



On the Development of Island Tourism Resources Under the Concept of Sustainable Development—A Case Study of Dongji Island

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Abstract. Taking Dongji Island as an example, this study examines the development of island tourism resources under the concept of sustainable development. By analyzing the geographical, natural, and cultural characteristics of Dongji Island, it explores how to develop and utilize island tourism resources while protecting the environment and maintaining socio-economic sustainability. Dongji Island has rich natural landscapes and unique cultural heritage, but it faces challenges such as environmental degradation and overexploitation of resources. To achieve sustainable development, it is necessary to formulate scientific planning and management measures to promote ecological conservation, cultural heritage, and community participation. By appropriately developing and utilizing island tourism resources, a virtuous cycle of economic growth, social development, and environmental protection can be achieved.

Keywords: Sustainable development; Island tourism; Dongji Island; Resource development.

1 Introduction

The concept of sustainable development is at the core of the scientific outlook on development. It emphasizes the balance between economy, society, and the environment to ensure sustainable use of resources, environmental protection, and social justice[1]. Sustainable development recognizes the impact of human activities on the environment and society, and advocates for development in a sustainable way to meet the needs of current and future generations. The concept of sustainability has been surrounded by epistemological and practical problems, contestation about its meaning and determinants[2]. This includes pursuing long-term and sustainable economic benefits rather than maximizing short-term profits. Economic activities should consider the rational use of resources, environmental protection, and social well-being. In addition, sustainable development should focus on social justice and equality, emphasizing poverty reduction, social equity, and the protection of human rights to ensure that everyone can enjoy opportunities and benefits of development. It requires environmental protection

and restoration, reducing excessive exploitation and pollution of natural resources. Emphasis is placed on the health of ecosystems, the protection of biodiversity, and reducing negative impacts on the environment. Long-term planning and decision-making are highlighted to ensure sustainable use of resources and environmental sustainability. Building a new path for sustainable development requires a commitment to green development, aiming to build a harmonious coexistence between humans and nature and striving to construct an inclusive and happy society[3].

Amid the historical opportunity of extensive ocean development, islands, as the frontier for coastal development and marine utilization, hold an important position in the country's modernization process due to their unique location, resources, and environmental advantages. Island economies have become a new highlight of the marine economy and a new growth point for the tourism industry. In recent years, many coastal regions have prioritized island development[4]. Island resource development can bring growth and employment opportunities to the local economy. Furthermore, island regions often have unique cultural heritage and traditions. Reasonable development and protection of island resources can promote cultural inheritance and protection. Island tourism can also serve as a platform for the display and transmission of traditional culture, helping local residents maintain cultural identity and pride. In addition, island regions usually possess rich natural landscapes and biodiversity, which, through proper development and management, can promote ecological conservation. Island resource development holds great significance in the economic, cultural, and ecological aspects. However, to achieve sustainable development, island resource development should be carried out on the premise of environmental protection, maintaining socio-economic sustainability, and respecting local culture, ensuring sustainable use of resources and benefits for future generations.

The momentum of island tourism development has contributed to Zhejiang's emergence as a new highlight in the tourism industry, and Dongji Island, as one of the ten planned island gardens in Zhejiang Province, holds a strategic position in the province's island tourism development. Dongji Island, consisting of four adjacent islands on the edge of the Zhoushan Archipelago, gained attention around 2017 due to a film directed by Han Han titled "The Continent," which attracted many tourists with its beautiful island scenery and cultural atmosphere. However, despite the development of Dongji Island's tourism industry, only a part of it has been developed, and there are issues with inadequate infrastructure, insufficient environmental protection measures, seawater pollution, and increasing marine litter due to improper development.

2 Analysis of Tourism Resources in Dongji Island

Dongji Island, known as Zhongjiaoshan Archipelago in geographical terms, is one of the eastern islands in the Zhoushan Archipelago. Situated in the open sea, surrounded by the East China Sea, it is approximately 45km from the Shengjiakou Port in Zhoushan. The total number of islands in various sizes is 28, with a land area of 11.7 square kilometers. It not only possesses the rustic charm of fishing villages but also

showcases breathtaking island scenery, encompassing genuine sunshine, clear seas, islets, and seafood. The climate is pleasant, and the water quality is pristine, making it a rare haven. Before the arrival of the pandemic, according to the Statistical Table of Tourism Reception and Revenue in Zhoushan City publicly released by the Tourism and Culture Bureau, the number of tourist arrivals and the total tourism revenue in Zhoushan City had been steadily increasing. In 2019, the number of tourist arrivals reached as high as 70.5475 million, with a total tourism revenue of 105.46 billion RMB. During the pandemic, the tourism industry nationwide suffered, and Dongji Island was no exception. However, with the changing demands of tourists in the post-pandemic era, island trips featuring sunshine beaches, fresh air, and seafood are increasingly popular in the market. According to the data monitoring of major tourist islands in our city by the Municipal Culture and Tourism Big Data Platform, the total number of visitors to the islands in the first half of 2021 was 579.4, an increase of 144.8% compared to the same period last year. Specifically, Putuoshan saw a 320.6% increase, while Dongji Island and Shengsi Main Island saw increases of 77.9% and 61.3% respectively. Excluding residents of Zhoushan, the total number of visitors to the islands from January to June was 438.22, accounting for 75.6% of the total, a 234.2% increase compared to the same period last year[5]. With the opening up of the pandemic in 2023 and the recovery of the national tourism industry, the number of tourist receptions in Zhoushan City in the first quarter of 2023 reached 3.218 million, an increase of 90.4%, with a total tourism revenue of 4.35 billion RMB, an increase of 90.1%[6]. Therefore, the current prospects for Dongji Island in the tourism market are quite promising, presenting both opportunities and challenges.

2.1 The Advantages of Tourism Development in Dongji Island

Dongji Island has rich natural resources. Located in the best sea area of the East China Sea, surrounded by blue sea, with a subtropical monsoon climate, pleasant climate, and beautiful scenery[7]. Because it is far away from the mainland and various sources of pollution, the air quality index of Dongji Island is relatively low, which is very beneficial to the physical and mental health of the human body. Therefore, Dongji Island has good climate resources. In addition, due to the relatively late start of resource development in Dongji Island, the scope of ecological environment damage is small, and there are sufficient environmental resources to be developed, especially Dongfushan Island, where only a small part has been developed, and most of it is still in a wild state, with the characteristics of original ecology.

The sea areas around Dongji Island has a good marine environment, preserving rich biodiversity and abundant fishing resources. Dongji Island also has abundant cultural resources. Miaozihu Village has rich tourist resources, deep historical and cultural heritage, and the island still retains ancient residential buildings that are over a hundred years old. Miaozihu Village has also been selected as a national-level traditional village, becoming the third national-level traditional village in Zhoushan. In addition, Dongji Island is also known for its fishermen's paintings, with clear levels, bold imagination, strong colors, full of marine and regional characteristic life atmosphere. Dongfushan Island retains the original stone house architectural style, with houses built by large

stone blocks, and the roofs are also covered with small stones, providing good wind-proof functions. In addition, Dongfushan Island is also one of the most original ecological islands in natural landscapes. Qingbang Island has historical and cultural sites such as the "Potala Palace on the Sea," the sinking site of the Lisbon Maru, and the WWII Memorial Area.

2.2 The Disadvantages of Tourism Resource Development on Dongji Island

Due to the fact that the island is a relatively closed and independent ecological system, it has limited carrying capacity, fragile ecosystem, and poor stability, among other environmental disadvantages. At the same time, due to its location, the island area generally suffers from limited freshwater resources and frequent disastrous weather (typhoons). The freshwater resources on Dongji Island mainly come from rainwater collection and seawater desalination projects, leading to specific instability and insufficient supply during the tourist peak season, particularly in July and August, when the island often experiences property damage from typhoons brought by the southeast monsoon from the Pacific. Additionally, since it requires over an hour by boat from the mainland to reach Dongji Island and the weather conditions like heavy fog and strong winds can affect boat travel, it greatly impacts the stability of tourist influx.

Due to its late start in development, remote location, and significant construction challenges, Dongji Island has lagged behind in basic infrastructure. Except for one main road, most of the island consists of mountainous roads, resulting in extremely inconvenient transportation and travel for tourists. Through on-site investigations, it was found that there is a widespread lack of environmental facilities on the main island of Dongji, particularly evident on Qingbang Island and Dongfushan Island, where there are no corresponding trash bins along the island's routes. This leads to tourists littering everywhere, causing significant ecological damage. The backwardness of environmental infrastructure poses a significant threat to the sustainable development of Dongji Island, as the ecological environment is an important capital for sustainable development. Additionally, the lack of a waste disposal system results in accumulated household waste or direct incineration. Safety facilities are inadequate, particularly on the rugged and steep island routes without appropriate guardrails, posing a threat to the personal safety of tourists. There is also a shortage of public toilets on the island.

2.3 The Opportunities Facing the Development of Tourism Resources on Dongji Island

After the end of the COVID-19 epidemic, with the recovery of the national tourism industry, Dongji Island has also ushered in a great opportunity for development. At the same time, the country strongly supports sustainable development and implements a sustainable development strategy. The tourism resource development of Dongji Island will also inevitably move towards a path of long-term sustainable development. The concept proposed by General Secretary Xi Jinping that "green waters and lush mountains are invaluable assets" has deeply resonated with people, and the sustainable development of Dongji Island will surely receive the support of the public.

2.4 The Threats Facing the Development of Tourism Resources on Dongji Island

At present, domestic island tourism tends to be homogeneous and standardized, leading to great competitive pressure. Due to the late start of development, Dongji Island has relatively weak competitive advantages in terms of visibility and internal infrastructure construction. At the same time, the island's industries are highly similar, with many seafood stalls, bars, and barbecue restaurants, resulting in a repetitive and single product range with insufficient external appeal and weak competitiveness. There is a lack of in-depth development of unique resources such as historical and natural cultural landscapes on the island. This single development model is highly susceptible to competitive threats and is not conducive to the long-term sustainable development of the island tourism industry.

3 Countermeasures for Tourism Resource Development on Dongji Island

3.1 Sustainable Tourism Infrastructure Construction

The development of a region's tourism industry depends not only on the development of tourist resources, but also on the construction of supporting tourism infrastructure[8]. Strengthening the construction of tourism infrastructure, including the planning and construction of facilities such as transportation, hotels, and restaurants. Emphasize the construction of energy-saving, resource-utilizing, and environmentally friendly facilities to improve resource utilization efficiency and environmental protection levels. In terms of transportation, there are many bumpy stone roads on Dongji Island, making internal transportation inconvenient. It is possible to build a greenway around the island to improve the convenience of internal transportation while highlighting the island's picturesque scenery, effectively optimizing tourists' sightseeing experience. At the same time, establish safety facilities, as the topography of the island's edge zone is complex, requiring the rectification and construction of tourist signs and safety barriers. Also, set up garbage collection points along the circular island roads with dedicated personnel for garbage collection, operation, and handling, and establish a garbage recycling and disposal system.

It was found through on-site investigation that the number of public toilets on the island is extremely limited, so the construction of public toilets should be expedited. Freshwater resources are scarce on the island, so desalination projects should be strengthened to improve the stability of the water supply system. The island's power supply mainly comes from submarine cables; therefore, to ensure the stability of the power supply system, regular inspection and maintenance of the cables are necessary. Enhance the construction of information infrastructure, accelerate the in-depth development and sharing of island management information such as planning, real estate, environmental protection, hydropower, municipal, and meteorology, and focus on promoting the construction of important information systems such as disaster prevention and emergency response, traffic management, and population management.

3.2 Ecological Environment Protection and Development

Adhering to the principle of sustainable development, before developing the natural scenic resources of Dongji Island, it is necessary to strengthen the ecological environment protection of Dongji Island, including protection of the marine ecosystem, coral reefs, control of pollutant emissions, protection of nearshore water quality, and ensure the sustainable development of the ecosystem. The surrounding sea area of Dongji Island has a rich variety of marine products. According to the data released by Zhoushan City Statistics Bureau, the sea area of Dongji Island has a variety of marine products such as Japanese horse mackerel, tiger puffer, yellow croaker, hairtail, eel, swimming crab, scallop, small yellow croaker, brown chub mackerel, and saddle grunt. Under the premise of rational and appropriate development, the core industry of sea fishing can be developed, along with the leisure fishing and sea sports tourism. In the winter, there are many sparsely populated, densely vegetated, and beautiful wilderness areas on the island that have not been developed. Under the premise of restricting the development area and establishing a sound ecological protection area management system, wilderness exploration and hiking activities can be developed to attract tourists who enjoy outdoor activities. However, fragmentary and parochial visions, typical of small and closed communities, can only lead to heterogeneous strategies regarding sustainable tourism planning and management[9].

3.3 Innovation of Tourism Products

Develop diversified and locally characteristic tourism products to meet the needs of different tourists, and create the characteristics of various small islands of Dongji Island. Establish brand IPs and create "one island, one scene" according to local conditions. For example, Miaozi Lake Island is the filming location of the movie "No Man's Land," which can be used as an attraction point for filming locations, and develop film and television cultural tourism. Qingbang Island has a small island area and a small number of permanent residents, making it suitable for the development of leisure tourism projects such as sea fishing industry and sea sports. Among these islands, Dongfushan Island is located at the easternmost end with the "first point of dawn" on the island, attracting many people to come and see the sunrise. At the same time, Dongfushan Island has the most primitive ecological environment with a large amount of dense vegetation, suitable for the development of ecotourism such as wilderness hiking exploration.

3.4 The Protection, Inheritance, and Innovation of Cultural Heritage

Dongji Island has rich cultural heritage including traditional villages with stone houses built to endure powerful typhoons, unique folk art featuring vibrant colors and strong "sea flavor" in fishermen's paintings, and historical relics such as the sunken "Lisbon Maru" from World War II. Currently, Dongji Island primarily focuses on nature tourism, neglecting the cultural essence of tourism. In the process of developing tourism

resources, Dongji Island should fully explore and utilize its historical and cultural resources to promote the integrated development of culture and tourism. It can showcase the distinctive lifestyle of fishermen based on their characteristic stone houses, create special wall paintings in streets and buildings based on fishermen's art, develop cultural and creative products based on fishermen's paintings, and exhibit the island's wartime appearance themed around the "Lisbon Maru" wreckage.

In the present, environmental issues have become a global concern, and development issues are also an important strategic concern for our country as it moves towards high-quality development. The same applies to the Zhoushan Islands, where the development of the tourism industry must also take the path of high-quality sustainable development. Implementing this plan will bring benefits to all parties involved and create a beneficial economic cycle. Effective protection of the natural environment will attract more tourists, while the construction of basic environmental protection facilities will reduce the environmental pollution caused by the large amount of waste generated by tourists. A clean and humanistic environment will attract more tourists. The increase in tourists will bring about an increase in tourism income, which can be reinvested to further improve environmental protection facilities. It is important to not forget the significance of environmental protection while developing the tourism economy, as sustainable development is the key to survival for islands whose primary tourism resources are natural scenery.

4 Conclusion

The paper uses the sustainable development perspective as a guide and takes Dongji Island as an example to study and analyze the initial stage of tourism development and the unreasonable resource development of the island, and proposes a new model for the long-term sustainable development of the island. Based on the statistics of the Zhoushan City Culture, Radio, Film, Television, Tourism and Sports Bureau, the paper introduces and analyzes the current situation of tourism development and resource development in Dongji Island, and evaluates the strengths, weaknesses, opportunities, and threats of resource development in Dongji Island. Finally, the paper analyzes the model and strategy for the development of island tourism resources guided by the concept of sustainable development.

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