

The practical study of inclusive waterway renewal planning: A case study of West Hongqiao Business District in Shanghai, China

Yidong YU, Shanghai Tongji Urban Planning & Design Institute Co., Ltd, China

Xindan CAO, Shanghai Tongji Urban Planning & Design Institute Co., Ltd, China

Lu LIU, Shanghai Tongji Urban Planning & Design Institute Co., Ltd, China

Xiji JIANG, Xi'an University of Architecture and Technology, China

Xianglei SHI, Shanghai Tongji Urban Planning & Design Institute Co., Ltd, China

Abstract

As the renewal of waterways is regarded as one of the most important strategies for shaping the spatial environments for urban vitality, addressing economic growth and cultural protection, it has obtained increasing attention over the past decade years. However, the waterways' regeneration would influenced by its natural environment and local culture, which consequently cause difficulties in planning and construction of the waterways. Therefore, we offer a framework of 'background analysis-status quo assessment-regeneration strategy' as a response to these issues. The framework is designed to analyse what key factors influence waterways' regeneration and how to derive the natural inclusive goals and social inclusive goals, as well as how to ensure an inclusive collaboration mechanism involving multiple parties at the same time. According to the review of the background and state, we proposed strategies covering operational modes, transportation systems, and culture-tourism initiatives. Finally, we perform practical research in the West Hongqiao Business District in Shanghai to confirm the effectiveness of the framework, which would further ensure the contribution of valuable practical experience while considering the inclusion of preserving the city's culture, history, and communal memory.

Keywords

Inclusive regeneration, Waterway regeneration, Innovative framework

1. Background

Urban waterways often have significant influence and benefit on the socioeconomic context of cities, as they are key physical parts of the eco networks and culture in the cities (Huang and Wang, 2023; Zheng et al., 2022; Song et al., 2022). In recent years, it has been proved that the renewal of waterways has enabled it to be regarded as a key tool for city rebranding, improving urban competitiveness and dwellers' lives (Hein, 2016; Cabau, Hernandez-Lamas and Woltjer, 2021; Fouad et al., 2022; Niu et al., 2023; Dobson, 2021; Qiao et al., 2022; Ding and Wang, 2024). However, there are a number of obstacles, such as the loss of distinctive urban cultures and a lack of community involvement, which led to increasing difficulties in the process of restoring and renovating urban waterways. Furthermore, ensuring that these renewals promote

social inclusion and sustainable development becomes a major challenge. (Zhu and Li, 2024; Kristianova, Gecova and Putrova, 2015; Perera et al., 2022; Piper, 2005). In this case, the United Kingdom has come up with the principles of inclusive design and inclusive regeneration pioneer, which are fundamentally rooted in enhancing the physical environment, balancing the overall interests of the community, and involving multiple participants, thereby shaping a more inclusive and urban landscape (Zhao et al., 2024; Liu et al., 2022; Cattaneo, Giorgi and Ni, 2018; Wang et al., 2023).

In light of these considerations, it is necessary to consider environment and history preservation, and participation from local community members through effective waterway regeneration initiatives, which would combine thorough research and practical experimentation to promote inclusive regeneration. Accordingly, we propose a research framework designed to systematically investigate the practical experiences of inclusive waterway landscape regeneration.

2. Waterway landscape regeneration framework

A framework for waterway landscape regeneration that we constructed is based on the foundation of the theory of inclusive renewal and inclusive design, which is anchored in cultural conservation, waterway space landscape regeneration, and cultural tourism planning (Figure 1).

First of all, we rooted in comprehensive systematic background analysis and evaluation, with the consideration of history and culture, local strategic aim, characteristics, planning regulations and policies, stakeholders' needs, opportunities and potentials, as well as values and visions. This phase, which is regarded as the foundation for final strategic planning, is crucial for obtaining an overall sightseen of the context of the waterways, which could in turn help identify macro-level conditions and opportunities for regeneration.

In the status quo assessment phase, we develop a planning process based on analysis and evaluation, clarifying operational methods and spatial needs that coincide with waterway revitalization. Concurrently, it sets the goal of inclusiveness for the waterway in both natural and social realms based on the principles of natural and social solutions.

In the renewal strategy phase, the research elucidates essential planning and development strategies by addressing current challenges and presenting a focused vision plan. Based on the principle of inclusive design, the research shows approaches in multiple important domains: waterway pathways, leisure areas, landscape improvement, and riverside amenities. These strategies are guided by the goal of natural inclusivity. Additionally, the study proposes approaches centred on social inclusivity, including diversified design, phased implementation, cultural heritage preservation, and behavioural interaction. Ultimately, the study ensures the effective implementation and sustainable development of waterway landscape renewal planning through the construction of an inclusive cooperation mechanism that integrates technical, economic, and institutional dimensions (Figure 1).

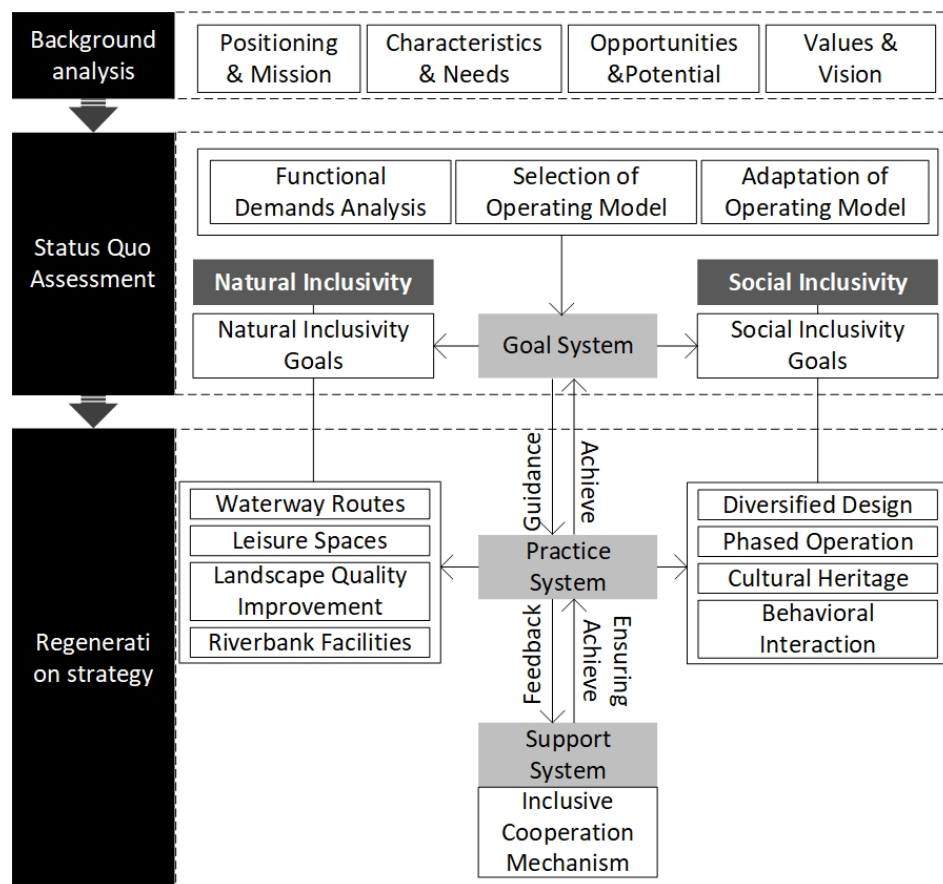


Figure 1. Waterway landscape regeneration framework. Source: Author-drawn.

3. Waterway Landscape Regeneration Planning Practice in Shanghai West Hongqiao Business District

3.1. Background analysis

Located at the heart of the Hongqiao International Central Business District, the Shanghai West Hongqiao Business District serves as a hub for modern service industries, international trade, and corporate headquarters. The area is primarily focused on six key industries, which include convention and exhibition, distribution, headquarters economy, financial, emerging industries, and creative industries. Our research area is about 7.95 km² (Figure 2). This research aim is to promote the development of business and upgrade the exhibition industry through the renewal of waterways. Based on a systematic analysis of the background and current situation of Shanghai's West Hongqiao Business District, this study mainly offers an overview of four key dimensions: position and mission, characteristics and needs, opportunities and potential, and value and vision (Figure 3).

Shanghai West Hongqiao Business District is the core functional area of the Hongqiao International Open Hub, which mainly focuses on open communication as its core purpose. Located at the intersection of Shanghai's main urban area and the Yangtze River Delta Green Eco-Integrated Development Demonstration Zone, the area contains famous landmarks for support, such as the National Convention and Exhibition Centre and Panlong Ancient Town, etc.

The characteristics and needs of the West Hongqiao Business District's water system landscape and functional enhancement goals are comprehensively considered in this study. A deeper analysis is conducted on the river network, passenger flow, and business conditions. Despite the district's capacity and convenient long-distance transportation advantages, challenges such as inadequate passenger flow import channels, limited convention and exhibition passenger flow, underdeveloped supporting infrastructure, poor destination connections, insufficient integration between public spaces and business formats, and underutilization of public green spaces by current business formats are identified.

Regarding opportunities and potential, the West Hongqiao Business District in Shanghai have opportunities and potential to develop cultural tourism and regional connections. The area is rich in sources of customers, including business and urban customers brought by international hubs and urban destinations, as well as surrounding residents with the development of housing and living services.

In terms of value and vision, the Shanghai West Hongqiao Business District aims to integrate cultural, sports, business, and tourism resources through characteristic water rings, absorb the flow of convention and commerce hubs (Figure 4-5).

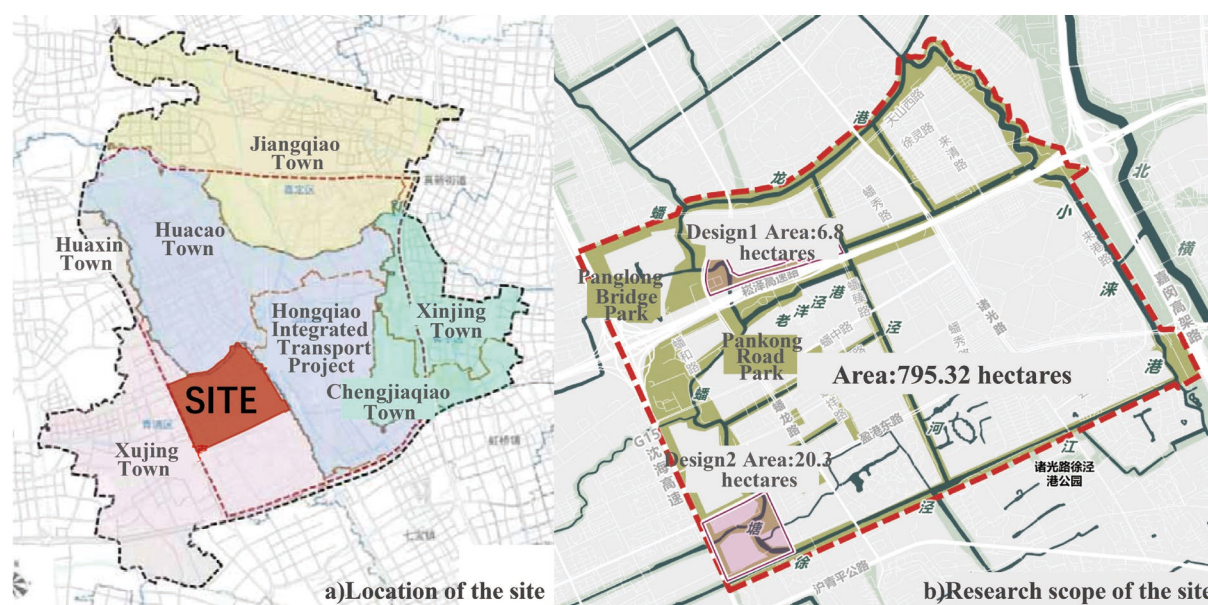


Figure 2. Research Area. Source: Author-drawn.

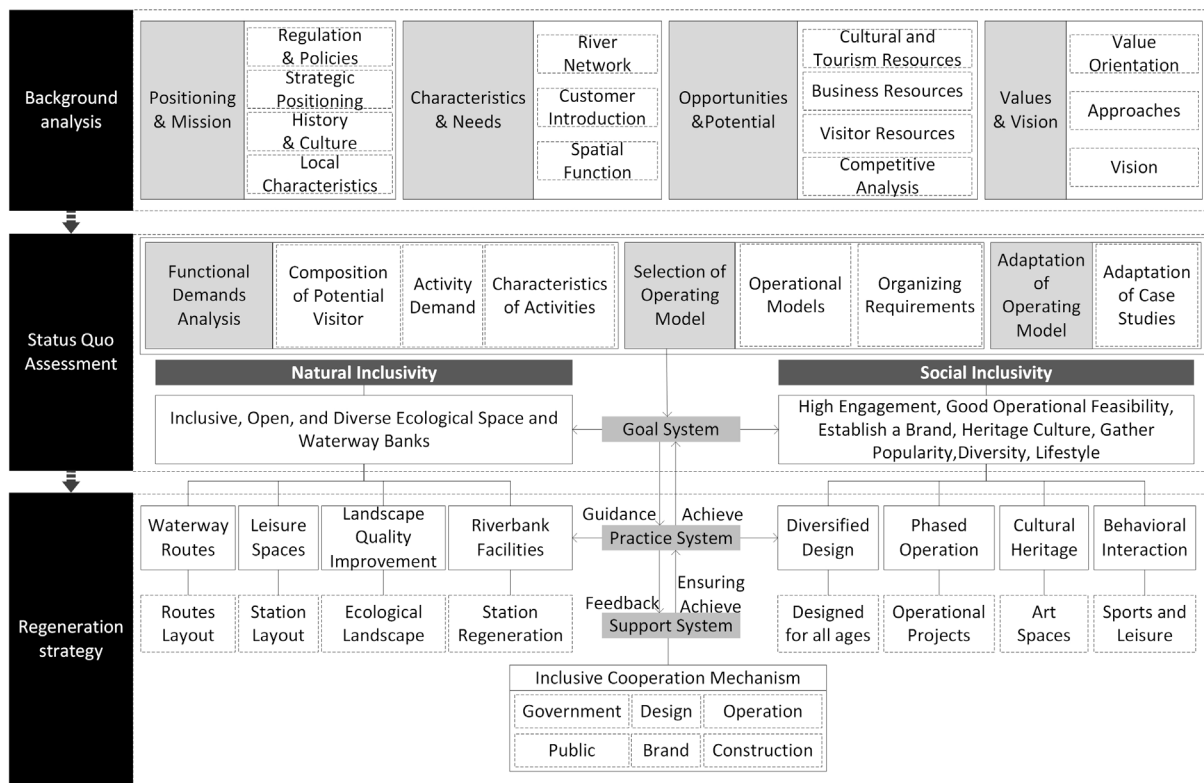


Figure 3. A Practical Framework for Waterway Landscape Renewal Planning in Shanghai's West Hongqiao Business District. Source: Author-drawn.

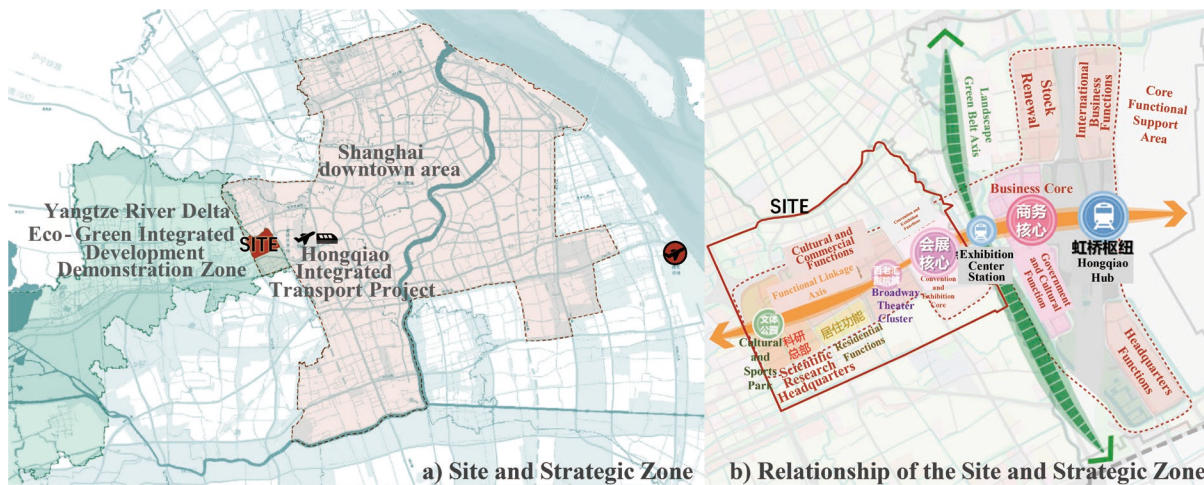


Figure 4. Shanghai West Hongqiao Business District Strategy Map. Source: Author-drawn.

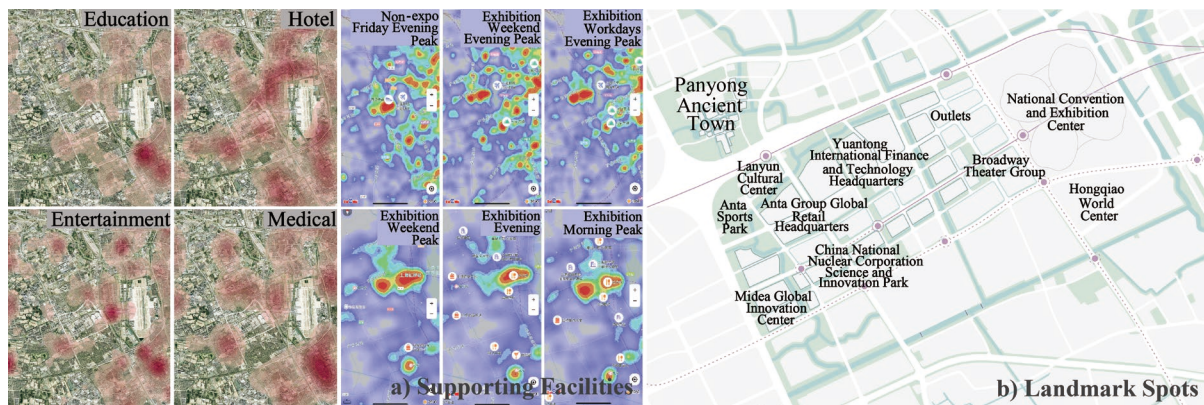


Figure 5. Resources around Shanghai West Hongqiao Business District. Source: Author-drawn.

3.2. Status Quo Assessment

3.2.1. Analysis of functional demands

Inclusive design is regarded as a comprehensive design method, and its task is mainly to think about how to integrate different sort of needs and wildly requirements of service of users without limitation of age and ability of people. The analysis of the components and activity demands of potential users would offer an empirical foundation for inclusive design to enable the planning work for everyone equitably. The analysis results show that the users of the West Hongqiao Business District generally have complex activity needs, including fixed and moving clients (Figures 6-7).

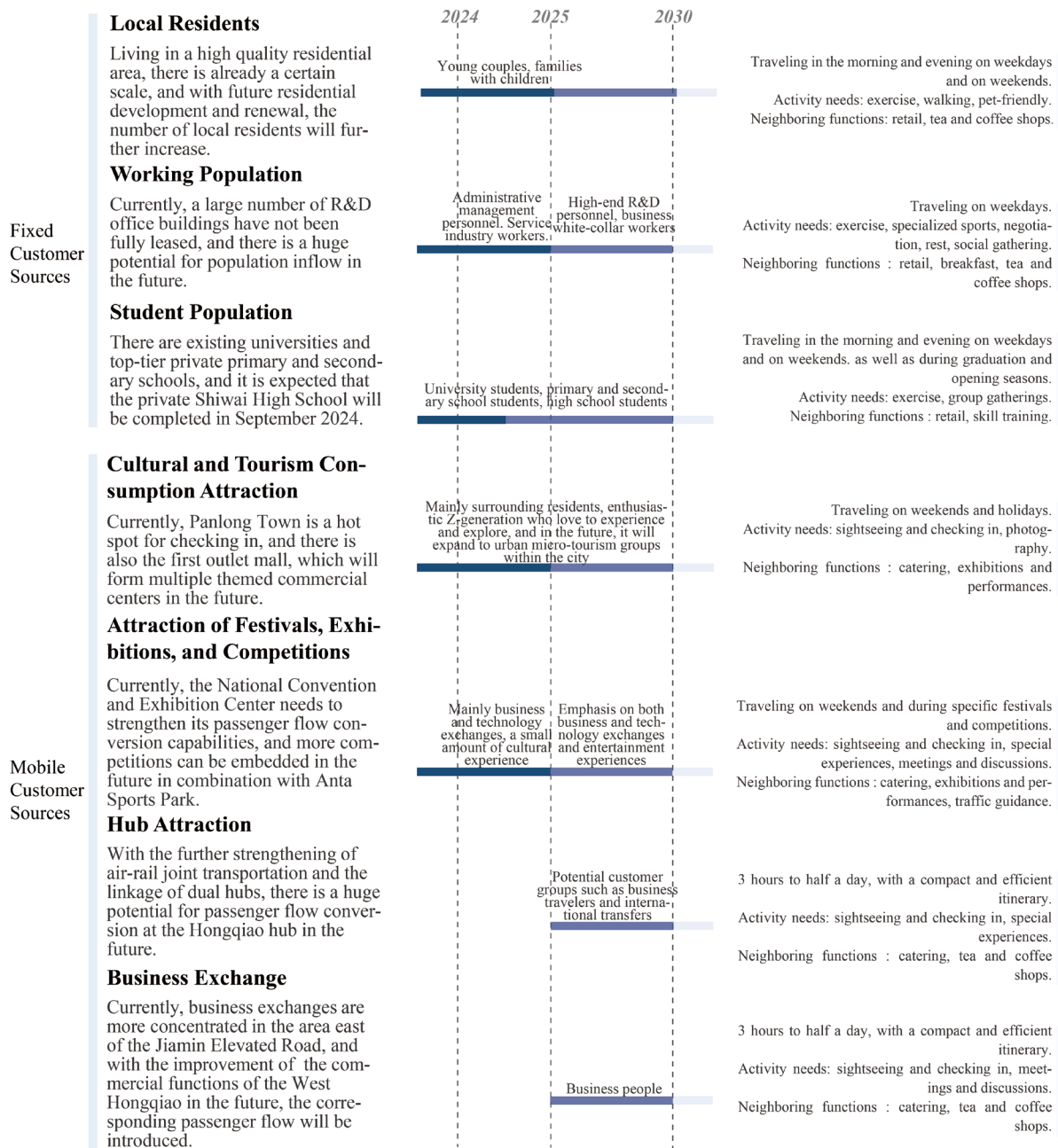


Figure 6. Analysis of the composition of the potential visitor. Source: Author-drawn.

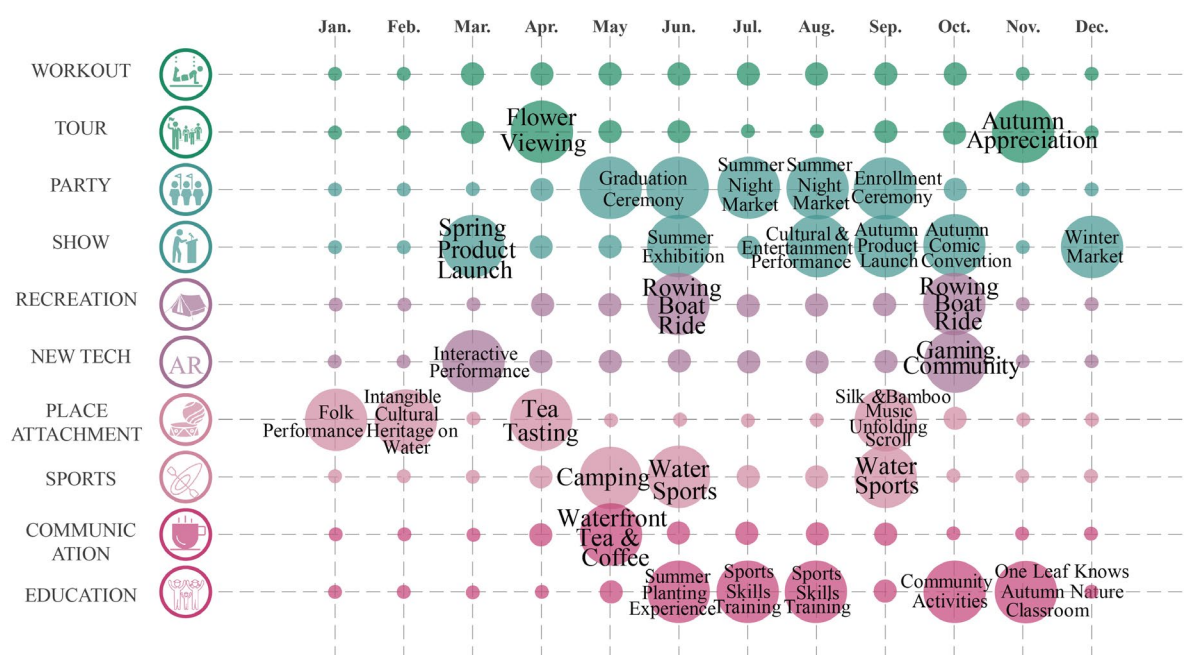


Figure 7. Analysis of the composition of the potential visitor. Source: Author-drawn.

3.2.2. Selection of operating model

There are three types of water sports in the operation mode of the West Hongqiao Water Circle, covering sightseeing tours and feeder transport, each of which has specific carrier requirements and target groups. The water sports mode is mainly operated by water sports clubs, targeting local people, and the water quality must meet the standard of Class III surface water. There are two types of sightseeing boats available, including rowboats and rented powerboats by the hour, that engage in the low-cost operation of cultural and tourism services. The clear sorting out of these operation modes guides the planning and implementation of the West Hongqiao Water Ring.

3.2.3. Adaptation of the operating model

This study analyses the four modes of fitness, which contain target fitness, carrier fitness, positioning fitness and development location fitness, and obtains a final fitness mode. Given the width limitation of the river, the pier is designed to be set up on one side, and ships need to navigate in one direction counterclockwise. Meanwhile, considering the difficulty of retrofitting and the access routes, the vessel design shall meet the requirement of a clear height of no more than 1.3 metres out of the water.

3.2.4. Natural and Social Inclusivity Goals

Based on the results of the above analyses, we derive a natural inclusiveness goal and a social inclusiveness goal for the renewal of the waterways in the West Hongqiao Business District. Its natural inclusiveness goal is to create an open and diversified ecological space and river environment. The goal of social inclusion is to establish a social environment characterized by strong community participation, ease of use, distinctive branding, widespread cultural sharing, social gatherings, and dynamic lifestyles.

3.3. Regeneration Strategy

3.3.1. Natural Inclusive Practices

In the waterway planning for the West Hongqiao area, we provide some measures and inclusive strategies, to solve the problem of environmental accessibility and equity, and to promote the development of cultural and tourism industries. Generally speaking, the nature of the regeneration depends on the inclusive design approach. This approach, involving the design of waterway routes and stations featuring recreational areas and a variety of outdoor activities, enables the development of an efficiently operating waterway system where public resources are equitably distributed.

Regarding the planning of waterway routes, two main routes were designed, covering the featured water land tourist route and the premium water route circuit (Figure 8). In contrast, the premium water route circuit connects Sports Park Station and Midea Station, etc., to achieve differentiated, complementary positions of featured nodes in the area and the extension of the leisure network.

When it comes to designing leisure spaces and transportation hubs, the key points of the design include a central loop of pathways for entertainment, which basically consists of footpaths. In addition, there are eight transportation hubs or water sports facilities across the area, which provide efficient loading services while improving the connectivity of paths, and maximizing the capacity of pedestrian flows.

As for the river facilities and stations, we came up with various actions including river and embankment restoration to improve the ecological capabilities of the waterway and the environmental quality and urban resilience.

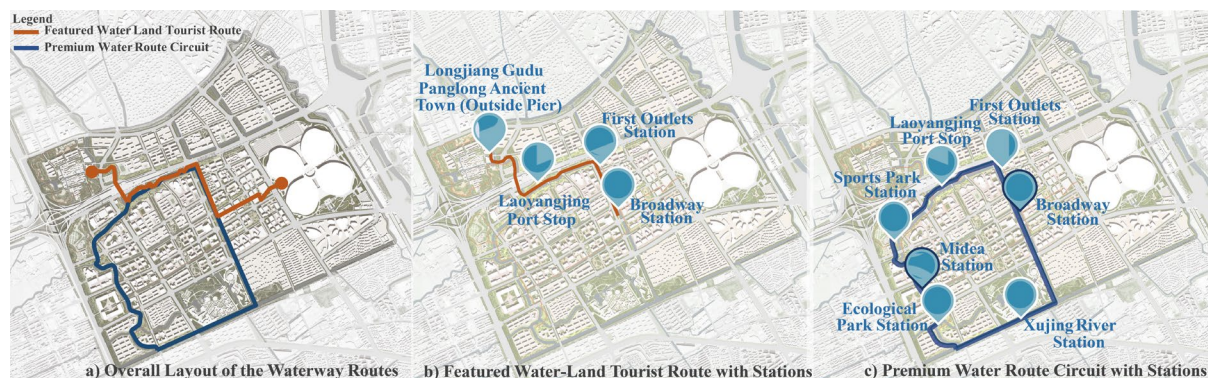


Figure 8. West Hongqiao Waterway Regeneration Plan Major Routes and Station Layout. Source: Author-drawn.

3.3.2. Social Inclusive Practices

Two main tours were created (Figure 8). A lot of resources, such as business, cultural, sports and tourism resources, were integrated through the 8-km water ring to build an all-age-friendly leisure network that provides different kinds of experiences for visitors with different needs, such as paddle boarding and flash activities with outdoor brands. As we considered the operation phase and strategy, 2-3 key products were offered to increase the influence of the local brand based on the recent aims (Figure 9).

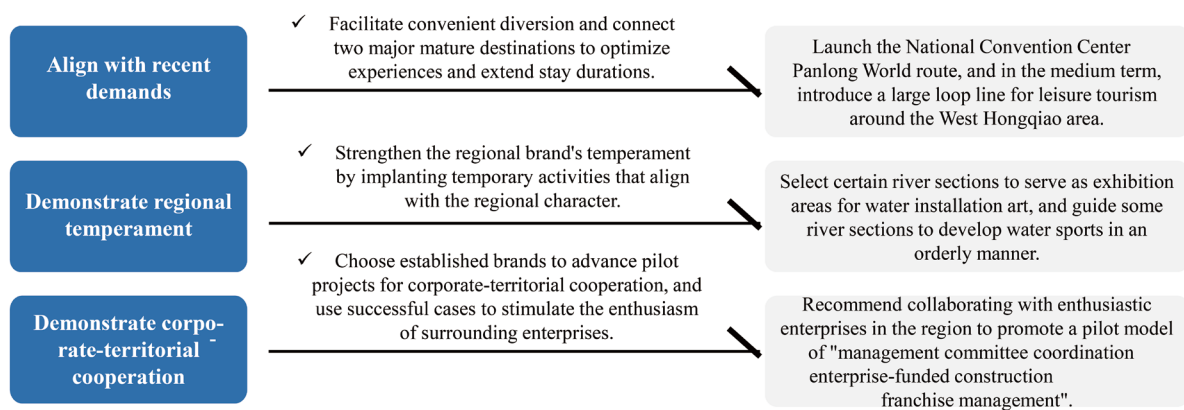


Figure 9. Recent Operations. Source: Author- drawn.

From the perspective of art spaces and cultural heritage, we created an innovative art exhibition area along the river, which offers people a truly unique artistic experience by combining art with spaces. On the one hand, this action could help improve the local brand character; on the other hand, it shows how important it is to have inclusive design in cultural heritage. In sports and leisure, our renewal plan, which is based on inclusive design for promoting a healthy lifestyle and community vitality, combines local characteristics and orderly guides and implements temporary activities for water sports.

3.3.3. Support System

Under the framework of an inclusive cooperation mechanism, the West Hongqiao area, by uniting active enterprises within the region, implements a pilot model of "management committee coordination - enterprise-funded construction - obtaining a franchise" (Figure 10). It aims to choose well-developed brands to promote cooperation between enterprises with local government and the market and inspire other enterprises' participation to promote regional common development.

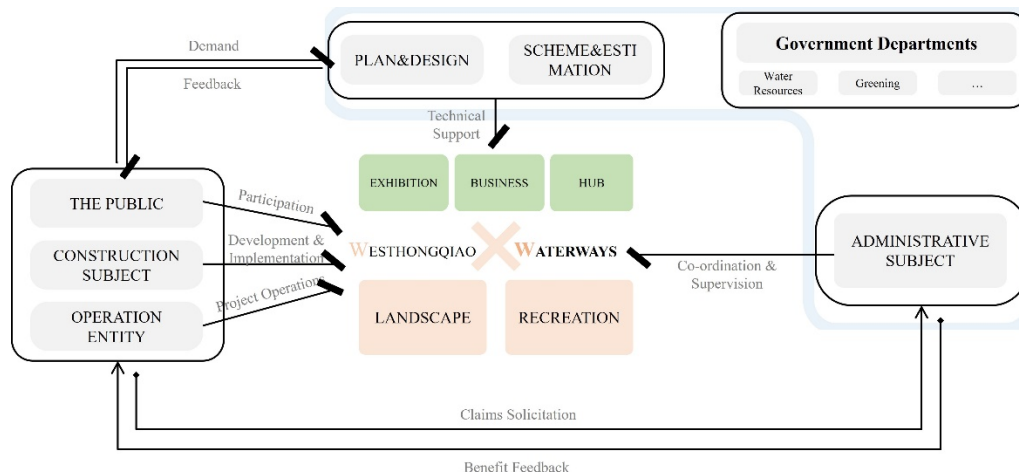


Figure 10. Inclusive Cooperation Mechanism. Source: Author- drawn.

4. Conclusions

This study proposes and verifies a comprehensive research framework for guiding the planning and renewal of urban blue-green spaces, focusing on the renewal of urban waterways. The framework places a strong emphasis on the preservation of cultural heritage and the improvement of water quality, focusing

on the key framework of “background analysis-status quo assessment-regeneration strategy.” To illustrate the effectiveness of this approach, we present a detailed case study of the West Hongqiao Business District in Shanghai. Our research highlights the importance of combining natural and social inclusivity in our goals and methods. Improving access and equity in the environment can be achieved by developing a range of varied and interactive ecological areas and riverbank landscapes. In addition, our research suggests opportunities for strategic growth and rejuvenation of urban parks and gardens, with a focus on conserving local traditions and community identity, while also promoting social cohesion and safeguarding the distinctive charm of city living. The collaborative framework we recommend involves various stakeholders to facilitate holistic regional development.

Note: In this study, we used Kimi (Moonshot AI, 2023) as an auxiliary tool, primarily for the compilation and translation of specialized terms, proper noun and proprietary names.

5. References

- Cattaneo, T., Giorgi, E. and Ni, M. (2018). Landscape, Architecture and Environmental Regeneration: A Research by Design Approach for Inclusive Tourism in a Rural Village in China. *Sustainability*, 11(1), p.128.
- Cabau, B., Hernandez-Lamas, P. and Woltjer, J. (2021). Regent’s Canal Cityscape: From Hidden Waterway to Identifying Landmark. *The London Journal*, pp.1–27.
- Ding, Z. and Wang, H. (2024). What are the key and catalytic external factors affecting the vitality of urban blue-green space? A case study of Nanjing Main Districts, China. *Ecological Indicators*, 158, pp.111478–111478.
- Dobson, J. (2021). Wellbeing and blue-green space in post-pandemic cities: Drivers, debates and departures. *Geography Compass*, 15(10).
- Fouad, S.S., Heggy, E., Abotalib, A.Z., Ramah, M., Jomaa, S. and Weilacher, U. (2022). Landscape-based regeneration of the Nile Delta’s waterways in support of water conservation and environmental protection. *Ecological Indicators*, 145, p.109660.
- Hein, C. (2016). Port cities and urban waterfronts: how localized planning ignores water as a connector. *Wiley Interdisciplinary Reviews: Water*, 3(3), pp.419–438.
- Huang, J. and Wang, Y. (2023). Research on Social Service Effectiveness Evaluation for Urban Blue Spaces—A Case Study of the Huangpu River Core Section in Shanghai. *Land*, 12(7), pp.1424–1424.
- Kristianova, K., Gecova, K. and Putrova, E. (2015). WATERCOURSE AS CULTURAL HERITAGE IN CONTEMPORARY URBANISM: Preservation approaches from Košice and Prešov in Slovakia. *International Journal of Architectural Research: ArchNet-IJAR*, 9(1), p.122.
- Liu, W., Yang, J., Gong, Y. and Cheng, Q. (2022). An Evaluation of Urban Renewal Based on Inclusive Development Theory: The Case of Wuhan, China. *ISPRS international journal of geo-information*, 11(11), pp.563–563.
- Moonshot AI (2023) Kimi [Online]. Available at: <https://kimi.moonshot.cn/> (Accessed 24 January 2025).

Niu, Y., Jiao, S., Tang, S., Tang, X. and Yin, J. (2023). Evolution Pattern of Blue–Green Space in New Urban Districts and Its Driving Factors: A Case Study of Zhengdong New District in China. *Water*, 15(13), p.2417–2417.

Perera, E.D., Moglia, M., Glackin, S. and Woodcock, I. (2022). The intention-implementation gap for community involvement in urban waterways governance: a scoping review. *Local Environment*, pp.1–23.

Piper, J.M. (2005). Partnership and participation in planning and management of river corridors. *Planning Practice and Research*, 20(1), pp.1–22.

Qiao, Y., Mengjiao, D., Haochen, L., Xizi, T. and Xiaoyan, L. (2022). Research on the Integrated Planning of Blue-Green Space towards Urban-Rural Resilience: Conceptual Framework and Practicable Approach. *Journal of Resources and Ecology*, 13(3).

Song, S., Wang, S., Shi, M., Hu, S. and Xu, D. (2022). Urban blue–green space landscape ecological health assessment based on the integration of pattern, process, function and sustainability. *Scientific Reports*, 12(1).

Wang, W., Watanabe, M., Zhou, D. and Ono, K. (2023). Environmental and Community Regeneration: Exploring Design Approach for Inclusive Tourism Based on Visualization Methods. *Sustainability*, 15(5), pp.4540–4540.

Zhu, Y. and Li, Z. (2024). ‘Sharing’ as a Critical Framework for Waterfront Heritage Regeneration: A Case Study of Suzhou Creek, Shanghai. *Land*, [online] 13(8), p.1280.

Zhao, Y., Jiang, Z., Yang, Y., Li, C., Dong, C. and Zhao, L. (2024). Research on Child-Friendly Renewal Strategy of Community Public Space From the Perspective of Inclusive Development. *International Review for Spatial Planning and Sustainable Development*, 12(4), pp.4–27.

Zheng, S., Yang, S., Ma, M., Dong, J., Han, B. and Wang, J. (2022). Linking Cultural Ecosystem Service and Urban Ecological-Space Planning for a Sustainable City: Case Study of the Core Areas of Beijing Under the Context of Urban Relieving and Renewal. *SSRN Electronic Journal*.