

Analysis of Satisfaction with Ecological Restoration and Human Settlement Environment based on Urban-Rural Integration

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Abstract: More and more people have been realizing the importance of ecological environment construction, which not only ensures people's health but also plays an important role in promoting the economy and society. County-level space is a current and long-term development focus in China, and improving the ecological environment to promote urban-rural integration and high-quality development is an effective way. Adhering to a people-centered approach and understanding the feelings and opinions of local residents can effectively guide urban and rural planning. This study investigated the residents of the Shichuan River Ecological Area in Fuping through field research and questionnaire interviews. The results indicate that the research area can attract tourists from the entire county and even other places. The initial promotion and publicity play an important role in project construction. The vast majority are satisfied with the current ecological environment construction, but there is still room for improvement in supporting facilities and supplementing urban functions.

Keywords: Urban-rural integration; Ecological restoration; Human settle environment; Urban park.

1. Introduction

The use of land in the edge areas of county-level urban areas is arbitrary, variable, and spontaneous, with various types of land use forms overlapping and intertwined. The boundary between urban and rural layout land types is blurred, and residential land, commercial land, industrial land, rivers, green spaces, etc. are intertwined, lacking unified planning [1-2]. The environment in the construction area of the county town is relatively dirty and disorderly, the layout of urban roads is unreasonable, and there is a serious lack of greenery. In the process of rapid urbanization, people have not paid enough attention to the environmental value of ecological corridors such as rivers and green spaces, and the phenomenon of river abandonment and encroachment is common. The natural environment and urban environment are in a long-term state of separation and opposition. At present, the construction of ecological new areas in the edge areas of small towns is still in a long-term blank stage [3].

The Shichuan River Basin comprehensive improvement project is located at the southern gateway of Fuping County, on both sides of the Jinlong bridge, in the transitional zone between urban and rural areas. It not only provides support for urban functions but also infiltrates ecological resources. The land use type is gradually shifting from construction land to agricultural land, belonging to the urban fringe area. The project area is a transitional area between the contiguous small town built-up area and the pure agricultural hinterland, influenced by both urban and rural development forces. The rural settlements in urban fringe areas have gradually shifted from agricultural production and residential functions to multiple composite functions such as production, processing, commerce, agricultural experience, ecological conservation, sightseeing and leisure, recuperation and vacation, and

second residences for citizens [4]. The situation of villagers working part-time is obvious, and their income has increased. However, at the same time, there are also many problems such as disorderly and scattered development of villages, scattered overall spatial layout, poor ecological environment quality, low land efficiency, weak infrastructure with mixed population, chaotic rural landscapes, and the disappearance of traditional rural culture. Before the project was launched, the Shichuan River Basin had already experienced flow interruption, exposed riverbed, and overgrown rocks and weeds, even becoming a site for garbage disposal in the surrounding area. The Shichuan River Basin has not only not become a continuation of urban functions, but also a natural barrier between urban and rural landscapes. The harsh ecological environment has also been criticized by surrounding villagers, hindering the development of local economy.

2. Research Area

The Shichuan River is a first-class tributary of the Wei River, with a drainage area of 4478 km² and a length of 137 km. It flows through Fuping County for a length of 36.4 km and runs in a northwest to southeast direction. The comprehensive improvement project of the Shichuan River (Fuping section) has a total length of about 5.2 km. The left bank of this section of the river is adjacent to a village, and many parts of the river channel have been damaged by illegal sand and stone excavation. There is also a lot of household waste, and various types of sewage from the village have flowed into the river, causing serious pollution to the river channel and overall poor environment. In addition, due to the lack of necessary rectification of the riverbank, bank collapse often occurs during floods, posing a threat to the lives and property safety of people on both sides. Shichuan River is an

important component of the green space system in Fuping County, with a complete ecosystem. It plays an irreplaceable role in protecting biodiversity, maintaining natural ecological balance, and improving the ecological environment in Fuping County. However, the current construction land (especially village construction land) is infiltrating into ecological land such as farmland and scenic areas, greatly damaging the ecological conservation function of the planning area. A large number of debris and garbage seriously pollute rivers, vegetation and water bodies, and there is an urgent need for ecological protection in the planning area. In terms of urban and rural development, the Shichuan River Basin is the southern gateway of Fuping County, connecting Yanliang and the main urban area of Xi'an. Ecological protection construction and tourism development in the Shichuan River Basin are not only beneficial for alleviating the leisure and recreational needs of residents in the central urban area of Fuping County, but also for regulating urban and rural construction in the region and guiding the healthy development of the urban fringe.

In the Overall Urban Plan of Fuping County, it is planned that by 2030, the urban population in the central urban area of Fuping County will reach 0.3 million population. The river regulation project in the urban section of Shichuan River is closely linked to the urban planning of Fuping County, combined with local terrain conditions, fully utilizing the available water resources in the basin, and comprehensively constructing riverside parks to retain water surfaces, in order to improve the local microclimate, reduce dust, prevent soil

erosion, absorb carbon dioxide, and prevent soil erosion. After the implementation of this project, a water surface of 0.28 km² will be formed in the lake area, and the environment will be beautified through the construction of forest land and gardens in the waterfront park, thereby achieving green and ecological prosperity, and improving the urban quality of Fuping County.

3. Methodology

This study conducted a survey questionnaire on the current usage status of the Shichuan River Ecological Park from 18:00 to 20:00 on September 25th, November 23rd, November 24th, November 30th, and December 1st, targeting visitors within the park. The questionnaire collected and analyzed information on the current usage status of the park. During this period, the total number of people staying in the park was approximately 1850, and the number of respondents to the questionnaire survey was 1040, accounting for approximately 56% of the total number.

4. Results and Discussion

According to Figure 1, it can be seen that out of a total of 1040 respondents in this survey, the gender distribution is 550 males and 490 females. The number of males is slightly higher than females, with a difference of nearly 3%, which is basically the same as the male to female ratio of 103.33 (100 females) in Fuping County in 2017.

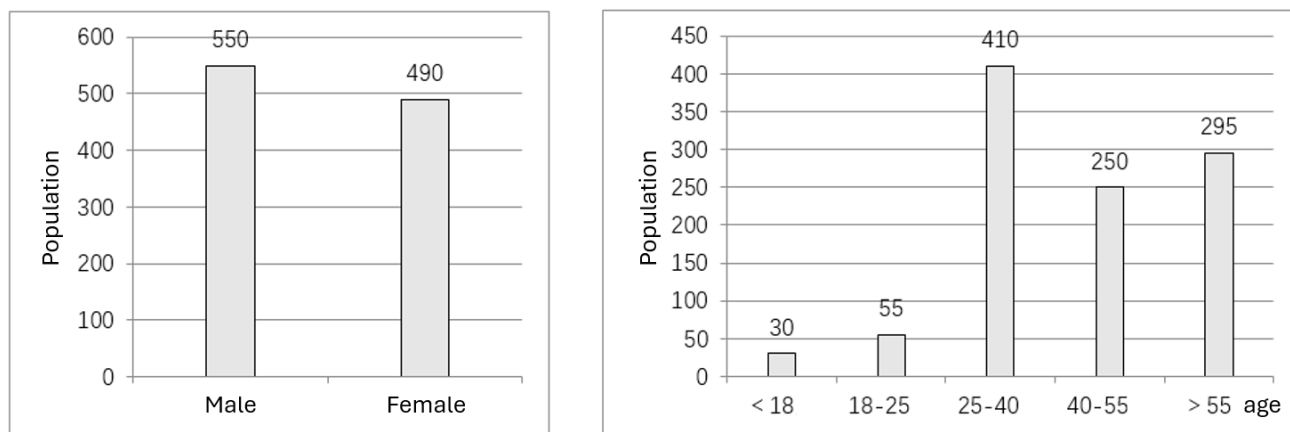


Figure 1. Gender and age distribution of respondents

According to the age distribution of the respondents, about 92% of them are over 25 years old. The age group with the highest number of people is 25 to 40 years old, with a total of 410 people, accounting for 39%. The second group is over 55 years old, with a total of 295 people, accounting for 28%. It can be seen that the main target audience of the park is adults aged 25 and above, especially young and elderly people.

74% of visitors come together, and 26% of visitors visit alone. The proportion of two people visiting at the same time is the highest, accounting for 31%, and another 20% are from four or more peers visiting. It can be seen that Ishikawa River Park, as a leisure space, provides a more suitable place for small-scale gathering activities between family and friends.

Figure 2 shows the residential locations of tourists visiting the Ishikawa River Ecological Park. As shown in the figure, 41% of the visitors are villagers living around the Shichuan River and residents of nearby communities (Zhuangyuan Mansion). Meanwhile, more than half of the residents (54%) come from other areas within Fuping County, and 5% of

visitors come from other cities and counties. So, the attraction range of the Ishikawa River Ecological Park is not only within the walking distance near the Ishikawa River, but also radiates to the overall Fuping County area and even the areas outside Fuping County.

Figure 3 shows the transportation methods used by tourists during their visits. Among them, 42% visited by walking, which is basically consistent with the 41% of villagers near the Shichuan River shown in the previous picture. Except for residents living nearby, the proportion of self-driving visits is the highest, accounting for 36%. Another 15% of visitors use bicycles and 6% of visitors use public transportation. At the same time, the supporting plan for Ishikawa River Park includes a parking lot. On the day of the investigation, there were 185 motor vehicles parked in the parking lot. Therefore, the planning and construction of the parking lot has played an important auxiliary role in the future development, influence enhancement and expansion of the radiation range of the Shichuan River Ecological Park.

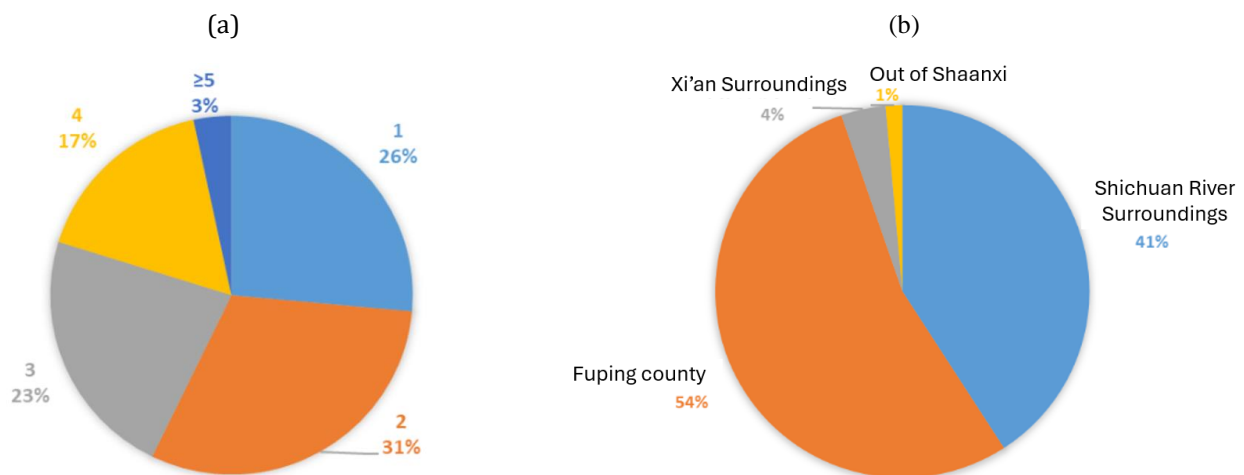


Figure 2. Number of respondents accompanying (a) and place of residence (b)

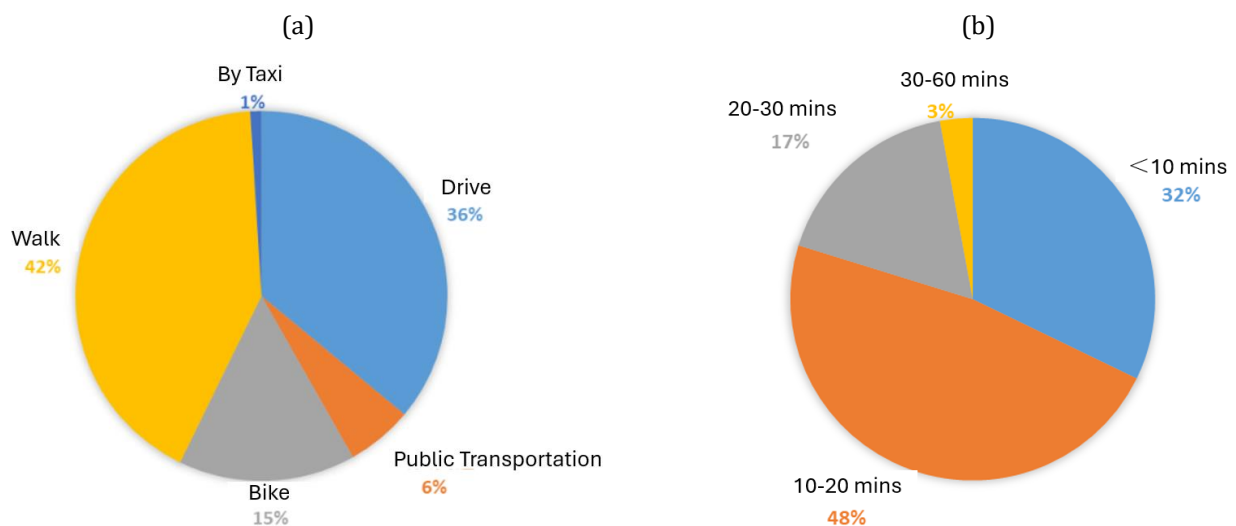


Figure 3. Transportation mode(a) and commuting time(b) to the ecological park

Regarding the transportation time spent by visitors visiting Shichuan River Park, the largest proportion is 10-20 minutes, accounting for 48%. The proportion of visitors who spend more than 20 minutes is a total of 20%. Considering a 36% self-driving to visit ratio, it can be seen that the Shichuan River Ecological Park has a certain attraction for residents living at a longer distance. By comparing the visiting purposes of visitors to the Shichuan River Ecological Park. More than half (52%) of the visitors take walks, 29% of the visitors aim for sports, and 17% of the visitors aim for dining. From this, it can be seen that the functions of the Shichuan River Ecological Park are becoming more complex and can meet the different needs of visitors. Moreover, sports facilities and catering facilities have strong functions and can provide corresponding services for a considerable number of people. At the same time, the commercial and catering facilities on the south bank of the Shichuan River have not yet been officially put into use, and the current catering facilities are still in the development stage. The Shichuan River basin has the potential to serve as a composite leisure area. 75% of visitors have been visiting since 2016 (the early stage of park construction). Another 4%, 12%, and 9% of visitors visited for the first time in 2017, 2018, and 2019, respectively. That is to say, the Shichuan River Ecological Park had a certain influence in the early stage of construction, and in the

following years, its influence continued to expand, and the expansion speed tended to be stable.

Approximately 60% of visitors reported visiting there every day. The leisure activities in Shichuan River Park have become an important part of daily life for this group of visitors. Another 27% of visitors stated that they visit 1-2 times a week and have developed a certain lifestyle habit. It can be seen that the functional role of the Shichuan River Ecological Park is a city functional space closely related to the daily activities of residents. It plays an important role in optimizing the entertainment and leisure environment of residents, and can directly affect the happiness and health of their lives. The vast majority of visitors believe that the park has reached a satisfactory level (82%). It can be seen that as the Shichuan River Ecological Park, which is still in the early stages of operation and the second phase of the project and the commercial street on the opposite bank have not yet been fully put into use, although there are constantly improving and continuing to be renovated spaces, it has still received high praise from park users and has well assumed the function of urban leisure and entertainment space.

5. Conclusion

Through investigation and analysis of the current usage

status of the Shichuan River Ecological Park, it can be seen that this park has played a supplementary role in urban leisure and entertainment space on a large scale, providing a comfortable space for frequent use in daily leisure and entertainment activities for citizens. As a fringe area of the city, the Shichuan River Ecological Park fully considers the design concept and methods for expanding the attractive radiation range. By increasing the complexity of the park's functions and planning for the use of transportation modes for long-distance visitors, it has attracted a large number of residents since the initial construction stage. Now, it has formed a stable number and mode of use, and has achieved the satisfaction of most visitors. In addition, through the renovation of the Shichuan River Basin and the construction of ecological parks, an impact has been formed on the daily living habits of residents on a large scale, playing an important role in improving the quality of living activities and the health of residents. It has achieved the development goal of people's happiness and health by building a complete public cultural service system.

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