



## Article

# Research on Ecological Hazards and Sustainable Development Path of Homogenized Development of Rural Tourism

Wanting Deng<sup>1</sup>, Lucille Aba Abruquah<sup>2\*</sup>, Yue Cao<sup>3</sup>, Yue Geng<sup>4</sup>

<sup>1,3,4</sup>School of Business Administration, Chongqing Technology and Business University, Chongqing, China

<sup>2\*</sup>CERATH Development Organization, Research Division, Accra, Ghana

**Correspondence:** Lucille Aba Abruquah, CERATH Development Organization, Research Division, Accra, Ghana  
**Email:** labruquah@yahoo.com

**Citation:** Deng, wanting, Abruquah, L. A., cao, yue, & geng, yue. (2025). Research on Ecological Hazards and Sustainable Development Path of Homogenized Development of Rural Tourism. *Contemporary Sustainability Development*, 1(1), 29-44. <https://doi.org/10.65514/6wptm991>

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**Abstract:** In recent years, as an important path to promote rural revitalization and local economic development, rural tourism has developed rapidly throughout the country. However, with its large-scale expansion and growth, the phenomenon of homogeneous development has become increasingly prominent, which not only weakens the market attraction and cultural attraction of local tourism products, but also poses a potential threat to the development of local ecological environment. This paper investigates the prominent rural tourism demonstration sites in China, aiming to analyze the specific performance, ecological risks and formation mechanism of the current rural tourism homogenization development. Based on social ecosystem theory and sustainable development theory, this paper constructs an integrated theoretical framework of "homogenization causes - homogenization performance - ecological risks - sustainable path", aiming to clarify three core research questions: (1) what are the specific performance dimensions and characteristic intensity of rural tourism homogenization development? (2) Is there a significant correlation between homogenization development and ecological hazards, and what is its impact path? (3) How to build a sustainable path that takes into account ecological protection and industrial development from a multi-agent perspective? The results show that the homogenization development of rural tourism is embodied in the duplication of landscape, the simplification of business types, and the superficial experience. The resulting ecological risks mainly include the decline of biodiversity, the pollution of water resources and soil, and the increase of waste treatment pressure. Further analysis shows that the root causes of the homogenization problem are the convergence of policy guidance, the lack of innovation ability of market players, the lack of local culture mining, and the imperfection of regulatory mechanism. Based on this, this paper puts forward relevant sustainable development paths from the four dimensions of policy regulation, industrial integration, differentiated development and science and technology empowerment for brief reference.

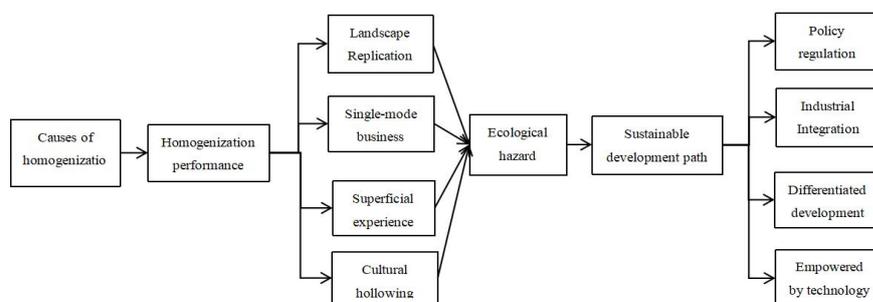
**Keywords:** Rural Tourism, Homogeneous Development, Sustainable Development, Ecological Hazards

## 1. Introduction

As an important link connecting urban and rural areas and activating rural resources, rural tourism is not only of great significance to local livelihoods, sustainability and regional development, but also of great significance to the protection and continuation of human civilization (Su et al., 2025). However, as rural tourism gradually enters the public's view, some regions blindly copy and imitate successful cases in the absence of scientific planning and characteristic positioning, resulting in problems such as landscape replication and convergence of business types, which have a negative impact on the natural, ecological environment, production and life of rural communities (Shen et al., 2020). This homogenization phenomenon not only weakens the market competitiveness of rural tourism, but also buries major ecological hidden dangers due to its over exploitation of natural resources and neglect of ecological environment protection.

In this context, exploring how to achieve differentiated development and improve the quality of rural tourism has become the research focus of scholars. Existing studies (Li, 2025; Liao et al., 2022) mostly discuss the development path of rural tourism from the perspectives of economic benefits, resource evaluation and development. This paper discusses the hidden dangers and sustainable development plan of rural tourism homogenization development through questionnaire survey and field interview, aiming to build a sustainable path that takes into account tourism development and ecological protection, and provide reference and decision-making basis for promoting the green and sustainable development of rural tourism. In addition, based on social ecosystem theory and sustainable development theory, this paper focuses on the following three core research questions: (1) what are the specific performance dimensions of rural tourism homogenization development and the characteristic strength of each dimension? (2) Is there a significant correlation between different dimensions of homogenization development and ecological risks (biodiversity, environmental pollution, waste disposal)? (3) How to construct the sustainable development path of rural tourism with pertinence and operability from the multi-agent perspective? At the same time, this paper constructs a conceptual model of "homogenization causes - homogenization performance - ecological risks - sustainable path", figure 1, which clearly shows the logical relationship between the variables and provides a theoretical framework for subsequent research.

Figure 1. Conceptual Model of Rural Tourism Homogenization Development and Ecological Hidden Dangers and Sustainable Development



## 2. Research Background and Theoretical Framework

### 2.1 Research Background

China's rural tourism has experienced the evolution and development from farmhouse entertainment and home stay clusters to pastoral complexes and characteristic tourism villages. As a new and effective catalyst, it promotes industrial restructuring, agricultural development and the upgrading of rural areas(Wang et al., 2013). Especially at present, under the influence of the Rural Revitalization policy, all regions have taken rural tourism as a breakthrough for industrial revitalization(Zhang et al., 2022) to promote the reconstruction and development of rural economy (Muresan et al., 2016).However, many rural areas lack overall planning and innovation guidance(Lu et al., 2025), and many areas are in a dilemma of modular development, such as opening the same manual workshops, developing the appearance of the same ancient city and ancient street, and launching similar cultural experience projects. This homogenization phenomenon largely promotes tourists' aesthetic fatigue, intensifies low-level competition among regions, and even destroys the local cultural background(Yang et al., 2022), which is not conducive to the development of economic benefits and cultural heritage in the region.

Some scholars at home and abroad are concerned about the impact of tourism activities on the ecosystem(Shang et al., 2020), including land use change, water resource consumption, waste production and species habitat disturbance. Research shows that (Senderos et al., 2025), highly homogeneous tourism development tends to cover up the local unique cultural characteristics and uniqueness, build large-scale infrastructure, and then form sustainable pressure on the local ecological environment. For example, intensive home stay construction may lead to vegetation damage and water and soil loss, and the influx of a large number of tourists will increase the difficulty of sewage treatment and waste management.

### 2.2 Theoretical Framework

Social ecosystem theory is a classic framework for analyzing the interaction between natural resource governance and human activities. This theory not only breaks through the research paradigm of the binary separation of "society" and "ecology", but also calls for more attention to the role of perception in social cognition(McArthur & Baron, 1983). It regards a specific region as a complex adaptive system composed of four core elements of resource system, resource unit, user, governance system and related external environmental variables, and emphasizes that the dynamic interaction and interdependence between the elements determine the stability and evolution of the system(Dorward, 2014). In the field of tourism research, rural tourism destination is essentially a typical social ecosystem. Natural landscape, soil and water resources constitute the ecological subsystem, while policy planning, operator decision-making and tourist behavior constitute the social subsystem. Cultural resources, as the core link connecting the two subsystems, are not only an important part of the social subsystem, but also the cultural carrier of the ecological subsystem.

The core of sustainable development theory is to achieve the coordinated balance of the three pillars of economy, society and environment. Its goal is to pursue the sustainable use of natural resources(Shi et al., 2019). In the field of rural tourism, the core requirements of sustainable development theory are: (1) economic sustainability, avoiding the extensive development oriented by short-term interests, and achieving long-term stable benefits through

industrial upgrading and brand building; (2) Social sustainability, protection of rural cultural heritage and community vitality, and protection of local residents' right to participate and benefit; (3) Environmental sustainability, strictly control the disturbance of tourism development to the ecological environment, and maintain the integrity and carrying capacity of the ecosystem.

### 3. investigation and research

#### 3.1 Survey Design

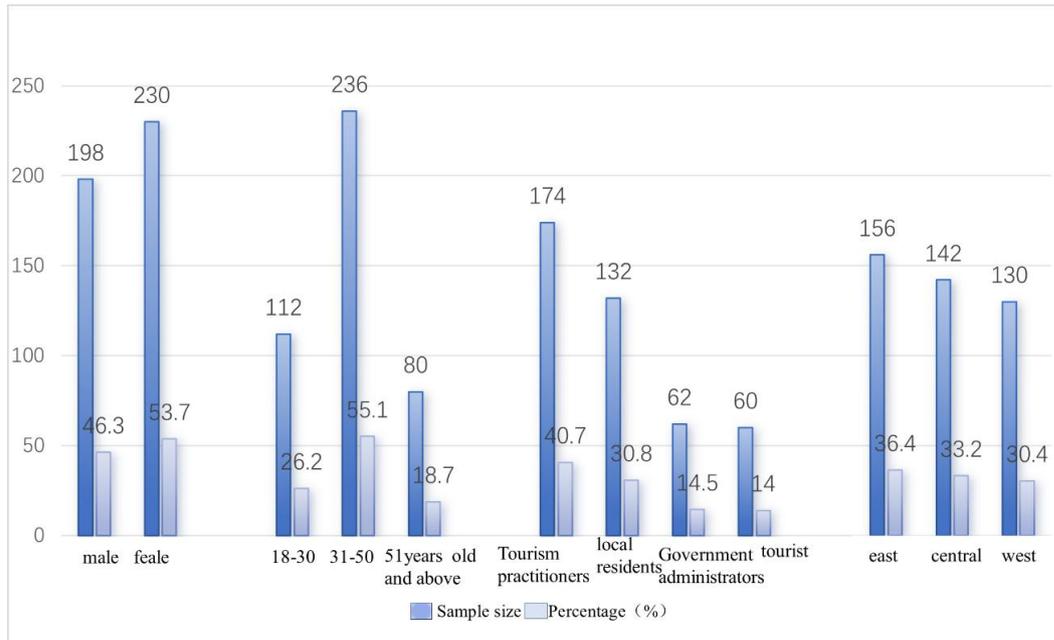
##### 3.1.1 Survey Objects and Samples

In this paper, a combination of questionnaire survey and field interview was used. A total of 500 questionnaires were distributed and 428 valid questionnaires were recovered, with an effective recovery rate of 85.6%. The respondents covered rural tourists of all ages and occupations. Based on the geographical distribution (East, central and West) and the development level of rural tourism (developed, medium and lagging), 20 rural tourism demonstration sites in 12 provinces (cities and autonomous regions) were selected as the research areas, including Anji, Zhejiang, Huangshan, Anhui, Dujiangyan, Sichuan, Weihai, Shandong, etc. The respondents include tourism practitioners, local residents, government managers and ordinary tourists. The specific sample characteristics are shown in Table 1 and table 2. Among them, tourism practitioners account for 40.7%, which is higher than that of other groups, and there may be sample bias. Its impact on the research conclusion will be discussed in the limitations section later.

Table 1. Distribution of Sample Characteristics

project	category	sample size	Percentage (%)
gender	male	198	46.3
	female	230	53.7
age	18-30 years old	112	26.2
	31-50 years old	236	55.1
	51 years old and above	80	18.7
occupation	Tourism practitioners	174	40.7
	local residents	132	30.8
	Government administrators	62	14.5
	tourist	60	14.0
Location	east	156	36.4
	central	142	33.2
	west	130	30.4

Table 2. Bar Graph of Sample Characteristic Distribution



### 3.1.2 Investigation Tools and Methods

The questionnaire used in this paper mainly contains four dimensions: homogeneity cognition, perception of ecological hazards, development suggestions and development willingness. In addition, the five point scale scoring method is used to score 1 to 5 points (1=completely unqualified, 5=fully qualified) from completely unqualified to fully qualified. The total score reflects the respondents' understanding and relevant views on the homogeneity of rural tourism. The specific dimensions and items are as follows:

(1) Homogenization performance: it includes 12 questions, including landscape duplication (3 questions, such as "the architectural styles of different rural tourist attractions are highly similar") simplification of business types (3 questions, such as "rural tourism projects are mainly catering and accommodation"), superficial experience (3 questions, such as "rural tourism experience lacks depth and creativity"), and cultural shell (3 questions, such as "rural culture is only displayed on the surface").

(2) Perception of ecological hazards: including the decline of biodiversity (3 questions, such as "the reduction of local animal and plant species after tourism development"), water resources and soil pollution (3 questions, such as "tourism activities lead to the deterioration of surrounding water quality"), and waste treatment pressure (3 questions, such as "serious waste accumulation in

peak tourism season"), a total of 9 questions.

(3) Causes of homogenization: including policy convergence (2 questions), insufficient innovation (2 questions), lack of cultural excavation (2 questions), and weak supervision (2 questions), a total of 8 questions.

(4) Demographic variables: including gender, age, occupation, region, etc.

The test results of reliability and validity of the scale are shown in Table 3. Cronbach's a coefficients were greater than 0.7, indicating that the reliability of the scale was good; Exploratory factor analysis showed that kmo value was 0.863, Bartlett sphericity test  $p < 0.001$ ,

and factor loads of each item were greater than 0.6, indicating that the scale had good structural validity.

Table 3. Test Results of Reliability and Validity of The Scale

dimension	Number of items	Cronbach's a	Factor load range	Variance interpretation rate (%)
1.homogenization performance	twelve	0.892	0.653-0.821	67.32
1.1landscape reproduction	three	0.785	0.682-0.796	---
1.2 simplification of business type	three	0.813	0.701-0.812	---
1.3 superficial experience	three	0.796	0.693-0.805	---
1.4 cultural hollowing out	three	0.778	0.675-0.789	---
2.perception of ecological hazards	nine	0.876	0.664-0.832	65.47
2.1 biodiversity decline	three	0.762	0.668-0.774	---
2.2 water resources and soil pollution	three	0.801	0.712-0.823	---
2.3 waste treatment pressure	three	0.789	0.691-0.801	---
3 causes of homogenization	eight	0.853	0.658-0.817	63.25
4.overall scale	Twenty-nine	0.915	---	---

### 3.2 Result Analysis

#### 3.2.1 Homogeneity of Rural Tourism

According to table 4 of the survey results, there are three typical characteristics of rural tourism homogenization: landscape duplication, simplification of business types and superficial experience.

First of all, at the level of landscape reproduction, 68.3% of tourists agreed with the view that "the architectural style and landscape layout of multiple rural tourism destinations are highly similar", which also reflected that most rural tourism destinations and villages did not really understand their own development positioning, and lacked some systematic planning and differentiated features(Fang et al., 2025), which hindered the sustainable development of rural tourism. Studies have shown that(Kou & Xue, 2024), tourists' landscape perception has a significant positive role in promoting their satisfaction and return visit enthusiasm, and rural landscape, as the core component of rural space, is crucial to promoting sustainable rural development and achieving the goal of Rural Revitalization(Wang et al., 2025). Therefore, for rural tourist attractions, it is more important to deeply Tap Rural historical and cultural resources to build a variety of landscapes, create rural fine tourism routes, and strive to improve tourists' landscape perception.

Secondly, in view of the simplification of business types, 75.4% of tourists reported that most rural tourism mainly focused on catering, accommodation, simple picking and other projects, lacking characteristic experience. Format is the core support of rural tourism, but most of the current formats of rural tourism are trapped in the dilemma of low-level repeated construction, which is difficult to meet the diversified needs of tourists. For example, the

picking garden only provides picking services, and does not extend the industrial chain to provide more experience projects such as jam production and dried fruit processing; B&B only provides accommodation, and does not launch special activities in combination with local B&B. Most rural tourism only stays at the level of primary consumption and does not deeply integrate agriculture, culture and Tourism.

Finally, in view of the superficial experience, 61.8% of tourists indicated that the current rural tourism experience lacked depth and creativity, and could not really integrate tourists into local culture. Most folk culture has been formalized, which only stays on the surface and is simplified to mechanical process performance and traditional clothing experience. Tourists cannot feel the local culture with local characteristics and understand its depth. Not only that, most farming and cultural experiences lack a sense of deep participation. The experience only stays in simple links such as picking and fishing, without professional explanations and interactive links, which makes tourists still have a smattering of local rural culture.

Table 4. Characteristics of Rural Tourism Homogenization Development

Homogenization characteristics	research question	Proportion of affirmative answers (%)
Landscape replication	The landscape of different rural tourist attractions is highly similar	68.3
Unifying business formats	The tourism project consists of mass projects such as catering, accommodation, and picking	75.4
Experience superficiality	Lack of depth and novelty in tourism experience	61.8
Cultural hollowing out	Rural culture is only displayed on the surface and has not deeply integrated with the landscape	59.2

### 3.2.2 Ecological Hidden Dangers of Rural Tourism Homogenization

At present, the ecological hidden dangers caused by the homogenization of rural tourism mainly include three aspects: the decline of biodiversity, the serious pollution of water resources and soil, and the increasing pressure of waste disposal.

First of all, most of the homogenization of rural tourism is centered on the replication of Red Net landscape facilities and hardened sites, which requires a large area of clearing of native vegetation and landforms, resulting in direct damage to the growth environment of local herbs and native trees, leading to the degradation of local plant communities (Peng et al., 2025). Moreover, the homogeneous development of rural tourism ignores the adaptability to the local ecology and blindly introduces exotic ornamental plants, which is easy to lead to the invasion of alien species and occupy the resources of native species, which further promotes the decline of biodiversity in a certain region and destroys the ecosystem balance.

Secondly, many homogeneous rural tourism projects lack standardized environmental protection facilities, such as the stereotyped farmhouse entertainment, catering and home stay

clusters. Catering sewage and domestic sewage are directly discharged into the surrounding ditches and farmland without treatment. Oil stains, detergent residues and organic substances in the sewage seep into the soil, resulting in soil hardening and fertility decline. At the same time, surface water and groundwater are polluted, affecting crop growth and rural drinking water safety; In order to ensure crop yield and appearance in large-scale picking gardens and sightseeing farmland, chemical fertilizers and pesticides are widely overused. The loss of chemical fertilizers will cause soil salinization, while pesticide residues will destroy soil microbial communities, and pollutants will flow into the water body with the rain wash, aggravating the eutrophication of water resources. In addition, homogenized rafting, water parks and other projects over pumped groundwater and disturbed the flow rate of water, which not only led to the shortage of local water resources, but also damaged the ecological structure of water bodies and aggravated the spread of water environment pollution.

Finally, the homogenization of rural tourism is likely to lead to the outbreak of centralized passenger flow, and the superposition of extensive project operation and lagging environmental protection facilities. At this time, the waste production will show explosive growth and complex components, such as domestic waste generated by tourists, such as food packaging, plastic tableware, disposable products, etc., crop stumps, food and beverage kitchen waste generated by picking gardens and farmhouses, and construction waste generated by the maintenance of amusement facilities. The existing waste decomposition and treatment capacity is far beyond the original rural waste collection and treatment capacity. At the same time, most homogenization projects are not equipped with complete waste classification and harmless treatment facilities. Waste is mainly piled up in the open air, incinerated on site or landfilled at will. It is easy to breed mosquitoes and stink when piled up in the open air, and pollutants infiltrate into soil and groundwater. Long term accumulation will also form a waste pollution zone, which will continue to erode the rural ecological environment, and the pollution caused by the lag of waste treatment will further aggravate the ecological hidden danger due to the high cost and long period of later repair.

#### **4. cause analysis of homogenization development and ecological hazards**

*4.1 Convergence at the Policy and Planning Levels (data support: 72.3% of respondents believe that "local rural tourism policies lack characteristics")*

The development of rural tourism in China started relatively late. Therefore, compared with other developed countries, rural tourism development and policies tend to be policy driven, with more emphasis on qualitative analysis and case-based methods(Lobsang et al., 2025). Therefore, rural tourism policies in many regions lack accurate research and often copy. For example, under the guidance of policies, many villages in a central province concentrated on building "antique commercial streets", all of which adopted the architectural style of blue brick and black tile, and the supporting business types were mainly catering and home stay, which not only caused low- level competition in the region, but also increased the soil erosion modulus by 30% and reduced the native plant species by 15% due to large-scale hardening of the ground and cutting down of native vegetation This convergence planning will make many adjacent villages get together to launch similar projects, ignoring the complexity of rural tourism destinations as social ecosystems(Zhao et al., 2025), resulting in a sharp increase in the pressure of ecological

carrying capacity in the region. For example, the centralized construction of amusement facilities will damage the mountain vegetation and disturb the water ecology, and the homogenized projects will disperse the passenger flow. The income of a single project is difficult to cover the cost of ecological restoration, resulting in a vicious cycle of ecological damage and waste of resources.

*4.2 Insufficient Innovation Ability of Market Players (data support: 68.5% of respondents believe that "rural tourism products lack creative transformation")*

At present, most rural tourism operators use the copy and paste mode, and lack of in-depth excavation and creative transformation of local natural and cultural resources. Rural tourism plays an important role in economic development, environmental protection and other aspects, but the following problems such as the lack of long-term strategic planning, monotonous tourism products, limited investment channels and so on all show that rural tourism also faces many challenges(Chang, 2024), which is fundamentally due to the lack of innovation ability of operators, which can not bring new vitality and vitality to the industry. For example, a western village is rich in intangible cultural heritage handicraft resources, but the local tourism operators only sell them as commodities, and do not develop in-depth participation projects such as manual experience courses and intangible cultural heritage cultural festivals, resulting in less than 2 hours of average stay time for tourists and only 300yuan per capita consumption. At the same time, at the level of in-depth excavation and development of rural tourism, there are still problems such as insufficient marketing and promotion of rural tourism(Zhu & Luo, 2022). Due to the differences in production level and ability, its communication has also been seriously hindered, and the lack of a complete planning theme, serious content homogeneity and other problems have seriously affected the development and impact of rural tourism communication.

*4.3 Lack of Cultural Mining, Relying on Landscape Replication (data support: 65.1% of respondents believe that "rural tourism does not reflect local cultural characteristics")*

With the development of rural tourism entering a new stage and the rise of buildings disconnected from the local culture, most rural tourist attractions imitate the ancient cities and towns and transplant the urban network red landscape. They do not make full use of the rich natural resources and the advantages of tourism site selection, rich landscape tourism resources, profound historical relics and rich cultural connotations(Wang, 2020), but inhibit the diversified development of the rural tourism market, such as transforming traditional spaces such as theatres and ancestral halls into commercial shops, or building amusement facilities on a large area of hardened ground. In addition, the traditional ancestral temple in an eastern village was transformed into a commercial bar, and the original farmland texture was removed to build the slide rope, Ferris wheel and other amusement facilities, which not only made the local traditional folk activities lose the carrier, but also caused the temperature in the summer area to rise by 2-3 °C due to the 40% reduction of the green area, and the habitat of local birds was destroyed. This behavior not only makes the original ecological style of the countryside disappear, but also affects the local biodiversity due to the disharmony between the architectural style and the natural environment, the reduction of green area and other factors. In addition, the maintenance cost of this kind of homogeneous artificial landscape is high, and long-term

idleness is easy to cause the waste of land resources and the decline of the ecological environment.

*4.4 The Regulatory Mechanism is not Perfect and the Ecological Binding Force is Poor (data support: 69.8% of respondents believe that "the ecological regulation of rural tourism is not in place")*

Under the current administrative system, the right to rural planning and construction is concentrated in the county-level governments, and township units often have no right to determine the development direction by themselves. However, the research and development of rural tourism needs a variety of systematic research, lacking comprehensive and refined data indicators support (Jia et al., 2022), which, to some extent, leads to the problems of long-term management and unclear rights and responsibilities, and the punishment for most illegal acts is insufficient and uneven. The survey found that only 32.7% of the rural tourism demonstration sites were equipped with special ecological supervisors, 45.3% of the projects did not build standardized sewage treatment facilities, and 67.8% of the projects did not implement the requirements of waste classification and treatment. For example, due to the lack of sewage pipe network construction in a southern rural tourism area, catering sewage is directly discharged to the surrounding rivers, resulting in the river water quality from class III to class V, soil pH value from 6.5 to 5.2, and crop yield reduction of 10% -15%. In addition, the self-restraint mechanism of some residents' organizations is not perfect, and it is difficult to form a consensus on ecological protection within the industry, which eventually leads to the disorderly expansion of homogeneous projects, and the continuous deterioration of the rural ecological environment, which is difficult to be effectively repaired.

## **5. Sustainable Development Path**

### *5.1 Policy Regulation and Local Implementation*

Rural tourism not only provides urban residents with the opportunity to reconnect with nature and experience rural traditions, but also injects new impetus into rural revitalization, urban-rural integration and farmers' income growth. Therefore, the government has also launched a series of policies and measures to support the development of rural tourism (Liu & Chen, 2025). Relevant departments should also formulate differentiated policy guidelines, divide three types of regions based on the regional resource endowment and ecological carrying capacity: prohibited development, restricted development and moderate development, control the total amount of tourism development in ecologically fragile regions, and issue special cultural protection policies for cultural rich regions. For example, for the ecologically sensitive areas in the west, we will restrict the construction of large-scale home stays and encourage the development of low impact businesses such as ecological observation and natural education.

Recognizing the potential and challenges of rural tourism development, the State Council, the Ministry of tourism and other government tourism departments have jointly promoted rural tourism projects in the region (Jiang et al., 2022). They have not only issued a number of policies to promote the development of tourism industry, but also made a more scientific and objective analysis of the regional tourism spatial structure to optimize the use of tourism resources. Some policies emphasize the priority of agriculture and rural development, urban-rural integration,

promote rural leisure tourism, deeply integrate rural culture and tourism, and improve the quality and efficiency of rural tourism, thus effectively promoting the comprehensive rural revitalization. At the same time, for rural areas with beautiful natural ecological landscape and health culture, the government should make rational use of rural forests, bays, mountains and other ecological resources, integrate medical projects into the natural environment, protect the regional ecological environment, improve the construction of tourism industry, and build a comfortable Medical Tourism Foundation(Liao et al., 2022).

### *5.2 Industrial Integration, Creating Ecological and Cultural Integration Products*

On the one hand, we can organically combine rural tourism with beautiful rural buildings(Sun & Meng, 2018), transform rural tourism resources into benefits, promote the construction of beautiful villages, promote the deep integration of rural tourism with agriculture, culture, health care and other industries, and create characteristic industries such as "agriculture+ research", "culture + experience" and "ecology+ health care". For example, combining local agricultural resources to develop agricultural products processing experience and pastoral research courses; Create an immersive folk custom experience project based on intangible cultural heritage. On the other hand, we should create unique and original IP in the region, combine the creation of IP with tourism resources, inject new vitality into the development of cultural tourism(Wu et al., 2023), improve its personalization and tourist adaptability, and enable the sustainable development of local tourism economy. In addition, it can also promote the development of rural enterprises by improving the competitiveness of rural tourism brands(Feng, 2021; Wang & Wu, 2022), thus promoting the development of rural tourism, which can not only reduce the negative impact of homogenization and simplification of rural tourism, but also help to meet the needs of consumers and create more value advantages for enterprises in a specific market environment.

### *5.3 Differentiated Development, Highlighting Advantages*

Different rural tourism destinations have different advantages and characteristics, including unique natural landscape or local cultural attraction, which constitute the unique competitiveness compared with other places(Feng & Borbon, 2022). Therefore, if you want to improve competitiveness and promote development, you must develop your own unique advantages. Rural tourism is widely considered to be an important driving force for the economic and social development of rural areas. It urges all regions to formulate supportive policies for their unique characteristics(Li, 2025), which will help put forward accurate and innovative development plans for the construction of characteristic rural tourism, and establish and strengthen the sustainable development mechanism at the rural economic and social levels. We can dig deep into local resources, realize differentiated development, focus on core resources such as local natural landscape, folk culture and agricultural characteristics, and develop original tourism products. For example, the theme home stay is created by using idle rural houses, and the package of "home stay + folk experience" is designed in combination with local folk activities; Rely on characteristic agricultural products to develop an integrated experience project of picking, processing and tasting. In view of the current situation of the protection and inheritance of most rural cultures, we should protect the traditional features of

local villages, rely on regional culture, develop tourism culture with distinctive local rural culture as the core element, create rural cultural brands, and improve the quality of tourism supply.

#### *5.4 Scientific and Technological Empowerment, Strengthening Ecological Constraints and Incentives*

At present, the construction of rural tourism also needs to use digital thinking and Technology (Zhang & Li, 2022) to promote the transformation and upgrading of rural tourism from the aspects of rural smart infrastructure construction, professional team construction, smart marketing platform construction and tourism theme planning, so as to promote the development of rural tourism with high quality. With the development of the industry, the rural economic structure is changing and upgrading, and rural tourism is an important way to promote the development of rural economy. Through mobile communication technology, GIS tools and other tools to collect the existing tourism development status information (Shi & Fan, 2022), in order to accurately formulate solutions and promotion strategies, accurately match differentiated products, and improve tourist satisfaction and repurchase rate. In addition, intelligent tourism is also an effective measure to promote the development of rural economy. Based on cloud computing and with mobile terminal applications as the core (Shiyi, 2019), it promotes the deep integration of "Internet + tourism", builds intelligent rural tourism data center and application platform, improves the intelligent management, marketing and service of rural tourism, and promotes sustainable development. The construction of digital village is also conducive to improving the competitiveness and ability of rural tourism. The establishment of rural tourism resource information system will meet the information needs of tourists and tourism management departments, and lay the information technology foundation for the development of rural tourism (Wang, 2022). It can also install soil sensors, water quality monitors, infrared cameras and other equipment in the tourism area by using the Internet of things and big data technology, monitor the ecological environment indicators in real time, realize risk early warning and precise control, and actively explore rural tourism resources.

## **6. Theoretical Contributions and Research Limitations**

### *6.1 Theoretical Contribution*

This paper constructs an integrated theoretical framework of "homogenization causes -homogenization performance - ecological risks - sustainable path", which combines social ecosystem theory with sustainable development, and provides a new theoretical perspective for the study of rural tourism homogenization and ecological sustainable development. The empirical study also verified the significant positive correlation between homogenization development and ecological hazards, quantified the impact of different homogenization dimensions on ecological hazards, and made up for the lack of qualitative description in existing studies. In addition, the hierarchical design of sustainable development path according to policy makers, local governments, business entities and community residents enriches the subject perspective of sustainable tourism path research and enhances the practical guidance value of the research.

## 6.2 Research Limitations

(1) In terms of sample deviation, tourism practitioners account for 40.7%, higher than other groups, which may lead to high perception and evaluation of homogenization performance and ecological hazards. Quota sampling method can be used in future research to optimize the sample structure.

(2) In terms of research methods, the questionnaire survey method is mainly used, lacking long-term follow-up research and experimental research. In the future, panel data, quasi experimental design and other methods can be combined to further verify the causal relationship between homogenization and ecological hazards.

(3) In terms of geographical limitations, the survey area covers 12 provinces (cities, autonomous regions) nationwide, but the particularity of different regions has not been fully considered. In the future, comparative studies can be carried out in different regions such as the East, central and West, and more targeted development paths can be proposed.

(4) In terms of data support, the empirical data of ecological hidden dangers are mainly from the perception of respondents, lacking objective ecological monitoring data, such as soil heavy metal content, water quality indicators, etc. in the future, the objectivity and accuracy of research can be improved by combining field monitoring and remote sensing data.

## 7. Conclusion

This paper reveals the internal relationship between the homogenization development of rural tourism and ecological hidden dangers through questionnaire interviews, and points out that there are some problems in the current development of rural tourism, such as the convergence of policy planning, the lack of innovation ability of the main body, and the weak regulatory mechanism. On this basis, it proposes that the sustainable development path should be systematically constructed from four aspects: policy regulation, industrial integration, differentiated development, and scientific and technological empowerment. Future research can further explore the differentiated development mode of rural tourism in different regions and resource types, and deepen the understanding of the interaction mechanism between tourism and ecology from the perspective of tourist behavior and cultural identity. In the future, the development of rural tourism should really integrate ecological protection into the development process, which not only protects the green waters and mountains in the countryside, but also allows farmers to continue to benefit from the development of tourism, so as to realize the harmonious coexistence between rural tourism and the environment.

## AUTHOR CONTRIBUTIONS

Wanting Deng: Conceptualization; research design; methodology; data collection; formal analysis; data curation; statistical analysis; visualization; validation; writing – original draft; writing – review & editing.

## ACKNOWLEDGEMENTS

The authors would like to thank the participants and interviewees for their valuable contributions to this study. The authors also appreciate the constructive comments provided by anonymous reviewers and the editorial team.

## CONFLICT OF INTEREST STATEMENT

The authors declare that there are no commercial or financial relationships that could be construed as a potential conflict of interest.

## DATA AVAILABILITY STATEMENT

The data generated and analyzed in this study are available from the corresponding author upon reasonable request. All data will be provided without undue restriction.

## Reference

1. Chang, X. (2024). CURRENT STATE OF RURAL TOURISM AND SUSTAINABLE DEVELOPMENT PLANS UNDER THE «BEAUTIFUL COUNTRYSIDE» INITIATIVE. *Роль технического регулирования и стандартизации в эпоху цифровой экономики.—Екатеринбург, 2024*, 243-250.
2. Dorward, A. R. (2014). Livelihood systems: a conceptual framework integrating social, ecosystem, development, and evolutionary theory. *Ecology and Society*, 19(2).
3. Fang, P., Liu, Y., Bai, X., & Niu, Z. (2025). Redesigning Sustainable Rural Tourism: A Stakeholder-Centered Approach to Interest Symbiosis in Post-Planning Villages. *Sustainability*, 17(5), 2064.
4. Feng, Y. (2021). Brand Marketing Strategy of Rural Tourism in the Era of Mobile Computer Internet. International Conference on Application of Intelligent Systems in Multi-modal Information Analytics,
5. Feng, Z., & Borbon, N. M. D. (2022). Level of competitiveness and attitude toward sustainable rural tourism in Zhejiang province: Inputs for tourism development. *Int. J. Res*, 10, 135-146.
6. Jia, Z., Jiao, Y., Zhang, W., & Chen, Z. (2022). Rural tourism competitiveness and development mode, a case study from Chinese township scale using integrated multi-source data. *Sustainability*, 14(7), 4147.
7. Jiang, X., Li, N., & Man, S. (2022). Spatial performance measurement and the resource organization mechanism of rural tourism resources in developing countries: A case study on Jilin Province, China. *Sustainability*, 14(23), 16316.
8. Kou, Y., & Xue, X. (2024). The influence of rural tourism landscape perception on tourists' revisit intentions—a case study in Nangou village, China. *Humanities and Social Sciences Communications*, 11(1), 1-14.
9. Li, Z. (2025). Rural tourism and the development of characteristic towns in China and Its influence on rural areas. *International Journal of Agricultural and Environmental Information Systems (IJAEIS)*, 16(1), 1-23.
10. Liao, C., Zuo, Y., Law, R., Wang, Y., & Zhang, M. (2022). Spatial differentiation, influencing factors, and development paths of rural tourism resources in Guangdong Province. *Land*, 11(11), 2046.
11. Liu, C., & Chen, Y. (2025). Research on the Spatial Pattern of High-Quality Tourism Rural Development and Its Influencing Factors: A Case Study of the Great Mount Huang District in Anhui Province. *Sustainability*, 17(19), 8943.
12. Lobsang, T., Zhao, M., Zeng, Y., Zhang, J., Liu, Z., & Li, P. (2025). Spatial Layout Optimization of Rural Tourism Destinations in Mountainous Areas Based on Gap Analysis Method: A Case Study in Southwest China. *Land*, 14(7), 1357.
13. Lu, Y., Shen, Y., Zhang, Y., & Qian, F. (2025). Research on the path of digital technology enabling

- high-quality integrated development of rural tourism. *Pacific International Journal*, 8(1), 70-76.
14. McArthur, L. Z., & Baron, R. M. (1983). Toward an ecological theory of social perception. *Psychological review*, 90(3), 215.
  15. Muresan, I. C., Oroian, C. F., Harun, R., Arion, F. H., Porutiu, A., Chiciudean, G. O., Todea, A., & Lile, R. (2016). Local residents' attitude toward sustainable rural tourism development. *Sustainability*, 8(1), 100.
  16. Peng, J., Li, J., Peng, L., & Zhang, Y. (2025). Forest Ecosystem Conservation Through Rural Tourism and Ecosystem Services: A Systematic Review. *Forests*, 16(10), 1559.
  17. Senderos, M., Sagarna, M., Otaduy, J. P., & Mora, F. (2025). Globalization and Architecture: Urban Homogenization and Challenges for Unprotected Heritage. The Case of Postmodern Buildings with Complex Geometric Shapes in the Ensanche of San Sebastián. *Buildings*, 15(3), 497.
  18. Shang, Y., Sun, Y., & Xu, A. (2020). Rural ecotourism planning and design based on SWOT analysis. *International Journal of Low-Carbon Technologies*, 15(3), 368-372.
  19. Shen, H., Zhang, Y., & Zhang, J. (2020). The ecological environment optimization mechanism of rural tourism community based on "Two Mountains Theory". 3rd International Conference on Advances in Management Science and Engineering (IC-AMSE 2020),
  20. Shi, B., & Fan, H. (2022). New Path Innovation of Rural Tourism Development Based on Mobile Communication. *Mobile Information Systems*, 2022(1), 5772204.
  21. Shi, L., Han, L., Yang, F., & Gao, L. (2019). The evolution of sustainable development theory: Types, goals, and research prospects. *Sustainability*, 11(24), 7158.
  22. Shiyi, T. (2019). Smart tourism and poverty reduction. *ORAȘE INTELIGENTE ȘI DEZVOLTARE REGIONALĂ*, 3(02), 65-75.
  23. Su, Y., Wang, Y., & Li, R. (2025). Mechanisms to Overcome the Homogenization of Rural Tourism Products and Improve the Competitiveness of Rural Tourist Destinations: A Case Study from China. *Systems*, 13(4), 287.
  24. Sun, H., & Meng, X. (2018). Research on the Development of Rural Tourism in Jilin Province Under the Coordination of "Industrialization, Urbanization and Agricultural Modernization". 3rd International Conference on Judicial, Administrative and Humanitarian Problems of State Structures and Economic Subjects (JAHP 2018),
  25. Wang, L.-e., Cheng, S.-k., Zhong, L.-s., Mu, S.-l., Dhruva, B. G., & Ren, G.-z. (2013). Rural tourism development in China: Principles, models and the future. *Journal of mountain science*, 10(1), 116-129.
  26. Wang, L. (2022). Rural tourism resource research based on multisensor and geographic information big data. *Journal of Sensors*, 2022(1), 1670571.
  27. Wang, W., & Wu, D. (2022). Construction of rural tourism brand value management model from the perspective of big data. *Computational intelligence and neuroscience*, 2022(1), 5623782.
  28. Wang, Y., Yao, H., Du, P., Huang, Z., & Li, K. (2025). Sustainable Development from Homogenization to Inclusivity: Optimization Strategies for Rural Landscape Design Based on Visual Behaviors and Landscape Preferences for Different Demographic Characteristics. *Sustainability*, 17(17), 7858.
  29. Wang, Z. (2020). The tourism rural landscape planning based on multi-scale factors under computer modeling. *Journal of Physics: Conference Series*,
  30. Wu, R., Chen, K., & Li, X. (2023). Development of Regional Cultural IP for Rural Tourism: A Case Study of Zesui Village. *Tour. Manag. Technol. Econ*, 6, 20-27.

31. Yang, W., Fan, B., Tan, J., Lin, J., & Shao, T. (2022). The spatial perception and spatial feature of rural cultural landscape in the context of rural tourism. *Sustainability*, *14*(7), 4370.
32. Zhang, Y., & Li, G. (2022). Research on Chinese Rural Tourism Scenario Construction under the Vision of Smart Tourism. *World Scientific Research Journal*, *8*(11), 145-152.
33. Zhang, Y., Li, W., Li, Z., Yang, M., Zhai, F., Li, Z., Yao, H., & Li, H. (2022). Spatial distribution characteristics and influencing factors of key rural tourism villages in China. *Sustainability*, *14*(21), 14064.
34. Zhao, Y., Liu, Z., & Wang, Y. (2025). The Effects of Rural Tourism on Rural Collective Action: A Socio-Ecological Systems Perspective. *Systems*, *13*(7), 566.
35. Zhu, X., & Luo, M. (2022). A Study on Short Video Marketing Dissemination for Rural Tourism Based on SIPS Model. *Forest Chemicals Review*, 1803-1810.

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