

## Literature Review on Low Carbon Eco-tourism

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**Abstract.** Climate change, resources and environment problems have aroused increasing academic attention around the world. In order to suppress ecosystem environment worsen, the ecological civilization construction has been started among the national world, therefore, the idea of low carbon and ecological development have emerged. For tourism industry, the development of tourism marks the progress of human civilization and it is also a major growth point of national economic development, however, it also has brought the phenomenon of the global climate warming, tourism environment worsening and so on. Thus, for the sake of according with the concept of sustainable development, how to combine the low carbon and ecological concepts, to develop low carbon eco-tourism and promote the transformation of the traditional tourism has become the hotpot. This article will review the related literature about low carbon eco-tourism from three aspects of low carbon economy, low carbon tourism, eco-tourism, so as to understand its development status and also point out low carbon economy eco-tourism in need of further research.

### 1. Introduction

With the progress of era, the social economy develops rapidly, and people's income level is gradually improving, people's consumption demands of the service products, especially the tourism product have been increasing day by day, therefore, the tourism industry is also developing fast. However, with the high benefits being brought to the tourism cities, the negative impact has been caused. In the year of 2008, the world tourism organization research report pointed out that the emissions of tourism development in 2005 was 1.3 billion, accounting for 4.9% of all emissions from human activities, and the contribution rate of global warming that caused by human factors, the whole tourism sector accounted for 5%-14% from the whole tourism sector [1]. Accelerating the development of tourism published by China's state council in 2009 put forward to develop tourism into a strategic pillar industry of national economy, promote energy conservation and environmental protection and advocate the way of low carbon tourism [2]. Besides, since 2002, Australia has issued the green globe 21 international eco-tourism standard to give a description of eco-tourism [3]. These show that the sustainable development of tourism industry has been being discussed as a highlight in the world, and experts and scholars studies on low carbon and ecological development of industry from different angles have made remarkable achievements.

This paper will review the related literature from three aspects of low carbon economy, low carbon tourism and eco-tourism to understand the current research progress and deficiency, and propose the research prospects of low carbon eco-tourism.

### 2. Low Carbon Eco-tourism Research Status

#### 2.1 Low Carbon Economy

In 2003, the British government in its energy white paper *our energy future: create a low carbon economy* first mentioned the low carbon economy and pointed out that more economic output could be acquired through the less natural resources consumption and less environmental pollution [4]. Low

carbon economy provides an opportunity to create a higher standard of living and a better quality of life and create opportunities for developing, using and outputting advanced technology; also, it can create new business opportunities and more chances of employment [5]. With the derivation of low carbon economy, its development pattern has been presented and international scholars have been discussing the low carbon economy. Foreign scholars' studies on it were earlier than the domestic researchers [6] and have been achieved comparatively abundant research achievements and the initial research mainly concentrated in a small number of industries, such as transportation, cement industry, etc. It shows that transportation released the largest carbon emissions of the OCED countries [7], and the cement industry was a major industry in greenhouse gas emissions [8]. So more researches focus on the national and global carbon emissions, such as the possibility of discussion that the U.K. and Germany respectively would achieve the target of 80% cut in carbon dioxide and the other greenhouse gases emissions based on those of 1990 in the middle of the century [9-10], the study of the causal relationship of the U.S. and Turkey's energy consumption, GDP and carbon emissions [11-12], the quantitative analysis of the relationship between energy consumption, carbon emissions and global GDP [13], the discussion on describing the methods of low carbon economy long-term development situation of city scale in Shiga, Japan [14], the determination of the population structure on the US and global carbon emissions [15-16], the direct relationship between the U.S. exports and the average international carbon emissions [17], the analysis and forecasting for the change of different parts of the temperature time series [18], and the adopted strategies in the process of transition to a low carbon future [19]. Besides, based on low carbon economy, some studies have discussed the relationship and influence of the climate changes, such as the relations between tourism and climate changes [20], the relationship between the climate and business economic thoughts and innovation [21], and the combination of re-industrialization and low carbon economy will help to mitigate climate change [22], using green performance score card to build green industry performance analysis [23], confirming the relationship of long-term and short-term between carbon emissions [24], etc.

Domestic studies on low carbon economy have been slightly later than abroad, and there're many literature involving low carbon economy or its related filed and having made a certain progress.

Since 2005, the discussions on facing challenges, possible ways and potential in the development of low carbon economy in our country have started [25] by analyzing the relations between the growth of GDP and carbon emissions, and we find that the main reason for the rise in greenhouse gas emissions is that our country relies too much on economic growth mode through investment and the industrial economic structure [26]. And the existing energy structure, energy efficiency, population and emissions intensity in china were at disadvantageous stage [27]. In view of energy consumption and carbon emissions in China, some studies have pointed out that measures should be taken from industrial structure adjustment, energy structure adjustment and innovation of science and technology [28], some analyzed the urgency of the development of low carbon economy in China from the aspects of greenhouse gas emission reduction pressure; energy security and resources and environment; and from the energy conservation priority, vigorously developing renewable energy, carbon funds, and establishing national carbon trading mechanism to put forward model of the development of low carbon economy policy measures in our country [29]. In 2009, on the basis of the review of the historical trajectories of the carbon emissions, Chinese academy of sciences sustainable development strategy research group explored the measures of China's response to climate change and low carbon development, and carried out the comprehensive assessment for China's sustainable development ability, resources and environment performance [30], and subsequent research was mainly around with the low carbon economy development mode, low carbon economy development elements, low carbon economy development ability differences, such as using developing gathered type of low carbon economy industry chain model, technology innovation and other means to promote and realize the transformation of economic development towards a low carbon economy [31]. The main factors affecting the development of low carbon economy have been extensive economic development, residents' low carbon consciousness and the lack of low carbon professional talents [32]. Low carbon technology was the core content to influence the low carbon development [33]. The

ability of developing low carbon economy to show the diversity varied on the basis of different geographical [34]. Meanwhile, the studies carried out were about the low carbon economy development efficiency evaluation, low carbon economy development level and model, such as using AHP and grey correlation method to explore the low carbon economy development level [35-38], using a desirable output of SBM model to evaluate the efficiency of low carbon economy development [39], the obstacle, path and mode of tourism development under low carbon economy [40] and using the DPSIR model for construction of low carbon economy development index system [41].

As a whole, the researches on the low carbon economy have paid more attention to the macroscopic aspects, such as global, each country and even the regional development, however, the further research of bringing emissions in all areas is lacking, for instance, service-oriented organization and tourism scenic spots system of low carbon economy research is minor.

## **2.2 Low Carbon Tourism**

Low carbon tourism development abroad started in 2000, and BCU advocated a kind of holiday footprint tool, and the tool was designed to provide a more useful or a wider range of sustainable development strategy under the background of “responsible tourism”. Then many foreign scholars carried out findings about energy consumption, tourist behavior and carbon emissions of tourists, found that the different modes of travel, accommodation facilities and even the diet of tourists, affected the energy consumption of travel process [42]. And tourists have been responsible for global CO<sub>2</sub> emissions, accounting for 4.4%, which would continue to increase with an annual rate of 3.2% from 2005 to 2035 [43]. Tourism is a kind of important economic activities, both tourist consumption and waste emissions are more than local residents’ daily amount [44]. Through investigation, most tourists were willing to get carbon offsets [45], but relying on carbon offsets exclusively, may hinder the sustainable development of tourism industry [46], so tourism industry stakeholders should recognize the consequence of environmental degradation, and provide strategic management for sustainable tourism practice [47].

Under the influence of low carbon travel abroad, the low carbon concept in all aspects of tourism in our country appeared, and the most typical event was that the first low carbon tour group made up of 10 Shanghai residents traveled in the North Pole successfully by their own expense in July 2009. Then the first low carbon tourism demonstration area appeared in Taiwan and Ma Ying-jeou took Taiwan’s low carbon tourism ambassador, played a good role in promoting the prevalence of low carbon tourism in Taiwan. Ctrip pioneered carbon compensation plan firstly and encouraged travelers to use their own member points for saplings way to compensate for the carbon dioxide emissions. At present, the domestic researches on low carbon tourism mainly have focused on the induction of the basic situation of low carbon tourism and tried to encourage tourists to adopt this way of tourism, such as introducing the low carbon travel behavior from multiple angles in detail, advocating tourism to take positive countermeasures and transforming the mode of development [48], exploring the personal carbon footprint of visitors and low carbon travel behavior intention, predicting tourists’ possible behaviors to the environment in the process of tourism activities, promoting and taking precautions before its behavior [49], advocating save energy and reduce pollution and with action to explain the construction of harmonious society, saving society and civil society through every link of eating, accommodation, transportation, traveling, shopping and entertainment [50]. By using low carbon technologies, applying mechanism of carbon sequestration and advocating low carbon tourism consumption mode, a higher quality of tourist experience and more tourism economic, social and environmental benefits can be obtained [51]. What has been said above has laid a foundation for the proposing and analysis of the low carbon tourism development mode [52]. Based on the concept, the follow-up research mainly started with the low carbon tourism development model, principles and dynamic of tourism development, carbon emissions, tourism traffic behavior and rural low carbon travel. For instance, according to problems diagnosing, goals setting, development principles, development strategy and performance evaluation of five steps constructed low carbon tourism development model [53]. Government regulation and control force, scenic areas endogenous power

and market force were the motivation of low carbon scenic area [54]. Low carbon scenic spot should adhere to the principle of dynamics, coordinate resources, environment and human factors [55]. Tourism transport carbon emissions were full of the characteristics of high proportion, measuring difficultly, expanding area significantly and the more involved departments [56]. For tourists, social influence factors, cognitive factors, individual characteristics and self-adjustment factor would affect the low carbon travel behavior [57]. And the transformation and upgrading of rural low carbon development should be based on the reference of the experience of development of low carbon rural tourism at home and abroad, ensuring the direction and path of low carbon economic transformation and upgrading the rural tourism and building the upgrading of rural tourism theory model [58].

On the whole, the researches regarding low carbon tourism have placed emphasis on the relation of the country's carbon emissions, energy consumption and the mutual influence between them, and also gradually deepen in the study of the tourism industry of the carbon emissions associated with climate change and low carbon tourism concept, low carbon tourism exploration strategy, therefore, studies on visitors from more micro level in the tour of scenic spot in the process of carbon emissions influence and practice of low carbon tourism scenic spots to realize low carbon development needs to be further researched.

## **2.2 Eco-tourism**

Eco-tourism is originated in the 1980s. After entering the 1990s, due to the ideas of sustainable development about natural, social, and economic coordination becoming the guiding idea to solve the problem of global environment, the corresponding eco-tourism has been developed rapidly. The data shows tourism was the world's fastest growing economy industry in the last century, among which eco-tourism was the fastest growing segment, and the average growth rate was from 15% to 20%, which reflected the people restored its pristine state and advocate natural new fashion.

Foreign researches on eco-tourism began in the 1980s, special adviser Ceballos Lascurain of IUCN firstly put forward the concept of "eco-tourism" in 1983 [59]. At that time, this term was not used extensively, and some scholars still used natural ecosystem tourism or green tourism to express [60-61]. In 1987, WWF done a special study on five countries involved in Ecuador and published the research report on *Eco-tourism: the Potential and Pitfalls*. According to the definition of the first world congress on "tourism and environment", eco-tourism was aimed at appreciating and studying the natural landscape, wildlife and relating characteristic culture, by raising money for nature reserve to create employment opportunities for local residents and providing environment education for the public to contribute the conservation of nature tourism [62]. On this basis, further research would put forward by improving the whole social awareness of the value of the resources, building the atmosphere of protecting natural resources, expanding the foreign investment and capital input to achieve the purpose of the eco-tourism development on the natural environment protection [63], and try to implement the management strategy, make the ecological tourists experience pleasure and satisfaction from the original and transformed into a deeper understanding of comprehension, changing of attitudes, so as to implement responsible behavior for the environment [64], and helping people to better understand the ecological tourists frequently contact with nature environment, at the same time, exploring the social, economic, political and psychological mechanism of the impact on community eco-tourism [65]. Meanwhile, exploring the effects of the rural eco-tourism for residents, and proper political intervention were helpful to the residents in the ecological tourist area to transform the traditional the mode of farming, and acquire social-economic welfare[66], in addition, trying to keep balance on the relations between eco-tourism, tourism development and environmental protection [67].

With China's environment worsening, ecological damage problems in tourism development is more and more obvious, so many scholars pay close attention to eco-tourism, and a lot of researches focus on eco-tourism, eco-tourism and environmental pollution, etc. such as the research on developing eco-tourism was an inevitable choice for reasonable development and effective utilization of tourism resources in nature reserve [68], and pointed out that in the process of eco-tourism, due to the tourists behavior, service unit in scenic areas caused the environment problems of water pollution,

solid waste pollution, noise pollution, vegetation destruction, and species reduction [69]. Besides, tourism ecological compensation has become a hot spot, and its meaning, interests subject, standards, and channels and mechanisms were the core content [70]. Based on this, the follow-up studies placed emphasis on eco-tourism resources, the construction of eco-tourism evaluation system, eco-tourism development mode and strategy, ecological civilization and eco-tourism and so on, such as artificiality and the objective existence of fragile eco-tourism resources were the internal cause of the fragility of ecological resources [71]. And it indicated that the construction of the evaluation system of eco-tourism resources should take tourism resources condition, ecological environment, tourism development conditions and development potential, degree of coordinated development into consideration [72]. Simultaneously, the government, tourism enterprises and the local community of the trinity of eco-tourism development mode can be constructed [73] and the ecological civilization was a factor to construct ecological tourism [74], and also community eco-tourism and rural tourism were the research emphasis, and some researchers thought that there existing some problems of eco-tourism management mode in the community, such as unsafe management mechanism, commercialized management thinking, the imbalance of the interests distribution and so on, therefore, its development can be conducted through government scientific management, the third party management and community autonomy management [75]. Rural eco-tourism in national regions should pay attention to building the national culture brand, eco-tourism industrialization, mobilizing more participants interactive cooperation, coordination of eco-tourism and rural construction to keep high effectiveness [76].

From what have been mentioned above, the study on eco-tourism mainly focused on ecological connotation of tourism, eco-tourism management strategy, the ecological environment and pollution, ecological compensation, eco-tourism development mode, eco-tourism evaluation system, eco-tourism resources and distinctive eco-tourism, etc. and it has achieved certain results, based on the protection of natural ecology, it takes sustainable tourism activities, consistent with the connotation of low carbon tourism nature and realization of the target, and the research about how to assess tourism scenic area development is deficient, considering advocating eco-tourism and low carbon tourism.

### **3. Low Carbon Eco-tourism Development Prospects**

Through the review of the literature above, it is found that low carbon eco-tourism lacks the organic connection and integration of low carbon economy, low carbon tourism, eco-tourism regarding low carbon eco-tourism and has not formed a unified understanding on the notion and system of these.

Facing the arrival and development of low carbon economy and green economy, this paper argues that low carbon eco-tourism should be integrated with core ideas of energy saving and emission reduction and activities based on the nature, and it does not only embody the protection of the natural landscape development, but also reflect the measures taken to reduce carbon emissions with response to climate warming, and some combination of the two, that is, in the context of low carbon economy, we should draw on the idea of low carbon economy to develop low carbon eco-tourism and advocate for taking new tourism mode of low energy consumption, low pollution and management concept in the process of development and utilization of natural landscape. Promoting the low carbon eco-tourism way and reducing carbon emissions in the process of travel and management of scenic spots, tourist scenic spot's low carbonization development is the trend of the current and future. Based on the perspective of tourists, regulators, residents, systematic analysis and quantitative researches are still lacking on building the relations of low carbon eco-tourism and the construction of low carbon scenic area and embodying the influence of low carbon economy in all levels in the construction process of scenic area.

#### 4. Conclusions

According to the review of the related researches of low carbon economy, low carbon tourism and eco-tourism, a basis of the low carbon eco-tourism will be set in the further studies for the ecological civilization and low carbonization of tourism industry. Under the atmosphere with climate change and environmental pollution, low carbon eco-tourism development helps to alleviate the pressure of the scenic area, promote the sustainable development of tourism industry and contribute to the process of the construction of ecological civilization, and encourage people to know nature, enjoy nature, and protect nature. In addition, the low carbon eco-tourism accords with energy conservation and environmental protection concept and corresponds to the development of circular economy concept, and it has a positive role to promote the development of tourism.

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