

Ecotourism as a Catalyst for Sustainable Island Development: Evidence from Yakushima Island, Japan

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Abstract

This study critically examines the current state and developmental trajectory of ecotourism on Yakushima Island, Japan, positioning it as a benchmark model for sustainable tourism in island ecosystems. Adopting a qualitative case study approach based on secondary data analysis, the research explores the dynamic interaction between environmental conservation, institutional frameworks, and community participation in shaping ecotourism outcomes. The findings indicate that the emergence of ecotourism in Yakushima since the 1990s—driven significantly by in-migrant eco-guides—has contributed to local economic revitalization through job creation and diversification of tourism services. Despite fluctuations in visitor numbers, particularly a decline after 2008, the gradual increase in international tourism has supported the resilience and adaptive capacity of the island’s tourism sector. The study further highlights the critical role of national policy instruments, notably the Ecotourism Promotion Act (2007), and the establishment of governance structures that coordinate sustainable tourism practices. In addition, the integration of local communities and eco-guides is identified as a key mechanism for balancing environmental protection with socio-economic benefits. Theoretically, the paper contributes to the discourse on sustainable tourism by demonstrating how the synergy between natural capital, policy intervention, and stakeholder engagement can foster an inclusive and environmentally responsible development model. Practically, the Yakushima experience provides transferable insights for policymakers and practitioners seeking to implement ecotourism strategies in similar ecological and socio-economic contexts.

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1. Introduction

Tourism has increasingly been recognized as a strategic sector for economic development, particularly in regions endowed with rich natural and cultural resources. Beyond its direct contribution to employment generation and income

diversification, tourism plays a critical role in fostering regional development and socio-economic transformation. In recent decades, the global tourism industry has accounted for approximately 10% of global GDP, underscoring its significance as a driver of economic growth and development (Muhammad, 2022). However, the rapid expansion of tourism activities has also raised concerns regarding environmental degradation, cultural commodification, and the unsustainable exploitation of natural resources (Das & Chatterjee, 2015).

In response to these challenges, the concept of sustainable tourism has emerged as a guiding framework aimed at balancing economic development with environmental conservation and social equity. Within this framework, Ecotourism has gained prominence as an alternative model that integrates environmental protection, community participation, and economic sustainability. Ecotourism is commonly defined as responsible travel to natural areas that conserves the environment and improves the well-being of local populations (Fennell, 1999). Subsequent studies have expanded this definition to emphasize its multidimensional character, incorporating governance structures, environmental education, and stakeholder collaboration as essential components of sustainable tourism systems (Buckley, 2009; Weaver, 2001).

A substantial body of literature highlights the role of ecotourism as a catalyst for local economic development and community empowerment. For instance, Scheyvens (1999) argues that ecotourism can enhance the socio-economic conditions of local communities by creating employment opportunities and promoting participatory development. Similarly, Stronza et al. (2019) demonstrate that ecotourism can contribute to biodiversity conservation while simultaneously generating economic benefits, particularly in rural and peripheral regions. Nevertheless, these outcomes are not guaranteed and depend heavily on effective governance, institutional capacity, and the equitable distribution of benefits among stakeholders (Higham, 2007).

The environmental dimension of ecotourism has also been widely discussed, particularly in the context of fragile ecosystems such as islands. Island environments are characterized by limited resources, ecological vulnerability, and spatial constraints, which make them highly sensitive to tourism-related pressures (d’Hauteserre & Funck, 2016). As a result, the development of ecotourism in such contexts requires careful management to avoid negative impacts such as over-tourism, habitat degradation, and biodiversity loss (Buckley, 2009). At the same time, island ecotourism presents unique opportunities for integrating conservation efforts with local development strategies, thereby contributing to sustainable livelihoods (Lee & Jan, 2019).

Within this global context, Japan has emerged as a notable example of a country that has successfully integrated ecotourism into its national development strategy. The introduction of the *Ecotourism Promotion Act (2007)* marked a significant policy milestone, providing a structured framework for the development and regulation of ecotourism activities. This policy emphasizes the importance of environmental conservation, cultural preservation, and community participation, while also promoting innovation and diversification within the tourism sector (Yamada, 2011). Governmental initiatives, combined with local institutional arrangements such as ecotourism councils, have contributed to the establishment of a coordinated and sustainable tourism system.

Among the various ecotourism destinations in Japan, Yakushima Island represents a particularly compelling case. Designated as a UNESCO World Natural Heritage Site in 1993, the island is renowned for its unique biodiversity, ancient cedar forests, and diverse climatic conditions. The development of ecotourism on Yakushima since the 1990s—driven in part by in-migrant eco-guides—has transformed the island into a leading model of sustainable tourism in island environments (Adewumi & Funck, 2016; Usui et al., 2021). The interaction between natural capital, policy frameworks, and community engagement has played a central role in shaping the island’s ecotourism trajectory.

Despite the growing body of research on ecotourism, several gaps remain in the literature. In particular, there is a need for integrated analyses that examine the interplay between environmental, economic, and governance dimensions within specific case study contexts. Moreover, limited attention has been paid to the long-term sustainability and transferability of ecotourism models across different socio-economic and ecological settings.

In light of these gaps, this study aims to analyze the current state and development of ecotourism on Yakushima Island, Japan, with a particular focus on its role as a catalyst for sustainable island development. The study seeks to address the following research question:

What is the current state of ecotourism on Yakushima Island, and how does it contribute to sustainable local development?

By adopting a qualitative case study approach, this research contributes to the existing literature by providing a comprehensive and integrated analysis of ecotourism as a multidimensional development mechanism, highlighting the interconnections between policy, community participation, and environmental sustainability.

Methodology

This study adopts a qualitative case study approach to examine the development and current state of ecotourism on Yakushima Island, Japan, as a model of sustainable tourism in island environments.

Research Design

The research is based on an exploratory and descriptive analytical design, aiming to understand the interaction between environmental conservation, public policy, and community participation in shaping ecotourism outcomes. Yakushima Island was selected as a representative case study due to its status as a UNESCO World Natural Heritage Site and its recognized success in implementing ecotourism strategies.

Data Collection

The study relies exclusively on secondary data sources, including:

- Academic journal articles and conference proceedings;
- Reports from international organizations and tourism institutions;
- Government publications, particularly from the Ministry of the Environment of Japan;
- Official statistical data and previously published case studies on Yakushima Island.

This approach ensures a comprehensive understanding of the evolution of ecotourism policies and practices in the selected context.

Analytical Framework

The analysis is guided by a thematic content analysis method, focusing on key dimensions of ecotourism, including:

- Environmental sustainability;
- Economic contribution to local communities;
- Governance and policy frameworks;
- Stakeholder engagement and community participation.

Additionally, the study incorporates a comparative interpretative perspective, positioning Yakushima Island within the broader context of global ecotourism practices.

Limitations of the Study

This research is limited by its reliance on secondary data, which may restrict access to real-time empirical evidence. Furthermore, the study focuses on a single case, which may limit the generalizability of the findings. However, the depth of analysis provides valuable insights applicable to similar island ecosystems and developing ecotourism contexts.

Literature Review

The concept of ecotourism has evolved significantly over the past decades, emerging as a key instrument for achieving sustainable development by integrating environmental conservation, socio-economic benefits, and cultural preservation. Early foundational studies conceptualized ecotourism as responsible travel to natural areas that conserves the environment and improves the well-being of local populations (Fennell, 1999). Subsequent research has expanded this definition to emphasize its multidimensional nature, incorporating governance, community participation, and environmental education as essential pillars of sustainable tourism systems.

A central theme in the literature concerns the role of ecotourism as a driver of local economic development. Studies such as *Ecotourism for Conservation* by Stronza et al. (2019) highlight that ecotourism can generate employment opportunities, diversify local economies, and reduce dependence on extractive industries. Similarly, Scheyvens (1999) argues that ecotourism contributes to the empowerment of local communities, particularly when residents are actively involved in tourism planning and benefit-sharing mechanisms. However, the literature also acknowledges that these benefits are not automatic and depend heavily on governance structures and stakeholder collaboration.

Another major strand of research focuses on the environmental dimension of ecotourism. Buckley (2009) and Weaver (2001) emphasize that ecotourism must operate within ecological limits to avoid environmental degradation, particularly in fragile ecosystems such as islands. In this context, the balance between conservation and tourism development remains a critical challenge. Das and Chatterjee (2015) further argue that ecotourism may become a “predicament” rather than a solution if it leads to over-tourism, habitat destruction, or commercialization of natural resources without adequate regulatory frameworks.

The role of policy and governance has also been widely examined. Higham (2007) notes that successful ecotourism development requires strong institutional frameworks that integrate environmental protection with economic planning. In the case of Japan, the introduction of the *Ecotourism Promotion Act (2007)* represents a significant policy innovation aimed at regulating and promoting sustainable tourism practices. Governmental initiatives, combined with local governance structures such as ecotourism councils, have been identified as key drivers in ensuring long-term sustainability (Yamada, 2011).

A growing body of literature highlights the importance of community-based and participatory approaches in ecotourism. Lee and Jan (2019) demonstrate that the sustainability of tourism initiatives is closely linked to residents' perceptions and levels of engagement. When local communities actively participate in decision-making processes, ecotourism is more likely to achieve both environmental and socio-economic objectives. This aligns with the findings of Adewumi and Funck (2016), who show that stakeholder perceptions significantly influence the success and acceptance of ecotourism initiatives in Yakushima Island.

Island ecotourism, in particular, has received increasing attention due to its unique environmental and socio-economic characteristics. Research by d'Hautesserre and Funck (2016) emphasizes the importance of innovation and adaptability in island tourism systems, where limited resources and geographical isolation require context-specific strategies. Similarly, Usui et al. (2021) highlight the role of tourism in shaping demographic and economic transformations in peripheral island regions, including processes such as counter-urbanization and migration.

Within the Japanese context, Yakushima Island is frequently cited as a model case of ecotourism development. Studies indicate that the island's success is closely linked to the interaction between natural assets, policy frameworks, and community engagement. The designation of Yakushima as a UNESCO World Natural Heritage Site has significantly enhanced its global visibility and attractiveness, while also imposing stricter conservation requirements (Seo & Kim, 2016). Furthermore, the emergence of eco-guides—many of whom are in-migrants—has played a crucial role in shaping the local ecotourism industry, contributing to both environmental awareness and economic diversification (Adewumi & Funck, 2016).

Despite these positive developments, the literature also identifies several challenges and gaps. These include the risk of environmental degradation due to increased tourist flows, conflicts among stakeholders regarding resource management, and the lack of standardized frameworks for evaluating the effectiveness of ecotourism initiatives. Additionally, there is a notable gap in empirical research focusing on the long-term impacts of ecotourism on island ecosystems and local communities.

In summary, the existing literature demonstrates that ecotourism is a complex and dynamic phenomenon that requires a careful balance between environmental sustainability, economic development, and social inclusion. While numerous studies have explored individual aspects of ecotourism, there remains a need for integrated analyses that examine the interplay between these dimensions within specific case study contexts. This study addresses this gap by providing a comprehensive analysis of Yakushima Island as a model of ecotourism development, with particular emphasis on the interaction between policy, community participation, and environmental conservation.

Previous studies

have explored the dynamics of ecotourism and sustainability in Yakushima Island, Japan, emphasizing both environmental and socio-economic dimensions. Arika Kuroiwa and Keiichiro Kanemoto (2016) analyzed the sustainability of Yakushima as a World Natural Heritage Site, highlighting its mountainous terrain, limited arable land, and significant demographic challenges, including population decline and rapid aging, which affect local development and tourism sustainability.

Focusing on stakeholder perspectives, Ifeoluwa Bolanle Adewumi and Carolin Funck (2017) examined the perceptions of tourism business operators using a questionnaire-based approach. Their findings indicate that ecotourism has contributed positively to the local economy and community development, while also generating environmental concerns such as resource overuse, waste accumulation, and trail degradation. The study also revealed that perceptions differ significantly depending on stakeholders' origin, type of business, and time of establishment.

In a subsequent study, Ifeoluwa Bolanle Adewumi, Rie Usui, and Carolin Funck (2019) investigated environmental issues from a multi-stakeholder perspective using mixed methods. The results showed that increasing tourist numbers and the controversial management of deer populations are key environmental challenges. Divergent stakeholder perceptions, particularly regarding wildlife management, add complexity to achieving sustainable tourism development.

Additionally, Anne-Marie d'Hautesserre (2016) emphasized the importance of innovation in island ecotourism. By comparing Yakushima with other island destinations, the study highlighted the need for creative strategies and sustainable approaches to enhance attractiveness and competitiveness, while acknowledging the complexity of implementation.

Definition of Ecotourism

Many researchers have differed in defining "ecotourism," yet most agree that the sustainable use of on-site resources constitutes one of its fundamental pillars. Ecotourism encompasses a wide range of resources, including natural and cultural elements, as well as festivals and events, aiming to achieve sustainable development from both environmental and social perspectives (Naoko, 2011, p. 139).

In general, ecotourism is defined as: "A sustainable form of tourism based on natural resources, primarily focused on experiencing and learning about nature. It is managed in a rational manner to be low-impact, non-consumptive, and locally

oriented. It typically takes place in natural areas and is expected to contribute to their conservation or protection” (David, 1999, p. 43).

Ecotourism is also defined as: “Responsible travel to natural areas that conserves the environment, supports the well-being of local people, and fosters knowledge and understanding through interpretation and education among all stakeholders (visitors, staff, and local communities)” (Network, 2016).

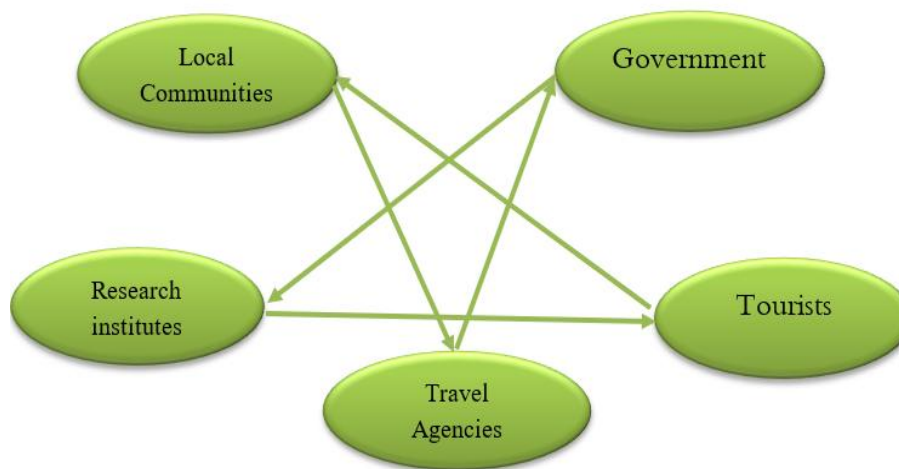
In the same context, the International Ecotourism Society (TIES) defines ecotourism as: “Responsible travel to natural areas that conserves the environment and improves the well-being of local people” (Hassiba, 2022, p. 27). The Society also emphasizes that ecotourism aims to link conservation efforts, community empowerment, and sustainable travel. This implies that individuals and entities involved in ecotourism activities should adhere to the following core principles (Belkaidoum & Mamen, 2016, p. 730):

- Minimizing environmental impact as much as possible;
- Promoting environmental and cultural awareness and fostering mutual respect;
- Providing positive experiences for both visitors and host communities;
- Generating direct financial benefits to support conservation efforts;
- Ensuring economic returns and real empowerment for local populations;
- Raising awareness of the political, environmental, and social contexts of host countries.

From the above definitions, it can be concluded that ecotourism is a form of tourism that aims to effectively promote environmental awareness while maintaining a balanced relationship among visitors, local communities, travel agencies, academics, and governments. Therefore, tourism plans should be based on the optimal use of attractive tourism resources. For this purpose, the presence of intermediaries (tour guides) with strong interpretive skills is recommended, enabling them to effectively connect nature, local culture, and visitors in a meaningful and informed way.

Maita and Kaizo further point out that ecotourism requires cooperation among various stakeholders, which is often illustrated through a five-part model (the “ecotourism pentagon”). These five actors interact in an integrated manner to ensure the successful implementation of ecotourism activities.

Figure (1): Stakeholders involved in ecotourism



Source: (Baiquni & Wiyatasari, 2023, p. 86)

The figure above refers to a conceptual model that highlights the importance of cooperation among five key stakeholders to ensure the success and sustainable development of ecotourism. These stakeholders typically include (Baiquni & Wiyatasari, 2023, p. 86):

- Government: through policies, legislation, and financial and regulatory support.
- Local communities: as the main partner and primary beneficiaries, including their economic and cultural empowerment.
- Private sector: such as tourism companies and tour operators, which provide products and services.
- Non-governmental organizations (NGOs): which contribute to awareness-raising, training, and environmental conservation.
- Tourists: as responsible participants who must demonstrate environmental and cultural awareness.

Objectives of Ecotourism

The relationship between tourism and the environment aims to make tourism an effective tool for environmental conservation and improvement, as tourism resources are an integral part of the environmental components of a region. From this perspective, ecotourism strives to achieve a set of fundamental objectives and roles, which can be summarized into four main dimensions:

- **Cognitive Impact:** raising visitors' awareness and understanding of the surrounding environment, such as nature and local culture, while promoting the idea of its preservation;
- **Emotional Impact:** enhancing feelings of appreciation and attachment to nature and culture, thereby encouraging their protection with care and affection;
- **Ethical impact:** instilling moral values and principles in dealing with the environment and local culture in line with positive behaviors;
- **Volitional (behavioral) Impact:** the ability to make positive decisions and adopt responsible behaviors within ecotourism.

These dimensions indicate that education is not limited to the transfer of knowledge, but also contributes to building an integrated system of awareness, attitudes, and behaviors necessary to achieve sustainable ecotourism. (Muhammad, 2022, p. 70). In addition, ecotourism has a tangible economic impact, particularly in terms of regional economic growth. It is also considered an important driver of productivity, provided that it is accompanied by strategic planning, institutional cooperation, and a balance between tourism supply and demand. (Muhammad, 2022, p. 80)

Types of Ecotourism:

Ecotourism has been classified into several types based on a set of different criteria and factors, as well as the needs and motivations of tourists. As a result, ecotourism is practiced in various forms, the most prominent of which are:

Exploratory tourism: This is considered one of the most prominent and most challenging types of ecotourism. It aims to visit uninhabited areas in order to acquire new knowledge, verify uncertain information, or complete incomplete data. The natural environment serves as a fertile field for explorers to conduct research, discover facts, and interact with natural living organisms, ecosystems, and natural laws, in addition to learning about the customs and traditions of the peoples in the targeted tourist region.

Recreational and leisure tourism: This type of tourism aims to seek the rest needed to restore an individual's psychological and physical balance, as humans need variety in their daily activities to escape routine and daily pressures. This is achieved by traveling to natural tourist destinations, away from city noise and problems, for relaxation, recreation, and rejuvenation.

Therapeutic ecotourism: This refers to traveling for medical or psychological treatment or for convalescence and recovery periods, by visiting areas characterized by natural healing properties such as mineral waters, hot springs, and mud baths, as well as benefiting from sunlight, seawater, and sand, all of which have positive effects on human health.

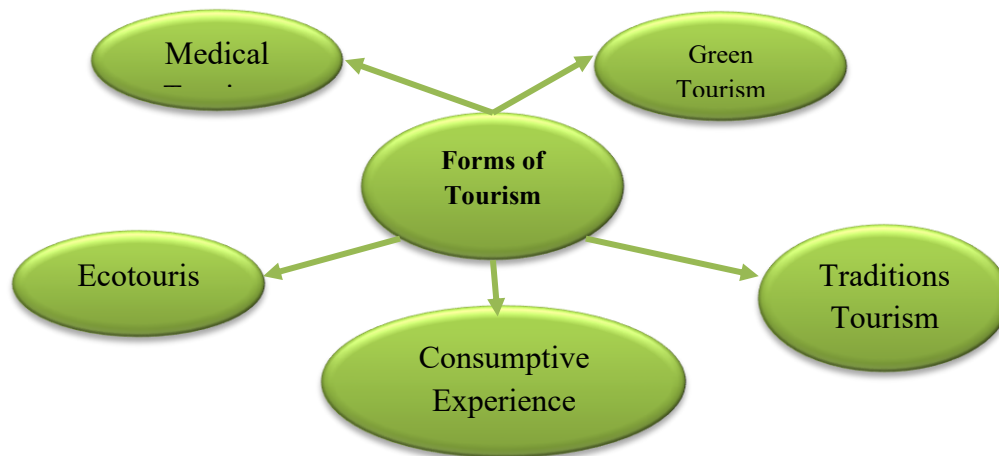
Wildlife observation tourism: In this type of tourism, tourists observe, monitor, and watch wildlife—such as birds, animals, and reptiles—in their natural habitats, with the aim of understanding their behavior, discovering their secrets, and learning how they adapt to environmental conditions. The main motivations for this type of tourism are often curiosity, enjoyment, or the desire to develop knowledge and gain scientific and environmental experience (Rashid & Sari, 2018, p. 128).

2. Ecotourism in Japan

Japan has a tourism market and industry with a modern infrastructure. Although international tourism in Japan has witnessed significant growth in the twenty-first century, driven by economic growth in neighboring Asian countries, most tourist destinations within Japan still rely primarily on domestic tourism.

The decline of the traditional domestic market—characterized by stability and dependence on organized tours and school trips—has led to the emergence of new patterns of consumer demand, along with intense competition from various international destinations. In contrast, this transformation has created space for the emergence of new forms of tourism, including:

Figure (2): Forms of Ecotourism (Source: (Naoko, 2011, p. 140))



The Japan Tourism Agency has classified these patterns collectively under the term “New Tourism”, which focuses on the interaction between culture and the local natural environment, making it highly anticipated as an innovative tool for local economic development.

Nature enthusiasts in Japan have sought ways to earn a livelihood within natural environments by developing ecotourism tours in a distinct Japanese style. At the local level, the enactment of the Ecotourism Promotion Law has introduced a new definition of this type of tourism, incorporating cultural elements and providing the possibility of classifying and protecting tourism-related environmental resources at the local level. Non-governmental organizations (NGOs) and other civil society organizations have also played an important role in promoting integrated development projects and environmental conservation within the framework of ecotourism worldwide.

The content of the law and the basic concept of ecotourism in Japan include innovative elements. The Japanese concept of ecotourism has been adapted to the context of a highly urbanized country with a very advanced tourism market. Moreover, the emphasis on environmental education has created opportunities to strengthen ecotourism in areas with a long history of human-nature interaction. Similar to the “Natura 2000” program, which is the European Union’s network of protected areas aimed at conserving representative natural habitats of European nature and restoring them, the Japanese model recognizes that most current natural habitats have been shaped and transformed through human-environment interaction (Dajeong & Sueo, 2016, p. 38).

Ecotourism in Japan is divided into four main types: (ADEWUMI & FUNCK, p. 187)

- Natural tourism, such as whale watching in Yakushima Island;
- Environmental tourism, such as school trips aimed at cleaning the Kamogawa River in Kyoto;
- Educational tourism, such as study tours in national parks or environmental conservation studies;
- Luxury tourism, which aims to raise funds to support conservation efforts.

2.1. Tourism in Yakushima Island

In Japan, Yakushima Island is considered the most prominent and most advanced site in the field of ecotourism. This form of tourism was introduced to Yakushima from outside the island in the 1990s, with the aim of preserving its natural environment while also enhancing the lives of local residents by reviving and deepening their historical relationship with their surrounding environment (ADEWUMI & FUNCK, 2016, p. 188).

2.1.1. Description of Yakushima Island:

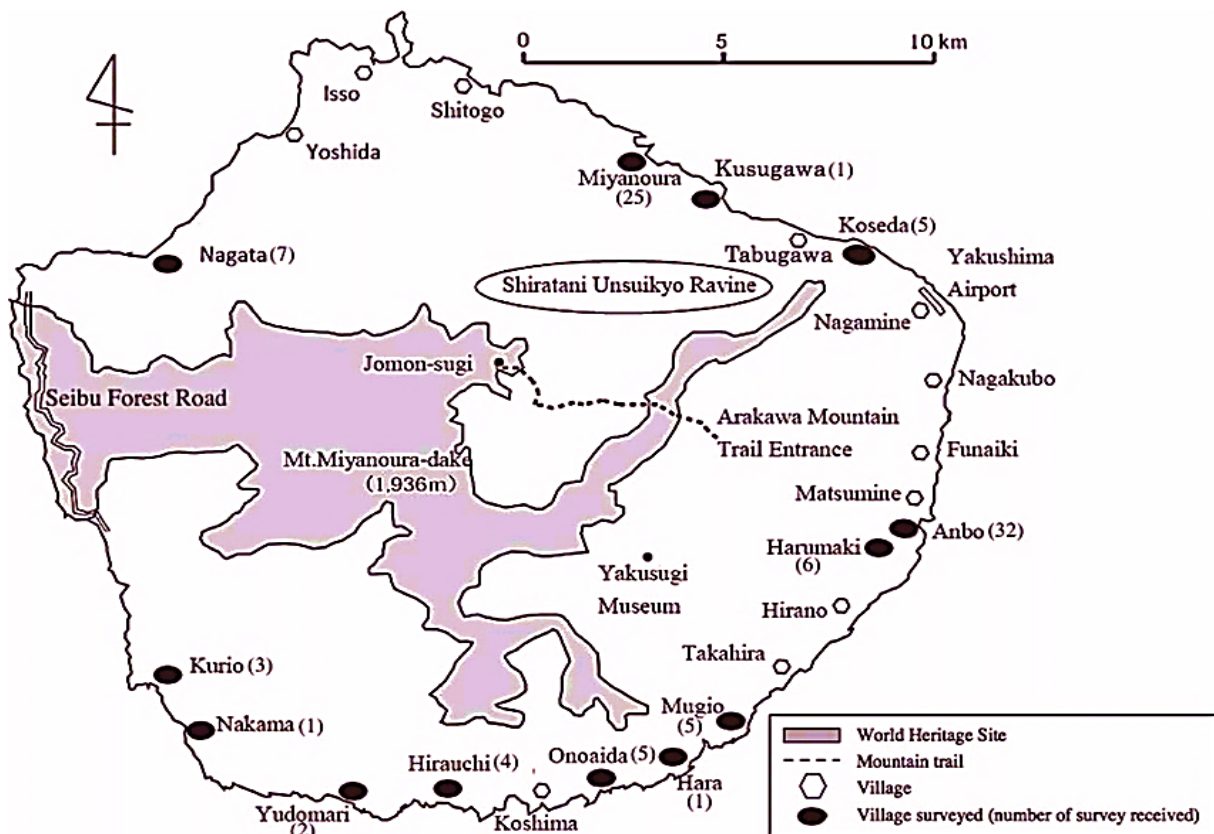
Yakushima Island is located in southern Japan, approximately 60 kilometers off the coast of Kagoshima Prefecture. It has a total area of about 500 square kilometers and lies within a geographical zone characterized by a temperate tropical climate. Due to its topographical features and isolated geographical location, the island lies within the influence of the Kuroshio Current, and therefore receives abundant annual rainfall, estimated at around 4,500 mm/year in relatively flat and dry areas, reaching 8,000-10,000 mm/year in mountainous regions.

The island also exhibits wide climatic variation, ranging from a subtropical climate in lowland areas to a subarctic climate in high-altitude regions. This climatic diversity has led to remarkable ecological development, reflected in the presence of more than 1,900 plant species and 16 confirmed endemic animal species on the island (ADEWUMI & FUNCK, 2016, p. 190). This diversity has given the island climatic characteristics representing all Japanese climatic zones extending from Hokkaido to Kyushu within a single island.

Dense forests cover approximately 90% of the island’s area, about 80% of which falls within national forest zones (Dajeong & Sueo, 2016, p. 39). The island is famous for its ancient cedar trees known as “Yakusugi”, which were historically regarded as religious symbols and objects of reverence. Historically, the island’s inhabitants relied on these forests to meet their daily livelihood needs.

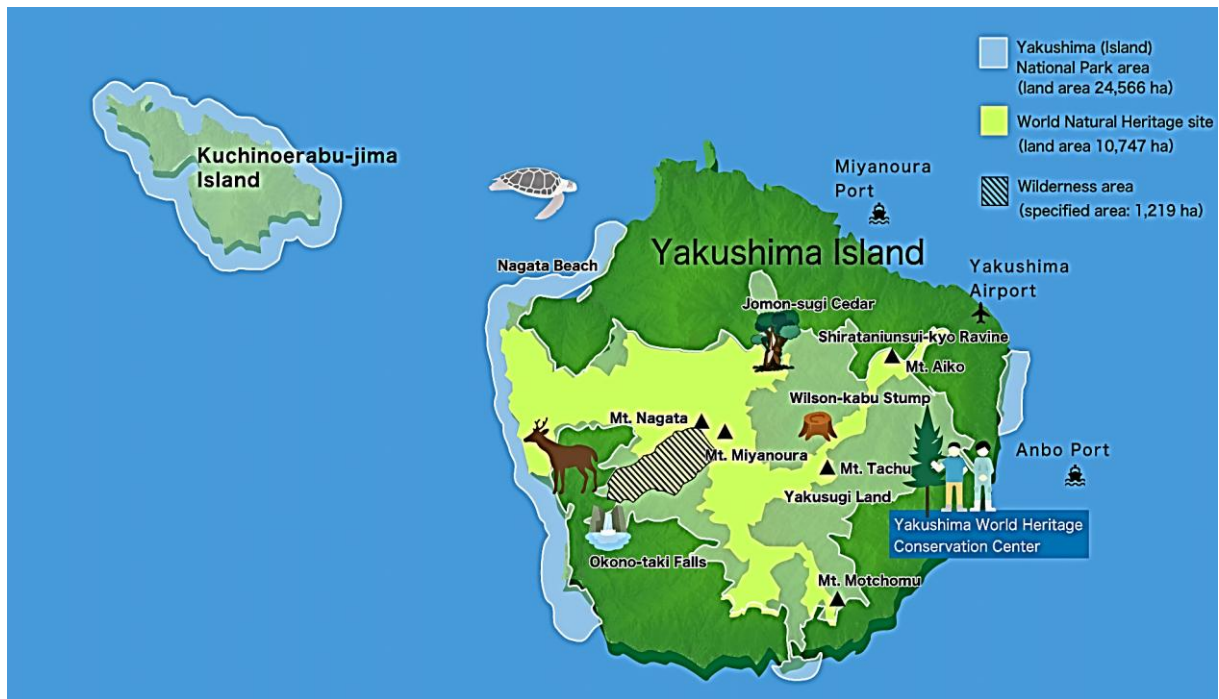
The central region of the island contains several high mountain peaks exceeding 1,800 meters, which has led to population concentration in small local communities distributed along the coast. (Rie, Carolin, & Ifeoluwa, 2021, p. 3). The following figures illustrate the geographical map of the island.

Figure (3): Geographical map of Yakushima Island



Source : (Rie, Carolin, & Ifeoluwa, 2021, p. 4)

Figure (4): Available tourist areas and services on the island



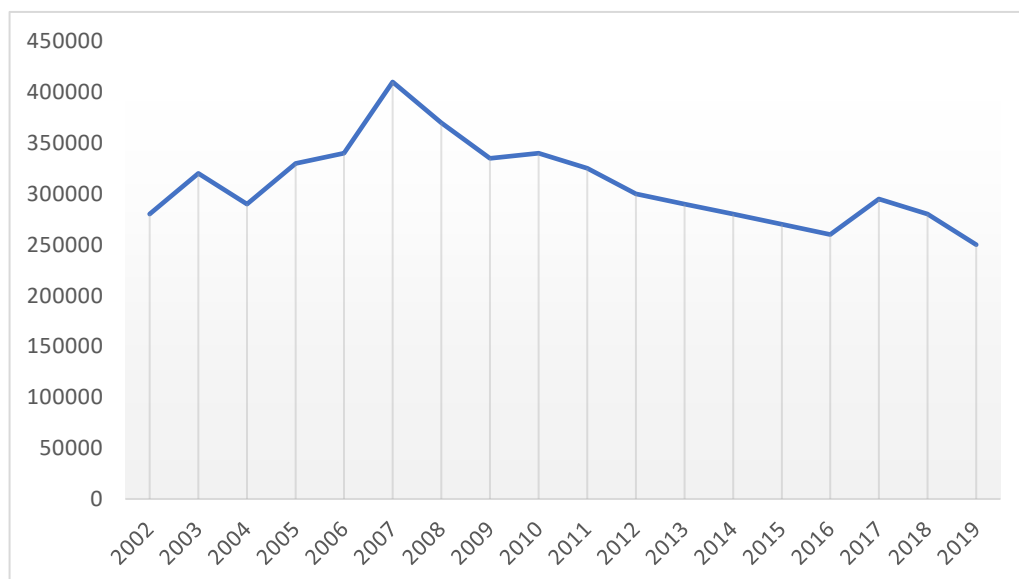
Source : (Ministry of the Environment Government of Japan, 2025)

2.1.2. Ecotourism in Yakushima Island

Kagoshima Prefecture began addressing ecotourism in Yakushima in 1992, during the development of the concept of an “Ecological Culture Village” on the island. The island was inscribed on the UNESCO World Natural Heritage List in 1993 due to its unique vegetation cover and the Yakusugi cedar trees, some of which are said to be over 2,000 years old. This designation made the island a major landmark in the field of ecotourism. In 2004, the Japanese Ministry of the Environment selected the island as a model for promoting ecotourism, which led to the establishment of the Yakushima Ecotourism Promotion Council as the governing body responsible for implementing this model project.

In the same context, the tourism industry has played an important role in the island’s economy, replacing the timber industry, which was discontinued for environmental reasons. Following the designation of the island as a national park in 1964 and the launch of high-speed boat services in 1989, Yakushima began to attract an increasing number of tourists, as shown in the following figure:

Figure (5): Evolution of the number of tourists between 2019 and 2022



Source : (Rie, Carolin, & Ifeoluwa, 2021, p. 5)

It is evident that the number of tourists has been increasing, particularly after the island’s inscription as a UNESCO World Natural Heritage Site. The number of tourists rose from approximately 100,000 visitors per year during the period between the 1970s and the mid-1980s (Rie, Carolin, & Ifeoluwa, 2021, p. 5), to 280,000 tourists in 2002, and then 406,000 tourists in 2007. However, this number began to decline after 2008, reaching 260,000 tourists in 2016. It rose again in 2017 before decreasing once more in 2018 and 2019.

With the increasing number of tourists, new employment opportunities began to emerge in the tourism sector, where accommodation, restaurants, tour guiding, and car rental services became the main sectors experiencing growth. In addition, several locally distinctive commercial activities also developed, such as the preparation and distribution of lunchboxes for hiking participants; equipment rental for outdoor recreational activities; production of souvenirs made from Yakusugi wood; and the production of local food products based on island resources, such as flying fish, venison, and tea.

Most tourists visiting Yakushima Island are attracted to the ancient cedar tree “Jomon Sugi,” as well as two mountainous areas equipped with easy hiking trails that include other giant cedar trees and moss-covered forests. Hiking is the main tourist activity on the island; however, marine activities are also offered, such as:

- Sea turtle watching;
- Snorkeling;
- Scuba diving;
- Kayaking.

Yakushima is considered one of the few places in Japan where guided ecotourism tours of natural sites have become an essential part of the visitor experience.

Among the various professions related to tourism on the island, mountain guides and ecotourism guides have become symbols of the relationship between internal migration and tourism development. Although mountain climbing guides existed before the island’s designation as a World Heritage Site, the first two specialized ecotourism guiding groups were established in 1989 and 1993 by migrants who had moved to the island. At one point, it was reported in academic literature, based on data from Yakushima Town, that there were approximately 200 ecotourism guides, around 80% of whom were newcomers from outside the island. These guides perform three main roles:

- Preserving the island’s nature and culture;
- Raising awareness of the island’s attractiveness and its valuable natural environment;
- Contributing to the revitalization of the local community (Anne & Carolin, 2016, p. 229).

2.1.3. Development of Ecotourism in Yakushima Island

Table 1. A Multidimensional Nexus Analysis of Ecotourism Development: Environmental, Economic, and Governance Interactions in Yakushima Island

Dimension	Key Components	Empirical Evidence from Yakushima	Positive Outcomes	Emerging Challenges	Policy & Strategic Implications
Environmental Sustainability	Biodiversity conservation, forest protection, UNESCO heritage status	Protection of Yakusugi cedar forests; designation as World Natural Heritage Site (1993); expansion of protected areas	Preservation of unique ecosystems; global recognition; increased environmental awareness	Pressure from tourist flows; trail degradation; ecosystem vulnerability	Strengthen carrying capacity management; implement eco-monitoring systems; regulate visitor access
Economic Development	Tourism-based income, local product development, service diversification	Growth of eco-guiding, accommodation, transport, and local products (tea, seafood, handicrafts)	Job creation; diversification of local economy; reduced dependence on forestry	Seasonal income instability; unequal distribution of benefits	Promote inclusive economic policies; support local entrepreneurship; stabilize tourism demand

Governance and Policy Framework	National legislation, local councils, institutional coordination	Ecotourism Promotion Act (2007); Yakushima Ecotourism Promotion Council; environmental regulations	Structured policy environment; coordination among stakeholders; long-term planning	Limited evaluation of policy outcomes; gaps in monitoring effectiveness	Develop performance indicators; strengthen policy evaluation mechanisms; enhance transparency
Community Participation	Local engagement, stakeholder collaboration, cultural integration	Active role of local residents and eco-guides; involvement in tourism services and decision-making	Community empowerment; preservation of local culture; social cohesion	Potential conflicts between locals and external actors; uneven participation levels	Encourage participatory governance; ensure equitable stakeholder inclusion
Role of Eco-Guides	Environmental interpretation, visitor education, cultural mediation	Presence of ~200 guides (majority in-migrants); guiding as core tourism activity	Increased environmental awareness; improved visitor experience; knowledge transfer	Dependence on non-local actors; lack of standardized training evaluation	Develop certification systems; invest in training and professionalization of guides
Tourism Dynamics	Visitor trends, infrastructure, accessibility	Growth from 100,000 to 400,000 tourists; fluctuations after 2008; improved transport access	Increased international visibility; tourism expansion	Over-tourism risks; market volatility; environmental stress	Diversify tourism markets; promote sustainable tourism models; manage visitor flows
Socio-Cultural Impact	Cultural preservation, local identity, education	Integration of local traditions into tourism; educational ecotourism activities	Strengthening cultural identity; awareness of environmental values	Risk of cultural commodification; external influence on local identity	Protect cultural authenticity; promote community-led cultural tourism
Sustainability Nexus (Integrated Perspective)	Interaction between environment-economy-society	Synergy between policy, natural capital, and community engagement	Balanced development model; resilience of tourism system	Complexity of managing interdependencies; policy-practice gaps	

The Japanese government launched a specific policy known as the “Ecotourism Promotion Law” in 2007. The Ecotourism Promotion Council is responsible for managing and coordinating this sector nationwide. This council includes representatives from local governments, local communities, and academic institutions, with the aim of organizing ecotourism activities in accordance with the local culture and natural resources of each region (Tribuana Tunggadewi & Reny, 2023, p. 86).

In addition, following Japan’s accession to the World Heritage Convention in 1992, World Natural Heritage listings became the most prominent branding tool for ecotourism promotion. Yakushima Island, located in Kagoshima Prefecture, was the first Japanese site to be inscribed on the World Natural Heritage List. Since its inscription in 1993, the island has developed into one of Japan’s most famous ecotourism destinations (Anne & Carolin, 2016, p. 232).

Ecotourism on the island has undergone several developments. In 1972, a Yakushima Protection Committee was established by local supporters in order to study future approaches to forest management on the island. In 2012, Yakushima National Park was established. In 2016, the Yakushima Biosphere Reserve (UNESCO Biosphere Reserve) was expanded through the addition of Kuchinoerabu-jima Island and was renamed the Yakushima and Kuchinoerabu-jima Biosphere Reserve. The system of official guides in Yakushima was also introduced alongside the establishment of the Committee for Appropriate Use of Mountain Areas on the island. In 2017, the Mountain Environment Management

Council was established, along with the launch of a donation program to protect the mountain environment of Yakushima as a World Natural Heritage site. In 2019, the Sea Turtle Conservation Committee was established (Ministry of the Environment, Government of Japan, 2025).

Discussion

The findings of this study provide important insights into the complex dynamics of ecotourism development in island contexts, particularly in relation to the interaction between environmental conservation, institutional frameworks, and community participation. The case of Yakushima Island demonstrates that ecotourism can function as a multidimensional development mechanism, rather than merely a niche tourism activity.

One of the central findings concerns the transformative role of policy frameworks in shaping ecotourism outcomes. The implementation of the Ecotourism Promotion Act (2007) in Japan appears to have provided a structured and coordinated approach to tourism development, enabling the integration of environmental protection with local economic objectives. This aligns with previous research emphasizing the importance of governance and institutional capacity in ensuring sustainable tourism practices. However, the findings also suggest that policy effectiveness depends not only on formal regulations but also on the degree of local adaptation and implementation at the community level.

Another key dimension highlighted by the study is the role of community participation and in-migrant eco-guides in driving ecotourism development. The emergence of eco-guides—many of whom migrated to the island—has significantly contributed to the diversification of tourism services and the promotion of environmental awareness. This supports the argument that ecotourism can act as a tool for local empowerment when stakeholders are actively involved in the design and delivery of tourism experiences. At the same time, the reliance on in-migrant actors raises questions regarding the balance between local identity and external influence in shaping tourism narratives and practices.

From an environmental perspective, the findings reveal a delicate balance between conservation and tourism growth. While the designation of Yakushima as a UNESCO World Natural Heritage Site has enhanced its global visibility and attracted increasing numbers of visitors, it has also intensified pressures on fragile ecosystems. This reflects broader concerns in the literature regarding the risk of over-tourism and environmental degradation in ecotourism destinations. The decline in visitor numbers after 2008 may, therefore, be interpreted not only as a market fluctuation but also as an indicator of the limits of tourism carrying capacity.

Economically, ecotourism has played a crucial role in restructuring the local economy, particularly following the decline of traditional industries such as forestry. The growth of tourism-related services—including accommodation, guiding, and local product development—illustrates the potential of ecotourism to generate diversified income sources. Nevertheless, the sustainability of these benefits remains contingent upon long-term planning, market stability, and the equitable distribution of economic gains among local stakeholders.

Importantly, the study also highlights the significance of education and awareness-building as core components of ecotourism. The integration of interpretive guiding and environmental education contributes not only to visitor experience but also to the broader objective of fostering sustainable behavior among tourists. However, as noted in the findings, the current policy framework provides limited evaluation of the actual impact of guiding activities on environmental awareness, suggesting a gap between policy intentions and measurable outcomes.

From a theoretical standpoint, the Yakushima case reinforces the notion that ecotourism should be understood as a “nexus system”, where environmental, economic, and social dimensions are deeply interconnected. The success of ecotourism initiatives depends on the ability to manage these interdependencies in a balanced and adaptive manner. This perspective contributes to the broader discourse on sustainable tourism by highlighting the need for integrated and context-specific approaches, particularly in island environments characterized by ecological fragility and spatial constraints.

Finally, the transferability of the Yakushima model to other contexts—such as developing countries—must be approached with caution. While the island provides valuable lessons in terms of policy design, community engagement, and environmental management, differences in institutional capacity, cultural context, and economic conditions may limit direct replication. Therefore, future research should focus on adapting the core principles of the Yakushima model to diverse socio-economic and ecological settings.

3. Conclusion

Yakushima Island is considered a pioneering model of ecotourism in both the Japanese and global context, as it has successfully achieved a balance between environmental protection and local community development. Through supportive government policies, community participation, and innovation in tourism activities, the island has managed to preserve its natural resources while attracting visitors without harming the ecosystem.

The Yakushima experience demonstrates that ecotourism is not merely a recreational option but a comprehensive development strategy capable of strengthening the local economy, promoting environmental awareness, and empowering rural communities. Therefore, generalizing this model and adapting it to the specific characteristics of each region can effectively contribute to achieving sustainable development goals.

Ecotourism promotion policies in Japan in general, and on the island in particular, emphasize the necessity of employing tour guides during ecological tours and developing innovative approaches to tour guiding, as stated in the Ecotourism Promotion Guidelines. However, these guidelines provide limited information regarding the actual achievements of tour guiding in relation to environmental awareness and educational objectives, which may weaken institutional support for facilitating guiding activities.

4. Recommendations

The recommendations derived from this study are as follows:

- The need for further research focusing on the impacts of ecotourism guiding and training programs in Algeria, in order to develop approaches aligned with national cultural and environmental needs;
- The development of a website that includes all characteristics and features of national ecotourism, following the model of the Ecotourism Promotion Guidelines for Yakushima Island;
- The effort to classify certain natural areas and reserves in Algeria as World Natural Heritage Sites, similar to Japan's experience with Yakushima Island, whose inscription significantly enhanced ecotourism and supported it as a key tourism product associated with the site, thereby becoming an important driver of tourism and development.

Author Contributions

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Ethical Considerations

This study was conducted in accordance with internationally recognized ethical standards for academic research, including the principles of the Committee on Publication Ethics (COPE).

The research is based exclusively on secondary data sources and previously published literature. No human participants were directly involved, and no personal or sensitive data were collected. All sources have been appropriately cited in accordance with APA 7 guidelines to ensure academic integrity and to avoid plagiarism.

The authors have ensured transparency, accuracy, and objectivity throughout the research process.

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Conflict of Interest

The authors declare that there are no conflicts of interest regarding the publication of this paper. The research was conducted independently, and no financial or personal relationships have influenced the findings or interpretations presented in this study.

AI Use Statement

The authors declare that no generative artificial intelligence (AI) tools were used in the design, analysis, or writing of this manuscript. All intellectual contributions, interpretations, and conclusions are the original work of the authors.

Data Availability Statement

The data supporting the findings of this study are derived from publicly available secondary sources, including academic publications, official reports, and institutional databases. All relevant sources are cited within the manuscript. No new datasets were generated during the current study.

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References

1. Adewumi, I. B., & Funck, C. (2016). Ecotourism in Yakushima: Perception of the people. *Geographical Sciences*, 71(4), 185–205. https://www.jstage.jst.go.jp/article/chirikagaku/71/4/71_185/pdf
2. Belkadi, S., & Maman, H. (2016). Ecotourism as a link between tourism investment and the environment to achieve sustainable development. *Journal of Financial, Accounting and Administrative Studies*, 5(1), 721–742.
3. Buckley, R. (2009). Ecotourism: Principles and practices. *Annals of Tourism Research*, 36(3), 641–643. <https://doi.org/10.1016/j.annals.2009.04.002>
4. d’Hautesserre, A.-M., & Funck, C. (2016). Innovation in island ecotourism in different contexts: Yakushima (Japan) and Tahiti and its islands. *Island Studies Journal*, 11(1), 227–244.
5. Das, M., & Chatterjee, B. (2015). Ecotourism: A panacea or a predicament? *Tourism Management Perspectives*, 14, 3–16. <https://doi.org/10.1016/j.tmp.2015.01.002>
6. Fennell, D. A. (1999). Ecotourism: An introduction. *Annals of Tourism Research*, 28(1), 256–258. [https://doi.org/10.1016/S0160-7383\(00\)00017-7](https://doi.org/10.1016/S0160-7383(00)00017-7)
7. Global Ecotourism Network. (2016). *What is ecotourism?* <https://www.globalecotourismnetwork.org/what-it-is-not-ecotourism/>
8. Hachiba, A. (2022). Ecotourism as an approach to achieving sustainable tourism development. *Journal of Economic Dimensions*, 12(2), 24–46.
9. Higham, J. E. S. (2007). Critical issues in ecotourism: Understanding a complex tourism phenomenon. *Tourism Management*, 28(6), 1485–1487. <https://doi.org/10.1016/j.tourman.2007.03.001>
10. Lee, T. H., & Jan, F. H. (2019). Can community-based tourism contribute to sustainable development? Evidence from residents’ perceptions. *Tourism Management*, 70, 368–380. <https://doi.org/10.1016/j.tourman.2018.09.003>
11. Ministry of the Environment, Government of Japan. (2025, August 1). *Yakushima World Heritage Conservation Center: Yakushima Island ecotourism*. <https://www.env.go.jp/en/park/yakushima/ywhcc/ecotour/ecotour.html>
12. Muhammad, A. M. (2022). The role of ecotourism in the social and economic field. In *Proceedings of the 2nd Basic and Applied Science Conference (BASC)* (pp. 65–73). <https://doi.org/10.11594/nstp.2022.2510>
13. Rashid, S., & Sari, A. (2018). Ecotourism as an approach to achieving sustainable development. *Journal of Development and Prospecting for Research and Studies*, 3(2), 116–130.
14. Scheyvens, R. (1999). Ecotourism and the empowerment of local communities. *Tourism Management*, 20(2), 245–249. [https://doi.org/10.1016/S0261-5177\(98\)00069-7](https://doi.org/10.1016/S0261-5177(98)00069-7)
15. Seo, D., & Kim, S. (2016). Ecotourism and World Natural Heritage: Its influence on islands in Japan. *Journal of Marine and Island Cultures*, 5(1), 36–46. <https://doi.org/10.1016/j.imic.2016.05.006>
16. Stronza, A., Hunt, C. A., & Fitzgerald, L. A. (2019). Ecotourism for conservation? *Annual Review of Environment and Resources*, 44, 229–253. <https://doi.org/10.1146/annurev-environ-101718-033046>
17. Tunggadewi, K. B., & Wiyatasari, R. (2023). Ecotourism as a medium of promotion and learning Japanese traditional culture. *Notion Journal of Linguistics, Literature and Culture*, 5(1), 82–92. <https://doi.org/10.12928/notion.v5i1.6773>
18. Ustui, R., Funck, C., & Adewumi, I. B. (2021). Tourism and counterurbanization in a low-amenity peripheral island: A longitudinal study at Yakushima Island in Kagoshima, Japan. *Sustainability*, 13(6), Article 68822. <https://doi.org/10.3390/su13168822>
19. Weaver, D. B. (2001). The encyclopedia of ecotourism. *Tourism Management*, 22(5), 543–545. [https://doi.org/10.1016/S0261-5177\(01\)00031-0](https://doi.org/10.1016/S0261-5177(01)00031-0)
20. Yamada, N. (2011). Why tour guiding is important for ecotourism: Enhancing guiding quality with the ecotourism promotion policy in Japan. *Asia Pacific Journal of Tourism Research*, 16(2), 139–152. <https://doi.org/10.1080/10941665.2011.556337>