

## *Evaluation on the Development Status of Green and Low-carbon Application in Landscape Tourism*

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**Abstract:** The current rapid development of social economy has had a great impact on the ecological environment of different regions, and this impact has brought more inconvenience to people's daily life. On the other hand, people's requirements for the ecological environment and environmental quality of the area they are living in are rapidly increasing as they continue to improve their material living conditions through the continuous progress of various technologies. This situation has prompted some organizations to pay attention to the development of some things that can purify the urban ecological environment, such as gardens. The various types of garden landscapes in cities can not only purify and protect the ecological environment in their areas, but also significantly improve the quality of life of residents in their areas, better improve the spiritual status of residents, and play an important role in the development of social economy. This role has made the concept of landscape tourism more and more popular, and even a considerable number of people began to seek to visit various excellent gardens. At present, garden tourism is still a comprehensive activity to appreciate various green landscapes and human environments, and also depends on the development of tourism. However, with the rapid increase of people's demand for garden tourism and the requirements for the quality of gardens in the process of tourism, garden tourism has gradually evolved into a relatively complete tourism service system. Through in-depth research on the current concept of green environmental protection, combined with the existing Analytic Hierarchy Process (AHP) to explore the development trend and direction of the existing landscape tourism industry, this paper successively proposed a green and low-carbon landscape tourism development model, and confirmed through relevant experiments that the performance of this new development model in many aspects has increased by about 47.8% compared with the existing development model.

## 1. Introduction

Tourism is a comprehensive activity that can meet people's material and spiritual needs. In the process of this activity, people would generally perceive the environment of a certain region through various ways and modes, combined with their own perception of various things. With the rapid development of social economy, people can have better living conditions, thus promoting the development of various types of tourism. This paper mainly studies the development mode of garden tourism based on the concept of green, low-carbon and environmental protection.

At present, some researchers have studied the development of landscape architecture, hoping to determine its development model through the development of landscape architecture. Garcia Mariana T explored the impact of gardens on health and diet, and proposed an evaluation method to fix the impact numerically [1]. Calvet-Mir Laura explored the relationship between the ecological environment crisis in a certain region and gardens, and determined that gardens can improve the ecological environment to a certain extent [2]. Strunk Christopher explored the relationship between the refugees' sense of identity in a region and the construction of gardens in that region, and determined that the construction of gardens and places can strengthen the refugees' sense of identity [3]. Attanayake Chammi P explored the utilization degree of various plants in garden soil, and analyzed the impact of such utilization degree [4]. Trendov Nikola M explored the motivation for the development of gardens in a city. Through this in-depth study, it was determined that gardens can promote the improvement of urban ecological environment [5]. Majewska Ania A explored the impact of pollination of insects in different areas in the process of landscape design, and determined that landscape design and construction are conducive to insect pollination through relevant experiments [6]. Salleh Ismail Hafiz explored the development of a new design model for a city's gardens and determined the feasibility of this new design concept [7]. However, most of these researchers' research on landscape architecture is limited to the study of urban landscape architecture, and can not better evaluate the development model of all gardens.

Other researchers have conducted research on gardening and tourism under the concept of environmental protection, hoping to determine the future development trend through the research on the three. Rahayu Sri explored the relationship between green garden tourism promotion and environmental protection, and determined the feasibility of a green tourism model [8]. Susiyanto Susiyanto explored a new concept of green tourism model and confirmed the reliability of this model through experiments [9]. Chin Chee-Hua explored the role of a green publicity tool in rural garden tourism, and determined the feasibility of this model [10]. Meghana V P explored the impact of green garden tourism model on social and economic development, and determined that green garden tourism can promote high-quality social development [11]. Madani Javad explored the decision-making of ecological environment protection in the context of green tourism, and determined that green tourism played a positive role in ecological environment protection [12]. However, the research of these researchers on the green concept and tourism is often too single, and they can not combine the green environmental protection concept and tourism better.

First of all, through the analysis of landscape and tourism, this paper confirms that there are many defects in the current development model of landscape tourism. At the same time, this paper uses the AHP analysis algorithm to analyze the development model of the existing garden tourism industry, and integrates the current popular green technology into the existing garden tourism industry. Through the integration of this green technology, it would greatly improve. It not only ensures the sustainability of garden tourism in the development process, but also greatly reduces the damage to the environment in the development of garden tourism.

## 2. Evaluation of the Concept of Green, Low-Carbon and Environmental Protection

With the continuous development of social economy and heavy industry, the issues related to climate change and ecological environment have become increasingly prominent, which has also attracted further attention of researchers in many relevant fields [13]. At the same time, the further development of tourism has also caused a greater burden on the ecological environment of different regions. The impact of the two on the ecological environment has prompted the proposal of green technology. The main goal of green technology is to establish a complete set of sustainable green circular development economic system, and this economic system can also help the existing social development model for a comprehensive green transformation, and solve the multiple types of contradictions between the existing ecological environmental protection and social and economic development [14]. At the same time, relevant researchers also conducted experiments to verify the feasibility of a tourism model under green technology, and determined that the tourism industry under this model can improve tourists' ecological and environmental protection concepts, change tourists' traditional travel views, and cultivate tourists' green and low-carbon tourism behavior implicitly. On the other hand, the tourism industry, as an important part of the service industry, combined with the concept of green, low-carbon and environmental protection, can further reduce the energy consumption of the industry operation, improve the efficiency of resource utilization, and finally achieve a sustainable tourism development model that takes into account the economic development of the tourism industry and the protection of the ecological environment. The general realization process of green and low-carbon is shown in Figure 1.

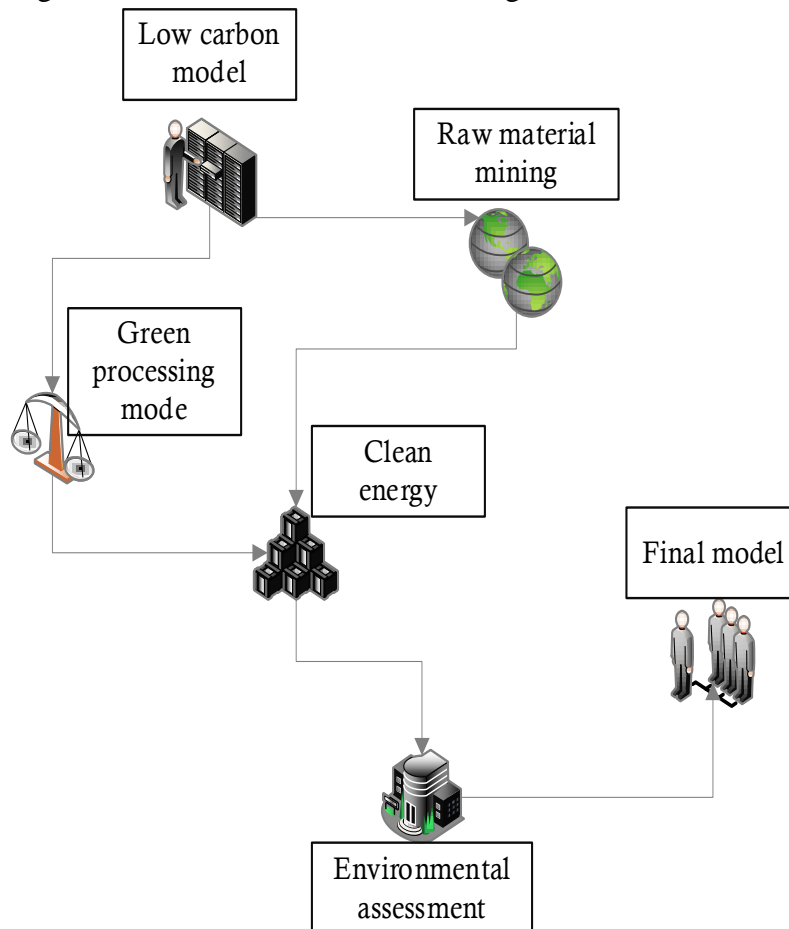


Figure 1. Schematic diagram of green and low-carbon realization process

### 3. Evaluation of Landscape Tourism

While the pollution of the global ecological environment has become more serious, the proposal of green technology has restrained the deterioration of the ecological environment to a certain extent. At the same time, combined with multiple industries, it has proposed a green development model that meets the development needs of the current era [15]. The landscape industry is no exception. The landscape industry can not only coordinate various contradictions in urban planning and construction and natural ecological environment, but also drive the further development of local economy and make sufficient contributions to the high-quality development of social economy. On the other hand, the garden construction in the city can also serve as a carbon sink container for the ecological environment of the city, providing more ideas for the sustainable development of the city. This paper mainly analyzes the existing garden tourism model through the AHP algorithm, deeply integrates the green technology with the existing garden tourism model, and proposes a green landscape tourism model. The garden in this mode can not only build the site inside the garden scientifically, but also take into account the carbon sink function of the garden itself, and enhance the ecological protection capacity and carbon sink capacity of the garden, thus promoting the protection of the ecological environment. The structure of garden tourism combined with green technology is shown in Figure 2.

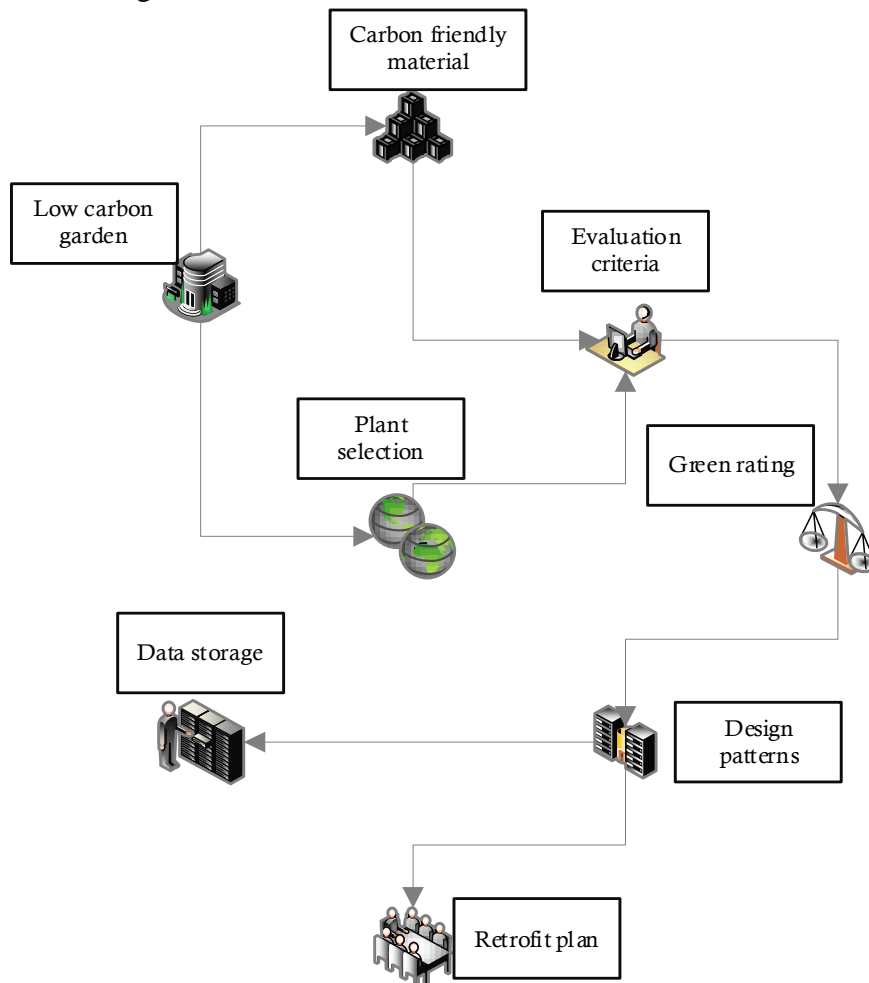


Figure 2. Schematic diagram of the structure of garden tourism combined with green, low-carbon and environmental protection

#### 4. AHP Algorithm Evaluation

At present, with the increasing demand for the ecological environment, researchers in relevant fields have also studied the development models of various industries that can affect the ecological environment. Because of the short time of its rise and development, landscape tourism has attracted more researchers' attention. In a sense, landscape tourism is an industry that relies on urban tourism. However, with the acceleration of the development of landscape tourism, landscape tourism has also played a positive role in the development of urban tourism. However, due to the problems such as substandard ecological and environmental protection concepts, unreasonable landscape construction and planning, and inadequate infrastructure, landscape tourism has not been able to develop better. At the same time, the existing landscape tourism development model still pays insufficient attention to the coordinated development of ecological environment and ecology, which also makes landscape tourism unable to meet some needs of the development of the times. Therefore, this paper analyzes the problems in landscape tourism through the AHP analysis algorithm, and integrates the concept of green, low-carbon and environmental protection into the development model of landscape tourism, so as to better promote the development of landscape tourism.

First of all, through in-depth analysis of the existing landscape tourism development model, and data collection, the data matrix is constructed. By building the data matrix, people can build the hierarchical model more accurately, so as to carry out the analysis work. The matrix construction algorithm formula is shown in Formula (1).

$$Y = (a_{ij})_{n \times n} \quad (1)$$

Among them,  $a_{ij}$  represents the importance of the quantification of sample data;  $n$  represents the number of sample data in the matrix;  $i$  and  $j$  represent different sample data. Then, the data consistency is checked. The formula is shown in Formula (2).

$$C = \frac{\alpha - n}{n - 1} \quad (2)$$

Among them,  $\alpha$  mainly represents the largest characteristic root of the sample data. Finally, the sample data at all levels are tested comprehensively. The formula is shown in Formula (3).

$$R = \frac{\sum_{i=1}^n C^{(i)} a_i}{\sum_{i=1}^n R^{(i)} a_i} \quad (3)$$

This paper mainly uses the AHP algorithm to decompose several parts of the existing landscape tourism development model, so as to analyze the problems existing in different parts in detail, and finally analyzes the objectives and specific optimization plans of several parts. In this way, green technology is deeply integrated into the existing development model of garden tourism, which would have a positive impact on its high-quality development.

#### 5. Experimental Evaluation on New Landscape Tourism

With the rapid development of social economy, people's living standards have been better improved, but in this process, the pollution of the ecological environment has become increasingly serious. On the other hand, people's high requirements for the environment also make more and more researchers in relevant fields begin to pay attention to the protection of the ecological environment, and have conducted in-depth research on how to effectively protect the ecological

environment, thus putting forward a set of scientific and feasible development ideas of green and low-carbon environmental protection. This development concept has put forward many feasible suggestions on how to promote the development of green industries, cope with the worse climate and build ecological civilization. In the meanwhile, this concept has also been applied to many industries and has been deeply integrated with the existing development model of many industries, thus further accelerating the progress of harmonious development of social economy and ecological environment. This paper analyzed the existing landscape tourism development model through AHP algorithm, determined that there are still many deficiencies in the existing landscape tourism model, and proposed a new landscape tourism development model based on the concept of green, low-carbon and environmental protection. This new development mode of landscape tourism based on green, low carbon and environmental protection can not only further promote social and economic development and employment growth, but also improve the ecological environment of the region to a certain extent.

The first is the analysis of the degree of attention to various factors in the development of landscape tourism in a region and its proportion in the development of landscape tourism, as shown in Table 1.

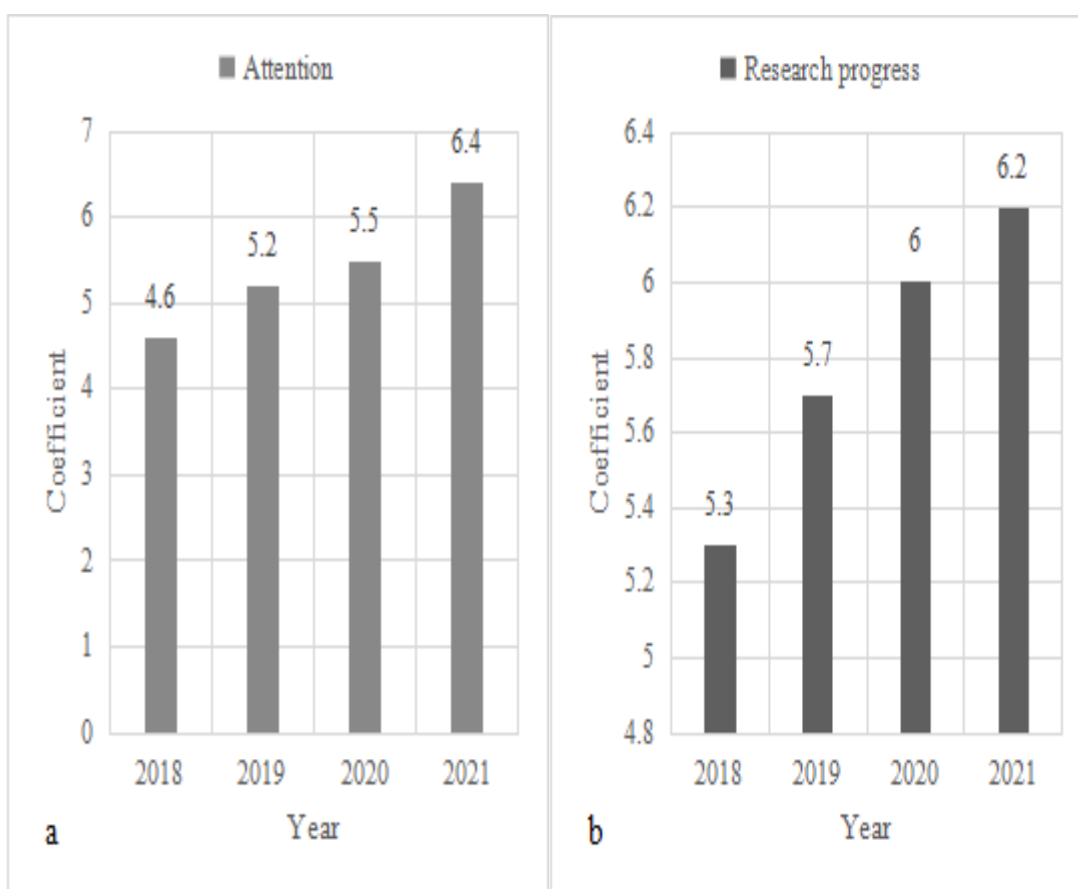
*Table 1. The degree of attention and the proportion of various factors in the development of garden tourism*

	Concern	Impact ratio
Tree design	6.1	7.3
Vegetation pruning	6.8	7
Landscape design	7.5	7.2

In the current development mode of landscape tourism, the characteristic landscape of a region is generally the center. The planning and construction of gardens were carried out from the perspectives of the local environment, natural ecological environment and human history. The planning and design of gardens in garden tourism directly determines people's willingness to visit this garden. Therefore, first of all, the importance of various influencing factors in landscape tourism was analyzed. According to Table 1, it can be judged that the design concept of trees, the pruning mode of vegetation and the design of landscape can have a great impact on tourists in the landscape tourism industry. This is mainly because the design of tall trees can give people enough shock.

The next step is to analyze the degree of attention and research progress of green technology in the region for a period of time, as shown in Figure 3.

With the continuous emergence of various types of problems in the process of social and economic development, people's eyes are no longer limited to the single economic development model, but also begin to shift to the model of coordinated development of social economy and ecological environment. The concept of green environmental protection can just coordinate the multiple problems between the rapid development of social economy and the protection of ecological environment, so that the two can achieve better development. Firstly, the degree of attention to green technology in a certain area in Figure 3a was analyzed, and it was determined that people's awareness of ecological environment protection in this area was rapidly increasing, and this has also prompted the degree of attention to the concept of green environmental protection to increase. This status quo has played a positive role in the protection of the social ecological environment. On the other hand, by analyzing the research progress of researchers on green technology in the four years in the area shown in Figure 3b, it was determined that as people pay more attention to ecological environment protection and environmental protection, they are also promoting the growth of green technology.



a. Schematic diagram of the degree of attention to green technology

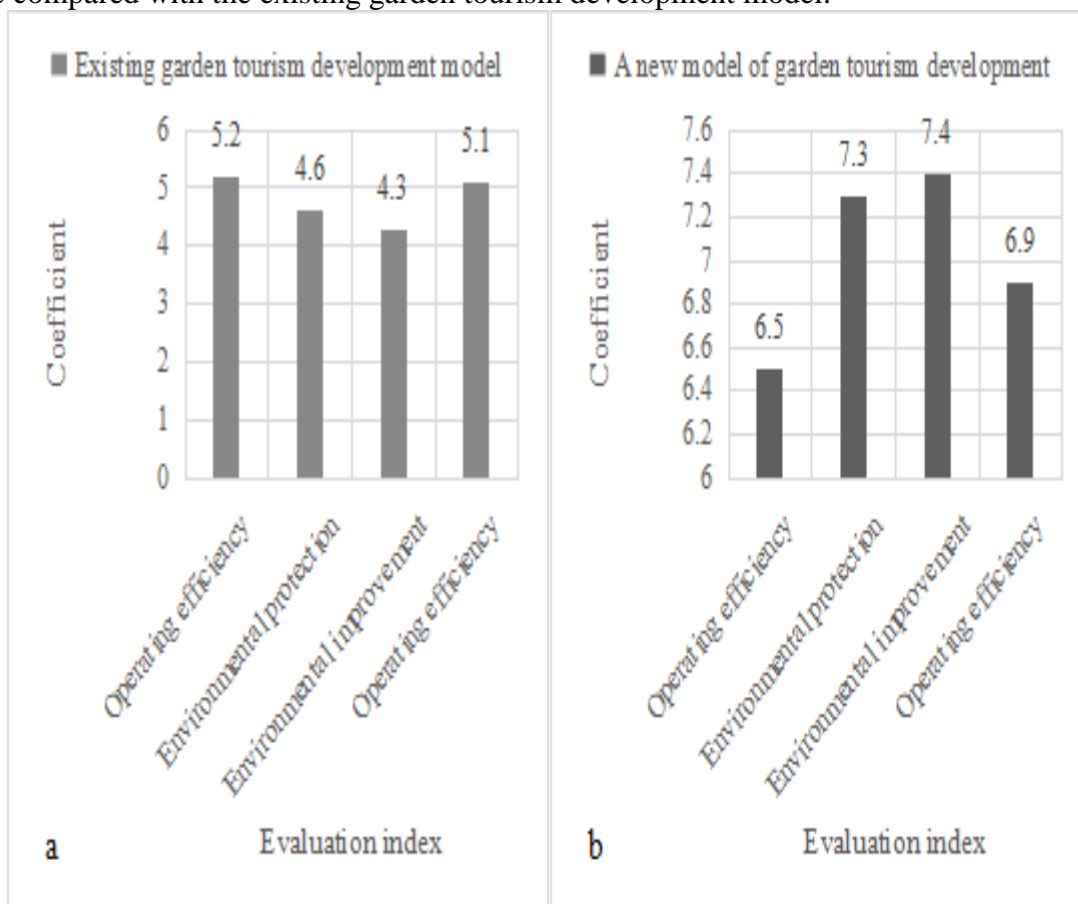
b. Schematic diagram of research progress on the concept of green environmental protection

Figure 3. Schematic diagram of the degree of attention and research progress of green technology in the region over a period of time

Finally, it is a comprehensive analysis of the multi-faceted performance between the new development model of garden tourism combined with green technology proposed in this paper and the existing development model of garden tourism, as shown in Figure 4.

Through the in-depth analysis of green technology, this paper not only confirmed the feasibility of the application of this concept in the development model of garden tourism, but also proposed a preliminary new development model of garden tourism. At the same time of consideration, environmental protection was also given a certain amount of attention. The first was to analyze the performance of the existing landscape tourism development model in the four aspects of operational efficiency, environmental protection, environmental improvement and comprehensive operational efficiency in Figure 4a. It can be seen that the performance of the existing landscape tourism development model in environmental protection and environmental improvement was relatively poor. On the other hand, after analyzing the new development model combined with the concept of green, low-carbon and environmental protection in Figure 4b, it was determined that the development model combined with the concept of green, low-carbon and environmental protection has been greatly improved in many aspects. Finally, after comprehensive analysis, it was determined that the performance of the garden tourism development model combined with the concept of green, low-carbon and environmental protection has increased by about 47.8% on

average compared with the existing garden tourism development model.



a. Schematic diagram of the existing development model of garden tourism

b. Schematic diagram of the new garden tourism development model

Figure 4. Schematic diagram of a new development model combining the existing garden tourism development model with green technology

## 6. Conclusion

As a hot field in recent years, urban landscape tourism industry has attracted more attention. At the same time, as a relatively comprehensive industry, landscape tourism has a direct impact on the social economy and the daily life of local residents in the process of its development. With the continuous updating and iteration of various social technological means and development concepts, more researchers have realized the relationship between socio-economic development and ecological environmental protection, and this relationship also makes people pay more attention to the protection of ecological environment. People have realized that economic benefits should be considered in the process of social and economic development, and enough attention should be paid to the ecological environment, which is reflected in the scientific and controllable use of various factors in the ecological environment such as air, land and water resources in the development area. On the other hand, the existing landscape tourism development model has become increasingly unable to meet the needs of the times. Therefore, through in-depth research on the concept of green and low-carbon environmental protection, this paper confirmed that this concept of green and low-carbon environmental protection is an essential part of the development process of the future



tourism industry. This concept of green and low-carbon environmental protection plays a great role in solving the current problems of unlimited consumption of resources and serious pollution of the ecological environment. Therefore, this kind of landscape tourism development model based on the concept of green, low-carbon and environmental protection can not only meet the growing demand of the tourism industry, but also be applied for a long time, thus promoting the high-quality development of the social economy.

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### Data Availability

Data sharing is not applicable to this article as no new data were created or analysed in this study.

### Conflict of Interest

The author states that this article has no conflict of interest.

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