

The Impact of Environmental Cost Allocation of Tourism Enterprises on the Sustainable Development of Regional Tourism Economy under the Low Carbon Background

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Abstract: The tourism industry features a long industrial chain and strong externality effects. Business entities including accommodation, scenic spots, cultural tourism services, and tourist transportation tend to generate considerable implicit environmental losses and carbon emissions, which result in distorted tourism market prices, excessive depletion of ecological resources, and unsustainable regional tourism development. Grounded in environmental cost accounting theory and sustainable development theory, this paper examines the core issues and solutions concerning environmental cost allocation of tourism enterprises from a low-carbon perspective, analyzes the intrinsic mechanism through which environmental cost allocation influences the sustainable development of regional tourism economy, and proposes targeted optimization strategies. This study aims to provide theoretical references and practical implications for the low-carbon transformation of tourism enterprises and the coordinated and sustainable development of ecology and economy in regional tourism.

Keywords: Tourism Enterprises; Environmental Cost Allocation; Carbon Accounting; Regional Tourism Economy; Sustainable Development

1. Introduction

With the continuous improvement of the national low-carbon governance system, rigid constraints such as ecological protection redlines, carbon emission control, and environmental pollution remediation have been fully applied to the tertiary industry. As a strategic pillar industry of the national economy, tourism integrates both economic and ecological attributes, and its development is highly

dependent on the natural ecological environment and cultural resources. Nevertheless, under the traditional business model, tourism enterprises only account for explicit operational costs and transfer environmental costs such as resource consumption, ecological degradation, carbon emissions, and pollution treatment to society and regional ecosystems, forming typical negative externalities.

Strengthened ecological constraints and the implementation of low-carbon policies have driven continuous growth in expenditures on environmental protection taxes, carbon verification, green retrofitting, and ecological restoration, leading to an expanding scale of environmental costs for tourism enterprises. How to scientifically recognize, measure, and reasonably allocate environmental costs, and balance corporate operational benefits, low-carbon emission reduction responsibilities, and regional ecological carrying capacity, has become a critical issue restricting the high-quality and sustainable development of regional tourism economy. In this context, exploring the impact of environmental cost allocation of tourism enterprises on the sustainable development of regional tourism presents strong contemporary value and practical significance.

2. Related Concepts and Theoretical Basis

From the perspective of integrating low-carbon development and environmental accounting, environmental cost allocation of tourism enterprises is no longer a standalone financial management issue, but a comprehensive topic connecting micro-operation, industrial regulation, and regional ecological security. In terms of core connotation, the low-carbon context emphasizes rigid constraints including total carbon emission control, reduced energy consumption intensity, and compensation for

ecological losses, requiring tourism enterprises to fully incorporate expenditures on carbon emission reduction, pollution control, and ecological protection into their cost management systems. Based on the framework of ecological accounting and carbon accounting, environmental costs of tourism enterprises cover all expenditures incurred during the entire operation process to reduce carbon emissions, treat pollutants, restore ecosystems, and meet environmental compliance requirements, serving as a key accounting indicator for measuring corporate green responsibility and environmental load. Environmental cost allocation follows the underlying logic of "polluter pays and beneficiary bears", and rationally distributes common environmental costs and indirect carbon emission costs among internal projects, industrial chain entities, and regional tourism clusters through scientific accounting measurement and allocation criteria. Its ultimate goal is to correct externalities, stabilize price signals, and maintain the ecological-economic balance of regional tourism.

In terms of theoretical support, environmental accounting and carbon accounting theories provide a complete toolkit for the recognition, measurement, accumulation, and disclosure of environmental costs of tourism enterprises, transforming previously unquantifiable implicit costs such as carbon emissions, ecological occupation, and environmental liabilities into accountable, allocable, and controllable accounting elements, thereby laying a data foundation and institutional basis for cost allocation. Externality theory reveals the essence of environmental cost problems: under the traditional tourism model, enterprises shift the costs of ecological damage and carbon emissions to society, resulting in market price failure and inefficient resource allocation, while scientific environmental cost allocation represents an important pathway to internalize negative externalities and restore market efficiency. Sustainable development theory sets value objectives and ecological boundaries for environmental cost allocation, requiring that tourism economic growth must not exceed regional ecological carrying capacity, and that the cost allocation mechanism should balance economic benefits, ecological protection, and long-term developmental capacity to achieve the coordinated unity of ecological and economic benefits. These theories support and integrate

with each other, forming a complete theoretical system for this study.

3. Current Situation and Logic of Environmental Cost Allocation of Tourism Enterprises under the Low Carbon Background

Against the backdrop of increasingly stringent low-carbon regulation, environmental costs of tourism enterprises have shifted from discretionary expenses to mandatory expenditures, with a clearer structure and more definite orientation, forming a systematic expenditure system centered on low-carbon transformation and ecological protection. Carbon emission-related costs occupy a core position, including energy consumption-related carbon emission costs, carbon verification and information disclosure costs, low-carbon equipment retrofitting expenses, and carbon market transaction costs generated by tourist transportation, accommodation, and scenic spot operation, which are the most representative new environmental costs for tourism enterprises under the dual-carbon goal. Meanwhile, traditional environmental costs such as pollution control, ecological restoration, and environmental compliance remain and continue to rise with tightened ecological constraints, jointly constituting the main body of environmental costs of tourism enterprises. These costs are characterized by high concealment, wide inter-temporal distribution, and close integration with tourism businesses. How to allocate them rationally directly affects corporate operational decisions and the regional development pattern.

At present, various practical approaches have been formed for environmental cost allocation of tourism enterprises, but they generally lack sufficient low-carbon orientation and refinement. Most enterprises adopt simple proportional allocation based on indicators such as operating revenue, visitor arrivals, and business area, which is easy to implement but fails to reflect differences in carbon emission intensity and ecological consumption. Some large scenic spots and cultural tourism groups have begun to introduce driver indicators such as carbon footprint, energy consumption, and ecological occupation area for allocation, which is more consistent with low-carbon development requirements but has a limited application scope. Public environmental costs at the regional level

mostly rely on government commitment, and a sound corporate sharing mechanism has not yet been established. From an operational logic, environmental cost allocation must achieve the unity of fairness and incentivization: it should not only ensure that high-emission and high-consumption entities bear corresponding costs, but also encourage enterprises to actively save energy and reduce carbon emissions through reasonable allocation, ultimately promoting rationalized cost burdens, market-oriented price formation mechanisms, and sustainable regional development. Essentially, environmental cost allocation under the low-carbon background uses accounting tools to realize measurable ecological responsibility, traceable environmental costs, and incentivized green development.

4. Impact Mechanism of Environmental Cost Allocation of Tourism Enterprises on the Sustainable Development of Regional Tourism Economy

4.1 Micro Level: Influencing Corporate Operational Decisions and Green Transformation

Unreasonable environmental cost allocation leads to an unbalanced cost burden between low-carbon and high-carbon enterprises, allowing high-carbon enterprises to gain high profits at low costs and lack incentives for emission reduction. Rational cost allocation can accurately reflect the environmental consumption level of each entity, forcing tourism accommodation, scenic spots, tourist transportation, and other operators to actively adopt energy-saving equipment and low-carbon service models and optimize internal cost management. Meanwhile, the reasonable internalization of environmental costs will prompt enterprises to adjust product pricing, correct ecological overdraft caused by low-price competition, and safeguard the long-term operational stability of enterprises.

4.2 Meso Level: Optimizing Tourism Industrial Structure and Cluster Development

The improvement of the environmental cost allocation mechanism will raise the operational costs of energy-intensive and extensive tourism formats, eliminate backward and inefficient production capacity, favor the development of

green formats such as ecotourism, health tourism, and low-carbon homestays, and promote the upgrading of the regional tourism industrial structure. In addition, unified cost-sharing rules can resolve the "free-rider" problem within tourism clusters, promote coordinated emission reduction along the upstream and downstream of the cultural tourism industrial chain, and improve the overall green development efficiency of the industry.

4.3 Macro Level: Safeguarding Regional Ecological Security and Long Term Development

Scientific environmental cost allocation can assign the economic responsibilities of regional ecological protection and carbon emission reduction to specific business entities, reduce problems such as excessive development of ecological resources, vegetation destruction, and water pollution, and uphold the bottom line of regional ecological carrying capacity. A stable ecological environment and low-carbon brand can enhance the core competitiveness of regional tourism, attract green investment and high-quality tourists, realize the mutual reinforcement of tourism economic growth and ecological protection, and consolidate the foundation for the sustainable development of regional tourism.

5. Problems Existing in Environmental Cost Allocation of Tourism Enterprises from a Low Carbon Perspective

First, most tourism enterprises suffer from an imperfect environmental accounting system and vague cost measurement. In the absence of dedicated environmental accounting accounts, environmental costs are mixed with operating costs, and implicit costs such as carbon emissions and ecological losses cannot be quantified, resulting in a lack of accurate data support for cost allocation. Second, most enterprises rely on single indicators such as revenue and visitor numbers to allocate environmental costs, without incorporating core low-carbon drivers such as carbon emissions and resource consumption intensity. High-emission entities bear an insufficient cost burden, and the fairness of cost allocation is compromised, making it difficult to meet low-carbon governance requirements. This leads some enterprises to shift environmental costs by lowering service quality and engaging in vicious

low-price competition, exacerbating ecological damage. Some tourism enterprises in ecologically sensitive areas bear excessive environmental costs, squeezing profit margins and weakening developmental momentum, resulting in unbalanced regional tourism development. Finally, insufficient low-carbon incentive policies reduce enterprises' initiative in allocation. The implementation of green subsidies, tax incentives, carbon emission reduction rewards, and other policies is inadequate, and compliant environmental cost allocation fails to generate positive benefits for enterprises, seriously undermining the endogenous motivation of enterprises to actively account for, allocate, and control environmental costs.

6. Countermeasures to Optimize Environmental Cost Allocation and Boost Sustainable Regional Tourism Development under the Low Carbon Background

6.1 Improve the Carbon Accounting and Environmental Accounting System

Formulate industry-wide norms for environmental cost accounting of tourism enterprises, and add special accounting accounts such as carbon emission costs and ecological restoration costs. Promote regular carbon inventory and environmental asset accounting among tourism enterprises to achieve quantifiable, traceable, and comparable environmental costs, laying a foundation for accurate allocation.

6.2 Construct a Low Carbon Oriented Differential Cost Allocation Model

Promote the carbon driver + activity-based costing allocation method in large scenic spots and cultural tourism groups, with carbon emissions, energy consumption, and ecological occupation as core allocation bases. Simplify accounting for small and medium-sized tourism enterprises and adopt the "basic ratio + low-carbon coefficient" to adjust allocation standards. Increase the cost allocation weight for energy-intensive tourist transportation and amusement projects to strengthen low-carbon constraints.

6.3 Establish a Linkage Mechanism between Environmental Costs and Tourism Prices

Guide tourism enterprises to incorporate

reasonable environmental costs into their product pricing systems and improve the premium mechanism for green tourism products. The government should appropriately liberalize pricing autonomy for ecological scenic spots and low-carbon cultural tourism projects to avoid ecological overdraft caused by low prices, and use reasonable prices to support ecological governance and low-carbon retrofitting.

6.4 Build a Collaborative Sharing Mechanism for Regional Tourism Environmental Costs

Take cultural tourism industrial clusters and ecotourism areas as units to establish a diversified sharing mechanism involving the government, tourism enterprises, and business operators. Establish a special fund for regional tourism ecological development to uniformly allocate regional environmental protection, low-carbon retrofitting, and ecological restoration costs and reduce the burden on individual enterprises.

6.5 Strengthen Dual Guarantees of Policy Incentives and Institutional Supervision

Implement preferential policies such as environmental protection tax reductions, financial subsidies for low-carbon enterprises, and green credit to encourage enterprises to actively implement environmental cost allocation. Strengthen the supervision of environmental information disclosure in the tourism industry, require key tourism enterprises to disclose carbon emission and environmental cost information, and standardize corporate environmental responsibility through institutional constraints.

7. Conclusion and Prospect

In the era of low-carbon development, environmental cost allocation serves as an important bridge connecting the micro-operation of tourism enterprises and the macro sustainable development of regional tourism. The environmental cost allocation approach of tourism enterprises directly affects the motivation for corporate green transformation, the upgrading of the tourism industrial structure, and the protection of regional ecological resources. At present, the tourism industry in China generally faces problems including non-standard accounting, extensive allocation methods, insufficient regional coordination, and inadequate incentive mechanisms, which restrict

the sustainable development of regional tourism economy. Only by improving cost accounting based on carbon accounting and ecological accounting, constructing a low-carbon oriented differential allocation system, and integrating price regulation, regional co-governance, and policy incentives, can we achieve the multiple goals of reasonable cost burdens for tourism enterprises, effective ecological environment protection, and long-term development of regional tourism economy.

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