

The Study of Local Community Participation of Ecotourism Development in Daming Mountain Nature Reserve in Nanning, Guangxi, China

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Abstract

Community participation is one of the main content of ecotourism development. In order to further understand the degree of residents' participation in ecotourism development in Daming Mountain Nature Reserve, this paper selected 6 villages, which have the closest relations in the process of ecotourism development in Daming Mountain Nature Reserve, as the research object. It adopted the way of questionnaire and interviews to investigate. The questionnaire was conducted by random sampling, one-to-one question-and-answer, and was filled in by the investigator himself. Interview is a random question and answer among respondents in the process of questionnaire, and further in-depth investigation of residents. The results show that the current ecotourism development in this area has not well connected the tourism development with the economic interests of local residents, nor has it driven the development of local economy and environmental improvement, resulting in the local residents' dissatisfaction with the current situation of ecotourism development in Daming Mountain Nature Reserve, affecting the degree of community participation in ecotourism. At the same time, it can also be seen that the local community has a strong subjective desire to participate in the development of ecological tourism. In view of the existing problems, this paper puts forward the corresponding countermeasures for local residents to participate in ecotourism development and realize sustainable development of ecotourism in this area.

Keywords: Ecotourism, Community residents, Community participation, Daming Mountain Nature Reserve

Introduction

Daming Mountain Nature Reserve was established in 1981 and promoted to National Nature Reserve in 2002. The reserve is located in south-central Guangxi at the junction of Shanglin, Wuming, Mashan, and Binyang counties. The Tropic of Cancer traverses the central part of the reserve. Daming Mountain Nature Reserve covers an area of 16,994 hectares and has rich animal and plant resources. According to the survey statistics, there are 2,023 species of vascular plants in 764 genera of 209 families and 294 species of wild vertebrates in 90 families and 31 orders. Humid subtropical hilly monsoon climate, oceanic climate and Daming Mountain Nature Reserve special low geographic latitude, topography and the adjacent east Asia continent south Beibu Gulf Marine, the influence of such factors as regional climate shows great mountain climate characteristics, both at the same time has the monsoon climate characteristics and characteristics of maritime climate, annual average temperature 15.1 °C. The average annual precipitation was 2 630.3 mm.

In order to deeply understand the participation degree and enthusiasm of the surrounding residents in the tourism development of Daming Mountain Nature Reserve, 6 villages were selected, which are located at the foot of Daming Mountain Nature Reserve, the only way to enter the Daming Mountain scenic area. The investigation on them is representative to some extent and can truly reflect the current situation of local residents' participation in the development of Daming Mountain Nature Reserve ecotourism and their thoughts on participating in ecotourism.

Through questionnaire survey, this paper understands the problems relating the participation of local community residents in the ecotourism development of Daming Mountain Nature Reserve. On this basis, some countermeasures and suggestions were put forward for the sustainable development of the ecotourism in Daming Mountain Nature Reserve.

Research objectives

- 1) To investigate the participation of the surrounding residents in the ecotourism development of Daming Mountain Nature Reserve.
- 2) To understand the residents' satisfaction degree and expectation of the ecotourism development of Daming Mountain Nature Reserve.
- 3) To provides suggestions for local residents to participate in ecotourism development in Daming Mountain Nature Reserve.

Literature review

In 1993, the international ecotourism society gave an authoritative definition of ecotourism: It refers to a preservation of the natural environment as well as to maintain the local residents of tourist activities. Since then, community participation has become one of the important standards of inspection of ecological tourism. While defining community participation in tourism, scholars at home and abroad have also studied the influencing factors, strategies, mechanisms and models of community participation in ecotourism.

As for the definition of community participation in ecotourism, Bao Ji-gang (2006) believes that community participation in ecotourism development means that all members of the community participate in relevant decision-making, production, service, operation and management based on their own needs in the process of tourism industry development, and become producers and development subjects of ecotourism products. The aim is to ensure the sustainability of tourism development and the integrity of the natural landscape. Yang Xiao-hong (2011) believes that community participation in ecotourism development means that the community realizes the comprehensive development of the community through tourism industry activities, ensuring that the community as the main body enters into all levels of the ecotourism industry and participates in various major decisions and activities of the ecotourism industry. Long Chang-xi (2017) believes that the essence of community participation in ecotourism is the process of community construction. Amanada Stronza (2008) divides community participation in ecotourism development into two levels: one is the executive level, which is responsible for specific operation; the other is the decision-making level, which is responsible for formulating strategies and systems. At the same time, the importance of community decision-making to the development of tourism industry is emphasized.

Research on the influencing factors of community participation in ecotourism mainly includes internal and external factors. Tosun, C. (2000) studied a tourism community in Turkey, studied the attitudes of various parties to the tourism industry in the local community, government agencies and tourism enterprises, and clarified the factors hindering its development, including internal and external comprehensive effects. For internal factors of Qiu Xin-yi (2017) found that destination residents demands mainly include the social demands, economic participation in appeal, cultural participation demands, decision participation and so on four parts, so the four psychological demands is the important internal factors that affect community participation in ecotourism, which is the biggest impact of the economic participation. Chen Wei (2017) conducted a survey on the willingness of community to participate in ecotourism on the attitudes of community residents to the environment, and constructed an integrated model for the two variables of community participation in ecotourism and environmental attitudes, in order to investigate the interaction between community participation and environmental attitudes.

As for the strategies of community participation in ecotourism, Liu Junqing (2016) proposed four strategies for ecotourism from the perspective of community participation: first, community residents' awareness of participation should be improved; Secondly, the channels of community residents' participation should be broadened; Thirdly, the decision-making mechanism of community participation should be established. The fourth is to build a standard and effective benefit distribution and protection mechanism. Luo Ru (2018) analyzed the social utility of community participatory ecological health tourism in Bama from this perspective, and discussed strategies to further expand the social utility of community participatory ecological health tourism. In terms of the strategy of development direction, Liu Yan et al. (2002) proposed that community participation in ecotourism should develop in the direction of demutualization. In terms of system establishment and regulation, Bao Ji-gang and Sun Jiu-xia (2008) proposed that to achieve sustainable development of community tourism, the community should be given institutional power to ensure the dominant position of the community in tourism development. Weng Shi-xiu and Peng Hua (2011) also pointed out that in order to effectively guarantee the rights and interests and dominant position of community participation in tourism, a series of supporting systems including property rights system should be formulated at the national or legal level. Liu Wei-hua (2000) proposed supporting mechanisms for community participation in tourism, including employment training mechanism, development consultation mechanism and even the establishment of benefit distribution mechanism. Wang Min-xian (2004) proposed a guarantee mechanism to ensure effective community participation in ecotourism from several aspects from the perspectives of politics, sociology, modern economics and public economics.

Regarding the mode of community participation in ecotourism, Chen Xiao-ming (2009) divided the current mode of community participation in tourism development in China into five modes: principal-agent mode, government-led mode, community-led mode and stakeholder participation. Sebele (2010) studied a community in Botswana and found that community tourism should make efforts to effectively communicate and exchange with the government so as to gain more support and even more rights. In this way, the interests of the tourism industry can be better obtained and more effective support can be obtained in environmental protection. Lv Kai, Zheng Lu (2014), taking Caiyi Street project in Yangzhou City as an example, expounded the practice and enlightenment of government-guided community participation mode.

It is found that domestic and foreign research on community participation in ecotourism shows an increasing trend in both breadth and depth, including the concept, connotation, influencing factors, strategies, modes and mechanisms of community participation in ecotourism. In contrast, foreign research has been involved earlier, and the theories and systems on community participation in ecotourism are more complete and mature, and even the ability and effect of community participation have been evaluated and studied. As China encourages the development of ecotourism in recent years, Chinese scholars have gradually increased their research on community participation in ecotourism. However, they mainly focus on theory and macro level, and there are few researches on the development of specific regions according to local conditions, and

few innovations on ecotourism forms based on the current market demand and trend. Therefore, based on previous research results, based on the actual situation of Daming Mountain Nature Reserve, combined with the current market demand and trend, this paper proposes strategies and suggestions from the perspective of community participation for the actual development process to refer to and learn from.

Methodology

In order to deeply understand the degree of participation and enthusiasm of the surrounding residents in the ecotourism development of Daming Mountain Nature Reserve, since it is closer to the Nature Reserve, the residents of 6 villages with a strong interest in correlation were surveyed by questionnaire, supplemented by a few interviews. A survey by implementing questionnaire was conducted by random sampling, one-to-one question-and-answer, and was filled in by the investigator himself. Interview is a random question and answer among respondents in the process of questionnaire survey, and further in-depth investigation of residents. These 6 villages are located at the foot of Daming Mountain Nature Reserve and the only way to enter the Daming Mountain Nature Reserve scenic spot. The investigation on them is representative to some extent and can truly reflect the current situation of local residents' participation in the development of Daming Mountain Nature Reserve ecotourism and their thoughts on participating in ecotourism.

Sample size

The population for local communities is 1,422. The sample size was determined by using the Yamane (1970) formula. The sample size n was computed as below;

$$n = \frac{N}{1 + N.e^2}$$

where,

n = sample size

N = population size (1,422)

e = precision or desired margin of error (10 %).

Table 1 Sample size.

Villages	N	n	n for study
Nahan Village	245	16	28
Naxin Village	206	13	25
Bangang Village	216	14	27
Xiahu Village	314	21	30
Shanghu Village	223	15	29
Tanghong Village	218	14	27
Total	1,422	93	166

Thus, 93 local communities were the minimum numbers of the sample size. However, for this study, 166 were considered.

Data analysis

The data were analyzed by using statistical software SPSS16.0, such as conventional descriptive percentage and mean value.

Six indicators of satisfaction and expectation were selected for the survey: ① "local residents get economic income from tourism development"; ② "Tourism development will increase employment for local residents"; ③ "Local infrastructure has been improved after tourism development"; ④ "Reasonable compensation for land expropriation for tourism development"; ⑤ "Tourism should not interfere with the normal life of local residents"; ⑥ "Promote the improvement of local community environment". The community participation in the development of ecological tourism in Daming Mountain Nature Reserve was evaluated from satisfaction degree (P) and expectation degree (E). Likert 5-point scale was used to evaluate the 6 indicators, with 1 - 5 representing "completely dissatisfied/not at all expected", "not satisfied/not expected", "average", "satisfied/expected", and "very satisfied/very expected", respectively. The scores were 1 - 5, and the mean value and standard deviation were calculated.

The measurement of the degree of satisfaction and expectation of resident was scaled as ordinal frequency of local satisfaction and expectation, the ordinal degree of satisfaction and expectation can be applied as;

- 1) Very satisfied/very expected = 4.21 - 5.00
- 2) Satisfied/expected = 3.41 - 4.20
- 3) Average = 2.61 - 3.40
- 4) Not satisfied/not expected = 1.81 - 2.60
- 5) Completely dissatisfied/not at all expected = 1.00 - 1.80

Results and discussion

Basic characteristics of respondents

The basic characteristics of residents in the surrounding communities of Daming Mountain Nature Reserve can be summarized from the demographic statistics of residents such as age, sex, marriage, nationality and education level, as well as family living standards and other aspects reflected. The basic information of respondents is shown in **Table 2**.

Table 2 Basic characteristics of residents in communities surrounding Daming Mountain Nature Reserve.

Item	Indicator	Effective percentage/%
Gender	Male	55.5
	Female	45.5
Marital status	Married	81.6
	Unmarried	18.4
Age	Aged under 17 (inclusive)	7.2
	Age of 18 - 24	8.2
	Age of 25 - 34	11.4
	Age of 35 - 44	22.1
	Age of 45 - 54	31.1
	Age of 55 - 64	11.1
	Age above 65 years (inclusive)	8.9
Nationality	Zhuang nationality	95.5
	Han nationality	3.5
	Other ethnic minorities	1.0
Education	Illiteracy	2.2
	Primary school	10.1
	Junior high school	42.1
	Senior high school	28.7
	Technical secondary school	6.9
	Junior college or above	10.0
Family living standard	Only solve the problem of food and clothing	7.2
	Average standard of living	80.3
	Relatively rich	11.0
	Rich	1.5

Basic characteristics of residents in communities surrounding Daming Mountain Nature Reserve can be got after talking about the statistical numbers reported in **Table 2**.

Most of the residents left behind are elderly

Most of the respondents are aged between 35 - 44 and between 45 - 54, totaling 53.2 %. Those aged 18 to 24 and 25 to 34 accounted for 8.2 and 11.4, respectively. The majority of local young adults work in other places, and a large part of the young adults interviewed only stay in the local vacation. Those under the age of 18 accounted for only 7.2 %, and those over 55 accounted for 20 %. The left-behind residents are generally older, resulting in low labor force, lack of vitality and innovative thinking in the surrounding communities of Daming Mountain Nature Reserve.

The inhabitants of Daming Mountain Nature Reserve are dominated by males

Among the respondents, males accounted for a relatively high proportion, accounting for 55.5 %, while females accounted for 45.5 %. This has something to do with the traditional concept of male superiority and female inferiority among local residents. During the survey, if the men were at home, the men were generally surveyed, while the women mostly did not answer the questions. The women were only interviewed when the men were not at home, or when they were out in the village. This is closely related to the local backward economic situation which affects people's thinking.

The overall level of education of local residents is relatively low and lack the necessary skills to participate in tourism development

Due to the low level of education, the overall cultural quality of local residents is low, and they lack of adequate understanding of the development of ecological tourism in Daming Mountain Nature Reserve. In addition, the villages surveyed belong to the communities of The Zhuang nationality, and the Zhuang residents account for 95.5 %. The Zhuang language is the main language of communication, and most of them cannot speak Mandarin, which has become a big obstacle for the communication between local residents and tourists and prevents them from participating in the ecological tourism development of Daming Mountain Nature Reserve.

Daming Mountain Nature Reserve surrounding community residents living standard is generally low

Most local residents consider their families to have a low standard of living. 80.3 % of the people think their family living standard is average, 1.5 % of the people think they are very rich, 11 % of the people think they are relatively rich, and 7.2 % of the people think they only have enough food and clothing. The low level of education and the outflow of young and middle-aged labor force are the main reasons for the low living standard and backward economy of local residents.

Analysis on the initiative of community residents' participation

The survey results of residents' enthusiasm for participating in ecotourism development in Daming Mountain Nature Reserve surrounding communities are shown in **Table 3**.

Table 3 Participation enthusiasm of residents in communities surrounding Daming Mountain Nature Reserve.

Item	Indicator	Effective percentage/%
The attitude of local residents towards tourism development	Don't support at all	4.6
	Don't support	11.4
	Averagely	20.1
	Support	36.5
	Completely support	27.4
Willingness to participate in tourism development	Very reluctant	0.0
	Reluctant	4.2
	Averagely	24.3
	Willing	43.6
	Really willing	27.9
To express views on tourism development actively	No	30.3
	Yes	69.7
Forms of participation in tourism development	Tourism staff	25.2
	Launch of tourism entity	19.7
	Don't care	45.4
	Tourism staff or start-up tourism entities	9.7

As can be seen from the data in **Table 3**, residents in the surrounding communities of Daming Mountain Nature Reserve have a strong subjective desire to participate in ecotourism. From “The attitude of local residents towards tourism development” 63.9 % of respondents support the development of ecotourism, indicating that local residents generally support the development of ecotourism. However, there are still 16 percent respondents do not support or do not support at all, which has a negative impact on the ecological tourism development of Daming Mountain Nature Reserve. As can be seen from the “willingness to participate in tourism development”, 71.5 % of the local residents have high expectations to participate in ecotourism, indicating that the local residents have a high willingness to participate in ecotourism. Only 4.2 % of respondents were reluctant to participate. In the project of “actively expressing views on tourism development”, 69.7 % of the respondents would actively express their views, while 30.3 % would not. It can be seen that most local residents have high enthusiasm for participating in ecotourism and are willing to take the initiative to give their opinions. In terms of “forms of participation in tourism development”, 25.2 % of the respondents are willing to participate in the form of tourism practitioners, 19.7 % in the form of establishing tourism entities, 9.7 % are willing to participate in the above 2 forms, but 45.4 % of the respondents are indifferent. This may be caused by the respondents’ low level of education and lack of understanding of the forms of tourism development.

Analysis on the satisfaction and expectation degree of community residents

The development status of each indicator satisfaction degree, expectation and ranking are shown in **Table 4**.

Table 4 Levels of satisfaction and expectation of residents in Daming Mountain surrounding communities.

	Items	Average value	SD	Ranking	Assessment level
Satisfaction (P)					
P1	Local residents get economic income from tourism development	1.816	0.815	12	not satisfied
P2	Tourism development will increase employment for local residents	1.948	0.977	11	not satisfied
P3	Local infrastructure has been improved after tourism development	2.535	1.066	8	not satisfied
P4	Reasonable compensation for land expropriation for tourism development	2.193	0.994	10	not satisfied
P5	Tourism should not interfere with the normal life of local residents	3.252	1.083	7	average
P6	Promote the improvement of local community environment	2.456	0.976	9	not satisfied
	Total	2.367			
Expectation (E)					
E1	Local residents get economic income from tourism development	4.522	0.683	1/2	very expected
E2	Tourism development will increase employment for local residents	4.522	0.831	1/2	very expected
E3	Local infrastructure has been improved after tourism development	4.296	0.752	4	very expected
E4	Reasonable compensation for land expropriation for tourism development	4.351	0.831	3	very expected
E5	Tourism should not interfere with the normal life of local residents	4.009	0.747	6	expected
E6	Promote the improvement of local community environment	4.260	0.817	5	very expected
	Total	4.327			very expected

According to the data in **Table 4**, it can be seen that local residents are generally dissatisfied with the impact of the ecological tourism development in Daming Mountain Nature Reserve. The mean rank from P1 to P6 is only 7 - 12 (assessment level = not satisfied). The average value of P5 "Tourism does not interfere with the normal life of local residents" is more than 3, reflecting that local residents think that the development of Daming Mountain Nature Reserve ecotourism basically does not affect their normal life. Influence factors in P1 "local residents income from tourism development", P2 "tourism development for the local residents will be", P3 local infrastructure improved after the "tourism development", P4 "reasonable" tourism development land expropriation compensation, P6 "promote local community environment improvement" from 5 aspects, which are local residents are not satisfied. In particular, they are very dissatisfied with P1 and P2, and their average values are both lower than 2 (not satisfied), scoring 1.816 and 1.948, respectively. At present, the development of Daming Mountain Nature Reserve ecotourism has not well connected with the economic interests of local residents, neither brings economic benefits to local residents, nor leads to the development of local economy. Failed to cope with issues concerning residents' land expropriation compensation, infrastructure building and environmental improvement. Problems mentioned above affect the community participation in ecotourism.

It can also be seen from the data in **Table 4** that local residents have high expectations for tourism development. The mean values from E1 to E6 rank from 1 to 6, and the mean values are 4.327 (assessment level = very expected), local residents have the highest expectations for E1, "local residents get economic income from tourism development" and E2, "Tourism development increases employment opportunities for local residents", with an average score of 4.522, which is consistent with P1 and P2 in the satisfaction degree of the impact of tourism development on local residents. As they are most dissatisfied with the current situation of economic income and employment, they have the highest expectations for these 2 aspects. All these indicate that the development of ecotourism can increase the income and employment of local residents. Other 4 aspects: E3 "Local infrastructure is improved after tourism development", E4 "Reasonable compensation for land expropriation for tourism development", E5 "Tourism does not interfere with the normal life of local residents", and E6 "Promotes the improvement of local community environment", the residents' expectations are also very expected, with average values of 4.296, 4.351, 4.009 and 4.261, respectively. It also shows that the residents have great expectations for the improvement of ecological and living environment after the development of ecotourism.

From the findings above, it can conclude that countermeasures should be taken to deal with the existing problems relating community residents participating in the ecotourism development in Daming Mountain Nature Reserve.

Suggestions for local residents in ecotourism development

Formulate relevant preferential policies to attract young and middle-aged people to return to local ecotourism

Due to the relatively backward economy and low income of residents in the surrounding communities of Daming Mountain Nature Reserve, youngest and middle-aged people in the area rely on migrant work to increase their income. Most of the people left at home are elderly women and children, and the labor force is low, which cannot meet the needs of ecotourism community participation. In order to develop local economy, increase residents' income and develop ecotourism, young and middle-aged migrant workers should be attracted to return to local areas and participate in ecotourism through various means.

Government support is crucial for residents of communities surrounding Daming Mountain Nature Reserve to participate in ecotourism, and the local government should play a leading role in providing policy support for community participation in ecotourism, so as to attract young and middle-aged people to return to the local area to participate in ecotourism-related work. Specific measures include the following aspects: 1) give priority to local residents to provide employment opportunities, increase employment rate; 2) Reduce the tax of community residents to participate in tourism operation entities, and encourage local residents to open tourism entities; 3) Formulate relevant preferential policies to ensure that foreign business entities give priority to hiring local residents and reach a certain proportion, so that tourism business income flow back and increase the income of local residents.

Provide relevant skills training for local residents to improve their overall quality

From **Table 2**, it shows that majority of local residents are ethnic minorities with low education level and poor expression ability in Mandarin. On the one hand, they are unable to engage in jobs requiring relevant skills, and on the other hand, they cannot communicate with tourists. The local government and Daming Mountain Reserve Administration should provide training of ecotourism skills to the surrounding residents, so as to improve their comprehensive quality and employment rate. The training content can involve the following aspects: 1) The tourism service skills of local residents will be improved and they will be better qualified for relevant work through the training of tour guides, folk performances and other related tourism skills. 2) Daming Mountain specialty production training. To provide local residents with Daming Mountain handicrafts production training. 3) Daming Mountain Nature Reserve tourism traffic driving training. Due to the narrow road from the gate to the mountain service area, only small vehicles are allowed to pass. Local drivers can be trained to provide rental or shuttle services for tourists. 4) Mandarin training. In order to improve the Putonghua level of local residents, Putonghua should be popularized so that local residents can better communicate with tourists.

Establish a social security mechanism to protect the reasonable interests of residents

The residents around Daming Mountain Nature Reserve are not satisfied with the current situation of ecotourism development. It mainly focuses on economic development, employment and income. Local residents generally expect that Daming Mountain Nature Reserve tourism development can improve their economic income and employment opportunities, improve infrastructure construction, and maintain a good ecological environment.

Establish a reasonable profit distribution mechanism to ensure the reasonable interests of local residents. The benefit distribution mechanism is one of the core contents of community participation in ecotourism, which is related to the success or failure of community participation in ecotourism. In the process of developing ecological tourism in Daming Mountain Nature Reserve, it is necessary to ensure that the surrounding community residents participate in the distribution of benefits, so that they can fully share the benefits brought by ecological tourism, so as to ensure their enthusiasm to participate in ecological tourism and protect the ecological environment consciousness. Residents can benefit from ecotourism by participating in accommodation, catering, tour guides, security guards, handicrafts, local specialty processing, car rental services and ticket revenue sharing.

Established a special fund for community participation in ecotourism to support community participation in ecotourism

The surrounding residents of Daming Mountain Nature Reserve hold a relatively supportive attitude towards its ecotourism development, and have high expectations to participate in the tourism development, and are willing to put forward opinions and suggestions on the problems in the tourism development. Taking advantage of these favorable factors and supporting them can increase the confidence and motivation of local residents to participate in ecotourism. Because the economy of the communities around Daming Mountain National Nature Reserve is underdeveloped and the income level of residents is low, the residents who are willing to participate in the establishment of tourism entities lack sufficient funds. Therefore, special funds can be set up to support local residents to participate in ecotourism-related activities during the development of Daming Mountain Nature Reserve ecotourism, and low-interest or interest-free loans can be provided to competent and skilled local residents to encourage local residents to engage in ecotourism-related work. A special fund may be established by the government, or it may be established by attracting investment under the guidance of the government.

Conclusions

- 1) Most of the residents left behind are elderly. The majority of local young adults work in other places.
- 2) The overall level of education of local residents is relatively low and lack the necessary skills to participate in tourism development.
- 3) Local residents in the surrounding communities of Daming Mountain Nature Reserve have a strong subjective desire to participate in ecotourism.
- 4) Local residents are generally dissatisfied with the impact of the ecological tourism development in Daming Mountain Nature Reserve. Meanwhile they have great expectations for the improvement of ecological and living environment after the development of ecotourism.

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