



The Sustainable Tourism Observatory of Huangshan (STOH)

Annual Progress Report 2024.12 Edition



International Network
of Sustainable Tourism
Observatories

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Annual Progress Report-2024.12 Edition

MCSTO

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Foreword

The annual observatory work on sustainable tourism development of Huangshan started in 2011, which is conducted by teams from the Sun Yat-sen University. From July 17 to July 24, 2024, a monitoring team from Sun Yat-Sen University's School of Tourism completed an on-site survey of the sustainable development of the Huangshan Scenic Area.

The monitoring work primarily focused on assessing the current status of sustainable development in Huangshan's tourism industry, based on the basic indicators of sustainable development. Field research and data collection were carried out according to different themes.

This is the 14th monitoring activity since the establishment of the Huangshan observation point. During this monitoring, an evaluation was conducted on the overall development of the Huangshan Scenic Area, as well as the development of key scenic spots. The monitoring process involved analyzing and summarizing the sustainable development of tourism in Huangshan, identifying existing issues, and providing corresponding recommendations.

Executive Summary

Sustainable tourism is a concept that encompasses the entire tourism experience, including concerns about economic, social, and environmental issues, as well as a focus on improving visitor experience and meeting the needs of host communities (UNWTO, 2020). Overall, the development of Huangshan's tourism industry is becoming increasingly sustainable. Tourism has become an integral part of Huangshan City's economy. Local residents generally benefit from the development of tourism, with strong enthusiasm for supporting tourism and a high demand for participation. For tourists, Huangshan is an attractive destination, with its natural landscapes receiving high praise. The tourism supply largely meets the growing and diversifying needs of visitors. However, there is still room for further development in Huangshan's tourism industry.

The research covered a wide range of issue areas, including local satisfaction with tourism, destination economic benefits, employment, tourism seasonality, energy management, water management, wastewater management, solid waste management, governance, climate action, and accessibility. Each of these areas is detailed with specific indicators, dimensions, and associated Sustainable Development Goals (SDGs).

Furthermore, through data collection and research analysis focusing on tourism and environmental conservation, economic impacts of tourism, local residents' perceptions and attitudes, and tourist behavior and satisfaction, we have derived three conclusions:

- **Environmental Sustainability:** Public services and sanitary conditions in Huangshan City have continued to improve, but the region still faces issues of excessive waste, which impacts biodiversity and the tourist experience. There is a need to strengthen guidance and education on responsible behavior for tourists.
- **Economic Sustainability:** In 2023, visitor numbers and growth rates reached new highs, signaling a recovery in the cultural and tourism market. However, attention should be paid to the rising costs of housing and rentals. Additionally, strategies should be developed for promoting off-season tourism and addressing the changes brought about by the newly established cable car system.
- **Social Sustainability:** The diverse activities aimed at tourists have enriched the lives of local residents. However, there is a need to strengthen the protection of

local traditional culture.

Among these conclusions, there are commendable aspects as well as areas for improvement. Corresponding suggestions have been provided to address these areas of improvement.

Huangshan in Brief

Mount Huangshan located in the humid subtropical monsoon climate zone of China's Anhui Province and covering an area of 16,060 ha with a buffer zone of 49,000 ha, which includes five towns and one forest farm. The geographical coordinates of the central location of Mount Huangshan are 30° 11' N latitude and 118° 10' E longitude.

As a World Cultural and Natural Heritage Site, the Huangshan Scenic Area meets the following UNESCO World Heritage criteria:

- Criterion (ii): to exhibit an important interchange of human values, over a span of time or within a cultural area of the world, on developments in architecture or technology, monumental arts, town-planning or landscape design.
- Criterion (vii): to contain superlative natural phenomena or areas of exceptional natural beauty and aesthetic importance.
- Criterion (x): to contain the most important and significant natural habitats for in-situ conservation of biological diversity, including those containing threatened species of outstanding universal value from the point of view of science or conservation.

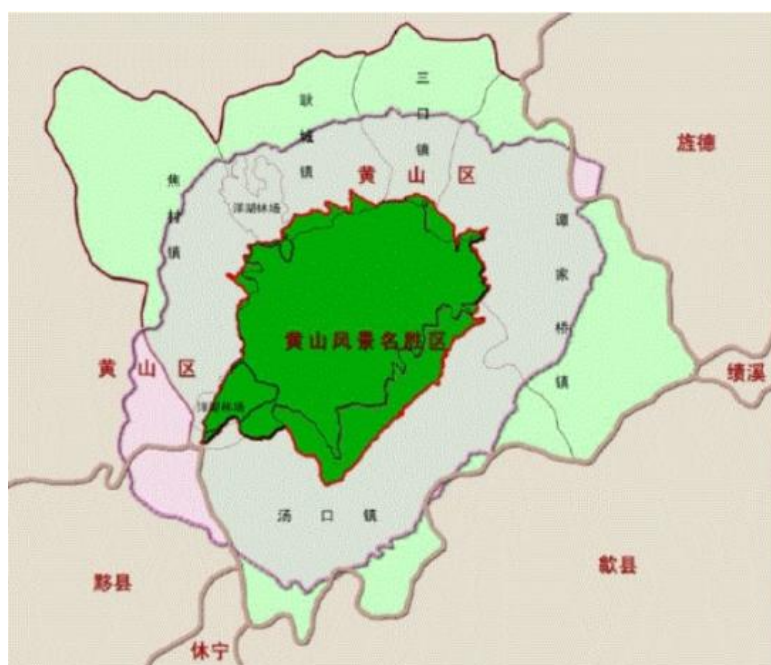


Figure 1: Huangshan Scenic Area and its adjacent towns and districts map

Source: Huangshan Scenic Area Master Plan 2007-2025

The Role of Tourism in Huangshan

As a World Heritage Site, Mount Huangshan is recognized as a World Cultural and Natural Heritage Site, a Global Geopark, a member of the UNESCO World Network of Biosphere, and a national key scenic area of mountainous type. It is a natural landscape of global significance, an important habitat for biodiversity conservation, and the birthplace of the Huangshan School of Painting. Huangshan holds an important place in the development history of Chinese landscape painting. It also serves as a base for resource and environmental protection, scientific research, and patriotic education, as well as a destination for moderate sightseeing, cultural, and ecological tourism for the public.

In 2023, the Huangshan Scenic Area welcomed a total of 4.5746 million domestic and international visitors, a year-on-year increase of 227.48% compared to 2022, and 130.7% of the number in the same period of 2019. The visitor reception volume and growth rate reached a new high, making it the first year since the pandemic in which the number of visitors exceeded the 2019 level, reflecting a strong recovery in the cultural and tourism market.

Tourism is an important industry for local communities. In 2023, tourism in the five towns within the monitoring area was restored and developed. Currently, each town is promoting the integration of tourism with other industries based on its own resource endowments, steadily advancing key tourism projects, and continuously improving public services and sanitary conditions.

Methodologies and Issue Areas

The monitoring process was divided into three stages: preparation, field research, and report writing.

During the preparation stage from May 15 to July 16, 2024, the monitoring team developed a monitoring outline and research plan, clarified the list of required information, collected secondary data, designed survey questionnaires, arranged itineraries, and allocated personnel. They also actively communicated and coordinated with the personnel from institutions and departments related to the research, to ensure smooth progress for the subsequent field research.

From 17 to 24 July in 2024, the monitoring team utilized observation, questionnaire surveys, and interviews to conduct on-site research. They distributed 320 tourist questionnaires, with 283 valid responses (response rate of 90.7%), and 189 resident questionnaires, with 182 valid responses (response rate of 96.3%). Through face-to-face interviews, the team engaged with various stakeholders involved in local tourism development, including representatives from government departments, scenic area managers, local residents and tourists.

Following the completion of the field research by July 24, 2024, the team entered the report writing phase. Combining preparatory research and data obtained from field research, they used their expertise in tourism to write comprehensive reports and specialized reports oriented towards addressing identified issues.

There were 11 issues areas monitored during this monitoring period, Table 1 illustrated the issue areas respectively with corresponding indicators, dimensions and SDGs.

ISSUE AREA	INDICATORS	DIMENSIONS	SDGS
1 Local satisfaction with tourism	Local satisfaction with the government's execution in tourism development	Social-cultural	 
	Local satisfaction with the development of local tourism		 
2 Destination economic benefits	Total tourism revenue and its growth rate	Economic	 
	The proportion of added value of three industries in GDP		 
	Tourists' expenditure in destination		 
3 Employment	The willingness of residents to participate in local tourism	Social-cultural	 
	Occupational distribution of tourism practitioners in the sample		 
4 Tourism seasonality	Yearly tourists number and its growth rate	Economic	  
	Monthly tourist number		  
5 Energy management	Energy consumption and development goals	Economic Environmental	   
6 Water management	Water consumption and development goals	Economic Environmental	  
7 Waste water management	Water quality situation (surface water and centralized drinking water)	Environmental	   
8 Solid waste management	Solid waste (industrial solid wastes, agricultural solid waste, household solid waste and hazardous waste)	Environmental	  
9 Governance	New legislation	Social-cultural	   
	Workshops		 
10 Climate action	Climate change mitigation goals and actions	Economic Environmental	  
11 Accessibility	Accessibility facilities	Social-cultural	  

Table 1: Issue areas respectively with corresponding indicators, dimensions and SDGs

Source: MCSTO. (2024). The Sustainable Tourism Observatory of Xishuangbanna (STOX). Annual Progress Report-2024.6 edition. Guangzhou.

Issue Areas





Local Satisfaction With Tourism

The survey collected a total of 189 resident questionnaires, with 182 valid responses, yielding an effective rate of 96.3%. The survey was conducted from July 17 to July 24, 2024, spanning eight days. The survey locations is the buffer zone of the Mount Huangshan, included Tangkou Town, Tanjiaqiao Town, Jiaocun Town, Gengcun Town, and Wukou Town.

The questionnaire is designed with five categories to assess the impact of Huangshan tourism development: economic impact, social impact, cultural impact, and environmental impact, totaling 28 items. It also includes 36 items aimed at understanding the attitudes of community residents towards tourism development, their livelihood situations, and their satisfaction with life. Residents' perceptions of tourism impacts were assessed using the Likert five-point scale (1=Strongly Disagree, 2=Disagree, 3=Neutral/No Opinion, 4=Agree, 5=Strongly Agree). During the distribution of questionnaires, residents were encouraged to fill them out independently. For those facing difficulties, surveyors provided assistance through guided interviews to facilitate questionnaire completion.

1.1 Residents demographic information

Among the 182 valid questionnaires collected, the gender distribution is relatively balanced, with 78 males accounting for 42.9% and 103 females accounting for 56.6%. Age distribution is mostly between 15 and 60 years old, with the highest proportion (57.7%) in the age group of 25-44 years. Occupation distribution in this sample is primarily composed of service workers, with 56 individuals accounting for 30.9%. Following that are self-employed individuals and government or public institution employees, accounting for 27.1% and 13.3% respectively. Educational level distribution mostly ranges from junior high school to university or college, with 169 sample accounting for 95.0%. Among the sample, a total of 147 own a car, accounting for 86.0%. Among those residents who own a car, the majority of their vehicles are fuel-powered, accounting for 74.7%.

1.2 Residents' Satisfaction with Tourism Development

According to Figure 2 and Figure 3, we identified 9 indicators with a mean perception score above 4.00, which include the economic aspects of "Tourism development has increased the economic income of local residents" (4.09), "Tourism has brought more employment opportunities to the area" (4.19), "Tourism development has promoted local economic growth" (4.21), "Tourism development has led to improvements in local infrastructure" (4.12), "Tourism has attracted more investment" (4.01), the social aspect of "Tourism development has enhanced the local area's reputation" (4.38), the cultural aspect of "Tourism has led to better protection and utilization of traditional culture" (4.02), "Tourism development has made local residents aware of the value of Huangshan's natural heritage" (4.19), and "Tourism development has fostered cultural exchanges between local and foreign communities" (4.20).

The three indicators with the lowest mean perception scores are the social aspect of "Tourism development has worsened local public security" (1.96), "Tourism development has led to a decline in local social morals" (2.13), and the environmental aspect of "Tourism has caused air pollution" (2.42).

Above three lowest mean perception indicators are negative and are lower than last year, indicating that residents' perception of the negative impacts of Huangshan's tourism development is not significant, suggesting that the tourism development in Huangshan is positive and sustainable.

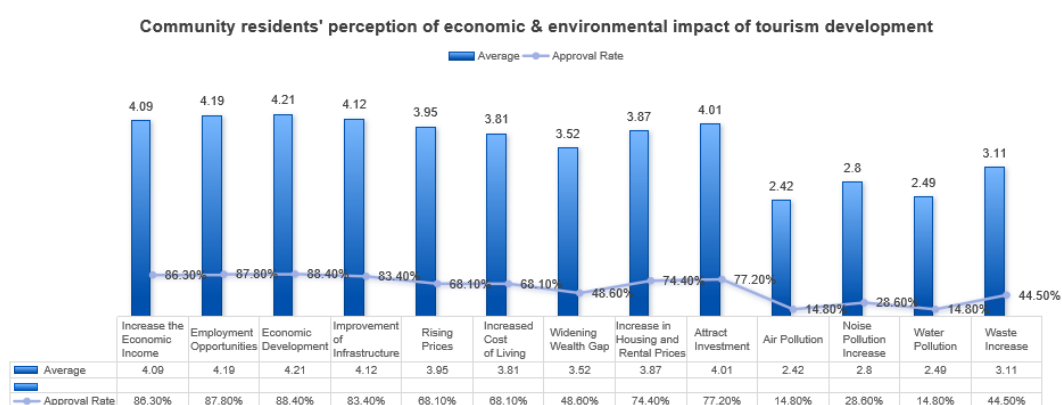


Figure 2: Community residents' perception of economic & environmental impact of tourism development

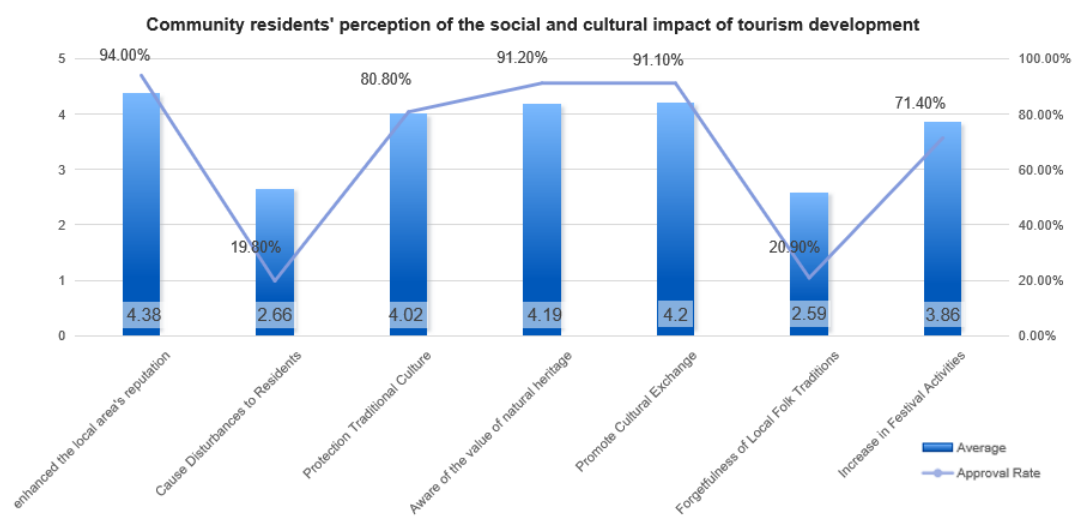


Figure 3: Community residents' perception of the social and cultural impact of tourism development



Destination

Economic Benefits

Over the past five years, the proportion of the tertiary industry has remained at a relatively high level, driving rapid economic development in Huangshan City. The tourism industry has strong interactivity and significant multiplier effects. Its development has played a crucial role in boosting the economic growth of Huangshan City. The tertiary industry, represented by tourism, has become the cornerstone of Huangshan's economic development.

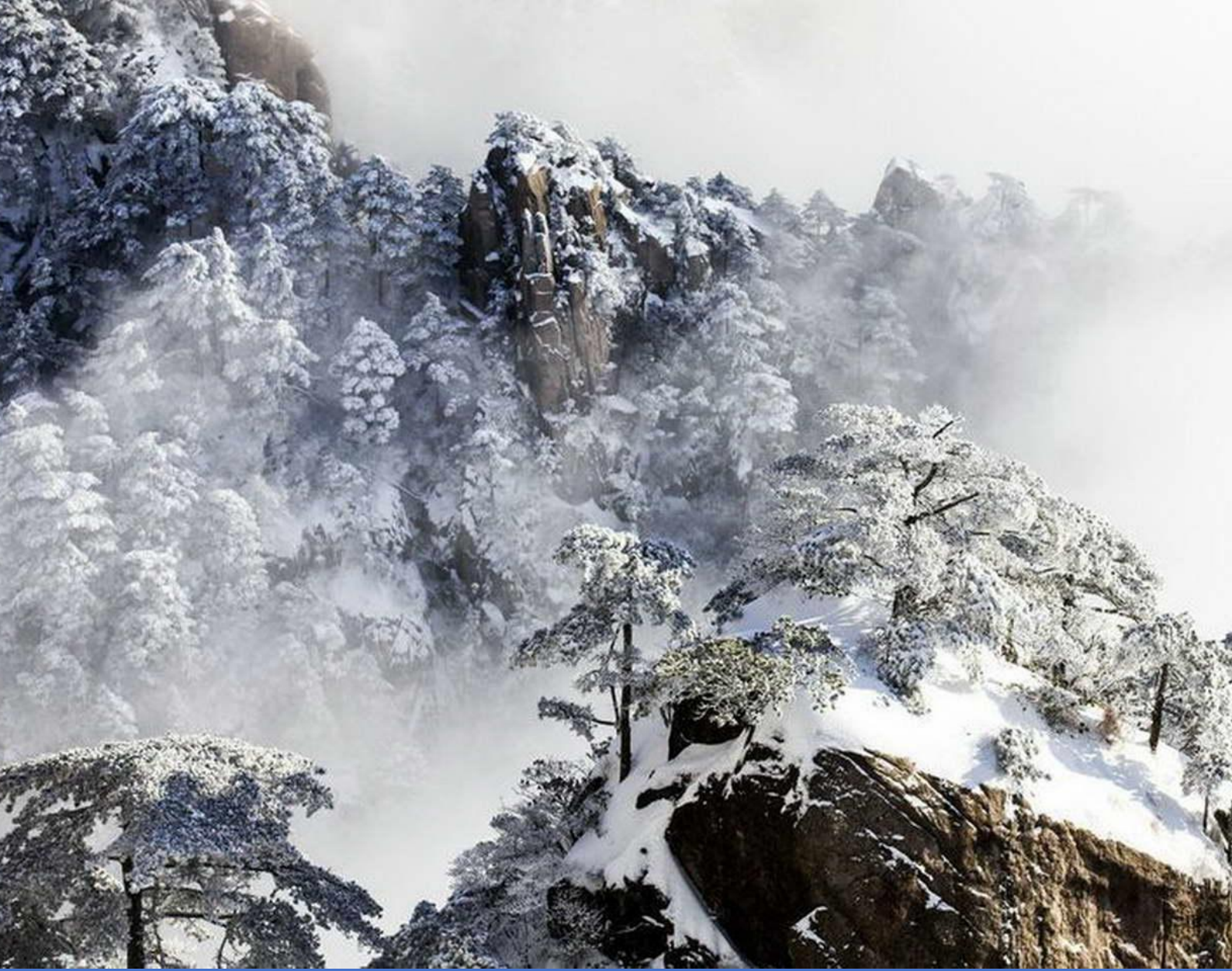


Employment

In Huangshan, tourism has been further consolidated as a pillar industry, with most residents perceiving its positive economic impact. The development of tourism in Huangshan has significantly promoted local economic growth, providing more employment opportunities and increasing the economic income of local residents. However, the extent to which residents benefit from the dividends of tourism remains limited, with overall satisfaction at a moderate level.

According to the data from this survey, in terms of positive economic impacts, the approval ratings for “Tourism development has increased the economic income of local residents,” “Tourism has brought more job opportunities to the local area,” “Tourism development has promoted local economic development,” and “Tourism development has improved local infrastructure” all exceed 80%, showing an increase compared to the previous year. The indicator with the lowest approval rating, “Tourism has attracted more investment,” is at 77.2%, which is close to 80% and has slightly improved from 74.6% last year. Field interviews and observations reveal that investment in tourism enterprises within the Huangshan buffer zone continues to grow, with villages and towns actively attracting external investment, indicating that the role of Huangshan tourism in attracting investment and promoting regional economic development is becoming increasingly evident.

In terms of negative economic impacts, the approval ratings for most indicators did not exceed 70% or hovered around 70%, suggesting that, overall, residents perceive the negative impacts of tourism development less strongly than the positive impacts, and that Huangshan has made some progress in mitigating these negative effects. However, all indicators show a relatively large standard deviation, which has increased compared to the previous year. This suggests significant differences in how residents perceive negative impacts and the extent to which they are affected. Of particular note is the indicator “Tourism development has led to an increase in local housing prices and rental levels,” which has the highest approval rating among negative impact indicators, at 74.4%, indicating that the issue of rising housing prices and rental levels due to tourism development in Huangshan is relatively prominent and warrants further attention and appropriate regulation in the future.



Tourism Seasonality

In 2023, Mount Huangshan Scenic Area will receive 4.5746 million tourists from home and abroad, 3.1777 million more than 1.3969 million in 2022, 227.48% more than the same period in 2019. The number of tourists in the first half year of 2024 increased by 30.7% compared to the same period in 2019. The number of tourists received and the growth rate have reached a new high, becoming the first year after the epidemic that the number of tourists received has exceeded 2019, reflecting the strong recovery of the cultural and tourism market.

The tourism industry in Mount Huangshan Scenic Area shows distinctive seasonal characteristics. The peak periods for tourist reception in 2023 are April, August, and October. The climate in Huangshan is pleasant in April, neither too hot like summer nor too cold like winter, making it ideal for outdoor activities. In August, during the summer holidays, a large number of students and family groups, including study tours and family vacations, visited Huangshan. Their enthusiasm for travel was high. However, in September, when students returned to school, there was a significant decline in the number of tourists. The National Day holiday in October, lasting a full week, is one of the few extended holidays of the year.

In general, the Mount Huangshan Scenic Area experiences obvious seasonal fluctuations in tourism. The peak periods occur during long holidays, with different tourist groups at each smaller peak. At the same time, the impact of the pandemic-induced decline in tourist numbers has gradually diminished, and people's willingness to travel has significantly increased, leading to a notable rebound in tourist arrivals.



Energy Management

5.1 Clean Energy Resources

1. Hydropower Energy: Huangshan City is rich in hydropower resources, with an annual electricity generation capacity of up to 1.554 billion kilowatt-hours.
2. Solar Energy: Most areas in Huangshan City have an annual total solar radiation of between 5000 and 5500 MJ/m², which is very suitable for solar energy development.
3. Wind Energy: Huangshan City has good wind energy resources, especially in Xiuning County and Qimen County. Currently, a wind farm with an installed capacity of 49,500 kilowatts has been built and put into operation.
4. Biomass Energy: Crop residues in Huangshan City, such as rice, corn, and tea, can be converted into industrial granular fuels, charcoal, biomass power generation fuels, or biomass gas.

5.2 Energy Cooperation and Consumption

1. In 2023, Huangshan City actively participated in clean energy cooperation with neighboring countries, focusing on promoting the construction of cross-border clean energy bases and enhancing the level of international cooperation in the energy sector.
2. In 2023, the total energy consumption of Huangshan City reached 168 million tons of standard coal, a year-on-year increase of 7.8%.

5.3 Energy Development in 2023 and the First Half of 2024

1. In 2023, Huangshan City formulated and implemented the "Huangshan City Zero Carbon (Near Zero Carbon) Pilot Construction Implementation Plan", aiming to improve the city's green and low-carbon development level, and planning to double the scale of photovoltaic and wind power installation in the city by 2026 compared to 2023.
2. In the first half of 2024, Huangshan City continued to increase the development of clean energy, with a steady growth in the scale of wind power and photovoltaic installation. The Huangshan Supply and Marketing Group successfully launched a 153.5 megawatt wind power project, which is an important progress in the exploration of green, low-carbon, and high-quality development model in Huangshan City.

5.4 Energy Development Plan

1. Huangshan City has formulated the "Huangshan New Energy Development Three-Year Action Plan" to promote the large-scale development of renewable energy such as photovoltaics and biomass.
2. Huangshan City has formulated the "Huangshan City 14th Five-Year Energy Development Plan", aiming to promote energy transformation and reform, and build a clean, low-carbon, safe, and efficient modern energy system.
3. The Huangshan City Committee and the Municipal Government have issued the "Implementation Opinions on Fully, Accurately, and Comprehensively Implementing the New Development Concept for Carbon Peaking and Carbon Neutrality", which clarifies the objectives and measures for carbon peaking and carbon neutrality work.

The implementation of these measures and projects marks significant progress made by Huangshan City in the development of clean energy resources and green low-carbon development, making an important contribution to achieving sustainable development goals.



Water Management

The main rivers in Huangshan City include the Xin'an River, Chang River, Qingyi River, and Le'an River. In 2023, the total annual water consumption in Huangshan City reached 547.51 million cubic meters.

By 2025, Huangshan City aims to achieve the following goals.

Strengthening Water and Drought Disaster Prevention:

- Conduct comprehensive inspections of water conservation projects such as rivers, reservoirs, and facilities for monitoring and early warning of mountain flood disasters.
- Improve the grid division of mountain flood disaster prevention and ensure responsibilities are effectively implemented.
- Review and refine emergency response plans and conduct targeted training exercises.
- Strengthen cooperation with meteorological, hydrological, and major communication departments to ensure timely release of warning information.
- Use scientific management of water conservation projects to optimize the function of reservoirs for flood control, drought resistance, and water supply.
- Actively apply for and implement flood control projects for mountain torrents and gully areas.

Promoting Water Infrastructure Development:

- Carefully plan and implement key water conservation projects.
- Plan scientifically for the construction of the modern water network in Huangshan City, continuously improving the city's water network system.
- In 2024, construction will begin on five small and medium-sized river management projects, including river dredging, slope and bank protection reinforcement, and new flood control channels.
- Implement the funds for the continuation and modernization projects of the Fengle Irrigation District in 2024.

Enhancing the River and Lake Chief System:

- Strengthen cross-regional planning for rivers and lakes, with the goal of building "Happy Rivers and Lakes" throughout the entire river basin.
- Establish and improve information sharing mechanisms for cross-border rivers and lakes, coordinating upstream and downstream management.
- Promote river and lake chief work in schools, communities, and grassroots levels

to foster a culture of water protection and create a positive atmosphere for river protection.

Strengthening Water Support for Rural Revitalization:

- Ensure the continuous provision of 24-hour water supply in rural areas.
- Strengthen the standardized, normalized, and professional management of rural water supply projects, and establish standardization for three large-scale water plants, including the Hongcun Water Plant.
- Continue promoting county-level unified management of rural water supply projects, aiming for unified management, operation, and maintenance.
- Strengthen water source protection, strictly adhering to purification and disinfection measures, and enhance the monitoring and testing of water quality at the source, plant, and terminal.
- Improve the mechanism for identifying and addressing rural drinking water issues, ensuring timely response to public demands and achieving dynamic resolution of problems.

Strengthening Water Resource Management and Ecological Governance:

- Implement the strictest water resource management system, achieving dual control over the total annual water consumption and intensity.
- Enhance water intake management and complete the construction of standardized water resource management systems at district and county levels.
- Strengthen water resource protection, improve the guarantee of ecological water flow, and enhance water resource scheduling.
- Deepen the reform of the water rights system and explore multiple forms of water rights trading.
- Implement national water-saving initiatives, establish water-saving industrial parks, enterprises, irrigation districts, and water-saving education bases, and strive to improve the utilization rate of unconventional water resources.
- Collaborate with the Provincial Water Resources Department to carry out spatial control for key areas of national soil erosion prevention and control.



Waste Water Management

In 2024, the overall water quality of Huangshan City remains relatively good. Compared with 2023, the water quality has stayed consistent. The surface water compliance rate and the compliance rate of drinking water sources have both reached 100%, with stable water quality achieving or exceeding Grade III standards.

In 2024, Huangshan City advanced the upgrading of sewage treatment facilities in 10 township locations and completed the comprehensive improvement of sewage treatment in administrative villages. Additionally, Huangshan strengthened the supervision of rural domestic sewage treatment facilities. Concurrently, a comprehensive inspection and rectification of sewage treatment facilities was carried out throughout the district, along with an investigation of sewage discharge outlets into rivers and lakes. The city also enhanced protection measures for drinking water sources and increased patrols in protected areas.

7.1 Surface Water Quality Situation

In 2024, the surface water quality in Huangshan City remains excellent, with 100% of the sections meeting Class I to III water quality standards, showing no significant change from the previous year.

7.2 Centralized Drinking Water Source Quality Situation

In 2024, all centralized drinking water sources in urban and rural areas of Huangshan City met the required standards for drinking water quality, with a 100% compliance rate. The water quality of each source was classified as excellent. The city continues to make efforts to monitor water quality at urban faucets, with a comprehensive compliance rate of 100%.



Solid Waste Management

In 2023, Huangshan City adhered to the concept of "Lucid waters and lush mountains are invaluable assets" and enhanced its waste management capabilities. Key activities included the formulation and release of the "Fourteenth Five-Year Plan for Ecological Environmental Protection in Huangshan City." This plan outlined the current trends and issues in waste management within the city, identified future challenges, and set detailed target indicators and planning visions.

At the same time, to improve the control and prevention of hazardous waste pollution, Huangshan also formulated and released the "2024 Work Plan for the Standardized Environmental Management Assessment of Hazardous Waste." This plan detailed the evaluation indicators and methods for the standardized management of hazardous waste, providing a comprehensive roadmap for the future development of sustainable hazardous waste management. Moving forward, Huangshan aims to actively promote waste pollution control initiatives and improve the waste management supervision system.

8.1 Industrial Solid Waste

In 2023, the amount of industrial solid waste produced in Huangshan City reached 215,800 tons. Of this, 181,800 tons were comprehensively utilized, achieving a utilization rate of 84.24%. The top three types of industrial solid waste were slag, tailings, and sludge. These industrial wastes were primarily used in the production of building materials. The total disposal volume was 34,100 tons, with a disposal rate of 15.8%, mainly through incineration.

By the end of 2023, the top three industries contributing to the production of general industrial solid waste were the power and heat production sector, chemical raw materials and chemical products manufacturing sector, and the non-ferrous metal mining sector.

8.2 Agricultural Solid Waste

In 2023, the statistics for agricultural solid waste in Huangshan City are as follows:

- **Straw:** Crop straw production amounted to 389,100 tons, with 306,400 tons being recoverable. Of this, 289,200 tons were utilized, achieving a utilization rate of 94.4%. A total of 82 units in Huangshan are engaged in crop straw utilization activities, with an annual straw utilization capacity of 158,100 tons.
- **Livestock and poultry manure:** The total production of livestock and poultry manure was 1.9 million tons, with 1.76 million tons being utilized, leading to a comprehensive utilization rate of 92.6%. There are 290 livestock and poultry farms in Huangshan City involved in manure treatment activities, with an annual treatment capacity of 2 million tons.
- **Agricultural plastic film:** The total recycling volume of waste agricultural plastic film was 1,161 tons, with a recovery rate of 83.5%.
- **Pesticide packaging waste:** The total recycling volume was approximately 120 tons, with a recovery rate of 90%. The disposal volume was 112.7 tons, with the main disposal method being harmless incineration.

8.3 Household Solid Waste

In 2023, the total amount of domestic waste generated in urban and rural areas of Huangshan City was 346,200 tons, all of which underwent harmless treatment. By the end of 2023, six domestic waste treatment facilities had been built in Huangshan City, including one incineration power plant and five landfills, with a total treatment capacity of 699,000 tons per year. Additionally, Huangshan achieved "zero landfill" for raw domestic waste in both urban and rural areas. The total volume of construction waste cleared was 372,800 tons, with a resource utilization rate of 100%.

By the end of 2023, the transportation volume of kitchen waste in Huangshan City reached 31,000 tons, all of which were utilized and treated harmlessly. The total volume of other waste removal was 346,200 tons, all of which were utilized and treated harmlessly, achieving a 100% harmless treatment rate. Furthermore, the coverage rate of urban solid waste classification reached 90.03%.

8.4 Hazardous Waste

In 2023, the total production volume of hazardous waste in Huangshan City was

29,980 tons, with a utilization volume of 4,480 tons, yielding a utilization rate of 14.8%. The disposal volume reached 25,660 tons, with a disposal rate of 85%. The storage volume was 1,200 tons (with a remaining volume of 1,400 tons in 2022). Additionally, 43,800 tons of hazardous waste were transferred under joint orders, with 50 tons transferred in and 14,400 tons transferred out.

By the end of 2023, the total production volume of medical waste in Huangshan City was 1,434 tons, and the disposal volume was 1,449 tons, all of which were safely disposed of, achieving a harmless disposal rate of 100%.^B

In 2023, one unit in Huangshan City was engaged in hazardous waste disposal activities, while five hazardous waste (including medical waste) license holders were approved for collection, utilization, disposal, and storage activities, with a total annual capacity of 44,450 tons. The actual amount collected, utilized, disposed of, and stored was 4,533 tons. By the end of 2023, Huangshan City had issued one hazardous waste license for the disposal of medical waste, with an approved disposal capacity of 1,050 tons per year and an actual disposal volume of 1,400 tons.



Governance

Huangshan Mountain is one of China's most famous tourist destinations, known for its unique natural landscapes and rich cultural history. It is one of China's top ten famous mountains and a UNESCO World Cultural and Natural Heritage site, attracting tourists from all over the world. In addition to its renowned wonders such as strange pines, unusual rock formations, seas of clouds, sunrises, and winter snow, Huangshan Mountain also offers tourists a cultural feast with its unique flora and fauna. As tourism continues to develop, Huangshan Mountain has been actively improving laws and regulations related to tourism and regularly holds seminars on tourism development.

9.1 New Legislation

On September 26, 2023, to further integrate culture and tourism, promote the transformation and upgrading of the cultural and tourism industries, and strengthen the city's position as a major cultural and tourism hub, Huangshan City introduced the "Opinions on Deepening Cultural and Tourism Integration to Build a World-Class Leisure and Vacation Tourism Destination in Huangshan." This document, comprising 23 key tasks, includes policy support and leadership mechanisms to safeguard the legal rights of tourism enterprises and consumers. Notable initiatives include using platforms like "double random, one open" and "Internet + Supervision" to enhance oversight of new tourism models and improve the credit supervision system of the tourism market. On April 8, 2024, based on field investigations and extensive consultations, the Standing Committee of the Huangshan Municipal People's Congress enacted the "Regulations on the Promotion and Management of Homestays in Huangshan," which safeguard the legal rights of homestay operators and consumers and promote the development of tourism in Huangshan.

9.2 Workshops

On August 30, 2024, the Huangshan Scenic Area Management Committee held a training session for managers and cadres. During the training, Professor Ye Jianren, a renowned scholar in national forest protection and the chief expert on pine protection in Huangshan, gave a special lecture on "Pine Wilt Disease Prevention and Control." Professor Ye systematically discussed the distribution and transmission routes of pine wilt disease worldwide, the history and current status of its occurrence in China, and the overall situation of prevention and control efforts in the country. He covered key

prevention and control techniques such as quarantine, monitoring, pest control, and early diagnosis and treatment, and shared successful case studies and important lessons learned. The lecture was highly relevant to the situation in Huangshan Scenic Area, providing clear, targeted guidance for the prevention and control of pine wilt disease.

To further improve the capabilities of cultural and tourism professionals and support the development of world-class leisure and wellness tourism destinations, the Huangshan Scenic Area Management Committee collaborated with Sun Yat-sen University's School of Tourism to organize a training course from June 25 to 28, 2024. The course was attended by 50 outstanding young cadres and professionals from various departments of the Management Committee, group companies, and joint-stock companies.

The training program included six specialized lectures, one on-site teaching session, one group discussion, and one sharing session. It focused on cutting-edge topics such as consumer transformation, changes in the cultural and tourism markets, the construction of cultural and wellness tourism destinations, innovative management and product development, tourist experience and service management, and the use of big data and tourism statistics. The training combined theoretical insights with practical case studies, immersive experiences such as visits to leisure tourism destinations like Xingledu Camping Town, and brainstorming sessions on future industry prospects. Participants praised the training for its fast pace, practical content, and strong relevance to their work. Many expressed their intention to apply what they learned to their roles in tourism development and management, contributing to the construction of the Huangshan tourism industry.

During the training, the Political Department of the Huangshan Scenic Area Management Committee and the leadership of Sun Yat-sen University's School of Tourism held discussions on deepening cooperation. They noted that since 2011, the joint establishment of the UNWTO Tourism Sustainable Development Observatory in Huangshan has yielded significant achievements, enhancing the brand influence of the "famous school + famous mountain" collaboration. As tourism has become a strategic pillar industry with notable contemporary characteristics, it has imposed higher demands on renowned scenic spots and top-tier tourism education and research institutions. Both sides emphasized the need to maintain real-time insights into the development directions of the cultural and tourism industries, to be bold and

innovative in frontline work, and to contribute to continuously advancing the tourism sector.



Climate Action

Huangshan, recognized as a World Cultural and Natural Heritage site and a World Geological Park, is famous for its four unique features: pine trees, rock formations, seas of clouds, and hot springs. These natural features contribute to its high ecological and tourism value. In recent years, Huangshan has taken significant steps toward ecological protection and development.

As summer tourism continues to rise, Huangshan Scenic Area has experienced a surge in visitors drawn to its summer charm. However, the area also faces challenges. On June 19, heavy rainfall caused floods, waterlogging, landslides, fallen trees, and road closures, leading to traffic disruptions and the temporary closure of several scenic spots. In response, Huangshan's public security agencies swiftly launched rescue operations, handling 1,089 incidents related to the storm.

Additionally, Huangshan has actively promoted cultural activities. On July 30, the city hosted the “New Integration of Culture and Tourism: A New Chapter for Huangshan” media event, where reporters were invited to explore Huangshan's ongoing efforts in cultural-tourism integration and high-quality development. Looking ahead, Huangshan will continue to explore new strategies in ecological protection, tourism development, and economic growth. The city will strive to fully leverage its advantages, meet various challenges, and achieve sustainable development, thereby ensuring that this brilliant “pearl” shines even brighter in the new era. Furthermore, Huangshan is committed to addressing global challenges such as climate change, contributing to the protection of our shared planet.

10.1 Goals

Huangshan has outlined a series of development goals and measures, including building high-end service clusters around leisure, creative economy, sports events, medical wellness, and convention industries, while enhancing integration with the Yangtze River Delta region. Huangshan has also drawn on the experience of other national scenic spots like West Lake to actively participate in cultural-tourism industry collaborations within the Yangtze River Delta. In coordination with the deepening of the Quzhou-Huangshan-Nanrao "Alliance Garden" collaborative initiative, we will participate in building the most beautiful backyard of the Yangtze River Delta and a premier destination for wellness and vacation. Additionally, Huangshan is focusing on revitalizing rural tourism resources to develop short trips, micro-vacations, and other new tourism models.

Cultural preservation is also a key focus for Huangshan. This year, the city will conduct a cultural resources survey, restore stone inscriptions and steles in the hot spring area, renovate Guanpu Tower, and implement the three-year Cultural Heritage Protection Plan. This plan includes building a cultural heritage identification system, creating the Ciguang Academy, mapping immovable cultural relics, and compiling cultural trails. In terms of infrastructure, the lower section of the Yungu Cableway will be completed, the Taiping Cableway safety upgrade will begin, and the renovation of the South Gate visitor center and Guangmingding Square will be launched. Huangshan will also upgrade several hiking trails and accelerate the construction of projects like Xixinan and Yimei Town.

To improve tourism service quality, Huangshan has established a visitor-centered tourism service evaluation system, launched a "Strange Visitor Plan," and conducted visitor satisfaction surveys followed by corrective measures. Additionally, comprehensive tourism market supervision will be strengthened, addressing issues such as parking fees and online reservation cancellations. In ecological protection, Huangshan adheres to strict ecological red lines, prioritizes the protection of key ecological spaces, and promotes joint ecological protection with neighboring areas. The city also strengthens the spatial management of key river basins like the Xin'an River and enhances the governance of natural reserves and water sources.

According to the "Huangshan Land and Space Development Plan (2021-2035)," by 2035, Huangshan City will establish a new land use and protection framework characterized by strong foundational principles, beautiful ecology, integrated urban-rural development, and top-tier quality. This framework will provide a solid foundation for building Huangshan into a world-class leisure, vacation, and wellness tourism destination, a modern regional hub, and for creating the picturesque landscapes of "Rainy Huizhou," "Pastoral Huizhou," and "Village Huizhou." The plan also sets specific targets for the retention of cultivated land, the area of ecological red lines, and urban development boundaries. It outlines a comprehensive spatial layout of the city, consisting of "one screen, one belt, one group, and three zones."

In summary, Huangshan is making continuous efforts toward becoming a world-class leisure and wellness destination. While preserving its ecological and cultural heritage, the city is advancing economic development and social progress, thus enhancing its overall competitiveness and attractiveness.

10.2 Action Plan

Huangshan focuses on developing tourism and related services, with an emphasis on ecological tourism and cultural experiences. The city also promotes the modernization of traditional industries like green agriculture and local handicrafts. Huangshan aims to build an industrial structure centered around the scenic area, with integrated development of rural tourism and wellness. The goal is to establish a modern industrial system that enhances enterprise development, promotes industrial clustering, and boosts economic quality and competitiveness to push the industry to a higher stage.

Huangshan also prioritizes the intelligent upgrade of tourism facilities by leveraging new technologies to improve management and service quality in scenic areas. In agriculture, Huangshan is promoting green farming and livestock practices to reduce resource consumption and environmental pollution. The city also encourages the development of distinctive agricultural product processing industries by adopting energy-efficient and environmentally friendly production processes.

Huangshan is cultivating a cultural and creative industry by developing tourism products and souvenirs with local characteristics. The city is also expanding its wellness tourism sector by creating an integrated system of medical care, rehabilitation, and wellness services. Additionally, Huangshan is advancing the integration of the digital economy with traditional industries to increase the value-added output of these sectors. Efforts are being made to accelerate the green transformation of the tourism service industry, promote the deep integration of tourism with culture and sports, and combine modern services with local agriculture for projects such as sightseeing and farm experiences. Finally, the city is enhancing the use of digital technologies in the service industry to improve efficiency and service quality.



Accessibility

The construction of barrier-free facilities is a systematic project where each component requires coordinated planning and execution, making it highly challenging to ensure its effectiveness. As one of China's most famous tourist destinations, Huangshan Scenic Area attracts large numbers of visitors each year, including the elderly, the disabled, and other special groups. Huangshan Scenic Area recognizes the necessity of barrier-free facilities to improve the overall environment and enhance the visitor experience. To this end, the following measures have been taken:

- Deepening the construction of barrier-free scenic spots.
- Implementing and complying with the National Law on the Construction of a Barrier-Free Environment.
- Utilizing technology to improve the quality of tourism services.

In the scenic area, barrier-free ramps, toilets, crutches, wheelchairs, and other accessibility features have been installed in key locations. Additionally, improvements to tourist roads and the renovation of rest platforms have been accelerated, enhancing the overall accessibility for visitors.

Huangshan Scenic Area has also embraced technology to optimize its service processes. It has launched a "one-stop, one-click" service platform that offers 24/7 booking and consultation services and developed a mobile guide application to help visitors understand distances between scenic spots and access related information. The scenic area has also implemented intelligent systems, such as a real-name, time-sharing ticket booking system, earning it recognition as a national smart tourism scenic spot. These technological advancements have enhanced the tourist experience, indirectly benefiting all visitors, including those with disabilities.

In addition, Huangshan Scenic Area regularly conducts volunteer services, advocating for civilized tourism and providing assistance to tourists, including those with special needs.

Despite these efforts, the barrier-free construction in Huangshan Scenic Area still faces some challenges. Some may not meet construction standards, and maintenance is sometimes inadequate. Therefore, there is a need to strengthen supervision and maintenance management. Additionally, the barrier-free infrastructure across different areas of the scenic spot is uneven, requiring further attention and timely solutions.

Conclusions and Suggestions

Based on data collection and research analysis related to tourism and environmental protection, the economic impact of tourism, local residents' views and attitudes, as well as tourist behavior and satisfaction, the following three conclusions were drawn from this monitoring. These conclusions highlight both commendable aspects and areas in need of improvement and provide corresponding recommendations for the identified shortcomings.

Environmental Sustainability

Despite the Huangshan City government's ongoing efforts to continuously improve public services and sanitary conditions, and the implementation of numerous measures, waste management within the Huangshan Scenic Area is still seeking more effective solutions. The survey revealed that many tourists lack a deep understanding of the importance of the "waste down the mountain" initiative. The scenic area could consider optimizing incentive mechanisms to educate tourists about environmentally responsible behavior. Waste management activities could be designed to be more engaging and integrated with the overall tourism experience, such as through eco-friendly check-in activities, team competitions, and other interactive initiatives.

Economic Sustainability

In 2023, the Huangshan Scenic Area reached new highs in both visitor numbers and growth rate, marking the first year since the pandemic when tourist arrivals exceeded those of 2019, reflecting a strong recovery in the cultural and tourism market. During this year, tourism in the five towns within the monitoring area recovered and developed. However, it is important to note that the issue of "tourism development driving up local housing and rental prices" received the highest level of agreement among all negative impact indicators in the residents' surveys. This indicates that the rise in housing and rental prices due to tourism development is a relatively prominent issue. It suggests that local governments, while promoting tourism development, should also take into account the housing and rental needs of local residents, as well as the rationality of commercial rental prices for tourism. More attention should be paid to market rents, with appropriate regulatory measures implemented.

At the same time, the seasonality of tourist numbers in Huangshan remains quite

pronounced. The local area should consider strategically developing off-season attractions to diversify the regional tourism offerings. Furthermore, the new operation of the Huangshan Cable Car in Tanjiqiao Town in 2025 will present both opportunities and challenges for the tourism supply in the five nearby towns. Different towns can consider leveraging local advantages to focus on different aspects of the "eat, stay, travel, play, and shop" experience, thereby further improving tourism service quality.

Social Sustainability

Based on their own resource endowments, the five towns are currently promoting the integration of tourism with other industries and steadily advancing the construction of key tourism projects. Residents increasingly agree that tourism development has led to the increase of festive activities and enriched their lives, indicating that the various activities organized in multiple towns not only benefit tourism development but also contribute to the construction of community spiritual civilization. However, 20.9% of residents believe that tourism development has caused the destruction and fading of Huangshan's traditional culture and customs. The approval rate for this negative impact indicator has slightly increased compared to the previous year, suggesting that Huangshan still needs to strengthen its efforts in exploring, preserving, and utilizing local cultural elements and traditional culture in the course of tourism development.



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