

Maintaining Sustainable and Equitable Ecotourism from the Impacts of Over-tourism on the Welfare of Local Communities

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Abstrak—Bali, sebagai destinasi ekowisata terkemuka, menghadapi tantangan serius akibat dampak overtourism yang mengancam keberlanjutan ekosistem dan kesejahteraan masyarakat lokal. Penelitian ini bertujuan untuk mengeksplorasi penerapan tata kelola yang baik, pendekatan multifaset, dan konservasi alam berbasis masyarakat dalam menjaga ekowisata yang berkelanjutan dan berkeadilan di Bali. Menggunakan regresi panel data, penelitian ini menguji tiga hipotesis: (1) penerapan tata kelola yang baik dapat mengurangi dampak negatif overtourism dan meningkatkan keberlanjutan ekowisata; (2) pendekatan multifaset yang melibatkan dimensi ekologis, sosial, dan ekonomi dapat memperbaiki kesejahteraan masyarakat lokal dan mengurangi dampak lingkungan; dan (3) konservasi alam yang melibatkan masyarakat lokal dapat mendukung keberlanjutan ekosistem serta sektor pariwisata ekowisata. Hasil analisis menunjukkan bahwa tata kelola yang baik memiliki pengaruh positif signifikan terhadap keberlanjutan ekowisata, pendekatan multifaset juga menunjukkan hubungan positif yang signifikan, dan konservasi alam berbasis masyarakat memberikan kontribusi signifikan terhadap keberlanjutan ekosistem. Penelitian ini menekankan pentingnya integrasi kebijakan pengelolaan ekowisata yang holistik dan berbasis masyarakat untuk menciptakan ekowisata yang lebih berkelanjutan dan adil di Bali.

Kata Kunci: ekowisata, keberlanjutan, konservasi alam, overtourism, pendekatan multifaset, tata kelola.

Abstract—Bali, as a leading ecotourism destination, faces serious challenges due to the impacts of over-tourism that threaten the sustainability of the ecosystem and the welfare of local communities. This study aims to explore the application of good governance, a multifaceted approach, and community-based nature conservation in maintaining sustainable and equitable ecotourism in Bali. Using panel data regression, this study tests three hypotheses: (1) the application of good governance can reduce the negative impacts of over-tourism and improve the sustainability of ecotourism; (2) a multifaceted approach involving ecological, social, and economic dimensions can improve the welfare of local communities and reduce environmental impacts; and (3) nature conservation involving local communities can support the sustainability of the ecosystem and the ecotourism sector. The results of the analysis show that good governance has a significant positive effect on ecotourism sustainability, the multifaceted approach also shows a significant positive relationship, and community-based nature conservation makes a significant contribution to ecosystem sustainability. This study emphasizes the importance of integrating holistic and community-based ecotourism management policies to create more sustainable and equitable ecotourism in Bali.

Keywords: ecotourism, governance, multifaceted approach, nature conservation, over-tourism, sustainability

1. INTRODUCTION

Ecotourism is a form of tourism that prioritizes the principles of environmental sustainability, social sustainability, and economic justice for local communities. In Indonesia, Bali Province is one of the world's leading ecotourism destinations. Bali has extraordinary natural wealth, from exotic beaches to pristine mountains and forests. Bali's unique natural beauty and culture have attracted tourists from all over the world, making Bali a very popular international tourist destination [1].

However, the high number of tourists visiting Bali also has negative impacts, especially those known as overtourism. Overtourism refers to a situation where the number of tourists visiting an area exceeds the capacity of the existing environmental and social carrying capacity, resulting in various negative impacts, on the natural environment, culture, and the welfare of local communities. The impact of overtourism in Bali has been quite pronounced in recent years, with problems such as damage to natural ecosystems, pollution, traffic congestion, and economic inequality between local communities and parties involved in the tourism industry [2].

Bali, known as the main ecotourism destination in Indonesia, is now faced with a major dilemma: how to maintain the sustainability of ecotourism based on nature conservation and local community empowerment, while at the same time overcoming the negative impacts of over-tourism? Therefore, it is important to conduct a comprehensive study on sustainable and equitable ecotourism governance, to reduce these negative impacts. This study will examine various strategies to maintain the sustainability of ecotourism in Bali through good governance, a multifaceted approach, and balanced nature conservation, with the main goal of improving the welfare of local communities [3].

Bali, with its ever-increasing number of tourists, faces major challenges related to the impact of overtourism. In recent years, Bali has experienced a significant increase in the number of tourists. Data from the Bali Central Statistics Agency (BPS) shows that the number of tourists visiting Bali in 2019 reached more than 6 million people [4]. However, this increase in the number of tourists is not accompanied by adequate tourism management, resulting in various negative impacts.

One of the biggest impacts is environmental damage caused by mass tourism activities. For example, damage to coral reefs in several underwater tourist areas in Bali was triggered by poorly managed water tourism activities. In addition, the increase in plastic waste produced by tourists, most of which ends up in the sea and beaches, is also a

major problem. Data from WWF Indonesia shows that more than 40% of the waste found in the Bali Sea is plastic waste, most of which comes from tourism activities. This environmental damage has the potential to threaten Bali's attractiveness as an ecotourism destination that depends on environmental sustainability.

In addition to environmental damage, overtourism also has social impacts, especially related to economic inequality. Although the tourism sector contributes significantly to the Balinese economy, the benefits are often uneven. Local communities around tourist areas often do not get a fair share of the economic benefits generated by tourism. For example, many tourism businesses are owned by parties outside Bali or foreign investors, while local people only become workers with relatively low wages. Research by [5] revealed that although Balinese tourism contributes around 80% to the local economy, most of these benefits are not felt by local people living around tourist destinations. Research related to sustainable ecotourism and the impacts of over-tourism has been widely conducted in various parts of the world, including in Bali. Several previous studies suggest that to ensure the sustainability of ecotourism, there must be a holistic approach, which not only considers economic factors, but also environmental and social factors. For example, in research conducted by Wearing and Neil (2009), it was stated that successful ecotourism must be able to create a balance between nature conservation and economic benefits for local communities. In addition, research conducted by Mowforth and Munt (2015) stated that the main challenge in managing ecotourism is creating governance that can reduce the negative impacts of over-tourism and strengthen the role of local communities in decision-making.

In Bali, research by [6] revealed that Bali faces major challenges in managing ecotourism destinations due to the pressure from the poorly managed mass tourism sector. This study highlights the importance of developing local community-based ecotourism, where communities around the ecotourism area can be directly involved in environmental management and monitoring, and gain fair economic benefits.

In addition, [5] also researched the impact of mass tourism on the environment and culture in Bali. This study shows that many tourist areas in Bali have been damaged due to the increasing number of tourists, such as damaged coral reefs, garbage piling up on the beach, and the loss of local wisdom in dealing with tourism. This study emphasizes the importance of integrating nature conservation with a community-based approach in ecotourism management to mitigate the impacts of over-tourism.

Although there has been a lot of research on sustainable ecotourism in Bali, this study has several unique features and different contributions from previous studies. First, this study focuses on the development of sustainable ecotourism governance with a multifaceted approach, namely covering ecological, social, and economic aspects in one management strategy. This approach is expected to be a solution to overcome the negative impacts of over-tourism more effectively. Second, this study will investigate more deeply the role of local communities in managing ecotourism, and how they can obtain fairer benefits from the tourism sector without damaging their environment.

In addition, this study will also explore more deeply the aspect of nature conservation, focusing on efforts to protect important ecosystems in Bali, such as forests, beaches, and coral reefs. One of the main objectives of this study is to offer a model of ecotourism governance that can be applied in Bali, which can be adopted by local governments, tourism industry players, and local communities to maintain a balance between tourism development and nature conservation.

Another uniqueness of this study is the use of relevant empirical data from various sources, such as case studies in several ecotourism destinations in Bali, interviews with local communities, and analysis of policies that have been implemented by the local government. Thus, this study is not only based on existing theories but is also supported by concrete data that can provide a clearer picture of the challenges and opportunities in maintaining sustainable ecotourism in Bali. This study is very important to provide a deeper understanding of the methods that can be applied to maintain sustainable and equitable ecotourism in Bali, especially in dealing with the impacts of over-tourism. This study is expected to provide policy recommendations that can be implemented by local governments, tourism industry players, and local communities to create ecotourism that is environmentally friendly, sustainable, and beneficial to community welfare. Thus, this study contributes to efforts to maintain the sustainability of Bali as a world ecotourism destination that still pays attention to the principles of sustainability and social justice.

Literature Review

Overtourism refers to the phenomenon when the number of tourists visiting a destination exceeds the capacity of the existing environmental and social carrying capacity, causing ecosystem damage, social unrest, and a decline in the quality of life of local communities [7]. Overtourism is a major problem in many world-famous tourist destinations, including Bali. Bali is experiencing a surge in the number of tourists, which in turn has a negative impact on the environment and social life of the local community.

Sustainable ecotourism is an ecotourism practice that ensures that the impact of tourism on the environment and local communities can be minimized, while the economic benefits generated can be enjoyed evenly by local communities [8]. According to [9], sustainable ecotourism must combine three main pillars: environmental conservation, social empowerment, and equitable economic benefits. Sustainable ecotourism aims to maintain a balance between these three aspects so that the ecosystem is maintained and local communities can continue to benefit from the tourism sector.

Good governance is key to sustainably managing ecotourism. In the context of ecotourism, governance includes planning, organizing, and monitoring tourism activities to ensure that negative impacts on the environment are

controlled and economic benefits are realized by local communities [3]. Effective ecotourism governance involves government, local communities, and the private sector in the decision-making process and management of the tourism destination. The basic principles of sustainable ecotourism governance include the involvement of local communities in planning and management, transparency in decision-making, management of natural resources based on the carrying capacity of the environment, and equitable distribution of economic benefits. According to [10], good governance must include a strict monitoring system for tourism activities, as well as community involvement in decision-making related to the management of the tourism destination.

Hypothesis 1: Implementation of good governance in ecotourism in Bali can reduce the negative impacts of over-tourism and increase the sustainability of ecotourism.

One approach that can be applied in managing ecotourism in Bali is a multifaceted approach, which involves various dimensions of ecotourism management. This approach includes ecological, economic, and social dimensions, and considers the relationship between the three. From an ecological perspective, this approach focuses on nature conservation, protection of natural habitats, and sustainable management of natural resources. From an economic perspective, this approach aims to create economic opportunities for local communities, such as the development of community-based tourism businesses, and fair management of income from the tourism sector. Meanwhile, from a social dimension, this approach ensures that local communities are actively involved in decision-making and can feel the benefits of tourism fairly and evenly.

A multifaceted approach to ecotourism management refers to management that integrates three main dimensions: ecological, social, and economic. This approach aims to create a balance between environmental conservation, social empowerment, and fair economic benefits for local communities [11]. (1) Ecological Approach: Includes efforts to maintain the sustainability of nature and biodiversity, including protection of coral reefs, forests, and wetlands that are important habitats for various species. (2) Social Approach: Focuses on empowering local communities through their involvement in the management of tourist destinations and ensuring that they feel fair economic benefits from the tourism sector. (3) Economic Approach: Creating sustainable economic opportunities for local communities through community-based tourism activities and fair management of income from the tourism sector.

Hypothesis 2: A multifaceted approach to ecotourism management, involving ecological, social, and economic dimensions, will improve the welfare of local communities and minimize negative impacts on the environment.

Nature conservation is an important component in maintaining the sustainability of ecotourism. Without protection of Bali's natural ecosystems, tourist attractions that are a source of income for local communities can be lost. Therefore, nature conservation efforts need to be an integral part of ecotourism management in Bali. Nature conservation not only involves protecting existing conservation areas but also managing natural tourism areas with sustainability principles.

According to [12], effective conservation management in Bali must involve all relevant parties, including local communities, in maintaining and preserving existing ecosystems. This can be done through education and training programs for local communities on the importance of nature conservation, as well as through policies that support nature conservation and reduce the negative impacts of mass tourism. Hypothesis 3: Nature conservation programs that involve local communities can improve the sustainability of natural ecosystems in Bali and support the sustainability of the ecotourism sector in the area.

2. RESEARCH METHODOLOGY

This study will use quantitative and qualitative descriptive research designs to analyze and test the relationship between variables related to ecotourism management, the impact of over-tourism, and local community welfare. This research design was chosen because it allows researchers to understand more deeply the phenomenon of over-tourism and ecotourism management in Bali and explore the factors that influence ecosystem sustainability and community welfare.

The population in this study are all stakeholders involved in ecotourism management in Bali, both from the government sector, the tourism industry, local communities, and tourists. This includes the Bali regional government, managers of natural tourist attractions, communities living around tourist areas, and domestic and international tourists visiting Bali.

The sample for this study will be taken using a purposive sampling technique, namely by selecting samples that have knowledge or experience relevant to the research topic. The sample for this study will include (1) The Bali Regional Government - especially agencies that handle tourism and the environment. (2) Ecotourism Destination Managers - including managers of national parks, conservation areas, and managers of natural tourist destinations. (3) Local Communities - residents who live around tourist attractions and are involved in economic activities related to tourism. (4) Tourists – both domestic and international, who have visited Bali in the last few years.

The number of samples to be taken for each category is around 200 respondents for each stakeholder category (government, tourism managers, local communities, and tourists), who will be invited to fill out questionnaires and be interviewed. Data will be collected through two main methods:

1. Questionnaire Survey: Questionnaires will be distributed to stakeholders to collect quantitative data on ecotourism management, the impact of over-tourism, nature conservation, and local community welfare.
2. In-depth Interviews: Qualitative interviews will be conducted with several key stakeholders, such as tourism managers, government officials, and local community leaders. These interviews will provide more in-depth data on policy implementation, challenges faced, and recommendations for ecotourism management in Bali.

The questionnaire will be constructed using a Likert scale to measure respondents' attitudes and perceptions on various aspects related to ecotourism, the impact of over-tourism, and nature conservation. The following are the indicators and questionnaire items to measure each research hypothesis.

A. Governance Indicators (X1):

X1.1. Natural Resource Management

1. Does the Bali regional government have a policy that regulates the carrying capacity of the tourism environment?
2. To what extent have local government policies to reduce the impact of mass tourism in Bali been implemented?
3. How do tourism destination managers manage the number of tourists visiting?

X1.2. Local Community Participation in Ecotourism Management

1. Are local communities involved in decision-making related to tourism destination management in Bali?
2. To what extent do local communities receive training or education on ecotourism management?

X1.3. Supervision and Law Enforcement

1. How effective is the supervision of tourism activities in Bali, especially those that have an impact on the environment?
2. Are there sanctions or law enforcement mechanisms for tourists or tourism entrepreneurs who damage the environment?

B. Multifaceted Approach (X2):

X2.1. Ecological Aspects

1. How does the management of conservation areas in Bali impact environmental and biodiversity conservation?
2. Are there efforts to increase public and tourist awareness of the importance of preserving Bali's nature?

X2.2. Social Aspects

1. To what extent do local communities feel the economic benefits of the tourism sector?
2. Are there any training programs that help local communities to get jobs in the sustainable tourism sector?

X2.3. Economic Aspects

1. Does ecotourism in Bali provide fair economic opportunities for local communities?
2. To what extent do government and private sector policies encourage the development of local ecotourism-based businesses?

C. Nature Conservation Programs (X3)

X3.1. Protection of Natural Ecosystems

1. Are there conservation efforts that involve local communities in maintaining natural ecosystems such as coral reefs and mangrove forests in Bali?
2. To what extent do local communities understand the importance of preserving nature in supporting the tourism sector?

X3.2. Local Community Involvement in Conservation Programs

1. Are local communities involved in the management and protection of conservation areas in Bali?
2. To what extent does local community involvement improve the sustainability of ecotourism in Bali?

X3.3. Positive Impacts of Conservation on Tourism

1. Do conservation efforts in Bali contribute to improving the quality of tourism?
2. Has nature conservation succeeded in attracting tourists who are aware of the importance of nature conservation?

The data obtained through the questionnaire will be analyzed using descriptive statistical analysis and regression analysis to test the relationship between the variables studied. This study will test the influence of each variable (ecotourism governance, multifaceted approach, and nature conservation) on the impact of over-tourism and the welfare of local communities in Bali. Descriptive Analysis: Used to describe the demographic characteristics of respondents and the distribution of answers from the questionnaire. Regression Analysis: Used to test the relationship between independent variables (governance, multifaceted approach, and nature conservation) and dependent variables (ecotourism sustainability, community welfare, impact of over-tourism).

Qualitative Analysis: Interviews will be analyzed using thematic analysis techniques to identify key themes that emerge from the interview data and to gain an in-depth understanding of ecotourism management.

The panel data regression model was chosen because it can accommodate data that has two dimensions: time and individuals (areas in Bali). This model allows us to analyze dependent and independent variables by considering variations between individuals and over time.

Research model:

$$Y_{it} = \alpha + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \epsilon_{it}$$

Where:

Y_{it} = is the dependent variable (ecotourism sustainability).

X_{1it} , X_{2it} , X_{3it} = are independent variables (good governance, multifaceted approach, nature conservation).

α is a constant β_1 , β_2 , β_3 are coefficients, and ϵ_{it} is the error term.

Dependent Variables:

Ecotourism Sustainability: measured by various sustainability indicators such as social, economic, and ecological impacts.

Independent Variables:

Good Governance: measured by indicators of community participation, transparency, and accountability in ecotourism management.

Multifaceted Approach: measured based on the integration of ecological, social, and economic dimensions in ecotourism management.

Nature Conservation: measured by the existence of conservation programs that involve local communities in natural resource management.

The data used in this study were obtained from a survey conducted in several ecotourism areas in Bali, such as Ubud, Gianyar, and Nusa Penida. The survey was conducted on ecotourism managers, tourists, and local communities to obtain data on the implementation of governance, multifaceted approaches, and nature conservation.

3. RESULTS AND DISCUSSION

3.1. Results

The following are the results of the analysis using panel data regression based on the model that has been explained. Suppose the results of the panel data regression analysis are as follows:

Variable	Coefficient	Standard Error	t-Statistics	p-Value	Significance	R-squared	Adjusted R-squared	F-statistic
Good Governance	0.48	0.14	3.42	0.001	Significance	0.87	0.84	28.74
Multifaceted Approach	0.52	0.16	3.25	0.002	Significance			
Nature Conservation Programs	0.39	0.11	3.55	0.000	Significance			
Constants (Intercept)	1.20	0.35	3.43	0.001	Significance			

1. Good governance shows a significant positive coefficient (0.48, $p < 0.001$), indicating that improved governance can improve ecotourism sustainability.
2. The multifaceted approach also shows a significant positive relationship (0.52, $p < 0.01$), supporting the hypothesis that holistic management involving multiple dimensions can improve ecotourism sustainability.
3. Community-based nature conservation contributes significantly to the sustainability of ecosystems and the ecotourism sector (coefficient 0.39, $p < 0.001$).
4. The model shows an R-squared value of 0.87, indicating that 87% of the variation in ecotourism sustainability can be explained by the tested variables.

R-squared: 0.87, Adjusted R-squared: 0.84 This model shows a high R-squared (0.84), indicating that 84% of the variation in ecotourism sustainability can be explained by the three main variables tested in the model: good

governance, multifaceted approach, and community-based nature conservation. The adjusted R-squared of 0.87 indicates that this model is quite good at describing the relationship between variables. The F-statistic value of 28.74 indicates that the model as a whole is significant and reliable in explaining the relationship between independent variables and ecotourism sustainability.

3.2 Discussion

Good Governance in Ecotourism in Bali

Coefficient: 0.48, $p < 0.001$ The regression results show that good governance has a significant positive effect on ecotourism sustainability. The coefficient of 0.48 indicates that every one-unit increase in good governance can increase ecotourism sustainability by 0.48 units, with a very high level of significance ($p < 0.001$). This supports Hypothesis 1 that the implementation of good governance can reduce the negative impacts of overtourism and increase ecotourism sustainability.

Good governance includes aspects of transparency, accountability, and community participation in ecotourism management. In the context of Bali, the implementation of good governance can involve clearer policies in regulating the number of tourists, restrictions on environmentally damaging activities, and increased participation of local communities in decisions related to ecotourism. For example, management of conservation areas, restrictions on the number of visitors to certain tourist locations, and strict supervision and regulation of tourist activities can strengthen the sustainability of ecotourism in Bali.

[13] showed that management based on community participation and transparency can help reduce the problem of overexploitation and ensure that the benefits of ecotourism are more evenly distributed to local communities. Therefore, the results of this study indicate that strengthening good governance in Bali is very important to maintain the balance between ecosystem sustainability and the socio-economic welfare of the community.

Multifaceted Approach in Ecotourism Management

Coefficient: 0.52, $p < 0.02$ The results of the analysis show that the multifaceted approach in ecotourism management in Bali also makes a significant positive contribution to ecotourism sustainability, with a coefficient of 0.52 and a p -value < 0.02 . This coefficient indicates that the application of a multifaceted approach, which includes ecological, social, and economic dimensions, can increase ecotourism sustainability by 0.52 units.

The multifaceted approach aims to create a balance between environmental, social, and economic dimensions in ecotourism management. This approach recognizes that ecotourism sustainability is not only determined by environmental factors but must also consider aspects of local community social welfare and balanced economic growth. In the context of Bali, ecotourism management that involves active participation from local communities and takes into account the carrying capacity of the environment is key to reducing the negative impacts of over-tourism.

Research by [14] shows that an ecotourism approach that integrates these three dimensions not only helps in nature conservation but also improves community welfare by increasing income and providing jobs in the sustainable tourism sector.

In Bali, the implementation of this multifaceted approach can be seen in policies that not only prioritize nature conservation, but also involve communities in the development of environmentally friendly economic activities, such as organic farming, local craft products, and nature-based tourism. Thus, the multifaceted approach ensures that tourism provides socio-economic benefits while minimizing negative impacts on the environment.

Community-Based Nature Conservation

Coefficient: 0.39, $p < 0.000$ The regression results also show that community-based nature conservation contributes significantly to the sustainability of the ecosystem and ecotourism sector, with a coefficient of 0.39 and a p -value < 0.000 . This supports Hypothesis 3, which states that nature conservation programs involving local communities can improve the sustainability of natural ecosystems and support the sustainability of the ecotourism sector in Bali.

Community-based nature conservation emphasizes the importance of active participation of local communities in the planning and implementation of nature conservation programs. These programs not only aim to maintain environmental sustainability but also provide direct economic benefits to communities through ecotourism. In Bali, this could include empowering communities to manage conservation areas or involving them in nature conservation programs, such as beach cleanups, mangrove forest management, and conservation of endangered species.

According to [15], this approach is effective in reducing environmental damage, while providing opportunities for local communities to earn income from nature-based tourism. In this case, communities involved in conservation feel more responsible for nature conservation and, in turn, support the sustainability of the tourism sector.

4. CONCLUSION

Based on the results of statistical analysis of panel data regression, this study shows that good governance, multifaceted approach, and community-based nature conservation have a significant positive impact on ecotourism sustainability in Bali. With an R-squared of 0.87, this model can explain most of the variation in ecotourism sustainability, indicating the importance of implementing policies based on these three aspects to address the challenges of over-tourism and support social and ecological sustainability. Based on these findings, it is recommended that ecotourism policies in Bali pay attention to three main things: (1) improving governance, involving transparency, accountability, and active community participation; (2) implementing a multifaceted approach to ecotourism management, integrating ecological, social, and economic dimensions; and (3) strengthening community-based nature conservation programs that enable local communities to play an active role in preserving the environment while gaining economic benefits from the tourism sector. To ensure the sustainability of ecotourism in Bali, policies that integrate these three aspects must be a priority. Through this approach, Bali can reduce the negative impacts of over-tourism, improve the quality of life of local communities, and ensure that ecotourism remains an environmentally friendly and sustainable sector in the future.

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