

Challenges and Prospects of Solid Waste Management in Rural Tourism Areas in China

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Abstract. Rapidly developing rural tourism in the vast rural areas brings economic benefits and also produces waste increment; at the same time, with the improvement of living standards, the increase of waste in rural areas is not low, which has become an essential issue of ecological, environmental protection. This paper discusses China's rural tourism development, the difficulties of domestic waste management in rural tourism areas and puts forward suggestions for improvement based on analysis.

1 Introduction

After entering the 21st century, with the vigorous development of China's new rural construction, rural tourism has developed rapidly and has achieved gratifying achievements. The overall scale of development is large, spreading across the country; there are a wide variety of products, and new products have outstanding personalities; the development models are rich and diverse, and the old and new are constantly being introduced; the results are remarkable, and the impact is far-reaching. However, due to a variety of factors, there are still many shortcomings, such as insufficient theoretical research depth, major bad development, monotonous operating projects, low service quality, lack of management, the tourism industry chain is not yet complete, and environmental damage occurs from time to time.

China's rural tourism areas are mainly scattered in the suburbs of cities, scenic spots and the marginal poverty alleviation development zones. Suburbs of the city tourism geographical location is good, convenient transportation, and the cost is low, it is a good place for urban residents to leisure and entertainment. Rural tourism on the edge of the scenic area is favored by many people because of its mature tourism resources and convenient traffic conditions. China's leisure agriculture and rural tourism revenue reached 850 billion yuan in 2019, up 6.3 percent year on year[1].

2 Review of rural tourism in China

2.1 The overall scale is large, throughout the country

Since 1998, the national tourism administration launched "Chinese urban and rural Tours" to form for the first time since the country tourism wave. In our country economy high-speed development, the governments at all levels to

develop and promote the rural tourism, urban residents' desire to return to nature under the influence of many factors, such as China's rural tourism has been showing a development frequently, all climax of development situation, and finally formed the characteristics of the overall scale, product throughout the country. Take Hubei Province as an example. In 2015, there were more than 40 famous tourist towns, more than 200 renowned tourist villages, and 20,000-star "farmhouses" in the province. In 2011, there were 35,000 rural tourism villages in China.

2.2 Tourism products: a wide variety of outstanding personality

Currently, there are many kinds of rural tourism activities in China. China's rural tourism can be divided into eight types from the purpose of tourists to rural tourism: rural sightseeing tourism; Rural farmhouse; Rural cultural tourism; Rural leisure tourism; Rural vacation tourism; Rural fitness tourism; Rural experience tourism; Rural adventure tourism.

2.3 Tourism mode: rich and diverse, innovation

China's rural tourism, after nearly 30 years of development, from the initial relatively single "farmhouse" mode has developed and formed a variety of rural tourism development modes. Some scholars have classified the current rural tourism in China into six modes: "farmhouse music mode," "high-tech agricultural sightseeing garden mode," "agricultural new village mode," "development mode of ancient villages," "agricultural rare scenery mode and scenic spot mode," "compatible with scenic spots mode"[2]. Thankfully, especially the new model of rural tourism are continually emerging, such as in some areas that appeared to run into a fresh, harvest, family "ornamental agriculture, picking forestry" model, with differences, experience, competition into the characteristic mode of the recreational fishery, animal husbandry

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"experience, with local materials (only), trading, value-added features on the spot" handicraft industry and rural art "mode. Also, new rural tourism development modes, such as rural hotels, rural leisure, culture-themed villages, and specialized production villages, have emerged in some areas.

2.4 The effect is tremendous and the influence is profound

As a new type of tourism activity, rural tourism, as an important measure taken by the Party and the government to narrow the difference between cities, has been rising in China for more than 20 years, with remarkable results and far-reaching influence. In the 2012 National Tourism Work Conference, when reviewing the tourism work in 2011, the National Tourism Director said that rural tourism has developed vigorously and become an important area of residents' tourism consumption. There have been 35,000 rural tourism characteristic villages in the country, which receive more than 600 million tourists annually and earn more than 150 billion yuan from tourism[3].

The development of rural tourism in China has played an extremely important role in promoting the construction of new socialist countryside. The promoting effect of rural tourism on the construction of new countryside in China is reflected in the economic level -- broadening the channels for increasing farmers' income [4]. According to the statistics of the World Tourism Organization, the investment multiplier of tourism is 4.3, which means that every additional 1 yuan of investment can generate a return of 4.3 yuan, boosting the tertiary industry and the primary industry and increasing the accumulation of capital in rural areas. It is reflected in the social level: increased employment opportunities and expanded employment "domestic demand," According to statistics, for every job opportunity created by rural tourism, five rural people will be employed. According to this calculation, there are now nearly 1.3 million "farmhouse entertainment" households in China, and more than 4 million farmers are employed. Embodied in the cultural level: improve the farmers' scientific and technological cultural literacy. Represented at the environmental level: promote the cultivation of farmers' ecological, environmental awareness, and the improvement of the rural environment.

3 Current situation and challenges of waste management in rural tourism areas in China

3.1 Current situation of rural solid waste

Rural solid waste mainly includes kitchen waste, lime soil waste, rubber and plastic waste, paper waste and other kinds of waste, among which kitchen waste is the main component of rural solid waste. A survey conducted in 6 towns and 12 villages in Zhejiang Province shows that 50.12% of the rural solid waste is non-recyclable waste such as kitchen waste, 38.85% is recyclable waste such as

plastic products and cans, 3.12% is harmful waste such as pesticide bottles and used batteries, and 7.91% is other waste.

With the rapid development and progress of rural society and economy in China, the living standard of rural residents has been continuously improved, the types of rural consumer goods and commodities have become richer and richer, and the composition categories of rural household waste have become more and more complicated and diversified. On the one hand, with the deepening of the "toilet revolution" in rural areas and the decline in the proportion of household farming, the proportion of organic waste is decreasing. On the other hand, the change of lifestyle and consumption concept of rural residents has led to the increase of electronic waste such as old mobile phones, charging cables, old computers, food packaging, plastic bags, beverage bottles, used shoes, and clothes. On the whole, China's rural solid waste has the characteristics of complex composition, large amount and wide range, scattered distribution, rising harmful components, big regional differences, and so on, and its total is still growing.

3.2 Three main characteristics of domestic waste in rural areas in China

3.2.1 China's rural solid waste production is still increasing in daily life.

Tang Lin et al.[5] pointed out that the rapid growth of consumption has led to a sharp increase in the discharge of rural household waste. According to relevant data, each person in rural households produces about 0.8 kg of household waste per day on average. Li Quanyang and Wen Xuan[6] pointed out that in daily life and production in rural areas, the amount of waste produced is far beyond the limit of the amount that can be treated. Liu Xiliang and Chen Min[7] estimated that the output of rural solid waste in China was close to that of urban solid waste based on the data from the National Bureau of Statistics, accounting for almost half of the total output of solid waste in China. In many rural areas, solid waste has not been properly arranged, piling up around villages in chaos or even rotting and stinking.

3.2.2 China's rural solid waste has obvious regional characteristics, and the influencing factors are diverse.

Natural conditions (such as climate, terrain, etc.) and social conditions (such as living standards of rural society, living habits of rural residents, consumption habits, etc.) in different regions jointly affect the total amount and composition of rural solid waste. Huang Kaixing et al.[8] found through econometric model research that there is a significant inverted "U" shaped curve between the per capita daily discharge of rural solid waste and the per capita annual net income of rural residents. Zhi-yong Han[9] in 280 villages in 31 provinces of investigation and study found that when the level of economic development, fuel composition, lifestyle factors, such as the national

rural living waste is higher than the south, north on overall the characteristics of the east than the west, and in the category of different solid waste also presents obvious regionality, life rubbish such as paper presents decreasing trend from south to north.

3.2.3 China's rural solid waste has the characteristics of diffusion.

Rural living waste, if any, deposited in the open air for a long time, not to effective use, not only occupy certain land, reduce the use of land resources, also can contaminate soil, water, and air, and degraded living waste will affect the health of the rural residents of contemporary and future generations, causing a severe and far-reaching impact on the ecological environment system.

3.3 Challenges in waste management in rural tourism areas in China

3.3.1 The mode of "village collection" cannot achieve specialization, and the sanitary condition of waste pool is poor

Due to the small population of village-level units, hundreds of people in small villages, and thousands of people in large villages, the daily amount of domestic waste produced is less than 1 ton. If the villages are responsible for the collection, it isn't easy to provide specialized vehicles, and the cost of personnel (drivers) is high. For economically underdeveloped areas, rural waste collection and transportation can only choose agricultural vehicles or tractors as vehicles; For some economically developed areas, even if the higher-level government funds to buy professional waste vehicles, due to the small amount of waste, a day can not load a truck of waste, at least a special driver is needed to take charge of the collection and transportation, such collection and transportation costs are difficult for most villages to afford.

In recent years, many places in China have begun to pay attention to solid waste collection, and many places have built waste collection ponds. However, due to the lack of waste classification management, the waste pool has become the breeding ground of mosquitoes and flies, and the environmental sanitation is poor, and it is difficult to meet the sanitation requirements.

3.3.2 The cost of collecting and transporting rural solid waste is high

The existing slogan is "village collection, township transport, county processing," the existing technical standards and norms require a township construction transfer station. The construction of waste transfer stations was originally intended to reduce transportation costs. Similarly, due to the high investment and low use efficiency of these transfer stations, if the full cost accounting is carried out, the cost of domestic waste collection and transportation will not be reduced but greatly increased.

3.3.3 Small disposal facilities of rural household waste are difficult to operate

Small-scale landfills and small-scale incineration are difficult to deal with in rural solid waste effectively. Many places try various forms of comprehensive treatment. Most of these comprehensive treatment plants are in the name of waste recycling, and most of the technical routes are separation treatment and composting treatment. These so-called integrated treatment plants can hardly be used after they are completed.

4 Recommendations of solid waste management in rural tourism areas of China

4.1 Scientific and reasonable development of rural tourism

First of all, the concept of "scientific planning" should be established. Scientific planning is the premise of the development of rural tourism, but it also does a good job of the basis of the follow-up work; therefore, before the development, we must analyze the market from the perspective of the whole region to work out a feasible plan. Secondly, the old and the new should be broken; that is, the traditional tourism concept of "profit first" should be broken, and the new concept of "service first" should be established. Only by setting up the new concept of "service first" can we reduce or eliminate all kinds of negative effects in the process of rural tourism development.

In combination with the new rural construction, it is of great significance to plan rural tourism and new rural construction simultaneously. It can avoid the conflict between the rural tourism planning and the latter two planning contents. It is conducive to the project positioning; that is, it is clear what kind of rural tourism project a region, a place, and a village should be engaged in; Can avoid "rush up" and "low-level repeated construction."

4.2 Standardize tourism operations and improve service quality

Standardizing business behavior to do the following four points: First, strict examination and approval links, put an end to the operation without a license; Second, the introduction and strict implementation of rural tourism norms and standards, the implementation of accommodation and catering prices are basically unified; Third, adhere to the pre-business and regular training system, strengthen the professional skills of employees training, examination passes the issue of post certificate, prohibit the post without a license; Four is to establish reward and punishment system, to comply with the management rules and regulations, good service quality management room households to give recognition and even the appropriate material reward, on the contrary, revoke the license or give certain economic punishment.

4.3 Increase investment in innovative waste treatment models

There are more than 40,000 townships and about 600,000 administrative villages across the country, most of which lack the necessary environmental protection infrastructure. At the same time, the environment of Chinese villages and towns is complex, and the layout is scattered. Although there are mature urban waste treatment technology and equipment, it is unable to solve the complicated rural waste problem in a targeted manner.

Therefore, in the face of more and more township enterprise-type pollution and urban-rural transfer-type pollution, as well as the re-upgrading of solid primary pollution, it is necessary to strengthen the construction of environmental protection infrastructures such as basic sanitation, waste collection, and transportation in villages and towns, and build a batch of suitable for villages and towns. Relatively complete, centralized and decentralized solid organic waste treatment facilities have enabled the proper treatment of rural solid waste, livestock breeding waste and silage straw, etc., focusing on clean production, resource utilization, and harmless waste disposal. The investment and application of technical equipment ensure the long-term stable operation of governance facilities.

4.4 Enhancing the environmental awareness of farmers and tourists

Strengthen the publicity of the basic national policy of environmental protection and environmental legal system for farmers and tourists, encourage the public to participate in environmental supervision, encourage them to report and expose environmental violations, and actively use the diversified educational methods that farmers love to see to raise public awareness of waste disposal.

5 conclusion

With the improvement of resident's living standards and the rise of rural tourism, more and more urban residents travel to rural areas, which is followed by the rapid increase of solid waste in rural tourism areas, which brings great challenges to the local environment. In order to improve this situation, first, it is necessary to develop rural tourism scientifically and reasonably; the second is to standardize the management of rural tourism and minimize the generation of tourism waste, especially food waste; the third is to explore the waste disposal mode suitable for rural tourism areas, such as biogas utilization of biological waste.

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References

1. Qian Li. leisure agriculture and rural tourism development [J]. scientific consultation (science and technology management), 2020(11):81.
2. Guo Hua, Yang Yuxiang. A summary of research on sustainable rural tourism livelihood [J]. Journal of Tourism Science, 2020,35(09):134-148.
3. Jiang Taiqin, Dong Peihai. Research progress and enlightenment of poverty alleviation through rural tourism in China [J]. Tourism Research, 2021,13(01):32-42.
4. Sun Jingwen, Ma Yuanjun, Wang Zhenbo, Wang Xujing, Liang Longwu. The revitalization path of rural tourism industry based on locking effect [J]. Advances in Geographical Sciences, 2020,39(06):1037-1046.
5. Tang Lin, Luo Xiaofeng, Zhang Junbiao. Social supervision, group identity and farmers' centralized treatment behavior of domestic waste —— Mediating and regulating function based on the concept of face [J]. china rural survey, 2019 (2): 18-33.
6. Li Quanpeng, Wen Xuan. Multiple structures of rural domestic waste problem: Analysis based on two paradigms of environmental sociology [J]. Learning and Exploration, 2020 (2): 36-42.
7. Liu Xiliang, Chen Min. Rural Domestic Waste Treatment Problems and Approaches: A Literature Review [J]. Journal of Tianjin University of Commerce, 2020 (3): 39-47.
8. Huang Kai-xing, Wang Jin-xia, Bai Jun-bing, et al. Analysis of rural domestic solid waste discharge and its control countermeasures [J]. China Soft Science, 2012 (9): 72-79.
9. Han Zhiyong, Fei Yongqiang, Liu Dan, et al. Analysis of output and physical characteristics of domestic waste in rural areas of China and treatment suggestions [J]. Journal of Agricultural Engineering, 2017 (15): 1-14.