Research Paper

Heritage, Heart, and Home — A Socio-Cultural and Emotional Approach to Urban Tree Trail Planning

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Abstract

Shichahai Subdistrict in Beijing, a historic area rich in cultural, commercial, residential, and tourism elements, is home to 55 cultural heritage sites and 403 ancient trees. Despite their significance, these trees have been largely overlooked, leading to diminished ecological heritage value and weakened community identity. This study investigates local residents' attitudes and willingness to participate in planning ancient tree trails, aiming to integrate these trails with daily activities and tourism routes.

Through literature analysis and GIS technology, the study assessed the distribution and health of ancient trees in Shichahai. A community participation survey yielded 264 responses and 25 interviews, revealing that residents recognize the ecological and cultural value of the trees and express strong support for their protection. However, they highlighted the need for education on sustainable practices.

The findings suggest four strategies for enhancing cultural heritage integration in urban planning: utilizing GIS for spatial optimization, considering diverse user needs, promoting community participation, and addressing cultural factors in design. This approach not only fosters a deeper connection between residents and their environment but also enhances community involvement in preserving their cultural heritage.

Keywords

Ancient Tree Protection, Community Participation, Cultural Heritage,Emotional Identification,Urban Planning

1. Introduction

As globalization sweeps across the globe, the significance of cultural heritage has become increasingly prominent (Francioni, 2015). Cultural heritage serves not only as a testament to history but also as a symbol of national identity and cultural diversity. However, the protection of cultural heritage faces unprecedented challenges worldwide (Sesana et al., 2021). From climate change to urbanization, and from natural disasters to human destruction, these precious historical legacies are under various degrees of threat. Protecting cultural heritage is not only a respect for the past but also a responsibility for the future (Macmillan et al., 2013).

Cultural heritage protection has been widely placed on the agenda, yet there remains a category of cultural heritage that is often overlooked: ancient trees (Townsend et al., 2018). These spot-like historical resources are not only material entities but also carriers of emotion and memory. They constitute unique historical and cultural landscapes in urban spaces, representing irreplaceable cultural heritage. However, they often lack the necessary attention and protection (Parikka, 2019). While the ecological importance of

dispersed trees in natural landscapes is well-recognized, their value in human-altered environments is frequently neglected (Manning et al., 2006).

2. Background and Literature Review

2.1. Current Status and Issues of Ancient Tree Protection

Ancient trees are a critical part of nature's web and a valuable cultural and social asset. These trees are vital homes for various animals, and they strengthen air purity. These enduring beings are strongly linked to local legacy, customs, and community identity, and they represent cultural heritage. In society, ancient trees offer shared spots for rest and social unity, although also encouraging environmental care and belonging.

The city is evolving rapidly and finance is also progressing, but the main issue is how to find a balance between the two, especially when it comes to protecting ancient trees. Urban expansion drives economic development but often threatens precious cultural heritage. Studies have demonstrated that many ancient trees are declining and at risk of removal because of urban development, pollution, and poor management (Zapponi et al., 2017). This means that cities need to be planned carefully to promote financial goals although preserving these cultural landmarks. Which include ancient tree protection into city renewal, travel, and community projects is vital. This aims to make answers that guard ancient trees and encourage community advancement and cultural travel. Innovative urban planning and community participation can help us superior understand and preserve the social and cultural value of ancient trees, which is very helpful for the sustainable development of cities.

Although several cities and communities have begun stressing the protection of ancient trees, many ideas and examples guide practice. For example, cities such as London, Tokyo, and Hangzhou have implemented ancient tree surveys and database construction, systematically managing and protecting ancient trees (Figure 1). These planning practices significantly preserve the ecological value of ancient trees. However, the socio-cultural value of ancient trees is often overlooked in urban planning (Blicharska et al., 2014), leading to neglect and destruction of the social and cultural significance of these "living relics." A lack of public participation and awareness is also a critical issue in ancient tree protection. Currently, the public's understanding of ancient tree protection is insufficient, resulting in low participation rates. Designing and implementing educational programs to raise public awareness and foster a sense of responsibility and initiative towards ancient tree protection through community engagement and interactive activities is vital for effective conservation.

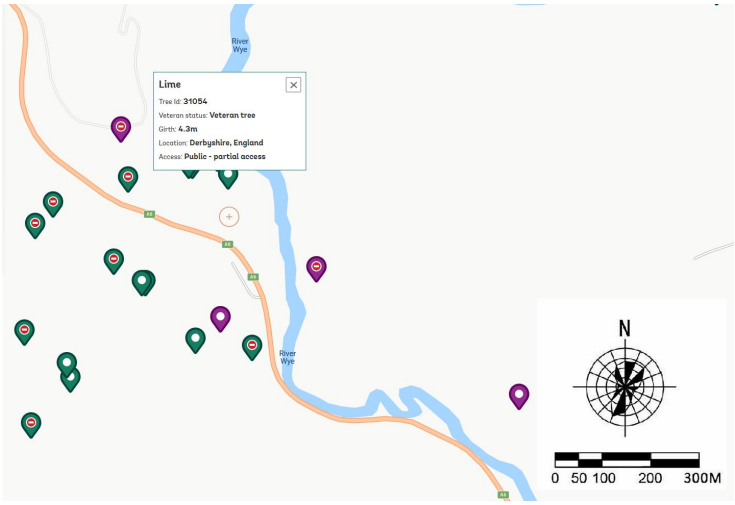

Figure 1.The ancient tree map of the UK marks the location of ancient trees, whether they are located in public areas, and supports individuals to upload unmarked ancient trees. Source: https://ati.woodlandtrust.org.uk/tree-search/?v=2729286&ml=map&z=13&nwLat=53.43607917273829&nwLng=-1.6566809167480834&seLat=53.32610782303615&seLng=-1.2834890832519896.

Another reason for ignoring ancient tree protection in city planning is the clash between economic advancement and cultural preservation, which links to the relationship between ancient trees and city growth. City growth is often fueled by economic advancement, but, this progress can come at the cost of ancient trees, which are invaluable cultural legacy (Butler et al., 2001). Ancient trees hold local historical and cultural worth and symbolize community identity and unity. Thus, city planning and building must find a way to encourage continued economic advancement although also protecting and respecting these precious cultural icons. This needs adding the protection and sensible use of ancient trees into city renewal, tourism advancement, and community building. The goal is a win-win plan that keeps ancient trees and drives community advancement and cultural tourism. Via creative city planning and community involvement, we can secure the socio-cultural worth of ancient trees is recognized, although adding to lasting city advancement.

Simply put, protecting ancient trees in modern cities is not only an ecological issue, but also involves challenges in social, cultural and economic development. In future research and practice, we need to pay more attention to these related aspects in order to develop a comprehensive protection strategy.

2.2. Theoretical Framework

Because there is no comprehensive theoretical framework to evaluate the socio-cultural value of ancient trees in urban ecosystems, this study constructed a framework that includes ecosystem services, long-term use, community participation, and cultural heritage. This structure highlights the importance of ancient trees in community assist, like cultural sharing, learning significance and visual value, and the critical role that groups play in preserving cultural heritage. Its goal is to offer a scientific basis for how to protect and utilize ancient trees in urban planning, so as to achieve a balance between protection and development.

2.2.1. Ecosystem Services

Natural services are the various direct and indirect benefits and functions that natural habitats bring to us humans. These perks fall into four main types: providing perks, which cover food and water supplies; controlling perks, such as weather control and water cleaning; cultural perks, which contain fun and

spiritual meanings; and supporting perks, involving soil creation and biodiversity upkeep (Holmgren et al., 2017). The nature services framework forms a scientific base for handling and saving natural supplies by judging perks systematically.

The framework is a total tool for assessing and planning the various values of ancient trees within urban areas. It mentions the main ecological roles of ancient trees, like absorbing carbon dioxide and producing oxygen, as well as providing broader socio-cultural benefits, like cultural sharing, educational significance and aesthetic value (Holmgren et al., 2017). Numerical checking of these perks' aids grasps ancient trees' impact on city habitats and community well-being, thus guiding fair saving and use plans in city planning.

Using the nature services framework needs an emphasis on the community-level perks of ancient trees. The value of these places lies not only in providing entertainment, learning opportunities and environmental beautification, but also in improving the quality of life and cultural identity of local people. These concrete data on benefits offer urban planners with a factual basis for finding a balance between urban expansion and preserving ancient trees.

2.2.2. Sustainable Utilization

Lasting frameworks help keep ancient trees by balancing current needs and future supply saving. In this framework, ancient trees are a total treasure of urban ecology, culture and economy, and they are very critical to the city's biodiversity and cultural history. The lasting use idea highlights the need to balance saving with social perks and future responsibilities (Guzmán et al., 2014).

The concept of sustainable use is to find a suitable balance between current needs and future savings. Ancient trees have great ecological, cultural and economic value and are an critical part of keeping urban biodiversity and cultural history (Pereira Roders and Van Oers, 2012). Non-use activities like nature travel and environmental learning can drive local economic growth and make people appreciate their value, thus rising people's awareness of savings.

Handling plans, such as visitor number limits and learning events, secure the long-term strength and survival of ancient trees, helping lasting supply use (Nocca et al., 2017). This combined method meets the needs of current society although protecting these precious natural and cultural treasures for future generations.

2.2.3. Community Participation and Cultural Heritage

The involvement of the community and the cultural historical framework highlight the importance of the community in preserving history (Guzmán et al., 2017). This idea suggests that cultural history maintaining goes beyond government and expert tasks, showing a shared community duty (Diego et al., 2020). Active community involvement raises the success of cultural history maintaining and sharing, especially for living landmarks such as ancient trees.

Ancient trees, as living signs of cultural and natural history, need full community joining for their maintaining. Via efforts to learn and share projects, we can help everyone superior understand the cultural importance of ancient trees and inspire community-led conservation actions (Bonnett et al., 2013).

2.2.4. Summary

Community forums, talks, and public presentations work well to boost resident involvement and responsibility. Use local knowledge and traditional approach to find new ways to protect ancient trees.

For instance, the 'Tree Exchange and Imprint' project in Jian'ge County shows how traditional cultural elements can successfully meet modern preservation needs. In this study, we elaborated a complete conceptual model specifically designed to address the various barriers to preserving old growth trees during urban development and economic advancement. This model combines three main concepts: ecosystem services, long-term use and public participation, and cultural heritage, to explain the protection of ancient trees from multiple perspectives. The concept of ecosystem services highlights the ecological, cultural and aesthetic value of ancient trees, making them particularly critical in urban planning. We have always adhered to the concept of sustainable development, make sure the rational growth of resources and protecting ancient trees to promote in conclusion advancement. At the same time, the idea of group participation emphasizes the importance of residents in protection and promotes everyone's sense of responsibility. Using this model, we can protect and pass on the valuable heritage of ancient trees, and also promote sustained community advancement so that people and nature can live in harmony (Roslan et al., 2021).

2.3. Context of the Project

In summary, this study focuses on Shichahai Subdistrict in Beijing, a historic place located in the northeastern part of Xicheng District, close to the imperial palace. This district is particularly notable because it combines cultural, commercial, residential and tourist elements. It has 55 cultural heritage sites and 403 ancient trees (see Figure 2), making it the largest and best-preserved historical district in Beijing's old city. The ancient trees, which are interspersed throughout the area's streets, alleys, communities, and landmarks, are emblematic of the collective identity of Beijing residents and serve as living repositories of the city's historical and cultural narratives.

Figure 2. Ancient trees in Shichahai, Beijing. Source: Author's own work.

While these ancient trees are critical, compared with famous cultural relics like Prince Gong's Mansion and Yinding Bridge, basically no one pays attention to them. Problems like missing records, outdated information or damaged identifying signs mean that even less is known about its ecological and cultural value. Therefore, if we do not pay attention to these trees, the result will be that they will be neglected, their value will be reduced, and the emotional connection between people will be weakened, which will threaten the inheritance of cultural heritage.

The study sought to understand how local residents feel about participating in the planning of ancient tree trails and their readiness to integrate these trees into daily activities, tourist routes and historical sites. The study aims to enhance community cohesion and actively participate in the protection of cultural heritage by stimulating everyone's interest in caring for trees and helping the public superior understand ecological knowledge. The results highlight the importance of combining scientific research and community engagement to protect the unique cultural landscape of Shichahai.

3. Research Methods

3.1. Research Design

This study used a mixed approach method to study the layout. First, we conducted a literature review and collected details from policy documents and planning texts related to ancient tree protection. Critical documents examined involve the "Control Detailed Planning of the Core Functional Area of the Capital," the "Beijing Land Use Master Plan 2006-2020," and the "Archives of Ancient Trees in Xicheng District, Beijing." Then, Geographic Information System (GIS) tech gathers and studies quantitative info, which include green space planning charts and remote sensing pictures of Shichahai Subdistrict, to grasp the spatial spread and health status of ancient trees. Semi-structured chats were used to collect several qualitative information, which helped us to gain a deeper understanding of local people's views and feelings on the protection of ancient trees. Merging both quantitative and qualitative studies, this research aims to explore thoroughly the emotional connection of Shichahai Subdistrict folks with ancient trees and its effect on cultural legacy protection.

3.2. Data Collection

This study began with an in-depth analysis of essential documents, which include the "Control Detailed Planning of the Core Functional Area of the Capital," the "Beijing Land Use Master Plan 2006-2020," and the "Archives of Ancient Trees in Xicheng District, Beijing." This analysis provides useful details on green space planning and the location of ancient trees in the Shichahai area. By examining the distribution and actual growing conditions of these trees, supplemented by information from on-site observations, we can gain a clearer picture of their current condition. To conduct a more in-depth study, we conducted a community engagement survey to understand local residents' thoughts and readiness for participating in the planning of ancient tree trails. Eight on-site surveys were done in Shichahai Subdistrict from November 2023 to March 2024. The research subjects are the people in Shichahai Subdistrict, especially those who have lived there for a long time and have deep feelings for the ancient trees. The selection criteria are based on how long people have stayed in the area and their knowledge of the ancient trees. We sent out a overall of 271 questionnaires and finally collected 264 valid ones. Based on the readiness shown in the surveys, 25 semi-structured chats were held in familiar places, such as streets or community spots, to ease open and honest talk. You can ask several leading questions during the conversation so that everyone can talk about their memories and experiences with ancient trees.

3.3. Data Analysis

3.3.1. Literature Analysis

The research performed a thorough examination of the critical papers mentioned above, uncovering the safeguarding status and planning needs for ancient trees within the existing policy setup. The information extracted from these documents mainly talks about the critical points of protection measures, planning objectives and development restrictions, especially those related to the ancient trees in Shichahai Subdistrict. This information gives the necessary background understanding and basic data to grasp the present condition and hurdles of ancient tree safeguarding at the policy level.

3.3.2. GIS Analysis

This study used geographic information system (GIS) technology to map and record the distribution of ancient trees in Shichahai Subdistrict. The study identified both tree groups and individual tree samples,

which helps us understand the density and distribution of ancient trees. Scientists utilized field evaluations and satellite pictures to evaluate ancient tree wellness by inspecting growth aspects and environmental hurdles. This method can thoroughly identify which examples require higher protection. This study is about the relationship between ancient trees and the plants around them. It looks at how the layout of green space affects the growth environment of trees. By linking the location of ancient trees to the spread of green space, scientists are learning about the influence of plant life on tree life. This geographical research assists urban gardening projects by making superior use of ancient trees and enhancing their aesthetic value in urban environments (Ye et al., 2019).

3.3.3. Questionnaire Data Processing

This study used SPSS statistical software to process and analyze the survey results. Preliminary data cleaning removed invalid answers and statistical outliers to maintain the integrity and reliability of the data. Descriptive statistics were used to understand residents' feelings about ancient trees, their awareness of protection, and their willingness to participate. Cross-tabulation and chi-square analysis were used to investigate the differences in attitudes toward protecting ancient trees among different demographic groups (such as age, gender, and length of residence). The study showed that cutting-edge multivariate techniques such as factor analysis and regression analysis can identify key factors that affect residents' participation in ancient tree protection activities (Bonnett et al., 2013).

3.3.4. Thematic Analysis

Qualitative analysis software (like NVivo) was used to transcribe and code the data from the semi-structured interviews. Reviewing transcript codes from the outset can help identify and categorize major ideas and trends. The scientists then used axial coding to show the relationships between the identified ideas, forming greater theoretical groups and connections. The final step used selective coding to refine core themes and patterns in the study. This method deepened the understanding of the emotional connection between residents and ancient trees, enhanced their awareness of protection and willingness to participate, and also revealed how these factors affect their views and actions on tree protection (Anau et al., 2019). Qualitative analysis uncovered residents' underlying views and emotional connections to veteran tree preservation, offering valuable perception for evolving effective conservation plans.

4. Findings and Discussion

4.1. Policy Framework and Current Status of Ancient Tree Protection

0Literature analysis shows that within the policy papers for Shichahai Subdistrict, ancient trees, as part of cultural heritage, get a certain level of focus, with matching protective steps and planning aims suggested.However, the promotion and attention to ancient trees are relatively weak compared to other cultural heritage elements (Figure 3), resulting in a lack of prominent position in public awareness. Results from field surveys and resident interviews further reveal that many visitors are even unaware of the existence of ancient trees, reflecting the need to strengthen the implementation of ancient tree protection. This situation aligns with ecosystem services theory, which emphasizes the importance of ancient trees in providing ecological, cultural, and social services. The current lack of effective policy implementation may lead to the loss of these service values (Wu et al., 2022), thus necessitating urgent improvements in policy execution and raising public awareness of the importance of ancient tree protection through education and outreach (Figure 4) to achieve a harmonious balance between ancient tree protection and urban development.

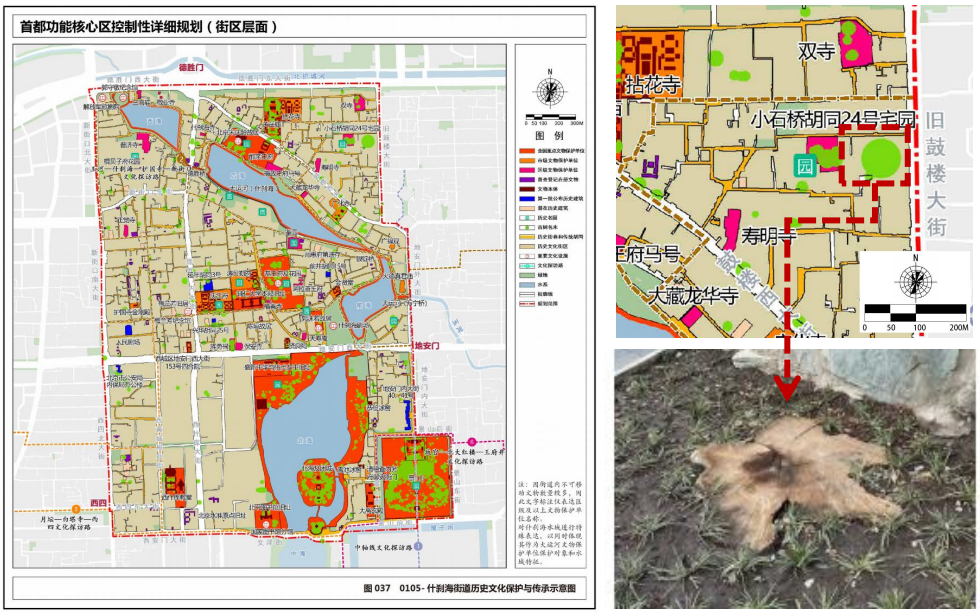

Figure 3. Inaccurate records of ancient tree related documents. Source: Controlled Detailed Planning of the Capital Functional Core Area (Block Level).Author's own work.

"There used to be a 300-year-ancient tree here, but it was unfortunately cut down last year due to some reasons." (The security guard, BANBOO GARDEN HOTEL)

Figure 4. The living environment of ancient trees has been damaged due to human activities.Source: Author's own work.

"In the absence of space for drying clothes in the alleyways, it's quite common to string a wire between the big trees for hanging clothes and bedding to dry." (Resident, 75-year-old)

4.2. Spatial Distribution and Health Status of Ancient Trees

GIS analysis results indicate that the distribution of ancient trees in Shichahai Subdistrict is uneven, with some trees concentrated in areas rich in historical and cultural heritage, such as the Wangfu Rear Courtyard. This distribution fosters an organic connection between ancient trees and other cultural heritage, enhancing the cultural continuity and historical depth of the area. However, the health status of some ancient trees is threatened, potentially linked to historical development patterns, urban planning

decisions, and inadequate green space protection (Figure 5). The study found that some ancient trees are located within private courtyards or government offices, where they often lack public access and may not receive adequate protection and management. Specific environmental pressures faced by these trees, such as nearby construction activities and human interference, further exacerbate their health risks. As a means to connect these point-like historical resources, the ancient tree trail enhances both the accessibility and aesthetic value of ancient trees, while also providing new ideas for urban greening and cultural heritage protection. These measures resonate with the theory of sustainable utilization, highlighting the need to balance current demands with the protection of future resources while ensuring that these cultural heritages are effectively protected and reasonably utilized.

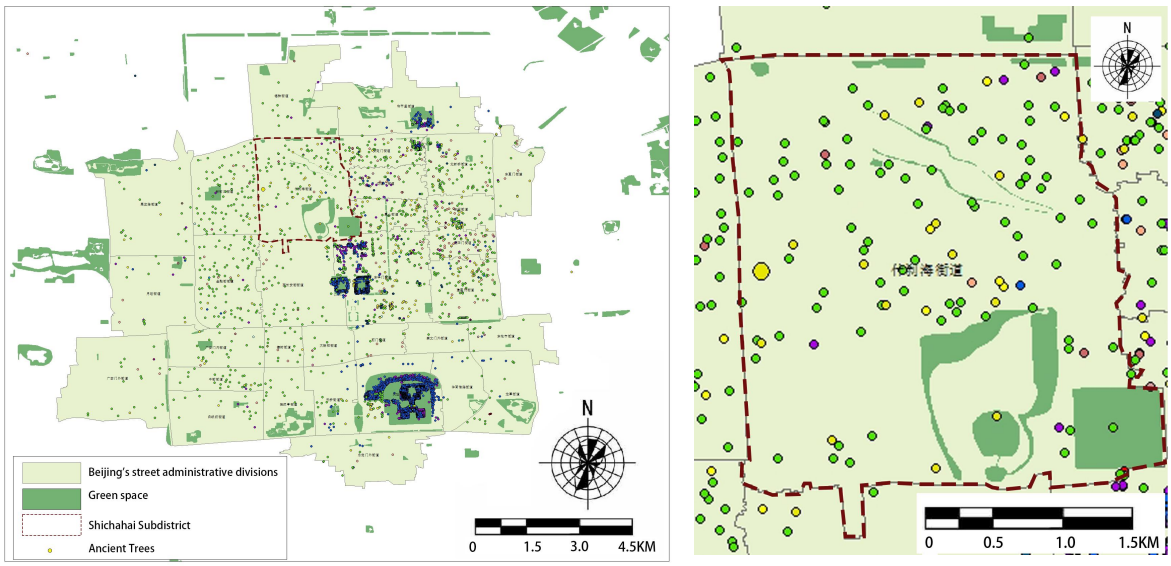

Figure 5. The distribution of ancient trees does not match that of green spaces.Source: Author's own work.

4.3. Residents' Emotional Identification and Participation in Protection

Survey and interview results reveal the extent of residents' emotional identification with ancient trees and their willingness to participate in protection activities (Figure 6). While most residents exhibit some emotional attachment to ancient trees, this feeling does not always translate into active protective actions. This may be related to residents' insufficient understanding of protective measures, personal resource limitations, or skepticism regarding the effectiveness of protection efforts. The theories of community participation and cultural heritage transmission emphasize the importance of enhancing public awareness and community involvement, indicating the need for educational and participatory projects to strengthen the community's recognition of the cultural value of ancient trees, thereby promoting the implementation of protective actions.

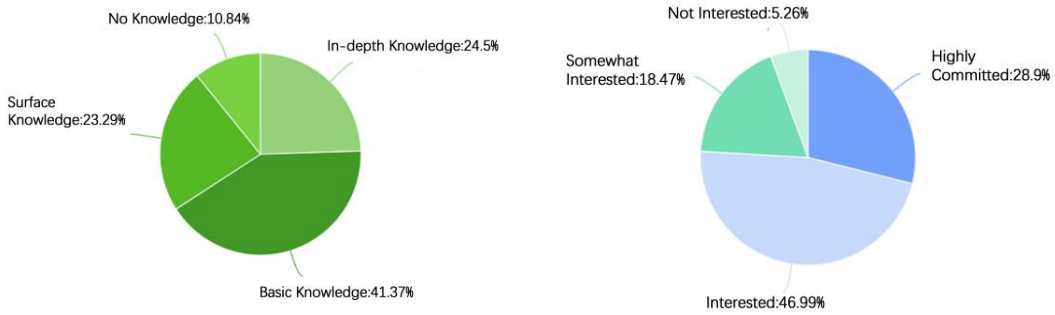

Figure 6. The willingness of Shichahai residents to participate in planning activities related to ancient tree protection and their degree of understanding of ancient trees. Author's own work.

5. Recommendations for Planning

5.1. Strengthen Policy Implementation and Supervision Mechanisms

Given that the literature analysis indicates insufficient enforcement of ancient tree protection policies, it is recommended to strengthen policy implementation and supervision mechanisms to ensure that protective measures are effectively implemented. This includes regularly reviewing and updating relevant policy documents and ensuring that sufficient resources and personnel are available to monitor the execution of protective measures.

5.2. Optimize Ancient Tree Archive Management

Due to the absence or lack of timeliness in some ancient tree records, it is recommended to establish a comprehensive archive management system for ancient trees, regularly updating their growth conditions and protection needs. This will enhance the targeted and effective protection of ancient trees.

5.3. Improve Spatial Distribution of Ancient Trees and Their Relationship with Green Spaces

GIS analysis results reveal a mismatch between the distribution of ancient trees and green spaces. It is suggested that urban planners consider the locations and needs of ancient trees when planning new green spaces or improving existing ones, in order to enhance the accessibility and aesthetic value of ancient trees and to provide a healthier growth environment.

5.4. Raise Residents' Awareness and Participation in Ancient Tree Protection

Survey and interview results indicate that while residents have some emotional identification with ancient trees, their willingness to participate in protection activities varies. It is recommended to enhance residents' awareness of protection through community education and outreach activities while also encouraging them to participate in volunteer activities for ancient tree.

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