

Stage performance and background layout: process of rural tourism development, land use and human settlement environment evolution based on the micro empirical study in China

Tao Li

School of Geography, State Key Laboratory of Climate System Prediction and Risk Management, Nanjing Normal University, Nanjing, China

Shanshan Cheng

School of Economic Management, Changzhou Vocational Institute of Engineering, Changzhou, China

Qiushi Gu

School of Humanities, Southeast University, Nanjing, China

Qun Zhang

School of Tourism and Culture, Nanning Normal University, Nanning, China, and

Xin Zhang

School of Tourism, Beijing Union University, Beijing, China

Abstract

Purpose – Rural tourism and human settlement environments are both complex systems, and existing studies have only explored their interrelation from visible aspect perspectives (stage performance), such as tourism arrivals, economic growth and landscape fragmentation, while invisible power (background layout) – rural tourism development and investment – and its process and mechanism have not been fully considered. Rural tourism investment is regarded as the engine for rural tourism industry and leisure atmosphere enhancement. This study aims to learn the driving mechanism of rural tourism investment (RTI) and reconstruction process of the rural production-living-ecology functional structure, and results can help us deeply understand the interrelation between RTI and local human settlement environment evolution in destinations.

Keywords Rural tourism development and investment, Rural human settlement environment (RHSE), Land use pattern, Stage authenticity theory

Paper type Research paper



1. Introduction

For rural areas, the natural, leisurely, free and sustainable human settlement environment and pastoral lifestyle are the pursuit of visitors, who are generally occupied by busy work and noise. This native advantage has empowered the development of rural tourism industry in rural areas. And the harmonious and comfortable rural human settlement environment (defined as RHSE) is becoming the core attraction for rural tourists (You *et al.*, 2025). Thus, local natural and social leisure resources are developed with rural tourism investment, and amenities are also built to adapt to rural tourists' satisfaction and tourism industrial development with infrastructure construction and land use changing (Gocer *et al.*, 2024). Overall, rural tourism investment drives local land use pattern to create a recreational RHSE and achieve tourism and rural development.

A recreational RHSE is the direct reflection of rural comfortable infrastructure, attractive landscape and leisure atmosphere (Peleg-Barkat *et al.*, 2025). As the construction of accommodations, ranging from catering, lodging, communication and transportation to travel paths, rural scenic spots and entertainment facilities for rural tourism destinations, local land use and its pattern of production, living and ecology functional spaces would present a systematic change (Vishnu *et al.*, 2024). Meanwhile, their sightseeing and leisure value can also be explored and developed to create various tourism attractions, with their original single function turned into multiple functions for tourism. Thus, local RHSE can allude to rural land use, and rural tourism development means RHSE orienting toward land touristifiable and recreational conversion.

However, rural land touristifiable and tourism developments are inevitably linked to an enormous investment in leisure amenities, charming experiences and activities. Therefore, rural tourism industrial investment becomes very vital to destination development, land use changes and the evolution of RHSE. In practice, investment plays a critical role in rural tourism destination development and local human living environment evolution throughout the tourism area life cycle. According to statistics, rural tourism visitors have increased at an average annual rate of 20% since 2012 in China [1]. Such rapid growth has induced rural areas investing large capital, land, labor and other economic resources, into rural tourism destination construction. To receive rural tourists, local land use patterns and production-living-ecology functional structures have also been reframed to enlarge the supply of rural leisure and tourism industrial space, which deeply disturbs the RHSE and drives its evolution. Hence, rural tourism development and investment directly interact with local land use and RHSE.

Photos in Figure 1 concretely describe the evolution of RHSE from landscape to living facilities and social development with rural tourism in local destinations. Rural tourism development and investment drove local land function conversion and recreational use, as shown in Figures 1(a) and (b). At the same time, rural tourism has also transformed the local main industrial and population structure and attracted outside homestay investors or entrepreneurs, as shown in Figure 1(c). These facts can comprehensively illustrate the influence of rural tourism development on destination functional spaces and RHSEs.

Afterward, the beautiful destination landscape, comfortable travel accommodation and harmonious habitant environment become popular and visible goods, while rural tourism destination construction and investment process are unseen and invisible with enduring rural land use to support rural tourism activities and human settlement environment build. Therefore, the destination leisure environment and rural tourism atmosphere – RHSE – looks like a stage performance being shown to tourists, while rural tourism investment and destination construction look like a behind director in charge of the landscape background and land use layout, structure of local industrial investment and functional spaces in the destination. Given the important role of rural tourism investment and destination building in RHSE, a

Total human settlement environment evolution and ecology functional space with rural tourism development from 1983 to 2019



(a)

Destination production functional space has extended from traditional farmland to the whole space attracting tourists' attention



(b)

Destination living functional space has been rebuilt to recreation-oriented, and local social life is close to outside with tourism development



(c)

Figure 1. Influence of rural tourism development on destinations from the perspective of “production-living-ecology” functional spaces of rural human settlement environment in study area (Baishacun village)

scientific understanding of their relationships can help promote sustainable and coordinated development of rural areas in the wide practice of rural revitalization strategy.

2. Literature review

2.1 Influence of tourism development on the local community

Many studies have proven that the development of tourism and its industrial investment have a deep influence on local society and the economy (Najid *et al.*, 2022). According to the literature, scholars have widely discussed the positive and negative influence of the tourism industry on local development (You *et al.*, 2025). Moreover, some studies uncover the effects of tourism development on individuals' subjective well-being and green and sustainable development (Alves *et al.*, 2023). The nexus between tourism, local community ecology and the environment is also a hot topic in the literature. There are studies confirming no effect on carbon emissions in Mediterranean countries with intense tourism activities, while some studies have revealed tourism-related activities compromise these coastal countries' ecology

and environmental quality (Mejjad *et al.*, 2022) and proved that destination investment and service supply showing positively affect consumption intentions in rural tourism (Chen *et al.*, 2023).

Especially, studies have explored the importance of rural tourism roads, toilets and water and electricity pipeline construction (Antonín *et al.*, 2023) in improving infrastructure and promoting living comfort and happiness. Especially under the stimulation of local nostalgia, rural tourism promotes the protection and inheritance of traditional rural culture (Paul *et al.*, 2020; Hu and Wang, 2020), greatly improving the cultural environment and comfort of rural and beautiful homes (Zhu *et al.*, 2021). Scholars measured the impact of rural tourism on communities in the form of a community sensitivity index in Australia and suggested that community sensitivity is unlikely to be driven by negative perceptions (Law *et al.*, 2022).

Furthermore, rural tourism development may have a negative influence on local destinations (Wang *et al.*, 2026). Because of unreasonable resource development, rural landscape pollution, disorderly rural tourism development and transitional commercialization, the RHSE has experienced varying degrees of deterioration (Zou *et al.*, 2025). In practice, the “Great Leap Forward” of rural tourism development has led to a waste of resources, inefficient development and even “negative effects,” such as damage to the native environment and growth of carbon emissions (Chandra and Lekh, 2021). In addition, there are also existing documents reflect that the rise of rural tourism activities has driven local consumer prices rather than economic growth, causing price increases, further affecting the quality of life of residents, generating social culture shock and damaging the local tourism image and other adverse effects (Gao and Cheng, 2020).

Moreover, the large-scale development of rural tourism has more significant effects on ecological resources, social culture, the transportation environment and potential crimes in the region, seriously affecting the quality of the local rural living environment and residents’ satisfaction (McLean *et al.*, 2023).

2.2 Rural tourism and rural human settlement environment (RHSE)

From various perspectives, studies have comprehensively learned the relationship between rural tourism development, investment and the local RHSE (Luz and Seweryn, 2022). The literature has emphasized the ecological and human settlement environmental benefits of promoting economic development through sufficient empirical cases and combining the characteristics of the rural tourism industry (Zhao *et al.*, 2021; Ma and Tang, 2022). Studies have analyzed the positive role of rural tourism development and investment in local natural ecology, residents’ environmental awareness and harmless waste treatment (Shi *et al.*, 2022). At the same time, international scholars have pointed out the impact and importance of rural tourism activities on infrastructure, the ecological environment, the residential environment and other aspects of RHSE (Lu *et al.*, 2020).

Additionally, studies have revealed that large infrastructural investment being expected to produce long-term benefits for resident communities in abandoned inland rural areas (Scorza and Gatto, 2023). For special areas, such as traditional villages, ancient towns, A-level scenic spots and rural tourism clusters surrounding cities, scholars have also analyzed the correlation and coordination between rural tourism development and the living environment (Deodat *et al.*, 2022; Dong *et al.*, 2022).

Furthermore, to learn relationships of rural tourism and RHSE development, scholars have deeply assessed the drive of rural tourism and local RHSE (Edwin *et al.*, 2021). Existing studies have paid much attention to rural tourism investment, as rural tourism intertwine with local ecology, culture, population and society development, and it plays a vital important role; Thus, rural tourism investment and its industrial policies hold visitor

flow, promote responsible tourism practices and enhance the environmental domain (Betül and Serhat, 2025). With rural destination construction, rural tourism convenient, comfortable and recreational environment can be improved. Meanwhile, local land use patterns and production-living-ecology functional structures are affected, leading to changes of local RHSE (Kate et al., 2025).

What is more, rural tourism investors also exert a great influence on local development, as investors deciding economic resources and factors layout and investing scale (Ristic et al., 2019). And it can impact and reshape rural landscape, which is the basis of RHSE, and illustrate rural tourism development with investment changing local human settlement environment (Aazami and Shanazi, 2020). Scholars have also academically and practically compared the interaction effect of tourism and FDI on alleviating urban–rural income disparity in autonomous regions with other provinces in China (Kim and Kang, 2021).

2.3 Research gap and framework

Based on the above reviews, the literature has largely investigated the influence of tourism industrial development, including rural tourism, on the local human settlement environment. These findings have truly enriched our knowledge of the mutual interaction of industrial investment and development with the local human settlement environment and provided practical guidance for policies and plans making of rural tourism development.

However, both rural tourism and human settlement environments are complex systems, and existing studies have only explored their interrelation from visible aspect perspectives (stage performance), such as tourist arrivals, economic growth and landscape fragmentation, while the invisible recreational conversion process of local RHSE and land use multifunctional structure (background layout) have not been fully considered. As a rural leisure atmosphere and tourism destination built mostly upon RHSE and its recreational function construction, the relationship and interaction of background layout with stage performance is worth studying. Meanwhile, the driving mechanism and reconstruction process of the rural production-living-ecology functional structure can help us deeply understand the interrelation between rural tourism and local human settlement environment evolution in destinations. Thus, it will foster a scientific awareness of rural tourism investment and development in rural areas, to effectively create a harmonious and comfortable rural settlement environment and synergistically promote rural revitalization.

To fill this research gap, this paper first focuses on the theoretical framework of relationships of rural tourism (investment and development), land functional layout and RHSE evolution, clarifying the influence of rural tourism on rural land use and pattern of multifunctional spaces. Then, the empirical study has been illustrated to explain how the process and mechanism of rural tourism drives the local human settlement environment. Finally, this paper is organized as follows: Section 3 explains the theoretical basis of stage authenticity. While Section 4 describes study areas and samples, Section 5 outlines an empirical study in China, and Section 6 concludes and discusses the findings.

3. Theoretical basis: rethinking relationships between rural tourism and rural human settlement environment from the perspective of stage authenticity

Generally, academics have highlighted the core attraction of rural tourism as the distinctive culture and life experiences found in the countryside (Chiara and Daniel, 2022). However, as the rural tourism industry and its modes of experience have evolved, this core attraction has broadened to include the overall rural habitat system and RHSE (Jillian, 2021). This includes unique culture, ecological environment and experiential activities, as well as a comfortable leisure atmosphere, convenient infrastructure and a lifestyle that fosters interaction between hosts and guests (Deepak et al., 2003). Consequently, rural tourism is

now deeply integrated into all aspects of rural society (Sarah et al., 2022). Thus, the RHSE has become a crucial carrier of rural tourism’s core attraction and a key element in the construction and industrial development of rural tourism destination (Cheng et al., 2023).

From the perspective of the Stage Authenticity Theory, with rural tourism focus shifting from the specific cultural traits, experiential activities and environmental advantages of particular attractions, to a more comprehensive view of the regional leisure environment, rural tourism destinations are essentially being the staged displays of the core attractions of rural tourism (Vikas and Karishma, 2024). The creation of these attractions, through the development of recreational facilities, environmental construction and the rural tourism industry, underpins the staging process of the RHSE, as Figure 2 describes.

For RHSE build, rural land touristifiable and its multifunctional conversion is the core segment to achieve recreational evolution, with local tourism area life cycle. The rising rural tourism and leisure demand is an initial driving force, while rural tourism investment and destination build is the first segment to change stage performance of RHSE. Then, the land use patterns have transferred to recreational and create a leisure atmosphere. Clearly, there is a typical authenticity–staging relationship between the development of rural tourism, industrial investment and destination construction and local RHSE in rural tourism destinations.

3.1 Rural tourism development (investment), land use and background layout

The development of tourism industry, along with investment and construction, forms the foundation of rural tourism destinations and is essential for creating recreational RHSE, while investment and construction in recreational resources, land utilization, functional and structural transformation are pivotal for the development of rural tourism, establishing the basic framework for recreational RHSE. Industrial investment drives rural tourism development, with developers and investors focusing on the demand for rural tourism facilities and environments. This investment leads to the construction of rural tourism service facilities and the creation of an experiential environment, transforming traditional rural spaces – primarily used for residents’ production and living (presented in Figure 3) – into leisure and experience spaces for both residents and tourists.

Rural tourism investors are the actual leaders of destination build and play a core role in rural tourism development, with industry economic factors providing development power for investors. Their decision-making on investment objects (INOs) and allocation of economic factors have a profound influence on the local rural tourism industry and leisure environment. INOs, namely rural tourism facilities, are built as local rural spatial patterns and land functional adjustments to experience facilities, such as leisure agricultural parks, homestays, scenic roads, spots, countryside clubs, infrastructure and so on. INOs and land

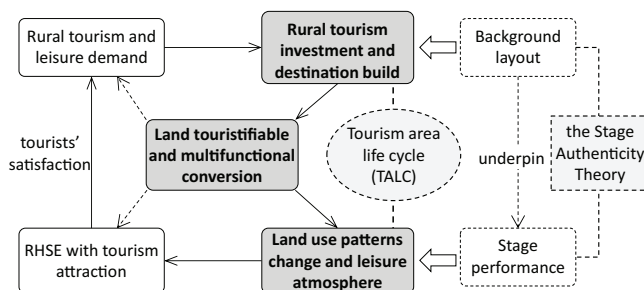


Figure 2. Theoretical framework of rural tourism, land use and rural human settlement environment

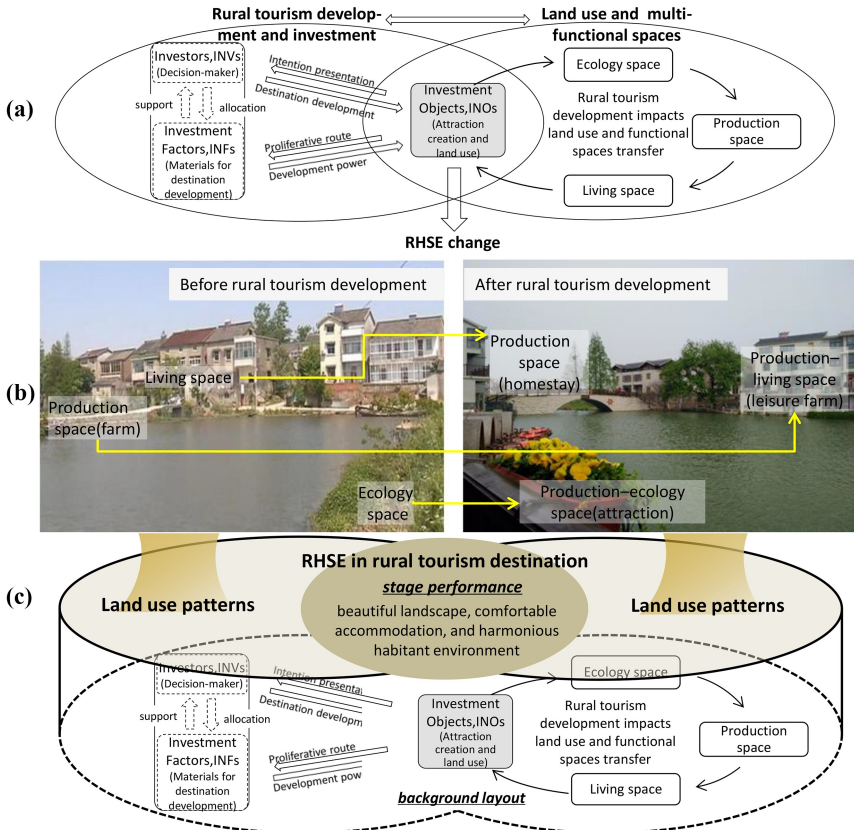


Figure 3. Intra-relationships of rural human settlement environment's background layout and stage performance

use become the visual performance of destination development and inevitably inducing land use and the conversion of rural production-living-ecology functional space patterns. Thus, those industrial INOs and facilities become the junction [Figure 3(a)] of rural tourism development, destination land use and “production-living-ecology” functional conversion.

As Figure 3 presents, with the rural tourism investment and land use bringing rural tourism destination development, especially facility construction, INOs achievement plays a medium role in local land use patterns and “production-living-ecology” functional space conversion. INOs and local land use act as the basis of rural tourism destination human settlement environment evolution. Eventually, rural tourism development and rural tourism investment in destinations drive local RHSE evolution, because of their influence on destination land use and “production-living-ecology” functional space patterns. In Figure 3(b), before rural tourism development, rural land multifunctional spaces are distinguished and single-function, while after rural tourism development, the patterns of land use and multifunctional spaces are toward integration and transformation.

With the construction of rural tourism facilities and the creation of experience products, land use has been oriented to recreational conversion, and its multifunctional spaces are

equipped with leisure and tourism services. At the same time, ecological land has been improved into a sightseeing spot by raising flowers to decorate destinations. The converted space can satisfy tourists' comfortable experiences and become production-ecology spaces, bringing economic benefits to destinations still with ecological roles. Farms located in front of households, a traditional production space to grow grain or vegetables for daily life, have been redesigned as a part of a homestay leisure agriculture space for tourists, and this new space can be a production-living space for residents providing leisure services and gaining living goods. Moreover, resident houses have also been renovated to become homestays or featured accommodations. It has transferred to a production space specialized to earning for the destination.

3.2 Rural human settlement environment and stage performance

With the recreational use of leisure resources and the conversion of local production-living-ecology multifunctional spaces, RHSE readjusts to meet tourists' satisfaction needs. Thus, to a certain extent, the essence of rural tourism destination development embodies a process of local land use pattern transferring to create a leisure atmosphere and supply experience products satisfying tourists' leisure demand. Based on environmental economics, recreational RHSE has been commercialized as a tourism and leisure goods.

A harmonious and comfortable RHSE is the core attraction for rural tourists, and it comprehensively reflects local natural and cultural endowments and living conditions in the full picture. In general, RHSE refers to a very complicated and comprehensive system, ranging from tangible material living amenities to an intangible comfortable atmosphere and cultural heritage. It is the essential matrix for rural living and development conditions and supplies a substantial foundation for rural tourism and unique attractiveness to visitors, as [Figure 3\(c\)](#) shows. Therefore, the process of rural tourism development can be extended and understood as an utter process of RHSE construction, the essence of rural landscape and living scene staged performance for visitors.

The creation of rural landscape and human settlement environment is inseparable from rural land use and tourism industrial investment. Especially rural tourism investment is a vitally important industrial activity ([Figure 3](#)) in creating recreational RHSE and staged exhibition atmosphere, and it spans the entire process and all aspects of rural tourism destinations. Accurately, rural tourism investment is a conjugated action existing from land use, RHSE creation and leisure supply to the tourist experience. Based on the Stage Authenticity Theory, tourists in rural destinations gaze on local specific rural landscapes and living scenes, and the well-planned and decorated RHSE is presented to visitors in the rural stage, symbolizing the destination's tourism attractiveness.

Ultimately, from the perspective of relationships between rural tourists and destinations, local natural and cultural attractions and comfortable human settlement environments are driving factors of destination development. Meanwhile, the growth of rural tourism destinations is accompanied by local human settlement environment packaging and stage performing to display rural destination attractions and sell the leisure experience for tourists.

4. Study areas and samples

To deeply explore and validate the theoretical frameworks with various RHSE backgrounds, this paper has selected two typical rural tourism villages – Baishacun village of Zhejiang Provinces and Dahecun village of Shanxi Provinces – respectively in the humid developed and sub-humid developing regions of China, to comparatively analyze characteristics of rural tourism development, investment structure, destination construction model and driving mechanism on RHSE evolution. This will serve as an empirical reference for the

development of rural tourism investment and rural development in regions of the world with different habitat contexts, especially in developing countries and regions.

Baishacun village has a population of 1,169 and more than 200 rural tourism operators servicing 300,000 tourists annually, with tourism revenue approaching 100m yuan [2]. And Dahecun village has a population of 3,339 and receiving 930,040 tourists with 108m income annually [3]. They are all famous rural destinations for local citizens taking vacations and enjoying rural leisure life; however, they exhibit enduring differences in present economic and social backgrounds and comparability in their spatial conditions, development model and maturity, as shown in Figure 4. It can help us to systematically and comprehensively rural tourism with RHSE and process of INOs decision-making and destination construction influences on RHSE from the perspective of the destination's different phases.

Undoubtedly, this comparative study will enrich and illustrate the theoretical mechanism of rural tourism destination land use patterns and multifunctional space conversion on the stage performance of local human settlement environment evolution. To gain an in-depth understanding of the development process of rural tourism and RHSE in the case site, authors used field observation and open interviews to randomly communicate with relevant local government staff, tourism practitioners and residents well familiar with the development of local rural tourism and to obtain relevant data and information about the cases.

This paper applied field research, including interview [like interacting with homestay investors in Figure 1(c) and basic demographic information on samples in Figure 4], intermittently ranging from October 2017 to May 2021 in study cases, to learn their rural tourism development and investment process, land use structure and evolution condition of local RHSE. The basic data and main study materials were collected during October 2017 to August 2018, about land use remote sensing data and rural tourism development. What is more, the supplementary data were made up during September 2018 to May 2021.

5. Empirical study: mechanism of rural tourism inducing local human settlement environment evolution

5.1 Changes of land use structure and iceberg characteristics of investment objects

Rural tourism investment and destination build promote local land touristifiable and land use pattern change. With rural tourism development, the local human settlement environment has presented an enormous change in study areas with the building of INOs and adjustment of local land multifunctional structures to recreational conversion. Based on the theoretical framework, this paper analyzes the spatial pattern of production-living-ecology multifunctional spaces and its transformation of the Dahecun village, in 2005 and 2017. Then, ArcGIS has been used to interpret their remote sensing image and results shown in Figure 5.

In terms of the amount of structure change, the scale of transformation from production space to ecology space is the largest and most prominent; followed by a more obvious transformation from ecology space to production space, production space and living space, accounting for more than 1%; and the scale of transformation of other functional spaces is relatively small, accounting for about 0.5%. This reflects investment and development of rural tourism infrastructure and amenities inevitably induce land use pattern and functional structure changes, with production and ecology spaces increasing while living space decreasing to adjust local rural tourism industry development.

Based on the rural tourism investment scale in objects (INOs), the investment in rural tourism infrastructure has an absolute advantage, accounting for an average of 99%, while investment in rural tourism exclusive facilities, products and services only accounts for approximately 1%. The analysis results reflect the "Iceberg structure" characteristics of regional rural tourism INOs in Figure 6. Infrastructure investment is similar to the part under


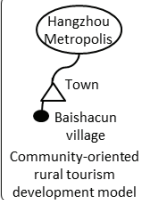

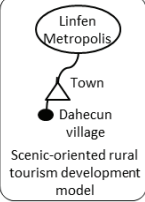
Study areas	Rural tourism industrial development	Demographic information on interviewees	Features
Baishacun	<p>Its rural tourism started in the 1990s and featured in the natural ecologic environment, with the development of the Taihuyan scenic spot next to Baishacun, to meet tourists catering, lobbying, and leisure demands. With the increase of tourists, residents actively invest and operate rural tourism based on their houses or vacant facilities. To promote rural tourism development, local government has simultaneously improved infrastructure, and ecology and optimized rural tourism development plans to guide industry. Currently, the whole village has become a rural tourism professional destination.</p>	<p>The random respondents were 63 people from 50 households, 29 males and 34 females. More than half of the respondents (55.7%) were over 40 years old, and about 10.2% were 35 years old and below. Among them, the education level is generally low, about 50% of the primary school, approximately 15% of the high or secondary school, but most of them have long rural tourism experience, of which 5 respondents have been operating farmhouse for more than 10 years. The respondents who have been operating farmhouse for more than 3 years are also close to half (49.8 %).</p>	 
Dahecun	<p>It is famous for a traditional village preserved in thousands of years and folk customs. Its rural tourism has been initiated since the development of the traditional village and Yunqiushan scenic spot about 2005. However, its rural tourism activities and RTI are limited in scenic spots, and residents can be involved in rural tourism only by working in the spot. This presents an obvious scenic-oriented rural tourism development model to Baishacun, a community-oriented model.</p>	<p>The random respondents involved 59 people from 42 households, including 39 males and 20 females. Among the respondents, 66.4% were young and middle-aged labor force under 35 years old, and about 18.2 % were over 45 years old. The education level was generally at secondary school and below (80.9%), and most of them engaged in rural tourism for less than 3 years, especially nearly half (44.3%) of the respondents worked less than 1 year. However, the vast majority (98.1%) of them are engaged in rural tourism services as the main source of work and income.</p>	 

Figure 4. Description of study areas and demographic information on interviewees

the sea (implicit, invisible but real), which accounting for more than 99% of the rural tourism investment in the whole region. The investment in exclusive facilities, products and services is similar to the floating part of the iceberg on the sea (explicit and visible), accounting for only approximately 1% of the rural tourism investment in the whole region. It can be seen that the development degree, maturity level and performance of regional rural tourism are affected by the infrastructure that accounts for 99% of the whole investment. It also further shows that special facilities, products and services for rural tourism are INOs that can give better play to the attractive effect of rural tourism and promote the development of the regional rural tourism industry based on the full investment and improvement of rural tourism infrastructure.

5.2 Rural tourism development and local destination construction model

Although rural tourism development has induced the evolution of land multifunctional conversion and Iceberg structure of INOs, destinations may form distinctive development

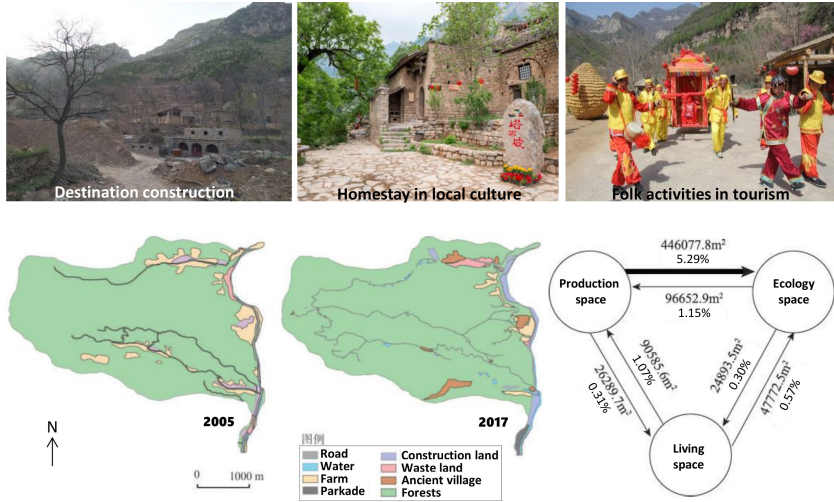


Figure 5. Rural tourism development inducing land functional transformation in Dahecun village
Source: Zhu He, Liu Jiaming. Rural settlement reconstructing driven by mountain scenic spot construction: An empirical study of Yunqiu Mountain Scenic Spot. *Geographical Research*, 2018,37(12):2490-2502



Figure 6. Iceberg structure of investment objects and rural tourism development model

models because of their different land use and investment processes of rural area infrastructure, rural tourism exclusive facilities, leisure atmosphere and amenities and services. For example, investment in rural tourism infrastructure has not only the characteristics of a strong foundation and large investment scale but also the characteristics of long duration, great recessive effect and easy to ignore. As the largest part in Iceberg structure, rural tourism infrastructure often overlaps with other public infrastructure in rural areas and is difficult to distinguish, rendering it susceptible to being planned as public infrastructure (back stage), subjectively stripping and weakening its “real” role in the development of regional rural tourism.

Relatively speaking, the investment scale of rural tourism special facilities, products and services is significantly smaller than that of rural tourism infrastructure. However, the INOs,

such as catering, accommodation facilities, experience activities and smart guides, directly provide services for rural tourists. The “stage” is placed in front of farmers, rural tourism enterprises, local governments and other rural tourism investment subjects (front stage). It is precisely because of the different understanding and identification of the “real” and “stage” iceberg structural characteristics of various INOs of rural tourism that the development level and stage of regional rural tourism are different.

Comparing the difference in the proportion of rural tourism INOs between Baishacun village in Zhejiang and Dahecun village in Shanxi, it is found that the difference in the investment in rural tourism productions and services is small, both approximately 50%, while the difference in the investment in infrastructure and special facilities is large. Among them, Baishacun village has obvious advantages in infrastructure investment and Dahecun village has outstanding advantages in exclusive facilities investment. This difference in the INOs of rural tourism between study areas reflects the difference in the understanding of the Iceberg structural characteristics of the INOs in the development of rural tourism and leads to the difference in the community- and scenic-oriented rural tourism development models.

The scenic-oriented rural tourism development model presents the process of INOs order in rural tourism activities and exclusive leisure facilities or amenities, rural infrastructure improvement, rural tourism resource development and rural leisure atmosphere creation and rural tourism service enhancement. The exclusive leisure facilities in rural scenic spots act as a stage presented to visitors, while rural tourism activities are limited to the rural scenic spots. The community-oriented rural tourism model presents the process of INOs order in rural infrastructure improvement, rural tourism resource development and rural leisure atmosphere creation, rural tourism activities and exclusive leisure facilities or amenities and rural tourism service enhancement. And local community acts as an open destination with an attractive RHSE for visitors.

5.3 Rural tourism development, land functional conversion and rural human settlement environment evolution

The background arrangement of rural functional space structure induced by the development of rural tourism industry and the investment of the destination creates the RHSE attractiveness of the staged rural tourism place, as Figure 7 shows. The Iceberg structure characteristics of INOs have induced land use change and its multifunctional conversion and further impacted

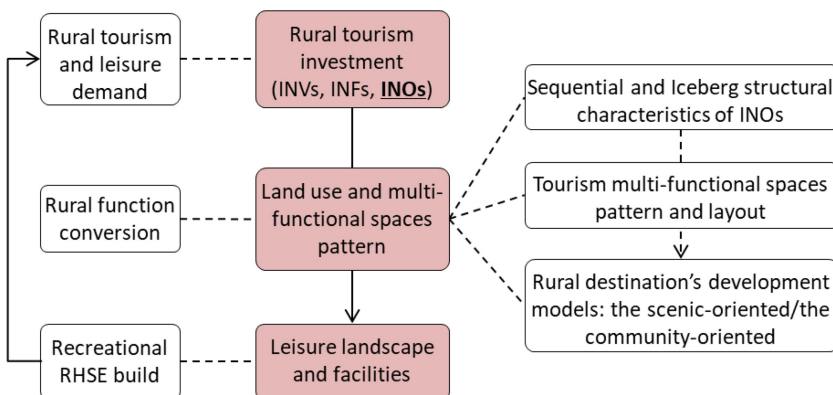


Figure 7. Process of rural tourism development, land use and rural human settlement environment evolution

local human settlement environment evolution. Thus, INOs and land use are the intermediate variables for rural tourism development and investment, producing a marked effect on human settlement environment evolution. At the same time, land use and the investment model also play a great role in promoting land multifunctional space conversion and human settlement environment evolution. Rural tourism investment can be related to the local economic and social environment. With destination development, its industrial, social and human settlement environment have experienced systematic and profound change. Rural tourism development will face new decision-making conditions, and its INOs and land functional structure will also be greatly different from those in the past. Next, it brings land multifunctional spaces and local human settlement environments to adjust to satisfying recreational demand.

Eventually, the process of rural tourism development influence on the local human settlement environment has an obvious phased and progressive characteristic, with layouts and construction of INOs linking to the investors' decision-making policy and the existing human settlement environment. Investor impacts economic factors flowing into the specific rural tourism objects, inducing land use patterns and functional conversion, and it is clear that investment in rural tourism infrastructure and environmental construction is the foundation for the development of regional rural tourism. In the system of regional rural tourism, INOs belong to the most basic part, involving the most content and the largest investment scale. Rural tourism special facilities and product services are powerful means to display and optimize the attraction of regional rural tourism, supported by rural tourism infrastructure. They should be subordinate to rural tourism infrastructure in the regional rural tourism INOs system. Therefore, a correct understanding of the Iceberg structure of rural tourism INOs is the key guarantee for the effectiveness of regional rural tourism development.

6. Conclusion and discussion

6.1 Conclusion

This study focuses on the transformation of the entire RHSE system for recreation and leisure, with particular emphasis on rural tourism investment and the development's underlying structural characteristics, under the backgrounds of changes in rural tourism attractions. Findings show that rural tourism development is accompanied with rural land use and RHSE construction, and it is not only a special rural tourism production and facility but also the recreational development of RHSE. Especially, the Iceberg structure of INOs highlights how the attractiveness of rural tourism is shaped by RHSE, such as the human environment, infrastructure, atmosphere, environmental creation and comprehensive services, which enhance the specific rural human environment. Consequently, the presentation of rural tourism to visitors is closely tied to the adjustment and optimization of the rural recreational spatial structure, driven by the development of the rural tourism industry and investment in destination infrastructure and services.

For rural tourism development and destination construction, the research findings highlight the need for a systematic transformation of the rural regional environment, rather than merely focusing on typical rural tourism products. Enhancing the attractiveness of the local habitat system is essential for achieving sustainable and high-quality rural tourism development. For regions and countries with distinctive rural characteristics and developing socio-economics, this approach can maximize the benefits of rural tourism in improving the human environment. By combining rural tourism development with the optimization of land functional space and the enhancement of the RHSE, a mutually reinforcing pathway can be established. This integrated approach can avoid the pitfalls experienced by developed countries, where pollution precedes remediation, and instead promote the comprehensive revitalization of rural areas globally.

6.2 Discussion and implication

Rural tourism industrial development has profound influences on the local land use structure and settlement environment (Tiberghien *et al.*, 2020). INOs are the critical intermediary for destination settlement environment evolution, and their structure has also induced different local rural tourism development models and community human settlement environment build processes (Zollet and Qu, 2024). Destination-phased development and local market conditions have created a great fluctuation in rural tourism decision-making (Donaire *et al.*, 2025). In the preliminary stage, local rural tourism industrial infrastructure and amenities are invested. The stage presentation of the destination is obvious (Zou *et al.*, 2025). With the development of rural tourism destinations and the pursuit of a comfortable leisure environment of market demand, rural tourism prefers from scenic-oriented to community-oriented (Kong *et al.*, 2025).

Rural tourism investment and development is mostly related to local industrial and human settlement environments. This research has studied a general and macro question on the relationship of rising rural tourism industrial investment with rural land use transfer and the RHSE. The finding may give rural destination tips and help investors draw a conceptual framework for investment decision-making, but it does not extend to practical operation. Currently, various large-scale rural destinations are planning to promote local development, but they are equipped with obvious differences in industrial and human settlement environments. Therefore, each destination has a specific human settlement environment condition and rural tourism investment strategy to effectively improve rural tourism development and build the human settlement environment. In light of the foregoing, more case studies should be carried out to deeply learn the relationship of rural tourism with the local human settlement environment.

In practice, different investment structures in rural tourism infrastructure and accommodation may result in different leisure environments and experiential atmospheres in rural tourism destinations. For example, investment volume may influence its destination development process, and its structure of inflowing aspects and spatial patterns could bring about different local rural tourism attractions, even having a deep effect on tourists' experience and satisfaction. Thus, the rural tourism experience is induced by destination development and rural tourism investment. Rural tourism investment should refer to a comprehensive system and different structures of investment fields. In the future, rural tourism can be conducted simultaneously with local human settlement environment construction to effectively promote rural tourism destination development. This can satisfy residents and tourists and help sustainable destination development.

Notes

- [1.] Data source: www.mct.gov.cn/preview/whzx/whyw/202208/t20220819_935431.htm
- [2.] Data source: http://lyj.zj.gov.cn/art/2024/12/24/art_1277853_59089894.html
- [3.] Data source: www.shanxi.gov.cn/zjsx/sxfg/cysx/202509/t20250930_9970336.shtml

References

- Aazami, M. and Shanazi, K. (2020), "Tourism wetlands and rural sustainable livelihood: the case from Iran", *Journal of Outdoor Recreation and Tourism*, Vol. 30, p. 100284, doi: [10.1016/j.jort.2020.100284](https://doi.org/10.1016/j.jort.2020.100284).
- Alves, J.P., Eusébio, C., Carneiro, M.J., Teixeira, L. and Mesquita, S. (2023), "Living in an untouchable world: Barriers to recreation and tourism for Portuguese blind people during the COVID-19

- pandemic”, *Journal of Outdoor Recreation and Tourism*, Vol. 42, p. 100637, doi: [10.1016/j.jort.2023.100637](https://doi.org/10.1016/j.jort.2023.100637).
- Antonín, *et al.* (2023), “Economically underdeveloped rural regions in Southern Moravia and possible strategies for their future development”, *Journal of Rural Studies*, Vol. 97, pp. 356-364, doi: [10.1016/j.jrurstud.2022.12.024](https://doi.org/10.1016/j.jrurstud.2022.12.024).
- Betül, A. and Serhat, G. (2025), “Mobilizing capitals, forging terroir: Lifestyle migration and envisioning a “better rural landscape”, *Journal of Rural Studies*, Vol. 119, p. 103714, doi: [10.1016/j.jrurstud.2025.103714](https://doi.org/10.1016/j.jrurstud.2025.103714).
- Chandra, B.S. and Lekh, P. (2021), “Articulating strategies for developing disaster resilient settlements from the experience of the tadi rural municipality of nuwakot district”, *Progress in Disaster Science*, Vol. 10, p. 100160, doi: [10.1016/j.pdisas.2021.100160](https://doi.org/10.1016/j.pdisas.2021.100160).
- Chen, S., Sotiriadis, M. and Shen, S. (2023), “The influencing factors on service experiences in rural tourism: an integrated approach”, *Tourism Management Perspectives*, Vol. 47, p. 101122, doi: [10.1016/j.tmp.2023.101122](https://doi.org/10.1016/j.tmp.2023.101122).
- Cheng, T.-M., Chen, T.-Y. and Chang, S.-F. (2023), “Effect of guide playfulness on the authenticity perception and place attachment of tourists: a cross-level analysis of indigenous tourism of Tsou in Taiwan”, *Tourism Management Perspectives*, Vol. 48, p. 101170, doi: [10.1016/j.tmp.2023.101170](https://doi.org/10.1016/j.tmp.2023.101170).
- Chiara, D.B. and Daniel, A. (2022), “How to avoid swinging: A social enterprise’s quest for authenticity in tourism”, *Tourism Management*, Vol. 89, p. 104439, doi: [10.1016/j.tourman.2021.104439](https://doi.org/10.1016/j.tourman.2021.104439).
- Deepak, C., Robert, H. and Erin, S. (2003), “Staged authenticity and heritage tourism,” *Annals of Tourism Research*, Vol. 30 No. 3, pp. 702-719, doi: [10.1016/S0160-7383\(03\)00044-6](https://doi.org/10.1016/S0160-7383(03)00044-6).
- Deodat, M., Jon, H. and Mikhail, S. (2022), “Navigating the early stages of a large sustainability-oriented rural tourism development project: Lessons from træna, Norway”, *Tourism Management*, Vol. 89, p. 104456, doi: [10.1016/j.tourman.2021.104456](https://doi.org/10.1016/j.tourman.2021.104456).
- Donaire, J.A., Galí, N. and Romero, L. D (2025), “The endurance of the rural idyll. The evolution of urban-rural migrants’ images of rural areas in Mediterranean Spain”, *Journal of Rural Studies*, Vol. 119, p. 103730, doi: [10.1016/j.jrurstud.2025.103730](https://doi.org/10.1016/j.jrurstud.2025.103730).
- Dong, Y., Cheng, P. and Kong, X. (2022), “Spatially explicit restructuring of rural settlements: A dual-scale coupling approach”, *Journal of Rural Studies*, Vol. 94, pp. 239-249, doi: [10.1016/j.jrurstud.2022.06.011](https://doi.org/10.1016/j.jrurstud.2022.06.011).
- Edwin, G., Katarzyna, W., Franklin, C. and Alberto, P. (2021), “Community eco-tourism in rural peru: Resilience and adaptive capacities to the covid-19 pandemic and climate change”, *Journal of Hospitality and Tourism Management*, Vol. 48, pp. 416-427, doi: [10.1016/j.jhtm.2021.07.016](https://doi.org/10.1016/j.jhtm.2021.07.016).
- Gao, C. and Cheng, L. (2020), “Tourism-driven rural spatial restructuring in the metropolitan fringe: an empirical observation”, *Land Use Policy*, Vol. 95, p. 104609, doi: [10.1016/j.landusepol.2020.104609](https://doi.org/10.1016/j.landusepol.2020.104609).
- Gocer, O., Boyacioglu, D., Karahan, E.E. and Shrestha, P. (2024), “Cultural tourism and rural community resilience: a framework and its application”, *Journal of Rural Studies*, Vol. 107, p. 103238, doi: [10.1016/j.jrurstud.2024.103238](https://doi.org/10.1016/j.jrurstud.2024.103238).
- Hu, Q. and Wang, C. (2020), “Quality evaluation and division of regional types of rural human settlements in China”, *Habitat International*, Vol. 105, p. 102278, doi: [10.1016/j.habitatint.2020.102278](https://doi.org/10.1016/j.habitatint.2020.102278).
- Jillian M.R. (2022), “A review of authenticity research in tourism: Launching the annals of tourism research curated collection on authenticity”, *Annals of Tourism Research*, Vol. 92, p. 103349, doi: [10.1016/j.annals.2021.103349](https://doi.org/10.1016/j.annals.2021.103349).
- Kate, T., Marco, E., Filipa, R. and Susana, C. (2025), “Challenges for tourism-related lifestyle migrant entrepreneurship in rural areas of the algarve, Portugal”, *Journal of Rural Studies*, Vol. 115, p. 103562, doi: [10.1016/j.jrurstud.2025.103562](https://doi.org/10.1016/j.jrurstud.2025.103562).

- Kim, J.H. and Kang, K.H. (2021), "The interaction effect of tourism and foreign direct investment on urban–rural income disparity in China: a comparison between autonomous regions and other provinces", *Current Issues in Asian Tourism*, *Routledge*, Vol. 2.
- Kong, X., Zhang, R., Lin, F., Jiang, P. and Zhang, Y. (2025), "Integrating human mobility and rural multifunction to identify village types in metropolitan suburbanization", *Journal of Rural Studies*, Vol. 119, p. 103776, doi: [10.1016/j.jrurstud.2025.103776](https://doi.org/10.1016/j.jrurstud.2025.103776).
- Law, A., Pyke, J., De Lacy, T. and McGrath, G.M. (2022), "Towards a community sensitivity index for tourism investment: a case study of regional Australia", *Journal of Hospitality and Tourism Management*, Vol. 50, pp. 412-420, doi: [10.1016/j.jhtm.2021.12.009](https://doi.org/10.1016/j.jhtm.2021.12.009).
- Lu, M., Wei, L., Ge, D., Sun, D., Zhang, Z. and Lu, Y. (2020), "Spatial optimization of rural settlements based on the perspective of appropriateness–domination: a case of Xinyi city", *Habitat International*, Vol. 98, p. 102148, doi: [10.1016/j.habitatint.2020.102148](https://doi.org/10.1016/j.habitatint.2020.102148).
- Luz, R. and Seweryn, Z. (2022), "Community-based tourism, social capital, and governance of post-conflict rural tourism destinations: The case of minca, sierra nevada de santa marta, colombia", *Tourism Management Perspectives*, Vol. 43, p. 100985, doi: [10.1016/j.tmp.2022.100985](https://doi.org/10.1016/j.tmp.2022.100985).
- McLean, G., AlYahya, M., Barhorst, J.B. and Osei-Frimpong, K. (2023), "Examining the influence of virtual reality tourism on consumers' subjective wellbeing", *Tourism Management Perspectives*, Vol. 46, p. 101088, doi: [10.1016/j.tmp.2023.101088](https://doi.org/10.1016/j.tmp.2023.101088).
- Ma, M. and Tang, J. (2022), "Interactive coercive relationship and spatio-temporal coupling coordination degree between tourism urbanization and eco-environment: a case study in Western China", *Ecological Indicators*, Vol. 142, p. 109149, doi: [10.1016/j.ecolind.2022.109149](https://doi.org/10.1016/j.ecolind.2022.109149).
- Mejjad, N., Rossi, A. and Pavel, A.B. (2022), "The coastal tourism industry in the Mediterranean: a critical review of the socio-economic and environmental pressures and impacts", *Tourism Management Perspectives*, Vol. 44, p. 101007, doi: [10.1016/j.tmp.2022.101007](https://doi.org/10.1016/j.tmp.2022.101007).
- Najid, A., Liu, Y. and Mouna, H. (2022), "The role of innovation and tourism in sustainability: Why is environment-friendly tourism necessary for entrepreneurship?", *Journal of Cleaner Production*, Vol. 379, p. 134799, doi: [10.1016/j.jclepro.2022.134799](https://doi.org/10.1016/j.jclepro.2022.134799).
- Paul, G., Thuvander, L. and Wallbaumet, H. (2020), "Spatiotemporal characteristics of residential material stocks and flows in urban, commuter, and rural settlements", *Journal of Cleaner Production*, Vol. 251, p. 119435, doi: [10.1016/j.jclepro.2019.119435](https://doi.org/10.1016/j.jclepro.2019.119435).
- Peleg-Barkat, O., Marom, R., Gardner, G.E., Chernin, M., Farhi, Y. and Kharanbeh, S. (2025), "Rural adaptation and settlement change in the late Islamic Jabal al-Khalil (Judean foothills)", *Journal of Historical Geography*, Vol. 90, pp. 87-98, doi: [10.1016/j.jhg.2025.09.005](https://doi.org/10.1016/j.jhg.2025.09.005).
- Ristic, D., Vukoičić, D. and Milinčić, M. (2019), "Tourism and sustainable development of rural settlements in protected areas—Example NP kopaonik (serbia)", *Land Use Policy*, Vol. 89, p. 104231, doi: [10.1016/j.landusepol.2019.104231](https://doi.org/10.1016/j.landusepol.2019.104231).
- Sarah, G., Sera, V., Yang, E.C.L., Khoo, C. and Le, T.H. (2022), "Recreating history: The evolving negotiation of staged authenticity in tourism experiences", *Tourism Management*, Vol. 91, p. 104515, doi: [10.1016/j.tourman.2022.104515](https://doi.org/10.1016/j.tourman.2022.104515).
- Scorza, F. and Gatto, R.V. (2023), "Identifying territorial values for tourism development: the case study of Calabrian Greek area", *Sustainability*, Vol. 15 No. 6, doi: [10.3390/su15065501](https://doi.org/10.3390/su15065501).
- Shi, Z., Ma, L., Zhang, W. and Gong, M. (2022), "Differentiation and correlation of spatial pattern and multifunction in rural settlements considering topographic gradients: evidence from loess hilly region, China", *Journal of Environmental Management*, Vol. 315, p. 115127, doi: [10.1016/j.jenvman.2022.115127](https://doi.org/10.1016/j.jenvman.2022.115127).
- Tiberghien, G., Bremner, H. and Milne, S. (2020), "Authenticity and disorientation in the tourism experience", *Journal of Outdoor Recreation and Tourism*, Vol. 30, p. 100283, doi: [10.1016/j.jort.2020.100283](https://doi.org/10.1016/j.jort.2020.100283).

- Vikas G. and Karishma, S. (2024), "Food authenticity, culture, and tourism: analysing the dimensions of local gastronomic image among foreign tourists in Fiji", *British Food Journal*, Vol. 126 No. 12, pp. 4124-4146, doi: [10.1108/BFJ-04-2024-0343](https://doi.org/10.1108/BFJ-04-2024-0343).
- Vishnu, S., Arun, P., Usha, K. and Charuvila, T. (2024), "Human exposure to methyl and butyl parabens and their transformation products in settled dust collected from urban, semi-urban, rural, and tribal settlements in a tropical environment", *Environmental Research*, Vol. 242, p. 117805, doi: [10.1016/j.envres.2023.117805](https://doi.org/10.1016/j.envres.2023.117805).
- Wang, X., Huang, D. and Wu, M. (2026), "Rural tourism as a catalyst for labor return? A rethinking of return migration from a mixed embeddedness perspective", *Journal of Destination Marketing and Management*, Vol. 39, p. 101041, doi: [10.1016/j.jdmm.2025.101041](https://doi.org/10.1016/j.jdmm.2025.101041).
- You, E.-Y., Ashourizadeh, S., Adu-Ampong, E.A. and Huijbens, E.H. (2025), "Inventing lively rural areas: characteristics, motivations, and regional triggers of young in-migrant tourism entrepreneurs in South Korea", *Journal of Rural Studies*, Vol. 120, p. 103842, doi: [10.1016/j.jrurstud.2025.103842](https://doi.org/10.1016/j.jrurstud.2025.103842).
- Zhao, F., Zhang, S., Du, Q., Ding, J., Luan, G. and Xie, Z. (2021), "Assessment of the sustainable development of rural minority settlements based on multidimensional data and geographical detector method: a case study in Dehong, China", *Socio-Economic Planning Sciences*, Vol. 78, p. 101066, doi: [10.1016/j.seps.2021.101066](https://doi.org/10.1016/j.seps.2021.101066).
- Zhu, J., Yuan, X., Yuan, X., Liu, S., Guan, B., Sun, J. and Chen, H. (2021), "Evaluating the sustainability of rural complex ecosystems during the development of traditional farming villages into tourism destinations: a diachronic energy approach", *Journal of Rural Studies*, Vol. 86, pp. 473-484, doi: [10.1016/j.jrurstud.2021.07.010](https://doi.org/10.1016/j.jrurstud.2021.07.010).
- Zollet, S. and Qu, M. (2024), "Revitalising rural areas through counterurbanisation: community-oriented policies for the settlement of urban newcomers", *Habitat International*, Vol. 145, p. 103022, doi: [10.1016/j.habitatint.2024.103022](https://doi.org/10.1016/j.habitatint.2024.103022).
- Zou, Y., Du, P., Liu, Y., Luo, Z., Liu, H., Luo, F., Yi, C., Wu, P. and Song, Y. (2025), "Evolution of rural settlements and its mechanism under the influence of a-class scenic spots in karst region: a case study of Guizhou province in southwestern China", *Habitat International*, Vol. 164, p. 103504, doi: [10.1016/j.habitatint.2025.103504](https://doi.org/10.1016/j.habitatint.2025.103504).

Further reading

- Sadeghi, H.O., Seidaiy, S., Sadeghi, H.O. and Seidaiy, S. (2023), "Tourism and rural development", *Rural Areas—Development and Transformations*, IntechOpen, doi: [10.5772/intechopen.111400](https://doi.org/10.5772/intechopen.111400).
- Yıldırım, D.Ç., Ektiren, B. and Erdoğan, F. (2023), "The threshold effect of tourism, growth, and population interactions on environmental pollution in Mediterranean countries", *Tourism Management Perspectives*, Vol. 47, p. 101118, doi: [10.1016/j.tmp.2023.101118](https://doi.org/10.1016/j.tmp.2023.101118).

Corresponding author

Xin Zhang can be contacted at: lytzhangxin@buu.edu.cn