

# Analysis on the Impact of Residents' Environmental Awareness on Low Carbon Tourism Cognition and Willingness in Bijie City

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**Abstract:** In recent years, low-carbon tourism has become an important approach to deal with environmental problems in tourism. While the cognition and willingness of tourists is crucial for the development of low-carbon tourism, their environmental awareness may affect their cognition and willingness. Through the methods of literature analysis and questionnaire survey, we collected the relevant information about Bijie residents' low-carbon tourism cognition, demographic characteristics and other possible influencing factors, and then made statistical analyses with the data. The results showed that Bijie residents lack enough understanding about low-carbon tourism, and there are differences in their cognition of different aspects of low-carbon tourism. Many factors have influenced the cognition of low-carbon tourism. Firstly, residents have a high level of cognition of low-carbon transportation and accommodation. In terms of low-carbon catering and shopping, residents show various levels of cognition on different items. Secondly, gender and age have significant effects on Bijie residents' understanding of low-carbon tourism. Thirdly, the higher the residents' awareness of carbon reduction in daily life, the more they understand the two major elements of tourism carbon emission, namely transportation and accommodation. The tourism industry and relevant government departments should take positive measures to enhance residents' environmental awareness, so as to improve residents' awareness and participation in low-carbon tourism.

## 1 INTRODUCTION

With the rapid development of the economy and society, tourism has become an important leisure lifestyle. With the continuous expansion of the tourism industry, the overall carbon emission of the tourism industry is also increasing, especially the carbon emission caused by transportation, accommodation and the consumption of water, electricity and other resources in the scenic area. Therefore, reducing the carbon emission from tourism has become an important part of the low-carbon economy. At present, low-carbon tourism has been widely concerned by the government, academia and society, and has become an inevitable choice for the sustainable development of China's tourism industry (Cai, 2010; Liu, 2020).

Low-carbon tourism is a sustainable tourism development mode that advocates low-carbon consumption in the process of tourism development, so as to obtain higher tourism experience quality and

economic, environmental and social benefits (Cheng, 2018; Wang, 2020). To develop low-carbon tourism, the behavior of tourists is very important. Furthermore, the cognition of low-carbon tourism is the basis for the formation of low-carbon tourism attitude and behavior. However, the public perception of low-carbon tourism varies and the influencing factors are also various. Coombes and Jones found that warm weather will attract more tourists to participate in low impact tourism activities through their research on coastal tourism (Coombes, 2010). Mckercher found that although international tourists understand that their travel form may lead to climate warming, few people are willing to take the initiative to change their tourism behavior (McKercher, 2010). Fotiou thought that in view of the current social and economic development trend, the environment-friendly tourism market will continue to expand, bringing great opportunities for the development of low-carbon tourism (Zhou, 2013). Liu Qing and Liu Yaping analyzed Nanning citizens' cognition and

willingness of low-carbon tourism, and found that the deeper the citizens' understanding of low-carbon tourism, the more they support the development of low-carbon tourism in Nanning (Liu, 2017).

Bijie City, located in the northwest of Guizhou Province, which possesses rich tourism resources and a superior ecological environment, has a favorable condition to promote low-carbon tourism (Zou, 2012; Lu, 2015). In this study, we investigated the residents' cognition of low-carbon tourism in Bijie City, and analyzed the influencing factors of their cognition. Combined with the development experience of low-carbon tourism at home and abroad, we put forward suggestions to enhance the residents' cognition of low-carbon tourism in Bijie city, so as to promote the sustainable and healthy development of low-carbon tourism.

## 2 METHOD

In this research, we mainly adopted the questionnaire survey. Bijie residents who often participate in tourism activities were interviewed, and the relevant data was obtained. Using the data, we analyzed Bijie residents' cognition of low-carbon tourism and the influencing factors, including demographic characteristics such as gender, age, education, occupation and income, internal factors such as the perception of climate change and environmental responsibility, and external factors such as social reference norms and the tourism environment. Then we found out the factors that significantly affect Bijie residents' low-carbon tourism cognition.

The questionnaire in this study mainly included three parts: residents' cognition of low-carbon tourism, possible influencing factors and residents' demographic characteristics. In March 2021, we distributed questionnaires to Bijie residents through the Internet by random sampling, and a total of 202 valid questionnaires were collected.

## 3 RESULTS

### 3.1 Sample Distribution of Respondents

In 202 valid questionnaires, the proportion of women is slightly higher than that of men. The sample basically covers all the major occupations in society, mainly including company staffs, professional and technical staffs and students. In terms of monthly income, 51.0% of the respondents earn less than 2000 yuan, 20.3% earn between 2001 and 4000 yuan, 16.8% earn between 4001 and 6000 yuan, 7.9% earn between 6001 and 8000 yuan, and 4.0% earn more than 8000 yuan. Most of them travel 0-3 times a year.

### 3.2 Residents' Cognition of Low-Carbon Tourism

In this study, residents' cognition of low-carbon tourism was quantified. One to five points represented "strongly disagree", "disagree", "uncertain", "agree" and "strongly agree" on low-carbon tourism cognitive items. Then the average value of each item was calculated; the average score of 1-2.4 means "do not understand", 2.5-3.4 means "modest", and 3.5-5 means "understand".

The results of the questionnaire survey showed that the overall cognition of Bijie residents of low-carbon tourism is only modest, with an average of 3.00. In the survey sample, 34.65% of the respondents know about low-carbon tourism, only 5.45% of them know it very well, and 20.79% of them are uncertain. Nearly 40% of the respondents don't know about low-carbon tourism.

Bijie residents show a high level of awareness of low-carbon transportation. Most of them believe that public transportation should be vigorously developed in scenic spots, walking is a way to practice low-carbon tourism, and self-driving produces more carbon emission. The average value of each item is above 3.5 (Figure 1).

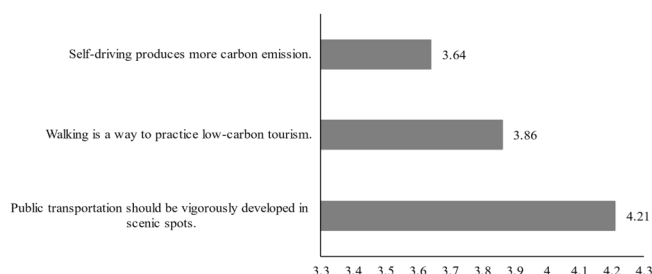


Figure 1: Bijie residents' cognition of low-carbon transportation.

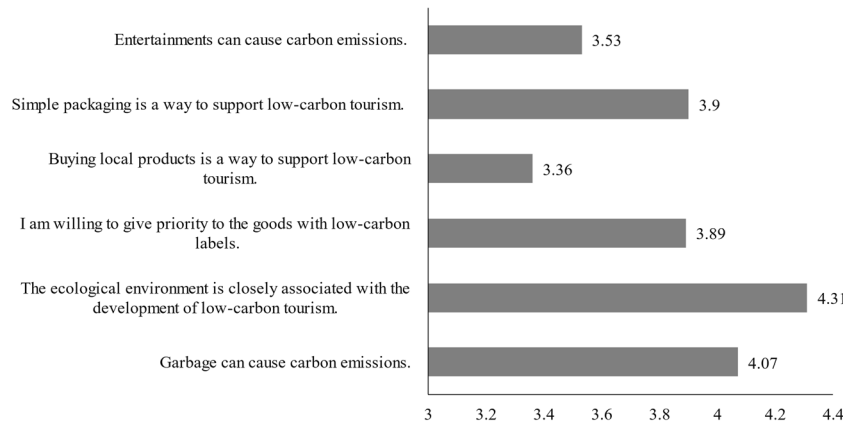


Figure 2: Bijie residents' cognition of low-carbon sightseeing, shopping and entertainment.

Table 1: Multivariate analysis of variance of the influencing factors (*P*-value) on residents' cognition of low- carbon tourism.

Low-carbon tourism items	Gender	Age	Education	Income	Awareness of carbon reduction	Daily consumption habits
Carbon emissions of meat	0.688	0.674	0.443	0.292	0.836	0.334
Carbon emissions of hotels	0.528	0.1	0.463	0.029*	0.502	0.001**
Water saving toilets	0.031*	0.025*	0.9	0.646	0.943	0.023*
Energy saving lighting systems	0.288	0.388	0.393	0.108	0.001**	0**
Public transportation	0.603	0.162	0.046*	0.631	0.001**	0.002**
Walking	0.024*	0.264	0.632	0.137	0.483	0.001**
Priority to low-carbon products	0.129	0.006**	0.28	0.577	0.445	0.008**
Priority to local products	0.016*	0.325	0.128	0.812	0.404	0.743
Carbon emissions of recreation	0.014*	0.141	0.564	0.269	0.762	0.095

Bijie residents also have a high level of awareness of low-carbon accommodation. Most of them believe that hotels should use intelligent energy-saving lighting control systems and water-saving toilets, and the air conditioning temperature should be set according to the national standard. The average value of each item is more than 4.

Bijie residents show various levels of cognition on different low-carbon catering items. Among them, residents well understand the item that carbon emissions of different levels of hotels are different (3.85), while the understanding of the item that the carbon emission of meat food is greater than that of vegetarian food is only modest (3.26).

Residents have a high degree of cognition of low-carbon sightseeing. They consider that the ecological environment is closely associated with the development of low-carbon tourism and that garbage can cause carbon emissions. The average value of each item is more than 4. Residents show various levels of cognition on different low-carbon shopping items. They believe that simple packaging is a way to support low-carbon tourism when they buy souvenirs and are willing to give priority to the goods with low-carbon labels, with an average value of more than 3.8.

As for the item that buying local products is a way to support low-carbon tourism, the cognition level is only modest, with an average value of 3.36. Residents' cognition of low-carbon entertainment is also not high (3.53), just reaching the level of “understand” (Figure 2).

### 3.3 Influencing Factors on Residents' Cognition of Low-Carbon Tourism

The results of multivariate analysis of variance showed that gender, age, awareness of carbon reduction and daily consumption habitats have significant impacts on cognition of many low-carbon tourism items. However, education, income and other factors have very limited impacts on low-carbon tourism cognition (Table 1).

Through the analysis, it can be seen that men have a higher level of cognition than women on the four items that hotels should use water-saving toilets, walking is a way to practice low-carbon tourism, purchasing local products is a way to support low-carbon tourism, and entertainments can cause carbon emissions. Therefore, the gender of residents has a certain impact on the cognition of low-carbon tourism.

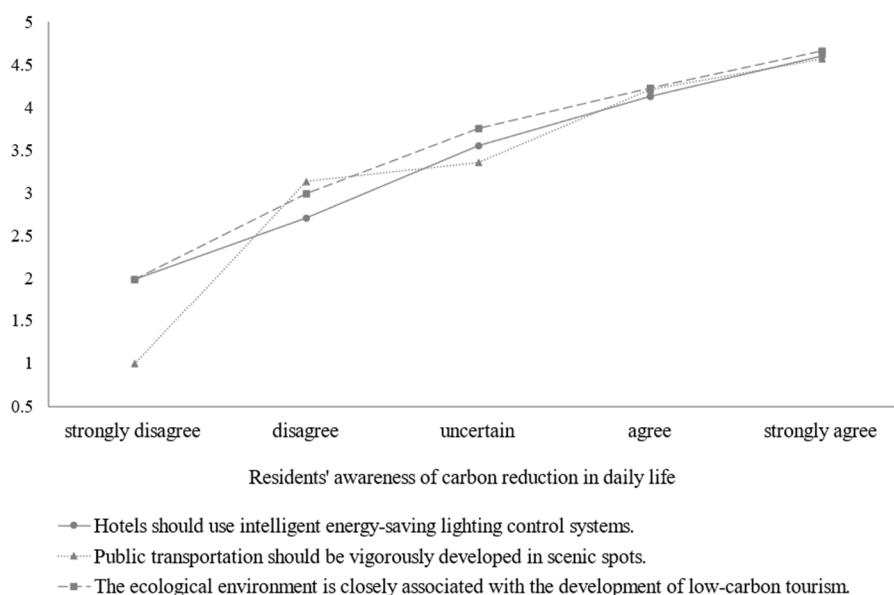


Figure 3: The effects of Bijie residents' awareness of carbon reduction in daily life on their cognition of low-carbon tourism.

Similarly, the age of residents also has a significant impact. The residents under 35 and over 55 years old have a high degree of cognition on items that hotels should use water-saving toilets and the ecological environment is closely associated with the development of low-carbon tourism, and they are willing to give priority to low-carbon goods, while the residents aged 36 to 55 show a relatively low level of cognition on these items.

The awareness of carbon reduction and daily consumption habits also have significant impacts on cognition of many low-carbon tourism items. It can be seen from Figure 3 that the higher the residents' awareness of carbon reduction, the higher the level of their cognition on items that hotels should use energy-saving lighting control systems, governments should vigorously advocate the development of public transportation in scenic spots, and the ecological environment is closely associated with the development of low-carbon tourism. In addition, the more residents are used to buying low-carbon products in their daily life, the better they know that hotels should use water-saving toilets and energy-saving lighting control systems, the air conditioning temperature should be set according to the national standard, public transportation should be vigorously advocated, low-carbon goods should be given priority, and walking is a way to practice low-carbon tourism. Therefore, improving residents' awareness of carbon reduction and daily consumption habits are essential to enhancing residents' cognition of low-carbon tourism.

#### 4 CONCLUSION

As the main body of tourism, residents play an important role in the development of low-carbon tourism. Through this study, we obtained a better understanding of Bijie residents' cognition of low-carbon tourism and the influencing factors. First of all, residents have a high level of cognition of low-carbon transportation. They believe that public transportation in scenic spots should be vigorously developed. Most residents are concerned about the relevant information about tourism accommodation, and generally recognize low-carbon accommodation. In terms of low-carbon catering, residents' cognition varies on different items, which is related to the differences in their catering experience. Residents have a high level of awareness of low-carbon sightseeing, and consider that the ecological environment is closely associated with the development of low-carbon tourism. In terms of low-carbon shopping and entertainment, residents' cognitive level is not high. Secondly, gender and age significantly affect Bijie residents' understanding of low-carbon tourism. Residents in different gender and age groups show significantly different cognition levels. In addition, the higher the residents' awareness of carbon reduction in their daily life, the more they pay attention to the low-carbon economy and environmental protection, and the more they understand the two major elements of carbon emission in tourism, namely transportation and

accommodation. At the same time, the more residents are used to buying low-carbon green products in their daily life, the more they know about low-carbon tourism items.

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