

# Scuba Diving As Sustainability Economic Marine Ecotourism

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**Abstract:** Diving ecotourism is a form of adventure tourism that has high economic value in marine ecosystems, especially coral reef ecosystems, contributing at least 4 billion USD annually in the Southeast Asian region. In particular, diving tourism worth more than 150 million USD has contributed significant income and employment to many islands and coastal communities in South-east Asian countries. Another research have a plan that blue economy become base of scuba diving eco-tourism as economic concern and use community-based ecotourism (CBET) within the develop-ing market dynamics of the blue economy. Many coastal communities around the world are strongly dependent on the need to find a balance between protecting marine biodiversity and main-taining a sustainable and direct access to ecosystem services. Healthy coastal ecosystems support livelihoods and provide protection from natural hazards, coastal erosion and rising sea levels, particularly in small island developing states. The blue economy discourse has made considerable inroads towards bridging the gap between livelihoods and ocean health. Although different actors involved in marine and ocean governance are using the blue economy term in competing and often conflicting ways, the wider consensus is that economies and human wellbeing rely on healthy eco-systems. Scuba diving tourists can help fund marine conservation initiatives and research. Some dive operators, for example, contribute a percentage of their income to marine conservation groups or engage in citizen science pro-grams that collect data on marine ecosystems. Scuba diving tourism can help safeguard marine habitats and encourage sustainable practices by funding research and conservation activities. Overall, scuba diving tourism provides a one-of-a-kind opportunity to enjoy the beauty and diversity of marine ecosystems while also offering considerable economic benefits and aiding marine conservation.

**Keywords:** Ecotourism, Scuba Diving, Sustainability.

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## 1. Introduction

Ecotourism diving is one of the high-value adventure tourism activities that exist in marine ecosystems, especially coral reefs. It contributes at least \$4 billion USD annually in the Southeast Asia region. The popularity of recreational diving has increased in the last few decades and its supporting activities have become an important tourism sector that stimulates the global industry of billions of dollars. However, the creation of compe-tition among diving industries has presented challenges such as a lack of understanding of the marine environment, legal regulations, governance issues, and poor network when diving. Without proper planning, negative impacts on the diving industry may arise. From the diver's perspective, the sustainability of this sport can be achieved through re-sponsible diving behavior, which includes various behavioral obligations and sanctions that prevent divers from damaging the marine ecosystem (Kala et al., 2020;Pevzner et al., 2018).

Scuba diving tourism is a form of adventure tourism that involves diving underwa-ter using self-contained underwater breathing apparatus (SCUBA) to explore marine en-vironments. Scuba diving allows tourists to experience the beauty and diversity of marine life in its natural habitat. Scuba diving tourism can bring significant economic benefits to local communities. It creates employment opportunities for dive operators, dive instruc-tors, and other related services, such as hotels, restaurants, and transportation. Addition-

ally, scuba diving tourism can attract high-spending tourists who are willing to pay a premium for unique and memorable experiences, thus increasing local revenue and supporting small businesses. Scuba diving tourism is synonymous with enjoying the beauty of coral reefs by diving. Therefore, the diving ecosystem must be maintained by using literature studies related to consideration of predetermined parameters. After that, the weight of marine ecosystem parameters can be observed and followed by appropriate analysis to determine the status of the ecotourism. Tourism activities without considering its sustainability can damage the ecosystem. Moreover, scuba diving tourism plays an essential role in marine conservation (Gutierrez-Zuniga et al., 2020; Bernal et al., 2018). It can contribute to raising awareness about the fragility of marine ecosystems and the importance of their protection. By encouraging tourists to appreciate the beauty of marine life, scuba diving can help promote conservation efforts and encourage sustainable practices. Furthermore, scuba diving tourism can also generate funding for marine conservation programs and research, thus helping to protect and preserve marine environments for future generations (Giraldo et al., 2019).

## 2. Materials and Methods

The use of existing literature in research is a common and effective method of collecting data, particularly when studying a topic that has already been extensively researched, such as scuba diving ecotourism. Peer-reviewed papers, articles, and research reports are valuable sources of information as they have undergone rigorous review and scrutiny by experts in the field, ensuring the accuracy and reliability of the data presented. In addition to these sources, the authors of this text also included government reports and assessments in their review of existing literature. These reports often provide valuable insights into the economic and environmental impact of tourism activities, as well as the policies and regulations in place to manage them. By including these sources, the authors were able to gain a more comprehensive understanding of the state of scuba diving ecotourism around the world.

One of the key areas of focus in the study was the analysis of lethal tourism waste and its impact on the marine environment. Lethal tourism waste can cause significant harm to marine organisms, particularly when it is not properly disposed of or managed. By categorizing lethal tourism waste into different levels, the authors were able to identify the most severe forms of waste and prioritize their management and mitigation. Overall, the data obtained through the review of existing literature allowed the authors to draw conclusions on the importance of scuba diving ecotourism. By identifying the economic and environmental benefits of this activity, as well as the potential risks associated with it, they were able to make recommendations for promoting sustainable tourism practices and protecting the marine environment. The use of existing literature in this study demonstrates the importance of building upon existing knowledge and research to advance our understanding of complex issues such as tourism and the environment.

## 3. Results

Diving ecotourism is a form of adventure tourism that has high economic value in marine ecosystems, especially coral reef ecosystems, contributing at least 4 billion USD annually in the Southeast Asian region. In particular, diving tourism worth more than 150 million USD has contributed significant income and employment to many islands and coastal communities in Southeast Asian countries (De Brauwert et al., 2017). Scuba diving is a recreational sport with outdoor activities that are increasingly popular. It has become a source of income for many from the sea, offering significant economic impact for local communities. Dive tourism offers positive ways to experience the underwater world and brings divers physical and psychological benefits (Gregory & Dimmock, 2019). The benefits of social psychology from diving itself are very valuable for people with disabilities

because it is increasingly motivating to carry out social interactions between divers and “dive friends” with the aim of safety (Kovacs & Walter D., 2015). Since divers spend large amounts of money to experience the underwater world, diving guarantees a promising income for both businesses and local communities. So, if properly managed, diving tourism can increase the income and livelihoods of the local population, conservation efforts, and divers' underwater experiences.

The consideration of a diving tour pays attention to several parameters. There are considerations in the form of:

1. Diving tourism requires the brightness of the waters so that divers can see the beauty of the coral reef ecosystem.
2. If the coral cover reaches > 65 then it will become an ecosystem that will be very suitable for divers.
3. The type of life form will be an attraction rather than a stretch of coral that is only alone.
4. Different types of reef fish will become charmers due to their excellent aesthetic value.
5. Strong currents will not make divers safe, so a good current is a current that is not too fast.
6. The deeper the depth of the coral reefs, the more enjoyable it will be for divers in this diving tour.

With the past research about economic potential regarding scuba diving, there's correlation between coral reef and scuba diving ecotourism. Estimated the value of coral reefs as food producers to be \$ 220 per year per hectare, and \$ 3,008 for recreational value (per year per hectare). Their estimates of the reefs as food producers for the year 2006 are approximately 17% of the value estimated. Scuba diving has significant economic potential, particularly in areas with rich marine biodiversity and natural beauty. The scuba diving industry generates revenue through various means, including equipment sales and rentals, training and certification, dive charters and tours, and related services such as lodging and food (Roche et al., 2019; Wu et al., 2021).

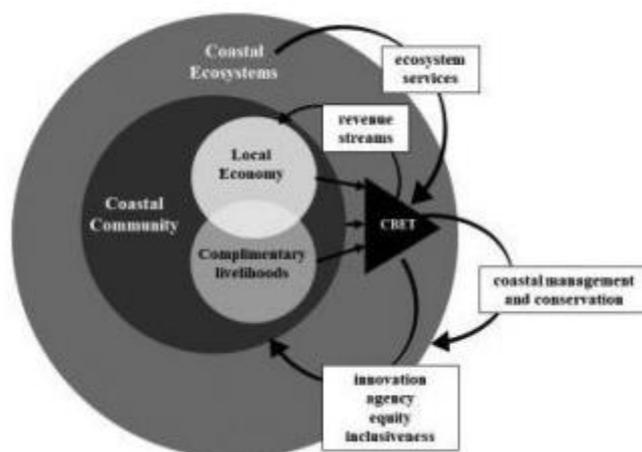
According to a report by the Divers Alert Network, scuba diving contributes an estimated \$11 billion annually to the US economy alone. In the Caribbean, the dive tourism industry generates an estimated \$1 billion per year, while in the Asia-Pacific region, the industry contributes over \$4 billion annually. In addition to generating revenue, scuba diving can also create employment opportunities, particularly in areas with limited economic options. Dive centers, resorts, and other businesses associated with the scuba diving industry can provide jobs for locals, boosting the local economy and supporting sustainable development (Sardelic et al., 2023).

Furthermore, scuba diving can also promote conservation efforts by raising awareness of marine conservation issues and contributing to conservation programs. This can include promoting sustainable tourism practices, supporting marine research and monitoring efforts, and participating in reef restoration projects. Overall, scuba diving has significant economic potential and can provide important benefits to both the tourism industry and local communities, while also promoting environmental conservation and sustainable development.

### **Scuba Diving As Blue Economy**

Another research have a plan that blue economy become base of scuba diving ecotourism as economic concern and use community-based ecotourism (CBET) within the developing market dynamics of the blue economy. Many coastal communities around the world are strongly dependent on the need to find a balance between protecting marine biodiversity and maintaining a sustainable and direct access to ecosystem services. Healthy coastal ecosystems support livelihoods and provide protection from natural hazards, coastal erosion and rising sea levels, particularly in small island developing states.

The blue economy discourse has made considerable inroads towards bridging the gap between livelihoods and ocean health. Although different actors involved in marine and ocean governance are using the blue economy term in competing and often conflicting ways, the wider consensus is that economies and human wellbeing rely on healthy ecosystems.



**Figure 1.** One of CBET ideas of coastal blue economy (Anna *et al.*, 2020)

Scuba diving tourism can have a positive impact on local economies in several ways. First, it can create direct and indirect jobs for locals, including dive guides, boat operators, and marine conservationists. In some cases, scuba diving can also stimulate the development of local infrastructure, such as roads, airports, and water treatment facilities, which can benefit both tourists and residents (Roche *et al.*, 2019; Wu *et al.*, 2021).

Second, scuba diving tourism can bring significant revenue to local businesses, including hotels, restaurants, souvenir shops, and transportation companies. This revenue can support the growth of small and medium-sized enterprises and help diversify the local economy (Mukramin *et al.*, 2023). Moreover, scuba diving tourism can attract high-spending tourists who may be interested in other activities, such as wildlife watching, hiking, and cultural experiences, thus creating a more diverse tourism offering.

Third, scuba diving tourism can promote marine conservation efforts by raising awareness about the importance of protecting marine environments. Scuba divers are often more attuned to the health and vitality of marine ecosystems and can serve as ambassadors for conservation efforts. By promoting sustainable practices, such as reducing plastic use, supporting marine protected areas, and minimizing environmental impact, scuba diving tourism can help protect marine ecosystems and the livelihoods of communities that depend on them (Kang *et al.*, 2021; Lee *et al.*, 2022).

Finally, scuba diving tourism can generate revenue for marine conservation programs and research. For example, some dive operators donate a portion of their profits to marine conservation organizations, or they may participate in citizen science initiatives that gather data on marine ecosystems. By supporting research and conservation efforts, scuba diving tourism can help protect marine environments and promote sustainable practices. Overall, scuba diving tourism offers a unique opportunity to experience the beauty and diversity of marine environments while providing significant economic benefits and promoting marine conservation.

## 5. Conclusions

Diving ecotourism is a form of adventure tourism that has high economic value in marine ecosystems, especially coral reef ecosystems, contributing at least 4 billion USD annually in the Southeast Asian region. In particular, diving tourism worth more than 150

million USD has contributed significant income and employment to many islands and coastal communities in Southeast Asian countries. The blue economy discourse has made considerable inroads towards bridging the gap between livelihoods and ocean health. Although different actors involved in marine and ocean governance are using the blue economy term in competing and often conflicting ways, the wider consensus is that economies and human wellbeing rely on healthy eco-systems. Furthermore, scuba diving can also promote conservation efforts by raising awareness of marine conservation issues and contributing to conservation programs. This can include promoting sustainable tourism practices, supporting marine research and monitoring efforts, and participating in reef restoration projects. Overall, scuba diving has significant economic potential and can provide important benefits to both the tourism industry and local communities, while also promoting environmental conservation and sustainable development.

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