with observing the Bukit Matoa tourist site's general condition, followed by identifying issues related explicitly to sanitation at the location. Subsequently, a thorough inspection of the site's sanitation conditions was conducted. After these assessments, *Pokdarwis* was designated as the responsible party for developing and managing sanitation and safety within the ecotourism area. The socialization program commenced with distributing informational leaflets to provide an overview of the educational content. Following this, the main socialization session was conducted using a PowerPoint presentation, complemented by interactive discussions and a question-and-answer segment. The education was further enhanced by video screenings demonstrating composting techniques for dry leaves and the proper use of portable fire extinguishers (APAR). The program concluded with the symbolic handover of first aid equipment (P3K) to *Pokdarwis*, aimed at strengthening the group's capacity to respond to emergencies effectively in the Bukit Matoa ecotourism area.

A. Preliminary Observation of Bukit Matoa Tourism Area

Before conducting the socialization activities, the team conducted a preliminary observation of the Bukit Matoa tourist site in Kelurahan Mata Air, Padang Selatan Subdistrict, Padang City. This observation aimed to identify the general sanitation-related issues at the site. During the initial observation, it was noted that a significant amount of dry leaf litter was scattered throughout the area, and there were several points where stagnant water had accumulated. Such conditions are likely to increase the population of disease-carrying vectors within the site.

The team undertook a complete ascent to the summit of Bukit Matoa to observe the sanitation conditions along the hiking trail. It was found that the toilet facilities were inadequate, with visible stagnant water in some areas. Moreover, there were no handwashing stations (sinks) available, and no waste bins were provided, resulting in dry leaf litter being scattered across the area.

Following this preliminary observation, the team prepared the socialization program focused on waste management and vector control for the Tourism Awareness Group (*Pokdarwis*). The educational activities were designed to be delivered through the distribution of leaflets, the presentation of academic material using PowerPoint, and the screening of videos on composting techniques.



Figure 1. Initial observations showed dry leaf litter scattered around



Figure 2. Leaflet containing material on general sanitation and safety in ecotourism

B. Inspection of Bukit Matoa Tourism Area

Following the preliminary observation, the team inspected the Bukit Matoa tourism site. The inspection utilized a questionnaire-based assessment employing a Likert scale. The criteria evaluated included water quality, air quality, facility and building sanitation, adequacy of supporting infrastructure, vector and pest control, waste management, cleanliness management, security systems, fire prevention, and emergency responsiveness.

Based on the inspection results, Bukit Matoa was classified as the "very poor" category, with a total score percentage of 16.8% (Kemenparekraf, 2020). Some components that achieved a satisfactory evaluation included water quality used for odorless sanitation purposes, land that was not a former mining site, industrial area, or final waste disposal site (TPA), and basic safety operational procedures.

However, several critical deficiencies were noted in other evaluation components, including the absence of handwashing facilities (such as sinks, soap, and running water) and waste bins in toilet areas, the lack of stormwater drainage systems, the unavailability of health facilities, the absence of waste and wastewater management facilities, and the lack of evacuation routes and safety equipment such as portable fire extinguishers (APAR) in the event of natural disasters or fires.

The findings from this inspection were formally submitted to the management of Bukit Matoa tourism area (*Pokdarwis*) as recommendations for improvement. Additionally, the team provided a blood pressure monitor (tensiometer) and a rescue stretcher to support emergency response preparedness.



Figure 3. Results of initial observations regarding sanitation in ecotourism areas



Figure 4. Handover of tensiometers and stretchers for first aid activities

C. Socialization for *Pokdarwis*

Subsequently, a socialization and education activity targeted the main stakeholders, namely the Tourism Awareness Group (*Pokdarwis*). The team undertook comprehensive preparations for the event, starting with coordinating with *Pokdarwis* representatives to

agree on the date, time, and venue for the socialization activity as the first step of organizing the program. Additionally, the team prepared necessary administrative documents, such as invitation letters and attendance lists. Internal meetings were also conducted to delegate tasks during the socialization event and to develop the empowerment materials.

The empowerment activity, titled "Optimizing the Ecotourism Potential of Bukit Matoa by Empowering the Tourism Awareness Group (*Pokdarwis*) in Sanitation and Safety Management at the Ecotourism Site," was held on Sunday, December 3rd, 2023. The event lasted for three hours, from 08:00 to 11:00 WIB. Participants included the chairman, vice-chairman, and members of *Pokdarwis* from Kelurahan Mata Air, along with local neighborhood leaders (RT and RW). All participants received informational leaflets containing material on waste management and vector control.

The event began with an opening session, followed by presentations on waste management, vector control strategies, ergonomic design for staircases, and the proper use of portable fire extinguishers (APAR). A question-and-answer session was subsequently opened, during which the stakeholders demonstrated a high level of enthusiasm, as evidenced by the numerous questions and active discussions. One of the most engaging discussions revolved around composting, including queries about the appropriate type of water, the duration required for compost curing, and suitable composting materials.

After the session, souvenirs in the form of emergency response equipment were presented to address the issue of inadequate first aid facilities (P3K). The souvenirs were officially handed over by the Field Supervising Lecturer to the Chairman of *Pokdarwis*, followed by a documentation session to capture the event.



Figure 5. Socialization and education on sanitation and safety in ecotourism areas

CONCLUSION

Based on the analysis results, it can be concluded that Bukit Matoa possesses considerable potential to develop into a high-quality ecotourism area. This potential is supported by its preserved natural resources, strong community involvement, and the stunning panoramic views it offers. However, Bukit Matoa's ecotourism development still faces several risks that could significantly impact the area's sanitation, safety, and environmental sustainability if neglected.

The primary issues identified include domestic waste accumulation originating from nearby settlements, the lack of basic fire safety equipment such as portable fire extinguishers (APAR), the absence of sufficient first aid facilities (P3K), and inadequacies in

the trekking infrastructure, such as non-ergonomic stair designs. These challenges could hinder the growth and sustainability of Bukit Matoa as an ecotourism destination.

Nevertheless, these issues can be addressed by re-evaluating the ecotourism development plans, particularly from the perspectives of occupational health and safety (OHS) and environmental health management, to ensure a more organized and sustainable advancement of Bukit Matoa's ecotourism potential.

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