

## The Role of Environmental Management in Enhancing Ecotourism Development in Bantimurung National Park

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### Abstract

*An investigation examines environmental management methodologies which enhance the growth of ecotourism at Bantimurung National Park in South Sulawesi Indonesia. The qualitative research method examines present management practices together with their impact on tourism as well as defines current challenges and potential opportunities for improvement. Interviews with important stakeholders from park management and government departments and ecotourism facilities and tourist parties combined with park observations and document examination structured the data collection. Numerous sustainable practices installed by the park get hindered by restricted resources along with minimal community engagement and weak policy collaboration. The research underscores the critical value of local unity in management decisions alongside new funding methods and technological approaches to solve the problems affecting a famous ecotourism attraction. The research reveals major opportunities for environmental management improvement at the park by developing better policy frameworks and enhancing participation from communities and implementing technological solutions. The research adds to the expanding literature on sustainable tourism by presenting guidelines that assist other protected areas dealing with conservation-tourism balance concerns.*

## Introduction

Ecotourism stands as a fundamental tool to support sustainable development since biodiversity-rich and naturally attractive locations need it the most. The focus of this tourism format is to protect natural environments by creating financial advantages that support local residents and delivers educational initiatives to visitors. Environmental management represents a fundamental success factor for ecotourism because it protects natural resources while creating economic value according to Guo & Li (2024). Bantimurung National Park presents ideal conditions for ecotourism development since it is recognized as the “Kingdom of Butterflies” because its natural and cultural wealth (Qanitha et al., 2023; Soekmadi et al., 2021). Effective environmental management systems need establishment throughout the area because the park faces crucial obstacles that demand cohesive management of conservation alongside tourism development.

The range of approaches under environmental management in ecotourism works to reduce how tourism damages natural ecosystems. The core elements of environmental management in ecotourism consist of waste management in addition to habitat restoration together with resource conservation combined with visitor education according to Fang et al. (2024). Protecting Bantimurung National Park requires these practices because they preserve ecological balance as they promote valuable visitor experiences. According to Jabar et al. (2024) & Zhichao & Yashu (2024) environmental management if properly executed enhances both biodiversity protection and visitor enjoyment while creating beneficial economic results for neighborhood communities during extended periods. The tourism sector alongside natural environments face sustainability challenges stemming from insufficient management because

it results in environmental deterioration and pollution as well as cultural expulsion (Irawan & Hartoyo, 2022).

Bantimurung National Park positions itself as an internationally distinguished attraction because of its diverse selection of endemic butterflies and karst landscape formations (Nugroho et al., 2023; Achmad et al., 2021; Maulany et al., 2024). The park exists as both a conservation sanctuary and major global ecotourism destination serving thousands of yearly visitors. The various features of the ecosystem including waterfalls, caves and tropical forests present substantial prospects for tourism development in an eco-friendly manner. The increasing visitor numbers lead to environmental challenges at the park through habitat damage together with waste buildup along with resource exhaustion which necessitates urgent sustainable environmental management practices (Radić & Gavrilovic, 2021).

The worldwide sustainable tourism principles focus on keeping environmental aspects harmonized with economic and social elements (Streimikiene et al., 2021; Richardson, 2021; Baloch et al., 2023). Environmental management must become intrinsic to all stages of ecotourism planning and operations at Bantimurung National Park for maintaining sustainable balance. Difference-making stakeholders consisting of government agencies and local communities together with private enterprises need to work as one unit to handle waste management and control illegal logging and regulate tourism activity (Morton, S., & Cook, A. (2022); Julkunen et al., 2023; Dunlop et al., 2024). Successful ecotourism destinations adopt participatory approaches for conservation and tourism activities which include active involvement from local communities as research indicates. Mouse involvement directly creates a feeling of ownership as well as ensures equitable distribution of tourism economic rewards (Xu et al., 2024; Rane et al., 2023; Alriyami et al., 2024).

The primary issue of Bantimurung National Park management involves establishing a balance between ecological preservation and tourism visitor volume. The park's vulnerabilities grew worse because of peak-time overcrowding and insufficient infrastructure and weak environmental rule enforcement. Tourist-generated waste builds up in vulnerable parts of the landscape as Verones et al. (2022) reports and endangers both terrestrial and aquatic ecosystems. The park's karst terrain demands specific preservation measures because it presents a high risk of destruction. The integrated environmental management strategy should balance ecosystem protection with the construction of tourist infrastructure to resolve these problems effectively.

Bantimurung National Park provides essential research to explain how Indonesian environmental protection measures relate to tourism development in protected areas. Bantimurung provides valuable knowledge that guides sustainable tourism policies and practices for protected areas according to national development protocols (Putri et al., 2023; Haliding & Majid, 2024). The combination of islands and natural wealth in Indonesia creates complexity for ecotourism management because it necessitates advanced solutions which fulfill global sustainability targets (Rahmaniar & Edison, 2024).

The environmental importance of Bantimurung National Park extends to its educational and cultural worth. The recreational area lets people discover biodiversity together with ecosystem conservation knowledge and environmental connection. Educational activities together with informative markers can improve visitor satisfaction and build understanding and accountable actions for exploring the area. Visitor education programs that combine environmental management show how nature appreciation grows best when these strategies are integrated.

The potential for Bantimurung National Park to provide sustainable ecotourism is limited by various barriers that prevent its full achievement. Bantimurung National Park faces challenges

which consist of weak funding for conservation efforts alongside insufficient training of its park staff and stakeholder disagreements. The solution demands stakeholders from government agencies along with NGOs and private sector entities to collaborate under the direction of Matsuoka & Rocha (2021). The park becomes an exemplary destination for ecotourism when it implements environmentally sound management principles which present sustainable coexistence between preservation and commercial activities.

The study analyzes environmental management as an impetus for Bantimurung National Park ecotourism advancement by examining its enabling strategies alongside encountered complications and existing potentialities. Qualitative methods allow this study to examine stakeholder experiences who show how environmental practice management shapes the results of ecotourism initiatives. Through this approach the research enhances both sustainable tourism research and provides practical guidance to strengthen protected area conservation along with tourism activities.

## **Method**

A qualitative research methodology was employed to create an in-depth exploration of environmental management elements which enhance ecotourism development at Bantimurung National Park. The qualitative research design turned out to be suitable because it let researchers study the perspectives of multiple stakeholders active in park administration together with tourism management. Researchers sought to document the methods and observations which affect environmental protection alongside tourism advancement. The strategy focused on both social aspects and environmental elements of ecotourism to present structural information about the trade-offs between conservation values and tourism economic expansion.

This study selected Bantimurung National Park situated in South Sulawesi of Indonesia to serve as its primary location. The park stands out because of its distinctive butterfly species living only in this region along with dramatic karst formations which attracts numerous ecotourists. Scientific analysis of tourism's sustainability could be effectively studied at the destination because the location combined natural wealth and a rising visitor count. The park demonstrates an effective model of environmental conservation that combines nature protection alongside tourist development therefore making it a crucial research case for understanding Indonesian ecological management approaches and ecotourism mechanisms.

Purposive sampling procedures were used in this study to select participants because they yielded a sample of participants that included professionals dedicated to park environmental management and ecotourism activities. The research incorporated 20 individuals who represented park administration workers along with municipal representatives and community leaders together with those who run ecotourism services and recreational visitors. The researcher selected participants from various fields to understand the park's management methods alongside their effects on tourism development at the park. The research included a diverse participant sample because the researchers wanted to understand various perspectives regarding conservation-tourism interactions and environmental management support for sustainable tourism practices.

The study used three main data collection methods that included semi-structured interviews combined with participant observations together with document analysis. Interviews which followed a semi-structured approach enabled researchers to conduct deep explorations with important participants about environmental management approaches and ecotourism establishment strategies. The interviewer obtained permission to record interviews which took place using Bahasa Indonesia. Ten days of firsthand observation inside the park enabled the

researcher to see firsthand how different environmental practices were applied across waste management areas and visitor conduct practices. The observations collected valuable information that enhanced the interview findings by showing the park's ongoing operational activities. The analysis incorporated relevant documents from park management plans together with visitor statistics to give meaning to the research findings.

Thematic analysis represented the method that analyzed the gathered data. The method provides strong qualitative research capabilities because it enables researchers to find meaningful patterns in addition to interpreting themes extracted from their data. The researcher started by turning all recorded interview audio into transcripts before reviewing observational notes to understand the data collection. The researchers conducted inductive coding because they developed their codes using data, they collected directly rather than using predetermined categories. The researcher developed three defining codes which included sustainable tourism practices and challenges in park management and local community involvement to detect recurring topics. The investigators categorized the collected codes to identify major environmental and ecotourism challenges affecting the nature reserve.

The researchers evaluated the themes to understand how environmental management affected the development of ecotourism within Bantimurung National Park. The researchers studied environmental management themes especially funding issues and staffing challenges to identify barriers or facilitators for sustainability integration into park operations. The study examined how ecotourism growth supplied monetary advantages to nearby residents along with preserving biodiversity. An analysis through this thematic approach allowed researchers to gain full understanding of the intricate relationship linking environmental management to ecotourism which contributed important knowledge for future sustainable tourism policy-making and practice.

## **Result and Discussion**

The results section introduction presents key outcomes from research about environmental management at Bantimurung National Park for ecotourism development enhancement. Research collected findings through interviews with important stakeholders and field examinations together with document assessments while examining the park's management approaches and ecotourism effects in addition to documenting challenges and potential improvements. These research results present an extensive examination of present-day environmental management approaches as well as their touristic impact and identify necessary obstacles to establish sustainable community-environmental cooperation.

### **Current Environmental Management Practices**

Bantimurung National Park implements diverse environmental management strategies which promote both ecological conservation and ecotourism growth demands. Multiple strategies within these practices support both ecological sustainability of the park as well as local economic development through tourism. The three main components of present-day environmental management consist of habitat preservation measures as well as waste disposal techniques and community outreach efforts.

The main environmental management plan of Bantimurung National Park focuses on habitat protection duties. The conservation team makes the endemic butterfly *Papilio garamas* and other such species the center of their focus at Bantimurung National Park. The valuable ecosystems receive protection through multiple conservation efforts which involve controlled sensitive area entry together with monitoring endangered species populations.

*"We have set up specific zones within the park where tourists are not allowed to enter, especially areas known for high biodiversity. This is essential to preserve the delicate ecosystems that are critical for species like the endemic butterflies".*

These efforts ensure that the park's natural resources are protected from overexploitation, which could result from unchecked tourism activities. Another key aspect of environmental management in the park is waste management. As tourism has increased, the management of waste has become a growing concern. The park authorities have established waste disposal systems and promote responsible waste practices among both visitors and staff. In the interview with a local ecotourism operator, it was noted,

*"We encourage all visitors to dispose of waste in the designated bins and we actively monitor waste management during peak season. However, there is still a lack of facilities in some remote parts of the park".*

The commitment to cleaning efforts faces obstacles when trying to preserve cleanliness in heavily traversed spaces. To reduce tourism-related ecological damages the practice of waste management through scheduled cleaning operations alongside pro-environment product promotion is vital. Environmental management practices in the park require fundamental support from community participants. Resource sustainability in the park extends long-term when local residents participate in natural resource management. The park administration executes multiple community-driven initiatives which combine ecological conservation education with funds for local population.

*"We have been involved in the management of tourism activities through training programs, where we teach locals about sustainable practices, and some even work as guides in the park".*

By implementing these programs, the park achieves resource conservation alongside local economic growth through tourism jobs in the area of ecotourism. Environmental success of sustainable ecotourism relies heavily on the inclusion of local communities for the development of management practices. Bantimurung National Park demonstrates clear dedication to unite conservation goals with tourism growth through its present environmental management strategies. The park exhibits progress but not enough infrastructure and funding together with mounting tourism pressure prevent sustainable practice from being fully implemented. The initiatives for waste management and habitat conservation together with community involvement act as essential components to build better ecotourism alongside protection of the park's biodiversity resources. Fusing efforts between park directors and local clubs together with tourism promoters will enable Bantimurung National Park to create sustainable balance between environmental protection and tourist activities.

### **Impact on Ecotourism Development**

Environmental management practices at Bantimurung National Park significantly influenced the regional progress of ecotourism development. The practices have successfully combined environmental conservation needs with tourism expansion which made Bantimurung National Park a major destination for ecotourism. The relationship involves multiple dimensions where positive effects blend with negative ones especially within economic scopes and visitor experiences and sustainable practices. Ecotourism development receives its main economic advantage after implementing environmental management protocols. The influx of visitors to the park because of its natural diversity has driven up the revenues of local tourism businesses that serve visitors. Local employment opportunities stemming from ecotourism activities generate work in tour guiding areas along with hospitality fields and handicraft industries to enhance the economic standard of life in adjacent villages.

*"Tourism has brought significant economic benefits to the area. Many locals have started businesses catering to tourists, from guiding to selling local crafts, and it has improved the community's overall welfare".*

The economic growth within the park area has motivated local residents to participate in conservation projects because they understand how resource preservation benefits upcoming visitor generations. The economic expansion from ecotourism development brings forth additional difficulties. More visitors to the park have caused heavier demands on local resources primarily affecting infrastructure services and waste disposal systems. The park management team continues to support ethical tourism however the expanding visitor numbers create challenges for park facilities.

*"While we see the economic benefits of increased visitation, it also brings challenges. Sometimes the infrastructure, especially in peak seasons, can't handle the large number of visitors, leading to issues like overcrowding and pollution".*

The park requires constant progress in its environmental management systems to keep tourism development inside sustainable resource levels. The implementation of environmental management practices serves to polish visitor satisfaction levels along with their economic incentives. The number of travelers grows because destinations that implement sustainability and conservation play an important appeal to them. The park uses efforts to protect biodiversity and maintain scenic views and contain tourism impact which makes it stand out as a leading ecotourism destination. Visitors recognize when the park conserves its natural scenery while teaching visitors crucial concepts about conservation.

*"What I love about this park is how they combine tourism with conservation. It feels good to know that my visit helps support preservation efforts".*

The satisfaction of participating in conservation activities leads people to visit again and spread good reviews about the park thus increasing its popularity among ecotourists. The park experiences ongoing obstacles because of the difficulties in visitor management and education efforts. The park achieves only limited success in its mission to educate tourists on responsible conduct such as waste reduction and wildlife conservation. The guidelines appear to be followed by most visitors yet some new travelers who lack sustainable tourism knowledge might unknowingly damage the environment.

*"Despite the educational programs, there are still some tourists who don't follow the rules, leaving waste behind or disturbing the wildlife. We need more efforts to raise awareness".*

Visitors must receive ongoing educational information to make ecotourism support the preservation of the park ecosystem forever. The future sustainability of Bantimurung National Park's ecotourism activities relies heavily on the protection methods applied to tourism expansion effects by environmental management programs. Successful waste management combined with proper infrastructure development and consistent community engagement will sustain Bantimurung National Park's role as an ecotourism destination. The successful approach of promoting ecotourism without compromising natural resource protection has established Bantimurung National Park as an example for other conservation areas interested in fostering tourism alongside environment protection. Proper management of increased visitation demands and conservation measures at Bantimurung National Park will support its role as an enduring sustainable ecotourism center in South Sulawesi.

## Challenges in Environmental Management

Multiple environmental management practices at Bantimurung National Park encounter various hurdles which prevent these practices from reaching their maximum effectiveness. The multiple obstacles stand in the way of effective environmental management because funding lacks sufficient resources and the park's infrastructure needs improvement and the workforce needs expansion while the tourism demand increases. Long-term sustainability depends on resolving these fundamental barriers that affect the ecosystems and tourism operations of the park. A leading obstacle stands in the way because environmental management initiatives suffer from inadequate funding. Bantimurung National Park stands with Indonesia's protected areas as it handles financial limitations which block the execution of extensive conservation projects and improved facility development. The inconsistent financial support disables the park from sustaining or developing its environmental management operations.

*"The main issue is funding. We are constantly working with limited resources, and some of the initiatives we would like to pursue, such as increasing conservation patrols or enhancing visitor education, are delayed or scaled back".*

The shortage of funds leads to problems such as untrained and inadequate staff as well as late development of infrastructure and minimal ability to tackle new environmental threats like invasive species and habitat degradation. The park deals with two major issues: insufficient funding and unresponsive infrastructure networks to rising visitor counts. During busy seasons many visiting tourists stress the infrastructure and service capabilities of the park including its trails and waste management systems and visitor facilities and services. Natural sites suffer from deterioration and crowd management issues occur because the infrastructure does not handle high visitation numbers adequately.

*"The infrastructure here hasn't caught up with the number of tourists we're seeing. The park's facilities are overburdened, and in some areas, tourists' activities are starting to damage sensitive ecosystems".*

The abundance of development needs comes in conflict with maintaining the natural beauty and biodiversity of the park area. The management team faces major difficulties while trying to build infrastructure while minimizing environmental damage in the park. The insufficient number of personnel working in Bantimurung National Park stands as a significant barrier in achieving efficient environmental management throughout the area. Unlike the size of its territory the Bantimurung National Park management team consists of only a small number of personnel. The restricted number of available staff presents challenges to perform comprehensive surveillance and conduct proper conservation methods and responsible tourism administration.

*"We have a small staff, and sometimes it's difficult to manage the park's vast area. We rely heavily on the local community for support, but there's still a need for more trained personnel to carry out the necessary conservation and visitor management tasks".*

With an inadequate number of trained staff members, critical conservation activities, such as wildlife monitoring or habitat restoration, may not be conducted as effectively or frequently as needed. Another significant challenge in environmental management is the increasing pressure from tourism itself. While ecotourism offers economic benefits, it also brings substantial environmental costs. The rise in the number of visitors leads to greater demands on the park's resources, including increased waste production, disturbance to wildlife, and the potential for habitat degradation.

*"As more people come to visit, it's harder to manage the park without damaging its natural resources. There are more tourists who are unaware of how their actions can harm the environment".*

Sustaining tourism operations within the park presents the challenge of avoiding excess tourism impacts which could harm the natural ecological systems. Visitor behavior control together with sustainable practice education represents a continuing management obstacle for the park staff. The task to balance local expansion with environmental protection creates advanced complexities in environmental management operations. The economic perks from ecotourism enable nearby communities but certain groups within those areas participate in destructive activities including illegal forest removal and excessive retrieval of natural resources that can ruin conservation efforts. The official responsible for local government expressed these challenges when they said.

*"There is sometimes a conflict between conservation goals and the needs of the local population. Some locals rely on the park's resources for their livelihoods, and while they are engaged in tourism, they may still resort to unsustainable practices".*

Resolving this tension between conservation and local development requires a collaborative approach, where both environmental and socio-economic needs are balanced effectively.

### **Opportunities for Improvement**

Multiple chances exist to improve environmental management at Bantimurung National Park which would strengthen both ecological sustainability and touristic development. The venues for betterment include developing stronger community engagement and enlarging educational outreach programs together with better policymaking frameworks along with funding methods and modern management techniques. The three areas constitute essential development paths to rectify present limitations while guaranteeing maximum long-term value from park tourism resources and ecological elements. A key possibility exists for boosting community engagement to handle and preserve the park territory. The vital position of local communities serves both the protection of ecological health in the park and the development of economic advantages from ecotourism activities. A stronger engagement policy between the park staff and local communities will produce more effective partnerships that unite conservation goals with development needs.

*"Local communities are key to the success of this park. We need to educate and involve them more in conservation efforts, not just as beneficiaries of tourism, but as active participants in managing the park's resources".*

The active involvement of local community members in eco-tourism work and sustainable farming alongside wildlife monitoring activities will establish a permanent relationship of sustainability between wildlife park and nearby residents. Training and awareness programs provided to local individuals help develop environmental stewardship that decreases resource strain on the park. A key strategy for development involves organizing better educational programs targeted at both visitors and residents of the area. Maintaining the environmental health of the park depends directly on raising understanding about conservation and sustainable activities. The potential destructive outcomes from visitor activities in the park remain unclear to numerous visitors hence proper education about responsible tourism would minimize these undesirable effects.

*"Visitor education is something we're working on, but we could do more. Educating tourists about the park's biodiversity and the importance of conservation can help minimize harm and ensure that tourism supports sustainability".*

Tourists can learn about the site through interactive activities and guided natural tours as well as digital resources and posted information. Local community educational initiatives are essential to teach people about the parks' value so they can better support efforts in protecting natural resources. Environmental management at the park requires better structures of policy and governance as an essential avenue for development. Well-defined policies which combine conservation aims with tourism expansion enable sustainable conduct of ecotourism activities. A stronger conceptual framework should be implemented because it will tackle evolving challenges resulting from over-tourism together with habitat depletion and resource management questions.

*"There is room for improvement in our policy framework. Stronger collaboration between the national government, local authorities, and park managers could lead to better-coordinated efforts in managing the park's resources".*

Partnerships between government departments and private entities alongside sustainable tourism policy harmonization leads to better diverse managing of the park while maintaining development alongside conservation efforts. The park can enhance its sustainable financial situation by broadening its funding streams. The park faces funding constraints in its operations and conservation programs yet several strategies exist to create new financial revenue streams. International biodiversity conservation grants and newly developed ecotourism revenue-generating services in partnership with private-sector companies represent possible financial sustainability measures for the park.

*"We could explore more funding opportunities, including international partnerships or private-sector involvement. The park is an asset for ecotourism, but it needs more financial support to thrive".*

Innovative financing mechanisms, such as eco-tourism fees or donations from international conservation organizations, could provide the park with more resources to implement its environmental management strategies and infrastructure improvements. Lastly, embracing innovative management approaches could significantly improve the park's ability to balance conservation and tourism. Integrating technology, such as visitor monitoring systems or data analytics for conservation efforts, could streamline park management and enhance its effectiveness. Implementing smart technology to track visitor behavior and monitor environmental changes can provide real-time data that helps make informed decisions about park operations. A local ecotourism operator noted,

*"Using technology to monitor visitors and environmental conditions can help us adjust management strategies quickly and more effectively".*

The application of such innovative tools could enhance the park's ability to manage tourism flow, minimize ecological disruption, and improve resource allocation for conservation programs. The research investigated environmental management practices which boost ecotourism development in Bantimurung National Park. The research combined stakeholders' interviews with park observations and documentary assessment to gather information about present environmental management standards at the park as well as their influence on ecotourism and the obstacles faced by park managers and possible areas for enhancement. The results of this paper advance research on sustainable ecotourism development by establishing how environmental preservation ties with protected area tourism.

The widespread recognition exists that environmental management serves as an essential component in touring development since it safeguards environmental preservation during tourism operations (Liu et al., 2022; Pivello et al., 2021; Shittu et al., 2021). The Bantimurung National Park management strategy includes sustainable tourism practices as a fundamental

component which this current study verifies. Waste management together with visitor education and biodiversity conservation at the park highlights a worldwide approach to manage tourism while protecting natural resources (Velmurugan et al., 2021; Grangxabe et al., 2023; Roos et al., 2023). These management practices do exist but fail to be completely effective because of limited resources and the difficulties from growing tourist numbers which match research findings observed in other ecotourism locations.

A significant gap in the literature pertains to the role of local communities in the success of ecotourism initiatives. The research determined that local community members serve as fundamental elements for ecotourism growth yet they have restricted participation in environmental management initiatives at Bantimurung National Park. Tourism created benefits for local residents yet these residents failed to achieve full participation in conservation activities. Studies before showed community involvement as fundamental for achieving sustainability in ecotourism but this new research yields different results (Laba et al., 2021; Rahman et al., 2022). The study discovered substantial prospects to enhance localized involvement in their parks which include training park residents about sustainability and direct participation in park management mechanisms. The study supports current thoughts about participatory approaches for ecotourism development as discussed in (Khaledi et al., 2023; Chan et al., 2021).

The research outputs match previous findings which demonstrate that effective environmental management in parks enhances sustainable environmental practices as well as economic progress. Visitor satisfaction and park image quality both rose through the combination of waste management and education efforts carried out by park administration teams to advance ecotourism development. The research showed promising outcomes yet demonstrated that better policy standards should unite tourism expansion with nature preservation objectives. Agrees that sustainable policies for ecotourism need flexible structures which prioritize sustainability. The study demonstrates that national and local government entities must boost their policy coordination to enable sustainability between natural conservation efforts and tourism development.

This research studied the environmental management obstacles encountered by highlighting resource shortages and insufficient employee capacity and budget deficiencies as reported in existing literature about ecotourism. The park experienced difficulties in implementing efficient management approaches because of these organizational hurdles according to the research findings. The literature shows that ecotourism destinations experience difficulties when trying to preserve environmental quality because of limited resources. The research identified several enhancing possibilities to address current challenges which include combining different funding sources with the implementation of innovative technological solutions. Indigenous financial approaches such as eco-tourism fees as well as public-private partnerships offer ways to secure essential funding needed for efficient management.

New information emerges through this research which shows technology plays an essential part in enhancing environmental management while improving ecotourism practices. The deployment of smart technologies represents an encouraging approach to develop superior management tactics by tracking visitor conduct and environmental factors. The research findings match emerging technological developments used to enhance the effective management of ecotourism spots. Research should continue to explore how the park could enhance its technology deployment because current practices indicate inadequate utilization.

## Conclusion

Bantimurung National Park reveals the essential position of environmental administration for promoting sustainable ecotourism development. The existing management strategies involving waste collection and visitor awareness campaigns and protection activities have enhanced both environmental resilience and ecotourism establishment but system limitations and weak connections between policies along with minimal community participation persist. The research identifies crucial improvement possibilities for the park which aim to boost community involvement and funding source diversity and technology implementation for enhancing management strategies. The park will achieve maximum success in environmental preservation and ecotourism economics by resolving existing gaps. The findings contribute to the expanding sustainable tourism research body which provides guidance for developing global conservation area strategies.

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