

Identifying and Conserving Cultural Landscapes in a Mountain Traditional Village From a Relational Conservation Perspective: The Case of Hejiayan Village, Youyang, Chongqing

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ABSTRACT

This study falls within the category of applied research. This applied research aims to identify the cultural-landscape system of Hejiayan Village in Youyang, Chongqing, and to translate the diagnosis into operational conservation strategies. A mixed-method design was used, combining documentary analysis, spatial interpretation, field observation, photographic evidence, review of AHP weights and the K-prototypes classification of 59 traditional villages and 17 factors, and an object–relation–condition–pressure–response analysis. The results show that Hejiayan belongs to the mid-mountain natural–human-dominant type. Its core value lies not in isolated heritage sites but in a relational network connecting mountains, water systems, terraces, settlements, buildings, skills, and community use. Current risks are concentrated in discontinuities among water–soil processes, dwelling renewal, intangible-heritage transmission, and tourism use. The study proposes a three-level control system comprising core relational units, a production–living transition zone, and a peripheral coordination zone, supported by community co-governance and a versioned, multi-date database. The applied framework links regional typology, village-scale diagnosis, and adaptive monitoring without treating cluster membership as a conservation grade.

Keywords: traditional village, cultural landscape, relational conservation, typological research, community participation, Hejiayan Village

1. Introduction

1.1. Research Background

Traditional villages are inhabited systems formed through long-term interaction among natural environments, productive practices, settlement order, and local culture. Their value exists both in visible objects—such as vernacular dwellings, roads, terraces, and water systems—and in continuing processes, including patterns of use, local memory, festive rituals, and skill transmission (Hu et al., 2014; Li, Li, et al., 2022; Li & Xiao, 2009; Shan, 2010; Sun et al., 2008). When population outflow, material replacement, and tourism construction enter a village, the first losses often occur not in a single heritage site but in relations such as water source–irrigation–terrace, dwelling–courtyard–road, and inheritor–skill–place. Buildings may be repaired while the life that sustains them withdraws; landscapes may be beautified without a corresponding increase in local identity or community benefit. Conservation assessment therefore needs to shift from counting objects to examining relational continuity.

Youyang Tujia and Miao Autonomous County is located in the mountainous southeast of Chongqing, where mountains, water systems, farming, and ethnic culture have jointly shaped diverse traditional villages. Hejiayan Village lies in the mid-mountain area of Huatian Township at an average elevation of approximately 900–1,200 m. It consists of Upper, Middle, and Lower settlement clusters. Buildings follow the terrain, and terraces, settlements, and mountains form a continuous spatial sequence. Miao embroidery, the Baishou dance, Youyang folk songs, and other cultural practices depend on households, courtyards, learning spaces, and festive activities (Li & Xu, 2021; Lü, 2023; Peng & Dan, 2009; Peng & Li, 2021; Wang & Lu, 2017; Yang & Hu, 2022). The source master's thesis identified factors, assigned AHP weights, and used K-prototypes to cluster 59 traditional villages in Youyang (Lü, 2023), providing a data foundation for moving from countywide typology to the study of a representative village.

1.2. Research Questions

This article addresses three questions. First, how do Hejiayan's natural environment, agricultural production, settlement space, buildings, and local culture constitute an interpretable cultural-landscape system? Second, what spatial levels and relational patterns do different landscape elements display in a mountain village? Third, what database structure can record tangible elements, intangible culture, and their dependencies while retaining an interface for subsequent conservation decisions?

The three questions are connected. Landscape classification determines what should be recorded, spatial analysis explains how elements are related, and database design determines how evidence can be stored, retrieved, and continuously updated. The database is therefore treated not merely as a mapping product but as a working framework linking field knowledge, spatial evidence, and conservation action.

1.3. Research Objectives

The objectives are to construct a cultural-landscape classification system suitable for Hejiayan Village; summarize the formation logic, compositional levels, and spatial organization of the village cultural landscape; propose a database compatible with point, line, polygon, event, and relational data; and identify priorities for shifting mountain traditional-village conservation from individual-object protection to system conservation. Following the source-paper framework, the article is organized into literature review, methodology, results, discussion, conclusions, recommendations, and references.

2. Literature Review

2.1. From Landscape Elements to Cultural-Landscape Systems

Chinese research on traditional villages has developed major strands concerning cultural meaning, landscape genes, spatial pattern, digital conservation, and community participation (Deng et al., 2006; Guo et al., 2022; Hu, Liu, Deng, & Zheng, 2015; Li, Wang, & Li, 2020; Liu, Li, et al., 2022; Liu et al., 2010; Wang & Shi, 2010; Xie et al., 2023; Zheng & Liu, 2016). Landscape-gene research helps identify regional characteristics, while GIS and database studies strengthen object location, classified statistics, and dynamic updating. However, when the unit of analysis remains a single building or one intangible-heritage item, natural processes, productive activities, and social relations can still be separated. Typological labels may also remain descriptive and fail to explain how conservation priorities should be established within the same type.

International cultural-landscape research emphasizes that landscape is a dynamic result of interaction between nature and culture, with attention to historical change, local identity, cultural ecosystem services, and social–ecological sustainability (Antrop, 2005; Plieninger et al., 2015; Rössler, 2006; Schmitz & Herrero-Jáuregui, 2021; Soini & Birkeland, 2014; Stephenson, 2008; Taylor & Lennon, 2011; Tengberg et al., 2012). This literature shows that heritage value is not defined only by experts but is continuously produced through community use, remembered narratives, and environmental practice. Traditional-village conservation should therefore examine material condition, users, settings, and maintenance mechanisms together.

2.2. Participatory Recording and Digital Methods

Research on community values, participatory learning, stakeholder negotiation, public-participation GIS, volunteered geographic information, and digital heritage archives demonstrates that local knowledge can enter spatial data and environmental management (Brown & Kytä, 2014; Goodchild, 2007; Koller et al., 2009; Pretty, 1995; Reed, 2008; Waterton, 2005). This does not mean replacing professional judgment with public opinion; it means adding the questions of who uses a place, who bears maintenance costs, and who receives benefits to the evidence chain. AHP is suitable for organizing multilevel evaluation structures, while K-prototypes can process numerical and categorical variables together (Huang, 1998; Saaty, 1978). Research on landscape change, the rural cultural turn, landscape identity, and cultural ecosystem services further shows that classifications must be interpreted through concrete processes rather than treating weights or cluster labels as absolute rankings (Antrop, 2004; Chan et al., 2012; Cloke, 1997; Stobbelaar & Pedrolí, 2011).

On this basis, the study proposes a relational-conservation framework. The object layer records mountains, water systems, terraces, buildings, and public nodes. The process layer records cultivation, movement, festivals, skills, and tourism use. The actor layer records residents, inheritors, business operators, and

managers. The evidence layer stores images, interviews, spatial files, and documentary sources. Stable object identifiers connect the four layers so that conservation judgments remain traceable and updateable.

2.3. Research Gap and Analytical Scale

Three gaps remain. First, countywide distribution studies explain why villages differ but often lack operational relational units at the single-village scale. Second, case-based conservation studies describe buildings and intangible heritage in detail but may not establish the regional representativeness of the case. Third, digital products often emphasize three-dimensional display and resource retrieval while paying less attention to dependencies among objects, evidence credibility, and responsible actors. This study treats countywide typology as a comparative background, the representative village as a field for relational verification, and the database as a governance interface linking macro-, meso-, and micro-scales. This avoids both substituting one village for countywide patterns and allowing cluster averages to obscure local differences.

3. Methodology

3.1. Study Area and Evidence Sources

The countywide sample consists of 59 traditional villages in Youyang, with Hejiayan selected as the representative case. The evidence includes the 17-factor feature database, AHP weights, and cluster results in the source thesis, as well as local literature, spatial maps, current images, and field records (Lü, 2023). Each source is used only for claims it can support: spatial materials inform location and pattern; photographs document visible conditions at the time of capture; interviews describe actors' experiences; and documentary materials establish historical and institutional contexts. Long-term change is not inferred from a single photograph.

Table 1. Evidence Types, Analytical Uses, and Quality Controls

Source: Illustrated by Zhang Zhiwei

Evidence type	
Principal content	
Analytical use	
Temporal property	
Quality control	
Master's thesis and local literature	
59 villages, 17 factors, historical and policy context	
Countywide typology and case background	
Historical to current	
Verify source and definition	
Spatial materials	
Terrain, water, roads, settlements, and terraces	
Location, boundary, and spatial relations	
Multi-date or current	
Standardize coordinates and scale	
Current images	
Terraces, settlements, buildings, and Miao embroidery	
Visible condition and place characteristics	
Capture date	

Retain originals and capture information

Field records

Observation, interviews, use, and maintenance

Actors, processes, and risk interpretation

Survey period

Anonymization, permission, and cross-checking

3.2. Classification, Weights, and Representative-Village Diagnosis

Following principles of authenticity, representativeness, integrity, and identifiability, the source study grouped 17 factors into natural landscape, tangible cultural landscape, and intangible cultural landscape. Two indicators were numerical and 15 were categorical. AHP was used to establish weights for similarity assessment, and K-prototypes was used to cluster mixed variables. The present article does not re-estimate the model; it reviews sample size, factors, weights, and type results and then interprets Hejiayan within the typological structure.

Table 2. Cultural-Landscape Factor System and Data Representation

Source: Illustrated by Zhang Zhiwei

Criterion	
No. of factors	
Principal factors	
Data representation	
Natural landscape	
5	
Landform; mountain–water configuration; watershed; village–mountain relation; village–water relation	
Categories and spatial position	
Tangible cultural landscape	
8	
Function; settlement form; spatial structure; overall layout; dwelling plan; material; roof; orientation	
Mixed numerical and categorical data	
Intangible cultural landscape	
4	
Ethnic composition; intangible heritage; historical period; historical figures	
Categories, inventories, and event records	
Note. The total number of factors is 17.	

Table 3. AHP Criterion Weights and Interpretive Boundaries

Source: Illustrated by Zhang Zhiwei

Criterion
Weight
Percentage
Use in source study
Boundary in this article
Natural landscape

0.1802

18.02%

Similarity assessment

Not equivalent to ecological-value ranking

Tangible cultural landscape

0.5824

58.24%

Similarity assessment

Not equivalent to conservation priority

Intangible cultural landscape

0.2374

23.74%

Similarity assessment

Requires verification of actors and settings

Note. The three weights sum to 1.0000.

Figure 1. Research Workflow and Evidence Chain. Created by the authors.

Source: Prepared by Zhang Zhiwei

3.3. Relational Diagnosis and Strategy Translation

The representative-village diagnosis follows an object–relation–condition–pressure–response sequence. It first identifies the natural base, production space, settlement and buildings, and cultural activities, and then establishes key relations such as water system–terrace, terrace–path, dwelling–courtyard, and skill–inheritor–place. The assessment asks whether each relation remains in use, whether spatial interruption has occurred, whether actors are stable, and whether benefits return to the community. Strategies correspond to three scales: core relational units emphasize authenticity and continued use; the production–living transition zone coordinates everyday function and landscape character; and the peripheral coordination zone controls ecological processes, viewsheds, and tourism capacity.

3.4. Data Organization and Credibility Control

To prevent an attractive map from replacing real evidence, the database uses minimum necessary fields. Each object receives a stable identifier, name, location, type, and spatial boundary. Each survey creates a separate condition record containing date, investigator, condition grade, risk, and recommended treatment. Cultural activities are stored as events with time, place, actors, frequency, and participant structure. A relation table links objects, events, and actors through terms such as connects, depends on, contains, and transmits. An evidence table stores original files, provenance, permission, confidence, and version. Unverified historical information is marked pending verification, and divergent accounts are retained in parallel. Personal identity, household income, and restricted transmission knowledge require tiered access; public maps show only authorized information.

4. Results

4.1. Countywide Type Structure and the Position of Hejiayan

The clustering results divide the 59 villages into four types. Type I, low-mountain cultural-integration, includes 7 villages (11.9%); Type II, hilly folk-culture-dominant, includes 16 (27.1%); Type III, mid-mountain natural-ecological-dominant, includes 6 (10.2%); and Type IV, mid-mountain natural–human-dominant, includes 30 (50.8%). Hejiayan belongs to Type IV. This largest type is generally characterized by a mid-mountain setting,

proximity to mountains and water, agricultural production, and the coexistence of buildings and intangible heritage. These shared characteristics do not mean that all 30 villages should receive identical construction plans.

Table 4. Cultural-Landscape Types Among Traditional Villages in Youyang

Source: Illustrated by Zhang Zhiwei

Type	Name	Villages, n	Share
I	Low-mountain cultural-integration	7	11.9%
II	Hilly folk-culture-dominant	16	27.1%
III	Mid-mountain natural-ecological-dominant	6	10.2%
IV	Mid-mountain natural–human-dominant	30	50.8%

Note. N = 59; percentages retain one decimal place.

Figure 2. Typology of 59 Traditional Villages and AHP Criterion Weights.

Source: Prepared by Zhang Zhiwei

4.2. Relational Structure of Hejiayan’s Cultural Landscape

First, the natural base and agricultural production form the operating foundation of the village. Mountains determine construction boundaries and the visual background, while water sources, slope, and soil constrain terrace locations. Terrace ridges, irrigation channels, and production roads connect dispersed plots. Terraces are not only scenic objects but also a composite system of soil and water regulation, food production, labor organization, and seasonal landscape. If irrigation is interrupted, cultivation ceases, or roads serve only visitors, the cultural-landscape function of the terraces declines even if their appearance remains.

Second, the settlement displays a three-cluster structure of Upper, Middle, and Lower villages. Buildings extend along contour lines and paths. Courtyards support crop drying, rest, household production, and neighborhood exchange. The value of a vernacular dwelling depends not only on its roof and facade but also on its relation to slope, courtyard, road, drainage, and users. Modern materials can improve safety and comfort, but unmanaged changes in volume, color, and boundary treatment can damage cluster scale and continuous views.

Third, intangible culture is grounded in specific actors and places. Miao embroidery requires inheritors, tools, patterns, learning processes, and sales channels; the Baishou dance, folk songs, and festivals require organizers, participants, time, and public space. Treating intangible heritage only as stage performance or tourism merchandise separates it from household life, village memory, and intergenerational learning. Transmission should therefore be recorded through frequency, participant age, activity location, and benefit distribution rather than only as present or absent.

The three groups of relations form feedback rather than a parallel list. Stable cultivation maintains terrace soil–water processes and seasonal landscape, while landscape appeal can generate value for agricultural products and cultural experiences. Reasonable benefit return can increase residents’ willingness to maintain buildings, roads, and channels. Continued everyday and cultural use of public spaces strengthens place identity and community cooperation. Conversely, abandonment, vacancy, performative use, and benefit leakage can reinforce one another. Conservation should therefore identify key nodes that can generate positive feedback, such as water sources and main channels, actively used courtyards, stable embroidery-learning settings, and the principal paths connecting the three clusters.

Figure 2. Current Visual Evidence of Hejiayan’s Landscape and Settlement

Source: www.xiaohongshu.com

4.3. Current Problems and Risk Chains

The evidence shows that Hejiayan’s risks are transmitted across systems rather than forming four independent lists. Inadequate maintenance of water sources affects irrigation and terrace cultivation, and reduced cultivation weakens seasonal landscape and agricultural knowledge. Dwelling renewal that is disconnected from courtyards, roads, and drainage changes both landscape character and everyday convenience. Fewer inheritors can transform skills from living processes into display products. Concentrated tourism can occupy public space while leaving maintenance costs to the community. Conservation priority should therefore depend on whether a broken relation would be difficult to restore.

At the natural–production level, the priority is not to maintain a fixed image of paddy fields but to sustain the operating chain of water source, terrace ridge, channel, and cultivator. Paddy fields, dry crops, and seasonal fallow should be recorded according to real production instead of being visually standardized for tourism. At the settlement–building level, structural-safety improvement should be distinguished from damaging changes to landscape character. Sanitation, fire protection, and insulation can be improved when scale, materials, and drainage are coordinated. At the culture–place level, the question is whether “someone knows the skill” has become “someone teaches, someone learns, activities occur regularly, and participants receive reasonable returns.” At the tourism–community level, peak visitors, occupation of public space, business ownership, and benefit distribution should be recorded together rather than equating visitor growth with conservation success.

Table 5. Key Relations, Current Pressures, and Monitoring Indicators in Hejiayan

Source: Illustrated by Zhang Zhiwei

System
Key relation
Principal pressure
Direct consequence
Suggested indicators
Natural–production
Water source–channel–terrace–cultivation
Aging facilities, abandonment, extreme weather
Weakened water–soil processes and seasonality
Water-delivery rate, cultivated-area rate, collapse points
Settlement–building

Slope–road–courtyard–dwelling

Material replacement, excessive scale, altered drainage

Damage to cluster character and everyday function

Traditional-building condition, courtyard-use rate

Culture–place

Inheritor–skill–activity–space

Aging, performative use, spatial displacement

Breaks in transmission and local memory

Activity frequency, participant age, stable venue

Tourism–community

Visitor–facility–public space–benefit

Peak congestion, homogeneous businesses, benefit leakage

Exceeded capacity and declining community support

Peak flow, complaints, resident share of benefits

Fig. 4. Current Visual Evidence of Production and Built Change in Hejiayan.

Source: www.xiaohongshu.com

4.4. Determining Conservation Priorities

Where funding and personnel are limited, priorities can be arranged through four criteria: irreplaceability, urgency of risk, relational leverage, and community feasibility. Historic buildings, old water sources, main channels, and stable inheritors have high irreplaceability. Structural danger, interrupted channels, and inheritor withdrawal have high urgency. Nodes that improve production, landscape character, and community benefit simultaneously have strong relational leverage. Actions with a named maintenance actor, a low technical threshold, and continuous funding have greater feasibility. The criteria are intended for open deliberation rather than mechanical addition into a single score. If a high-value object lacks a user, care and appropriate use should be established first. If tourism may generate revenue but occupy irrigation or public space, relational loss should be included as a cost. The resulting sequence is to stop loss first, restore relations second, and pursue proportionate activation third.

5. Discussion

5.1. Value and Boundary of Typological Research

The countywide findings are consistent with earlier regionalization and typological studies that use landscape elements to distinguish shared settlement patterns (Guo et al., 2022; Liu et al., 2010). They also complement national distribution research showing that traditional-village locations reflect the combined effects of terrain, accessibility, settlement history, and regional culture (Li, Wang, & Li, 2020). The present study differs from these macro-scale approaches by treating the regional type as a comparative frame rather than as the final conservation unit. Hejiayan shares mid-mountain natural–human characteristics with other villages, but its water-delivery chain, three-cluster settlement structure, active cultural actors, and tourism pressures remain locally specific. This result also qualifies landscape-gene approaches: identifying recurring forms and elements is useful for recognizing regional identity (Hu, Liu, Deng, & Zheng, 2015; Wang & Lu, 2017), but a type or gene cannot by itself determine intervention priority. County-level typology is therefore most useful for baseline rules and resource allocation, whereas village-level conservation requires field-verified relational maps.

5.2. From Preserving Objects to Sustaining Relations

The relational diagnosis supports Antrop's (2005) argument that historic landscapes remain meaningful because they embody continuing interactions rather than frozen scenery. It also accords with Stephenson's (2008)

cultural-values model, which integrates landscape forms, relationships, and practices, and with Taylor and Lennon's (2011) interpretation of cultural landscapes as a bridge between nature and culture. Compared with these broad conceptual models, the present study operationalizes relational thinking through specific management chains—water source—channel—terrace—cultivator, dwelling—courtyard—road—drainage, and inheritor—skill—activity—place. This translation is important because repairing a dwelling without its drainage and access, or conserving terraces without cultivation and water maintenance, can preserve visible objects while weakening the process that gives them value.

The findings further correspond with research that links cultural ecosystem services to landscape management and identity (Plieninger et al., 2015; Tengberg et al., 2012) and with social–ecological approaches that treat cultural-landscape preservation as a sustainability problem (Schmitz & Herrero-Jáuregui, 2021). The distinction is one of scale and use: these studies establish why cultural and ecological processes should be considered together, whereas the Hejiayan case shows how the principle can be converted into three spatial control levels and review triggers. The proposed zoning is not intended to freeze land use. It separates difficult-to-replace relational units from areas where adaptive renewal is acceptable and from peripheral areas where ecological processes, viewsheds, and visitor capacity require coordination.

5.3. Governance Significance of the Database

The governance proposal agrees with Waterton's (2005) critique of expert-only definitions of place and with evidence that participation is most effective when stakeholders enter a transparent learning and decision process (Pretty, 1995; Reed, 2008). Public-participation GIS and volunteered geographic information likewise demonstrate the value of georeferenced local knowledge (Brown & Kyttä, 2014; Goodchild, 2007). The present framework adds a stricter evidentiary layer: resident submissions, professional surveys, documentary claims, and photographs are all retained with provenance, confidence, permission, date, and version instead of being merged into an apparently authoritative record. This responds to the digital-archive challenge identified by Koller et al. (2009), because long-term usefulness depends on traceable context and update history, not only on visual completeness.

The database is therefore conceived as a deliberative governance instrument rather than a one-time inventory. Managers can test whether a proposed repair affects drainage or views; the village collective can record conflicts over public-space use; inheritors can add activity schedules and teaching needs; and technical personnel can verify spatial data and review risks. When monitoring results conflict with residents' experience, the discrepancy becomes a trigger for renewed field examination rather than a reason to discard either source. This approach reduces the risk that conservation knowledge remains with a temporary project team and creates a continuous evidence base for evaluating later interventions.

5.4. Scope and Limitations

The study remains limited by inconsistent dates among sources, the absence of continuous measurement, and insufficient community sampling. Photographs document visible conditions only at the time of capture; they cannot establish long-term change by themselves. The proposed indicators and review triggers are management hypotheses that still require calibration through repeated surveys, resident participation, and implementation feedback. Annual monitoring, participatory mapping, and a multi-date database are therefore necessary to test whether the relational units and zoning thresholds remain valid.

6. Conclusions

Hejiayan belongs to the mid-mountain natural–human-dominant type, which includes 30 of the 59 sampled villages (50.8%). Its cultural landscape can be summarized as a relational network in which mountains and water provide the base; terraces and roads organize production; Upper, Middle, and Lower clusters support residence; buildings and courtyards connect everyday life; and Miao embroidery, song, dance, and festivals sustain local identity.

Current risks are concentrated in relational discontinuity rather than the complete disappearance of individual resources. Irrigation, cultivation, and terrace landscapes affect one another; building renewal interacts with courtyards, roads, and drainage; and intangible-heritage transmission depends on actors, places, and benefit flows. Conservation assessment should include relational continuity, actor participation, and recoverability when

establishing priorities.

Countywide types are suitable for defining differentiated directions, but representative-village diagnosis must be implemented through core relational units, a production–living transition zone, and a peripheral coordination zone. Stable identifiers linking multi-date conditions, relations, evidence, and responsibility can transform a database from a project archive into a continuous governance instrument.

7. Recommendations

7.1. Establish Three-Level Spatial Control and a Relational Inventory

Core relational units include difficult-to-replace combinations such as historic building–user, inheritor–skill–place, and water source–channel–critical terrace; priority is given to authenticity and continued use. The production–living transition zone covers terraces, roads, courtyards, public nodes, and ordinary dwellings. Adaptive renewal for safety, sanitation, and livelihoods is permitted, but volume, color, drainage, and interfaces are controlled. The peripheral coordination zone addresses mountains, water systems, viewsheds, transport, and tourism capacity to prevent construction from interrupting ecological processes or overwhelming village scale.

Table 6. Conservation Zones, Permitted Actions, and Review Triggers

Source: Illustrated by Zhang Zhiwei

Zone

Principal objects

Conservation objective

Permitted actions

Review trigger

Core relational units

Key buildings, transmission places, water systems, and terrace nodes

Maintain authenticity, use, and intergenerational transmission

Conservation, repair, minor functional improvement

Actor withdrawal, structural danger, relational break

Production–living transition

Ordinary dwellings, courtyards, roads, terraces, and public nodes

Coordinate everyday improvement, landscape character, and production

Environmental improvement, adaptive renewal, public-service completion

Abrupt scale change, altered drainage, use conflict

Peripheral coordination

Mountains, water, viewsheds, transport, and tourism facilities

Protect ecological processes and the overall landscape

Ecological restoration, capacity management, low-impact facilities

Blocked viewshed, exceeded capacity, increasing hazard

7.2. Form a Community Co-Governance and Monitoring Loop

Regular review should involve residents, inheritors, the village collective, operators, and technical personnel. The database should contain at least object, condition, event, relation, evidence, and responsibility fields. New records must not overwrite older ones, and major revisions should preserve version, date, and verifier. Annual monitoring should prioritize a small sustainable set of indicators, including water-delivery rate, cultivated-area

rate, traditional-building condition, courtyard use, intangible-heritage activity frequency, youth participation, peak visitor flow, and resident share of benefits. Crossing a locally calibrated threshold should trigger review before the overall landscape visibly deteriorates.

7.3. Implement in Stages and Evaluate Outcomes

Short-term work should focus on basic records and urgent risks: complete object identifiers and original-image archiving; inspect primary water systems and channels; screen structural hazards; and confirm inheritors and important activity places. In the medium term, integrate the relational inventory into village-construction deliberations; prioritize restoration of the water source–terrace, primary path–courtyard, and transmission space–activity chains; and establish small maintenance funds and resident training. In the long term, use multi-date data to adjust zone boundaries, tourism capacity, and project priorities. Evaluation should examine not only the numbers of repaired buildings and visitors but also continuity of cultivation, residents' use of public space, youth participation in transmission, resident benefits, and risk reduction. Each evaluation should disclose methods, principal results, and unresolved issues.

7.4. Establish Low-Cost Maintenance and Emergency Mechanisms

Village governance should maintain tools and training lists for channel clearing, roof inspection, timber moisture control, fire patrol, and image documentation, and define reporting routes for floods, fires, structural anomalies, and visitor overload. Small, continuous maintenance generally preserves original materials and everyday order more effectively than concentrated intervention after damage. Village personnel should identify and isolate risks, while professional structural stabilization, geological-hazard treatment, and statutory heritage repair must be undertaken by qualified teams. Emergency records should enter the condition and evidence tables and inform the next cycle of zoning and budget adjustment.

Figure 5. Relational Conservation, Community Co-Governance, and Continuous Monitoring Framework.

Source: Prepared by Zhang Zhiwei

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