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"Numbers Weave Bridges under the Moon, Intelligence Empowers Yongle": Rural Tourism Landscape Planning for Yongle Village, Dongxi Town, Qijiang District, Chongqing City

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Abstract: This study addresses several issues in the rural landscape design of Yongle Village, Qijiang District, Chongqing City, such as outdated updates, severe homogenization, and a lack of innovative industries, proposing solutions accordingly. In line with the national rural revitalization strategy and the concept that "lucid waters and lush mountains are invaluable assets," this research employs policy analysis, field research, and case studies, integrating design experiences from both domestic and international sources. It introduces the "immersive experience" and "all-inclusive pricing" models to alleviate homogenization, activate site-specific characteristics, and create sustainable rural landscapes.

Keywords: Experiential landscape; Intangible cultural heritage; Rural landscape

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1. Introduction

1.1. Project background

In recent years, the Chinese government has placed great emphasis on rural development and landscape construction, introducing multiple policies to support the planning and construction of rural experiential landscape bases. Laws and regulations such as the Urban and Rural Planning Law of the People's Republic of China, the Land Administration Law of the People's Republic of China, and the Guidelines for Beautiful Rural Construction have set requirements for regulating rural spatial layouts and improving living environments. Documents including Chongqing Territorial Spatial Master Plan, the Territorial Spatial Subdivision Plan for Qijiang District, Chongqing, and the High-Standard Farmland Construction Plan for Chongqing emphasize green development and ecological protection, calling for the promotion of sustainable

rural landscape construction. Meanwhile, the national "green development concept" and rural revitalization strategy provide clear guidance for immersive agricultural experiences, local cultural heritage preservation, and low-carbon landscape design [1]. These policies lay a solid political foundation and implementation conditions for the construction of a rural experiential landscape base in Yongle Village, Dongxi Town, Qijiang District, Chongqing City.

1.2. Design objectives

1.2.1. Integration of landscape and smart agriculture

By shaping ancient village scenery combined with agriculture, we aim to develop eco-friendly and livable rural tourism, responding to the concept that "lucid waters and lush mountains are invaluable assets." Simultaneously, we will construct a "cloud-edge-end" collaborative smart agriculture system, deploying Beidou agricultural machinery autonomous driving systems and digital twin models for crop growth, applying blockchain NFT technology for full traceability of agricultural products, establishing an agricultural carbon sink monitoring platform, and using carbon credits to redeem agricultural products. This is expected to improve water and fertilizer utilization by 50% and management efficiency by 60%, achieving synergistic development of ecology and industry.

1.2.2. Digital cultural tourism and cultural heritage preservation

Addressing the insufficient promotion and gradual fading of local resources such as Sichuan opera and pomelo culture, we will incorporate traditional elements into landscape design and protect and renovate ancient buildings and homestays. Moreover, utilizing 3D laser scanning and motion capture technology, we will transform stilted buildings and intangible cultural heritage techniques into digital assets; develop an AR time-travel guided tour system to overlay historical scenes; and establish a rural intangible cultural heritage metaverse exhibition hall, supporting interactive experiences such as VR Sichuan opera singing lessons and digital collectible collection, enhancing the efficiency of intangible cultural heritage dissemination and strengthening cultural identity.

1.2.3. Intelligent monitoring and ecological protection

Implementing national ecological protection and green development policies, we will adopt environmentally friendly and energy-saving technologies such as solar power generation systems and rainwater collection and utilization systems to reduce resource consumption. Additionally, utilizing intelligent monitoring and data cloud platforms, we will monitor the ecological environment in real-time, creating a green and sustainable rural tourism landscape and achieving effective protection and sustainable utilization of the ecological environment.

1.2.4. Economic development and rural revitalization

Developing characteristic cultural and creative products such as pomelos, Sichuan opera, and rice, we will drive economic income through tourism exhibitions and sales, as well as carbon credit redemption. By fostering a "culture-ecology-intelligence" synergistic development model, developing rural tourism and smart agriculture, integrating site and surrounding resources, we will increase farmers' incomes, promote industrial prosperity and affluent living, and provide support for comprehensive rural revitalization [2].

1.3. Design significance

1.3.1. Promoting ecological-smart synergy and enhancing resource efficiency

By deeply integrating smart agriculture with landscapes, we will practice the concept that "lucid waters and lush mountains are invaluable assets." Utilizing technologies such as Beidou navigation, digital twins, and blockchain traceability, we will significantly improve water and fertilizer utilization and management efficiency, achieving synergistic development of ecological protection and agricultural industries, and providing technological support for eco-friendly and livable rural areas.

1.3.2. Promoting digital cultural tourism empowerment and revitalizing local cultural heritage

Addressing the dilemma of inheriting local cultures such as Sichuan opera and pomelos, we will employ digital means such as 3D scanning, AR, and digital collectibles to transform ancient buildings and intangible cultural heritage into interactive immersive experiences. This will effectively enhance the efficiency of intangible cultural heritage dissemination, strengthen cultural identity among villagers and tourists, and promote the living inheritance of traditional culture.

1.3.3. Promoting intelligent monitoring and control to safeguard the green foundation

Implementing national ecological policies, we will adopt green technologies such as solar energy and rainwater collection, combined with intelligent monitoring cloud platforms, to achieve real-time control over environmental resources. This will reduce energy and resource consumption, ensure the sustainability of rural tourism landscapes, and promote a virtuous cycle of ecological protection and long-term utilization.

1.3.4. Promoting the integration of three industries for revitalization and driving common prosperity

Developing characteristic cultural and creative products, we will drive income growth through channels such as carbon credit redemption and tourism exhibitions. By constructing a "culture-ecology-intelligence" synergistic development model, integrating regional resources, increasing farmers' employment and incomes, we will promote industrial prosperity and affluent living, providing a replicable demonstration path for comprehensive rural revitalization.

2. Market analysis

2.1. Location analysis

Yongle Village is located in the core area of Dongxi Town, Qijiang District, Chongqing City, adjacent to the nationally renowned historical and cultural town of Dongxi Ancient Town, enjoying significant location advantages. The village covers an area of approximately 667 square meters, with 4,145 acres of arable land, serving as an important agricultural production base in Qijiang District. The terrain within the village is gentle, with fertile land. The Dongding River runs through the village from north to south, serving as a crucial segment of the Dongxi River, providing abundant water resources for agricultural irrigation and landscape creation. Yongle Village has relatively convenient transportation, with national highways and township roads connecting it, and is approximately 30 kilometers away from Qijiang urban area, offering good accessibility. The village has a long history and abundant resources, producing characteristic agricultural products such as rice and pomelos, possessing superior natural and humanistic foundations for developing rural experiential

landscapes and smart agriculture.

2.2. Natural conditions analysis

In terms of natural conditions, Yongle Village is located on the southeastern edge of Qijiang District, belonging to the transitional zone of parallel ridge-valley landforms on the southeastern edge of the Sichuan Basin. The terrain is mainly mountainous and hilly, with an overall southwestern high and northeastern low inclination. The village features many isolated mountains, with few complete mountain ranges, and karst and Danxia landforms interspersed, forming unique natural landscapes. The central part of the site is low-lying, with gradually rising surroundings, presenting a typical bowl-shaped catchment terrain conducive to the natural accumulation of surface runoff. The Dongding River runs through the village from south to north, with numerous streams and rivers, providing abundant water resources. The climate is subtropical humid monsoon, with distinct seasons, abundant rainfall, and a long frost-free period, suitable for the growth of various crops such as rice and pomelos, providing excellent natural conditions for agricultural and ecological landscape creation.

2.3. Cultural resources analysis

In terms of cultural resources, Yongle Village in Dongxi Town boasts rich cultural heritage and a long history, but many cultural aspects have low inheritance rates, with most being forgotten or even abandoned. Existing sites include the Chen Family Residence and Ancestral Hall from the Qing Guangxu period, the 270-year-old Wangye Temple, and the 630-year-old Taiping Bridge. Historically, Yongle Village was a crucial commercial route in southwestern China during the Tang Dynasty and an ancient dock on the Qijiang River, as well as the birthplace of the Dai ethnic group, leaving behind monuments such as the “Nanping Liao” stele, Guansuo Bridge ruins, ancient Han tombs, the Mahxiangyue Civil Post, and archways; folk cultures such as Yu-style Sichuan opera and dragon and lion dances require protection. The site has a complete surrounding infrastructure, less than 500 meters away from Dongxi Ancient Town, with scenic spots and historical sites interconnected along the route, providing favorable conditions for rural landscape design.

2.4. Visual analysis

In terms of visual analysis, the overall terrain of the site is relatively flat, with vegetable fields and farmland as the main current features, presenting a native agricultural landscape. The site is surrounded by barriers due to river regulation projects, preventing direct observation of the river’s interior; the river maintains a primitive natural state, with small water volumes and overgrown weeds, indicating a relatively primitive water system ecology lacking systematic organization. The region is dotted with old houses, mostly dilapidated and idle due to long-term lack of proper repair and maintenance, making them difficult to utilize effectively. Within the site, there are obvious elevation changes in some areas, with surrounding terraced fields forming relatively clear layered textures influenced by the terrain, with natural topography and agricultural traces jointly constituting the site’s base characteristics.

Overall, the current foundation of the site is acceptable, but the overall quality and utilization effect are not ideal. The land within the site is mainly farmland, with some old buildings retained. In subsequent designs, it is necessary to fully revitalize and utilize existing old buildings while incorporating farmland landscapes and functions into the overall planning. The site has a profound cultural heritage and rich

surrounding tourist attractions, but unfortunately, the cultural connotations have been gradually forgotten and have not been effectively excavated and highlighted. Additionally, how to protectively update the farmland while developing and utilizing it is also a key issue that this design needs to address.

3. Design principles

3.1. Ecological priority as the primary concept

Development should strictly adhere to the principle that "lucid waters and lush mountains are invaluable assets," with ecological protection established as a fundamental prerequisite. This entails respecting existing topography, natural hydrological systems, and agricultural foundations, while integrating environmentally sustainable technologies, such as solar energy utilization and rainwater harvesting, to develop an intelligent ecological monitoring framework. Such a system is intended to support the conservation of sensitive geological formations, including karst and Danxia landscapes, as well as the integrity of the Dongding River water system.

At the same time, safety-oriented development should be regarded as a core guiding criterion. Infrastructure related to landscape amenities, tourism routes, and agricultural activities must comply with relevant safety standards. Through this approach, it is possible to achieve a coordinated model of development that balances ecological sustainability, low-carbon practices, and safety resilience [3].

3.2. Cultural empowerment as a key approach

Development efforts should prioritize the in-depth exploration of the local cultural resources of Yongle Village, integrating elements such as Chongqing-style Sichuan Opera, Taiping Bridge, Chen's Residence, traditional dragon and lion dances, and agricultural heritage into the overall landscape design. Intangible cultural heritage (ICH) should be incorporated as a complementary dimension, supported by digital technologies, such as augmented reality (AR) guided tours and metaverse-based exhibitions, to facilitate dynamic preservation and innovative presentation.

With cultural education as a central objective, it is essential to create immersive, visually engaging, and interactive experiential environments that enhance public understanding and participation. At the same time, the protection and adaptive reuse of traditional architectural homestays should be promoted, thereby enabling the sustainable transmission and educational function of local cultural heritage through both preservation and revitalization.

3.3. Smart integration as an innovative pathway

Development should be aligned with the strategic objectives of smart agriculture and digital cultural tourism, promoting the deep integration of advanced technologies with landscape design and agricultural practices. This includes the establishment of a "cloud–edge–terminal" collaborative smart agriculture system, incorporating technologies such as BeiDou navigation, digital twin modeling, and blockchain-based traceability to enhance precision management and data transparency.

With experiential landscape design as a defining feature, digital tools, including augmented reality (AR) and 3D laser scanning, should be applied to create immersive cultural tourism environments. In addition, the development of an intelligent monitoring and carbon sequestration platform can further support sustainable resource management while highlighting the distinctive experiential and ecological value of "Smart Yongle."

3.4. Local adaptation as a fundamental prerequisite

Planning and development should fully respect the geographical advantages, natural conditions, and site-specific characteristics of Yongle Village. Key features, such as its bowl-shaped catchment terrain, terraced agricultural landscapes, and the spatial distribution of traditional buildings, should be carefully considered to avoid homogeneous or standardized design approaches.

With rural practice as a central guiding principle, efforts should focus on the adaptive reuse of underutilized buildings and the organic integration of agricultural landscapes with functional spatial planning. At the same time, the Dongding River system and surrounding mountainous topography should be strategically utilized to create a spatially layered and ecologically coherent environment. In coordination with the resources of Dongxi Ancient Town, this approach can further enhance site adaptability while reinforcing the distinctive characteristics of rural development and practice [4].

3.5. Industrial linkage as a developmental support

With rural revitalization as the central orientation, landscape design should be closely integrated with industrial development to establish a "culture–ecology–smart technology" model for the coordinated advancement of the tertiary sector. This includes the development of cultural and creative products based on distinctive agricultural outputs, such as rice and pomelos, while creating diversified value-generation channels, including tourism exhibitions and carbon credit trading mechanisms.

At the same time, the promotion of eco-tourism and smart agriculture experiences should be prioritized to enhance resource integration and utilization. Such initiatives can contribute to expanding employment opportunities and increasing income for local residents, thereby supporting industrial prosperity and improving living standards. In this context, landscape design functions not only as a spatial and aesthetic intervention but also as a critical driver of rural revitalization and sustainable economic development.

3.6. People-orientation as the fundamental guideline

Landscape planning should be guided by the dual needs of local residents and visitors, achieving a balance between functional practicality and experiential quality. On the one hand, design interventions should prioritize the optimization of the living environment and the improvement of infrastructure, thereby enhancing the overall quality of life for villagers. On the other hand, it is essential to develop immersive and interactive landscape experiences that enrich visitor engagement.

Tourism circulation systems should be further refined through the design of integrated and immersive routes, complemented by inclusive pricing models that enhance accessibility and convenience. Particular attention should be given to accommodating diverse user groups, including the elderly and children, ensuring a safe, comfortable, and inclusive experience. Through such a people-centered approach, visitors can fully appreciate both the natural and cultural landscapes while benefiting from a high-quality and accessible tourism experience, thereby realizing the fundamental objective of human-oriented design.

4. Design analysis

4.1. Overview of design concept

Located in Yongle Village, Dongxi Town, Qijiang District, Chongqing, this project establishes a mountain-themed rural tourism landscape design based on the topographical characteristics of mountains, rivers, and

villages in Yongle Village. Taking the integration of ancient architecture and natural landscapes as the entry point for rural planning and design, it adheres to the concept of adapting to local conditions and leveraging unique rural resources to create distinctive landscapes with clear elevation differences, excellent ecology, harmonious coexistence, and healthy livability. This approach aims to attract development vitality and popularity, providing an agreeable ecological environment and a strong sense of local livability for residents and tourists, enhancing external tourism appeal, and promoting high-quality development of the local cultural tourism economy.

4.2. Analysis of design approach

Guided by existing site issues, this project comprehensively enhances site quality and breaks through developmental bottlenecks through three major measures: spatial function reconstruction, cultural memory regeneration, and characteristic landscape creation [5]. To address issues such as monotonous activity spaces and insufficient landscape ornamental value, it optimizes and upgrades spatial functions by establishing a composite rural landscape system, creating multi-level experiential spaces, and incorporating interactive landscape nodes. For problems like abandoned buildings and cultural discontinuities, it revitalizes historical buildings, innovatively translates cultural elements, and designs ICH exhibition experiences to awaken site cultural memories and promote dynamic preservation of local cultural heritage. By deeply integrating local aesthetic expressions, immersive experience designs, and ecological smart technologies, it creates characteristic rural landscapes that are ecological, experiential, and cultural, aligning with project design principles and aiding rural revitalization.

4.3. Analysis of axes

The landscape axis adopts a “one belt, three points” landscape sequence, constructing a globally interconnected and hierarchically clear landscape pattern to achieve organic connections and collaborative development among functional areas.

4.3.1. One belt

The Dongding River, the main waterway running through Yongle Village, serves as the core axis. Convenient footpaths are laid on both sides, leading to various functional branch areas. It acts as both the ecological vein of the site and the core link for extracting pomelo elements and connecting the entire landscape, showcasing the site’s water system resource advantages.

4.3.2. Three points

These are landscape distribution centers located around the handicraft market, picking experience area, and agritainment facilities. The distribution centers near the handicraft market and agritainment play a core linking role. The center near agritainment not only provides access to areas for experiencing characteristic agricultural products, agricultural processing plants, livestock experience zones, and agritainment product selection areas but also allows for appreciation of natural and cultural landscapes on the opposite riverbank, achieving bidirectional empowerment of experience and appreciation. The center at the handicraft market organically connects various functional areas, including the tourist center, planting experience area, cultural corridor, folk custom area, seasonal agricultural product viewing area, and ICH cultural exhibition hall, forming a globally interconnected landscape pattern of “three points, one axis” to enhance the landscape’s

integrity and experiential continuity.

5. Business model design

5.1. Self-purchased product form

Centered on green ecology and cultural empowerment, leveraging the high-quality agricultural products produced by Yongle Village's smart agriculture, we aim to create a differentiated self-purchased product system that balances environmental protection and cultural significance, aligning with the principles of ecological priority, green sustainability, cultural empowerment, and living heritage preservation.

5.1.1. Direct-sale products

Relying on the "cloud-edge-end" collaborative smart agriculture system, we offer high-quality local specialty agricultural products such as rice and pomelos, directly selling to tourists, nearby residents, and online customers. These products are packaged in eco-friendly, biodegradable materials, highlighting their green cultivation, pesticide-free nature, and smart traceability features. The carbon credit value of the agricultural products is also indicated, meeting the requirements of "green and low-carbon, efficient resource utilization" in the principle of ecological priority, allowing customers to intuitively appreciate the advantages of Yongle Village's ecological agriculture.

5.1.2. Brand story

We create exclusive brands for agricultural products like rice and pomelos, deeply exploring the cultural connotations and farming stories behind them. We focus on introducing Yongle Village's traditional farming methods, the cultivation history of rice and pomelos, as well as their connections to local culture such as Chongqing-style Sichuan Opera and Taiping Bridge, endowing the products with cultural value and educational significance. This aligns with the principles of cultural empowerment and living heritage preservation, enhancing the added value of the products and distinguishing them from ordinary agricultural products.

5.1.3. Experiential purchasing

In the agricultural product exhibition and sales area, we set up an experiential zone where customers can directly purchase products and participate in brief immersive experience activities for free, such as tasting freshly steamed Yongle rice and freshly squeezed pomelo juice, as well as experiencing simple farming activities like hand-peeling pomelos and screening rice grains. This increases the experiential and fun aspects of purchasing, adhering to the principles of people-orientation and experience optimization, boosting customers' willingness to buy while transmitting Yongle Village's farming culture.

5.2. Participatory purchase product forms

Centered on interactive experiences and cultural immersion, integrating smart technologies with local culture, we design diversified participatory purchase forms that balance experiential, personalized, and social aspects, aligning with the principles of people-orientation, experience optimization, smart integration, and cultural empowerment, addressing the challenge of homogenized rural landscapes.

5.2.1. Interactive experience

Relying on Yongle Village's terraced fields and smart agriculture base, we design exclusive interactive

experience zones, allowing customers to personally participate in the entire production and cultivation process of rice and pomelos, such as rice sowing, harvesting, and hulling, as well as pomelo picking, peeling, and processing. Simultaneously, leveraging smart technologies like Beidou agricultural machinery displays and digital twin crop growth demonstrations, customers can intuitively feel the charm of smart agriculture, meeting the core needs of agricultural practice while adhering to the principles of smart integration and technological empowerment.

5.2.2. Educational workshops

Based on the principle of cultural empowerment, we host diversified educational workshops, combining resources such as Chongqing-style Sichuan Opera and farming culture to offer deep-processing workshops for rice and pomelos. Customers are taught to make traditional rice cakes, rice wine from rice, and pomelo tea, pomelo jam from pomelos, while learning about the cultural origins and nutritional value of these traditional foods. This balances cultural inheritance and educational significance, aligning with the basic goals of cultural empowerment, living heritage preservation, and cultural education.

5.2.3. Customized services

We provide personalized customized services, allowing customers to choose processing recipes and packaging styles for agricultural products like rice and pomelos according to their preferences. Cultural elements such as Chongqing-style Sichuan Opera masks and Taiping Bridge can be printed on the packaging, or personal exclusive marks can be added to create personalized products, adhering to the principles of people-orientation and experience optimization, meeting customers' diversified and personalized needs.

5.2.4. Souvenir production

Customers are encouraged to add personalized designs or exclusive marks to products they personally make, such as handmade rice cakes, pomelo jam, and rice paintings, combining cultural elements of Yongle Village to turn them into unique rural cultural souvenirs. This not only preserves the experiential memories but also transmits Yongle Village's local culture, aligning with the principles of cultural empowerment and living heritage preservation, enhancing the commemorative value and dissemination of the products.

5.2.5. Sharing and display

In the experience and exhibition areas, exclusive sharing zones are set up to display customers' handmade works. Simultaneously, an intelligent sharing platform is built, providing photo check-in points, free WiFi, and social media sharing templates to encourage customers to share their experience processes and works. Leveraging social dissemination, we expand the brand influence of Yongle Village's "smart + ecological + cultural" image, adhering to the principles of smart integration and technological empowerment while enhancing the project's visibility and attractiveness.

5.3. Education-integrated product design

Centered on "cultural education and practical education," we deeply integrate product production, agricultural production, and educational courses to create educational products that are both knowledgeable and practical, aligning with the principles of cultural empowerment, living heritage preservation, smart integration, industrial linkage, and revitalization empowerment, achieving coordinated advancement in cultural education

and industrial development.

5.3.1. Course integration

We deeply integrate the cultivation and processing processes of rice and pomelos with educational courses such as agronomy, ecology, nutrition, and traditional culture, designing immersive practical courses. Agricultural experts and intangible cultural heritage inheritors are invited to teach, allowing customers to learn smart agricultural technologies, farming culture, ecological protection knowledge, and intangible cultural heritage such as Chongqing-style Sichuan Opera in practice, achieving the dual value of "practice + education" and aligning with the principles of cultural empowerment and smart integration.

5.3.2. Study tours

For schools and educational institutions, we design exclusive study tour projects, relying on resources such as Yongle Village's smart agriculture base, intangible cultural heritage experience zones, and historical sites to create "ecological + cultural + smart" study routes. This allows students to learn agricultural knowledge, traditional culture, and ecological protection concepts in practice while driving agricultural product sales and increasing revenue from experience projects, aligning with the principles of industrial linkage and revitalization empowerment, achieving coordinated development in education and industry.

5.4. Social welfare and poverty alleviation

Based on the goal of rural revitalization, combining Yongle Village's local cultural resources and site characteristics, we design poverty alleviation paths that fit the village's actual conditions, aligning with the principles of industrial linkage, revitalization empowerment, cultural empowerment, and site adaptation, injecting new vitality into the rural economy and achieving common prosperity.

We deeply explore Yongle Village's intangible cultural heritage resources such as Chongqing-style Sichuan Opera and dragon and lion dances, exploring poverty alleviation paths through collaborative design innovation of intangible cultural heritage. We create cultural brands with Yongle Village's intangible cultural heritage characteristics, promoting the revival of intangible cultural heritage such as Chongqing-style Sichuan Opera. Relying on idle old buildings, we open intangible cultural heritage workshops, inviting local intangible cultural heritage inheritors to teach, allowing villagers to participate in intangible cultural heritage product production and experience project services, conducting skill training to enhance villagers' employment capabilities. Simultaneously, we combine intangible cultural heritage elements with agricultural products such as rice and pomelos to develop intangible cultural heritage creative products, selling them through channels such as tourism exhibitions, online sales, and carbon credit exchanges, driving villagers' income growth and promoting rural industrial prosperity, achieving coordinated advancement in cultural inheritance and poverty alleviation, ensuring that landscape design and industrial development truly serve rural revitalization.

6. Technical implementation

6.1. Project features

6.1.1. Prime geographic location

The Dongding River runs through the project site, with farmland on both sides symmetrically arranged in a leaf-like pattern. The natural landscape blends harmoniously with the village, creating a pastoral scene

reminiscent of "small bridges, flowing streams, and quaint homes," laying the foundation for a "digital-smart" rural tourism landscape.

6.1.2. Rich cultural heritage

The site, established during the Zhenguan period, served as a key location on the ancient Sichuan-Guizhou salt route and the ancient wharf of the Qijiang River. It preserves a wealth of historical buildings and cultural heritage, including Ming and Qing architectural complexes and the Chen family's residence, along with unique cultural elements such as Sichuan Opera and folk performances. Additionally, it integrates the protection and inheritance of Sichuan Opera and pomelo culture.

6.1.3. Diversified educational experiences

Centered on "digitalization + smart agriculture," the project constructs a "one-brain-three-network" system, integrating cutting-edge technologies to create a smart tourism model that combines technology, ecology, cultural tourism, and wellness. It offers rich intangible cultural heritage experiences, facilitating cultural education inheritance and rural industrial upgrading.

6.1.4. Prominent local characteristics

By deeply exploring the site conditions, crops, and local customs, the project creates rural tourism landscapes with distinct local identities, enhancing the project's visibility and appeal, and injecting new vitality into the local economic and cultural development.

6.2. Innovations

6.2.1. New applications in digital cultural tourism, renewed inheritance of old culture

In response to the cultural digitization strategy, technologies such as 3D laser scanning are employed to transform century-old stilt houses and intangible cultural heritage skills into digital assets. An AR guided tour system and a metaverse exhibition hall for rural intangible cultural heritage are developed, innovating the cultural inheritance model and improving dissemination efficiency.

6.2.2. New applications in smart agriculture, keeping pace with the times

A "cloud-edge-end" collaborative smart agriculture system is constructed, integrating technologies such as 5G and AI to achieve intelligent agricultural production. Blockchain technology is used for agricultural product traceability, and an agricultural carbon sink monitoring platform is established, pioneering a new model of modern smart agriculture.

6.2.3. New applications in intelligent monitoring, new greens in ecological protection

Environmental technologies such as solar power and rainwater harvesting are adopted, combined with intelligent monitoring and a data cloud platform, to monitor the ecological environment in real-time. This creates a green and sustainable rural tourism landscape, achieving ecological protection and sustainable utilization.

6.2.4. Promoting development through rural "digital-smart" tourism landscapes

A "culture-ecology-smart" collaborative development model is created, aligning with the requirements of

industrial integration for rural revitalization. By driving local economic growth and increasing farmers' incomes through cultural tourism and agricultural development, it provides support for the comprehensive revitalization of rural areas [6].

7. Conclusion

This project, based on the site conditions, resource advantages, and cultural customs of Yongle Village, Dongxi Town, Qijiang District, Chongqing, leverages the local landscape of "small bridges, flowing streams, and quaint homes" and the resources of Ba-Yu stilt houses to create a new model of "digital-smart" empowerment for rural tourism landscape planning. Addressing issues such as homogenization of rural landscapes and cultural inheritance gaps, the project proposes a trinity solution of "intangible cultural heritage activation + ecological education + industrial revitalization." It constructs a "one-brain-three-network" system, integrating cutting-edge technologies such as digital twins and AI to achieve coordinated development of digital cultural tourism, smart agriculture, and ecological protection. By promoting the deep integration of agriculture and education, protecting and inheriting rural cultural heritage, popularizing ecological and environmental protection concepts, and innovating rural education models and learning methods, the project enhances the cultural significance of the site and landscape diversity, providing a characteristic practical path for the revitalization of traditional villages, rural cultural tourism development, and comprehensive rural revitalization.

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