

Tourism Development and Environmental Sustainability: A Study on the Dual Impact on Economic Growth in Developing Countries

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Abstract: This study explores the intricate relationship between tourism development, economic growth, energy consumption, and environmental sustainability in developing countries, with a particular focus on Indonesia and Brazil. While tourism significantly contributes to economic growth and job creation, its rapid expansion often exacerbates environmental pressures, raising concerns about long-term sustainability. By analyzing the case of Indonesia, where tourism is both a vital economic driver and a source of environmental stress, this study highlights the importance of balancing economic growth with environmental protection. Furthermore, the paper performs an empirical investigation of the impact of international visitor arrivals, economic growth, and energy consumption on CO₂ emissions in Brazil. Using the autoregressive distributed lag (ARDL) technique, the study aims to fill a gap in understanding the relationship between tourism and carbon emissions, particularly in the context of carbon neutrality and the Sustainable Development Goals. The findings aim to inform the development of policies that mitigate the environmental impact of tourism while fostering sustainable economic growth. This study contributes to the broader literature on the role of decarbonization in achieving emission reductions and promoting sustainable tourism practices.

Keywords: Developing Countries, Tourism, Economic Growth, Environment.

1. Introduction

Tourism has emerged as a vital sector for many developing countries, contributing significantly to economic growth and job creation. However, the rapid expansion of the tourism industry often comes at the expense of environmental sustainability, raising concerns about the long-term consequences for both the economy and the environment. This study examines the dual impact of tourism development and environmental sustainability on economic growth in developing countries. To find out which nation has an abundance of tourism resources, the case of Indonesia will be examined. Although the tourism sector makes a substantial economic contribution, it is also subject to environmental concerns. It is crucial that Indonesia research ways to safeguard the environment and advance economic development. Furthermore, a thorough empirical analysis of the connection between Brazil's tourism industry, economic expansion, energy use, and CO₂ emissions has the potential to produce comprehensive insights that can guide the adoption of suitable policies meant to

lower carbon emissions and meet climate targets while boosting the nation's economy through sustainable tourism. The study of how tourism affects carbon emissions is severely lacking in research, especially in light of the SDGs and aspirations to become carbon neutral. Examining the dynamic effects of foreign visitor arrivals, economic growth, and energy consumption on CO₂ emissions in Brazil is, thus, the primary objective of this study. The ability of this study to appropriately balance the negative effects of tourism, like pollution, with its positive effects, like economic growth, within a comprehensive framework that also takes energy consumption into account, is what makes it so important. By applying the autoregressive distributed lag (ARDL) technique, this study adds to the growing body of knowledge regarding the capacity of decarbonization to enable emission reductions and achieve carbon neutrality.

2. Case Description: The Impact of Tourism on Economic Growth

How does tourism contribute to economic growth by increasing foreign exchange earnings, promoting employment, and stimulating the development of related industries? In 2019, it hosted 6.5 million international tourists, making it the second most visited country in South America. In 2019, Brazil's travel and tourism sector accounted for 8% of total GDP and employed around 7.5 million people [1].

Cite examples of ecotourism and sustainable tourism in Indonesia, Brazil, and Indonesia to illustrate the role of these concepts in protecting the ecological environment and promoting cultural heritage and community development.

Analyze the negative impacts of tourism activities on the natural environment in both countries, such as coral reef destruction, mangrove depletion, biodiversity loss in Indonesia, and rainforest deforestation and water pollution in Brazil, and explore how these impacts can be mitigated through sustainable tourism planning and management.

3. Analysis on the Problem

3.1. Impact Analysis

3.1.1. Tourism's Positive Economic Impact

Tourism is a key driver of economic growth in developing countries. It generates foreign exchange earnings, promotes local employment, and the development of related industries such as hospitality, transportation, and retail. For example, many small island economies rely heavily on tourism for their economic survival, with tourism accounting for a significant portion of their GDP and employment [2]. Protected areas (PAs) are one significant option under consideration for biodiversity conservation and ecosystem service supply [3]. Each dollar invested by Brazil in the PA system resulted in \$7 in economic benefits. Furthermore, all economic contributions generate more than \$1.3 billion in total sales, \$342 million in personal income, and \$473 million in value added to the GDP, supporting 43,602 employments nationwide [4].

Moreover, tourism can contribute to poverty alleviation by providing income opportunities for marginalized communities and improving their living standards. It also fosters cultural exchange and understanding, enhancing the international image of the destination country.

3.1.2. Environmental Challenges of Tourism Development

Economic growth and energy consumption are positively correlated in Southeast Asia, whereas tourism and CO₂ emissions are negatively correlated [5]. It investigated the relationship between energy use, tourism, and economic growth and CO₂ emissions [6]. Between 1995 and 2013, the

researchers looked at a selection of Asia-Pacific nations using panel data analysis. According to the panel GMM study, there is a positive correlation between CO2 emissions, energy consumption, and economic growth. On the other hand, it was discovered that the arrival of tourists decreased CO2 emissions. A study by Wei and Lihua used data from 1995 to 2018 [7]. According to their research, there is a positive correlation between economic growth and carbon emissions in ASEAN nations.

Even when tourism grows economically, it frequently has negative environmental effects. Even when tourism grows economically, it frequently degrades the environment. The tourist sector uses a lot of resources, including energy, water, and land. Deforestation, soil erosion, and water contamination can arise from this, especially in places with insufficient waste management systems [8].

Indirectly, through higher energy use in lodgings and other tourist facilities, as well as directly through transportation, tourism activities also add to greenhouse gas emissions. Furthermore, excessive tourism might jeopardize the long-term viability and protection of natural and cultural heritage places by causing congestion and deterioration. Infrastructure Deficiencies and Regional Disparities

3.2. Problem-Identified Analysis

Indonesia's tourism industry, despite its vast potential, faces significant challenges that hinder its ability to compete on a global scale. The country's diverse natural landscapes and rich cultural heritage offer immense opportunities for tourism, yet these are often underutilized due to systemic issues in infrastructure, planning, and product development. This section identifies and analyzes the key problems that currently impede the growth of Indonesia's tourism sector.

3.2.1. Infrastructure Deficiencies and Regional Disparities

A critical issue facing Indonesia's tourism industry is the stark disparity in infrastructure quality between different regions. Java and Bali, the most developed and frequently visited areas, benefit from relatively advanced transportation systems and road infrastructure [9]. These regions have established themselves as the primary gateways for international tourists, with well-maintained airports, highways, and public transportation networks that facilitate easy access to key tourist sites. However, this level of infrastructure development is not replicated across the country, particularly in more remote and less developed regions.

For instance, the eastern part of Indonesia, which is home to some of the most stunning natural landscapes in the world, suffers from inadequate infrastructure. Poor road conditions, limited transportation options, and a lack of essential services make it difficult for tourists to reach and explore these areas. This not only restricts the flow of tourists but also limits the economic benefits that tourism could bring to these regions. The reliance on Bali and Jakarta as the main entry points for international visitors further exacerbates these regional disparities, leaving vast areas of the country's tourism potential untapped.

Addressing these infrastructure gaps is crucial for achieving more equitable and sustainable tourism development across Indonesia. Investment in transportation networks, including roads, airports, and public transit, is necessary to improve accessibility to lesser-known destinations. Additionally, the development of supporting infrastructure, such as accommodations, restaurants, and tourist services, is essential to enhance the overall visitor experience and encourage longer stays in these regions.

3.2.2. Weak Tourism Planning and Underutilization of Resources

Another significant problem in Indonesia's tourism sector is the weak planning and underutilization of its abundant natural and cultural resources. Despite the country's enormous tourism potential, many regions suffer from inadequate tourism planning, which leads to missed opportunities for development. In particular, the eastern regions of Indonesia, which boast extraordinary natural beauty, have not been effectively integrated into the national tourism strategy. This lack of strategic planning results in the underdevelopment of these areas, leaving their tourism potential largely untapped.

Strategic tourism planning should focus on identifying and developing new destinations that can diversify Indonesia's tourism offerings. This includes not only improving infrastructure but also creating comprehensive development plans that consider the environmental, social, and economic impacts of tourism. By adopting a more holistic approach to tourism planning, Indonesia can ensure that the benefits of tourism are more evenly distributed across the country, reducing regional disparities and fostering sustainable growth.

3.2.3. Lack of Product Diversification and Service Quality

In addition to infrastructure and planning issues, Indonesia's tourism sector struggles with a lack of product diversification and inconsistent service quality, which limits its competitiveness on the global stage. As noted by tourism scholar Krippendorf, a successful tourism product is a combination of tangible and intangible elements that together provide value and satisfaction to the consumer [10]. However, Indonesian tourism offerings have not sufficiently evolved to meet the changing demands and preferences of the global market.

Many tourism products in Indonesia remain focused on traditional attractions such as beaches, cultural sites, and natural wonders. While these are undoubtedly valuable, there is a need for greater innovation in developing new and unique tourism experiences that cater to diverse market segments. This could include adventure tourism, ecotourism, wellness tourism, and cultural immersion experiences that go beyond the typical offerings. Developing such products would not only attract a broader range of tourists but also enhance Indonesia's competitive edge in the global tourism market.

Moreover, the quality of tourism services in Indonesia is often inconsistent, further undermining the country's ability to compete with neighboring destinations. High-quality service is a critical component of the overall tourist experience, influencing satisfaction, repeat visits, and positive word-of-mouth recommendations. To address this, there needs to be a concerted effort to improve the skills and professionalism of those working in the tourism industry. This could involve targeted training programs, certifications, and incentives for businesses to invest in service quality improvements.

3.2.4. Addressing Market Needs and Enhancing Competitiveness

To better compete with neighboring countries, Indonesia must pay closer attention to market trends and consumer preferences. This requires a proactive approach to tourism product development, where market research plays a crucial role in identifying emerging trends and consumer demands. By staying ahead of market trends, Indonesian tourism operators can create products that resonate with tourists and offer them unique and memorable experiences.

Furthermore, enhancing the overall Competitiveness of Indonesia's tourism sector will require collaboration between the government, private sector, and local communities. Public-private partnerships can be instrumental in driving innovation and investment in new tourism products, while community involvement ensures that tourism development is inclusive and benefits local populations.

3.3. Empirical Model and Hypotheses

Total factor productivity is the fraction of output that cannot be explained by the standard labor and capital inputs utilized in production. As a result, its value is defined by how efficiently and intensively the inputs are used in production. The equation below (in Cobb-Douglas form) expresses total output (Y) as a function of total factor productivity (A), capital input (K), labor input (L), and the two inputs' respective shares of output (α and β are the contributions of K and L, respectively).

An increase in either A, K, or L results in an increase in output.

$$Y = A \times K^\alpha \times L^\beta \quad (1)$$

The purpose of this research is to show how mass tourism affects economic growth and the environment in Indonesia, allowing for informed policy decisions. Therefore, the following assumptions are considered: Hypothesis 1: Tourism, economic growth, and the environment are in long-run balance. Hypothesis 2: Tourism receipts are related to short-term economic growth. Hypothesis 3: In the short run, agricultural land use correlates with economic growth. Hypothesis 4: In the short term, arable land is associated with tourism increase.

4. Suggestions

4.1. Balancing Tourism Development and Environmental Sustainability

Achieving sustainable tourism development in developing countries like Indonesia requires a delicate balance between fostering economic growth and ensuring environmental protection. The rapid expansion of the tourism industry can significantly boost a nation's economy by generating employment, increasing foreign exchange earnings, and stimulating related sectors such as hospitality, transportation, and retail. However, if not managed carefully, this growth can lead to severe environmental degradation, including deforestation, loss of biodiversity, and pollution of natural resources such as water and air.

To maintain this balance, a comprehensive approach is necessary. This approach should integrate policies and practices that minimize the negative environmental impacts of tourism while maximizing its economic benefits. For example, sustainable tourism practices such as eco-friendly accommodations, waste management systems, and responsible wildlife tourism can be promoted. These practices not only help preserve the natural environment but also enhance the long-term appeal of tourist destinations, ensuring that they remain attractive to visitors in the future.

Moreover, public awareness campaigns should be implemented to educate tourists and local communities about the importance of environmental conservation. By fostering a culture of sustainability, these initiatives can encourage both tourists and residents to adopt more responsible behaviors, such as reducing waste, conserving water, and respecting local wildlife. Additionally, promoting sustainable tourism products, such as eco-tours and cultural experiences that highlight local traditions and natural beauty, can further contribute to this balance by attracting tourists who value and support environmental conservation.

4.2. Policy Interventions

Governments play a pivotal role in promoting sustainable tourism through the implementation of effective policies and regulations. One of the key strategies is to introduce policy interventions that encourage eco-friendly practices while discouraging environmentally harmful activities. For instance, the government can implement corrective taxes on businesses and residents whose activities contribute to environmental degradation. The revenue generated from these taxes can be allocated to

fund pollution abatement technologies, waste management systems, and ecotourism initiatives that aim to protect and preserve natural ecosystems.

In addition to fiscal measures, governments can enforce stringent regulations on tourism development projects to ensure compliance with environmental standards. These regulations can include mandatory environmental impact assessments (EIAs) for new tourism ventures, limits on construction in ecologically sensitive areas, and requirements for sustainable resource management practices. By enforcing such regulations, governments can prevent overdevelopment and ensure that tourism activities do not compromise the integrity of natural landscapes and habitats.

Moreover, governments can incentivize private sector investment in sustainable tourism through subsidies, grants, and low-interest loans for projects that demonstrate a commitment to environmental stewardship. These financial incentives can motivate enterprises to implement green technologies such as renewable energy sources, water-saving devices, and waste recycling systems, therefore dramatically reducing tourism activities' environmental footprint. Collaboration between government agencies, local communities, and the private sector is also crucial for the successful implementation of these policies. By involving local stakeholders in the decision-making process, governments can ensure that tourism development aligns with the needs and values of the communities it affects, leading to more sustainable and equitable outcomes.

4.3. Infrastructure Development for Sustainable Tourism

Infrastructure development is a critical component of sustainable tourism, as it facilitates access to tourist destinations and enhances the overall visitor experience. In Indonesia, the government has recognized the importance of infrastructure in driving tourism growth and has prioritized the development of physical infrastructure in key tourist regions. This includes the construction of new airports, toll roads, and tourist facilities, which are essential for accommodating the increasing number of visitors and ensuring their safety and comfort.

However, infrastructure development must be carefully planned and implemented to avoid adverse environmental impacts. For instance, the construction of roads and airports can lead to habitat fragmentation, soil erosion, and pollution if not managed properly. Therefore, it is important to incorporate environmental considerations into the planning and design of infrastructure projects. This can be achieved by conducting thorough environmental impact assessments, selecting environmentally friendly construction materials and techniques, and implementing mitigation measures to minimize the ecological footprint of these projects. Reducing transportation costs within tourist regions is another important aspect of infrastructure development. Lower transportation costs can make destinations more accessible to a broader range of visitors, including domestic tourists, and can also stimulate local economies by attracting businesses and increasing labor mobility. In Indonesia, improving connectivity between the country's top ten tourist destinations has been identified as a priority. By enhancing infrastructure connectivity, the government can facilitate the flow of tourists between regions, promoting regional economic development and reducing the pressure on more popular destinations.

Furthermore, efficient infrastructure is essential for supporting the broader economic development associated with tourism. For example, well-maintained roads and reliable public transportation systems can improve access to remote areas, enabling local communities to benefit from tourism-related economic opportunities. Similarly, the development of sustainable energy and water infrastructure can reduce the environmental impact of tourism by ensuring that tourist facilities operate efficiently and responsibly.

Finally, it is crucial to recognize that infrastructure development is not just about building new facilities but also about maintaining and upgrading existing ones. Regular maintenance and modernization of infrastructure can enhance its longevity and effectiveness, reducing the need for

new construction and minimizing environmental disruption. For example, retrofitting existing buildings with energy-efficient technologies, upgrading waste management systems, and improving public transportation networks can contribute to the sustainability of tourism without the environmental costs associated with new construction.

4.4. Integrating Community Participation and Cultural Preservation

In addition to balancing economic growth with environmental sustainability, it is vital to integrate community participation and cultural preservation into tourism development strategies. Local communities are the stewards of the natural and cultural resources that attract tourists, and their involvement is key to the success of sustainable tourism initiatives. Governments and tourism developers should engage with local communities through consultations and partnerships, ensuring that tourism development respects and enhances local cultures and traditions. Cultural preservation initiatives, such as the promotion of traditional crafts, festivals, and local cuisines, can enrich the tourist experience while providing economic opportunities for local residents. Moreover, by involving communities in tourism planning and decision-making, governments can foster a sense of ownership and responsibility among residents, encouraging them to participate actively in environmental conservation efforts.

5. Conclusion

While Indonesia's tourism sector holds great promise, it is currently constrained by significant challenges related to infrastructure, planning, product diversification, and service quality. Addressing these issues will require a coordinated effort to improve infrastructure, strategically plan tourism development, diversify tourism products, and enhance service quality. By doing so, Indonesia can unlock the full potential of its tourism industry, contributing to more sustainable and inclusive economic growth. In conclusion, sustainable tourism development in Indonesia and other developing countries requires a multifaceted approach that balances economic growth with environmental sustainability, supported by effective policy interventions, infrastructure development, and community engagement. By adopting these strategies, countries can ensure that tourism continues to be a positive force for economic development while safeguarding the natural and cultural resources that make it possible.

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