ECOTOURISM AND BIODIVERSITY CONSERVATION: PARADIGM SHIFTING AND FUTURE ACTION

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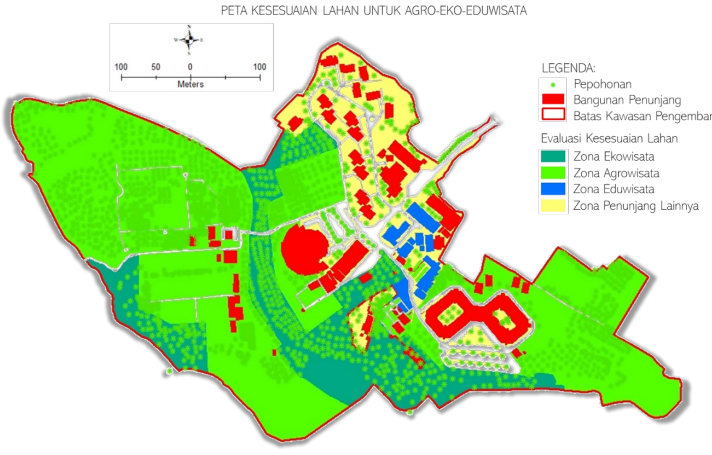
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Evaluasi Kesesuaian Lahan
Zona Ekowisata
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Zona Eduwisata
Zona Penunjang Lainnya

ABSTRACT

Tourism has been positively impacting the economy for decades. However, the industry has also brought several challenges related to climate change and biodiversity conservation. This paper will discuss tourism's issues, trends, and future perspectives supporting biodiversity conservation.

INTRODUCTION

Since the United Nations World Tourism Organization International predicted about two decades ago that tourist arrivals would reach 1.8 billion by 2030 (UNWTO, 2011), tourism has been considered one of the most developed industries in the world. The growth of the tourism sector has affected employment, foreign exchange earnings, expansion of infrastructure facilities, investment, socio-economic development, increasing contribution to GDP, and many others (Juwita et al., 2021; Kimbu & Tichaawa, 2018; Steiger & Scott, 2020). Unfortunately, despite the positive impact generated by the tourism sector, this sector also harms the environment and has become one of the contributors to greenhouse gases (GHG). Between 2009 and 2013, tourism's global carbon footprint increased from 3.9 to 4.5 GtCO2e (Gigatons CO2-equivalent), four times more than previously estimated, accounting for about 8% of global greenhouse gas emissions (Lenzen et al., 2018) and will continue to increase to more than 25% by 2030. In 2021, more than 300 tourism stakeholders, leading industry players of destination countries, and other large to small-scale tourism stakeholders signed up for the Glasgow Declaration at the United Nations Framework Convention on Climate Change (UNFCCC) COP26. The convention proposed a coordination plan for tourism to support the global commitments to halve emissions by 2030 and achieve net-zero by 2050. In the context of reducing greenhouse gas emissions, Indonesia is committed to reducing greenhouse gas emissions to 26% by 2020. After ratifying the Paris Agreement in 2015, this commitment increased to 29% within the National effort and 41% with support from international cooperation by 2030 (Perpres. No 18, 2020). This commitment has been recorded as Indonesia's National Determination Contribution (NDC) to the world. Based on the climate change convention (UNFCCC), Indonesia has targeted to reduce carbon emissions in the forestry sector to 17.2%, the energy sector to 11%, the waste sector to 0.32%, and the agricultural sector to 0.13% as well as the industrial and transportation sectors to 0.11% (GOI, 2021). However, reducing greenhouse gas emissions through the tourism sector is not explicitly a national priority, while Indonesia is currently enhancing the tourism sector through small-scale holders and micro-enterprises. Meanwhile, one of the strategic plans of the Association of Southeast Asian Nations (ASEAN) in the tourism sector for 2016-2025 is to increase the ability of tourism to overcome climate change (ASEAN, 2015). Hence, this paper will discuss briefly how the tourism paradigm can be shifted from being a GHG contributor to becoming an actor in supporting global commitment to a decade of climate change mitigation and adaptation and biodiversity conservation.

IMPACT OF TOURISM ON GREENHOUSE GASES AND BIODIVERSITY

Tourism positively impacts economic growth by generating jobs and opportunities, promoting public investment, and boosting public finances, as has been empirically proven by some studies (Dritsakis, 2012; Ehigiamusoe, 2020; Fahimi et al., 2018; Santamaria & Filis, 2019). Tourism has contributed 9% of the world's total Gross domestic product (GDP) through exports of oil, food products, and automobiles; provided 1 in 11 of all jobs in the world; 6% of global exports; 1.4 trillion in exports; 30% of service exports (Jiaqi et al., 2022). Unfortunately, the economic impact of tourism is coupled with increasing carbon emissions resulting in environmental degradation (Ehigiamusoe, 2020). Energy consumption of the tourist industry is also consequently increasing rapidly (Dogan & Aslan, 2017; Katircioglu et al., 2019). Energy consumption directly involves fossil fuels or, indirectly, electricity power in each step of tourism activities, from transportation to accommodation (Dogan & Aslan, 2017). Five percent of global CO_2 emissions came primarily from the transportation sector, which produced 75% of all emissions from the tourism business (Jiaqi et al., 2022; Simpson et al., 2008). Accordingly, a significant amount of CO_2 is emitted by the Wulingyuan Scenic/Historic Interest Area (WSHIA) and Guizhou ethnic areas in China, as well as the Yogyakarta Special Region in Indonesia (Saputra et al., 2013; Su, 2019; Tang et al., 2019).

Besides its impact on carbon emissions, tourism has also impacted biodiversity, particularly ecotourism. Recent studies showed the negative impacts of tourism on biodiversity. Ecotourism in the National Park of El Salvador, Central America, and Colombia's Tayrona National Natural Park, South America, has negatively affected the dung beetle assemblage structure. The loss of habitat specialists in favour of widespread generalists caused specific species' extinction. Consequently, ecotourism must be regulated to minimize its effects on the site (Noriega et al., 2020; Pablo-Cea et al., 2021). The dung beetle is effectively indicates the intensity of factors affecting biodiversity, including landscape fragmentation, logging, mammal hunting, and land use change (Bicknell et al., 2014; Nichols et al., 2007, 2009).

Furthermore, ecotourism also affects animal behaviour. The four-year study (2013-2016) at the Brownsberg Nature Park, Suriname, showed that tourist activities affected the activity pattern of medium to large mammals. Most species tended to be more nocturnal or avoided the area

with many tourists. The increasing number of tourists on the road and trail resulted in the decrease in mammal diversity (Ouboter et al., 2021). Hence, ecotourism at the National Nature Park has affected biodiversity and animal behaviour. Ecotourism has therefore, posed several potential negative impacts on the natural environment, such as breeding disorders, extinction of animals, damage to vegetation, and other components of the environment, such as pollution, erosion, natural resources, and impact on the scenery (Butarbutar & Soemarno, 2013). Even a sentimental notion would consider that ecotourism is more to revenue generation than the protection of environmental assets (Das & Chatterjee, 2015). Despite ecotourism having some negative impacts on biodiversity, it is still believed to provide a tangible aspect of biodiversity conservation, such as helping to save animals and fragile ecosystems (Libosada, 2009; Salvador et al., 2011).

ECOTOURISM IN SUPPORTING BIODIVERSITY CONSERVATION

Ecotourism is an environmental activity in well-preserved areas for recreation, with the responsibility of promoting conservation (Noriega et al., 2020). Biodiversity as an asset for ecotourism and nature-based tourism provides vital ecosystem services and commodities for sustainable use (Jurkus et al., 2022). By encouraging the local and indigenous populations in host nations, including visitors, to maintain and appreciate the natural and cultural heritage, ecotourism presents tremendous potential for biodiversity conservation, protection, and sustainable use of nature reserves (Das & Chatterjee, 2015). Ecotourism is also characterized as alternative tourism, which differs from mass or conventional tourism. The specific form of alternative tourism is distinguished as cultural, educational, scientific, nature-adventure, and agri-tourism with rural, ranch, and farm subsets (Figure 1) (Beaumont, 2011).

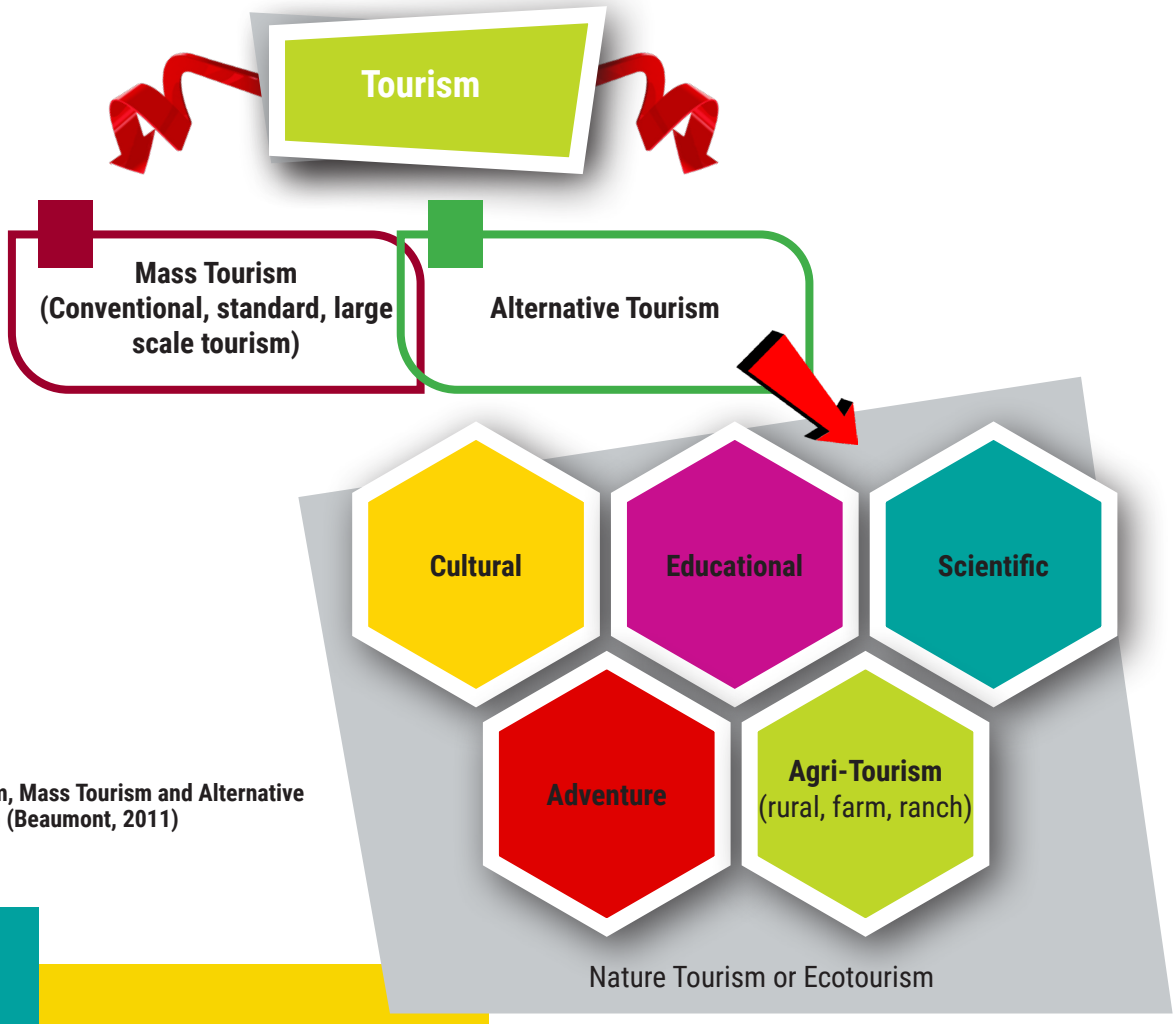

Figure 1. Tourism, Mass Tourism and Alternative Tourism (Beaumont, 2011)

As a concept, ecotourism can be agri-tourism (farm tourism) and edu-tourism (educational tourism). Agri-tourism is the long-term tourism development strategy in a rural area, which enables visitors to learn about the agricultural environment and its cultural and traditional components (Kumar et al., 2021). Meanwhile, Edu-tourism is a type of tourism that covers the specific tourism activity, in which education, learning, and obtaining knowledge are the main purposes (Alipour et al., 2020). In the context of Biodiversity Conservation, agri-tourism tends to develop more sustainable techniques that minimize environmental damage and promotes conservation of biodiversity, landscape, and other natural resources (Mastronardi et al., 2015). Even if its economic and social performance is likely inferior to other enterprises operating in rural regions, Agri-tourism can lessen the harmful external consequences of agriculture on the environment (Colton & Bissix, 2005).

Furthermore, edu-tourism, through agri-tourism, is a valuable source of learning experiences that takes advantage of an area's agricultural resources. This example demonstrates how organic farming business in the form of farm tourism adds value to agricultural production (Magnaye, 2019). Furthermore, another term is also being used to state the content of tourism activities in the specific area, namely, Agro-Eco-Edu-Tourism (AEET). Agro-Eco-Edu-Tourism is a development concept of ecotourism which involves the travel to the natural area or agricultural site (in the broad meaning), aiming for education, environmental conservation, promoting agricultural products, and life preservation, including the local community's welfare. Thus, ecotourism in the form of agricultural and educational tourism could promote biodiversity conservation and minimize the negative impact of tourism on the environment.

CONCLUSION AND FUTURE PERSPECTIVE

Ecotourism is often viewed as an effective strategy for promoting the conservation of endangered species and habitats/ecosystems in developing countries. Ecotourism plays an important role in raising awareness of sustainable development, motivating people to save biodiversity, and teaching the importance of biodiversity conservation for human livelihood. It provides economic, social, and cultural incentives for the local people while staying on the environmentally friendly way in conserving high biodiversity value, which is consistent with the commitments of the National Determined Contributions (NDCs), Convention on Biological Diversity (CBD), Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), Millennium Development Goals (MDGs), and the UN Sustainable Development Goals (SDGs). By creating economic incentives for economically challenged villagers or communities, ecotourism is expected to encourage local guardianship of biological resources. Moreover, the form of Ecotourism as Agri-

tourism and Edu-tourism, or Agro-Eco-Edu-Tourism, might be the avenue to get the tourism sector involved in saving biodiversity.

To meet the needs of future generations, the development of a sustainable development platform needs to pay attention to the balance of social, environmental and economic aspects. To develop these platforms, collaborative actions, for example, on promoting low-carbon and green development. Ecotourism fits these parameters and can serve as an effective tool for sustainable biodiversity conservation. As an alternative to mass tourism, is also expected to minimize the environmental impact.

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