

**Monitoring Report on the Sustainable Tourism
Development of Hongcun
(simplified version)**

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1 Introduction

At present, the concept of sustainable development is widely recognized, which promotes the sustainable development of tourism into a global trend. This monitoring team is responsible for the monitoring of the ancient villages of Hongcun in Anhui. Hongcun became famous after being listed as a World Cultural Heritage in 2000. With its long history, quaint culture and architectural style, it has become a hot spot for emerging cultural tourism. Known as "the picturesque Chinese countryside". The monitoring process includes questionnaire surveys and interviews with residents of Hongcun, to understand the changes of resident's life during this period of time, to record changes in cultural heritage, and to explore sustainable development models for heritage sites based on these changes, with minimal negative impact on heritage. In addition, the team also conducts surveys on tourists' perception and satisfaction and behavioral intentions, monitors the impact of human activities such as residents and tourists on the building and the village environment during tourism, and seeks protection measures with as little negative impact as possible; besides, the monitoring team collects business information, information on stores and owners of the main tourist routes is recorded in the file; a comprehensive and in-depth investigation of Hongcun's garbage, sewage, noise treatment, air pollution, and public service facilities is also included; archival work is being conducted based on data from the past few years.

The monitoring was divided into three phases. The monitoring team was set up in June, and field monitoring was conducted from July 15th to 22nd, and the report consolidation phase was from August to September. The monitoring collected a large amount of information on heritage protection and tourism development, including information on protection of dwellings obtained from household surveys, community and tourist questionnaires, commercial survey data, and environmental protection. The on-site monitoring includes the following: the content of the archives is mainly divided into basic information of residential houses and the distribution of house functions, including text data, floor plans, and photos, and a total of 38 households have been archived; visiting residents in various areas of Hongcun Scenic Spot, and issuing on-site questionnaire of sustainable livelihoods and sustainable development. 100 questionnaires were finally distributed, 99 were recovered, 99 were valid questionnaires, and the efficiency of the questionnaire was about 99.00%. Taking Hongcun tourists as the object of survey, they distributed on-site questionnaire about visit satisfaction, perception and attitude. Finally, 200 questionnaires were distributed, and 194 questionnaires were recovered. After removing invalid questionnaires, the remaining 190 were valid with a valid rate of 97.9%. The commercial

survey were mainly field survey, and recorded the tourism commercialization of Hongcun. The scope covers the entire Hongcun Scenic Area; this monitoring survey uses observations and interviews to collect data and analyze the status quo of sewage treatment, toilets, energy consumption and other aspects of the homestay restaurants in Hongcun Scenic Area.

2. Hongcun Heritage Protection Status

Through on-site observations and interviews with residents of Hongcun, this monitoring has a further understanding of the status of Hongcun's heritage protection. The survey results can be summarized with the following characteristics:

1. The residential houses changes rapidly and the usage is complicated. With the development of the tourism industry, more and more dwellings have been converted into inns or shops, resulting in rapid changes in the ownership relationship, use attributes, and housing patterns of dwellings, and the use of dwellings has become more complicated. The investigation found that the use of the converted inn / shop includes: ① After the house is converted into an inn, residents will continue to live in the inn, or do business in the inn during the day, and rent another place to stay at the periphery of Hongcun Scenic Area at night. The purpose is to provide more accommodations for tourists. On the other hand, because the ancient houses have retained the traditional architectural style, they cannot meet the modern living needs of local residents. ② After renting the house to the merchant, the original owner moves to the periphery of the scenic spot, and the merchant will operate the inn / shop alone, or hire an agent to manage the daily operation of the inn / shop, and go out to manage other industries under his name. In addition, some houses in the scenic area have been vacant or even abandoned.

2. Strict control of residential repairs and no subsidies from the government. As the facade, exterior wall, eaves and other building exteriors of the house must retain the traditional style of Hui architecture, the converted inn or shop cannot face the street with new openings for tourism purposes. In addition, the funds for internal repairs are paid by residents or tenants without any subsidies. These have also caused resentment and dissatisfaction among a small number of residents, who believe that there are many restrictions on housing reconstruction, a long approval period, which is not conducive to the renovation and updating of inns / shops, and the development of local tourism.

3. Commercial awareness is generally enhanced, but there are still a few backward groups. With the development of the tourism industry and the promotion of

commercialization in Hongcun Scenic Area, the tourism and business awareness of local residents and non-local merchants have greatly increased. Most inns attract tourists by providing standardized dining and accommodation conditions, and some have joined the inn alliance. At the same time, there are some chain inn brands, and brand awareness has increased. However, there are still a few residents inside the scenic area, whose dwellings in the hot zone have not been effectively used for tourism purposes, due to the lack of tourism and business awareness. The reason is that, on the one hand, they are farmers, have limited thinking skills, and lack in innovative consciousness and ability; on the other hand, Hongcun Scenic Spots or the village committee have not conducted related tourism training for this part of the disadvantaged groups in tourism development.

4. The degree of homogeneity of the inn is high, and a few have unique characteristics. The appearance of the inn is basically the traditional Hui architectural style, the interior is a courtyard-like space layout, all provide modern service facilities, and the catering and accommodation conditions tend to be standardized, so the degree of homogeneity is high. However, there are very few inns with unique features, such as a hand-made food catering hall, which provides personalized services for tourists in the inn and so on. In addition, the number of shops under reconstruction in the scenic area this year has increased compared with last year.

Drawing on last year's filing of the monitoring team, this year's filing report will be based on households. The situation where one building is divided into multiple households will be identified by a secondary number, and the situation where multiple houses are combined into one household will be added by serial number. A total of 38 dwellings were recorded in this monitoring, of which 7 were built on the East Side Street (D), 8 were built on the Back Street (H), and 3 were built on the Front Street (Q). There are 3 households in Shuizhen area (S), 5 households in Dongbianjing area (J), and 12 households in Nanhu area (N).



Figure 2-1 filing map of residential houses in Hongcun in 2019

3 Tourism and community

This questionnaire survey is aimed at the local residents of Hongcun. The “residents” refer to general residents, including local residents who have registered in Hongcun, non-local businessmen who have lived in Hongcun for a long time, and migrant workers who work in Hongcun but do not live there. The Hongcun research team used sampling survey in Hongcun Scenic Area, Huangshan City, Anhui Province from July 15, 2019 to July 22, 2019, visited residents and shops in various areas of Hongcun Scenic Area, and distributed on-site questionnaire on sustainable development. The team has improved the recovery rate of the questionnaires. Finally, 100 questionnaires were distributed, 100 were recovered, among which 99 were valid, and the efficiency of the questionnaire was 99%.

Descriptive statistical analysis of the demographic characteristics of the questionnaire sample found that in the sample male and female ratio was basically the same. 71.8% of the residents participating in the questionnaire were in the age range of 24-60 years old. The views held can represent the mainstream views of Hongcun residents. The sample of the

questionnaire covers residents of different educational levels. 58.6% of the residents who filled out the questionnaire have a high school education or above, and 67.7% of the residents have lived in Hongcun for more than 10 years. It proves that the sample can represent the population well. The data obtained can thus show the development status and changes of Hongcun tourism.

Table 3-1 Community monitoring indicators

Content	issue	Monitoring indicators
Residents' perception of the impact of tourism development	Economic impact	Tourism greatly promotes local economic development; tourism development improves local living standards; tourism brings more employment opportunities for residents; tourism attracts more investment and consumption for the local area; tourism will increase local prices and increase the cost of living; tourism development will increase local housing prices and rents; tourism development will help narrow the gap between the rich and the poor of local residents.
	Social impact	Tourism development has improved the local infrastructure; tourism development has changed the local population structure (male-female ratio, ethnic composition, etc.); tourism development has led to poor local public security; tourism has overcrowded local traffic and population; tourists disrupted the local life order and caused distress to the residents; the development of tourism made the local social atmosphere worse than before; tourism easily caused conflicts between tourists and local residents.

	Cultural impact	Tourism development makes local residents realize the value of Hongcun's cultural heritage; tourism development helps to enhance local residents' cultural pride in Hongcun; tourism promotes local and foreign cultural exchange; tourism development destroys Hongcun's traditional culture, skills, ethnic customs, etc .; tourism is conducive to the transmission of local traditional culture and skills, ethnic customs.
	Environmental Impact	Tourism development worsens air quality; tourism development makes noise pollution worse; tourism development makes water pollution worse; tourism development makes local solid waste management more difficult; the construction of hotels and other tourism facilities destroys our natural environment.
	Resident's attitude and behaviors	I am willing to actively communicate with tourists; I am satisfied with the government's implementation of tourism development; I am willing to actively provide suggestions for local tourism development; I am satisfied with the current status of local Hongcun tourism development; I support Hongcun to continue the development of
Residents' evaluation of personal situation and the environment	surrounding-oriented	People around can continue to improve; people around them have enough opportunities to learn; everyone has the opportunity to improve their knowledge and skills; everyone has the opportunity to achieve self-development; interest and curiosity are the main reasons for everyone to engage in tourism; Everyone is continually demonstrating their abilities; everyone wants to do better; everyone wants to do better than others; everyone compares performance or development with each other; everyone is afraid of making mistakes; everyone would rather make mistakes than asking others for advice; everyone will try to avoid doing things that they are not good at; everyone will feel a lot of pressure when they make mistakes.

	Personal goal-oriented	I am willing to do things that can be continuously challenging; I often look for opportunities to improve my knowledge and skills; I like to accept challenges and difficult tasks and learn new skills from them; for me, I am willing to try to further improve my ability; I like to prove that I can do better than others; I think about how to prove my ability to others; I like to let others know that I do well; I like to do things that prove my ability; If I do something and I may not perform as well as others, I will not do it; For things that I am not good at, I will try to avoid doing it, I will not learn; For things that may not be done well it would upset me; I try to avoid underperformance.
	Dynamic ability	I feel it is important to keep track of changes; I have a deeper understanding of the local situation; I am constantly thinking about the changes that I may encounter; I am always concerned about the development and changes of the tourism industry ; I can quickly respond to changes in the external environment; I can quickly find new opportunities in the changing environment; I can adapt to and profit from changes; I am actively seeking how to make better use of my resources. I am actively trying to invest in new areas; I am actively learning how to develop in new areas; I am good at using various resources to deal with various situations.
	Dynamic environmental changes	Customer needs are changing; competitors are changing (products or services, etc.); industries are changing; business environments are changing; policy environments are changing; climatic environments are changing.

Residents' evaluation of living conditions	My family 's fixed assets are at a higher level than the local average (such as houses); My family 's durable goods are more in number than the local average (such as cars, TVs, computers, refrigerators, etc.); my job opportunities have increased; my income has increased; my consumption level has increased; the types of jobs I can choose are increasing; my source of income is more than before; my local influence is greater than the average person; I can get help when I need help ; My circle of friends is expanding.
Residents' satisfaction with life	In many ways, my life is close to the ideal state; my living conditions are good; in general, I am satisfied with my life; I have got the most important things in life that I want ; If I were to be given a second chance at life, I hardly want to change anything.
Residents' perceptions and suggestions on tourism development	Distances from tourist routes; attitudes towards tourists visiting homes; ways to participate in tourism development; the most unsatisfactory issues in the process of tourism development; specific opinions or suggestions on tourism development.
Residents' perceptions and suggestions on heritage protection	Satisfaction with the current status of heritage protection; properties of houses; attitudes to the maintenance of ancient dwellings; the most troublesome problems in the process of heritage protection; methods of protection and development; recommendations for the protection of Hongcun heritage.
Basic resident information	Gender; age; education; residence time; occupation and the degree of relation to tourism; monthly income; family status and number of people engaged in tourism-related work.

3.1 Residents' perception of the impact of tourism development

Residents have a very comprehensive perception of the economic impact of tourism. They have a obvious perception of the positive economic impact of tourism development.

They believe that tourism has promoted the development of the local economy, improved the local living standard, brought more employment opportunities, attracted more investment and consumption, helped to narrow the gap between the rich and the poor, and they also have a strong perception of the negative economic impact of tourism. It is believed that tourism increased local prices, rents and rents, increased living costs, and the residents' perception of negative impact are stronger than positive effects. It is worth noting that although the local residents recognize the positive economic impact of Hongcun tourism development, the average residents' perception of the positive economic impact of tourism in 2019 are all slightly lower than last year.

In terms of residents' perception of the social impact of tourism, the proportion of residents who agree that tourism has improved local infrastructure has increased. Only 22.2% of the residents agree that tourism development has changed the local population structure, which is a significant decrease compared to last year. Regarding the negative impact of tourism on society, residents' perception of it is relatively low, but the most obvious among residents is the local traffic and population congestion. Compared with 2018, Hongcun residents' perception of the negative social impact of tourism has weakened.

Residents have a very positive perception of the cultural impact of tourism. They believe that tourism development allows residents to recognize the value of Hongcun's cultural heritage, and helps to strengthen local residents' cultural pride in Hongcun. It is also beneficial to promoting cultural exchanges and inheritance of local traditional culture and skills, national customs, etc., but some of them being forced to promote tourism products will create behaviors that violate the authenticity of Hui culture, and will cause the local traditional customs and culture to be harmed or even destroyed.

Residents have a relatively clear perception of the environmental impact of tourism, and the answers given are mainly concentrated between "neutral" and "agree". Among them, residents' perception of water pollution is the most obvious, followed by noise pollution, solid waste pollution, construction pollution, and the weakest is air quality degradation. Compared with 2018, the average values of the five major environmental impact indicators in 2019 have all declined.

In terms of residents' attitudes and behaviors, residents most support Hongcun's continued development of tourism, followed by the willingness to actively communicate with tourists. Residents' willingness to provide advice for local tourism development has increased. However, residents' satisfaction with the government's executive power and the status of tourism development in Hongcun is relatively low. Government departments should construct

effective forms of communication with residents so that government actions can be seen, understood, and accepted by residents. But from a long-term perspective, in addition to the decline in residents' satisfaction with Hongcun's tourism development status, the rest have improved slightly compared to last year.

3.2 Residents' evaluation of personal situation and environmental perception

In terms of surrounding orientation, most residents believe that the people around them can make continuous progress, have enough opportunities to learn, improve their skills and develop themselves. Less than half of the residents believe that interest and curiosity are the main reasons for everyone to engage in tourism. More than one-half of residents believe that everyone is constantly proving their abilities, wanting to do better, hoping to do better than others, and will compare development status with each other, reflecting the higher personal achievement goal orientation of residents. They hope that they can continue to develop and have higher achievements than others. Most residents admit that they are afraid of making mistakes and will feel a lot of pressure when they make mistakes. They will also avoid doing things that they are not good at, but everyone will actively ask others when they are at risk of making mistakes.

It is found in the measurement of personal goal orientation that residents are generally highly personal goal-oriented. Among them, residents most recognize that they will often seek opportunities to improve their knowledge and skills, and are willing to try to further improve their ability; secondly, they like to accept challenges and they are constantly learning new skills; they also like to prove their abilities. Although residents think that they will try to avoid performing poorly and are annoyed at doing bad things, they will not be afraid of doing poorly and will not evade things that they are not good at, but will take the initiative to learn.

In terms of dynamic capabilities, the residents of Hongcun have a high dynamic perception ability. Among them, residents most recognize the importance of paying attention to changes at all times, followed by acknowledging that they are constantly thinking about changes that may be encountered, and pay attention to the development and changes of the tourism industry. Residents also think that they have a good capability to respond to changes. Most residents believe that they can quickly find new opportunities and provide countermeasures in a changing environment, and can adapt to changes and profit from them. Most residents have confidence in their own absorptive capacity for learning. Most residents will seek how to make better use of their resources, actively try to invest in new areas and learn ways to develop in new areas, and consider themselves in a dynamic environment. They

are good at using various resources. However, it can be seen from the data that more than one third of the residents still have no confidence in their resilience and learning ability in a dynamic environment. Therefore, local village committees and managers should organize experience sharing sessions and training sessions in a way that residents like to hear, so as to improve the local residents' dynamic resilience and learning ability.

3.3 Residents' evaluation of their living conditions

In terms of physical capital, local residents' evaluation of their own physical capital is average. Low evaluation of their own fixed assets and durable goods indicates that most residents think that their own physical capital is not as much as others, which reflects the residents' subjective evaluation of their own physical capital and their lack of confidence in income and capital. It is the main feeling of Hongcun residents about their material capital.

In terms of economic capital, local residents believe that their economic capital is at the upper-middle level. The answers given by residents shows that most people agree with the driving role of tourism in the development of the local economy, which has increased the number and type of jobs, and improved their economic income. However, the average score does not reach the level of more than four points, which also shows that residents still have reservations about the evaluation of economic capital. Compared with last year, the average value of all items has declined, which may be related to the slowdown of tourism development in Hongcun and the slowdown of economic development.

In terms of social capital, only 12% of people think that their influence in Hongcun is stronger than ordinary people, and no one chooses "strongly agree", indicating that the majority of residents do not have enough confidence in their local social influence. The answers to "I can get help when I need help" and "My circle of friends are expanding" is the average or middle-to-upper level, but they are slightly lower than last year. They can make contact with different business owners and tourists and this provides them with increased opportunities to expand their social circles, but the fixed nature of time and space also limits their social relationships with others.

3.4 Residents' satisfaction with life

Generally speaking, residents are satisfied with their lives. Residents are more likely to agree that their own lives are nearly ideal and living conditions are good. But there are two things worth noting. One is related to the item "having already gotten the most important things in life". Although the average value of this part is concentrated between neutrality and

consent, but it only slightly exceeds 3 points, and some residents are neutral about this statement. It may be because it is not clear what the most important thing they want in their life is; on the other hand it may be something you value, such as a house that has not been obtained. Second, most residents don't agree with the item "If you were given a second chance at life, you don't want to change anything", which proves that most residents don't think their past life is perfect.

3.5 Residents' Perceptions and Suggestions on Tourism Development

Most of the residents who participated in the survey lived in or near the tourist route area, and held a welcome attitude towards tourists visiting their homes. Most of the residents are involved in tourism-related work. There are various ways for residents to participate in tourism. Most of them live in their own places, open stores or inns. There are also ways for residents to become tour guides and collect rents to participate in tourism development.

Regarding tourism development, residents are mainly dissatisfied with the government's working methods and work efficiency. Some residents think that government regulations are too cumbersome and cause a lot of trouble, such as difficult housing approval process, while some residents think that government efficiency is not high enough and related subsidies are insufficient. Some residents also believe that the current government policy is not perfect enough, causing a gap in residents' income.

The sanitation problem in Hongcun has been paid more and more attention by residents. The residents are most dissatisfied because the environment of Hongcun has been negatively influenced and the quality of living has deteriorated. Residents mentioned most about village water pollution and water treatment issues. It is followed by garbage disposal, as tourists do not consciously dispose of garbage. Regarding the community's interests, residents mentioned that the prices rose too fast, and some residents mentioned that commercialization was too serious and the quality of tourists was low, which caused problems for residents. In terms of scenic area management, the villagers are troubled by inconvenient transportation, too many restrictions, unreasonable road settings, congestion, and destruction of traditional buildings.

The residents' specific suggestions for tourism development can be divided into four aspects: environmental protection, tourism development, government departments and community development. In terms of environmental protection, residents suggested repairing groundwater facilities, strengthening sewage treatment, ensuring food safety, and protecting heritage(Hongcun). In terms of tourism development, the villagers recognized the

disadvantages of over-commercialization, and suggested to protect the originality of the town. It was also recommended to issue maps of scenic spots and improve the identification system in the scenic spots. For government departments, residents propose to promote green tourism, let professional teams manage Hongcun tourism, open new tourist routes, establish a local reservation platform for Hongcun scenic spots, avoid overlord clauses, and add more travel experience projects. As for government departments, residents mainly propose to improve work efficiency, increase subsidies, balance residents' income, and focus on protecting heritage. In terms of community interests, residents give recommendations to improve infrastructure, improve transportation, reduce excessive commercial development, reduce prices, increase surrounding projects, strengthen law and order, and the leader of the town should listen more to residents' opinions.

3.6 Residents' Perceptions and Suggestions on Heritage Protection

Residents are generally satisfied with the status quo of Hongcun heritage protection, and only a few residents are not satisfied. Among the interviewees, no residents held an indifferent attitude towards the status of heritage protection, proving that the vast majority of Hongcun residents recognized the value of Hongcun heritage and were concerned about the status of Hongcun heritage protection.

In terms of residential property, about one-fourth of the houses are protected dwellings, about 30% are old houses outside the protected dwellings, and about 30% of the residents have lived in newly built houses, and about 20% of the houses are in other categories. It is speculated that the current long-term staff and residents absorbed by Hongcun have exceeded the level of accommodation in Hongcun Village, and a considerable part of the residents working in Hongcun live outside Hongcun Village. In addition, residents have a strong willingness to maintain ancient houses, and about 80% of the residents have the willingness to maintain or have already done so.

Regarding the problems encountered in the process of heritage protection, residents mentioned that the most frequent is the government's approval of the repair of the house, the cycle is too long, followed by various other restrictions. It is difficult for motor vehicles to enter, and road pavements and widths are inconvenient and regulated. Residents also mentioned inappropriate restriction of the height of buildings, low government compensation, lack of maintenance funds, deposits required to repair the house, prescribed wood materials for building are difficult to buy or too expensive, difficulty in introducing sanitary equipment, trouble caused by prescribed design drawings, etc., but there are also many other problems

that the residents did not specify.

In terms of heritage protection and development methods, nearly half of the residents believe that the authenticity of residents' lives should be maintained in the heritage area, and tourism facilities such as tourism accommodation and shopping should be built in the surrounding area. But there are also early half of the residents who believe that tourists' accommodation and shopping being arranged in the heritage area is more suitable. 20% of residents think that the commercial area in the scenic area will be saturated and then expand to the surrounding area. A few residents think that other development methods are better.

In terms of heritage protection recommendations, Hongcun residents' recommendations for heritage protection are mainly based on five aspects: commercialization, water pollution, building protection, government departments, and health issues. Residents recommend against over-commercialization, it is recommended to reduce house reconstruction, reduce commercialization, and pay attention to the spread of heritage cultural values. In terms of water pollution, residents propose to protect the natural state of the environment, increase efforts to maintain the environment, pay attention to sustainable development of water quality, clean up garbage, and protect ancient houses and ancient water systems. In terms of building protection, residents believe that everyone should consciously improve their awareness and popularize their heritage protection awareness, and protect the whole town together, and they recommend publicizing the concept of heritage protection to tourists, so that local residents can carry out modernization and tourism to a certain degree can strike a balance. Residents believe that the government should strengthen the degree of governance, make practical changes, do not place too many restrictions on residents, use resources to deal with immediate and long-term interests, and achieve a win-win situation for resource protection and economic and social development. They hope the government will adhere to its original intention. In terms of health, residents suggested that hygiene in surrounding areas and scenic spots should be improved.

4 Tourist satisfaction

4.1 Basic information for tourists

The questionnaire survey targeted Hongcun tourists, and distributed questionnaires about tourists' satisfaction, perception and attitude towards Hongcun on the spot. Team members distributed 200 questionnaires to tourists in Hongcun Scenic Area from July 15, 2019 to July 22, 2019, and collected 194 questionnaires. After excluding invalid

questionnaires, the remaining 190 were valid, with a valid rate of 97.9%.

A brief analysis of the demographic characteristics of the surveyed tourists was conducted to better understand their composition.

Statistics show that the gender ratio of men and women is basically the same, and there is no significant gender difference in the attraction of Hongcun to tourists. Among them, tourists aged 15-44 years old accounted for nearly 90% of the total tourists surveyed. This data is close to that of 2018, and it can be speculated that the possible reason is that Hongcun tourists are mainly students and middle-aged people. The number of tourists aged 45 and over is small, probably due to the low willingness of this group to accept the questionnaire. In addition, most people have a high school or technical secondary school or bachelor degree. Regarding the source area, tourists from Hongcun mainly come from Anhui province itself. Other regions with a large number of tourists are Guangdong, Shanxi, Hubei, Shandong, Jiangsu, Zhejiang province, etc. Geographical distance and the degree of economic development of the region may affect the choice of tourists.

Regarding the characteristics of tourists' tourism behavior, the analysis and survey results show that the information of Hongcun mostly comes from the Internet, with 81 people choosing this item, accounting for 42.6% of all tourists. Compared with last year's 56 people (28.1%), this shows that Hongcun has gradually established a good tourism image on the Internet and has a good reputation. In addition, more people are introduced to Hongcun by family and friends, the exact number is 57 people, accounting for 30.0%, compared with 81 people last year, accounting for 40.7%. It is worth noting that the three channels of travel agencies, newspapers, magazines, and television broadcasts, have all fallen significantly. In addition, the "Other" option showed a clear upward trend, only 18 people (9.0%) chose this last year, and this year it has increased to 55 (28.9%).

In terms of travel methods, group tours are the main choice for Hongcun tourists. Their number accounted for 47.0%, which is similar to 2018. The remaining self-guided tourists are divided into two types, with or without guides. The former accounts for 29.0% of the total tourists, and the latter accounts for 24.0% of the total tourists. The proportion of self-help tourists who do not follow the guides is about 1/4. 1. Hongcun's revisit rate is relatively low, only about 12%. Most tourists who travel in Hongcun choose the form of day trip, which is related to the package service of the travel agency. The tourist activities carried out by tourists are mainly sightseeing, and participation is generally not high. In terms of stay time, there were 115 people who chose half a day or less and one day, accounting for 60.5%, which was significantly lower than 69.8% in 2018. It is worth mentioning that this value showed a

downward trend every year. In 2017, it was 87.3%. More and more people are choosing to stay for two days or more.

In terms of tourist activities, the most popular one is the visit of ancient houses under the guidance of tour guides, and 130 people participated in this activity (68.4%). The second is to visit other ancient dwellings on their own, with 123 people participating (64.7%). For the two items of touring the entire scenic area and watching the surrounding rural scenery, there is not much difference from last year. Sightseeing tourism activities are still the main selling point of Hongcun. In addition, 46% of tourists participated in no more than 3 tourism activities, 44% of tourists participated in 4-6 activities, and 10% of tourists participated in more than 7 activities. Compared with previous records, more tourists chose to participate in 4 activities and above.

4.2 Tourist perception and satisfaction

Table 4-1 Tourist perception and satisfaction

content	issue	Measurement indicators
Basic characteristics of tourists	Demographic characteristics	Gender; Age; Destination; Educational level; Occupation
	Travel information	Access to information; travel methods; first visit or not; stay time; tourist activities
Tourist Satisfaction	Destination Landscapes and Excursions	Rural Scenery; Traditional Hui School Houses; Tourist Attractions; Comfort of Tourist Environment; Passion of Surrounding Residents
	Destination environment	Commercial atmosphere; Congestion; Noise situation; Water quality; Air quality; General sanitation environment; Environmental protection

	Infrastructure	Public transport convenience; Public transport comfort; Public transport price; Completeness of toilet facilities; Toilet hygiene; Public rest facilities; Completeness of garbage collection facilities; Marking system
	Scenic area services	Reasonable ticket prices; Guide commentary; the richness of the tourist information carrier; the availability of tourist information; the clarity of the identification system
	Safety and Health	Safety Facilities; Medical Equipment; Public Order Status
	Experience the diversity of attractions-related activities	The value and charm of traditional Hui dwellings; rich history and culture; the traditional living conditions of local residents; honest folk customs; the characteristics of local souvenirs and handicrafts; special food and snacks; rich and diverse excursions
Perceived attitude	Perception of the heritage	Hongcun's recognition as a World Heritage ; awareness of the protection of ancient villages in Hongcun; evaluation of the protection of ancient villages in Hongcun
	Attitude towards locals	Attitudes of local service staff; willingness to communicate with locals; enthusiasm and friendliness of locals

	Overall satisfaction	Satisfaction with travel as a whole; willingness to recommend Hongcun to relatives and friends; willingness to revisit
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In terms of tourist satisfaction, the satisfaction rating of the destination landscape and tour, destination environment, experience and the diversity of attractions-related activities is highest; the satisfaction of infrastructure, scenic area services, and safety and health is the lowest, with a considerable number of tourists holding a "neutral" attitude. This may be due to the short stay of tourists or the different choices of activities, lack of exposure to some infrastructure and scenic area services, and no clear perception of safety and health.

In terms of tourists' perceptions and attitudes, tourists have a clear understanding of Hongcun as a World Heritage Site, and they also have a positive attitude towards locals. However, it is worth noting that the reliability of these two sets of items is relatively general and should be improved in the future. The overall satisfaction of tourists is high, but the willingness to revisit is very low, which will cause certain negative effects on the sustainable development of tourism in Hongcun.

4.3 Tourist impressions and suggestions

In terms of tourists' impressions, Hongcun has left a positive impression on most tourists. What impressed the visitors most were the Hui architecture and the two characteristic attractions of the Hui culture and the Hongcun water system. Tourist suggestions are mainly based on three aspects: scenic area facilities, scenic area management and folk customs. The three most prominent suggestions are to strengthen health management, add signs and reduce commercialization. The information construction of the scenic spot may become the direction of future improvement of the scenic spot.

5 Hongcun tourism commercialization research

5.1 Shop Distribution Map and Shop Distribution Features

In 2019, there were 405 tourism commercialization facilities in the core scenic spot of Hongcun. Compared with 2018, there were 9 new commercial facilities. In addition, this year, in addition to investigating the core scenic spots, a survey on the number of relevant shops and business types in the craft market was added. There are 69 shops in Hongcun Crafts

Market in 2019.

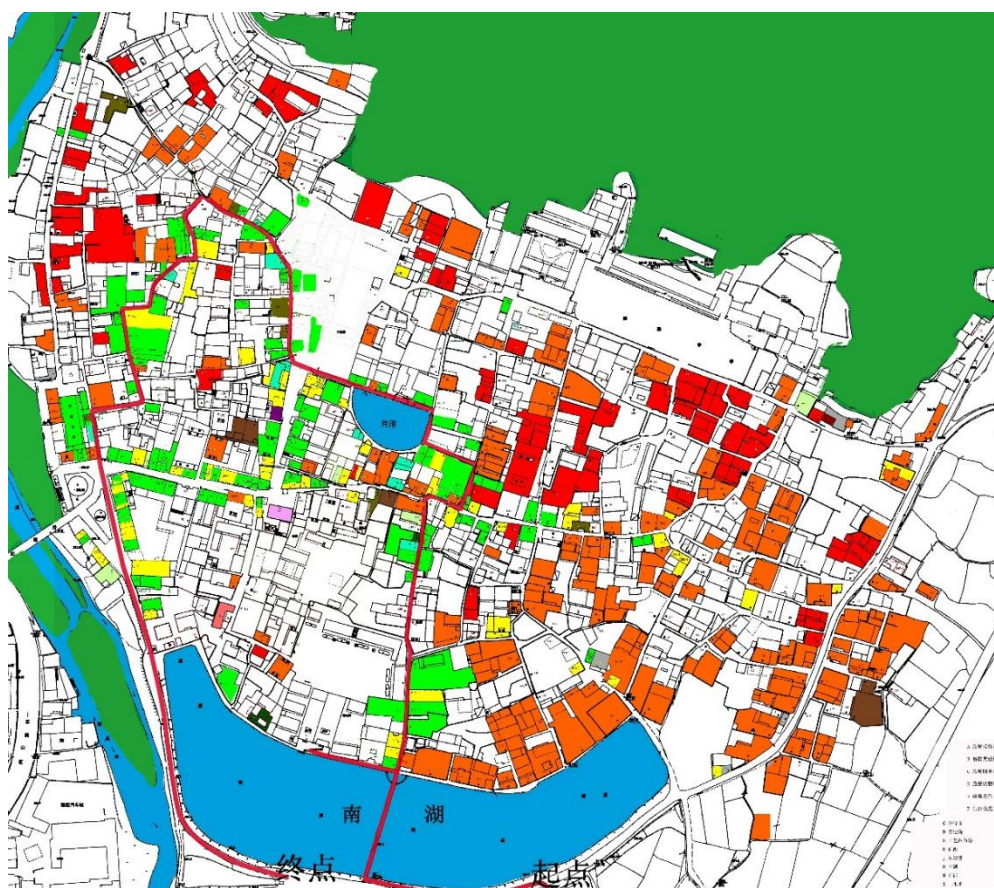


Figure 5-1 Hongcun Commercial Distribution

Among the 405 commercial facilities in the Hongcun Scenic Area, there are 193 tourist reception facilities (Class A), accounting for 47.6%, including 128 restaurants and catering functions, accounting for 66.3% of the tourist reception facilities. In addition, among the tourist reception facilities (Class A), there are 12 providing tourist shopping functions, 4 providing tourist service functions, 4 providing tourist entertainment functions, and 2 providing living facilities functions. Tourist reception facilities are not satisfied with a single accommodation reception function, but are working to expand from single to diverse. The owners of tourism reception facilities hope to be able to increase the competitiveness of their own stores by developing different businesses, and at the same time receive revenue from different businesses. There are 79 catering enterprises (type B), accounting for 19.5% of the total, of which 13 include tourism shopping functions, accounting for 16.5%. There are 124 tourist and shopping facilities (category C), accounting for 30.6% of the total. During the research and interview process, we found that Hongcun does not have any stores that are only for the residents of the community, so this year the number of community stores (type D) for the residents is 0. Among the entertainment facilities and living facilities (type E), there are 1

tourism and entertainment facility and 8 living facilities, accounting for 2.2% of the total.

From the perspective of distribution areas, Shangshuizhen (S), Dongbian Street (D), and Qian Street (Q) are still the most concentrated commercial areas in Hongcun Scenic Area. The number of stores in these three areas accounts for 53.58% of the nine areas surveyed, this result is related to the fact that the three areas are located in the core area of the Hongcun Scenic Area and are exposed to a large number of tourists.

Compared with 2018, it can be found that there are fluctuations in the number of shops in each region, but the overall change is not large. Areas that have increased more are Nanhu (N), Qianjie (Q), and Tingqian (T). D (East Side Street) has always been dominated by tourist reception facilities, and the number has dropped this year due to the fierce competition in the homestay market, leading to the closure of some previous homestays.

The monitoring counted the buildings and shops in Hongcun respectively, and obtained the commercial penetration rate (commercialization degree) through "the number of shops / the total number of regional buildings" for comparison. As can be seen from Table 5-1, there are currently 451 buildings in Hongcun, of which 296 are undergoing at least one kind of commercialization. The commercial penetration rate of the entire village reached 65.63%, compared with 78.49% in 2018, there is a downward trend. Among them, Nanhu, Tingqian, and Tea Lane have a relatively high degree of commercialization.

5.2 Hongcun Tourism Commercialization Model

Judging from the motivation of Hongcun's commercial activities, the owner of the house, the operator of the leased house and shopkeepers all claim that economic motivation is the main motivation for their operation, and the economic motivation of the shopkeeper or the operator of the leased house is stronger.

In addition to economic factors, traditional family concepts and age factors have a greater impact on local middle-aged and elderly shop owners. Local residents are also driven by surrounding families to try to operate with local resources such as specialty products and their own houses, handicrafts, cooking and other resources.

Judging from the operation status of Hongcun's commercial activities, in recent years, the overall number of tourists has decreased, and tourists' shopping consumption has also decreased, which has a greater impact on their income. Although the proportion of group tourists is large, the stay time is short, and the tour routes and areas are limited, resulting in an overall not so optimistic income. Secondly, the number of shops of the same type in Hongcun is large, competition among them is fierce, and the degree of homogeneity is high.

However, local residents have low operating costs, low operating pressure, weak competition awareness and fewer means of competition.

Judging from the future business plan of Hongcun's commercial activities, on the whole, it lacks a clearer future business plan. Most choose to continue to open stores, and a few have adjustment plans, such as strengthening online promotion, expanding and renovating stores.

In general, the business model of Hongcun local residents and non-local residents' shopkeepers or operators is quite different. Local residents open stores easier due to resource advantages such as housing but lack guidance. They have lower operating costs and are less affected by changes in income, so they are more stable. However, due to lower costs, they often lack competition awareness and business motivation, coupled with traditional family concepts and influenced by age and other factors, most shop owners choose to continue to maintain the status quo and lack a clear business plan for the future. Non-local residents generally carry out commercial activities by leasing local residential houses. The cost of housing rents is high, competition is fierce, and the decrease in the number of tourists makes owners quit more easily. Owners often choose to exit quickly and shop changes are frequent.

6. Environmental protection

6.1 Waste pollution

In recent years, with the rise of the tourism industry, the surge in the number of tourists has brought tremendous pressure to many scenic spots that are not yet mature. During the monitoring of Hongcun, the team found that the seasonal influx of tourists has put an excessive load on the cleaning mechanism of Hongcun. According to the causes of garbage generation, the garbage pollution is divided into three types: tourist garbage, production garbage, and domestic garbage. The reasons for their formation and distribution are described separately:

6.1.1 Tourism waste

Tourist garbage refers to various types of garbage produced by tourists during tourism activities. There are three major types in Hongcun: graffiti garbage, food garbage and pigment garbage. Graffiti garbage is a phenomenon that damages the cleanliness of public facilities such as walls and seats caused by tourists' graffiti. According to the monitoring results in July, graffiti appeared in the walls of Hongcun in several places, mainly distributed

in the walls of private houses in the periphery of the scenic spot and the public walls in the corner of the scenic spot. Local villagers and managers in these areas have responded by hanging signs that read "No graffiti" on the walls. Food waste refers to garbage generated by tourists during the process of purchasing and consuming food, such as packaging bags and surplus food. The disposal of the garbage formed by the food consumption of Hongcun tourists has become a big problem. In many cases, tourists cannot find the trash can in a short time, so they will choose to discard it on the streets, in the canals and in the corners. This garbage not only causes damage to the visual effects of the scenic spot, but also easily rots in summer to produce germs and bring safety risks. Pigment garbage refers to the garbage brought by tourists who carry out painting activities such as sketching and graffiti during the creative process. Hongcun enjoys the reputation of "the picturesque Chinese countryside", and there is a continuous stream of sketch tourists throughout the year. A pigment trash bin was specifically configured for this unique segment of the population, but the effect was not good: a large number of pigment trash bins were occupied by kitchen waste, mainly because the distribution, capacity, and cleaning frequency of specialized domestic trash bins could not meet the needs of residents; The pigment trash bins were not distributed reasonably. There were several highly concentrated sketch points in the village, but the number of paint trash bins did not match it well and the distribution is too loose.

6.1.2 Domestic waste

1) Food waste. Kitchen waste refers to the garbage produced by residents in activities such as food processing and food cooking in daily life, including rice water, expired beverages and exhausted soot. The sewage treatment of Hongcun mainly relies on the ancient drainage channels of the whole village's water net. However, due to the drastic increase of tourists in recent years and the lack of environmental protection awareness of operators, the fast-growing accommodation and catering industries have exceeded the environmental carrying capacity, mainly reflected in the flow barrier, garbage was piled up everywhere, the water was turbid and there were many floating objects. In response to this problem, at present, there are only special cleaning personnel to clean up the solid waste at obvious locations, but there is no countermeasure for solid waste, liquid waste, and gas waste in some corners.

(2) Waste garbage. Waste garbage mainly refers to garbage generated by residents' living such as abandoned sofas, tables and chairs, etc. These wastes have been placed on street corners for a long time to form long-term garbage dumps due to problems such as difficulty in recycling and its large volume. Many residents in the village have renovated old

houses, and a large amount of waste garbage generated will be directly treated nearby. For example, residents at the upstream water source will discard a large amount of domestic waste into the river. Because this garbage is located in the border area of the village, it has not been specially cleaned up and the garbage have accumulated here for a long time, which has a negative impact on water quality and tourism experience.

(3) Phosphorous laundry water. The water network of Hongcun is densely covered, and there is a canal flowing in front of almost every house. Many villagers still retain the habit of washing clothes in the canal. However, it is different from the past that the commonly used laundry detergent laundry liquid contains a large amount of phosphorus, which will have a serious impact on eutrophication of water quality. At the same time, the establishment of the guesthouse industry has rapidly increased the amount of laundry, causing serious harm to the water's self-purification capabilities. Threat. The villagers lacked a certain level of environmental awareness, and the management supervision was also absent. A large amount of laundry water was discharged directly to the ground without any treatment. Under such circumstances, we have now monitored a large number of algae and aquatic plants in many water streams, and the water quality is turbid.

6.1.3 Production waste

The main form of production waste in Hongcun is construction waste. In Hongcun, with the increase in the number of tourists in recent years, almost every household is actively developing homestay business, and many villagers are in the process of rebuilding their old houses. However, due to its geographical location, the vehicle's access is strictly controlled and the construction progress is slow. Many waste materials are piled up near the construction site to form a garbage dump.

6.1.4 Garbage distribution

It is concluded that there are three obvious characteristics in the distribution of garbage in Hongcun: first, solid garbage and water garbage are the main ones, and graffiti garbage and oily garbage are less; second, garbage is mainly distributed along the popular tourist routes along the east side and there is obvious concentration; Third, the main cause of garbage lies in the uncivilized behavior of some tourists and the lack of environmental awareness of the village guesthouse operators. The intensity of cleaning and supervision should be increased simultaneously.

6.2 Water pollution

Water pollution refers to the phenomenon that industrial wastewater, domestic sewage and other wastes enter water bodies such as rivers, lakes, and seas, which exceed the self-purification capacity of the water body and cause water quality to deteriorate. In recent years, water pollution has increasingly become a major problem faced by Anhui Hongcun's heritage protection, tourism development, and residents' lives. The following is a detailed description of the current status of water pollution in Hongcun from three aspects: water system distribution, water pollution, and water pollution perception:

6.2.1 Causes and Distribution of Pollution

The upstream is mainly the living area of local residents, so the main pollution source is domestic sewage, including rice water and vegetable washing water generated by residents' daily life, and the pollution level is relatively low. The middle reaches are occupied by all kinds of merchants and tourists. Many restaurants pollutants and the garbage discarded by tourists have caused serious pollution to the canals; in the downstream (near the South Lake), the paint pollution of sketch tourists is very obvious, and other pollution in the upper and middle reaches also accumulates here. Due to the increase in water volume, many pollutants are diluted, but due to the fact that the South Lake's water is standing water, so its self-purification ability is poor and the future is worrying. The water pollution of Hongcun is obviously distributed along the tourist route, and the brown lines almost coincide with the tourist route. The water network in the east of the village is dense, and the main body is relatively clear, but the concentration of homestays and restaurants will generate a certain amount of sewage. The original ancient canals have partially dried up, and this phenomenon is mainly concentrated in the northern part of the village.

6.2.2 Water pollution perception

(1) Resident perception. Through interviews with 10 households, we learned that residents generally have a clear perception of the deterioration of water quality in Hongcun, but compared with other scenic spots in the horizontal direction, water pollution in Hongcun is already optimistic; most villagers believe that the main cause of water pollution is the large influx of tourists which exceeds the local self-purification capacity, and almost every family in the village is running a homestay, but lacks certain environmental protection awareness and management experience, and improperly handles the garbage generated by the guests, which exacerbates the problem of water pollution; they believe that this pollution is

unavoidable in the process of tourism development. Since they want to continue to enjoy the benefits brought by tourism development, they think they should accept this "price".

(2) Tourist perception. Through interviews with tourists, we come to the following three conclusions: Tourists generally have low satisfaction and disappointment about water quality, they believe that the water flow has been seriously polluted, and the local ecosystem and ancient water systems have been damaged; tourists believe that deteriorated water quality has a great negative impact on the tourism experience, and has a negative attitude towards local food hygiene and future development. Food that is made from such poor water quality is certainly not trustworthy; tourists have expressed dissatisfaction with the management, and believe that since Hongcun is a world heritage, protection should be given top priority, but today pollution is more serious and inadequately handled.

6.3 Noise pollution

Noise pollution refers to the sounds that affect people's normal study, work, rest and entertainment, that is, "unwanted sounds" in certain occasions. In this monitoring, we used noise monitor software to perform spot monitoring on a total of 9 representative locations covering the less popular and popular areas, and tracked and monitored typical pollution sources. A total of 6 time periods were selected, which corresponded to the daily cycle of activities in the scenic area, and each monitoring time was representative. The following will explain in detail the three major aspects of pollution sources, pollution distribution, and pollution perception.

6.3.1 Analysis of pollution sources

According to international standards, more than 60 decibels during the day and more than 40 decibels at night fall into the category of noisy. Therefore, we define sound sources that meet this standard as noise pollution sources, and classify them into mobile pollution sources and fixed pollution sources for monitoring based on the stability of the distribution of the pollution sources.

(1) Mobile pollution sources. The four types of mobile pollution sources are mainly from villagers' daily transportation and group tours. On the whole, the average value of the four pollution sources has reached the noisy standard of 60 decibels; the maximum value is generally around 80 decibels, which causes certain damage to human nerves. Comparing the three types of motor vehicle pollution sources, it can be found that vehicle speed and honking have a great impact on decibels. Secondly, from the perspective of the duration of the noise,

the duration of the three types of pollution sources in the motor vehicle category is about 45 seconds (from the time the source is perceived to be close until the sound disappears), which is significantly lower than the noise of the group visitors, which lasts for 2 minutes.

(2) Fixed pollution sources. The fixed pollution source of Hongcun is mainly the construction site and caused by the reconstruction of old houses. Due to the different types of construction and construction sites, different noises are generated. It is divided into three existing types: roof construction, indoor construction, and flat construction. Through on-site inspections, we marked the six current large construction sites. We found that these construction sites are mainly distributed in areas with few tourists, such as the northeast corner of the village and some of the more remote streets and middle lanes. By monitoring the three types of construction points in six representative periods, we found that the overall decibels at these construction points fluctuates around 60 decibels due to the discontinuity of the operation, but the maximum value during the operation can reach about 80 decibels. It can cause damage to the nervous system of surrounding residents. Through comparison of the three construction types, we can find that the roof construction, due to throwing materials to the ground and other reasons, the noise during the period 1, 2, 5, 6 is significantly higher than other construction types, but around noon during time period 3 and 4 it is lower than the other two, because the roof construction has more hidden dangers and is more significantly affected by sunlight so during these two periods, it is generally in a shutdown state, while the other two are less affected. They generally continue to work after a short break.

6.3.2 Pollution distribution

For the popular zone, the noisy period of more than 60 decibels is concentrated in the peak hours of the tourists' activity in the afternoon. The extremely noisy period of more than 70 decibels is roughly diagonally distributed, meaning that the extremely noisy situation is situated along the tour routes. At night time period 6, because the night market is located in the commercial street and the famous night view of Yuenuma, there are still a lot of tourists in these two places, which causes a lot of noise, and other places are already quiet. At the same time, another rule can be found: for large trees at the entrance of the village and the entrance of Hongcun, the number of decibels is relatively stable, and there is no extreme high peak. For a long time, the noise maximum is more prominent for the crowded painting bridge. In short, the order of the severity of noise pollution is roughly commercial areas> attractions> circulation hubs> rest areas.

For the less popular zone, the noise pollution is relatively light (only light red patches

are present). The noisy period (only light red) of more than 60 decibels is concentrated in period 5, which is the time when visitors leave the park, because this period is when night market stalls started operating, and during this period vehicle control is lifted, and many motor vehicles begin to pass through the village. It is worth noting the special monitoring value near the village committee during time periods 2 and 5. The reason for this special point is that there is a wide shady rest area at the door of the village committee and it is located at the junction of the popular and less popular areas, so many tourists are resting here at the peak time; at night, the open space here provides space for square dance lovers, so it presents another noise peak. On the whole, the noise distribution in the less popular zone is basically in line with the daily routine of residents, and is less affected by tourism.

6.3.3 Pollution perception

(1) Resident perception. We divided the residents into less popular tourist area residents and popular tourist area residents and conducted interviews. We found that residents living in less popular areas generally have a neutral attitude towards noise pollution and believe that there is no noise pollution and occasional noise is normally acceptable. They believe that tourism brings increased income, so if you want to enjoy the good effects of tourism, you must bear the bad effects. Residents in the popular zone have a higher perception of noise pollution and a higher degree of acceptance. They said that they are indeed noisy during peak hours, but they have been used to it. There are more tourists and more opportunities to make money. However, it is worth noting that the noise of several construction areas in the village received negative responses of nearby businesses and residents because the project of renovating old houses in the village is still under construction in recent years. Because of these noises, the loss of guest in the surrounding guesthouses and the residents' lives are also affected to some extent.

(2) Tourist perception. Tourists generally show a neutral attitude towards the noise of the scenic area. There are two main reasons for this: First, tourists think that this "lively" atmosphere is a legitimate and even indispensable part of the scenic area, and they like the enthusiasm under this high decibel. Second, the noise distribution of Hongcun is concentrated, mainly in popular areas (commercial areas and attractions within tourist routes) and a few construction areas on the fringe. Most places are quiet and quiet streets can be easily found. However, in some special scenes, tourists show extremely disgusting attitudes towards Hongcun's noise pollution, such as someone riding a motor vehicle in a densely populated area and honking for a long time.

6.4 Air pollution

Atmospheric environment is the physical, chemical and biological characteristics of the air on which human beings and all living things depend, including temperature, humidity and other characteristics. This section will evaluate the overall air quality of Hongcun by analyzing the air pollution, suspended particulate matter, and temperature of Hongcun Town.

6.4.1 Air pollution

The air pollution index is a simplified conceptual index value of several types of air pollutants that are routinely monitored, and is used to characterize the degree of air pollution and air quality in a hierarchical manner. It is suitable for representing the short-term air quality conditions and trends in cities. The air pollution of Hongcun tourist area is measured by the air pollution index, and the most representative indicators are selected: air quality index (AQI), PM_{2.5}, PM₁₀, carbon monoxide, nitrogen oxides, sulfur dioxide, and ozone. The air condition was monitored. One day of the survey was selected as the research object, and the air pollution in the main travel time period from 9 am to 18 pm in the air of the village and town was measured. It can be seen that in the air pollution coefficient index of Hongcun tourist area during the main tourist period, the air quality index (AQI) and suspended particulate matter (PM_{2.5} and PM₁₀) indicators received significantly lower score than the optimal values, especially the AQI and PM_{2.5} are all in "Good" level, while carbon monoxide, nitrogen dioxide, sulfur dioxide, ozone and other common air pollutants are all in the optimal range. Therefore, the main source of air pollution in Hongcun Scenic Area is suspended particulate matter.

6.4.2 Suspended particulate matter

The main pollution source of Hongcun tourist area is suspended particulate matter. Therefore, the changes of PM_{2.5} over time and the changes in the last month were analyzed during the survey. By arranging the 24-hour change of PM_{2.5} in Hongcun into a line chart, it can be seen that the actual air quality failed to meet the criteria for "good air quality" throughout the day. The change trend is that the PM_{2.5} value starts to rise from 5 am and reaches the maximum PM_{2.5} by 1 pm. The value then starts to fall. The day-to-day variation of PM_{2.5} shows that the pollution of suspended particulate matter in the scenic spot is strongly related to the tourism activities in the scenic spot. After studying the monthly PM_{2.5} change in Hongcun scenic spot in the month from June 20 to July 20, 2019, and drawing a

line chart of these 30-day changes, we can see that the atmospheric quality of Hongcun scenic spot is not optimistic. Only 5 days out of 30 days were excellent, and most of the other days were good, and even 10 days reached a state of light pollution, which is quite different from the beautiful green Hongcun tourism requirements. The serious problem of air pollution in Hongcun has been fully demonstrated and should be paid attention to.

There are three major sources of air pollution in Hongcun: polluting gases emitted by the original inhabitants' lives, such as burning wood, and harmful gases generated by the accumulation of domestic waste and a large amount of inhalable particulate matter produced by traffic vehicles. With the increase in the number of tourists and the development of tourist attractions, tricycles and tourist cars have greatly increased, and pollution in this area has become more serious.

6.4.3 Temperature

Weather and temperature are one of the important considerations for tourists. Especially in the hot summer season, avoiding the summer heat becomes the primary motivation for many tourists to visit Hongcun. During the survey, many tourists complained that the temperature in Hongcun Scenic Area was too high, and there were no reasonable measures against the heat, and the tourism experience was poor. According to the statistics of the temperature change of Hongcun from June 21 to July 20, 2019, a line chart of temperature change is drawn. It can be clearly seen from the line chart that the temperature in Hongcun Scenic Area is relatively high, and the highest date in July had a temperature of close to 40 degrees. Because of the development of tourism, Hongcun Scenic Area has formed a "heat island effect" relative to the surrounding countryside. For the problem of excessive temperature, the scenic spot should first set up cooling facilities; in addition, it should reduce the temperature of the scenic spot through fundamental measures such as protecting green areas and dredging the water system.

6.5 Public service facilities

Public service facilities composed of three words: public, service, and facilities, which have huge externality and publicity. Hongcun is a tourist destination, but because it has local residents, public service facilities are related to and intersect with the infrastructure used for residents' living, showing the characteristics of service for all people. Tourism public services are collectively referred to as tourism products and services that are provided by the government, other social organizations, and economic organizations to meet the common

needs of tourists, and which are not profit-oriented. They provide social structure facilities. The main providers of tourism public service facilities in Hongcun Scenic Area are Huangshan Jingye Tourism Development Co., Ltd. and relevant government departments on the village level. They are mainly for tourists. The following sections will provide details on public information services, public services and security.

6.5.1 Scenic area information guidance facilities

Scenic area information guidance facilities are service systems that transmit scenic area information, and are carriers of scenic area service functions and tour information, including scenic area identification cards and tourism information management systems. At present, the distribution and configuration of the information guidance facilities of the Hongcun Scenic Spot are significantly different on the outside and on the inside. The exterior information is mainly based on traffic information signs that guide and regulate traffic. There are many types of internal information guidance facilities, including signboards that contain scenic spots and route directions, and signs explaining the general information of the scenic spots and cultural relics, prohibition signs and reminder signs set up for the order of scenic spots. In general, although the information guidance facilities of the Hongcun Scenic Area are relatively complete, and certain tourist routes have been scientifically planned, the number of tourist guides is far from enough to meet the needs of tourists. The quality of the tourist attractions and directions provided is low. Hongcun's information management is insufficiently informatized, failing to meet the development of society and the times, and to meet the needs of tourists' needs of integrated information management, query, and guidance. In the future, efforts should be made in the direction of informationization in terms of information identification, guidance, and management.

6.5.2 Scenic rest facilities

(1) Distribution of rest facilities in scenic spots. The public rest facilities in Hongcun Scenic Area are mainly stone chairs and natural rest seats in the area. The tourist rest area in Hongcun Scenic Area is mainly concentrated in the three areas around Nanhu, the square near the craft market and the big tree at the village entrance. The rest seats in the scenic area are concentrated in the area of Nanhu and the craft market, with a total of 38 stone chairs.

(2) Status and problems of rest facilities in scenic spot. Due to the planning of the tourist route of the scenic spot and other reasons, it can be seen that the rest of tourists in the scenic spot has a clear concentration effect. The provision of rest facilities, that is, rest seats,

is obviously in an unbalanced state, and most of them are located around the starting point and ending point of the scenic spot and around Nanhu and the handicraft market. Tourists can only rest below the big tree at the entrance and exit of the scenic spot and the village station at the last stop of the tourist route. It is difficult to find public rest facilities in other locations in the scenic spot, which has caused tourists to spend short periods of time and have a tired travel experience. During the interview, tourists mentioned many times that the resort has few facilities for rest, especially in the scorching sun.

6.5.4 Public health services

With the increase in the popularity of Hongcun, the flow of people in the tourist area has increased, and the requirements for the infrastructure of the area have continuously increased. However, the public health services in Hongcun area are still relatively backward, mainly in the two aspects of tourist toilets and medical and health facilities: (1) Medical and health clinics. At present, there is only one health clinic in Hongcun, which is located deep in the streets and outside the regular tourist area. The lack of a guideline for medical and health clinics in the scenic area coupled with its remote location makes it impossible for tourists to find it, and it is difficult to cope with possible health accidents, which illustrates that Hongcun Scenic Area currently attaches little importance to medical care; (2) public toilets. Hongcun Tourism Scenic Area covers an area of 187 square kilometers. At present, there are 8 toilets, which is significantly higher than the number of toilets in 2018 (only 4). Among them, there are 6 toilets in the scenic area, 2 near the scenic area; 7 public toilets, and 1 paid toilet. From the perspective of the distribution of toilets, the toilets in the scenic area are mainly distributed outside the planned tourist routes, and there are no toilets in the popular tourist area. There are 4 toilets densely distributed around Hongcun Village Committee, and one toilet each at the handicraft market far from Nanhu and the West Gate, which constitutes the distribution of all toilets in the scenic spot, of which only the Chengzhitang toilet is located along the tour route. These public toilets mainly present the following problems: unreasonable distribution of toilet and unreasonable quantity planning; unclear guidelines and signs, and difficulty for tourists to find toilets; toilet positioning and functions are not clear, and the quality is uneven; repair efficiency is low; lack of Hongcun characteristics.

6.5.5 Public trash can

(1) Type, quantity and distribution of public trash cans

According to surveys and statistics, there are 6 types of public trash bins in Hongcun

Scenic Area, including plastic trash bins, environmentally-friendly classified trash bins, trash bins for recycle pigments and kitchen waste, single-cylinder recyclable bins, four-throw wooden trash bins and barrels and other (family, iron bucket) trash cans. There are a total of 154 trash cans of various types in the Hongcun Scenic Area. In terms of quantity, plastic bins, environmentally-friendly bins, recycled pigment bins and kitchen waste bins account for the vast majority. From the distribution point of view, the trash bins in the scenic area basically cover the entire scenic spot of Hongcun. The trash bins are densely distributed around the entrance and exit of the scenic spot, the rest area around the South Lake, and the commercial street where the shops are concentrated. Garbage bins in the popular zone are replaced frequently and are attended by special personnel, while in other regions, there are few or even unmanaged garbage cans, which remain in the same state for several days. There are places in the scenic area where garbage cans are collected. The cleaning staff performs centralized garbage collection and sanitation treatment.

(2) Status and Problems of Public Trash Cans

The public cannot accurately dump garbage, and the function of sorting garbage bins has failed. Many tourists can't distinguish the use of various trash bins, so that they can dump the garbage at will. The most serious thing is that sketch students and restaurants will randomly put garbage in trash bins for other purposes; the garbage bins have poor hygiene and low cleaning efficiency. In Hongcun Scenic Area, especially around the accommodation and restaurants, you can find that there is a lot of residual garbage around the trash can and the unmanaged waste overflow problem; the setting of the trash can placement is unreasonable. Tourists indicated that the number of trash bins was insufficient, but in terms of area and quantity comparison, the number of trash bins in Hongcun Scenic Spot has become saturated. Tourist complaints are caused by the unreasonable setting of trash bin locations, the trash bins in the popular zone being scattered and difficult to find, and the trash bins in areas with few people are unreasonably concentrated; the design of trash bins is too normal and uncreative. In addition to the environmentally-friendly classified trash bins and single-cylinder recyclable trash bins that are coordinated with the Huipai architectural image, other trash bins conflict with the overall characteristics of the scenic spot in terms of color and design, affecting the harmony of the scenic landscape.

6.6 Summary

In summary, the 2019 monitoring results show that the garbage pollution in Hongcun

is intensifying, the economic and environmental conflicts brought about by tourism development are emerging, the quality of tourists is low, the environmental awareness of businesses is poor, the classification of garbage is ineffective and cleaning is inefficient. At the same time, the lag of the infrastructure setting compared with the needs of tourists is also a major problem, and the reasonable distribution of information needs to be improved. Therefore, it is important to pay attention to the rational planning of infrastructure, strengthen the environmental awareness of residents and tourists, and improve the management level of catering operators.

7. Overall Summary

As an ancient village, Hongcun is a world cultural heritage and also a place of local residence. How to balance residents' life and heritage protection is an issue that must be considered by scenic area management (companies and the government). According to the results of this monitoring, with the development of the tourism industry, more and more dwellings have been converted into inns or shops, resulting in rapid changes in the pattern of houses, and the use of dwellings has become more complicated. On this basis, the following suggestions are made. It is required to change the inn or shop to strictly abide by the local rules and regulations. The relevant departments should supervise the transformation of ancient dwellings. During the monitoring process, it was found that although the ancient dwellings still retain their original appearance on the outside, there are acts of random construction inside. It is recommended to inform residents of the disadvantages of over-commercialization and require residents to protect their traditional buildings within their capacity. Construction waste should be disposed of in a timely manner to avoid obstructing the travel of tourists and residents, and also avoid being a threat to the personal safety of others. Environmental protection in scenic spots requires the joint participation of residents, tourists, scenic spots and the government. We hope to maintain and protect the beauty of Hongcun, and not to cause irreversible impact on its environment due to any commercial nature. This monitoring noticed that the water quality of Yuezhuang has deteriorated to a certain extent, and there is also a tendency for the shrink of the differences in the water quality of the upstream and downstream. It is hoped that relevant departments can deal with it in time. In the process of tourism development, some villagers gradually realized the disadvantages of over-commercialization. They suggested to protect the original things, recommend the distribution of scenic spots maps, and improve the identification system in

the scenic spots. For government departments, it is recommended to promote green tourism and let professional teams manage them. Hongcun should open new tourist routes, establish a local reservation platform for Hongcun scenic area to avoid overlord clauses, add more tourism experience items. It is also recommended that the scenic area or related departments should consider if it's possible to preserve the originality of Hongcun and open stores outside the scenic spot.