



Research article

Rural public space design in China’s western regions: Territorial landscape aesthetics and sustainable development from a tourism perspective

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Abstract: This paper, set against the backdrop of folk culture and rural landscapes in China’s western regions, delves into the pivotal role of territorial landscape aesthetics theory in the design of public spaces in new rural areas. It offers innovative ideas and methodologies for rural spatial planning and design. The concept of the “New Countryside” aims to enhance rural residents’ quality of life, propel rural modernization, and foster integrated urban-rural development. Employing the analytic network process (ANP), this study establishes an assessment framework for evaluating folk cultural rural landscapes, encompassing natural, social, and economic dimensions as indicators, and analyzes the weightings between influencing factors. The research findings underscore the significant impact of territorial landscape aesthetics on elevating rural landscapes. Building upon these findings, the paper presents recommendations for the design of public spaces in tourism-oriented rural areas of China’s western regions. These recommendations encompass preserving historical relics and traditional dwellings, integrating folk culture into public artistic designs and enhancing rural cultural heritage exhibitions that depict local customs, traditions, and accomplishments. These suggestions are aimed at enhancing the quality and appeal of rural landscapes, thereby fostering the development of local tourism. Through an in-depth exploration of the application of territorial landscape aesthetics, it is hoped that this study can offer valuable guidance and inspiration for the design of public spaces in tourism-focused rural areas of China’s western regions, while actively contributing to the preservation and promotion of folk culture.

Keywords: regional landscape studies; western region; rural public space planning; northwestern folk culture rural landscape; tourism development; evaluation system

1. Introduction

In recent years, with the introduction of the rural revitalization strategy, the conservation and planning of rural landscapes have become focal points of research across relevant disciplines. Given the developmental disparity between China's western and southern regions, the former may require increased support and investment to narrow this gap and elevate the living standards of rural residents. Consequently, prioritized protection and development measures might be necessary for western rural areas within a certain timeframe. Moreover, the ecological fragility of certain local regions necessitates scientifically informed planning to safeguard these resources and prevent excessive development from causing environmental harm. As such, the preservation and planning of rural landscapes demand heightened attention.

The implementation of the rural revitalization strategy, as highlighted in the 19th National Congress of the Communist Party of China, represents a pivotal decision made by the central leadership in consideration of the holistic interests of the party and the nation. Aligned with the pursuit of the "Two Centenary Goals" and responsive to the aspirations of millions of farmers for improved living standards, this strategy bears significant importance. The implementation of the rural revitalization strategy stems from the need to address the principal contradictions within Chinese society, signifying a distinct and targeted objective-driven approach [1].

1.1. Theoretical and foundational aspects of rural landscape research

In recent years, scholars have increasingly directed their attention toward China's rural landscapes. Research across various disciplines has exhibited a broad spectrum of trends, encompassed diverse themes and employed a wide array of methodologies, resulting in a range of significant achievements. The convergence of disciplines such as geography, ecology, architecture, urban and rural planning, agricultural resources and environment, sociology, economics, and management has given rise to a comprehensive understanding. Research topics span landscape patterns, planning, rural tourism, cultural landscapes, landscape assessment, ecological landscapes, among others, leading to a series of representative research outcomes [2].

Rural public spaces, as vital conduits for disseminating rural social and cultural elements, play a crucial role in propelling rural community cultural development, enhancing the spiritual and cultural construction of rural residents, and improving the overall quality of rural life. This issue extends beyond the artistic value of rural public space design, profoundly reflecting the significance of preserving and developing indigenous culture, rural society, and ethnic traditions [3]. Consequently, for effective rural advancement, a thorough exploration and elevation of the artistic and cultural value of rural public space design are imperative. This, in turn, fosters the propagation and evolution of rural culture.

Comprehensive research efforts across multiple disciplines signify the growing recognition of the multifaceted importance of rural landscapes and public spaces in the context of rural development. These scholarly endeavors not only contribute to enhancing our understanding of rural areas but also

provide actionable insights to bolster rural livelihoods, cultural heritage, and sustainable development.

1.2. The practical significance of rural landscape planning in western regions

China's western regions, primarily characterized by mountainous terrain with fewer plains, remain economically underdeveloped and necessitate further development efforts [4]. Given the diversity of natural conditions and economic limitations, targeted and contextually appropriate rural landscape planning is imperative for these areas. One prominent example from the western region is the Karez system, a network of underground channels and wells. This system ingeniously directs snowmelt water from the mountains into the arid Turpan Basin. By harmonizing with the local natural conditions and effectively utilizing underground water resources, the Karez system not only addresses water scarcity in the arid region but also creates a distinctive landscape that intertwines human agricultural activity with natural elements.

The Karez system illustrates that adopting generic design templates from other areas is unsuitable. Each region possesses unique natural attributes, economic contexts, and cultural backgrounds, which collectively form distinct landscape characteristics. Consequently, in landscape planning and design, the activities and preferences of local inhabitants must be considered.

Employing effective landscape assessment methods can rapidly enhance the rural landscape in western regions. These measures not only address environmental concerns but also facilitate rural revitalization, cultural preservation, and industrial transformation. Furthermore, they offer valuable insights for sustainable rural development, guide and inspire the tourism industry, enhance visitor attraction, showcase unique cultural heritage, and promote sustainable tourism growth.

2. Comprehensive review of current research on rural landscapes

2.1. Current state of rural landscape research abroad

The Industrial Revolution propelled human civilization to unprecedented heights, resulting in substantial transformations in rural landscapes and garnering significant attention from the academic community. Researchers such as Manal Knezović and others have utilized the vast resources of social media's big data to explore historical urban landscapes. However, the assessment and management of heritage research using this data presents ongoing challenges. This paper introduces a Flickr-based approach, employing methods for analyzing photo data to identify aspects of human heritage occupation. By examining data such as viewpoints, locations, scenes, and tags, a deeper understanding of the urban-level attributes of human heritage is achieved. This uncovers shared preferences and distinctions between local residents and tourists, not only showcasing the interaction between daily life and historical landscapes but also highlighting the influence of politics and religion on heritage. Moreover, the paper delves into the limitations of identifying cultural value, uncovering disparities in heritage definitions between experts and users. Notably, when experts apply specific domain-based classification models, they tend to prioritize personal perceptions. These analyses deepen our comprehension of the relationship between urban landscapes and heritage, offering a novel perspective that enriches heritage research and management [5].

Nurdan Erdogan and colleagues have made a significant observation that over 80% of global landscapes have been significantly affected by human activities. The current trends in land use and

coverage are set to amplify the impacts on landscape changes. To effectively guide these changes, proactive management of transformations requires a clear understanding of the threats and opportunities at hand. Essential tools must be built upon the foundation of Madrid evidence, delving into historical shifts in landscapes and providing insights into future scenarios of change. The historical landscape character (HLC) methodology emerges within the geographic information system (GIS) framework, aiming to decipher and study the cultural processes shaping landscapes. In this context, a novel protocol is proposed, utilizing HLC data to simulate future landscapes and explore various changing scenarios. This approach combines a landscape ecology-based computational simulation framework with Turkey's Seattle HLC data, paving a new path for landscape modeling. By adopting an integrative protocol, landscape planners can comprehensively and profoundly manage changes, thus furnishing rich information for understanding and predicting future landscape changes [6].

The research conducted by Burkhatem Oumelkheir and colleagues delves into the intricate landscape planning boundaries within historic urban areas, with a specific focus on exploring the connections between Algeria's urban context and the heritage planning system, where landscapes take a central role. The study grapples with the multi-dimensional nature of the racial attributes of historic urban landscapes, challenged by diverse sets of values. Taking the historic core of Annaba's central city area as a case study, the researchers employ the analytic hierarchy process (AHP) to evaluate its layout and employ geographic information system (GIS) technology for decision support. Building upon this foundation, multiple scenarios for the boundaries of historic urban landscape planning are explored. The emergence of original landscapes has led to a gradual detachment between the original historic urban landscapes and the closely associated Kasbah environment. To manage the value and interrelationships of landscapes, the study introduces spatial landscape boundary methods, which monitor granular issues and ensure interaction across distinct boundaries. In decision-making, urban planning must incorporate landscape planning boundaries to uphold values and effectively manage their aesthetic layout relationships [7]. This research underscores the intricate interplay between heritage, urban planning, and landscape preservation within the context of historic urban areas.

The research led by Jesús Santiago Ramos and his team addresses the prevailing threats of landscape fragmentation and human-induced land cover changes in the realm of natural conservation. In response to these challenges, the development of protected area networks has emerged as a core tenet of nature conservation policies. This study focuses on evaluating the role of protected areas in the Andalusia region of Spain in the context of long-term habitat fragmentation and loss. Employing a multi-indicator approach, the study analyzes four landscape indicators encompassing the overall region, the regional protected area network, the Andalusia Natural Park, and ten individual parks. The research, which assesses the impact of the zoning development, spans approximately 50 years (1956–2007) and is divided into two periods (1956–1984 and 1984–2007). The findings reveal that lower-priority habitat distribution in the southeastern area is relatively irregular. Habitat fragmentation and loss in various regions occur predominantly outside protected areas. Notably, localized natural cover damage can significantly exacerbate regional habitat fragmentation, thereby affecting protected natural areas. The study concludes by advocating for bolstering ecological connectivity between larger protected areas and advocating for ecologically and proactively designed landscape planning methodologies in non-protected contexts. Such measures are imperative to safeguard the invaluable natural heritage of the region [8]. This research underscores the critical role of protected area networks in mitigating habitat fragmentation and offers insights for effective conservation strategies amidst landscape changes.

The domains concerning landscape change and conservation can be categorized into several

primary fields: ecology, urban planning, protected area management, and geographic information system (GIS) analysis. However, there are still certain shortcomings. For instance, while ecological research focuses on ecosystem responses to human activities, it often overlooks the influence of human culture and social factors. Ecological studies typically regard landscapes as the foundation of biodiversity, yet they lack an in-depth comprehension of the impact of human culture on landscape values.

Moreover, in the realm of urban planning, the emphasis lies in urban development and land use, yet it often lacks depth in considering historical cultural heritage and ecosystem preservation. Urban planning tends to concentrate on how to preserve historical cultural heritage during urbanization and how to balance urban development with nature conservation. Similarly, research in protected area management, although predominantly oriented towards safeguarding specific natural and cultural resources within protected regions, often neglects a comprehensive consideration of the interactions between the external region and the protected area. As a result, protected area managers often struggle to effectively address habitat fragmentation and loss within the larger region due to the intricate interplay of various factors both within and beyond their jurisdiction.

Lastly, while GIS analysis endeavors to address challenges through technological means, these studies frequently prioritize data collection and processing, neglecting the crucial aspect of evaluating how data can inform effective policymaking and decision formulation. It is evident that the integration of diverse research methods and perspectives across these fields is imperative to holistically address the complexity of landscape change and conservation challenges.

2.2. Current status of domestic rural landscape research

In recent years, driven by rapid urbanization, domestic scholars in China have concentrated their research efforts on various dimensions of rural landscapes, including ecological civilization, socio-economic aspects, and sustainable development. Scholars like Wu Xue, Chen Rong, and Zhang Yunlu have extended the traditional life cycle assessment (LCA) tool to formulate a multi-scale framework for assessing rural landscape characteristics. This framework aims to enhance the quality of rural landscapes, promoting harmonious coexistence between humans and nature through planning and design that accentuate regional features and distinctive local aesthetics. Their work explores methods for identifying and evaluating landscape features tailored to multi-scale rural spaces. They have put their framework into practice, exemplified by its application in the case of Horqin Right Front Banner in Inner Mongolia. The results demonstrate that this approach not only aligns well with the holistic development of territorial space but also excels in the identification and differentiation of localized rural aesthetic features. This method presents a novel path for constructing sustainable rural landscape development, as well as fostering a balanced integration between people and nature [9].

Liu Ling and Tian Guoxing have investigated the application of the “modular” planning method, derived from traditional Chinese construction practices, in rural landscape planning within shallow mountain regions. “Modular” refers to an approach that incorporates modular assessment in planning and design processes. The fundamental concept of modular planning involves dividing the planning and design process into various modules or units. These modules can be regularly patterned and reuse basic elements, which are then combined and arranged to construct larger, more intricate structures or systems. In the context of rural landscape planning within shallow mountain areas, the “modular” digital method can be employed to establish a community-oriented, unified planning layout, fostering

harmonious integration between rural landscapes and their natural environments. This approach addresses issues such as disorderly spatial organization in rural landscapes and detachment from natural mountain and water environments. In their study, the authors successfully applied a modular control method across three levels: “guarding the scenic beauty”, “utilizing the existing landforms”, and “emphasizing visual connections and perspectives”. This approach was implemented in the Jin Yin Hua Xi rural landscape planning project in the shallow mountain area of Songshan. The research not only explored the practical application value of traditional construction methods in modern contexts, but also established a comprehensive, interconnected, mutually integrated, and harmoniously presented landscape framework for shallow mountain rural areas [10].

Zhang Yibin, Hao Jinmin, Huang An, and Zu Jian utilized diverse geographical data, including remote sensing, and employed the kernel density analysis method to classify the rural landscapes of Diquan Town and Huaqiqiao Township in Quzhou County, Hebei Province. Through this process they established a bottom-up rural landscape classification system. The system encompassed three rural landscape groups, four rural landscape zones, 55 rural landscape categories, and 108 rural landscape elements. The study also elucidated the spatial relationships between these components. This research not only contributed to the theoretical and practical foundations of rural landscape planning and design within the context of the rural revitalization development strategy, but it also supported the endeavors of constructing aesthetically pleasing rural areas [11].

Ji Xiang, Liu Liming, and Li Hongqing utilized Jinjing Town in the Dongting Lake area as a case study to analyze the evolution of rural landscape patterns using the lifecycle theory. The lifecycle theory is applied to investigate the ultimate transition trajectory of landscapes, spanning changes from their initial to final states. This approach enhances the understanding of the dynamic characteristics and trends of landscape changes. The study combines the lifecycle theory with the CA-Markov model, creating a simulation method that predicts the evolution patterns of rural landscapes. The CA-Markov model, rooted in cellular automata theory, can predict the changing trends of different landscape types across various time steps. The research findings indicate a potential increase in settlement landscapes and a potential decrease in paddy field landscapes. Notably, the predictive accuracy of the model’s results are high, providing a robust reference for future rural landscape planning. The application of this comprehensive approach offers a deeper insight into rural landscape changes and offers valuable guidance to planners in their future decision-making processes [12].

In response to the needs of rural landscape planning and the characteristics of Chinese rural landscapes, Li Zhenpeng, Liu Liming and Xie Hualin proposed a village-scale landscape functional form classification method. This method employs a four-level classification system: landscape regions, landscape categories, landscape sub-categories, and landscape units. The researchers applied this approach to the Baijiatan Village in Haidian District, Beijing, performing detailed landscape type delineations and creating a landscape classification map using GIS technology. The developed method meets the requirements for large-scale rural landscape mapping and planning. It accurately represents various existing landscape types, making it a comprehensive and practical approach [13].

The aforementioned research topics encompass various aspects of rural landscape planning and development, generally falling into the following categories: landscape pattern evolution and prediction, functional classification of rural landscapes, application of modular planning methods, multi-scale assessment of rural landscape features, and the utilization of remote sensing and geographic data in landscape analysis.

However, these studies still exhibit some shortcomings in certain aspects. For instance, in the

realm of landscape pattern evolution and prediction, there is a tendency to overly focus on predictive outcomes rather than delving into in-depth analyses of driving mechanisms. The research on landscape functional classification in rural settings has commenced, yet struggles to comprehensively capture the complexity of rural characteristics. The application of modular planning methods predominantly revolves around theoretical discussions, lacking practical case validations. The multi-scale assessment of rural landscape features has yet to establish a universally applicable set of standards, hindering the comparison of research outcomes across different regions. The application of remote sensing and geographic data lacks consideration for data accuracy and advancements.

2.3. Comparison of domestic and international status

When contrasting the current state of rural landscape planning and developmental research between domestic and international perspectives, several commonalities and differences emerge. The scholars mentioned above have conducted extensive research in this field, focusing primarily on aspects such as landscape pattern changes, landscape functional classification, planning method application, feature evaluation, and the analysis of remote sensing and geographic data.

Through comparison, it becomes evident that international scholars emphasize the driving mechanisms behind landscape pattern transformations, striving to unveil causal relationships. In contrast, domestic research often focuses more on outcomes, and there is a need to gradually strengthen the in-depth analysis of driving mechanisms. International research tends to engage in interdisciplinary studies, integrating ecological, social, and cultural factors to provide a comprehensive framework for understanding. Furthermore, there are differences in the approach to landscape functional classification. While international scholars have undertaken pioneering work in this field, domestic research still requires more refined classification methods to better reflect the diversity and complexity of rural areas. Simultaneously, the classification of rural landscapes should be more attuned to practical needs and achieving effective integration with planning efforts.

Regarding method application, both domestic and international scholars possess distinct advantages. While international research leans more toward theoretical exploration, domestic research has begun to assess methods through practical case studies. There is potential for knowledge exchange to drive the innovation and practical validation of research methods. Additionally, international research focuses on establishing universal evaluation standards for comparing research outcomes across different regions. Meanwhile, domestic research is still exploring the standardization of various methods for evaluating rural landscape features. Building upon this foundation, further collaboration can enhance the integrated development of evaluation methods. In the realm of remote sensing and geographic data, international research delves deeper into applications, emphasizing data accuracy and advancements. In contrast, domestic research should pay more attention to data quality and long-term progress to enhance the reliability of analysis and prediction.

3. Theoretical exploration from the perspective of regional landscape aesthetics

3.1. Comparison between “New Countryside” and traditional villages

In fact, the “New Countryside” and traditional villages are manifestations of rural forms and cultural characteristics under different developmental paradigms of different eras [14]. These

differences go beyond just geographical and architectural distinctions; they primarily reflect the underlying economic, social, and cultural transformations.

The “New Countryside” is an important step in China’s rural development strategy, involving the transformation and upgrading of traditional rural areas within the processes of urban integration and urbanization, aiming to create more modern, populous, and ecologically sustainable rural communities [15]. On the other hand, traditional villages often rely on natural environments and cultural landscapes, with architectural styles and layouts that reflect local cultural and historical heritage. For example, in China’s western Xinjiang Province, rural buildings typically utilize wooden structures, and traditional houses commonly feature flat roofs, inward-facing layouts, and a central courtyard surrounded by various rooms. This architectural approach not only suits the local climate but also reflects the values of family and community life among the Uighur people.

However, traditional villages face various challenges in the face of development, including outdated infrastructure and population outflows. Amid the process of modernization, some traditional villages might encounter threats that undermine their original culture and way of life. The comparison between the “New Countryside” and traditional villages reveals the conflict between modernization and traditional culture. The construction of the “New Countryside” emphasizes improvements in living quality and social services, particularly evident in significant progress made in infrastructure. However, concerns also arise that such development might disrupt the original village landscape and cultural traditions. Traditional villages, on the other hand, hold rich historical and cultural significance but confront challenges such as economic development and population outflows.

Therefore, the comparison between the “New Countryside” and traditional villages encompasses more than just external differences in appearance; it delves into the clash between development models and cultural identity. In the process of rural development, finding a balance between modernization and traditional culture, while protecting and passing on the unique charm of rural areas, becomes a topic that warrants profound consideration.

3.2. The application value of regional landscape aesthetics in the design of public spaces in the “New Countryside”

Regional landscape aesthetics refers to the integration of regional culture and natural environment into landscape design, creating an aesthetic that harmonizes with the distinctive characteristics of the region. Therefore, the relationship between the landscape of the “New Countryside” and rural landscapes is closely intertwined, but has undergone significant transformations. The term “new” does not emphasize a new form of landscape, but rather the new rural environment in which the landscape exists. With this logical relationship clarified, the significance of regional culture in the planning and design of landscapes in the “New Countryside” becomes natural and logical [16]. The diversity of regions provides more choices and possibilities for the design of public spaces in the “New Countryside”. Different regional landscapes possess varying aesthetic values that align with the aesthetic and cultural needs of local residents, thus facilitating the creation of well-designed public spaces. This not only enriches the cultural content and quality of life in the “New Countryside”, but also enhances the landscape quality of the local area.

3.3. Principles and methods of public space design in the “New Countryside” from the perspective of regional landscape aesthetics

“Regional landscape aesthetics” and the concept of the “New Countryside” are two distinct fields that exhibit a strong connection in terms of ideology and content [17]. Taking Tongli Ancient Town in Jiangsu Province as an example, it is a place that combines the characteristics of a water town with the essence of the Jiangnan water landscape. It is renowned as the “essence” and “folklore treasure” of the Jiangnan water landscape and stands as one of China’s traditional ancient villages. In the design of Tongli (Figure 1), elements from traditional Chinese landscape paintings, such as bridges, flowing water and blue stone pathways, have been incorporated into the “New Countryside” landscape aesthetic. These elements enrich the visual appeal of the “New Countryside” by harmonizing with the surrounding water town environment. This integration creates a distinctive regional landscape beauty. Furthermore, as the development of the “New Countryside” progresses, Tongli Ancient Town is continuously improving and transforming its tourism facilities. Initiatives such as promoting homestays and introducing water-based activities are being undertaken to attract more visitors seeking to experience rural life. This approach facilitates economic transformation and sustainable development, allowing the town to evolve while retaining its traditional charm.



Figure 1. Tongli Ancient Town, Jiangsu Province.

Research on rural planning in foreign countries predates China by many years. Therefore, when constructing rural areas, it is essential to consider China’s current situation while also drawing insights from relevant research outcomes, both domestically and internationally. The book *New Rural Landscape Planning and Design Based on Regional Culture* provides numerous case studies and offers reasonable recommendations for the study of new rural landscapes, all grounded in the context of China’s realities [18]. The concepts of “relying on the mountains for sustenance” and “relying on water for survival” have been ingrained in China’s understanding of regional culture since ancient times. These concepts underscore the people’s dependence on the natural environment, which might inadvertently overshadow the importance of environmental protection. Additionally, the absence of a sense of local belonging impedes the complete integration of regional culture into landscapes. Culture, being inherently diverse, should naturally foster a sense of cultural identity among people, particularly when local culture serves as a significant source of social cohesion. Hence, in the process of constructing the “New Countryside”, emphasis should be placed on sustainable development. This

approach not only protects natural resources and the ecological environment but also preserves traditional culture, enhances community cohesion and a sense of belonging and facilitates economic development [19].

4. Tourism analysis of folk culture rural landscape system in Western China

The Northwestern region of China, characterized by its complex terrain, abundant natural resources and rich cultural heritage, serves as a crucial center for agriculture, animal husbandry and energy industries [20]. With a significant population of ethnic minorities, this region exhibits unique customs and traditions, making it an important tourist destination. The rapid economic growth in the area, coupled with government support for tourism development, has created a favorable environment for the expansion of the tourism industry. By leveraging its natural beauty and cultural heritage, promoting ecotourism and cultural tourism, and investing in tourism infrastructure, the Northwestern region has the potential to tap into substantial opportunities for sustainable tourism development (Figure 2).



Figure 2. Presents a map of the Northwestern region of China.

4.1. Preserving the natural environment is an essential prerequisite for rural landscape conservation and development

The natural environment holds significant importance in the tourism development of China's western regions. This area boasts a rich and diverse array of natural landscapes, including snow-capped mountains, plateaus, deserts and more, offering unique resources for the tourism industry. Much of the region maintains pristine natural environments characterized by clean air, lush vegetation and abundant biodiversity, which serve as compelling attractions for many visitors [21]. However, the western regions also face challenges such as arid climates and limited precipitation, resulting in water scarcity and soil erosion issues [22]. Geological variations lead to differences in topography, soil types and rock distribution, impacting the formation of local ecosystems. Furthermore, extensive human development associated with economic growth has led to landscape degradation and increased occurrences of extreme weather events. As a result, safeguarding the natural environment and enhancing ecological conditions are crucial for preserving the visual appeal and allure of rural landscapes and promoting the sustainable development of local tourism.

Furthermore, maintaining the natural environment holds undeniable significance in rural spatial design, with aesthetic values playing a crucial role in this process. Aesthetic value is not just about presenting beauty; it also represents a form of respect and protection for the environment. In rural spatial design, aesthetic value can be regarded as a meticulous care for the natural environment and a way of expressing gratitude to nature. Rural areas often boast unique natural landscapes, such as green hills, clear waters and pastoral scenery. These inherent beauties are valuable resources in themselves. By incorporating aesthetic values into rural spatial design, not only can we preserve these natural landscapes, but we also present them in a more graceful and harmonious manner.

4.2. Human factors are the intrinsic driving force of rural landscape development

When discussing the development and transformation of China's western region, human factors clearly play a crucial role. This region is a melting pot of diverse ethnic cultures, such as Uighur, Tibetan, Mongolian, and more. These diverse cultures have profound impacts on the social and cultural landscape, shaping people's values, lifestyles and social interactions. Traditional land use patterns and ways of life, such as pastoralism, farming and nomadic herding, have also laid the foundation for the cultural characteristics of the region and influenced economic and social development. Rich, religious and belief traditions, such as Islam, Buddhism and Tibetan Buddhism, influence people's ways of life, values and social behaviors, and play a significant role in cultural heritage. Additionally, the level of education and human resource development cannot be overlooked. While the educational level in the western region is relatively low at present, the advancement of educational reforms will have a profound impact on the region's development. Rural governance and social organizations also play a crucial role in the region's social stability and development, as different regions' social organizations and governance models impact the coordination and development of rural society. Furthermore, guided by development policies in the western region, sites and attractions like the Mogao Caves in Dunhuang, Maijishan Grottoes, Loulan Ancient City and Turpan's Flaming Mountains have attracted numerous tourists for sightseeing and learning. The exploration of western culture and art, whether it is preserved due to ethnic fusion, persists in its original state or undergoes changes in development, all share a distinct characteristic: "ancient heritage" [23]. This indicates that these cultural sites and attractions have a positive impact on the rural landscape of the western region.

4.3. Economic development is a crucial pillar for rural revitalization

Economic factors play a significant role in the tourism development of China's western region. Despite the relatively lower level of economic development in the area, infrastructure construction supported by policies has laid a solid foundation for economic growth. Particularly, there are differentiated development trends in manufacturing, services, and resource industries. However, rural areas still face challenges, such as sluggish economic growth, low household income and significant population outflow, which can hinder rural development [24].

Based on the unique geographical and climatic conditions along with the rich cultural background of China's western region, a series of context-specific development strategies can have a positive impact on rural economic enhancement. First, by exploring and showcasing diverse ethnic cultures, religious beliefs, and traditional ways of life, promoting cultural tourism can create new economic opportunities for rural areas while fostering cultural inheritance and diverse development. Next,

focusing on appropriate agricultural product processing, ecological agriculture and organic farming can elevate the added value of agricultural products, generate more job opportunities, and enhance farmers' income. Cultivating distinctive industries and handicrafts can not only preserve local culture but also bring employment and market opportunities to rural areas. Simultaneously, developing sustainable energy sources, strengthening technology education and training and upgrading tourism infrastructure can create new growth points and drive economic diversification locally. The provision of financial and entrepreneurial support encourages rural residents to engage in entrepreneurship, thus promoting the sustainable development of rural economies. The implementation of these development strategies will effectively stimulate the enhancement of rural economies in China's western region, paving the way for sustainable and diversified local development.

5. Specific process and steps of research methods

5.1. Research methods and steps

The analytic network process (ANP) is a method used to effectively solve complex decision-making problems through a hierarchical analysis. This approach transforms complex problems into a series of interconnected, relatively simpler questions. In this process, the relationships between various factors in the network are represented using matrices. To apply the ANP for analysis, the problem is transformed into a quadratic programming problem to calculate weights. Finally, the ANP's supermatrix is utilized to obtain the overall ranking [25].

Using the ANP framework, a rural landscape evaluation system is constructed for Chinese Western region's folk cultural villages. Taking a case of the cultural landscape, a survey questionnaire method is employed for rural landscape assessment. By listing various factors influencing the folk cultural village landscape and categorizing and summarizing them into natural, cultural and economic factors, an ANP model is established. The model needs to account for the interdependencies between these factors and set corresponding weight values.

After obtaining the weights for each factor, the ANP method is used for evaluation analysis. Specifically, this involves calculating the contribution of each factor to the overall landscape based on the weights of the nodes and the scores of each factor in the model. The contribution values of each factor to the overall landscape of the Northwest folk cultural village are then evaluated based on their magnitudes.

Through this algorithm, a more comprehensive and objective assessment of the strengths and weaknesses of the folk cultural village landscape can be achieved, providing references for optimization and design. Additionally, while using the ANP algorithm, it's important to consider the interactions between various factors to ensure the accuracy of the model.

5.2. Factors influencing folk village landscape in Western China

Through extensive research, this paper constructs an evaluation system for the influence of folk village landscapes in western China, focusing on the following aspects. First, all factors align with the developmental patterns of folk village landscapes, indicating that these factors not only possess geographical uniqueness but are also closely intertwined with local folk culture, forming an organic connection that enables village landscapes to achieve sustainable development while preserving

traditional characteristics. Second, each factor fully embodies the regional nature of folk village landscapes; for instance, local architectural styles, village layouts, and residents' daily habits are closely linked to the local folk culture. In a Tibetan village, traditional Tibetan architecture and layouts convey the region's unique culture and way of life through both external appearance and internal structure. Third, the results of each factor indicator should actively contribute to the full development of local cultural features and the improvement of the residents' quality of life.

For the sake of research convenience, this paper constructs a three-level hierarchy based on the attributes of folk village landscapes, consisting of A (Top-level Objective), B (Evaluation Criteria Level), and C (Sub-criteria Level), as shown in Figure 3. In this hierarchy, A represents the Landscape Assessment Level based on folk village landscapes, serving as the highest level of the entire model. The B level is divided into three significant influencing factors: natural, cultural, and economic landscapes, aiming to reflect comprehensive impacts. These dimensions fully represent various aspects contributing to folk village landscapes. The C level involves the subdivision of each influencing factor, revealing specific elements of each factor to capture more detailed evaluation information.

This multi-level model design not only takes into account the comprehensiveness of folk village landscapes but also provides detailed evaluation dimensions at different levels to more accurately reveal the impacts of various influencing factors on landscape quality. This will provide a foundation for in-depth analysis and optimization in research, ultimately promoting the sustainable development of folk village landscapes with cultural significance.



Figure 3. Assessment of folk culture rural landscape in Western China.

5.3. Quantitative evaluation of folk culture rural landscape assessment system in Western China

When constructing a rural landscape assessment system using the analytic network process (ANP) method, determining the interdependence relationships and weights among different levels is of

paramount importance. Taking natural factors as an example, this study considered seven factors: precipitation, landscape diversity, air quality, climatic conditions, aquatic aesthetic, average temperature, and water quality. In the assessment process, the initial step involves constructing a judgment matrix to compare the relative importance of these seven factors [26]. The judgment matrix is a square matrix containing pairwise comparisons between the factors and using numerical values to indicate their relative importance. For instance, if precipitation is considered more significant than landscape diversity, then the corresponding row value for precipitation in the judgment matrix should be higher than that for landscape diversity. Subsequently, eigenvectors are employed to calculate the weights for each factor. An eigenvector, representing the relative weight of each factor, is one of the column vectors of the judgment matrix. To compute eigenvectors, normalization of the judgment matrix is necessary to ensure that the sum of each row equals one. The next step involves determining the matrix's maximum eigenvalue and its corresponding eigenvector. The maximum eigenvalue signifies the importance of each factor, while the eigenvector indicates the relative weights of the factors. Finally, the eigenvector is normalized once again to ensure that the sum of the weights for all factors is one. This process yields the relative weights of each factor within the entire assessment system, which are then utilized for calculating the overall score of the rural landscape [27].

When designing the questionnaire, the options for each indicator and their relative importance were determined in advance. In the assessment model of rural landscape influenced by folk culture in China's western region, three primary categories were identified: natural factors, cultural factors, and economic factors. Taking the example of the precipitation indicator within the natural factors, options such as "extremely arid", "arid", "normal", "moist", and "extremely moist" were established. Subsequently, the logical relationships and relative weights between the hierarchical indicators were determined. This step was accomplished using the analytic hierarchy process (AHP) [28]. In the AHP method, pairwise comparisons of the importance of the hierarchical indicators were conducted to derive their relative weights, which, in turn, determined the overall weights of the hierarchical indicators. For instance, in the three primary categories of natural factors, cultural factors and economic factors, the relative weights were established as 0.4, 0.3 and 0.3. Within the natural factors category, the AHP method was further employed to determine the relative weights of each indicator, ultimately yielding the total weight for each indicator.

To ensure the scientific rigor of the study, a total of 132 questionnaires were distributed in May 2023. The sample encompassed respondents of various age groups, including the youth aged 18 to 40, the middle-aged group of 41 to 60, and the elderly aged 61 and above. Among the respondents, the gender distribution was 40% male (52 individuals) and 60% female (80 individuals). Participants with diverse educational backgrounds were included, spanning high school and below, associate degree, bachelor's degree, and graduate degree levels. Regarding regional distribution, although the sample size was limited, efforts were made to ensure most respondents originated from the Northwestern region of China. The covered geographical areas included provinces such as Shaanxi, autonomous regions like Ningxia Hui Autonomous Region, and Xinjiang Uygur Autonomous Region. All questionnaires were collected for analysis, ensuring the soundness of the research methodology. The evaluation criteria for the survey are presented in Table 1 below.

Table 1. Scoring standards for each factor index.

evaluation factors	standard layer				
	1 point	3 point	5 point	7 point	9 point
water quality	extremely turbid	somewhat turbid	normal	somewhat clear	extremely clear
average temperature	<0 °C	0 °C~10 °C	10 °C~20 °C	20 °C~30 °C	>30 °C
water scenery aesthetics	none or severely damaged	monotonous water scenery	no unique features	beautiful overall environment	exquisite water scenery design
climate conditions	extremely harsh	poor	normal	comfortable	extremely comfortable
air quality	pm 2.5 concentration between 115~150 pg/m%	pm 2.5 concentration between 75~115 ug/ms	pm 2.5 concentration between 35~75 g/m ³	pm 2.5 concentration between 10~35 ug/ms	pm 2.5 concentration below 10 ug/ms
landscape diversity	single landscape	similar landscape types	more landscape types	relatively rich landscape types	very rich landscape types
rainfall	extremely dry	dry	normal	humid	extremely humid
architectural aesthetics	very poor	somewhat poor	average	good	excellent
historical heritage	no historical buildings or cultural heritage	few historical buildings and cultural heritage	a certain amount of historical buildings and cultural heritage	rich historical buildings and cultural heritage	world-class historical buildings and cultural heritage
tourism services	lack of tourism service facilities	basic tourism service facilities	relatively complete tourism service facilities	very complete tourism service facilities	extremely complete tourism service facilities
population quality	extremely low cultural literacy	lower cultural literacy	normal	good cultural literacy	very good cultural literacy
transportation accessibility	very incomplete transportation facilities and very congested roads	complete transportation facilities and somewhat congested roads	complete transportation facilities and less congestion	convenient transportation but less congestion	convenient and quick with less traffic congestion
employment opportunities	very few	few	normal	many	very many
rural planning and management	chaotic rural planning	somewhat chaotic rural planning	basically reasonable rural planning	reasonable and orderly rural planning	highly efficient and excellent rural planning
income level	very low	low	normal	high	very high

Continued on next page

evaluation factors	standard layer				
	1 point	3 point	5 point	7 point	9 point
business atmosphere	very poor	somewhat poor	normal	good	very good
facility support	very poor	somewhat poor	normal	good	very good
social security	no sense of security	low sense of security	normal	high sense of security	very high sense of security

To enhance the accuracy and scientific validity of the weightings assigned to evaluation indicators, a modification was made utilizing the analytic network process (ANP) hierarchical analysis method. This approach employs a one to nine scale to establish judgment matrices for each level (as shown in Table 2), followed by using the eigenvector method for ranking purposes. Subsequently, a consistency test was performed to ascertain the key factors influencing Chinese folk cultural rural landscapes.

Table 2. Importance scale scores.

Importance scale value	Meaning
1	Two factors are equally important
3	One of the two factors is slightly more important
5	One of the two factors is significantly more important
7	One of the two factors is strongly more important

5.4. Quantitative result analysis

5.4.1. Matrix result analysis

The survey questionnaire results, analyzed using the yaahp software, yield the comprehensive assessment judgment matrix for the Chinese western folk cultural rural landscape. The maximum eigenvalue λ_{max} of the matrix, calculated as 3.0649, enables the derivation of the consistency ratio (CR), a metric utilized to ascertain the reliability and coherence of the weighted matrix. The consistency index (CI) represents an indicator of coherence and is calculated as follows:

$$CI = (\lambda_{max} - n) / (n - 1) \quad (1)$$

where λ_{max} is the maximum eigenvalue and n is the order of the matrix. RI represents the random index, which is an average random consistency index value determined based on the order of the judgment matrix. These values can be used to calculate the consistency ratio (CR) of the matrix. The formula for CR is:

$$CR = CI / RI \quad (2)$$

From the above two formulae, the CI is calculated as 0.0324, the RI as 0.5247 and the CR as 0.0624. The weighting matrix, i.e., the weight of each factor under the current layer, is obtained by normalizing the super-matrix and is calculated as follows:

$$W_{ij} = a_{ij} / \sum(a_{ij}) \quad (3)$$

In the above formula, a_{ij} denotes the element value of row i , column j in the supermatrix, and W_{ij}

denotes the element value of row i , column j in the weighted matrix. More detailed super-matrix data can be calculated from the above formula, and the following is a comprehensive assessment of the folk culture rural landscape in western China (e.g., Table 3).

Table 3. Comprehensive assessment of folk culture rural landscape in the western region of China.

Folk rural landscape evaluation	Economic factors	Cultural factors	Natural factors	Wi
Economic factors	1.0000	0.1429	0.3333	0.0810
Cultural factors	7.0000	1.0000	5.0000	0.7306
Natural factors	3.0000	0.2000	1.0000	0.1884

The same calculations were used to derive the natural factors assessment, human factors assessment and natural factors Assessment matrices (as in Tables 4, 5 and 6).

Table 4. Natural factor assessment.

	Water scenery aesthetics	Water quality	Rainfall	Average temperature	Climate conditions	Air quality	Landscape diversity	Wi
Water scenery aesthetics	1.0000	2.0000	0.2500	0.2000	N/A	0.5000	5.0000	0.0842
Water quality	0.5000	1.0000	0.2500	0.2000	0.5000	0.3333	4.0000	0.0581
Rainfall	4.0000	4.0000	1.0000	0.3333	3.0000	3.0000	5.0000	0.2306
Average temperature	5.0000	5.0000	3.0000	1.0000	4.0000	4.0000	6.0000	0.3777
Climate conditions	N/A	2.0000	0.3333	0.2500	1.0000	0.3333	4.0000	0.0816
Air quality	2.0000	3.0000	0.3333	0.2500	3.0000	1.0000	5.0000	0.1388
Landscape diversity	0.2000	0.2500	0.2000	0.1667	0.2500	0.2000	1.0000	0.0290

The maximum eigenvalue of the natural factors, λ_{max} , was 7.5095 and the consistency ratio was 0.0656.

Within the natural environment indicators, the weights of three factors—average temperature, precipitation, and air quality—are relatively high, reaching 0.3777, 0.2306, and 0.1388, respectively. This signifies that the sustainability of the natural environment remains a primary concern, with temperature, rainfall, and air quality playing a crucial role in the livability of the western region. Hence, their influence holds significant weight. Additionally, based on the provided data, water feature aesthetics also hold a substantial proportion in shaping the overall urban image. However, their scores are not notably high, possibly due to the impact of factors such as water quality, precipitation, average temperature, and air quality. Consequently, urban management authorities should intensify environmental governance, particularly in regulating air quality, to enhance the appeal and aesthetic value of water features, thereby providing tourists with pleasant travel experiences. Furthermore, the diversity of landscapes receives a comparatively low score, primarily attributed to deficiencies in rural planning and management that overlooked landscape design diversity. Accordingly, it's recommended that urban management authorities address urban environmental pollution, emissions, and similar

issues through enhanced regulation and governance of water quality and air quality [29]. Simultaneously, emphasis should be placed on the diversity of rural planning and landscape design, elevating the overall urban image and attractiveness.

Table 5. Evaluation of economic factors.

	Rural planning and management	Transportation accessibility	Income level	Employment opportunities	Business atmosphere	Facility support	Social security	Wi
Rural planning and management	1.0000	0.3333	9.0000	3.0000	8.0000	0.5000	9.0000	0.2045
Transportation accessibility	3.0000	1.0000	9.0000	3.0000	8.0000	N/A	9.0000	0.3078
Income level	0.1111	0.1111	1.0000	0.1429	0.3333	0.1111	3.0000	0.0266
Employment opportunities	0.3333	0.3333	7.0000	1.0000	5.0000	0.3333	8.0000	0.1224
Business atmosphere	0.1250	0.1250	3.0000	0.2000	1.0000	0.1111	4.0000	0.0415
Facility support	2.0000	N/A	9.0000	3.0000	9.0000	1.0000	9.0000	0.2786
Social security	0.1111	0.1111	0.3333	0.1250	0.2500	0.1111	1.0000	0.0186

The maximum eigenvalue λ_{max} of the economic factors is 7.5865 and the consistency ratio is 0.0755.

Examining the weight values (Wi) of economic factors reveals that rural planning and management, infrastructure facilities, transportation accessibility, and income levels play vital roles in rural development, with relatively minor influence from social governance. When fostering rural tourism development, emphasis should be placed on rural planning and management, infrastructure facilities, convenient transportation and income level improvement. For instance, rural planning departments can optimize spatial layout and introduce parks and green spaces, while enhancing rural tourism infrastructure, safeguarding natural landscapes and creating more appealing rural vistas for tourists [30]. Transportation authorities should strive to enhance transportation conditions and improve the convenience and accessibility of public transport, enabling visitors to reach their destinations more easily. Governments and businesses should also invest in infrastructure development, offering better healthcare, education, and cultural facilities to residents and tourists, thereby enhancing rural allure. Simultaneously, to elevate income levels and quality of life for residents, the government can implement measures to boost employment and entrepreneurship, energizing rural development with new momentum [31]. These improvement measures will contribute to elevating the attractiveness of rural tourism and propelling the robust growth of rural tourism.

Table 6. Evaluation of cultural factors.

	Tourism services	Population quality	Historical heritage	Architectural aesthetics	Wi
Tourism services	1.0000	8.0000	2.0000	3.0000	0.4863
Population quality	0.1250	1.0000	0.1429	0.1429	0.0415
Historical heritage	0.5000	7.0000	1.0000	1.0000	0.2460
Architectural aesthetics	0.3333	7.0000	1.0000	1.0000	0.2262

The maximum eigenvalue λ_{\max} of the cultural factors is 4.0893 and the consistency ratio is 0.0335.

The results above highlight a greater concern for human resources in the western region. Based on the data presented, it can be observed that the influence of population quality on other indicators is relatively minor, with its weight reaching the lowest value of 0.0415. Therefore, in tourism planning and development, there is a need to prioritize enhancing the local residents' quality and cultural foundation to elevate the overall attractiveness of the tourist destination. Additionally, historical heritage and architectural aesthetics wield a significant impact on tourism services. Hence, it is advisable to focus on preserving and passing down historical and cultural heritage, while also emphasizing aesthetics and artistic elements in the design of new structures. It is recommended that tourism planning and development place greater emphasis on safeguarding and inheriting historical culture [32], enhancing architectural aesthetics design, improving the quality of tourism services and paying attention to the elevation of residents' quality and cultural levels.

The interrelationships among these groups of factors are embodied in the weighted supermatrix table, collectively influencing the sustainability of development in the western region. In this context, human factors can directly impact natural elements. Therefore, corresponding environmental protection measures need to be undertaken during project construction and operations to preserve the pristine natural environment. When examining the interdependencies between factor groups, human elements exhibit relatively close mutual dependencies with various other factors, contributing significantly to their overall weight. While improving the rural landscape of the western region through the preservation of traditional architecture and cultural heritage, particular attention should be directed toward their impact on the natural environment. This is especially pertinent for key factors such as vegetation, climate and water. Such considerations will be conducive to attracting more tourists, promoting sustainable development in the western region's tourism industry, and achieving a harmonious coexistence between tourism and the natural environment.

5.4.2. Comprehensive data analysis

The above matrix data analysis produces the following results (as shown in Figure 4).

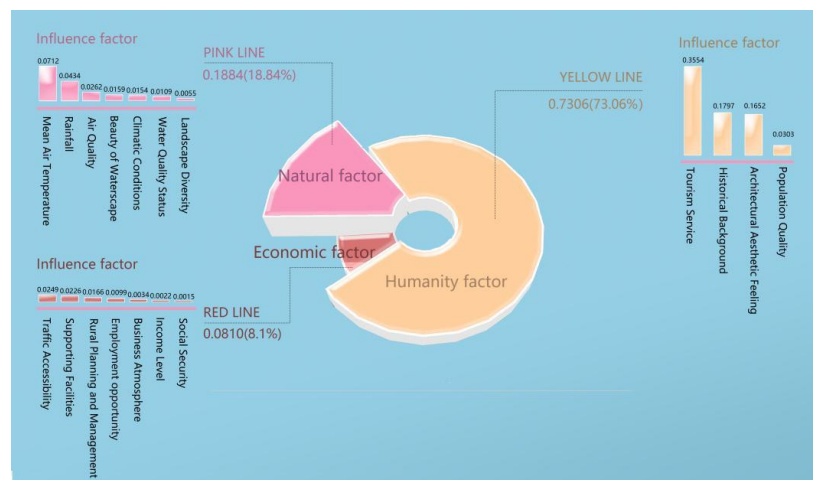


Figure 4. Weighting of B-layer and C-layer solutions for folk culture rural landscape assessment in the western region of China.

The research results indicate that in terms of B-level factors, humanistic factors have the highest weight, followed by natural factors, and economic influencing factors coming in last with the lowest weight. From the C-level perspective, tourism services have the highest weight, indicating that people have higher expectations for promoting rural development through tourism. Historical heritage and architectural aesthetics ranked second, indicating that people want to preserve local culture along with social development. Overall, the evaluation of Chinese western rural landscape with folk cultural characteristics is at a moderate level. The humanistic landscape generally has significant historical value, but there are some deficiencies in the overall infrastructure of public spaces due to economic factors. Landscape diversity is not abundant, so efforts should be made to improve visual effects by enriching the sense of landscape hierarchy and improving design aesthetics. The folk cultural rural landscape has a high conservation value in terms of natural ecology.

6. Research data and results analysis

In this study, the analytic network process (ANP) was used to calculate the weights of different indicators in the rural landscape system. Data was collected through a questionnaire survey, considering the limited number of survey samples, which may not objectively reflect the actual conditions of the local landscape. Therefore, the data obtained from the questionnaire survey was used for calculations to ensure its scientific validity.

As shown in the table above, it can be observed that the importance of the three evaluation indicators in the rural landscape, namely humanistic factors, natural factors and economic factors, decreases in this order. This indicates that these factors are the main influences on rural landscape aesthetics. Incorporating regional culture into the rural landscape can effectively enhance its attractiveness and foster a sense of local identity among residents. Therefore, more emphasis should be placed on regional characteristics in design [33]. Consequently, efforts can be made to protect historical heritage and traditional dwellings, integrate folk culture into the artistic design of public spaces in rural areas, and strengthen the dissemination of rural exhibitions.

6.1. The protection of historical sites and traditional houses is the core element of the inheritance of folk culture

The conservation of historical relics holds significant implications for rural development, particularly in the context of fostering sustainable tourism. Cultural heritage is now acknowledged as a positive force driving economic and societal advancement, underscoring its role in promoting overall societal progress [34].

On one hand, heritage preservation enhances the historical and cultural richness of rural areas, elevating the appeal of village tourism and offering new avenues for rural revitalization. Consider the case of the ancient Southwest Silk Road in China, a historically significant trade route spanning southwestern China, Tibet and India and serving as a vital link between China and South Asian nations [35]. The cultural and historical value of this ancient route is widely recognized. In recent years, with strong backing from the Chinese government, it has been designated as a key national cultural heritage conservation project aimed at safeguarding and passing on this historical legacy. Through the preservation of relics along the ancient route, local governments and communities have seized the opportunity to uncover and showcase their unique cultural resources, fostering local tourism

development. Government investments have led to the establishment of museums and relevant tourism facilities along the route, attracting more visitors eager to learn about the local history and culture. Local residents have also become more aware of the cultural and economic value of the ancient route, actively participating in its preservation and legacy transmission, thereby fostering enthusiastic support for local tourism and cultural endeavors [36]. Simultaneously, local governments have implemented policies to protect the natural environment along the tea road, promoting the development of ecotourism.

On the other hand, heritage preservation also imposes certain limitations and challenges on rural planning and development. For instance, issues related to the planning of protected areas and the integration of architectural styles need to be effectively addressed [37] to prevent conflicts between heritage conservation and rural development. Take the case of the rising prominence and allure of Kunming Ancient City, which has attracted a substantial influx of tourists and witnessed commercialization, leading to disruptions of the once tranquil rural environment. Additionally, some commercial developments and structures have sprung up around the ancient city. This scenario has introduced various challenges to rural planning and development. Therefore, while safeguarding heritage sites, it becomes crucial to strike a balance in rural planning, ensuring a harmonious coexistence between heritage preservation and promoting rural development [38].

6.2. Integrating folk culture into the artistic design of rural public spaces is an important means of developing cultural landscapes

Incorporating the essential components of Chinese traditional culture, a significant facet of folk culture, into rural public art design can have multifaceted benefits. This approach not only enriches the cultural essence of rural areas but also invigorates community dynamics, fostering residents' senses of belonging and identity to their homeland [39]. Take the case of Caochangpo Village in Gansu Province, which vividly illustrates its positive impact. The village integrated the concept of the traditional festival "Square Gathering in the Square" into its landscape planning, resulting in a unique "Meeting Square". This square not only showcases local traditional culture and customs but also hosts a variety of cultural events regularly, attracting a multitude of tourists and visitors. By infusing folk cultural elements into public art design, Caochangpo Village deepened its historical roots and created a culturally distinctive space. This fusion not only bolstered community vitality but also enhanced residents' sense of identification and attachment to their hometown. These measures stimulated local economic growth, fostering holistic village development and demonstrating the positive outcomes of blending traditional culture with public art design.

Incorporating folk culture into landscapes, from a developmental perspective, acknowledges the dynamic nature of society where the needs of urban and rural populations are ever-evolving. Both urban and rural areas adapt to changing societal demands in their developmental trajectories. Consequently, the preservation and promotion of folk culture also stand as significant avenues for driving modern urban development. By embracing and celebrating rich cultural heritage, modern cities can create distinctive tourism experiences that allure both locals and visitors, fostering cultural exchange and appreciation. Therefore, the conservation of folk culture has made substantial contributions to the sustainable development of urban and rural regions, adding depth and allure to tourism offerings while ensuring enriched experiences for all.

6.3. Strengthening the dissemination of rural exhibition halls is an important element in the display of regional culture

Rural exhibition halls not only serve to preserve and transmit folk culture and promote local economic development, but also awaken collective memories among villagers. They can translate the deep connotations of the village history exhibition hall into concrete practices that promote traditional culture [40]. The operation of these exhibition halls depends not only on the government, but also on the support and participation of local residents. Traditional culture often takes tangible objects as carriers; therefore, the design and planning of museum exhibition halls focus on creating diverse spaces to display these tangible artifacts. Within the exhibition halls, typical local artifacts can be displayed, combining physical objects with textual presentations. In addition, incorporating methods such as audio explanations, virtual reality (VR), animated demonstrations, and digital interactions can create a stronger impact on visitors from different perspectives [41]. For example, the Shanghai Natural History Museum uses high-tech approaches such as high-definition projections and multimedia interactions. In addition, it establishes a science education center within the exhibition hall to provide various forms of educational activities, thus attracting a larger number of visitors and viewers.

The Contemporary Chinese Folk Art Museum in Hunan Province is an excellent example. It is the first non-profit museum in China dedicated to collecting, researching and exhibiting traditional Chinese folk art. The establishment of the museum was a joint effort by the local government and social organizations, with professional experts responsible for collecting, preserving, researching and exhibiting the museum's artifacts. The museum displays a wide range of traditional folk art pieces, including carved wooden figurines, masks, clay figurines and puppets. In addition, it regularly organizes folk art festivals and cultural exchange activities, inviting folk artists and enthusiasts from all over the country to participate [42]. The Contemporary Chinese Folk Art Museum promotes cultural heritage and tourism development by exhibiting and preserving traditional folk art. The displayed artworks and organized events attract many visitors, create employment opportunities and generate economic benefits for the local community [43]. In addition, the traditional folk art pieces exhibited in the museum have received high praise from experts, making a positive contribution to the protection and inheritance of folk art.

7. Conclusion

Building on the existing research on rural landscape both domestically and internationally, this study establishes an evaluation framework for the cultural landscape of traditional Chinese villages in the western region of China. The factors influencing the rural landscape are categorized into three major dimensions: natural, cultural and economic, and further subdivided into 18 specific nodes for evaluation. The western region of China is an important node for traditional culture, with a rich history, rich cultural heritage, and diverse natural landscape, making it well suited for tourism development.

Based on the evaluation results of ANP, it is recommended to focus on three aspects for the development of the western region of China: The preservation of historical relics and traditional dwellings, the integration of folk culture into the artistic design of public spaces in rural areas and the strengthening of the promotion efforts of rural exhibition halls. By capitalizing on the strengths and addressing the weaknesses identified by the research results, various levels of improvements can be implemented. Similar approaches can be adopted in the development of other rural areas by

establishing more rural exhibition halls and museums to showcase regional characteristics, thereby enhancing their visibility and reputation. In addition, emphasizing humanistic and ecological values through rural planning and design can help create more livable, enjoyable and prosperous rural communities [44].

The present study has certain limitations and shortcomings that need to be acknowledged. First, the research methods and theoretical bases could be further improved. Although this study has established an evaluation system based on the rural landscapes in the western region and divided it into 18 nodes, the comprehensiveness and adequacy of these selected nodes need to be further explored in future studies. Also, the categorization of influencing factors into natural, humanistic and economic aspects may have a subjective bias, and there may be factors that simultaneously affect all three aspects, suggesting the need for a more nuanced classification approach for analysis. Considering the above limitations and constraints, future research can focus on the following directions to improve the study: Expanding the research scope to include rural landscapes in more regions to improve the generalizability and reliability of the research results; incorporating more objective factors into the analysis; and adopting a more comprehensive selection of relevant indicators for the evaluation system, while providing additional evidence for the feasibility and practicality of the evaluation framework.

In conclusion, rural landscapes in western China, as important cultural and tourism resources, have great prospects and challenges for future development. To achieve the revitalization of rural areas and the innovation of folk culture in the western region, the government, enterprises and various social groups must make joint efforts. Together, they can work to create more beautiful and prosperous rural communities and ensure the inheritance and promotion of traditional customs.

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