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Submission date: 22-Nov-2025 03:05PM (UTC+0900)

Submission ID: 2766698658

File name: 4009_Galley.pdf (2.53M)

Word count: 4485

Character count: 28101

PROMOTING RESPONSIBLE ECOTOURISM THROUGH ENVIRONMENTAL INITIATIVES AT COBAN GLOTAK, MALANG REGENCY, EAST JAVA, INDONESIA

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Abstract

Coban Glotak tourism area, located in Malang Regency, East Java, represents a natural attraction with substantial ecological and aesthetic value. Nevertheless, it continues to encounter significant challenges in terms of management. Inadequate accessibility, the lack of proper directional signage, and an ineffective waste management system constitute the principal obstacles to its development as a sustainable tourism destination. This initiative was undertaken as a contribution towards the achievement of the Sustainable Development Goals (SDGs), particularly SDG 3 (good health and well-being), SDG 11 (sustainable cities and communities), and SDG 15 (life on land). The approach adopted included environmental observation to identify prevailing issues, interviews with local site managers, and the implementation of field-based actions. The interventions comprised litter removal along the tourist pathways, installation of directional and safety signage, placement of safety ropes on steep or hazardous trails, and trimming of overgrown vegetation that impeded access. The outcomes indicated marked improvements in cleanliness, visitor comfort, and overall safety, in addition to fostering a collective sense of environmental awareness. These findings demonstrate that modest yet well-structured interventions, grounded in local community involvement, can yield positive impacts on the sustainable management of tourism sites. Furthermore, such practices may serve as replicable models for the development and conservation of other natural tourism destinations.

Keywords: Coban Glotak, environment, SDGs, natural tourism, sustainable tourism

Abstrak

Kawasan wisata Coban Glotak yang terletak di Kabupaten Malang, Jawa Timur, merupakan objek wisata alam dengan nilai ekologis dan estetika yang tinggi. Namun demikian, kawasan ini masih menghadapi tantangan signifikan dalam hal pengelolaan. Aksesibilitas yang kurang memadai, minimnya papan penunjuk arah, serta sistem pengelolaan sampah yang belum efektif menjadi kendala utama dalam pengembangannya sebagai destinasi wisata berkelanjutan. Inisiatif ini dilaksanakan sebagai bentuk kontribusi terhadap pencapaian Tujuan Pembangunan Berkelanjutan (TPB/SDGs), khususnya SDG 3 (kehidupan sehat dan sejahtera), SDG 11 (kota dan permukiman yang berkelanjutan), dan SDG 15 (kehidupan di darat). Pendekatan yang digunakan meliputi observasi lingkungan untuk mengidentifikasi permasalahan yang ada, wawancara dengan pengelola setempat, serta pelaksanaan aksi langsung di lapangan. Intervensi

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yang dilakukan mencakup pembersihan sampah di sepanjang jalur wisata, pemasangan papan penunjuk arah dan keselamatan, pemasangan tali pengaman pada jalur yang terjal atau berbahaya, serta pemangkasan vegetasi yang menghambat akses. Hasil kegiatan menunjukkan adanya peningkatan yang cukup signifikan dalam aspek kebersihan, kenyamanan pengunjung, dan keselamatan secara keseluruhan, serta mendorong tumbuhnya kesadaran lingkungan kolektif. Temuan ini menunjukkan bahwa intervensi sederhana namun terstruktur dengan baik, serta didukung oleh keterlibatan masyarakat lokal, dapat memberikan dampak positif terhadap pengelolaan pariwisata berkelanjutan. Lebih lanjut, praktik seperti ini berpotensi menjadi model yang dapat direplikasi dalam pengembangan dan konservasi destinasi wisata alam lainnya.

Kata Kunci: Coban Glotak, lingkungan, SDGs, wisata alam, pariwisata berkelanjutan

Introduction

Ecotourism is popular for its role in ecological and economic support for rural areas (Samal & Dash, 2023; Xu *et al.*, 2023; Joshi *et al.*, 2025), and it has become a progressively essential practice in nature conservation (Ni'am *et al.*, 2021; Miller *et al.*, 2023). Indonesia possesses a remarkable diversity of natural resources, ranging from mountainous landscapes and coastal zones to numerous natural waterfalls scattered across its regions (Karmila *et al.*, 2022; Rizaldi *et al.*, 2024). This wealth of natural assets places the country in a strong position for the development of conservation-based ecotourism (Efani *et al.*, 2024; Saputri *et al.*, 2024). Waterfalls, in particular, offer not merely aesthetic appeal but also function as integral components of local ecosystem and serve as educational tools for environmental awareness (Mestanza-Ramón & Caballero, 2022). As public demand for safe and natural recreational spaces increases, the need for sustainable management of such natural attractions has become more critical.

One such undeveloped natural tourism site is Coban Glotak, located in Wagir District, Malang Regency, East Java, Indonesia. Surrounded by dense natural vegetation and a pristine mountain landscape, Coban Glotak presents significant potential for conservation-oriented ecotourism development (Hambut *et al.*, 2023). However, this potential remains largely untapped due to several persistent challenges on the ground. Access to the site remains difficult due to steep and uneven terrain. Moreover, there is a lack of adequate directional signage for visitors, and basic safety infrastructure is entirely absent (Purba *et al.*, 2024). Riawati *et al.* (2024) stated that tourist interest in Coban Glotak over time has declined due to limited facilities and infrastructure, as well as competition from newly opened waterfalls. In addition to addressing physical and environmental constraints, strengthening destination branding is also essential to enhance the visibility, identity, and competitiveness of natural tourism sites. Through destination branding, the unique ecological and cultural values of Coban Glotak can be effectively communicated, enabling it to stand out from other regions and attract greater interest from both domestic and international visitors (Purnamasari *et al.*, 2025).

These challenges have given rise to several adverse implications. Poor accessibility and the absence of essential infrastructure diminish the comfort and safety of visitors (Agatha & Hawadi, 2024). As a result, the site's attractiveness as a tourist destination is compromised, and safety risks are heightened. Additionally, the absence of proper management has led to stagnation in the area's tourism development and poses environmental degradation risks if not addressed (Baloch *et al.*, 2022; Darsana *et al.*, 2025). This situation reflects a lack of both institutional intervention and community-based engagement in managing ecotourism potential.

In line with the global development agenda, which promotes balance among environmental, social, and economic dimensions, such conditions require serious attention through community-based initiatives. This activity is designed as a direct response to the practical needs observed on-site while aligning with the principles of the SDGs. It specifically contributes to SDG 3, which emphasises health and well-being; SDG 11, which supports the development of inclusive, safe,

resilient, and sustainable communities; and SDG 15, which focuses on protecting, restoring, and promoting the sustainable use of terrestrial ecosystems.

The urgency of this programme lies in the need to develop simple yet impactful interventions that directly address the problems of accessibility, safety, and environmental preservation in tourism areas. The intervention includes on-site environmental observations, problem identification through dialogue with local managers, and practical action such as litter clean-up, installation of directional and safety signage, placement of safety ropes on steep trails, and trimming of obstructive vegetation. Through this approach, the programme aims to improve environmental quality and foster local awareness of responsible tourism management.

Ultimately, this initiative seeks to establish a model for community-based tourism management that can be replicated in other regions with similar characteristics. Beyond physical improvements, the activity underscores the importance of collaboration between local stakeholders, tourism managers, and educational institutions in promoting the transformation of tourism sites into more sustainable and environmentally conscious spaces. Thus, Coban Glotak can evolve not only as a recreational destination but also as an ecological learning site that integrates social participation and environmental stewardship in a holistic manner.

Method of Implementation

This community service was carried out on May 9, 2025 at Coban Glotak in Malang Regency, East Java Province, Indonesia. It was structured into three sequential phases to ensure comprehensive implementation. The first phase involved systematic field observation aimed at identifying the physical conditions of the main access trail to the waterfall (Figure 1). Parameters examined included the presence of environmental hazards, the accumulation of solid waste, vegetation density, and the availability of signage and visitor information infrastructure. Observational findings indicated that large segments of the trail were obstructed by overgrown vegetation, several waste accumulation points were evident, and there was a complete absence of directional or safety signage, all of which posed risks to visitor safety and accessibility.



Figure 1. Field observation at Coban Glotak (source: personal documentation)

The second phase employed direct interviews with the site management personnel to explore institutional limitations and operational challenges in managing the area. The interviews revealed constraints related to human resource availability and infrastructure deficiencies. Management representatives confirmed the absence of procedures for monitoring visitor behavior, particularly regarding littering, and acknowledged the lack of systematic efforts to maintain the cleanliness of the trail or to restore damaged informational signage. These findings provided critical insight into the systematic gaps that hinder sustainable management of the ecotourism site.

The third phase consisted of direct intervention in the field, focusing on both environmental clean-up and infrastructural enhancement. Activities included the manual collection of inorganic

waste along the trail, the installation of informational plaques and safety warnings at hazardous points such as steep descents and trail junctions (Figure 2), and the deployment of webbing ropes along slippery slopes to improve safety. Additionally, overgrown vegetation was trimmed to reopen obstructed paths, thereby restoring accessibility and reducing environmental hazards. The implementation process was supported by a clear task allocation system to ensure efficiency and coordination across all sub-activities.



Figure 2. The process of installing informational plaques at Coban Glotak (source: personal documentation)

17 Results and Discussion

The following section outlines the results of the initial field observations and the subsequent intervention activities carried out at Coban Glotak. The findings are organised into two parts to clearly present the site conditions and the impact of the actions taken.

1. Field Observations

Prior to the intervention, interviews were carried out with local site managers to understand the prevailing issues at Coban Glotak. The interview results highlighted several critical challenges: faded and unclear directional signage, scattered non-biodegradable waste due to the absence of visitor waste control, the presence of only one waste disposal point, dangerous trail sections, and overgrown vegetation obstructing access routes. These issues not only undermined visitor safety but also posed significant ecological and management concerns for the site as an ecotourism destination.

Direct field observations confirmed the interview findings. Trail signage was found to be severely weathered, offering little to no guidance for visitors. Waste was widely distributed along the trail and near the waterfall, with no containment system in place. Certain trail sections were particularly hazardous, characterised by steep slopes, loose soil, and slippery surfaces. Moreover, the vegetation along the trail was dense and unmaintained, limiting visibility and posing additional safety risks. These findings aligned with previous studies highlighting common maintenance and infrastructure deficiencies in unmanaged or underfunded ecotourism sites.

2. Field Actions and Impact

Following the assessment, a multi-step field intervention was conducted. Waste collection was prioritised to address the visible accumulation of inorganic litter there. Inorganic waste, particularly single-use plastic waste continues to pose a significant environmental challenge in urban public spaces across Indonesia (Arifaturofiqoh *et al.*, 2025), including at Coban Glotak. Team members used large-capacity trash bags and systematically cleaned the trail from the entrance to the waterfall. The collected waste was then disposed of in the existing designated spot, which highlighted the urgent need for additional waste bins in the future. Waste must be disposed of

properly to prevent environmental pollution and other issues such as health problems for living beings (Dewi *et al.*, 2022; Putra *et al.*, 2024).

To improve safety and navigation, cautionary and directional plaques were installed at key locations including trail bifurcations, sharp descents, and approach paths near the waterfall. These plaques were constructed from weather-resistant materials and placed at eye level for maximum visibility. Their strategic placement responded to the previously identified navigational hazards and aimed to reduce the risk of injury.

Ropes made of durable webbing material were also installed in steep or slippery trail sections. These installations were designed to act as handholds, offering additional support for hikers, particularly in segments where the risk of falling was high. The use of low-impact anchoring techniques ensured minimal disturbance to the natural environment while enhancing user safety.

Vegetation trimming constituted another essential aspect of the intervention. Overgrown grasses and shrubs that blocked the path were cleared using manual tools to restore the visibility and width of the trail. This action not only facilitated easier movement but also reduced the potential for wildlife encounters in concealed areas. Post-trimming, the trail appeared significantly more accessible and navigable.

3. Discussion

The findings of this activity illustrate how participatory approaches in environmental stewardship can yield tangible improvements in natural site management. The presence of unmanaged waste, degraded signage, and unsafe trails is consistent with patterns observed in other natural tourist destinations facing similar resource limitations. The intervention demonstrated that even with limited tools, structured community action can address critical issues when grounded in direct observation and stakeholder input.

The installation of safety signage and trail ropes corresponds with best practices in ecotourism site planning, where visitor guidance and hazard mitigation are central to sustainable use. Clear and strategically placed signage serves multiple purposes: it informs, directs, and cautions visitors, thereby reducing uncertainty and preventing disorientation, especially in natural areas where formal infrastructure is minimal. In the context of Coban Glotak, the lack of clear markers previously led to confusion at trail junctions and increased the likelihood of visitors unintentionally straying into ecologically sensitive or dangerous zones. The introduction of visible and durable plaques at critical points, such as steep slopes, junctions, and near the waterfall, enabled safer navigation and promoted responsible movement within designated paths.

The vegetation management efforts at Coban Glotak align closely with ecological maintenance strategies that prioritise selective and minimally invasive clearing to balance human access with environmental preservation. In many unmanaged or underfunded natural sites, overgrown trails become a significant barrier to safe and enjoyable visitor experiences (Warren *et al.*, 2023). Dense vegetation not only obscures the trail, raising the risk of visitors getting lost or injured, but also encourages the creation of informal detours, which can lead to trampling of sensitive flora and disruption of wildlife habitats. Such unregulated movement contributes to habitat fragmentation and long-term ecological degradation.

By conducting manual trimming of grasses, shrubs, and low-hanging branches along the main trail, the intervention team restored the intended route without resorting to heavy machinery or widespread clearing, which could have caused further ecological disturbance. This selective approach is consistent with best practices in sustainable trail maintenance, where the goal is to retain the natural character of the area while improving access and safety. Moreover, this method ensures that only the vegetation directly impeding movement is removed, thereby preserving canopy cover, microhabitats, and native plant communities that contribute to the site's ecological integrity.

The success of this effort also illustrates the practical value of community-based engagement in managing ecotourism landscapes. In the absence of formal maintenance staff, local stakeholders

and volunteers can play a pivotal role in sustaining trail quality through periodic, low-impact interventions. Beyond the immediate functional benefit of improved trail visibility and navigability, this activity fosters a sense of collective ownership and responsibility for the site, reinforcing long-term conservation outcomes. Thus, the vegetation management undertaken at Coban Glotak is not only a physical improvement but also a demonstration of how community participation can uphold ecological principles while enhancing visitor access.

The use of minimal, context-appropriate tools in the Coban Glotak intervention highlights a practical and scalable approach to conservation, one that prioritises function, adaptability, and sustainability over cost-intensive solutions. In many ecotourism and conservation contexts, particularly in developing regions or sites with limited institutional support, access to advanced infrastructure or funding is often constrained (Chinweuba *et al.*, 2025). This creates a gap between management needs and available resources. However, as demonstrated in this intervention, that gap can be effectively addressed through creative use of locally available materials and manual labour tailored to the specific environmental and social context.

For example, the ropes used on steep trail segments were not industrial safety devices but durable webbing materials that could be securely anchored with basic tools. The informational plaques were crafted from weather-resistant yet affordable materials, designed for clear visibility rather than aesthetic complexity. Similarly, vegetation was cleared using manual cutting tools rather than mechanical equipment, reducing both environmental disturbance and financial cost. Each of these tools served a precise function and was selected based on its ease of use, maintenance, and compatibility with the natural surroundings.

This low-cost, high-impact approach has two important implications. First, it makes environmental interventions more accessible and replicable in other locations with similar limitations. Communities are empowered to act without waiting for external funding or complex technologies, which often leads to delays or inaction. Second, it fosters sustainability by ensuring that maintenance and future adjustments can be managed locally, without specialised technical expertise. Simple, community-driven tools, when applied through genuine collective action, can yield conservation outcomes comparable to those achieved by more capital-intensive and technology-dependent programmes.

Ultimately, the strategy adopted at Coban Glotak demonstrates that effective conservation does not always depend on sophisticated systems, but on thoughtful planning, contextual awareness, and the mobilisation of available human and material resources. This approach not only reduces costs and ecological impact but also strengthens community engagement, which is a critical factor in the long-term success of conservation initiatives (Dhliwayo *et al.*, 2023; Mina *et al.*, 2024).

These efforts also carry implications for policy and governance. In areas where formal management structures are weak, grassroots initiatives can act as catalysts for change, offering evidence of community capacity and providing models for institutional collaboration (Dushkova & Ivlieva, 2024). In conclusion, the intervention at Coban Glotak demonstrates the potential of structured community participation in enhancing both ecological and visitor-oriented aspects of natural tourism areas. The results affirm the need for continued support of site-level action, integrated waste management systems, and low-cost safety infrastructure as key components of sustainable ecotourism development.

The intervention we have made aligns with key targets of the Sustainable Development Goals (SDGs), particularly SDG 3 on good health and well-being, by contributing to the creation of a safe and clean natural environment conducive to recreation and mental wellness. Additionally, the activities support SDG 11 on sustainable cities and communities, through the promotion of responsible and environmentally friendly nature-based tourism practices. The also initiative contributes to SDG 15, which focuses on protecting, restoring, and promoting the sustainable use of terrestrial ecosystems, by actively preserving the natural integrity of the Coban Glotak area. These actions not only improved the physical conditions of the site but also reinforced the importance of collective responsibility in conserving natural heritage. Through these efforts, it is

expected that both local communities and visiting tourists will experience Coban Glotak in a safer and more enjoyable manner, while also developing a heightened awareness of the need to protect the environment as a shared obligation. The spirit of mutual cooperation and care for nature demonstrated in this programme reflects a practical and inclusive model for sustainable environmental stewardship.

Conclusions and Suggestions

The community service initiative implemented at Coban Glotak has proven that simple, low-cost, and community-driven environmental interventions can bring meaningful improvements to the quality of natural tourism sites. The actions undertaken, such as the removal of waste along the tourist trail, installation of directional and safety signage, provision of safety ropes, and trimming of obstructive vegetation, have contributed to enhanced cleanliness, accessibility, and visitor safety. Beyond the physical improvements, this programme also succeeded in cultivating environmental awareness and strengthening the sense of shared responsibility among local stakeholders and visitors. These outcomes affirm that sustainable tourism development can be effectively achieved through collaborative participation, environmental stewardship, and continuous community engagement, even in the absence of extensive financial resources or sophisticated infrastructure. The initiative also reflects real contributions to SDG 3, SDG 11, and SDG 15, particularly in promoting well-being, sustainable community-based tourism, and terrestrial ecosystem conservation.

To ensure the long-term sustainability of the improvements achieved, several suggestions emerge from this programme. First, it is essential to develop a routine maintenance and monitoring system that involves local communities, site managers, and volunteers to sustain the cleanliness and safety of the trail. Strengthening waste management through the addition of waste bins, clearer disposal guidelines, and improved coordination with local waste authorities will also support environmental preservation. Furthermore, empowering local communities through structured ecotourism governance, such as forming a dedicated management or caretaker group, will help institutionalise responsibilities and maintain continuity of conservation efforts. Educational approaches are equally important; therefore, it is recommended to develop environmental awareness programmes for visitors, including eco-learning activities and informational displays that promote responsible behaviour in nature-based tourism. Gradual improvements in safety infrastructure, along with enhanced collaboration between academic institutions, NGOs, and local government, are also expected to support the site's development as a model for community-based ecotourism. With sustained commitment, Coban Glotak has the potential to serve not only as an attractive natural destination but also as a replicable best practice for environmentally responsible tourism management in Indonesia. Coban Glotak, as a result of this initiative, has evolved not only as a more attractive and secure ecotourism destination but also as a model for educational engagement on the importance of environmental conservation. The experience illustrates that sustainability can be achieved through inclusive, practical actions rooted in cooperation and long-term commitment. Such programmes are vital for building environmentally conscious communities and ensuring that natural landscapes are preserved and appreciated for generations to come.

Acknowledgements

The author gratefully acknowledges the support of the local community and management of Coban Glotak for their cooperation during this research. Appreciation is given to all individuals who contributed to promoting environmental awareness and sustainable ecotourism in Coban Glotak.

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