

Beyond Policy: Optimizing Community-Based Ecosystems for Sustainable Tourism

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Article Info

Recieved: 11/06/2026

Revised: 25/06/2026

Accepted: 03/08/2026

Online: 15/08/2026

Abstract

This study aims to optimize community-based ecosystem governance policy for marine tourism in West Sulawesi. The research background is grounded in the fact that the marine ecosystem in West Sulawesi is deteriorating, a condition that triggers environmental degradation such as the accumulation of plastic waste and low direct economic contribution to local communities. Management of the ecosystem remains suboptimal, threatening the sustainability of marine ecosystem resources. Challenges include a lack of collaboration and roadmaps, a shortage of skilled personnel, and limited community participation. Visitors do not contribute to the local economy; meanwhile, the increase in plastic waste stems from insufficient oversight by government, academia, and tourism industry actors. Information and incentives remain non-transparent, communities have not been optimally involved in resource management, and the reconceptualized 5A + 3S integrated tourism framework (Attractions, Activities, Accessibility, Accommodation, Amenities, plus Security, Safety, Sanitation) has not yet been implemented, nor have the Sustainable Development Goals (SDGs) been achieved through actor engagement in marine tourism destination governance. This study employs a qualitative approach with a case study design. Data were collected through in-depth interviews, observation, and documentation, with local communities, tourism practitioners, and government officials serving as informants. The study emphasizes community-based ecosystem management for sustainable marine tourism in Indonesia, further contributing to ecosystem management toward realizing 15 percent of healthy and productive oceans for sustainable marine tourism, and produces a collaborative governance policy model to optimize the implementation of community-based ecosystems for a better Indonesian tourism sector.

Keywords: governance; marine ecosystem; community participation; marine tourism; 5A + 3S model; collaborative policy

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INTRODUCTION

Marine tourism is a sector that has experienced significant growth worldwide in recent years, with the potential to generate economic benefits for local communities (United Nations World Tourism Organization, 2021). West Sulawesi, Indonesia, is a region highly suited to marine tourism development, being home to a range of natural attractions such as coral reefs, beaches, and mangrove forests, and rich in cultural heritage. However, unregulated tourism activity can negatively affect the environment and local communities, such as coral reef damage and resource-use conflicts (Husain et al., 2018; Lee & Jan, 2018; Magel & Francis, 2022; Said et al., 2017). According to Syam (2021), sustainable marine tourism development in West Sulawesi requires an effective governance system that takes into account the needs and perspectives of local communities. Community-based ecosystem governance has been proposed to help achieve this goal by involving local communities in the management of natural resources and ecosystems (Turicchia et al., 2021; Van Bussel et al., 2020).

The development of sustainable marine tourism destination governance depends heavily on fulfilling the basic components of tourism, known as the 4A theory: Attraction, Accessibility, Amenity, and Ancillary. The integration of these four components is crucial in determining a destination's competitiveness and the sustainability of coastal ecosystems (Nguyen et al., 2023). Unfortunately, the marine tourism ecosystem in West Sulawesi has not optimally integrated these components. Supporting infrastructure and ancillary services remain non-transparent, so that the level of accessibility and utilization of tourist attractions is not proportional to environmental preservation or the improvement of the local economy.

Marine tourism in West Sulawesi faces major challenges in the form of an inadequate governance system that fails to consider the needs of local communities and does not provide active involvement. The lack of proper oversight and policy enforcement mechanisms further exacerbates this problem, leading to environmental degradation, biodiversity loss, and conflict among stakeholders. The absence of an effective governance system also results in an uneven distribution of benefits, with most of the economic benefits flowing to external actors rather than to the local communities directly affected by tourism activities. Community-based ecosystems constitute a framework that highlights the importance of involving local communities in the management of natural resources and ecosystems. This approach recognizes Traditional Ecological Knowledge (TEK), local communities, their social organizations, and their integrated cultural values in confronting existing problems and challenges (Fisher et al., 2022; Strand et al., 2023). Community-based ecosystems involve communities in decision-making processes and ensure that their unit's perspectives and needs are considered for sustainable and responsible development (Pedreschi et al., 2023; Pineda et al., 2023; Turicchia et al., 2021; Van Bussel et al., 2020). Furthermore, this approach can create an inclusive and equitable governance system, ensuring that all stakeholders share equitably in the benefits of tourism development (Pineda et al., 2023; Turicchia et al., 2021). Overall, community-based ecosystems provide a comprehensive and inclusive governance approach that can effectively address the challenges faced by marine tourism development in West Sulawesi.

Literature on marine tourism governance primarily emphasizes the roles and responsibilities of government, the private sector, and NGOs, without adequately recognizing the significant role of local communities (Atmodjo et al., 2020). However, previous research has shown that involving local communities in natural resource management through community-based ecosystems can produce better conservation outcomes and a more equitable distribution of benefits (Ekomadyo & Riyadi, 2020). Despite the potential benefits of community-based ecosystems, research on their application in the context of marine tourism, particularly in West Sulawesi, remains limited.

The main objective of this study is to optimize community-based ecosystem governance for marine tourism in West Sulawesi, involving government, the private sector, and universities. The findings of this study can contribute to establishing a policy model for developing a more inclusive and sustainable marine tourism governance system in West Sulawesi. In addition, the results of this study have broader implications for the management of natural resources and ecosystems in other regions, particularly in areas where local communities are involved in the management of marine tourism resources.

Marine tourism is a growing sector with the potential to generate economic benefits for local communities (United Nations World Tourism Organization, 2021), yet it carries high risk and requires the management of security, safety, and cleanliness standards to ensure that services provided to tourists retain high value. This is reinforced by the view that a comprehensive discussion of maritime security and navigational safety is needed (Akib et al., 2021). However, unregulated tourism activity can adversely affect the environment and local communities (Chen et al., 2020; Lucrezi et al., 2017; Wang, 2019). An effective governance system is required to ensure sustainable development while taking into account the needs and perspectives of local communities (Rampheri & Dube, 2021). Community-based ecosystem governance has been proposed as a framework to help achieve this goal (Berkes, 2010; Pineda et al., 2023).

The 4A theory has been widely recognized as a key foundation for analyzing and designing sustainable tourism. Based on a review of recent tourism literature (Pambudi et al., 2022), the 4A framework serves as a holistic evaluation instrument for a destination's readiness. Attraction refers to the primary drawing power, whether in the uniqueness of the landscape or local culture; Accessibility covers ease of physical transportation access as well as information access; Amenity encompasses the adequacy of basic facilities such as accommodation, toilets, and sanitation facilities; while Ancillary focuses on institutional support, regulation, and governance management services.

A collaborative approach involving various stakeholders, including government institutions, local communities, and tourism operators, can facilitate community involvement in decision-making and resource management (Berkes & Gaetani, 2023). Community-based ecosystems empower local communities to play an active role in governance, recognizing their unique knowledge and perspectives (Latulippe & Klenk, 2020). Accordingly, marine tourism in West Sulawesi can be developed comprehensively through collaborative and sustainable practices while prioritizing social justice and cultural preservation. In collaboration, each party shares information, resources, and benefits, and bears joint responsibility in the decision-making process to resolve various problems. Collaboration is chosen because, fundamentally, organizations cannot operate alone; by working together they can obtain greater benefits through the synergy of stakeholders' resources, while also creating more efficient budget management, as explained in the Triple Helix theory of Etzkowitz and Leydesdorff shown in Figure 1.

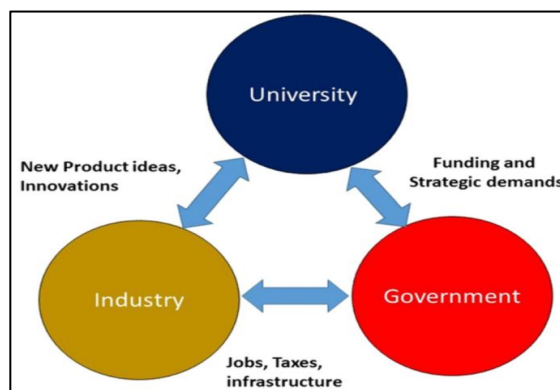


Figure 1. The Triple Helix Concept by Etzkowitz & Leydesdorff (1995)

The theoretical concept above can help set the rhythm of collaboration to realize the implementation of community-based ecosystems through the involvement of government, universities, and the private sector in jointly performing the same orchestra. This study aims to address the community gap by exploring the potential of community-based ecosystems to optimize the governance of the marine tourism ecosystem in West Sulawesi. By examining the role of local communities in the governance process, this study seeks to contribute to a better understanding of the factors that enable effective community-based marine tourism governance. In addition, this study aims to provide insight into the challenges and opportunities associated with implementing community-based ecosystems in the context of marine tourism in West Sulawesi.

The community-based ecosystem framework recognizes Traditional Ecological Knowledge (TEK), a body of understanding and practice accumulated by communities over generations through their interaction with the local environment (Anup et al., 2021). Incorporating TEK into the management of natural resources and ecosystems can enhance the effectiveness of governance

structures, offering a unique local perspective that complements and enriches scientific knowledge (Chatterjee et al., 2021).

However, given the many benefits offered by community-based ecosystems, there remains a clear research gap regarding their application within the scope of marine tourism, particularly in the West Sulawesi region. This study is dedicated to filling that gap by exploring the potential of community-based ecosystems in optimizing ecosystem governance for marine tourism in West Sulawesi. It is understood that assessing the limits of nature in terms of supporting human intervention is important for preserving places that sustain basic life-support systems, based on the environmental services that such places provide to communities. Although these principles are important, they remain general; additional techniques and strategies are required to guide the pursuit of sustainability in tourism (Ngo et al., 2018).

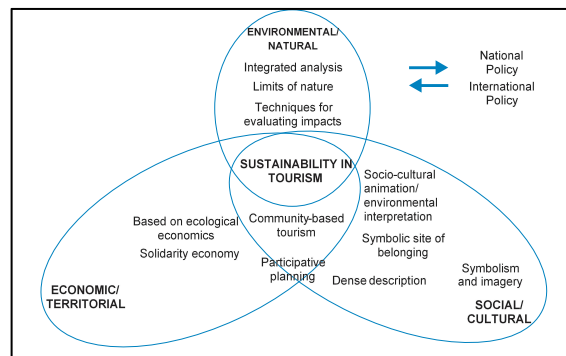


Figure 2. Strategies and techniques for achieving sustainability in tourism

This investigation focuses on the role of local communities in the governance process, aiming to elucidate the enabling factors for effective, community-oriented marine tourism governance. In addition, this study aims to provide valuable insight into the challenges and opportunities required in implementing community-based ecosystems in the context of marine tourism in West Sulawesi.

This study intends to be more than an academic exercise; it aims to make a tangible contribution to the field of community-based ecosystem management by providing an in-depth examination of the West Sulawesi marine tourism sector. Marine tourism is a rapidly growing sector with significant potential for socio-economic development and conservation. However, the growth of this sector can lead to environmental degradation and socio-economic disparity without an appropriate governance development policy and management. In this context, the community-based ecosystem framework can serve as a balanced approach that acknowledges the need for both conservation and development (Rashid, 2020). A comprehensive community-based ecosystem framework is derived through research focusing on several key aspects to be applied in West Sulawesi.

First, this study explores the knowledge, attitudes, and practices of local communities related to marine tourism and their relationship with the local environment. This focus aligns with the recognition that TEK is an integral part of community-based ecosystem management (Coelho-Junior et al., 2021; Green Sea et al., 2021).

Second, this study examines the governance structures and processes in West Sulawesi and their effectiveness in managing marine tourism policy. This research identifies potential gaps and areas requiring improvement in the existing governance system, informing the design of more effective community-based ecosystem management strategies (Damastuti & de Groot, 2019).

Although focused on West Sulawesi, this study has implications that extend beyond the regional context. Lessons from this study can provide valuable insight for other coastal regions where community-based ecosystem management can be adopted as an approach to sustainable marine tourism development. This case study can guide similar communities in effectively leveraging local knowledge, facilitating better community participation in governance, and addressing shared challenges in implementing community-based ecosystem management (Cheung & Li, 2019).

In addition, this report critically assesses the importance of political and policy-framework aspects in creating an environment conducive to the successful implementation of the community-based ecosystem framework. Previous studies have emphasized the need for supportive institutional and legal frameworks for community-based natural resource management to succeed (Skein et al., 2022; Tissot et

al., 2009). Accordingly, this study will highlight the policy changes and capacity-building initiatives needed to further enable the implementation of this framework within marine tourism policy.

Finally, this study analyzes the challenges and opportunities associated with implementing the community-based ecosystem framework in the context of marine tourism in West Sulawesi. This includes understanding the political, economic, and social factors that may influence the successful implementation of the framework (Skein et al., 2022; Trolle et al., 2012).

The findings of this study are expected to contribute to the development of a more inclusive and sustainable marine tourism governance system in West Sulawesi. In addition, this study aims to encourage the integration of local perspectives and TEK into the governance of natural resources and ecosystems, and to contribute to the achievement of sustainable development goals.

RESEARCH METHOD

Research Design

This study employs a qualitative research approach, enabling a comprehensive understanding of community-based ecosystem governance for marine tourism in West Sulawesi. According to Creswell and Creswell (2017), a qualitative research approach helps in understanding complex phenomena such as community-based ecosystem governance. In addition, this approach allows researchers to explore participants' perspectives and experiences, which is essential for understanding the social and cultural context of the phenomenon under investigation (Baxter & Jack, 2008). Accordingly, a qualitative research approach is well suited to this study, as it provides a detailed description and understanding of community-based ecosystem governance for marine tourism in West Sulawesi.

Informant Participant Criteria

Participants in this study included individuals from communities directly involved in marine tourism activities, such as local tourism operators, fishers, community leaders, and government officials responsible for tourism development. According to Braun et al. (2021), qualitative research typically involves purposive sampling, meaning that participants are selected based on their relevance to the research question and their ability to provide rich data. In this study, participants were selected based on their involvement in marine tourism activities as key stakeholders in community-based ecosystem governance. In addition, involving government officials responsible for tourism development provided insight into the policies and regulatory frameworks shaping marine tourism in West Sulawesi. Accordingly, the selection of participants for this study is appropriate and consistent with the principles of qualitative research. For further clarity, the data sources are presented in Table 1.

Table 1. Research Data Sources

Participant	Institution	Quantity	Keywords from Interview Data
Key Informant (Informant 1)	Coastal Community Leader	1	Not involved
	Tourism Awareness Group	1	Limited involvement
Main Informant (Informant 2)	Head of the West Sulawesi Provincial Tourism Office	2	Limited budget
	Head of the West Sulawesi Provincial Regional Development Planning Agency (BAPPEDA)	1	Master plan not implemented / no site plan
	Head of Tourism Destinations, West Sulawesi Province	1	Limited tourism experts
	Homestay Manager, Karampuang Island	2	Minimal contribution from tourists
Additional Informant (Informant 3)	Scuba Diving Tour Guide, Karampuang Island	1	Local tourists bring more waste than money

Data Collection

Data were collected through various techniques, including in-depth interviews, focus group discussions, and document analysis. In-depth interviews were conducted with key informants who

possess extensive knowledge and experience in community-based ecosystem governance to obtain in-depth information. At the same time, focus group discussions involved community members to obtain broader perspectives on marine tourism governance in West Sulawesi. In addition, document analysis was used to gather relevant data from official reports, regulations, and policies related to marine tourism in West Sulawesi.

On the other hand, focus group discussions can generate diverse perspectives from community members and provide insight into social dynamics and power relations. Finally, document analysis can provide a historical and contextual perspective on the development of marine tourism in West Sulawesi. Therefore, combining these data-collection techniques can provide a thorough understanding of community-based ecosystem governance for marine tourism in West Sulawesi.

Data were collected through interviews with nine informants to obtain a comprehensive understanding and identify issues related to community-based tourism governance. This information was reinforced through Focus Group Discussions (FGDs) at two locations involving local communities on Karampuang Island and Koa Koa Beach. In addition, to strengthen the data obtained, direct observation was conducted over three days, exploring the coastal area, diving, and visiting three sampled villages located in the coastal areas of Karampuang Island, Gusung Toraja Island, Dato Beach, Koa Koa Beach, and Gonda Mangrove Park.

Data Analysis

The collected data were analyzed using thematic analysis, which involves identifying themes or patterns in the data. The emerging themes and patterns serve to optimize community-based ecosystem governance for marine tourism in West Sulawesi. According to Braun et al. (2022), thematic analysis is a widely used method for analyzing qualitative data and involves several stages, including data familiarization, coding, theme identification, and theme refinement. This study applies systematic and rigorous thematic and qualitative data analysis to identify the key issues and challenges facing community-based ecosystem governance for marine tourism in West Sulawesi. In addition, it aims to explore the strategies developed to address these issues. The findings of this study can then be used to optimize community-based ecosystem governance development policy for marine tourism in the region. The identification process was carried out using thematic analysis, main themes, and patterns in the data to provide valuable insight into community-based governance for marine tourism in West Sulawesi.

RESULTS AND DISCUSSION

Results

Research conducted in West Sulawesi shows that community-based ecosystem governance is a practical approach to optimizing marine resource management for tourism development. This study emphasizes the importance of active participation by local communities in managing marine resources to achieve this goal. It is understood that governance is carried out by considering the social-ecological system based on coastal zoning. However, this has not been fully implemented properly, so collaboration among stakeholders is needed to support the sustainability of marine tourism. In reality, however, coastal community leaders have not been actively involved in marine tourism management, raising awareness, and implementing concrete measures and benefits in marine tourism management. Informant 1 confirmed this, explaining that “as community leaders, we have not been much involved in marine tourism management plans, so we do not know how to manage it properly.” It is understood that this particular program's focus is directed at the plan's potential impact on the implementation of the Ecosystem Approach to Management (EAM) and how these issues are perceived by the stakeholders involved. Based on this interview, it is clear that the government needs to provide practical solutions to support the development of community-based ecosystem governance policy for marine tourism in West Sulawesi through the establishment of groups. These groups can play an important role in ensuring that community interests are taken into account in managing marine resources. In addition, research shows that providing incentives to communities that conserve marine resources can encourage community participation and help ensure the sustainability of these resources. Incentives may include financial rewards, access to training and education, and recognition of community efforts.

One government initiative is the establishment and development of Tourism Awareness Groups (POKDARWIS). However, there are challenges in implementing government-mediated training, as

there has been no follow-up through mentoring and planning for marine tourism management. In addition, conflicts of interest between village governments and local tourism offices such as the management of gazebos built by the tourism office in areas with beach attractions, parking facilities, waste management, and toilets further hinder the progress of marine tourism. Due to budget constraints, tourism facilities built using the tourism office's budget have not been handed over to village governments because of regulatory conflicts and sectoral ego. This situation affects the suboptimal management of marine tourism attractions. Based on field observation, it is evident that government assistance in providing adequate facilities for communities remains unavailable. This is consistent with the results of interviews with government officials in the tourism sector. Informant 2 confirmed that “the limited budget of the tourism office is used to build tourism facilities for the benefit of tourists; however, we have not yet been able to determine their management because of a conflict of interest between the village government and the tourism office, due to village autonomy.” Furthermore, 90% of the main tourism destinations, or five of the six districts in West Sulawesi, are marine tourism destinations, according to a 2021 Governor's Decree. Tourism policy often reflects the political landscape, typically marked by intense internal debate over the impact of tourism, the amount of financial resources that should be invested in developing government policy, and the fact that local governments cannot stimulate or slow tourism development at either the national or international level; based on previous research on current issues related to marine tourism policy, two case studies on Phú Quốc and Côn Đảo islands were used to emphasize the role of local authorities in tourism development policy and the differing degrees of openness to marine and coastal tourism development (Ngo et al., 2018). Informant 3 explained that “as tourism actors, we are only passively involved in marine tourism management.”

These findings highlight the importance of increasing the involvement of community leaders and local communities in managing marine tourism. National and local governments need to provide support and resources to ensure the effective and sustainable management of marine resources, taking into account the needs and interests of local communities. A specific challenge highlighted is that West Sulawesi Province lacks a master plan and nautical tourism map, even though 90% of tourism destinations in the region are related to marine tourism. In addition, a constraint identified by researchers in this field is the lack of skilled government personnel and adequate human resources to support this program. This is consistent with the statement of an employee in the tourism sector. Informant 3 confirmed that “as field actors, we only carry out routine annual programs without supervision and handling by experts in the tourism sector,” consistent with other research stating that such programs can promote the development of attractive and competitive tourism for that purpose while providing economic benefits for community welfare. Unfortunately, awareness-raising outreach programs have not been accompanied by training activities for local communities around tourist sites (Mouw, 2018). This indicates the need to enhance competence and knowledge in marine tourism management at both the operator and managerial levels. If this condition continues unchecked, it will slow the development of leading tourism destinations as proposed by the local government.

Informant 3 stated that although Karampuang Island in West Sulawesi receives many visitors, especially during holidays, most local visitors and domestic tourists bring their own food and drink from home, meaning that the local community does not benefit much from marine tourism activity. In addition, many tourists leave plastic waste from packaged beverages on Karampuang Island. There is no synergistic cooperation among local government, communities, and business actors, so Karampuang Island cannot make a significant contribution to regional revenue. Other studies have found that the practical implication of this is that policymakers should enhance stakeholder cooperation in addressing issues related to marine transportation management, water and energy supply, innovation in natural and cultural attractions, and greater human resource development. Enhancing competence and knowledge in managing marine tourism at the field level can help address these problems. Tourism experts can assess the needs and preferences of visitors. In this regard, addressing issues such as the management of plastic waste from packaged beverages can become a focus in the development of marine tourism programs on Karampuang Island.

Expanding public knowledge about the sustainability of marine tourism and its environmental impact can encourage community participation in its management while minimizing negative impacts such as plastic waste. It is understood that marine tourism can help local communities improve their livelihoods through job diversification; this must certainly be supported by the provision of facilities

from the government so that everything can run well (Cahaya et al., 2019). In addition, collaboration among relevant stakeholders, including local communities and destination managers, can strengthen efforts to address this challenge. By involving communities in decision-making related to marine ecosystem tourism management, the sea can then be sustainably maintained; on the other hand, there is no consensus on an integrated platform for community, social, economic, and environmental welfare (Suharyanto, 2024). Solutions aligned with their needs and interests can be identified while encouraging active participation and a better understanding of the benefits of marine tourism.

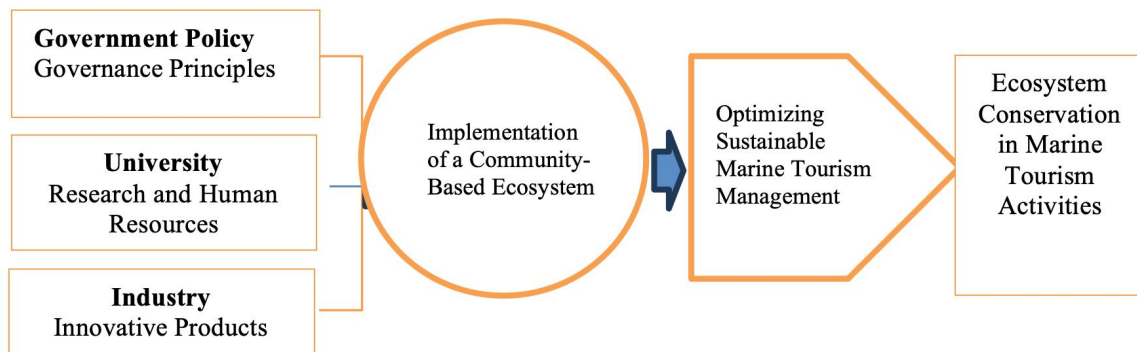


Figure 3. Reconstruction of Triple Helix Collaboration to Optimize Community-Based Ecosystem Management in Marine Tourism

This study underscores the importance of collaboration among government applying the principles of good governance universities, which conduct research and human resource development, and the tourism industry, in promoting and creating innovative, environmentally friendly tourism packages, so that communities and visitors can optimally apply the principles of the marine tourism ecosystem and experience its impact in the development of sustainable and environmentally friendly tourism programs, as shown in Figure 3 above. The results of the above collaboration model can encourage the development of programs that meet community needs while promoting regional tourism development. This study shows that community-based ecosystem management can improve local community welfare by creating opportunities for economic growth and environmental preservation. This aligns with Sustainable Development Goal 14 (SDG 14): conserve marine ecosystems and marine resources. The utilization of marine resource activities through marine tourism is divided into three zones: the first is the coastal marine tourism activity zone, such as relaxation activities, recreation, and beach volleyball; the second is the sea-surface tourism activity zone, encompassing various activities such as swimming, fishing, surfing, and boat racing; the third is the deep-sea tourism activity zone, such as snorkeling, diving, underwater photography, underwater selfies (freediving), and shipwreck research.

Discussion

A study conducted by Musthofa et al. (2020) in West Sulawesi suggests that community-based ecosystem governance is an effective way to optimize marine resource management for tourism development. The study's findings indicate that active community participation in marine resource management is essential for sustainable tourism development. This is consistent with previous research showing the importance of involving local communities in natural resource management (Marcot, 2020). Karampuang Island should always be considered and involved in various tourism activities and development, consistent with prior findings that one such effort is the implementation of Community-Based Tourism (CBT) development. Through the CBT concept, community awareness of tourism is formed and even becomes part of local communities' lifestyle (Sasongko, 2020). This approach effectively encourages community involvement in natural resource management in other fields as well (Shen et al., 2021). According to Surya et al. (2020), such groups can play an important role in ensuring that community interests are considered when managing marine resources.

In response to the gaps and dynamics of marine tourism ecosystem governance observed in the field, this study identifies a theoretical novelty by developing the classic 4A model into a more comprehensive evaluation instrument, namely 5A + 3S. The previously four basic components (4A) are expanded into 5A, comprising: Attractions, Activities, Accessibility, Accommodation, and Amenities.

This expansion separates Activities and Accommodation as essential, standalone indicators within marine tourism. Furthermore, this model crucially adds the 3S indicators, namely Security, Safety, and Sanitation. This theoretical novelty is formulated on the consideration that these eight indicators (5A + 3S) are highly relevant and adaptive to the direction of present and future tourism development.

This study also shows that providing incentives to communities that conserve marine resources can encourage community participation and help ensure resource sustainability. Incentives may take various forms, such as financial rewards, access to training and education, and recognition of community efforts. This approach effectively encourages community involvement in natural resource management in other fields as well (Ulucak & Khan, 2020).

This study emphasizes the importance of collaboration among government, tourism practitioners, and academics in developing sustainable and environmentally friendly tourism programs. Such collaboration can drive the development of programs that meet community needs while promoting regional tourism development. Tourism development can be achieved without compromising resource sustainability. This approach encourages sustainable tourism development in other fields as well (Son, 2019).

Research shows that community-based ecosystem governance can improve local community welfare by creating opportunities for economic growth and environmental preservation. Sustainable tourism development can also provide employment and increase community income. This is consistent with previous research highlighting the potential of sustainable tourism development to drive economic growth, reduce poverty, and improve quality of life (Wu et al., 2023). Marine tourism management is particularly well suited for study in Indonesia, an archipelagic nation where two-thirds of its seas have not been optimally managed, contributing to widespread local economic decline in the new-normal era (Islahuddin et al., 2021).

In addition, this study emphasizes the preservation of marine resources for future generations. By promoting community-based ecosystem governance, the sustainability of these resources can be guaranteed for the benefit of communities and the environment. This finding is consistent with the Sustainable Development Goals (SDGs), particularly SDG 14 (Life Below Water), which aims to conserve and sustainably use oceans, seas, and marine resources for sustainable development.

In conclusion, research conducted in West Sulawesi shows that community-based ecosystem governance is an effective way to optimize marine resource management for tourism development. Active community participation, clear and transparent information, and the establishment of resource management groups involving communities are essential to achieving this goal. Encouraging communities to conserve marine resources is also important for the sustainability of these resources. Therefore, local governments, tourism practitioners, and academics must collaborate with communities to develop sustainable and environmentally friendly tourism programs that benefit both local communities and the environment.

CONCLUSION

This study emphasizes the importance of collaboration among government, universities, and the tourism industry, while involving communities as key actors in community-based ecosystem management particularly of marine resources for sustainable tourism. The study reveals challenges such as the absence of specific plans, a shortage of skilled labor, and limited community involvement. The practice of visitors bringing their own food and drink provides only minimal economic contribution and worsens plastic waste pollution. It is essential to provide transparent information and incentives so that communities actively participate, to establish resource management groups, and to conduct education, training, and competence certification on ecosystem protection schemes and tourism services for communities to raise environmental awareness. This study highlights community-based ecosystem management in improving local welfare and ensuring the long-term sustainability of marine resources. Optimizing the implementation of marine tourism ecosystem governance policy can preserve marine ecosystems, which in turn increases the income and welfare of local communities. This study provides valuable insight into the effectiveness of community-based ecosystem governance in managing marine resources for tourism development. Practically, policymakers need to promptly develop a marine tourism master plan based on the 5A + 3S indicators, facilitate the phased establishment of and mentoring for Tourism Awareness Groups (Pokdarwis), provide transparent incentive schemes, and conduct training and competence certification in destination management for local communities. Future

research is recommended to test the generalizability of the 5A + 3S model in other coastal and archipelagic regions of Indonesia, and to measure the quantitative impact of implementing the 3S indicators on long-term economic and ecological sustainability.

ACKNOWLEDGMENTS

The authors would like to thank the Department of Community and Village Empowerment, the local government of West Sulawesi Province, and the Tourism Office of West Sulawesi Province for their support and access during data collection. The authors also gratefully acknowledge the coastal communities of Karampuang Island and Koa Koa Beach, including community leaders, tourism operators, and Tourism Awareness Group (POKDARWIS) members, for their willingness to participate as informants. Appreciation is also extended to Politeknik Pariwisata Makassar, Universitas Negeri Makassar, and Universitas Asa Indonesia for their institutional support throughout this research.

AUTHOR CONTRIBUTIONS

Conceptualization, F. and H.A.; Methodology, F. and R.S.; Validation, H.A. and D.R.U.S.; Formal Analysis, F. and R.S.; Investigation, F.; Resources, H.A.; Data Curation, F.; Writing-Original Draft Preparation, F.; Writing-Review & Editing, H.A., R.S., and D.R.U.S.; Supervision, H.A.; Project Administration, F.; Funding Acquisition, H.A.

CONFLICTS OF INTEREST

The authors declare no conflict of interest

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