



## Research Article

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## Analysis on Guizhou rural house renovation mode

Zhang Zhihui<sup>1</sup>, Yang Yong<sup>2</sup>, Suo Chenxia<sup>1</sup> and Gong Wenxuan<sup>1</sup><sup>1</sup>The College of Economics and Management Beijing Institute of Petrochemical Technology, China<sup>2</sup>Zhejiang Gongshang Universities, China

## ABSTRACT

The paper makes in-depth research analysis on Guizhou rural house renovation by using the interdisciplinary research method and sort out the situation and development context of Guizhou rural houses through field research on four areas, eight counties and cities and twelve villages under the administration of Guizhou province. It analyzed the existing mode of Guizhou rural house renovation from rural house renovation input ways and house structural forms and comes up with the solution for the problems existing in the existing modes.

**Key words:** Guizhou rural area, rural house, folk house renovation, mode

## THE DEVELOPMENT STATUS OF RURAL HOUSES

Chinese folk houses have abundant types and diversified forms and show extraordinary splendor due to regional climate and cultural differences. The rural society is relatively isolated and separated in living areas, and the formation and development of folk houses follow the law and show various varieties of regional characteristics. Especially related with the economic development level, traditional prints are still saved in underdeveloped inland areas, but the present situation also faces greater damages along with the economic development, because residents desire to change the current situation due to weak living environmental quality.

Table 1 Rural per capita living space in part of China's provinces (square meter/per person)

Year	2012	2011	2010	2009	2008
Beijing	38.2	38.1	38.3	38.5	38.7
Tianjin	30.3	30.2	28.8	28.6	28.3
Hebei	35.0	34.1	32.2	31.9	30.7
Heilongjiang	24.8	24.8	22.8	22.5	21.7
Jiangsu	50.8	49.3	46.3	45.2	44.0
Zhejiang	62.1	61.4	60.3	61.5	60.5
Shanghai	60.4	58.9	59.7	60.2	62.3
Fujian	50.8	49.8	47.5	46.8	46.1
Henan	37.9	36.5	34.5	33.5	31.7
Hebei	45.0	44.2	41.0	40.1	39.0
Shanxi	30.6	29.9	28.3	28.0	26.5
Shanxi	36.9	35.8	31.4	30.4	29.0
Sichuan	37.9	37.7	36.6	36.7	34.9
Yunnan	31.7	30.9	29.0	28.7	27.4
Guizhou	29.6	29.4	27.0	26.4	25.3
Xinjiang Autonomous Region	27.2	26.1	24.1	23.5	22.8

Data source: The author sorted out according to the official website data of the National Bureau of Statistics

It can be seen from the Table 1 that the eastern coastal area ranks the first place in the rural per capita total average living space, which is directly related with the advanced economy of the eastern coastal area. Due to the backward economy in the western China, the living space is the smallest. However, as the economic development in central and western regions is particularly fast in recent years, added with the great support of the government to rural

housing construction, the per capita living space in the central and western regions grows faster

## THE CURRENT SITUATION OF GUIZHOU RURAL HOUSE RENOVATION

### 1. Guizhou rural house overview

Guizhou folk houses lean against mountains and have irregular and unique mountain architectural forms combined with the environment. Regardless of the rock buildings in the central Guizhou area or houses in Miao ancient towns in the southeast of Guizhou and Zhenyuan and the dangling building communities leaning against the hill and facing the river, the personality and characteristics of these buildings all reflect their high attention to geographical environment and cultural specialty. Therefore, the formation and development of Guizhou folk houses, same as other regional folk houses, are the result of the joint action of environment, history, society, culture and other factors.

**Table 2 Guizhou rural housing condition**

	2005	2006	2007	2008	2009	2010	2011	2012
Rural per capita living space (sq.m.)	23.5	23.8	24.5	25.3	26.4	27	29.4	29.6
Rural family housing value (RMB/m <sup>2</sup> )	144.9	157.4	170.8	191.2	214.2	238.6	519.8	531.8
Housing per capita reinforced concrete building structure (m <sup>2</sup> /person)	7.3	7.7	8.2	8.9	9.6	10	10.8	10.4
Per capita housing thick and wooden structure (m <sup>2</sup> /person)	11.4	11.7	11.8	11.6	12.2	12.5	14.7	16.2

*Source: Sorted out from the official website data of the National Bureau of Statistics*

It can be seen from Table 2 that the rural per capita living space in Guizhou was 29.6 square meters in 2012, 20.2 percentage points lower than the national rural average living space of 37.1 square meters, which indicated that Guizhou rural houses were still in a relatively backward position. Seen from the structure, the main structure of Guizhou folk houses is reinforced concrete structure and brick and wooden structure, of which, the brick and wooden structure has 3.598 million households, accounting for 52% of the total number of households, the reinforced concrete structure has 2.9756 million households, taking up 43% of the total number, and the rest 5% is other structures. For housing values, the constant rising price of commodities in recent years led to the continuously increasing housing cost, so the value of rural family housing is also rising continuously.

### 2. Characteristics of Guizhou folk houses

Guizhou is a multi-ethnic province. As various nationalities have different living habits and cultures, the folk houses of different nationalities are also of great difference. As Guizhou folk houses all belong to the self-built houses, they are also much influenced by natural resource conditions and environmental conditions. These factors make Guizhou folk houses different in the main materials of houses, building structure, plane layout and other aspects. According to these standards and the difference of geographical locations, Guizhou folk houses can be divided into three categories respectively in the south, central and north of Guizhou.

#### 2.1 Folk houses in the south of Guizhou

The Miao nationality is mainly living in the south of Guizhou and the folk houses are mainly stilted buildings. Stilted buildings are the featured folk houses of Miao nationality and the crystal of Miao people's wisdom. These buildings are built against the mountain, with the latter half against rocks and the front half supported with wooden pillars. The houses are built with the wooden materials abundant in the local. The wooden pillars, wooden walls and wooden floors are all built on the rock ridges of several meters high. The house frame is 6-7 meters high, belonging to hipped-gable roof tenon-through balk pile dwelling buildings, with grey tile or Chinese fir caping. The building is divided into three layers. As the second and third floors and the front eaves stretch out of the outer ridge of the house foundation and form the dangling stilt, it is called the stilted building.

#### 2.2 Folk houses in the central Guizhou

The Bouyei nationality and Han nationality mainly live in the central Guizhou, and the main traditional folk houses in the area are slabstone houses. As the area has relatively higher altitude, there are no tall trees. The rocks in the place are better layered, so they are the best raw material for local residents to building houses. The thickness of slabstones can be different, generally 2-10 centimeters, and the wall is generally about 40 centimeters. The houses are piled with raw stones; the slabstone houses have natural and unadorned appearance with rich variations. The roof and floor are all paved with slabstones. Most slabstone houses use the neatly cut squamous slabstones as the roof, and each piece of stone is about 2 centimeters thick. They are overlapped high and low and well-proportioned and look like fish scales from a distance. Some are natural slab materials with different shapes, and these stones with different shapes are paved like tiles, not overlapped thick. The stone pieces form natural arcs on the roof, good for water draining, no need to set apart the drainage ditch like the tile roof.

#### 2.3 Folk houses in the north of Guizhou

The north of Guizhou has varied and complex geographical features. The local minority culture and the entry of

immigrant culture make the north area of Guizhou have very unique culture. These features are reflected in the folk houses and the folk houses in the north of Guizhou become the important carrier and constituent part of the regional culture. Influenced by the Ba-Shu culture, the folk houses in the north of Guizhou are mixed with the elements of Ba-Shu buildings. With the influx of foreign merchants, the folk houses in the north of Guizhou also show the sign of Hui style architecture.

## ANALYSIS ON GUIZHOU RURAL HOUSE RENOVATION MODE

### 1. Investigation situation introduction

In the investigation, the questionnaires are handed out to 550 peasant households in Guizhou and all questionnaires are taken back. There are 531 valid questionnaires. The questionnaire recovery rate is 100% and the effective rate is 96.5%. The statistical data is shown in the Table 3.

**Table 3** Guizhou rural housing statistical table

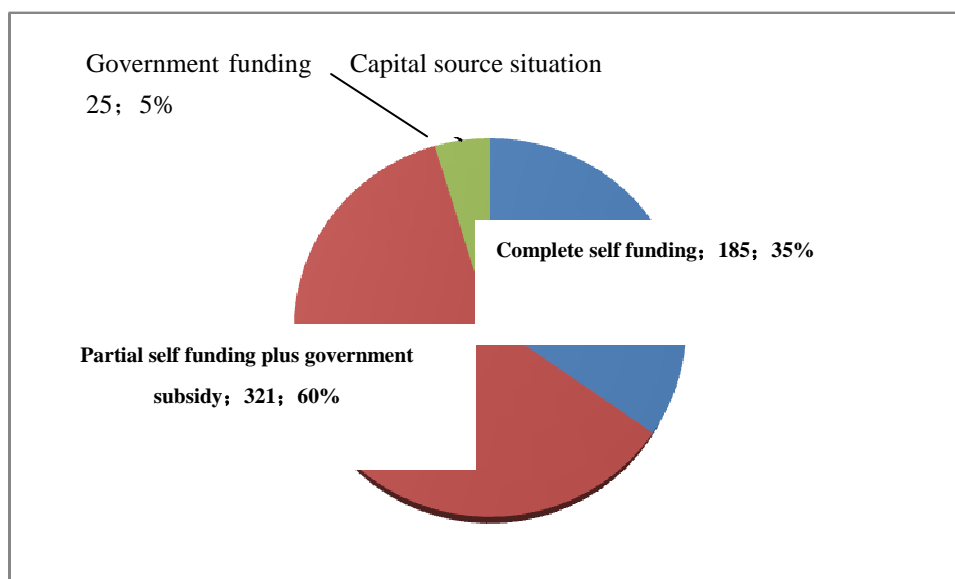
	Surveyed households	Number of housing renovation in 10 years	Renovation rate (%)	Living space (sq.m.)	Average investment (10,000)	Average government subsidies (10,000)
Renhuai	176	165	93.8	163.14	11.28	0.491
Zunyi	56	50	89.3	184.82	10.58	0.419
Suiyang	55	51	92.7	148	9.61	0.367
Qingzhen	48	40	83.3	153.6	8.47	0.308
Qianxi	49	41	83.7	186.6	9.87	0.686
Jinsha	58	51	87.9	212.36	13.57	0.389
Kaili	44	36	81.8	152.75	9.36	1.015
Leishan	45	34	75.6	196.86	8.33	3.835

*Data source: Sorted and compiled according to the research data*

It can be seen from Table 3 that 88.1% families in the surveyed area had made housing renovation in the past 10 years, of which, the highest rate is 93.8% and the lowest rate is 75.6%. Seen from the housing renovation area, Jinsha County has the average living space of 212.36 square meters, the highest in all counties. Suiyang County is the lowest, only 148 square meters. In terms of the housing renovation funding source, it is mainly composed of self-owned funds and government subsidies, of which, the self-owned funding takes up the most part and the government subsidies are mainly for dilapidated building transformation, style and feature transformation and the like. Additionally, villagers also put into a lot of manpower. According to the regional conditions, villager manpower inputs are also different.

### 2. Funding model

The problems of the renovation cost source and renovation methods are also involved in the investigation as an important item in the investigation. The current investigation statistical situation is shown in Figure 1.



**Fig. 1** Construction fund constitutional diagram

*Data source: Investigation data sorting*

Seen from Figure 1, in Guizhou folk house renovation, the renovation expense sources have three ways, namely

complete self funding, partial self funding and government subsidy and complete government subsidy. So the current renovation modes of Guizhou rural houses can be divided into complete self investment mode, government subsidy mode and government investment mode according to the construction fund source standards.

### 2.1 Self-investment mode

The self-investment mode refers to villagers taking their own money as the renovation cost, of which, their own capitals include self-owned funds and external loan. Seen from Figure 1, 185 households' housing construction funds are completely from their own investment in the investigation, accounting for 35% of the total amount.

### 2.2 Government subsidy mode

The government subsidy mode refers to the government investing part of funds for subsidy in the folk house renovation. According to the different projects and amounts of government subsidies, the existing modes in Guizhou include dilapidated building renovation mode, style and feature renovation mode and tourism development mode currently. In the housing renovation cause survey, 326 households expressed the government subsidy is the factor to conduct housing renovation, taking up 61.4% of the total survey number. Government subsidy has become an important factor influencing rural housing renovation.

### 2.3 Government funding mode

The government funding mode refers to the housing renovation funds being completely contributed by the government in the housing renovation. At present, about 5% houses in Guizhou are completely built by the government, mainly implemented for rural households enjoying the five guarantees, rural absolute poor households and rural orphans. According to the national provisions of the "Rural Five-Guarantee Household Support Work Regulations", the government should provide housing for rural five-guarantee households for free to ensure they can meet the basic housing requirement. At present, Guizhou government provides the housing of 30 square meters/per person for rural five-guarantee households, almost the same as the per capita housing in Guizhou. For the absolute poor households with annual per capita income less than RMB 800, Guizhou also provides free housing. Additionally, for orphans not full to 18 years old, in addition to the normal government subsidy, the government also offers free housing. For orphans full to 18 years old, the government should give corresponding subsidy to their self-built houses according to the practical situation.

## 1. The shortage of existing modes

### 1.1 Undefined government subsidy standard

Regarding the housing renovation subsidy, though many policy subsidy standards are issued, most households reflected that they have no idea of the subsidy standard in the investigation. Meanwhile, many local subsidy standards have loopholes. For example, the rural area stipulated in Renhuai city's Management Methods about Rural Dilapidated Buildings is just a sum total, without specific calculation standard, which leads to many loopholes appearing in the process of the rule implementation.

### 1.2 Non-transparent management system

In the interview, many villagers pointed out that the management in the housing renovation subsidy is not transparent. Many villagers reflected that the village leaders' misuse of authority and corruption problem is serious. Many villagers said they originally met the subsidy condition, but they did not get subsidy due to bad relationship with village leaders. Additionally, the problem that village leaders embezzle housing renovation subsidy funds is serious, and some even embezzled national subsidy funds.

### 1.3 Building design has flaws

In the areas where minorities including Miao and Bouyei nationalities live in the south and west of Guizhou, some houses of Miao nationality are connected with the livestock feeding places like the pigsty and cow enclosure, some even connected with the residence. Besides, the ventilation of such design is weak and has harmful influence on both people and livestock, leading to the increase of the morbidity of livestock.

### 1.4 Lack of technical guidance

Leaders at different levels pay much attention to the rural housing problem and formulated the whole set of construction drawing. But as the rural housing renovation is mostly completed by local rural labors and the rural labors' educational level is low, not all builders can understand the construction drawing. There's not a single architecture talent among these builders and they received fewer training opportunities. Added with the simple construction equipment, problems exist in the construction. The design market is very chaotic and designers are also of varying quality. Those qualified planners and builders rarely enter into the rural area for work.

## 2 Solutions

### 2.1 Set up a unified subsidy standard

For the housing renovation subsidy, the subsidy standards are different according to the practical situation in different places, but for the same area, the complete and unified subsidy standard can be established and the details like the subsidy object, subsidy grading standards and subsidy amount should be clarified in the standards, and should be implemented strictly according to standards.

### 2.2 Build a transparent regulatory system

To play a role, the supervision of the system is the most important. Only effective supervision can guarantee the effective implementation of the system, so the transparent regulatory system must be established. Leaders' rights should be closed in the cage of the system and people should participate in the supervision, so as to expose the corruption practices completely under the sun. Only by this way can the real fairness, openness and justness be achieved and the corruption phenomenon really curbed.

### 2.3 Strengthen construction worker training

Provide regular training for rural construction workers and establish rural building worker license examination system to make rural housing renovation constructors have the basic construction drawing understanding and design ability. Standardize the design market and adopt the design drawing of the normal design institutes for the centralized building of folk houses.

## CONCLUSION

Guizhou is a big agricultural province in urgent need of improving rural residents' housing conditions and living quality. Creating a beautiful and comfortable living environment for the rural area can help improve the rural sustainable development ability and achieve the urban and rural harmonious development as soon as possible, so as to promote the rural construction and various rural construction works. The analysis on Guizhou rural house renovation mode is of important significance to the harmonious coexistence and sustainable development of human and environment

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## REFERENCES

- [1] Luo Deqi, Guizhou Folk House **【M】** Guizhou: *China Architecture & Building Press* 2008-11-1: 23
- [2] Editor-in-chief Lu Yuanding, *Guangzhou South China University of Technology Press* 2003.11: 4-8
- [3] Created by Tsinghua University Building Energy Efficiency Research Center, Chinese Building Energy Efficiency Annual Development Research Report 2009**【M】**Beijing: China Architecture & Building Press 2009.3:56
- [4] Wang Bocheng, Analysis on the Problem and Countermeasure of Dilapidated Building Transformation of Rural Traditional Houses **【D】** : [Guizhou Minzu University Master's Thesis] Guizhou: Guizhou Minzu University 2009
- [5] The Speech of Housing and Urban-Rural Development Vice Minister Qiu Baoxing in 2009 Rural Dilapidated Building Renovation Pilot Work Conference [J]. *China Exploration & Design* 2009,(7)
- [6] Liu Lifeng, Chinese Rural Housing Construction: Development History and Prospect Forecast [J] *Urban Development Research* 2010,(2).
- [7] Tan Liangbin, Western Rural Earth Dwelling Regenerative Design **【D】** Xi'an: Xi'an University of Architecture and Technology, 2007.12:10
- [8] China Architecture Design & Research Group, Village and Town Well-off Residence Demonstration Community Residence and Planning Design **【M】** Beijing: China Architecture & Building Press 2000.03:12-13
- [9] Wu Liangyong, Introduction to Human Settlement Environmental Science [M]. Beijing: China Architecture & Building Press 2001
- [10] Yu Zhichun, Shaanxi Guanzhong New Rural Residential Pattern Research **【D】** : [Doctorate Thesis] Xi'an: Xi'an University of Architecture and Technology 2009.10
- [11] Ian L, Mcharg. Man design with Nature. 25th anniversary ed. New York :J .Wiley,1994
- [12] Gong Di, Hunan Provincial New Rural Residence Research **【D】** : [Master's Thesis] Hunan: Hunan Normal University 2009.5
- [13] Written by Luo Zhongzhao, Wang Xuejun and Zhou Yan, New Rural Housing Design and Construction **【M】** Beijing: China Forestry Publishing 2007
- [14] Li Qiuxiang, Chinese Rural Residence **【M】** Tianjin: Baihua Literature and Art Publishing House 2002
- [15] Liu Su, Millennium Home – Western Hunan Folk House **【M】** Beijing: China Architecture & Building Press

**2008**

[16] National Bureau of Statistics. DataStatistics 【EB/OL】 .<http://www.stats.gov.cn/>

[17]Guizhou Provincial Statistical Bureau. 2013 Guizhou Statistical Yearbook 【 EB/OL 】 .  
<http://www.gz.stats.gov.cn/Web62/>

[18] Ministry of Housing and Urban-Rural Development. Central Interim Procedures of Rural Dilapidated Building Renovation Subsidy Funds Management 【EB/OL】 . <http://www.mohurd.gov.cn/>

[19] The Housing and Urban-Rural Development Bureau of Guizhou, Guizhou Provincial Interim Procedures of Rural Dilapidated Building Renovation Project Construction Management 【EB/OL】 .