



RECLAIMING THE WATER CITY

URBAN REGENERATION STRATEGIES BASED
ON WATER CITY IDENTITY OF JIAXING

Cover image. The three pagodas at
Kashing on the Grand Canal
Photo by *Charles H. Kragh*

RECLAIMING THE WATER CITY **Urban Regeneration Strategies Based on Water City Identity of Jiaxing**

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Acknowledge

The years I spent studying here have been invaluable. The education system at BK provided me with the freedom to explore, learn various methods, and adopt new ways of thinking. This experience deepened my understanding of urbanism as a profession and strengthened my determination to pursue my goals.

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Abstract

Over the past few decades in China, the intense focus on economic growth has led to rapid urbanization, technological progress, and an increase in total socio-economic volume. However, this over-rapid urbanization has also brought about various urban issues, such as ecological damage. The Yangtze River Delta (YRD), one of the most developed urban agglomerations in China, has not been spared from such ecological harm. Jiaxing, located at the geometric centre of the YRD, serves as a typical example of these challenges.

Jiaxing's urban identity is closely tied to water. Its origins and prosperity are inextricably linked to water agriculture and the shipping trade. Traditional civic life and public activities often took place on the water, and cultural and artistic creations were also associated with it. However, recent urban development has significantly reduced the water area, dramatically altering the urban landscape and detaching people's lifestyles from water. This has led to a lack of identity throughout the city, posing several challenges, including issues with ecological resilience, economic attractiveness, and social well-being.

Therefore, this paper will discuss how to restore Jiaxing's urban identity as a water city, aiming to secure a more sustainable future for Jiaxing. Given that "urban identity" encompasses a broad scope

and has different meanings at various scales, this discussion will follow Cheshmehzangi's (2015) theory to address the reshaping of identity from both the regional and environmental scales.

At the regional scale, it is essential to consider the relationship between the city and its elements, particularly the interaction between water and the city in Jiaxing's case. Using the theory of Mačiukėnaitė and Povilaitienė (2013), this paper will analyse Jiaxing's infrastructure, ecology, society, and symbolic roles, and take a perspective of infrastructure mainly to enhance Jiaxing's urban identity and activate the city's vitality.

At the environmental scale, focusing on the main city area, it is crucial to consider the relationship between citizens and their interaction with the urban environment to shape urban identity. Forms, activities, and impressions are vital at this level. According to the Holistic Urban Landscape theory, it is necessary not only to focus on the water itself but also to maintain the overall spatial atmosphere. Therefore, this paper will conduct a more detailed analysis from the citizens' perspective and propose sustainable development strategies and tools to reshape the water city's identity and improve the quality of urban space. Finally, a selection of urban nodes will be designed to demonstrate the feasibility of these strategies.



Figure 1. Location of Jiaxing



Figure 2. A boat and scenery of the Grand Canal in Jiaying
Source: Xiuzhou District People's Government. <http://www.xiuzhou.gov.cn/>

Motivation

I came from Jiaying and I have witnessed its transformation into a bustling city over the past two decades during the rapid development of economy and urbanisation. While fancy buildings and elaborate overpasses have been constructed, I am not sure if people's lives have significantly improved. The sense of community belonging has faded, and people need to travel by car to enjoy a walk in green spaces. Also, flooding due to heavy rainfalls has become more common. I believe Jiaying citizens desire a safe, liveable, and unique city, not just another beautiful one.

The phenomenon of cities losing their unique identities is a common occurrence during the process of regionalization, which is happening worldwide. Hence, I think it is crucial to value smaller cities that are relevant to the well-being of everyone's life in the future of urban development.

During my studies at TU Delft, I had the opportunity to visit several cities in Northwest Europe. In a regionalised environment, every city retains its characteristics and identity. Although this is dependent on factors such as population, climate, and economy, I believe that small cities in China can also improve their urban environment to be more welcoming and liveable.

I am interested in exploring the future development of Jiaying. Although it is a complicated issue involving various institutions, I believe it is a suitable topic for me. On the one hand, I understand China's national conditions and have a deeper understanding of the stakeholders. On the other hand, my studies have provided me with a wealth of western planning knowledge, and I can offer fresh ideas from an outsider's perspective with the help of my excellent teachers and peers.

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I. PROBLEM FIELD

- contextualisation
- challenges of Jiaxing
- conclusion of problem field

Contextualisation

Ecological problems occurred during rapid urbanization

Over the past few decades, China has developed at an extremely fast pace, as reflected in its industrialisation, modernisation and urbanisation. However, with the slowdown of economic growth in recent years, China has begun to reflect on its own development model (Chen, 2012).

Since the implementation of reform and opening up policies, centralization and intensification have become the prevailing trends in Chinese urban planning and construction. This is primarily characterized by the pursuit of various 'central functions,' including national central cities, regional central cities, sub-central cities, central urban areas, nodal cities, and others. China's concentration of resources and functions has facilitated rapid modernization, leading to the emergence of numerous metropolitan areas (see Figure 3). Among these, the Yangtze River Delta, Jing-Jin-Ji, and Pearl River Delta metropolitan areas stand out as arguably the most significant economic and cultural centres in China. However, this rapid urbanization has also led to various urban diseases, including ecological damage (Liu, 2022). Haas and Ban (2014) observed a significant decrease in ecosystem service functions and values across these 3 main metropolitan areas, including landscape fragmentation and degradation of vital wetlands (see Figure 4). These findings underscore the adverse impact of rapid urbanization on the natural environment and emphasize the urgent need for sustainable urban development strategies.

Huang and Sun (2019) emphasize that the underlying issue can be attributed to an imbalanced development paradigm, where economic advancement has been prioritized over ecological and cultural considerations. This approach has led to unsustainable levels of urbanization and oversized urban clusters, surpassing socially and environmentally acceptable thresholds. To foster sustainable development in the forthcoming years, it is imperative to rectify these deficiencies in ecology and culture, and endeavour to institute a more equitable approach to development.

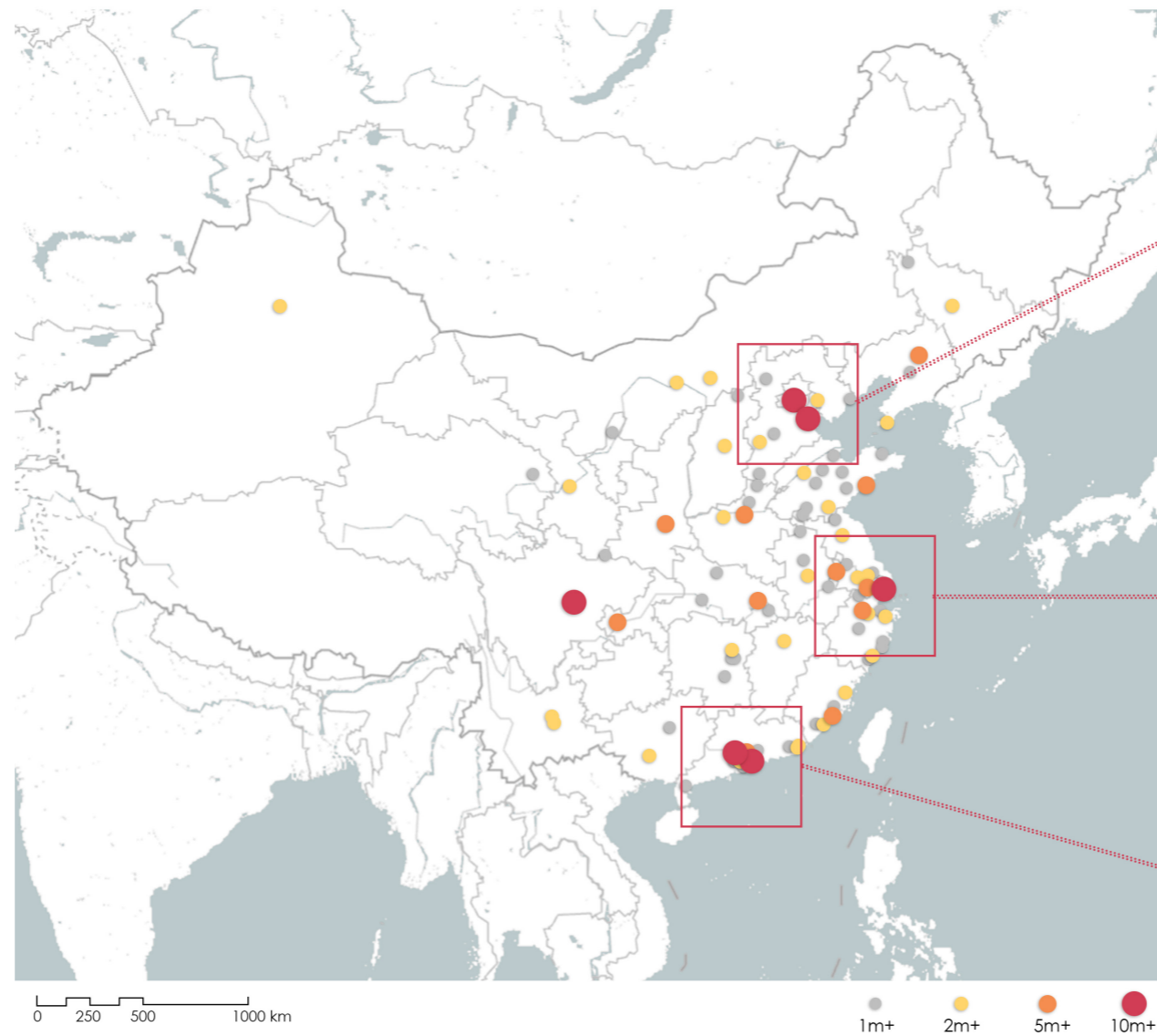


Figure 3. Chinese Cities with more than 1 million population (2017)

source: <https://www.theguardian.com/cities/2017/mar/20/china-100-cities-populations-bigger-liverpool>

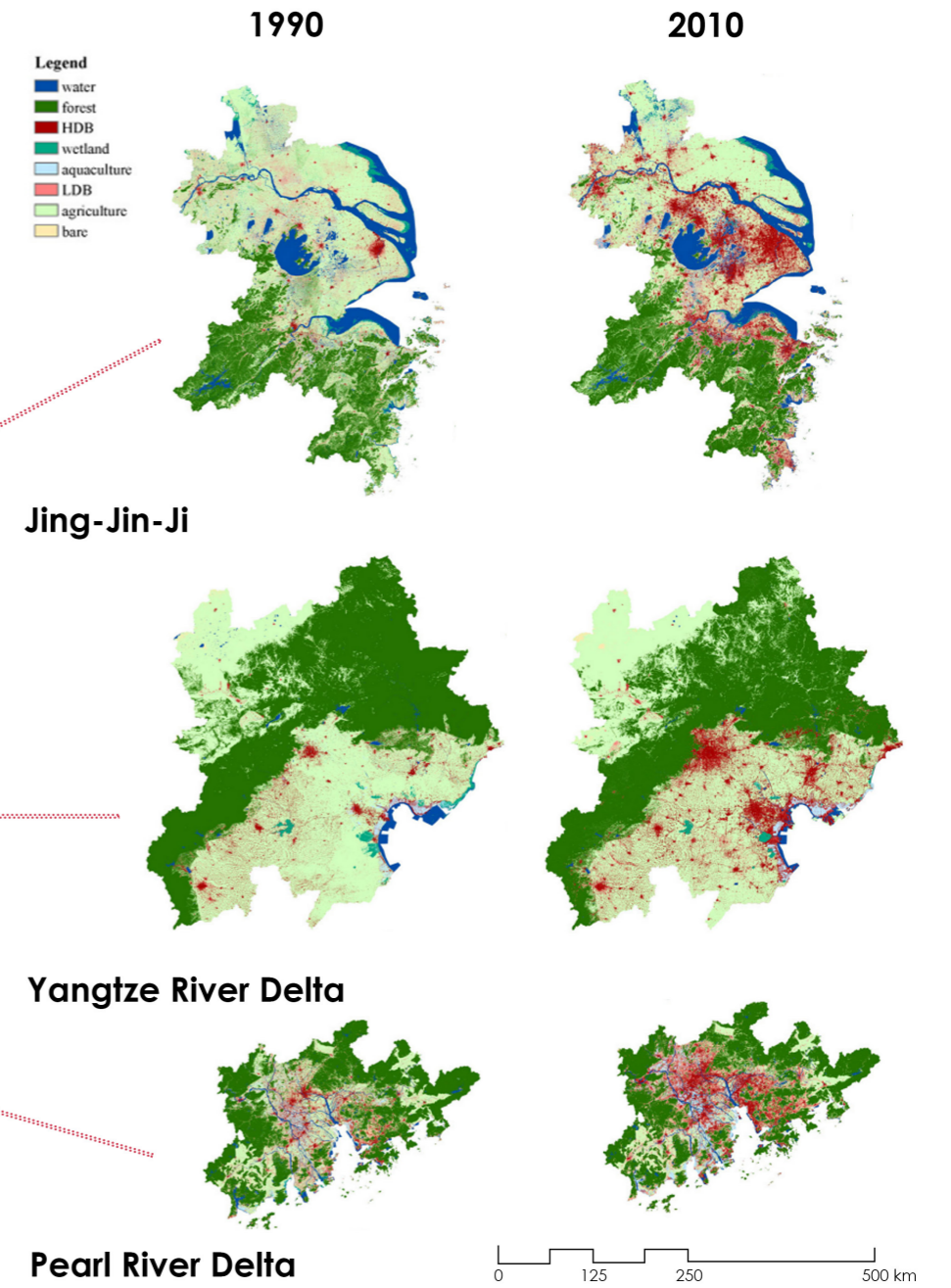


Figure 4. Classification of land use from 1990 (left) and 2010 (right) of JJJ (upper), YRD (central), PRD (lower).

source: Haas, J. & Ban, Y., 2014.

Contextualisation

The development and ecological problems of Yangtze River Delta

The Yangtze River Delta region is a bustling center of economic vitality, innovation, and openness within China. Despite occupying just 2.1% of the country's land area, it contributes nearly a quarter of the nation's total economic output (National Development and Reform Commission, 2021). Shanghai, situated in the eastern part of the Yangtze River Delta, serves as China's financial hub and largest economic city. In 2021, its GDP surpassed 4 trillion yuan, marking an 8.1% year-on-year increase and highlighting its pivotal role in driving the country's economic growth.

This metropolitan area boasts high levels of urbanization and economic prosperity, although with some disparities. Notably, four of the five

cities with the highest GDP rankings are clustered around Hangzhou Bay, with Shanghai leading the group in the east (see Figure 5 and Figure 6). Jiaxing, the focus of this thesis, is situated amidst these economically dynamic cities, which can be considered the most developed segment of China's most economically advanced region.

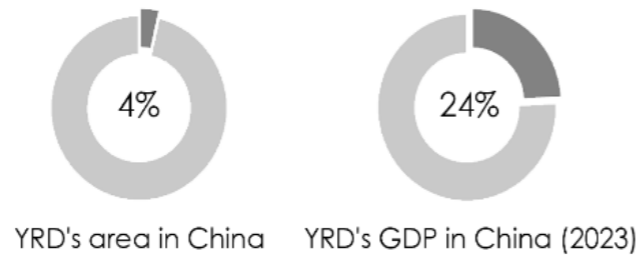


Figure 5. The location of Yangtze River Delta Area

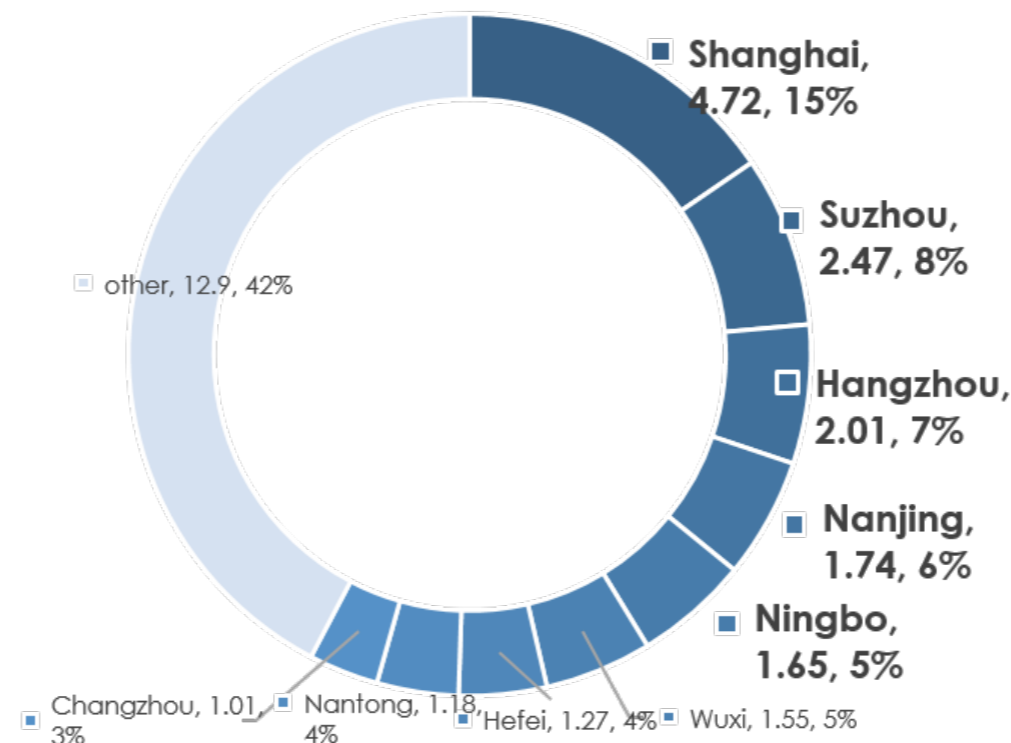


Figure 6. GDP of cities in Yangtze River Delta Area, 2023

Source: Chinese National Data

The unsustainable development pattern is glaringly evident in the Yangtze River Delta (YRD) region.

As one of the most urbanized and densely populated areas in China, the YRD faces significant hydrological challenges. Urban expansion encroaches upon river channels, and the widespread filling in of end channels disrupts the natural river system. Consequently, there is a decline in river network density and water flow rates.

A study by Han (2015) explored river degradation across various natural watersheds in the YRD. Han highlighted that the region is characterized by extensive tributary development, which means that the tributaries dominating the composition

of the river network. However, human activities, particularly in the Hang-Jia-Hu Lake area where Jiaxing is located (see Figure 7), have significantly disrupted the natural development of tributaries over the past three decades. This disruption has led to their rapid decline, raising concerns about the water system's structural stability in the region.

The loss of numerous tributaries also reduces the basin's storage capacity, potentially exacerbating flooding issues and increasing vulnerability to extreme weather events. These challenges pose risks to the future development of Jiaxing.



Figure 7. The hydrologic districts of Yangtze River Delta Area

Source: Han, L., 2015

Contextualisation

The dilemma of secondary cities

The prevailing unsustainable development mode not only exacerbates ecological issues but also engenders a holistic paradigm that permeates all facets of urban life, ultimately making secondary cities like Jiaxing invisible. Within this framework, the identity of smaller city is neglected, overshadowed by the economic metrics.

For instance, an analysis conducted in 2007 revealed that the industrial compositions of 15 cities

in the Yangtze River Delta shared a coefficient of similarity surpassing 0.9 (Liu, 2011). Many studies with different methods and indicators have confirmed the same results (see Figure 8 and Figure 9). Consequently, this homogenization has led to challenges such as indiscriminate investment in infrastructure and excessive construction. Economic advancement has thus been ensnared in a cycle of ruthless competition (see Figure 10), emphasizing quantity over quality. Under this circumstance,

city	Shanghai	Nanjing	Hangzhou	Wuxi	Suzhou
Shanghai	1				
Nanjing	0.998	1			
Hangzhou	0.987	0.995	1		
Wuxi	0.977	0.985	0.995	1	
Suzhou	0.976	0.986	0.996	0.999	1

Figure 8. Similarity coefficient of industrial structure among five cities in the Yangtze River Delta

source: Liu, W., & Xu, J. *China and the World Economy Development Report of 2006*, https://www.ydylcn.com/skwx_ydyl/multimedia/ImageDetail?SiteID=1&type=ImageTable&ID=8367014&Contentype=MultimediaImageContentype&isHost=null

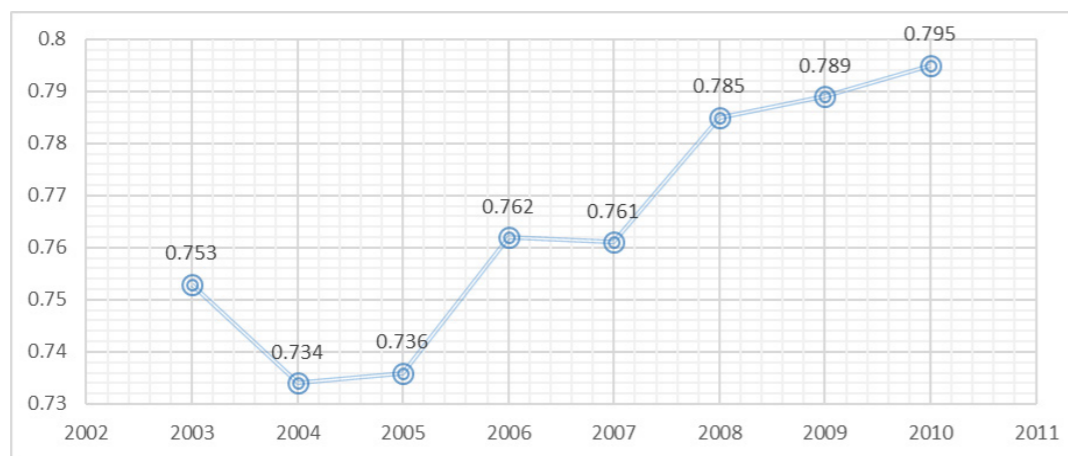


Figure 9. The location of Yangtze River Delta Area Similarity coefficient of industrial structure in the Yangtze River Delta region

source: Xie, F. (2014). *Shanghai, Jiangsu, Zhejiang, and Anhui: A world super economic zone has emerged. China Urban Competitiveness Report No.12* https://www.pishu.com.cn/skwx_ps/multimedia/ImageDetail?SiteID=14&type=ImageTable&ID=13239746&Contentype=MultimediaImageContentype&isHost=null

Jiaxing has gradually lagged behind neighbouring cities in competing for same resources concerning overall economic output, quality, and service standards (Li et al., 2015).

The resolution requires breaking away from the unsustainable development pattern, necessitating collaborative efforts from both the region and the city.

On one hand, the need for restructuring becomes apparent, given the unsustainable nature of the incremental approach to economic development. Responding to challenges such as population growth, traffic congestion, resource scarcity, and environmental degradation, the Yangtze River Delta has actively pursued strategies to alleviate urban pressures. Initiatives like the proposal to "relocate non-core functions" outlined in the

2006 Shanghai Government Work Report and the implementation of a "decentralization" strategy within the Greater Shanghai Municipal Jurisdiction in the 14th Five-Year Plan signal a shift toward a new model of polycentric city clusters. These efforts aim to establish urban clusters characterized by functional dominance rather than hierarchical spatial arrangements (Liu, 2022).

On the other hand, secondary cities like Jiaxing must define their unique position within the region, encapsulating their urban identity. The exploration of alternative development pathways and the enactment of corresponding policies at various levels offer opportunities for economically disadvantaged small cities like Jiaxing to carve out their distinctive niche within the competitive landscape of the Yangtze River Delta.

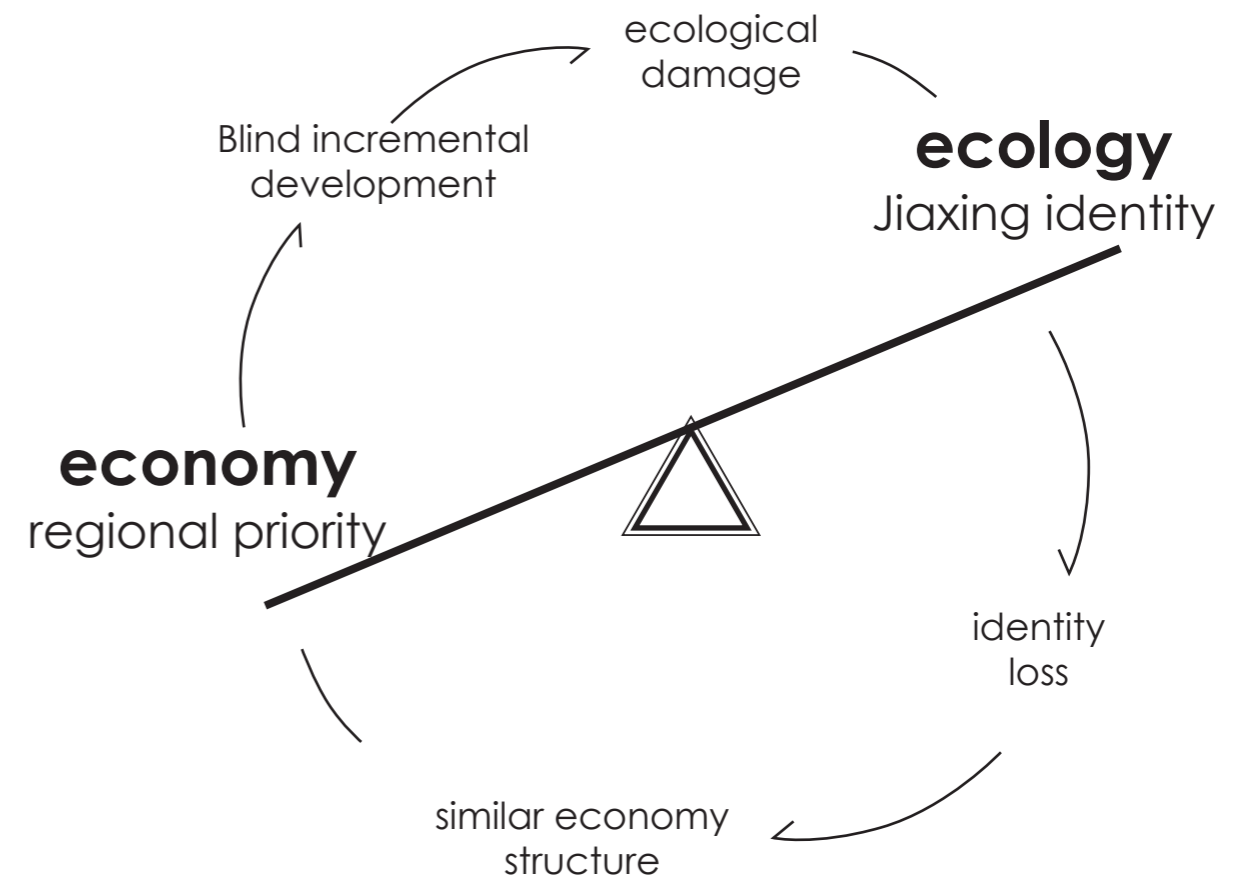


Figure 10. The vicious circle of Jiaxing

Challenges of Jiaxing

Basic information of Jiaxing

Jiaxing exemplifies the contradictions of the prevailing developmental model. Situated within one of the most rapidly urbanizing regions, it suffers from the most severe ecological challenges, making it a typical case for research.

Historically, Jiaxing boasted a millennial legacy as a water city, characterized by distinctive landscapes and modes of life and production. However, it has transformed into a secondary city lack of identity.

Jiaxing is a city that is under the jurisdiction of Zhejiang Province. It has a land area of 3,915 square

kilometres and a resident population of 5,550,100 as of the end of 2022.

It is located in the heart of the core area of the Yangtze River Delta and is considered to be a part of both the Shanghai Metropolitan Area and Hangzhou Metropolitan Area (see Figure 12). The city is situated less than 100 kilometres away from Shanghai, Hangzhou, Ningbo, Shaoxing and Suzhou, and it frequently interacts with neighbouring cities. Due to this, Jiaxing is considered to be one of the core cities in the geographical sense of the Yangtze River Delta.



Figure 11. Jiaxing in Yangtze River Delta Area

Author: Lu Hengxin, Jiaxing Calligraphy and Painting Academy

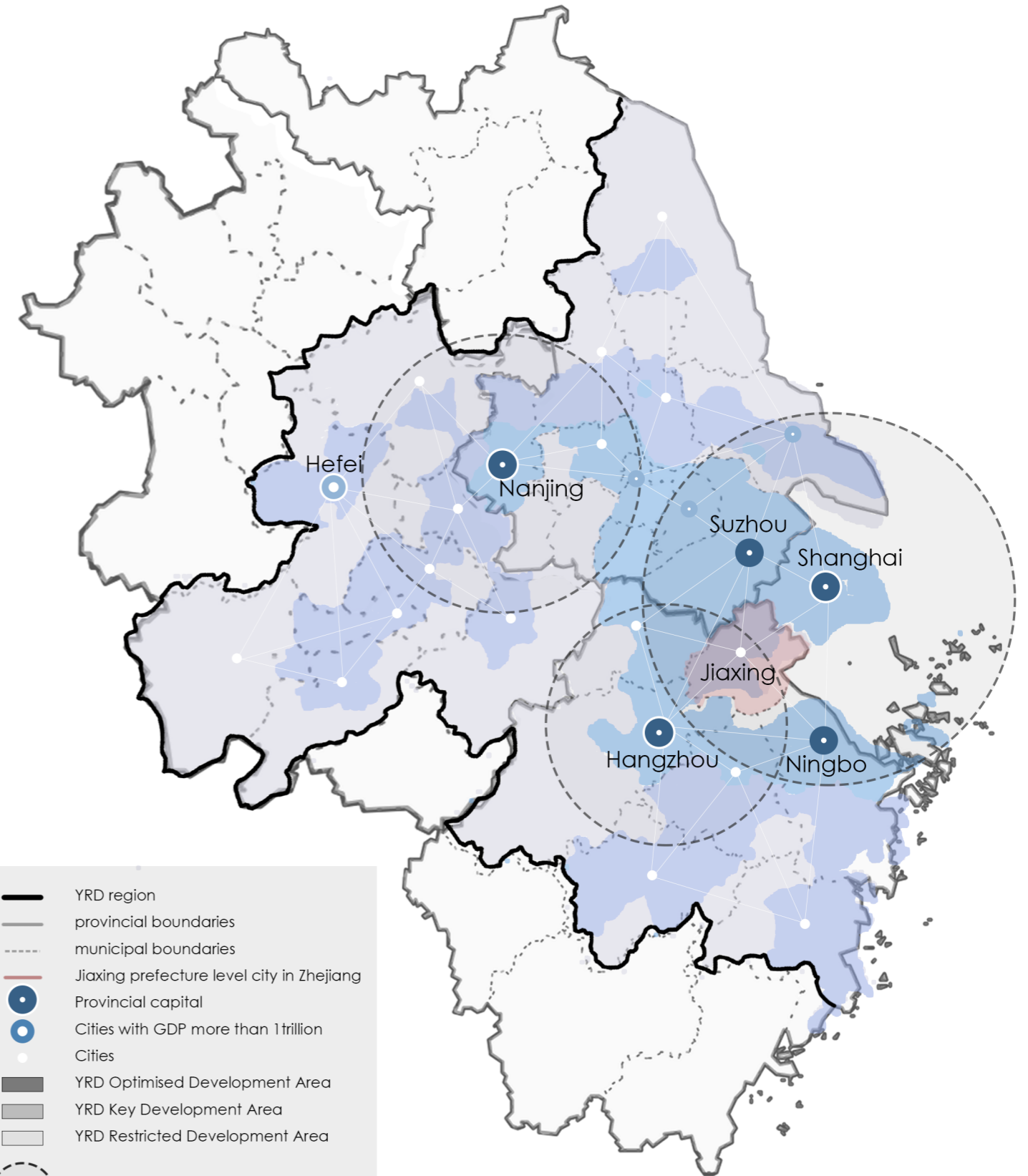


Figure 12. Jiaxing in Yangtze River Delta Area

Challenges of Jiaxing

The plight of Jiaxing

After World War II, numerous ruins remained to be restored, prompting an urgent push for development, such as agriculture. Consequently, agricultural land in Jiaxing was consolidated, and many rivers were filled in to expand the farmland. Subsequent to this, during the era of Reform and Opening-up, the influx of foreign investment spurred the growth of the commercial economy. Jiaxing began to attract investments from neighbouring metropolises, leading to significant land acquisition and further encroachment upon spaces for water bodies (Deng et al., 2015).

Jiaxing is currently witnessing steady economic growth (see Figure 14), with the secondary sector

playing a predominant role (China Data and Statistics Bureau, 2008-2022). The city's industrial landscape is primarily characterized by light industries such as textiles, garments, and leather products, which are significant contributors to water pollution. And they are anticipated to continue driving industrial expansion in the foreseeable future. Regarding the tertiary sector, Jiaxing's traditional industries, including trade, still hold sway, with new industries constituting a smaller proportion. Nonetheless, there exists ample scope for enhancing the depth of complementarity between Jiaxing's economy and other cities in the Yangtze River Delta (Gu, 2005). In these two aspects, Jiaxing exhibits substantial growth potential.

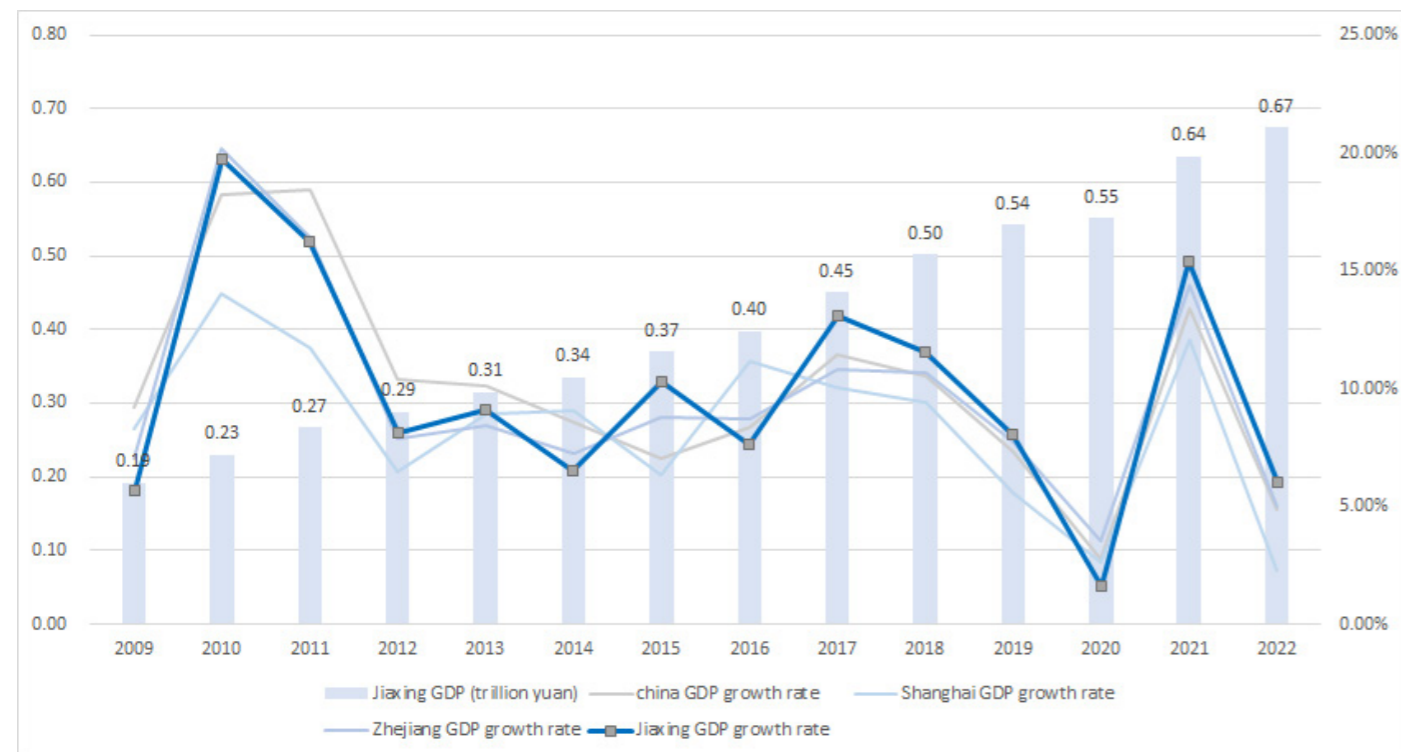


Figure 13. GDP of Jiaxing, 2009-2022

source: Jiaxing Data and Statistics Bureau



Figure 14. Jiaxing land change

Source: Baidu Map

Challenges of Jiaxing

Water problems

With the rapid advancement of industrialisation and urbanisation, some complex environmental issues have arisen. Jiaxing faces problems with air quality (Wang, 2014) and a decrease in biodiversity (Li & Shi, 2011). The most significant problem includes an increase in pollutant emissions along the rivers, a surface pollution problem in shipping and agriculture, and a substandard water quality problem. It is vital and urgent to protect and utilise the ecological functions of rivers.

China's reform and opening-up policy, which was implemented in the 1980s, has resulted in remarkable economic growth and development. However, this policy has also led to local governments prioritizing high GDP growth without considering the environmental costs of industrialization (Wang, 2014). Jiaxing, a city located on the eastern coast, has undergone rapid development and industrialization due to its economic foundation and favourable geographical conditions. The city's main industries are leather, printing and dyeing, paper, and textiles, which account for 47% of its industrial enterprises. Despite the impressive growth, these

industries have a significant impact on the water environment, and pollution is a serious issue in the area. This is mainly due to low efficiency and the spread-out distribution of industries. At present, only 25% of sewage and wastewater receive treatment, and only 70% of the wastewater meets the required standards (Fu & Zhang, 2014).

To conclude, we have to acknowledge that Jiaxing's economic growth has been significant, but its ecological decline is undeniable (Hu et al., 2017). Water quality in Jiaxing, as reported in the Jiaxing Environmental Report 2012, was worrisome. In China, water quality is measured on a scale from Grade 1 (best quality) to a grade worse than V (worst quality). Despite gradual improvements, most of the water in Jiaxing is still harmful to the ecosystem (see Figure 15). Moreover, the water also suffers from structural issues (see Figure 16 and Figure 17). There has been a significant decrease in water area in Jiaxing, and the connectivity of the river water system has been negatively impacted, as demonstrated by the decreasing number of river chains and nodes (Huai, 2019).

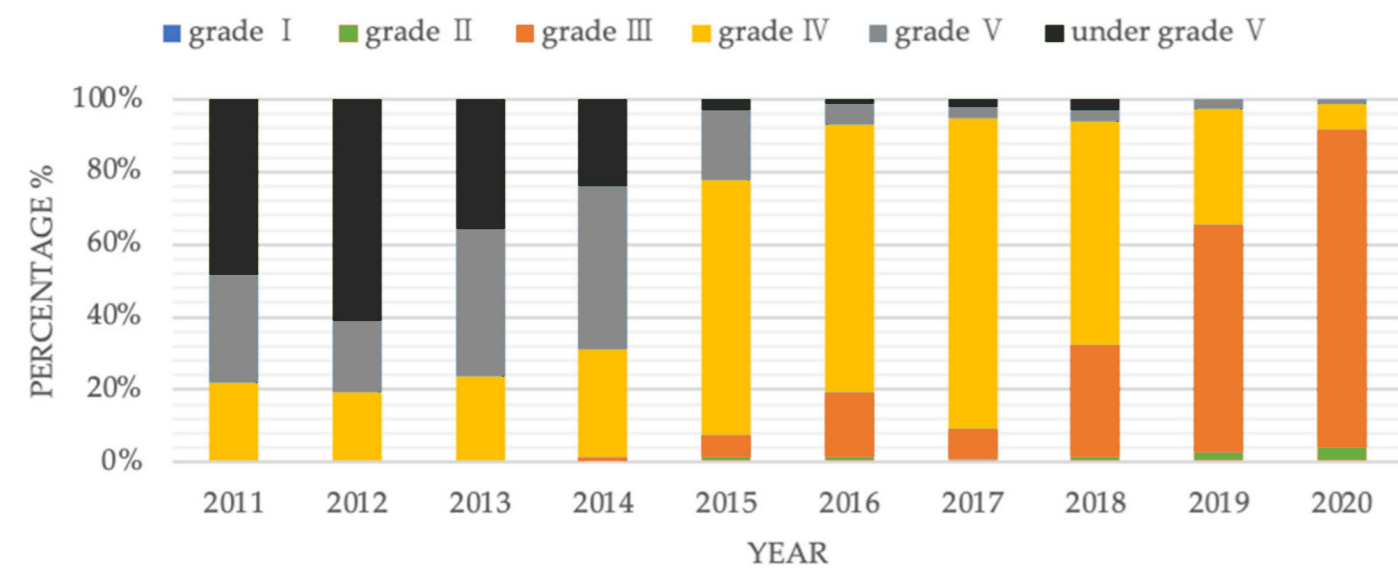


Figure 15. Water quality of surface water in Jiaxing from 2011 to 2020

source: Jiaxing water resource bulletins



Figure 16. Traditional Environment in Daqiao Town, Jiaxing

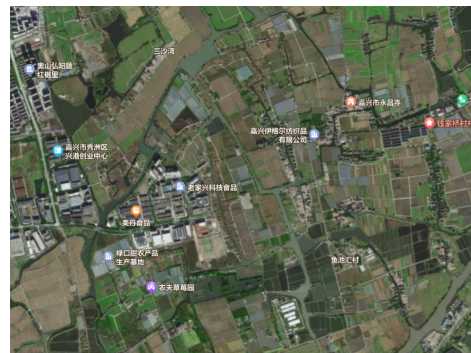


Figure 17. Developed Environment in Daqiao Town, Jiaxing

Challenges of Jiaxing

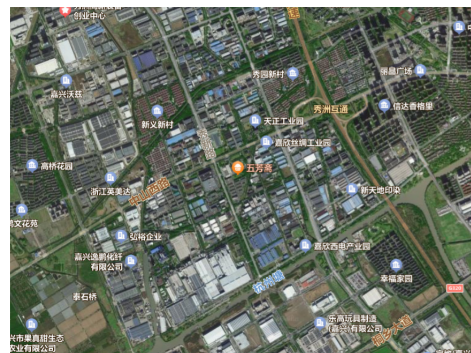
Spatialisation of contradictions

Spatially, as delineated in Ke's (2021) examination of Jiaxing's water system connectivity, notable disruptions have emerged in proximity to the central urban area. These disruptions predominantly manifest as new breaks attributed to the construction of properties, factories, and other infrastructural developments.



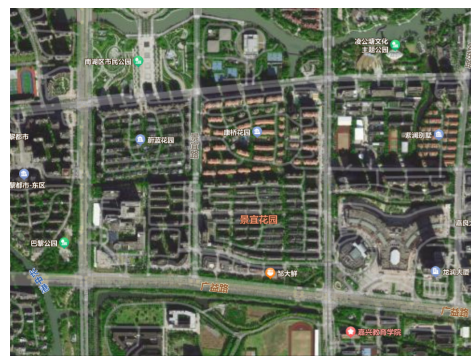
Industrial Companies in Rural Area

- built time: starting from 2000
- Jiaxing Laojiaxing Food Co., Ltd
 - Jiaxing Meidan Food Co., Ltd
 - Jiaxing Yiger Textile Co., Ltd



Industrial Park

- built time: between 2017-2021
- Jiaxing Wozi Toy Company
 - Jiaxing Jia Xin Silk Industrial Group
 - Jiaxing Yipeng Chemical Fiber Company
 - Zhejiang Yingmeida Cable Textile Company
 - Jiaxing Tianzheng Industrial Park
 - Jiaxing Xintiandi Textile Printing and Dyeing Company



Residential Area

- built time: mainly between 2000-2010
- Blue Garden Xinda Jindu Real Estate Development Co., Ltd
 - Kangqiao Garden Jiaxing Lian Construction Real Estate Co., Ltd
 - Jingyi Garden - Country Garden Group
 - Zilan Villa - Zhejiang Yingzhao Real Estate Development Co., Ltd

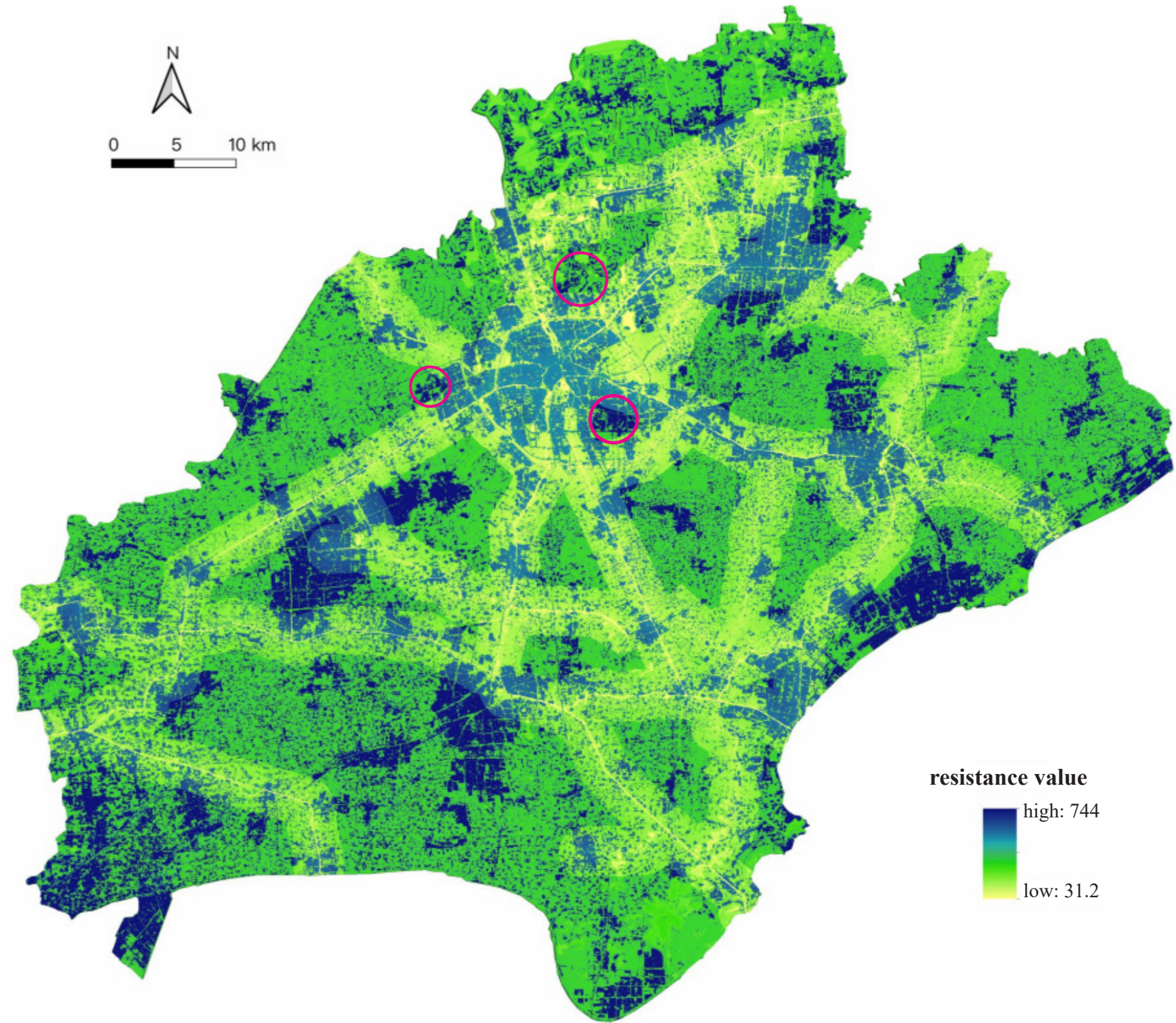
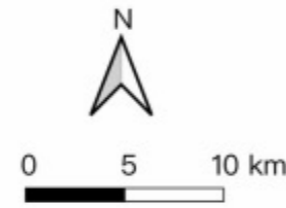


Figure 18. Comprehensive Cost Resistance Surface

source: Ke, D. (2021). *Research on the Construction of Blue-green Infrastructure in Jiaxing Based on MSPA and Water System Connectivity Evaluation* [Master's thesis, Zhejiang University].

Challenges of Jiaxing

Identity loss

In Jiaxing, water issues encompass more than just ecological concerns. As a city renowned for its waterways, these water networks symbolize Jiaxing's identity, intertwining with its agriculture, transportation, culture, and scenery. However, due to the deterioration of water infrastructure, Jiaxing's water landscape has undergone significant transformations. Water accessibility has diminished, leading to a gradual neglect of this vital resource and unsettling the city's identity.

The erosion of the city's identity poses several challenges for Jiaxing. These include reduced resilience to extreme weather events, decreased attractiveness to residents and visitors alike, and declining citizen well-being stemming from the aging of the city centre.

Addressing these challenges is crucial for ensuring the long-term sustainability of Jiaxing.

Figure 19. Old town of Yuehe, Jiaxing
Author: Ma Xuewen, Jiaxing Calligraphy and Painting Academy



Challenges of Jiaxing resilience challenge

Reduced water systems and water pollution have brought about an ecological crisis, and cities have become less resilient.

In the process of urban construction and water conservancy construction, the development coefficient of rivers is even reduced. For example, the construction of drainage projects such as the Hangjiahu South Drainage Project has led to a large-scale increase in the length of the backbone rivers in the region, and the rapid expansion of the town area has led to a large number of low-grade rivers being filled in, and ultimately led to a drastic decrease in the development coefficient of

the river, the length-area ratio of the mainstem, and the number of box dimensions (Deng et al., 2016). Relatively little effort has been made to restore the watershed area, the only reduction in comparison to other ecological lands. The quantitative indicators of water surface rate and river network density as well as the structural indicators of river network structural complexity and river network development coefficients of the river network and water system in Jiaxing City have led to an increase in the flood risk index of Jiaxing (Huai, 2019).

Reduced water availability also poses a risk of subsidence. Due to the serious pollution of surface

waters, water for domestic and industrial use comes mainly from river network abstraction and groundwater extraction, and for the vast rural water supply there is only a reliance on the massive extraction of deep groundwater. Over-exploitation has already led to large areas of ground subsidence in Jiaxing, generating geological disasters and restricting the city's sustainable development (Zhou & Su, 2005).



Figure 20. Street in monsoon



Figure 21. Street in monsoon

Challenges of Jiaxing

attractiveness challenge

Jiaxing is renowned as a water city, with its urban identity rooted in water-based agriculture, transportation, and landscapes. However, its water quality has significantly deteriorated in recent years (Deng et al., 2016), diminishing the city's appeal.

Firstly, the city's attraction to tourists has been adversely affected. There are numerous challenges in preserving the tangible cultural heritage around the river due to insufficient funds and human resources. For instance, the original representative three towers have been demolished, and the old bridges in Cannabis Town have not been preserved (Du, 2021). Furthermore, with less emphasis on water culture,

Jiaxing's cultural tourism lacks a strong creative concept, resulting in weak overall development, low visibility, and a limited variety of tourism products (Lou, 2013). Consequently, the historical heritage of Jiaxing is often incorrectly attributed to neighbouring large cities, further decreasing its visibility.

Secondly, attractiveness to talent is another crucial element for a city's creativity and future development. In recent years, 27 cities in the "Yangtze River Delta" have been implementing policies to attract talent, such as housing purchases, living subsidies, and employment and entrepreneurship incentives. The natural environment, living conditions, and

social culture are all essential factors in attracting talent, and no single element alone can sufficiently enhance a city's attractiveness to skilled individuals (Ran & Chen, 2022). The limitations of the natural environment also hinder Jiaxing's ability to improve its overall appeal.



Figure 22. Collage of the constructions which took the water space

Challenges of Jiaxing

well-being challenge

Jiaxing faces the dual challenge of being both water-rich yet water-quality scarce. While the city has abundant water resources, the proportion of clean water meeting quality standards suitable for use is limited. In 2012, only 2.4% of the city's drinking water sources met the required quality standards, marking the lowest compliance rate in the province (CNR News, 2019). Although governance efforts have led to some improvements in recent years, Jiaxing still records the lowest water quality compliance rate in the province. Furthermore, in 2019, the city's per capita water resources stood at 697.2 cubic meters, the lowest in the province and only one-third of the provincial average (Jiaxing Municipal People's Government, 2020).

This water quality scarcity not only impacts the

city's cultural heritage but also poses challenges to residents living in the old town. Neglect of water systems and water culture exacerbates issues in old urban areas surrounded by water and rich in historical heritage. Firstly, the aging buildings and infrastructure in the old city center expose residents to varying degrees of gas-related and fire risks. Secondly, the deteriorating physical environment of the inner city has lost its appeal to young people, leading to an aging population in numerous older neighborhoods and isolating older individuals from family support and other social and economic resources. Thirdly, these older neighborhoods have become attractive to low-income urban migrants due to their affordable housing prices, exposing new migrants to unsafe conditions and unfavorable socio-economic environments (Yi et al., 2024).



Figure 23. Old residential area in the city centre
Source: Baidu Map

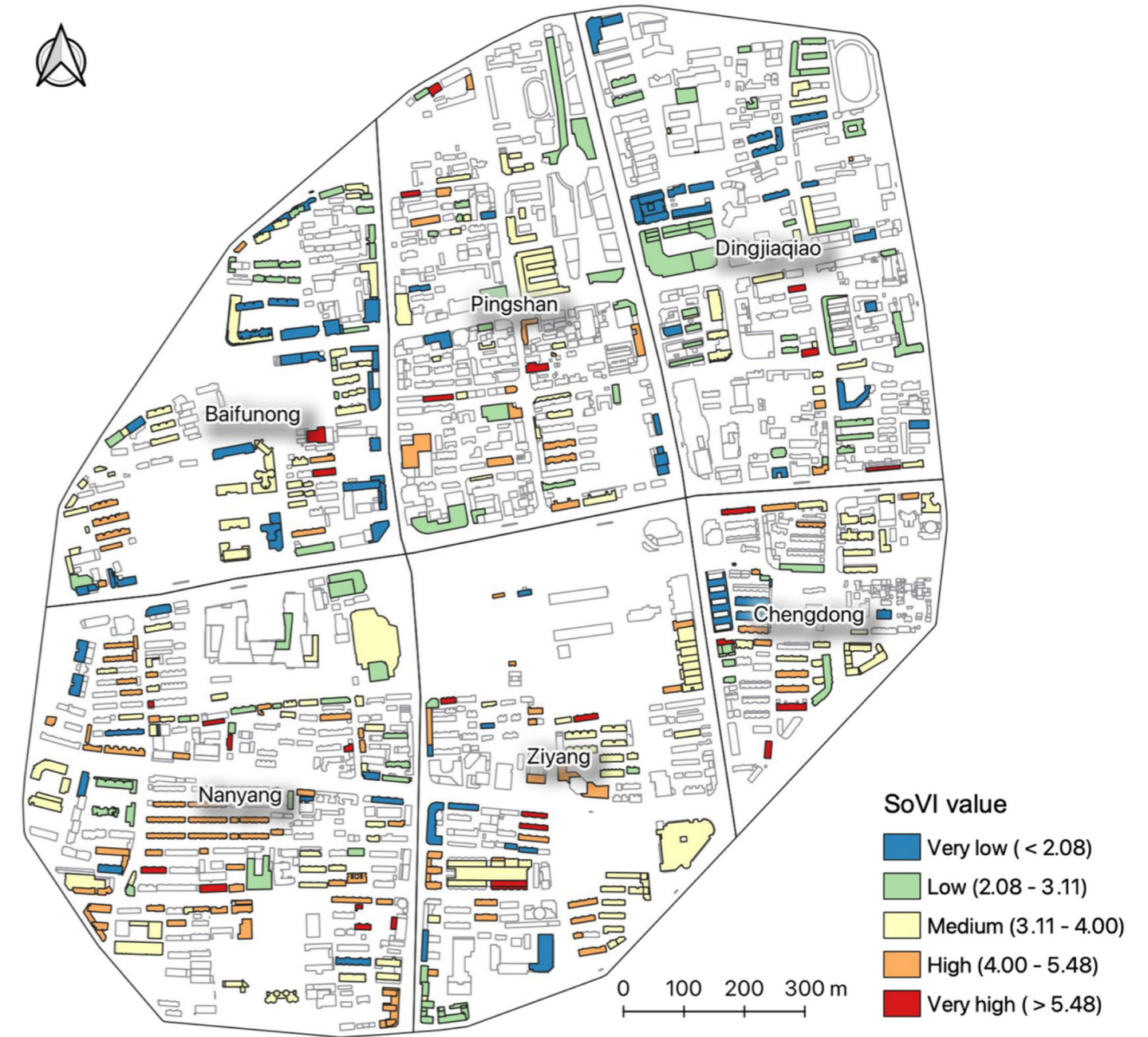


Figure 24. Spatial patterns of social vulnerability at the level of apartment blocks in the city centre

Source: Yi, G., Dou, W., Tao, Z., Yang, Y., Mao, Y., & Zhou, D. (2024). Characterizing the nature of social vulnerability to disasters in Inner-City households: Case of Jiaxing, China. *Natural Hazards Review*, 25(1). <https://doi.org/10.1061/nhrefo.nheng-1870>

Conclusion of Problem Field

Problem framework

Due to the fast-paced urbanization and industrialization in China, the Yangtze River Delta has become a metropolitan area that prioritizes economic growth over ecological concerns in recent decades, particularly in cities with a strong water characteristic like Jiaxing.

Jiaxing is known as a water city whose urban identity is founded on water-based agriculture, transportation, and landscapes. However, its water area and quality have decreased significantly in recent years. Therefore, Jiaxing is losing its unique identity as a water city during regional development.

This has led to damage to ecosystems, followed by a set of negative impacts on resilience, well-being, and attractiveness of the city. Therefore, it is urgent to reclaim the city's water identity and transform the current development paradigm for a balanced future for Jiaxing.

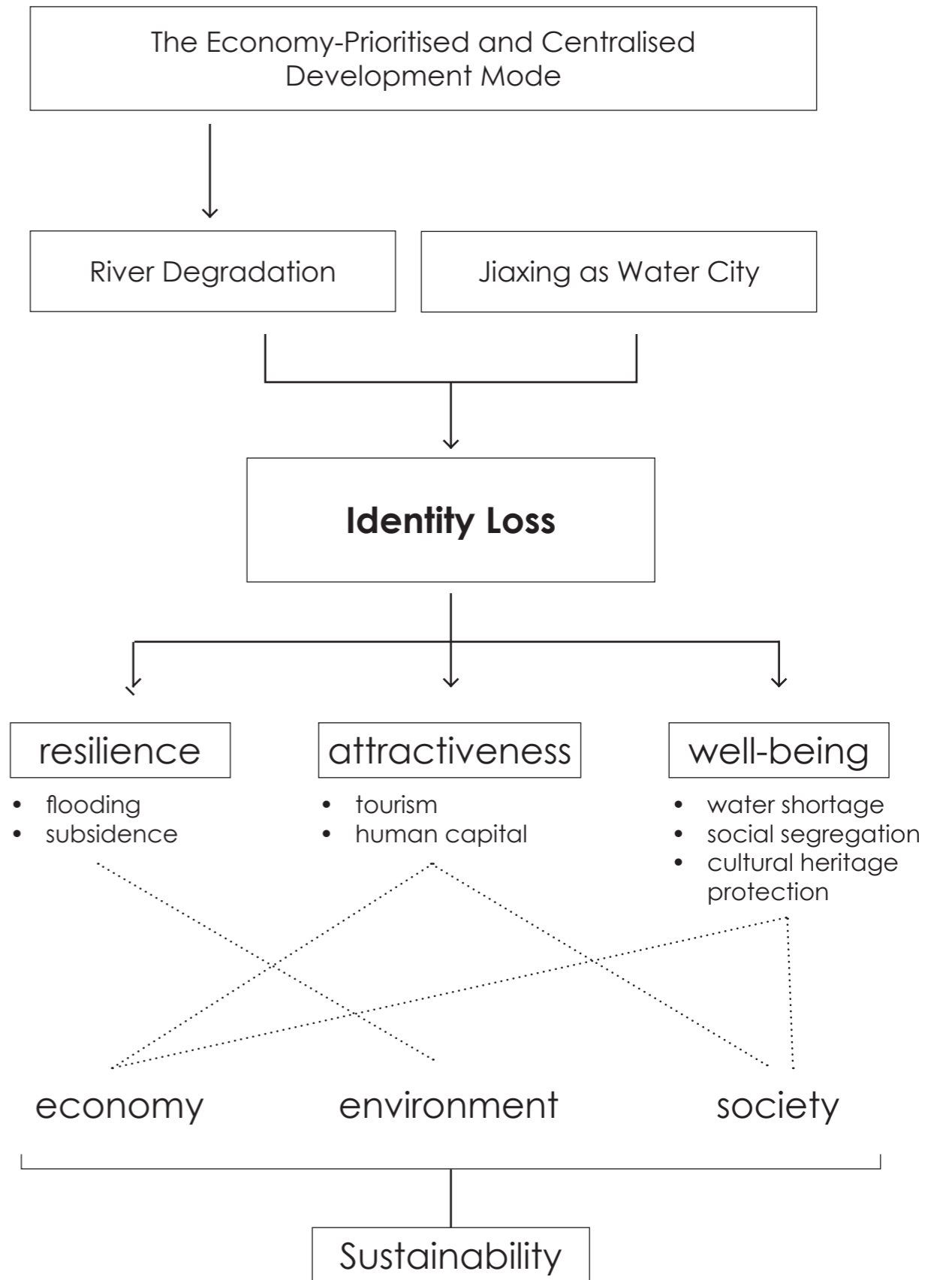


Figure 25. Framework of problem field

Problem Statement

In the **Chinese development model** that prioritizes the economy and emphasizes the central city, **the water city identity** of the secondary city of Jiaxing has been weakened, posing **challenges to future sustainable development** across economic, ecological, and social dimensions.



Figure 26. A Brief History of the City

Author: Feng Sheng Yan Ying

<http://dz.cppfoto.com/activity/showG.aspx?works=1194597>, 2015-06-09



Figure 27. Yuehe Ancient Cultural Street, Jiaxing

Author: YZERG
<https://www.xiaohongshu.com/explore/5f9e14990000000010029ce?source=question>

Research aim

This thesis aims to **rebuild the water city identity** to break the unsustainable regional dynamics and deliver a **sustainable future for Jiaxing**.

II. METHODOLOGY

- conceptual framework
- theories for identity
- theories for methodology
- research question
- methods & expected results
- timeline

Conceptual Framework

Main theme: Water identity

Water is the most important feature of Jiaxing's urban identity. So it has the potential to be a crucial role in breaking the cycle of unsustainable development. In the new era, there are opportunities to re-evaluate our priorities and consider how rivers can act as ecological stabilizers or platforms for public activities. This can lead to positive changes and a more sustainable development model. Therefore, this thesis will focus on water as its main theme and explore its potential as a driving force for sustainability.

Two layers

Urban identity is a complex topic that can be interpreted differently at various levels of analysis (Cheshmehzangi, 2015). Due to the vastness of the topic, we cannot cover every aspect of it thoroughly; hence, we need to concentrate on specific viewpoints. Therefore, in order to narrow down our focus, we require two scopes, **regional scope** and **city scope**.

As Jiaxing is located within the Yangtze River Delta region, its development is closely linked to the overall progress of the area. Therefore, it's important to analyse starting from the perspective of the region as a whole. However, this is a complex topic that involves many dimensions, and so we will examine the strategies in the city scale and from the point of view of the citizens. This means taking a bottom-up approach that complements the top-down perspective. By doing so, we can avoid any negative effects of these two approaches and ensure that they work together to provide the best outcome.

Three objectives

The primary goal of reshaping the identity of Jiaxing is to create a sustainable future for the city. Achieving this goal requires us to consider the three pillars of sustainable development: economic,

social, and ecological dimensions. A sustainable city identity could help in promoting progress in these areas. Cities that successfully integrate these three pillars into their development plans are more likely to have a resilient, vibrant, and distinctive urban identity that reflects the values and aspirations of their inhabitants. Therefore, there are three objectives in these three areas: **social well-being**, **ecological resilience**, and **economic attractiveness**.

1. economic attractiveness

Urban economies play a crucial role in shaping the sustainable future of a city. Economic activities, industries, and job opportunities contribute to the overall character and prosperity of an urban area. Sustainable urban economic development involves promoting businesses that contribute positively to the community, creating employment opportunities, and fostering innovation and entrepreneurship.

2. social well-being

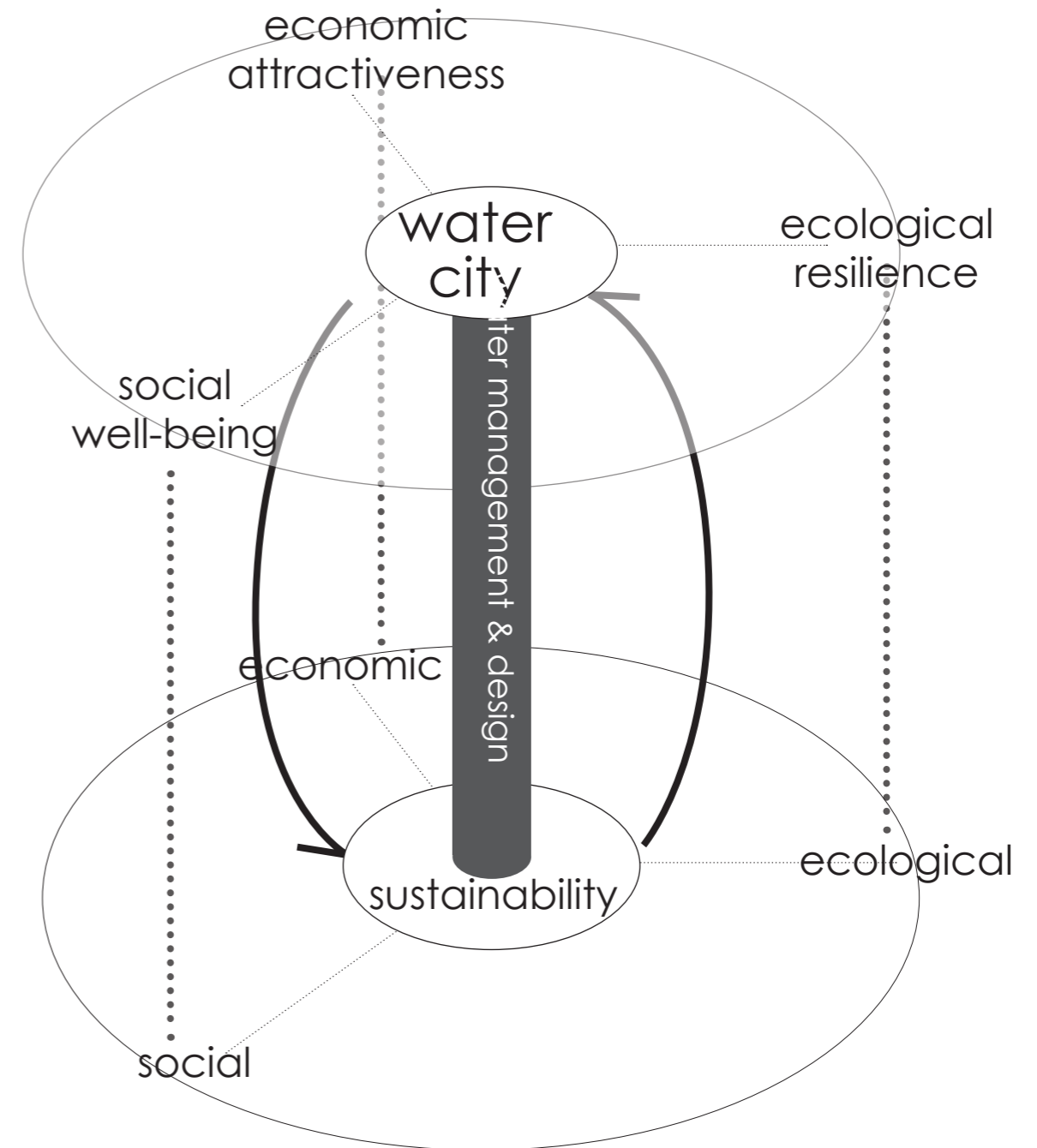
Urban identity is often deeply rooted in the social fabric of a community. Social sustainability in urban planning considers factors such as inclusivity, diversity, social cohesion, and community well-being. Preserving and promoting cultural heritage, fostering a sense of community, and providing social amenities contribute to a positive urban identity.

3. ecological resilience

The environmental aspects of a city, such as green spaces, sustainable infrastructure, and efforts to mitigate environmental impact, contribute to its identity. Cities that prioritize environmental sustainability often have a distinct character that values nature and ecological well-being. Sustainable urban planning involves measures like green building initiatives, efficient public transportation systems, and waste management strategies that minimize environmental impact.

By employing strategic water management practices and purposeful urban design, Jiaxing can cultivate and enhance its identity as a water city at both regional and municipal scales. This concerted effort aims to bolster the city's allure, foster well-being

among its inhabitants, and fortify its resilience, ultimately paving the way for a sustainable future.



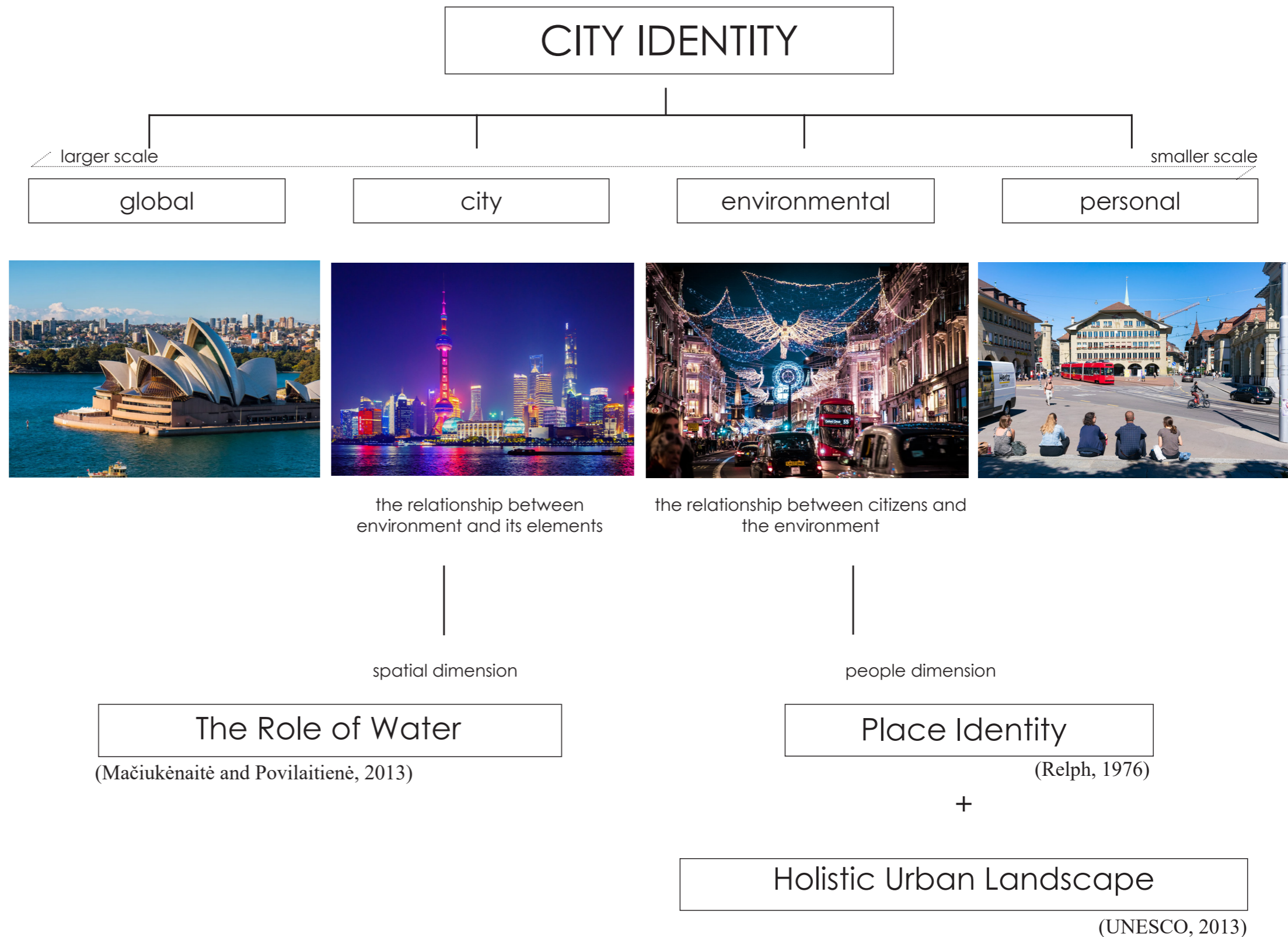
Theories for Identity

Definition of urban identity

Identity describes the "uniqueness" of an object (Kaymaz, 2013). As for urban identity, is a translation of the distinct characteristics of the place or a mixture of the individuals as a total object (Ujang, 2012). It is the way of representing natural, cultural and manmade components of the city (Ziyacee, 2018). It is not only about physical components, but also involves certain "intentions, attitudes, purposes and experience" as Relph (1976) suggested. Place identity grows out of direct experience with the physical environment (Proshansky et al., 1983). Built environment undoubtedly has an influence on how city dwellers define themselves within society. Place identity is, after all, a part of self-identity (Proshansky et al., 1983). Thus, in addition to particular physical characteristics, identity also requires socio-cultural processing (interaction with the city's inhabitants) in order to be formed. Therefore, physical and socio-cultural dimension both are crucial elements for urban identity.

It is also important to note that urban identity is a very broad concept. At different scales, context is different and cannot be generalised. Cheshmehzangi (2015) defined urban identity as a set of multiple and mutual relations in between context and contents. In this study, urban identity is broken down into four dimensions: global, city, environmental, personal, which represent different relationships. In this study, we need to focus more on the relationship between environment and its elements, and humans and their environment, i.e., the city and environment dimensions, and work on shaping the identity perception of the city itself and the residents as a whole.

At both scales, the city is interpreted differently, necessitating the application of different theories. On the large regional scale in Jiaxing, the primary discussion revolves around the water element in urban space, for which theory of Mačiukėnaitė and Povilaitienė (2013) on the role of water is applied. On the smaller human scale, the three elements of identity proposed by Relph (1976) are significant for citizens' perception. Additionally, the holistic perception view proposed by UNESCO is also considered in this scale.



Theories for Identity

Regional scale

The role of the water

The urban setting or the macro level is the level in which urban identity is defined as a concept with a great emphasis on image of a place (Cheshmehzangi, 2015). On the premise that Jiaying is known for its water city identity, this study focuses on the relationship between environment and its elements, i.e. the relationship between city identity and water. In the study of Mačiukėnaitė and Povilaitienė (2013), the roles of water in city were divided into 4 kinds: function, society, ecology, and visibility.

Under the cover of the first group “functional cog”, there are the scientists and urban planners who analyse river as a part of urban structure, however they bring out just the functional importance and tangible benefits. Le Corbusier especially highlighted the functional importance of the river. In his opinion, river is the infrastructural object, something like liquid railway (Rekevičius 2010). Although, it is very technical point of view.

Riverbanks have been very important public open spaces since ancient times. Possibilities of embankment development as open space for city dwellers were analysed in the aesthetic, compositional approach by C. Moughtin (1999). The formation of the embankment is described by K. Lynch (1990) as well. Rivers are increasingly important public spaces in modern urban life.

K. Jakovlevas-Mateckis analyses river from the ecological perspective. He claims that rivers and riversides are a part of natural frame and its carry out essential ecological compensation function. Riverside slopes and its greenery and even brushwood are like the lungs of the city and it encourages formation of horizontal and vertical air flow. This process ensures clean air flow and polluted air displacement into the upper layers of the atmosphere (Jakovlevas-Mateckis 2006).

The river, as a prominent visual element, is intuitively linked to the city's image. Recently, there

are researches about Valleys of Nemunas and Neris, and their influence for the Kaunas identity by J. Bučas (1994), M. Purvinienė (1980), J. Kamičaitytė-Virbašienė (2005). The thorough examination about the river influence on Vilnius visual identity has been made in the monograph “Protection and development principles of Vilnius visual identity” by Z. J. Daunora, S. Kirvaitienė, A. Vyšniūnas (2004). The proposals for the development of Neris riversides are discussed in the articles of P. Zaviša (2012), J. Glemža (2011), M. Kajackaitė (2011). The emergence of these studies shows a growing emphasis on visual roles.

These four roles will change over time, there will be times when certain roles will stand out a little and others will become irrelevant, which is related to social development.

Ambiguity may arise because the term function may have the same name as the elements in the next analysis. Therefore, this study speaks of the four functions of the river as infrastructural dimension, social dimension, ecological dimension and symbolic dimension

The focus of the thesis: infrastructure

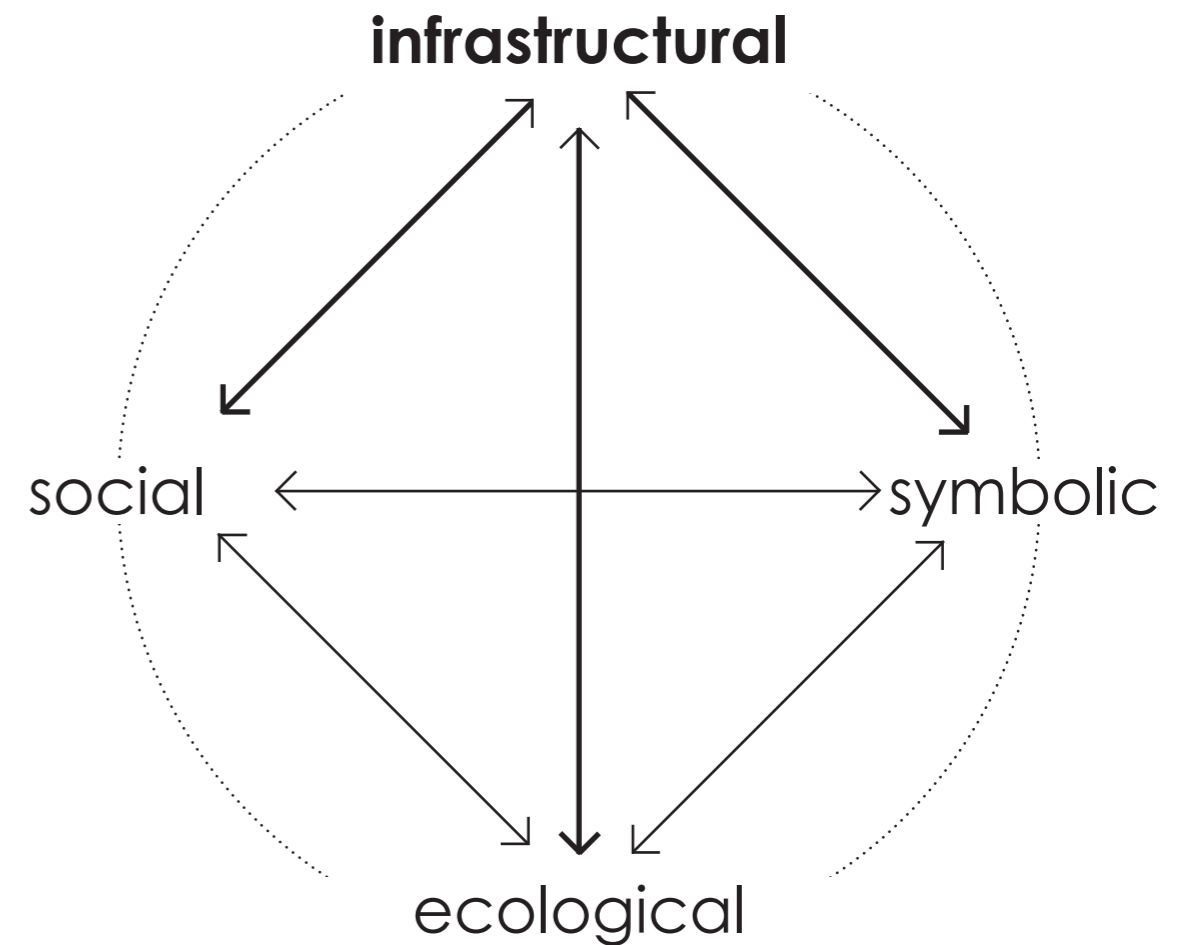
In this study, a predominantly infrastructural perspective will be adopted due to its strong historical foundation in Jiaying, its extensive linkages with other facets of the city, and its ability to effectively address all dimensions of the challenge.

Firstly, the historical essence of the city itself is intricately intertwined with water. Throughout its history, Jiaying has functioned primarily as a vital water transportation hub rather than a mere scenic destination or otherwise.

Secondly, infrastructure exerts a significant influence on other facets, owing to the interplay

between various roles in Jiaying. The development of waterways has notably facilitated the growth of markets, with a clear temporal correlation observed between the evolution of water infrastructure and the advancement of citizens' livelihoods. Symbolically, the canals have inspired numerous artistic expressions, including paintings and poetry, underscoring their intrinsic link with transportation and societal functions. Ecologically, the underutilization of water in contemporary society has resulted in its neglect and diminished ecological value. An infrastructural approach could help raise awareness of ecological degradation, thereby driving the development of the water's ecological role.

Lastly, the infrastructural role demonstrates effectiveness in addressing the challenges facing Jiaying. Examining the rivers' contribution as infrastructural elements to urban sustainability offers a robust pathway for problem-solving. Regarding attractiveness, it presents new avenues for tourism, effectively showcasing the city's identity. Concerning well-being, the infrastructural aspects of rivers can enhance accessibility and environmental quality in inner-city neighbourhoods, thus promoting social equity. Regarding resilience, rivers can bolster ecological resilience and mitigate the risk of flood disasters induced by extreme weather events.



Theories for Identity

City scale

The place identity

This particular level of urban identities is often articulated as “place identity,” within the medium level of urban identities, public realms, public spaces, and urban squares are considered as the most imageable nodes of a city. This level can also be considered as the most important and effective level of urban identities (Cheshmehzangi, 2015).

Relph (1976) made a comprehensive study to the characteristics of the places identity. To him, identity allows something being different from the others. Relph argued that identity of a place comprises three interrelated components of (i) physical features and appearances, (ii) activities, and (iii) meaning and symbols. Physical components comprise any naturally existed (e.g. land, mountain and lake) or manmade (e.g. buildings and streets) environments each of which offers its own characteristics. Activities are composed of events, situations and functional patterns of the place while meanings factors shape through experiences and interactions of the users in a place.

There are some other researchers with the similar conclusion. For example, Punter (1991) suggested factors as (i) physical settings, (ii) activities and (iii) meanings. and Montgomery (1998) made a similar study and categorized elements determining user's cognition of a place as (i) forms, (ii) activities and (iii) images.

To sum up, we see that all aforesaid works agree to categorize visual values of urban spaces as physical elements. Note that, activities represent functional abilities of a public space, hence, meanings and

images belong to semantic values of that place (Ziyace, 2012).

These factors are expected to not only represent the main qualities of a place identity; but also, cover comprehensive urban dimensions.

Holistic Urban Landscape

As Irina Bokova emphasized at the 2012 World Urban Forum, tangible and intangible heritage are sources of social cohesion, factors for diversity, and drivers of creativity, innovation, and urban regeneration. For Jiaxing, water stands as its foremost symbol and heritage. It is imperative that we capitalize on this inherent potential.

The historic urban landscape approach sees and interprets the city as a continuum in time and space (UNESCO, 2013), which requires a shift in urban identity from traditional singular heritage to a more comprehensive regional perspective that protects the whole cultural space.

Therefore, this thesis seeks to use water as a foundational infrastructure to expand beyond singular protection-oriented actions, adopting a holistic strategy that integrates cultural interpretation, ecological conservation, and socio-economic development, all towards sustainable development objectives (Shao, 2019).



Figure 28. Xueyin Temple

Source: Xiao You Yi Ge, Zhihu, https://zhuanlan.zhihu.com/p/22297330?utm_id=0



Figure 29. Moon River Street (Yuehe)

Source: Sohu, https://www.sohu.com/a/775179333_121117449

Theories for Identity

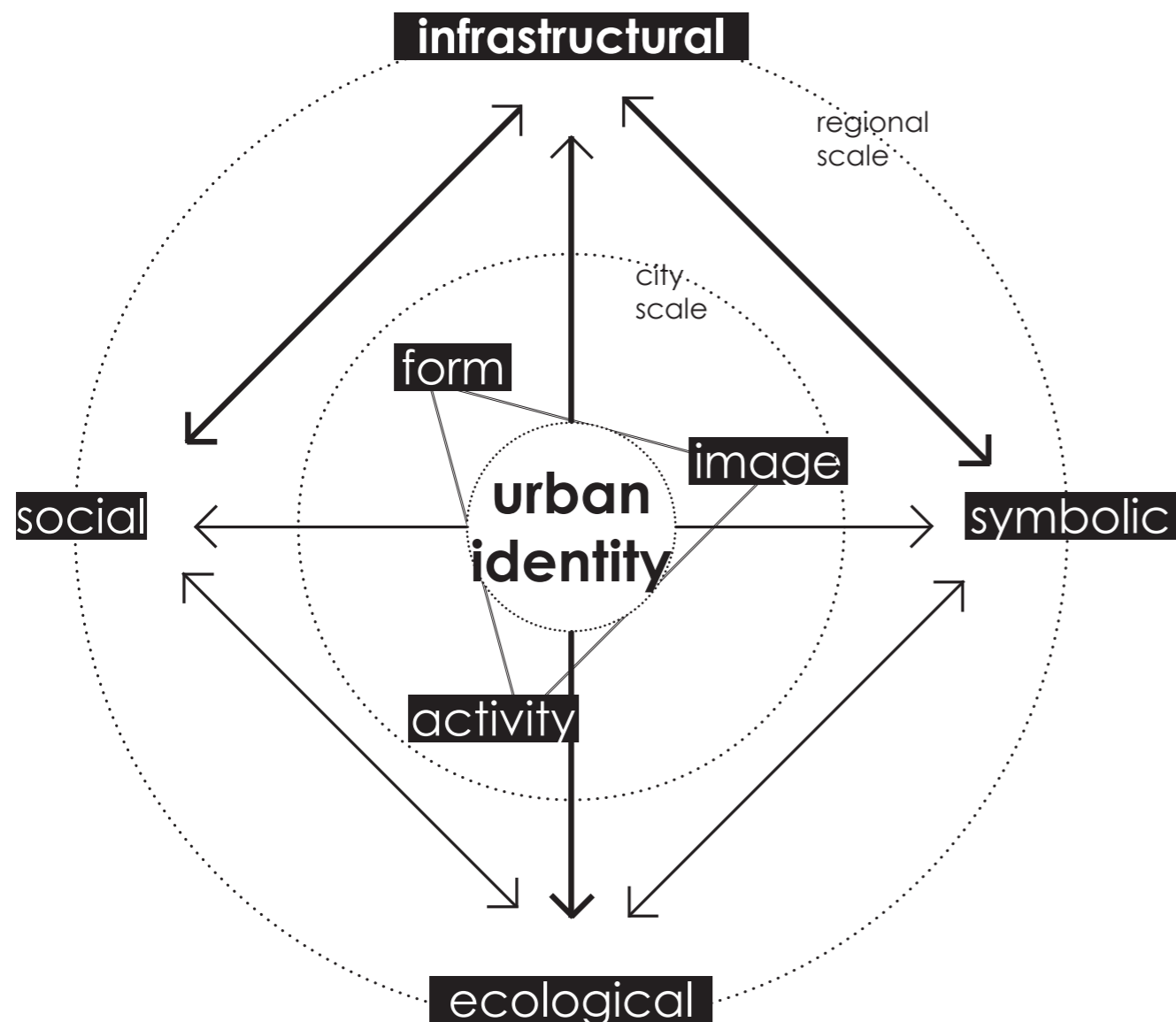
Framework for identity

Cheshmehzangi (2015) mentioned in his study that the aim for specifying different levels of urban identities is not necessarily to categorize them, but rather to identify the roles of urban identities in various scales of urbanism. Therefore, urban identity therefore focuses on different relationships at different scales and has to address different issues.

From a theoretical and methodological point of view, what should need to be considered at the regional level is the arrangement of spatial elements, i.e. the water element as the main component of Jiaxing's urban personality. Taking the role of infrastructure as the main entry point, the relationship with other roles is then considered, thus constituting a complete regional urban identity.

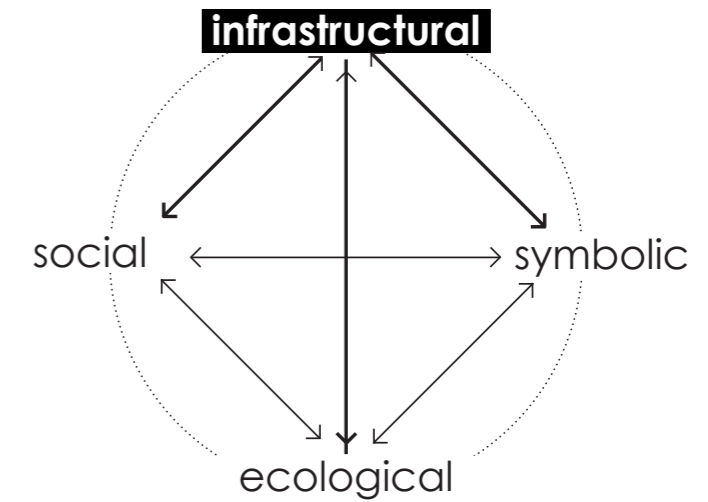
At the same time, the smaller scale of the main urban area is indispensable. The lack of attention of urban residents in the process of creating urban identity can result in some practical deficiencies. If only focusing on the macro level, there may be some limitation, such as asymmetrical political process, social inequity and exclusion, tokenism and limited public participation, and commodification of culture and gentrification. Therefore, we need to take into account the actual needs of urban residents at the macro level and focus on its unique features. At the micro level, we need to strengthen local participation, including citizens and local businesses.

Both aspects should complement each other in order to actually create a better urban identity for the city's inhabitants.

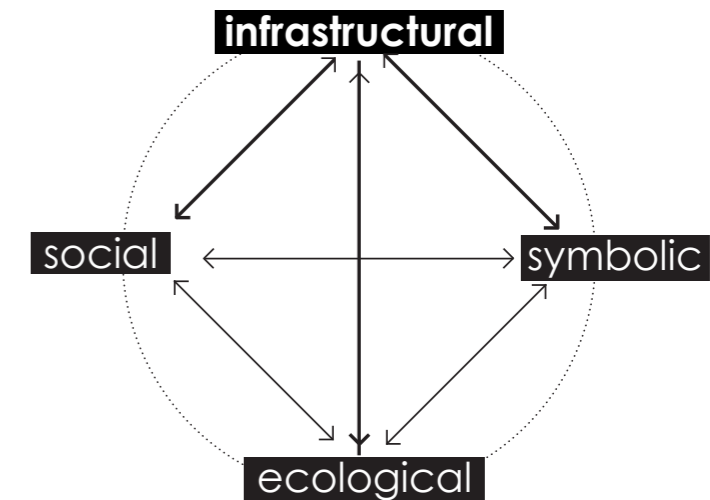


regional scale

mainly focus on the infrastructural role, to build a unique urban identity

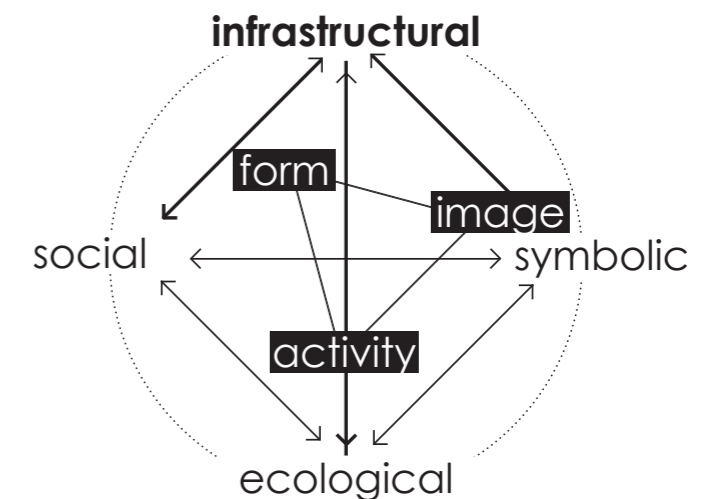


then shift to the relationship between the different roles to create a holistic cultural atmosphere



city scale

combine form, activity, and image to continue the memory of the city from the perspective of citizens



Theories for Methodology

Analytical framework for strategic sustainable development

Krellenberg et al. (2019) developed an analytical framework to compare the sustainability challenges faced by different cities. The framework combines Broman & Robèrt's (2017) strategic sustainability planning and SDSN's Cities Framework. Broman & Robèrt's five-level model emphasizes a strategic approach to sustainability planning, and by integrating SDSN's guideline, the focus is on supporting urban sustainability visions aligned with the UN Agenda 2030 and its 17 SDGs. The SDSN guideline outlines four steps for SDG implementation: inclusivity, local adaptation, goal-based planning, and monitoring. Linking these steps to Broman & Robèrt's five-level approach creates a comprehensive analytical framework with six levels.

- Principles - Map the System (Level 1): Describes the city's circumstances by analyzing social, physical, economic, ecological, political, cultural, and historical factors. Tools like SWOT analysis identify sustainability challenges, involving stakeholder participation.
- Vision with Goals and Indicators (Level 2): Develops a sustainability vision with concrete goals and indicators based on a backcasting process. Stakeholder involvement is crucial, and the vision aligns with the SDGs, emphasizing implementability, applicability, and transformative potential.
- Strategic Guidelines (Level 3): Integrates the sustainability vision with existing strategies and plans at international, national, and urban levels. Emphasizes multi-level and multi-sectoral decision-making, considering financial means, human resources, and capacities.
- Actions (Level 4): Defines concrete actions tied to specific resources and a timeline for implementing the strategic guidelines. Evaluates existing projects, considering benefits, co-benefits, and ongoing initiatives from various stakeholders.
- Tools (Level 5): Develops meaningful tools

for implementation based on visions and actions. Specifies responsibilities, establishes a monitoring framework, and ensures data provision for transparency, adjustment, and self-reflection.

- Readjustment (Level 6): Involves planned readjustment based on the monitoring system, considering changes internal or external to the system. This may lead to modifications in goals, indicators, actions, or other levels of the planning process.

This study will use this structure as a reference for the overall methodology.

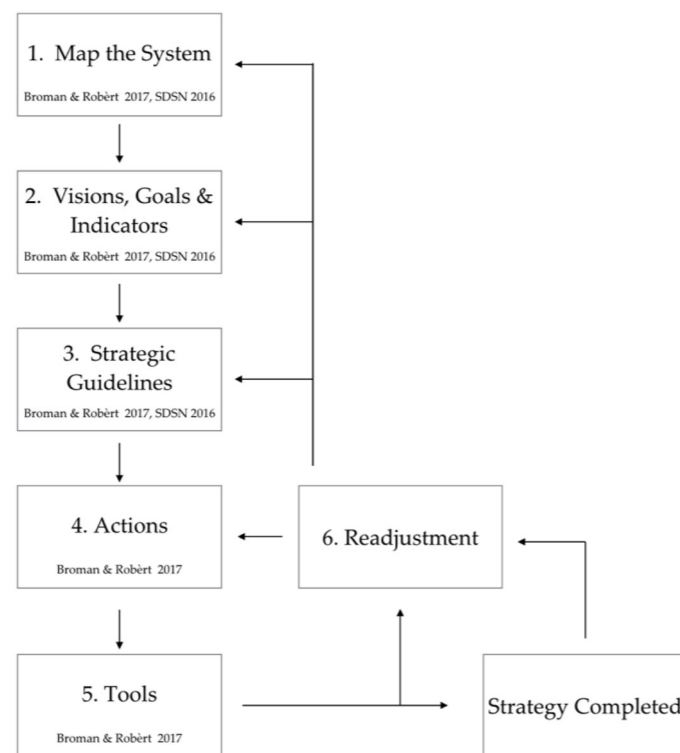


Figure 30. Analytical Framework
Source: Krellenberg et al. ,2019)

Visioning framework

Voros (2003) built this generic framework for foresight process, which could serve as a design aid for customised foresight projects and processes. This framework recognises several distinct stages, from initial information gathering to strategic development and strategic planning activities.

Figure 12 shows the four key elements of the process: Inputs; Foresight work; Outputs; and Strategy (i.e. continuing strategic processes). Note that while this process is conceptually described as a simple linear process, it actually goes through a number of feedback loops - results are not achieved overnight.

Foresight work is the crucial part of this frame. It can be conceived as comprising three broad steps which follow a logical sequence: analysis, interpretation, and prospection.

- **Analysis:** This initial step focuses on understanding what seems to be happening, aiming to bring order to diverse data generated during the Inputs stage.
- **Interpretation:** Going beyond surface analysis, this step seeks deeper insights and structures. It involves critical studies, causal layered analysis, and systems thinking to understand the underlying dynamics and influences.
- **Prospection:** The final step is about creating forward views by examining or generating alternative futures explicitly. Techniques include scenarios, visioning, and normative methods. It considers the type of futures: possible, plausible, probable, or preferable.

plausible, probable, or preferable. This step also accommodates methods like "backcasting" and evolving systems maps with different assumptions.

This study will take this section to guide the methodology of vision.

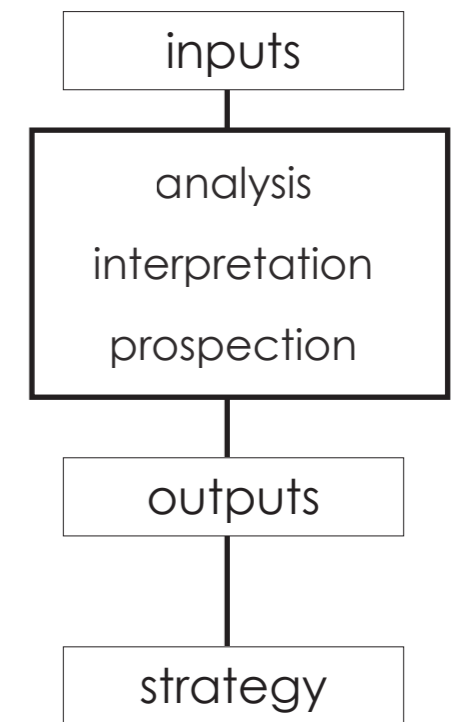


Figure 32. The foresight framework
Source: Voros, 2003

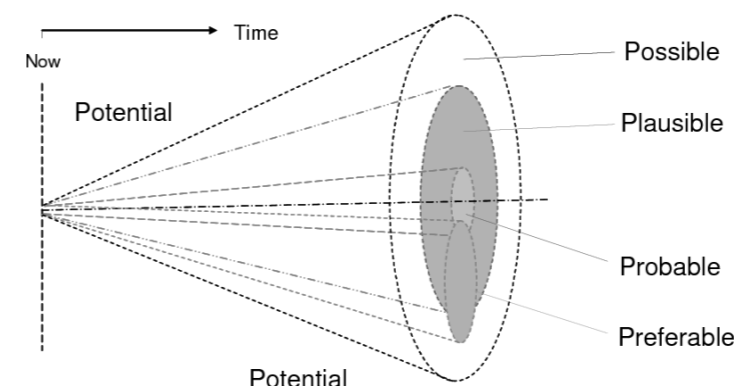


Figure 31. The futures cone
Source: Voros, 2003

Research Question

How can the **revitalization of Jiaxing's urban identity** as a water city be facilitated by enhancing the role of water as infrastructure to improve the **integral sustainability** of the city?



Figure 33. The banks of the Grand Canal

Author: Shen Xiangran, Jiaxing Calligraphy and Painting Academy

Research Question

Sub-Questions

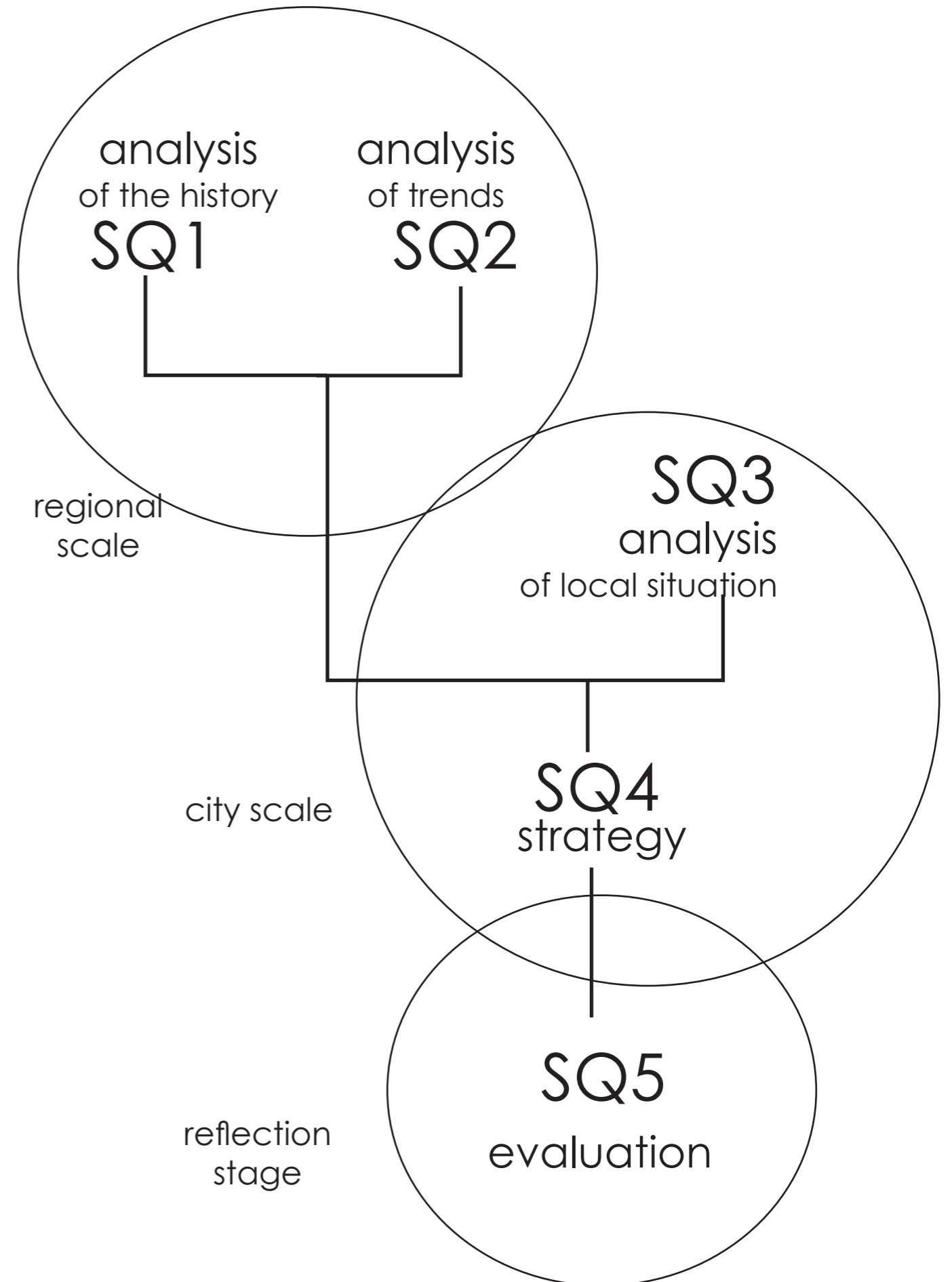
SQ1: How has water influenced the identity of Jiaxing? What role has water played in shaping Jiaxing's history?

SQ2: What are the current ecological, social, and economic trends and challenges in Jiaxing and the Yangtze River Delta (YRD) region? Are there any opportunities for more sustainable development?

SQ3: In what ways do the various roles of water affect the citizens of Jiaxing today? How do they use the water? How do the citizens of Jiaxing perceive their relationship with water?

SQ4: Based on the analysis of the previous questions, what strategies could be implemented to improve economic attractiveness, ecological resilience, and social well-being in Jiaxing? Are these strategies prioritised? How can these strategies be implemented step by step?

SQ5: To what extent are these strategies effective in shaping the water city identity? How will they specifically enhance economic, ecological and social benefits? Are there any limitations to their effectiveness?

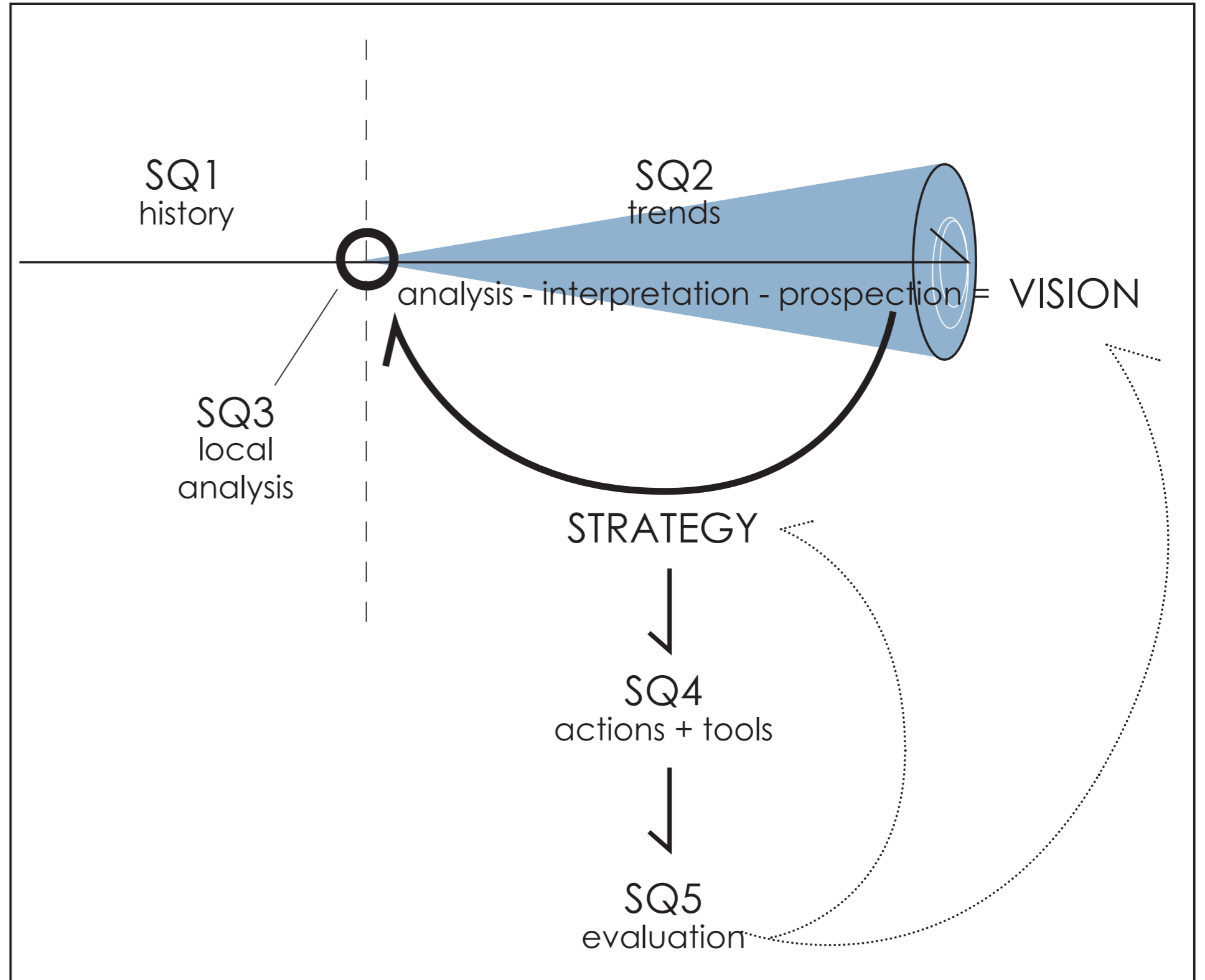


Research Question

SQ1 and SQ2 represent Jiaxing's past and future, respectively. By examining the city's history, we can identify the foundations of its identity, while future trends provide opportunities for positive change. These two questions help us form a vision of Jiaxing as a whole in the context of the Yangtze River Delta region.

SQ3 focuses on the main city of Jiaxing to analyse the current situation, we need to look into specific areas and analyse specific spaces and activities. Once we have completed our analyses, we can create a realization strategy in three dimensions: economic, ecological, and social - this is the key step of this thesis, SQ4.

The question, SQ5, is about evaluating the effects. The extent to which the final strategy can serve to promote the sustainable development of Jiaxing needs to be considered. The analysis of the assessment framework enables a better awareness of its limitations.



Methods & Expected Results

Methods

The research can be divided into three phases: regional vision, city strategy, and reflection.

In the regional vision phase, the research method is mainly through literature review, combining historical, policy, news, and other materials to analyse and derive the basic situation of the Jiaxing water system, as well as the opportunities and challenges faced by Jiaxing in the Yangtze

River Delta. Based on the results of the analysis, large-scale vision targets were set using Voros' methodology (2003).

The city strategy phase involves analysing specific spaces of the city. The impact of the various functions of the river on the space will be analysed, as well as how people use the river, based on the theory of Mačiukėnaitė and Povilaitienė (2013b). Through interviews, a more comprehensive

understanding of the water identity was developed. On the basis of the vision and spatial situation described above, several strategic principles can be derived, which will then be refined into actions, the development of implementable staging tools, and stakeholder tools.

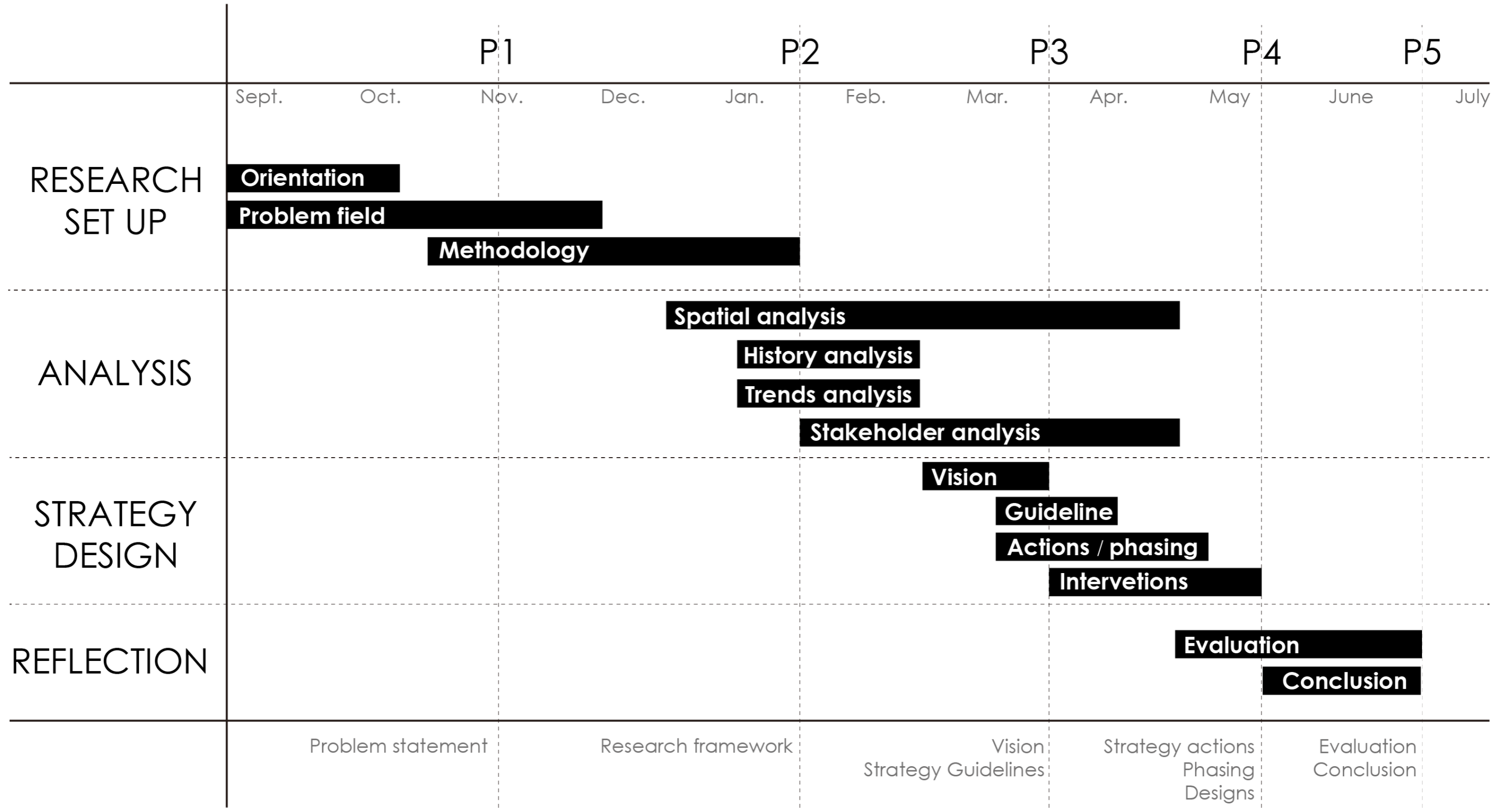
Finally, the strategy will be reflected upon, and limitations will be summarized.

Expected Results

1. Strategic vision for Jiaxing considering its history and policy
2. Strategic plan for sustainable development in Jiaxing through the water identity restoration
3. Spatial and policy advice on actions and tools improving ecological resilience, economic attractiveness, and social well-being in Jiaxing

	<u>QUESTION</u>		<u>METHOD</u>		<u>EXPECTED RESULTS</u>	<u>THEORY</u>
1 <u>Regional Vision</u> physical identity	<p>SQ1: How has water influenced the identity of Jiaxing? What role has water played in shaping Jiaxing's history?</p> <p>SQ2: What are the current ecological, social, and economic trends and challenges in Jiaxing and the Yangtze River Delta (YRD) region? Are there any opportunities for more sustainable development?</p>	—	<p>literature review historical analysis</p> <p>literature review policy analysis news reading</p> <p>visioning</p>	—	<p>a timeline of the water's role</p> <p>a conclusion of regional trends</p> <p>a regional vision</p>	<p>Assessment of urban identity through a matrix of cultural landscapes (Ziyace, 2018)</p> <p>A generic foresight process framework (Voros, 2003)</p>
2 <u>City Strategy</u> sio-cultural identity	<p>SQ3: In what ways do the various roles of water affect the citizens of Jiaxing today? How do they use the water? How do the citizens of Jiaxing perceive their relationship with water?</p> <p>SQ4: Based on the analysis of the previous questions, what strategies could be implemented to improve economic attractiveness, ecological resilience, and social well-being in Jiaxing? Are these strategies prioritised? How can these strategies be implemented step by step?</p>		<p>mapping layer analysis</p> <p>interviews news reading stakeholder analysis</p> <p>literature review mapping research by design</p> <p>stakeholder analysis</p>	—	<p>a set of spatial analysis maps</p> <p>a conclusion of water-human relationship</p> <p>strategic plan</p> <p>stakeholder strategy phasing</p>	<p>The role of river in the city (Mačiukėnaitė & Povilaitienė, 2013)</p> <p>The three elements of place identity (Relph, 1976)</p> <p>Analytical framework for strategic sustainable development (Krellenberg et al., 2019)</p>
3 <u>Reflection</u>	<p>SQ5: To what extent are these strategies effective in shaping the water city identity? How will they specifically enhance economic, ecological and social benefits? Are there any limitations to their effectiveness?</p>	—	<p>literature review comparative study</p>	—	<p>reflection & limitation</p>	<p>evaluation of sustainable land use in China (Lu et al., 2021)</p> <p>SDGs based Neighborhood Sustainability Evaluation Framework (Saiu et al., 2022)</p>

Timeline



III. PHYSICAL IDENTITY ANALYSIS

- The history of Jiaxing
- The potential of water
- Reference project
- Concept

The history of Jiaxing

Water bodies

The city of Jiaxing is characterized by its abundant water resources which play a significant role in shaping its unique identity across physical, functional, and cultural domains (Zhang et al., 2022).

Situated at the confluence of rivers, lakes, and seas, Jiaxing occupies a geographically position. To its north lies the expansive Taihu Lake, while its eastern border meets the sea, and to the south, it is flanked by the Hangzhou Bay. Moreover, the historic Beijing-Hangzhou Grand Canal traverses through its terrain, further enhancing the significance of water in Jiaxing.

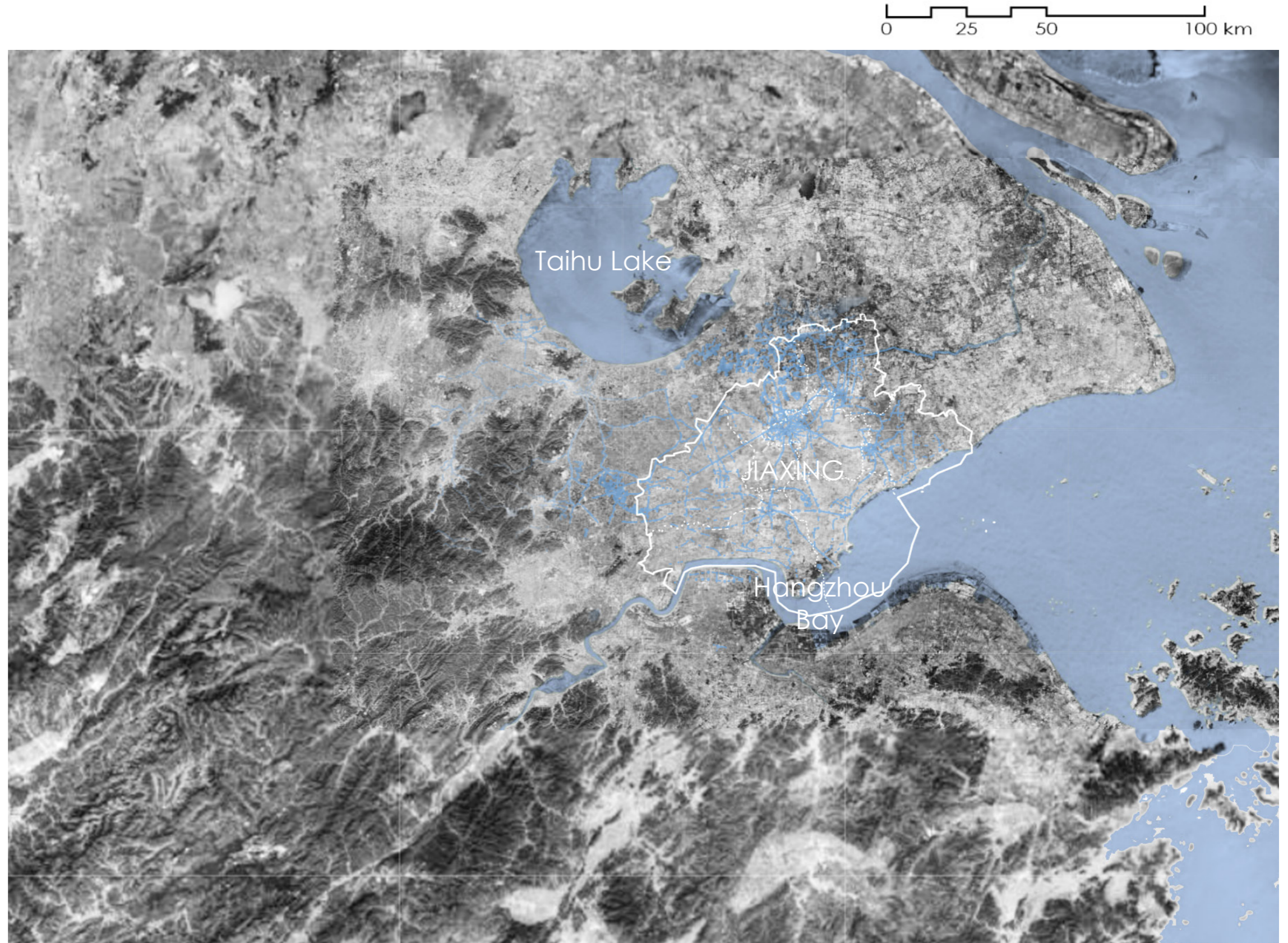


Figure 34. Location of Jiaxing and surrounding water bodies

The history of Jiaxing

Soil types

Jiaxing's natural formation is closely related to water. The alluvial plain was created by the sedimentary deposition from the Qiantang River, while the presence of the Taihu Lake and the adjacent sea significantly shapes the city's natural landscape.

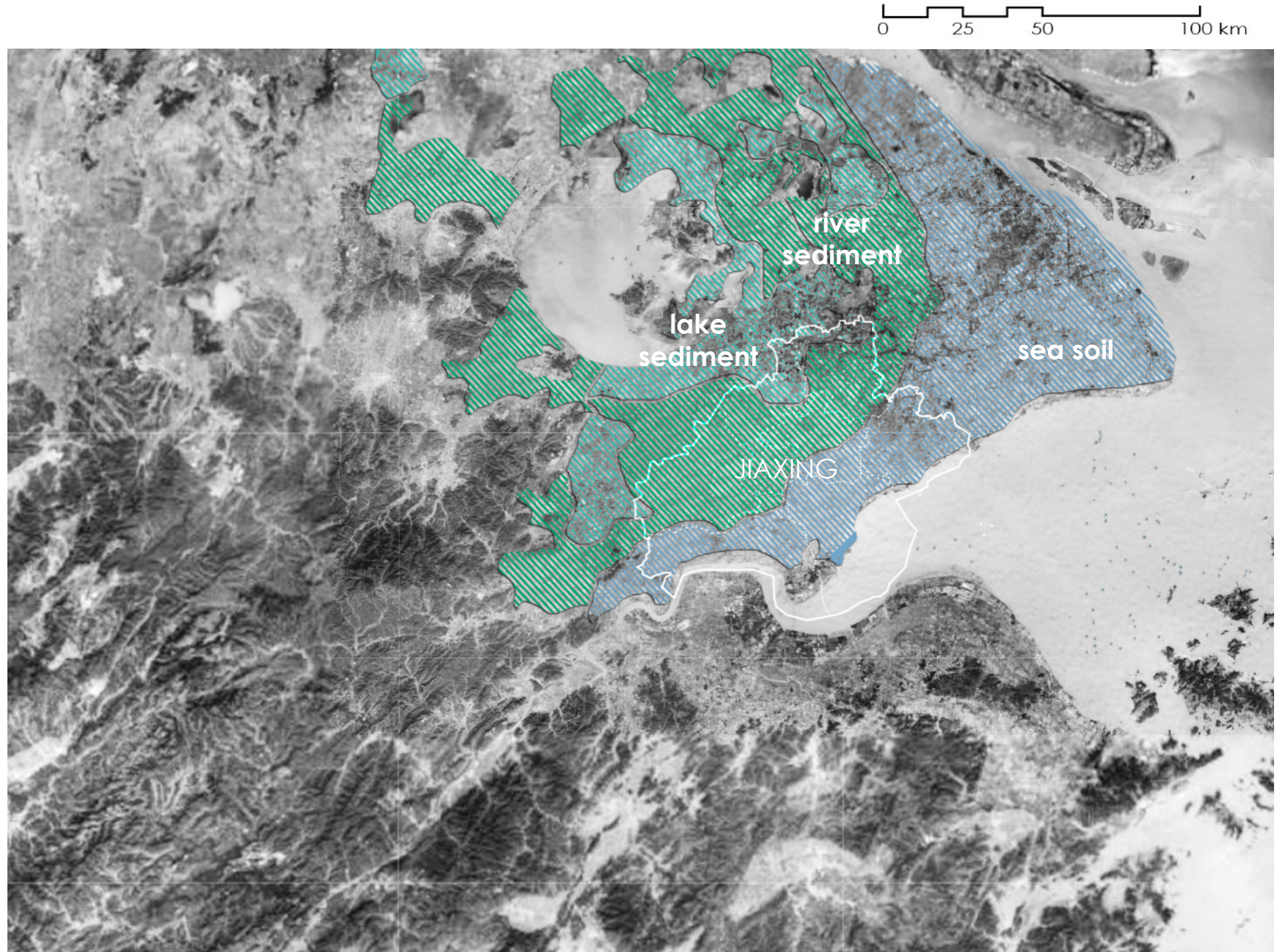


Figure 35. Soil type of Jiaxing

Source: Shao, Y., Chen, H., & Hu, L. (2019). Recognition and Characteristics Interpretation of Urban-Rural Cultural Heritage Based on Regional Culture: The Case of Jiaxing, Zhejiang Province. *Architectural heritage*, 2019(3):80-89. DOI:10.19673/j.cnki.ha.2019.03.009.

The history of Jiaxing

Water and landscapes

To address the natural challenges posed by the local geography, where water from the Taihu Lake tends to stagnate and seawater from the Hangzhou Bay surges in, protective embankments along the lake and sea were constructed.

Jiaxing features multiple layers of dikes, each contributing to different landscapes: In the northern wetland area, where water levels exceed land, tall dikes were erected to shield the land, resulting in the formation of irregular terrain. In the central polder area, numerous canals were excavated to manage water flow and accommodate human requirements. In the southern coast area elevated dikes were constructed to establish safe settlements behind them.

Consequently, Jiaxing has cultivated its distinctive landscape in response to the diverse water environments it confronts.



wetland area

Source: Baidu satellite map



polder area

Source: Baidu satellite map



coast area

Source: Baidu satellite map

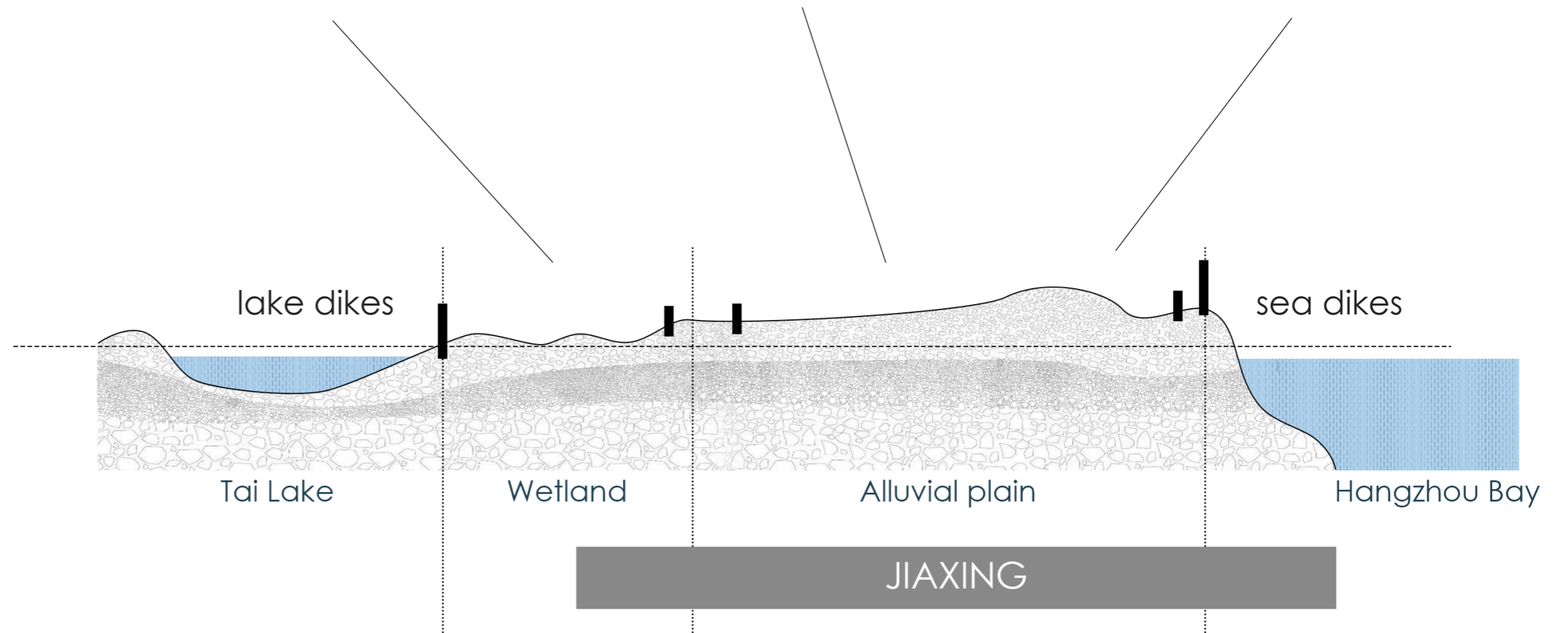


Figure 36. Topographic section of Jiaxing and different landscapes

The history of Jiaxing

Water and agriculture

Jiaxing is famous for its water-based agriculture. The area has been inhabited since the Neolithic Age and has always been prosperous, known as the "land of fish and rice" (Zheng, 2020). The dense network of rivers and humid climate fosters the cultivation of crops reliant on ample water resources. Varieties of crops are carefully selected based on the local landscape: in wetland area with abundant lakes, freshwater fish and freshwater crops like water chestnuts thrive; in polder areas, characterized by wet conditions but elevated land, a diverse range of crops can be grown, with rice cultivation dominating due to its affinity for water; and along the coastline, marine fisheries contribute to the agricultural diversity.

Moreover, Jiaxing showcases unique agricultural combinations. There are also some special combinations of agriculture. Since the dikes are mostly constructed with mud from dug ponds, soil erosion and siltation of river channels are common problems. Therefore, the dike sections are usually trapezoidal, with reeds and mulberry trees planted on them to maintain soil and water, and to support the silk production industry (Shao et al., 2019).



freshwater plant

Source: Tongxiang Today News, <http://jinritongxiang.txcmap.com/Article/index/aid/1574501.html>, 2017-08-15



Jiaxing rice polder

Source: Netease News, <https://www.163.com/dy/article/FVHNVED30536BCN0.html>, 2021-01-05



Jiaxing black carp farm

Source: CNR News, https://news.cnr.cn/local/dftj/20240319/t20240319_526632594.shtml, 2024-03-19

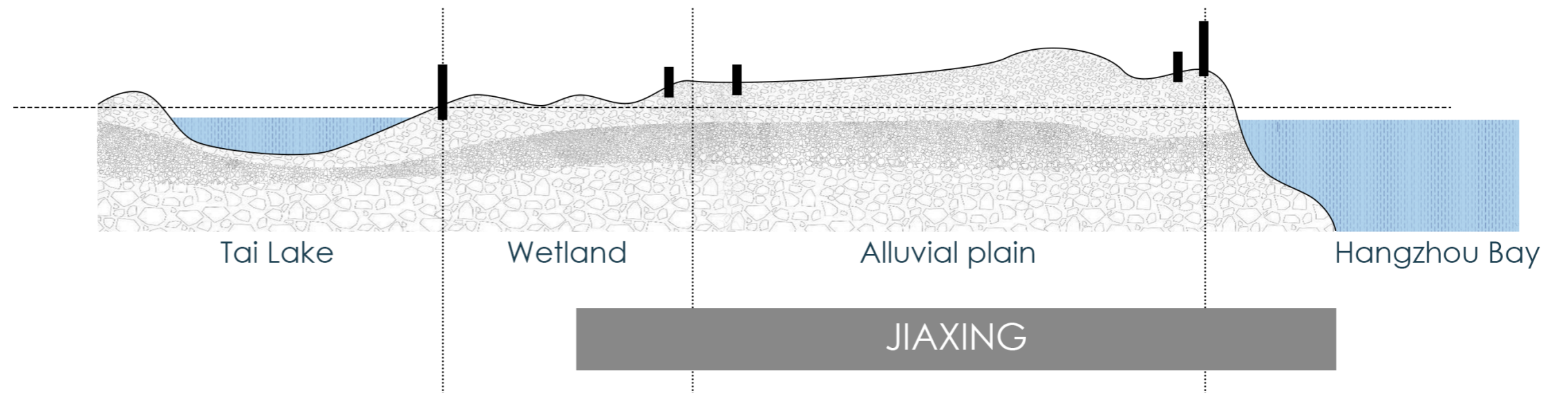


Figure 37. Topographic section of Jiaxing

The history of Jiaxing

Water and transportation

Over the course of millennia, Jiaxing witnessed the meticulous construction of extensive water infrastructures, including canals, sluices, and navigational markers. These endeavours were undertaken to facilitate communication between diverse water bodies and to address elevation discrepancies across the vast plains, thereby precipitating substantial artificial alteration within the city's landscape (Shao et al., 2019).

Simultaneously, Jiaxing's shipbuilding industry thrived. Various types of ancient boats, including warships, double boats, and building boats, were crafted, predominantly utilizing sails to harness wind power for navigation along the canals (see Figure 38). These vessels served diverse purposes, ranging from transportation to agriculture and fishing. By the late 19th century, the advent of coal-fired steam engine ships marked a technological leap, gradually paving the way for the proliferation of motorized vessels (Liao & Wang, 2018).

Despite the transformative impact of technological advancements, the significance of these water infrastructures has diminished over time. Nevertheless, their enduring presence continues to shape the urban fabric of Jiaxing, leaving an indelible mark on its landscape and developmental trajectory.



Figure 38. Different boats on the Grand Canal in Jiaxing
 Author: Pang Yiyong, Jiaxing Museum



Figure 39. (Restored)Slender Man's Stonehenge and navigational markers
 Source: Baijiahao, <https://baijiahao.baidu.com/s?id=1746901559633565351&wfr=spider&for=pc>, 2022-10-17



Figure 40. Old site of a sluice in Jiaxing (Luo Fan Ting)
 Author: Pang Yiyong, Jiaxing Museum



Figure 41. Model in Jiaxing Boat Museum
 Source: Soho, https://www.sohu.com/a/380704792_821596, 2020-03-16

The history of Jiaxing

Water and urban development

Water has historically fuelled prosperity in Jiaxing's urban development. The Grand Canal, once China's primary transportation waterway, played an important role in the city's economic growth during its heyday of bustling shipping activity.

Traditionally, human settlements in Jiaxing were clustered around dense networks of waterways, with villages positioned along harbours and channels amidst lakes and wetlands. Markets thrived at the confluence of these water bodies. This intimate relationship between the people and water sources gave rise to a distinctive habitat. Notably, there exists a direct correlation between the navigability of rivers and the city's economic flourishing (see Figure 42).

Over time, some settlements evolved into modern urban centres while others retained their traditional charm, transforming into renowned tourist destinations that allure visitors from across the globe.

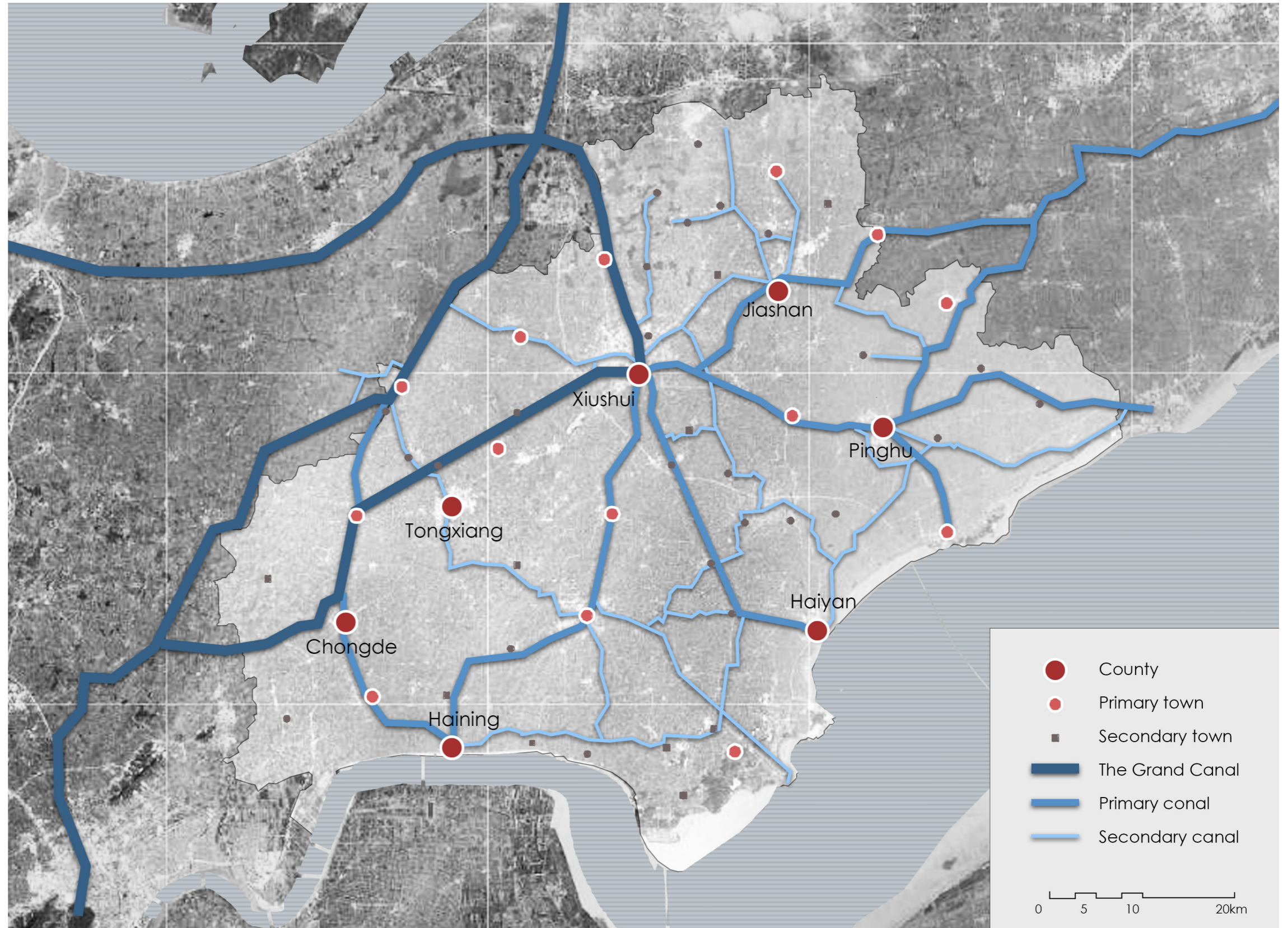


Figure 42. Jiaxing traditional waterways and town distribution

Source: Shao, Y., Chen, H., & Hu, L. (2019). Recognition and Characteristics Interpretation of Urban-Rural Cultural Heritage Based on Regional Culture: The Case of Jiaxing, Zhejiang Province. *Architectural heritage*, 2019(3):80-89. DOI:10.19673/j.cnki.ha.2019.03.009.

The history of Jiaxing

Water and culture

Water has exerted a profound influence on shaping Jiaxing's folk culture. Beyond its role in daily agricultural activities, transportation, and trade, water is intricately woven into the fabric of traditional festivals. For hundreds of years, the "Net Boat Festival" has stood as a revered water-centric temple fair (see Figure 43). During occasions such as Qingming, Mid-Autumn, and other traditional festivals, throngs of boatmen from neighbouring provinces converge at Lianshidang Lake to pay homage to Liu Chengzong, a hero from the Yuan Dynasty, and pray for favourable weather and bountiful harvests. Named the "Net Boat Festival," this celebration sees fishermen utilizing their fishing vessels, adorned with nets, as both modes of transport and platforms for performances on the water (Jiaxing City Cultural Bureau, 2018).

Furthermore, water is also crucial in shaping the collective perception of Jiaxing among its citizens. Much of the city's artistic and poetic expressions are intimately linked to its aquatic features. In traditional Chinese culture, the "Eight Scenic Spots" is a general term as symbolic representations of a region's cultural landscape, frequently serving as themes in art and poetry. In Jiaxing, approximately half of these designated spots from various historical periods and dynasties bear direct reference to water bodies, while many others include activities occurring on the water, water management infrastructure, and aquatic flora. These markers in the landscape underscore the indispensable role of water in both the personal memories of literati and the shared collective memory of Jiaxing's inhabitants (Zhang et al., 2022).



Figure 43. Net Boat Festival

Source: Xu Yu, People News, http://paper.people.com.cn/rmrhwb/html/2015-04/16/content_1554598.htm, 2015-04-16



Figure 44. Examples of Eight Scenic Spots

Source: KI Studio, Jiaxing City Concept, <https://www.kistudio.com.au/project/jiaxing-city-concept-nine-rivers-for-one-heart/>, 2020

The history of Jiaxing

Summary: 4 roles of water

From the preceding discussion, it becomes evident that Jiaxing's distinctive landscape, shaped by its watery geographical environment, has exerted a profound influence on all facets of Jiaxing, including agriculture, transportation, urban morphology, culture, and beyond. In the following section, we shall systematically delineate the influence of water on Jiaxing's development and the role of water in it will be organised in chronological order.

infrastructural role

Since the dawn of human habitation in Jiaxing, water has been an essential component of its infrastructure. Situated in the floodplain created by the Yangtze River, Jiaxing benefits from a mild climate and ample water supply. The presence of human settlements in the region can be traced back to the Majiabang era, nearly 7,000 years ago. Through archaeological excavations, it has been discovered that water farmland, wells, and cisterns were constructed, underscoring the vital significance of water in both the livelihoods of the residents and the productivity of their agriculture (Zheng, 2020).

Later in history, water has served as a vital transportation infrastructure. Wars prompted vassal states to construct canals for military transportation purposes. Vassal states constructed canals for military transport during wartime. The Yangtze River Delta region began building canals around 500 B.C. to transport war supplies, grain, and fodder. These excavated canals became the precursor to the Grand Canal (Huang, 2010).

During the Song Dynasty (960-1127), hydraulic engineering technology was developed that allowed the canal to fully release its economic and social benefits. As a result, many towns along the Grand Canal became commodity centres, leading to growing populations and expanding city sizes, including Jiaxing (Wang, 2022).

However, during the late 19th and early 20th

centuries, China faced colonial aggression, and the canals lost their function due to a lack of maintenance. Later, with the introduction of railways and roads, the transportation function of the canals was further weakened (Huang, 2010). It was not until the 1980s and 1990s that the canal became fully navigable again (Yao et al., 2023).

Currently, water's infrastructural role in the city is limited to transportation only. However, the potential of inland transport for both passengers and freight is not being fully utilized. With the growth of the global economy, it is foreseeable that the importance of water transport will increase in the future (Mačiukėnaitė & Povilaitienė, 2013).

social role

Since the Majiabang period, human settlements have been mainly located near rivers (Zheng, 2020). In Jiaxing, as well as in the entire Jiangnan region, the conventional form of settlement was centred on rivers. The waterfront area, as the primary and most important settlement space in the city, became the "natural place" for the emergence and development of urban cultural life (Gao, 2008). During the Song Dynasty, Jiaxing had become a prosperous city, and the area around the Yuehe River was a thriving commercial centre, with residents living in all directions, forming a marketplace. During the Ming and Qing dynasties, the Yuehe neighbourhood reached its peak and became a city-level public centre, which is still well-preserved to this day (Jiaxing Municipal People's Government Website).

However, the public space of the river is no longer the only option, and has gradually withdrawn from the centre of civic activities. The construction of industrial plants on both sides of the canal, due to inefficient but cheap canal water transport, has led to a decline in the quality of the canal environment. This has accelerated the decay of the neighbourhoods along the canal (Wang, 2006).

symbolic role

The symbolic function of the river has been accumulating with the historical development. During the Spring and Autumn period (770-476 BC), Jiaxing was known as Changshui which means Long Water, due to its unique water network landscape. This was the beginning of the river's symbolic function. Subsequent names underwent several changes, most of which were related to water agriculture. Over the years, the name of the city changed multiple times, with most of the changes reflecting water agriculture.

The Ming and Qing dynasties were the heyday of the development of the Beijing-Hangzhou Grand Canal. Many cultural relics, poems, and artefacts that exist today date back to that period of time (Du, 2021).

As mentioned earlier, the infrastructural and social functions of the water have been weakening since the end of the 19th century. In recent decades, the restoration of the Grand Canal has focused on economic and ecological benefits. The symbolic function of the water was largely ignored until 2006 when the nation proposed a bid for the Grand Canal inscription. Subsequently, several conservation plans were introduced to complement the bid, and several related studies were conducted (Du, 2021).

ecological role

The ecological function of rivers is an essential attribute that has always existed and cannot be ignored. For thousands of years, people have mainly utilised the ecological function of rivers to cultivate crops and develop the agricultural economy. However, in recent decades, the use of rivers for pure ecological protection has started. With the rapid advancement of industrialisation and urbanisation, some significant and complex environmental issues have arisen. These include an increase in pollutant emissions along the rivers, a surface pollution problem in shipping and agriculture, and a

substandard water quality problem (Yan, 2019). It is vital and urgent to protect and utilise the ecological functions of rivers.

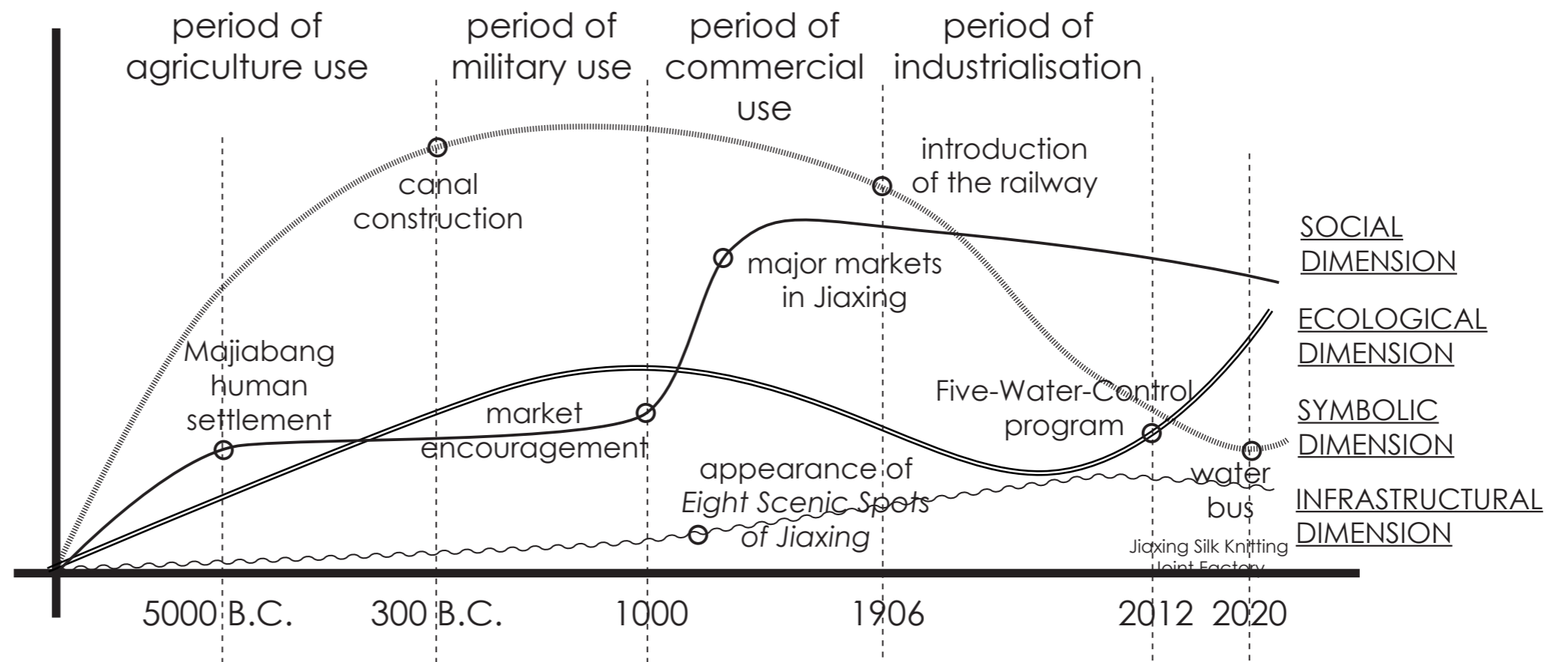
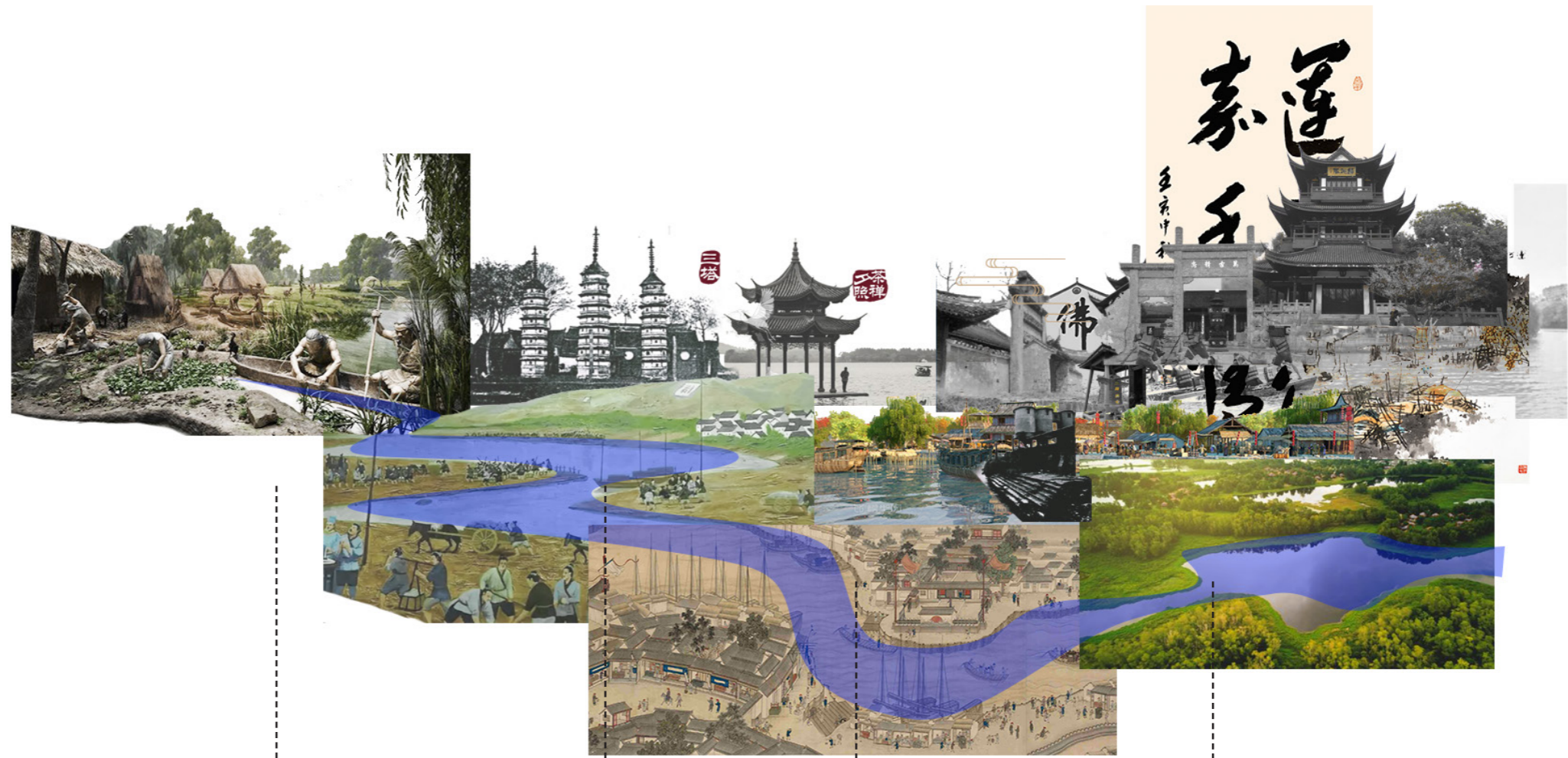
Take water as example. After the founding of New China, a lot of waste was left to be recovered, and agriculture was vigorously developed. Therefore, Jiaxing agricultural land was integrated and a lot of rivers were filled up. After that, reform and opening up, the introduction of foreign capital, the development of commercial economy. Jiaxing accepted investments from nearby big cities occupied a significant amount of land, further reducing the space available for water bodies.

The history of Jiaxing

Summary: 4 roles of water

Infrastructure role plays a relatively fundamental role in urban development, progressing through different stages over time. Initially, the role of infrastructure precedes other functions, providing the preconditions for social and iconic roles. For instance, the development of waterways led to the creation of public spaces such as markets, making life by the water a perceived symbol of the city. Additionally, infrastructure plays the most significant functional role in Jiaxing, defining the city as a shipping and transport hub rather than a landscape city.

In reconstructing Jiaxing's urban identity, the role of infrastructure determines the level of attention directed toward the water itself and influences other aspects such as social and symbolic dimensions.



The potential of water in Jiaxing

Present situation of water transport

Despite the abundance of channels and favourable conditions for navigation in Jiaxing, historical neglect by the government regarding transport infrastructure, compounded by years of civil unrest and financial strain, resulted in the deterioration of many waterways. Neglect and wartime destruction led to channel breaks, blockages, and various obstacles, impeding ship traffic.

Following World War II, as the social environment gradually stabilized, Jiaxing's water transportation industry experienced steady growth. By 1964, Jiaxing boasted 64 operational passenger routes, including intercity services to Shanghai, Hangzhou, Suzhou, and Huzhou.

However, starting in 1986, road passenger transport witnessed rapid development, accelerated by the establishment of highway connections to townships and villages from 1991 onwards. Consequently, passengers began to favour land routes over water transport, leading to a decline in water passenger volumes and a subsequent reduction in passenger routes.

In recent years, spurred by the burgeoning tourism industry, there has been a resurgence in water transport. Existing waterways now primarily cater to scenic spots, with only a limited number of rivers still actively used for navigation, despite the potential for many others to be utilized.

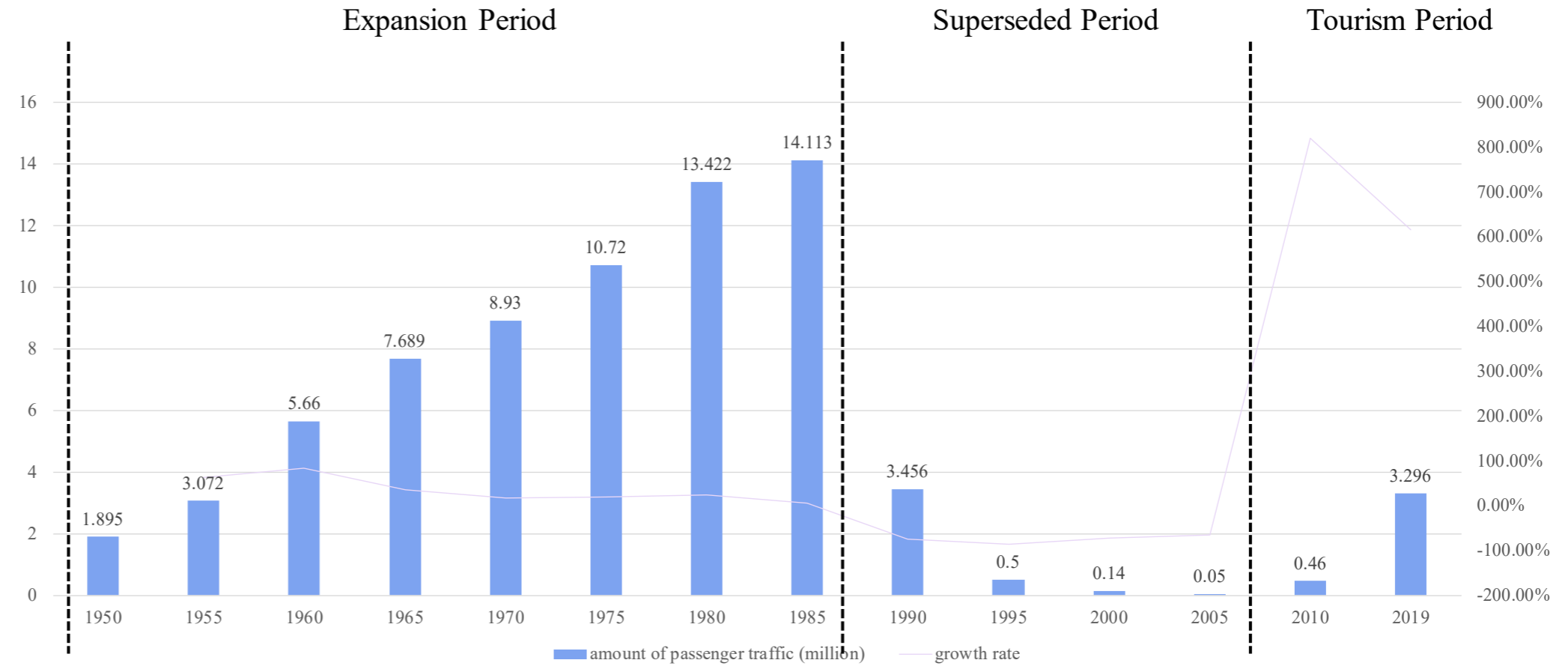


Figure 45. Jiaxing Waterborne Passenger Transport Development
 Source: Shanghai Tongji Urban Planning and Design Research Institute. (2020). Jiaxing Waterborne Passenger Transport Planning Special Study Report

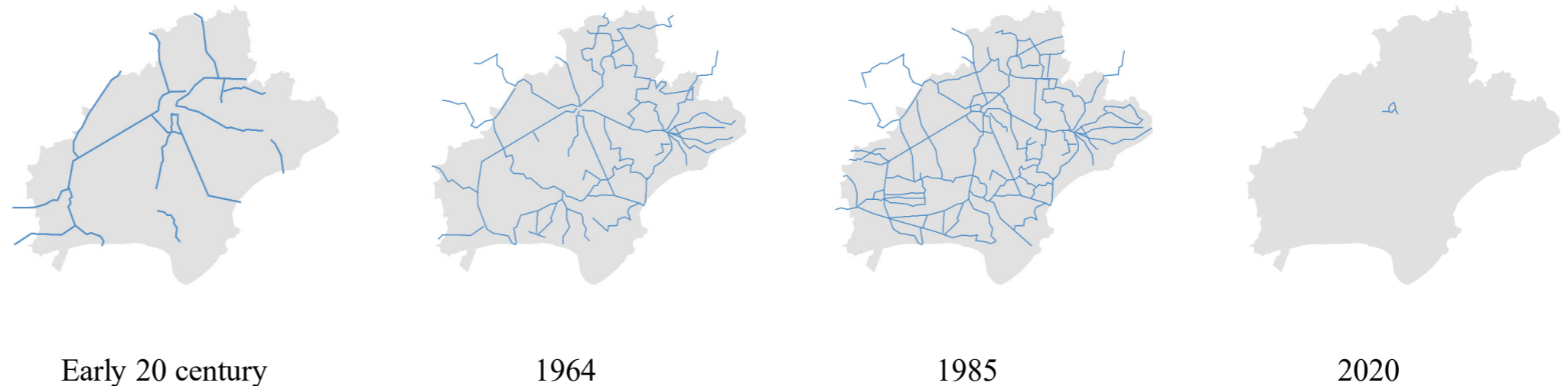


Figure 46. Jiaxing Waterborne Passenger Transport Map

The potential of water in Jiaxing

Current water infrastructure

During the peak of shipping development, Jiaxing had a wide range of water infrastructures. Around 1965, an important landmark was built with the construction of a passenger ship terminal at Qinjian East Road Bridge. The terminal covered about 450 square meters and had a waiting hall and a quay shoreline extending about 90 meters, becoming a key point in the city (see Figure 47).

Later, a ship maintenance yard and a passenger terminal office building were set up in Dongzha (see Figure 49). The new passenger hall could hold up to 6,000 people waiting for ships at the same time, making it a major architectural landmark on the western bank of the river in Jiaxing.

However, as shipping activities declined, these important infrastructures were quickly dismantled. By 1990, the Jiaxing shipping area had 309 passenger terminals. Yet, by February 1999, the last municipal passenger line, Jiaxing-Nanhui, stopped running, and all passenger terminals were abandoned by March 23rd of the same year.

Now, shipping is mainly used for cargo transport, with few boats on the city's waterways. The river's accessibility is blocked by its wide channel, large barges, and a green buffer zone. It remains inaccessible due to the end of passenger transport services, lack of entry points, and buildings facing away from the river. As a result, the river is neglected in urban life due to both physical and functional inaccessibility.



Figure 47. Old photo of Jiaxing Ship Passenger Terminal
Author: Pang Yiyi, Jiaxing Museum



Figure 48. Current situation of Jiaxing Ship Passenger Terminal
Source: Baidu satellite map



Figure 49. Old photo of Dongzha
Author: Pang Yiyi, Jiaxing Museum



Figure 50. Current situation in Dongzha
Source: Shen Jianfang, <https://baijiahao.baidu.com/s?id=1718106918549808073&wfr=spider&for=pc>, 2021-12-03

The potential of water in Jiaxing

Current waterways

Despite the decline in passenger transport, Jiaxing's freight transport sector remains active. Situated at the geographical heart of the Yangtze River Delta, Jiaxing boasts an extensive network of inland waterways and abundant port resources, endowing it with a unique advantage in sea-river intermodal transport. Therefore, it occupies a pivotal position in China's national shipping strategy.

The current waterways in operation are depicted in the Figure 51, comprising eight radial rivers that define Jiaxing's structural framework. Among these, the Beijing-Hangzhou Grand Canal stands out as the most significant, not only for its historical legacy but also for its cultural significance.

Water primarily flows into Jiaxing from the north, originating from Taihu Lake, and from the west, emanating from Hangzhou. Conversely, outflow predominantly streams towards Shanghai in the northeast and the Hangzhou Bay in the southeast.

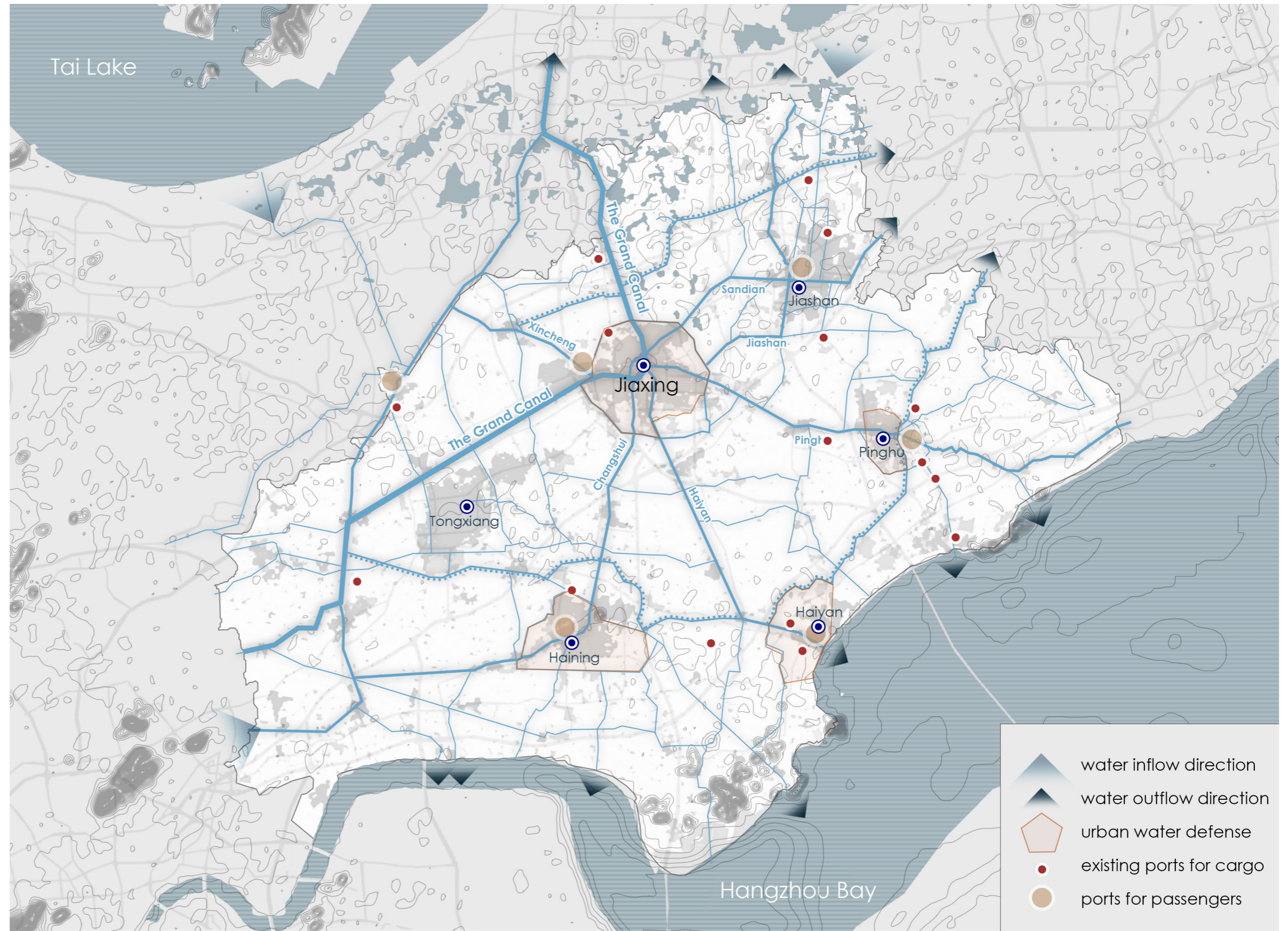


Figure 51. Jiaxing current waterways

The potential of water in Jiaxing

Public transport system

The railway system serves as a widely utilized public transport mode for residents of Jiaxing, offering convenient and cost-effective connectivity to neighbouring cities. With fast trains traversing between Jiaxing Station and Shanghai Station or Hangzhou Station in approximately 30 minutes, and at a relatively affordable fare of 30-40 RMB (equivalent to 4-5 Euros), and slower trains taking around an hour at 16 RMB (equivalent to 2 Euros), accessibility to major urban centres is facilitated.

However, the railway network primarily links Jiaxing with larger neighbouring cities, presenting challenges in reaching smaller towns. Moreover, railway stations are predominantly situated along the city's northeast-southwest axis, necessitating commuters to transfer to other modes of transport for access to smaller towns. This usually means taking longer, indirect routes and multiple transfers, which is the only practical choice despite resulting in detours. Consequently, the coverage of towns by the railway system remains limited.

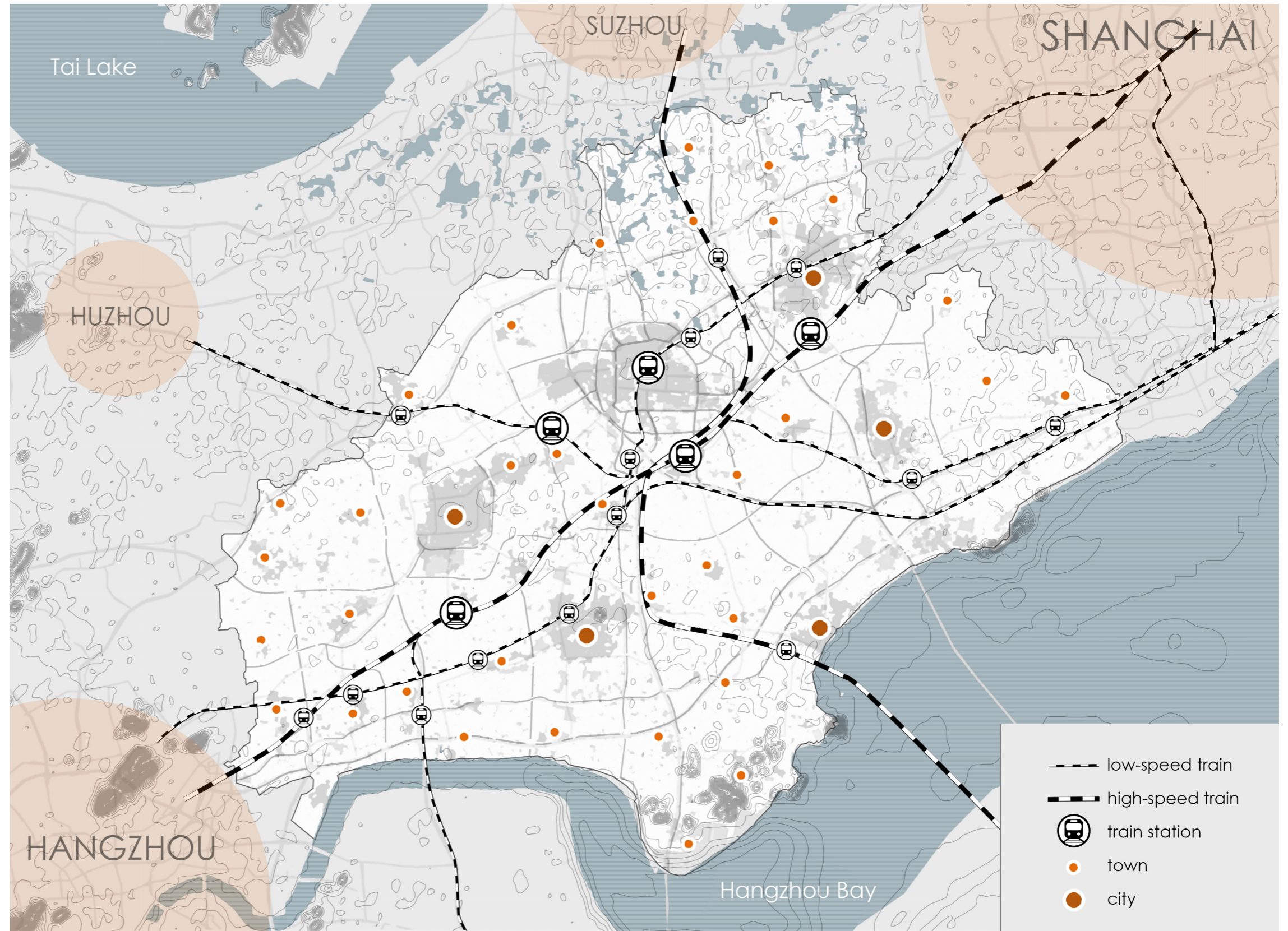


Figure 52. Jiaxing current public transportation

The potential of water in Jiaxing

Private transport system

As we can observe, the road network in Jiaxing is more extensive and well-connected compared to the railway system. It still follows a grid pattern, running predominantly in a southwest-northeast direction due to the gravitational pull of nearby Hangzhou and Shanghai.

Consequently, many people prefer private cars when traveling. The city boasts a high motor vehicle ownership rate, with 351.5 motor vehicles per 1,000 people. Additionally, the average daily number of motor vehicle trips stands at 2.9 trips per day, highlighting the city's characteristic of having both high vehicle ownership and usage rates (Jiaxing Natural Resources and Planning Bureau, 2022).

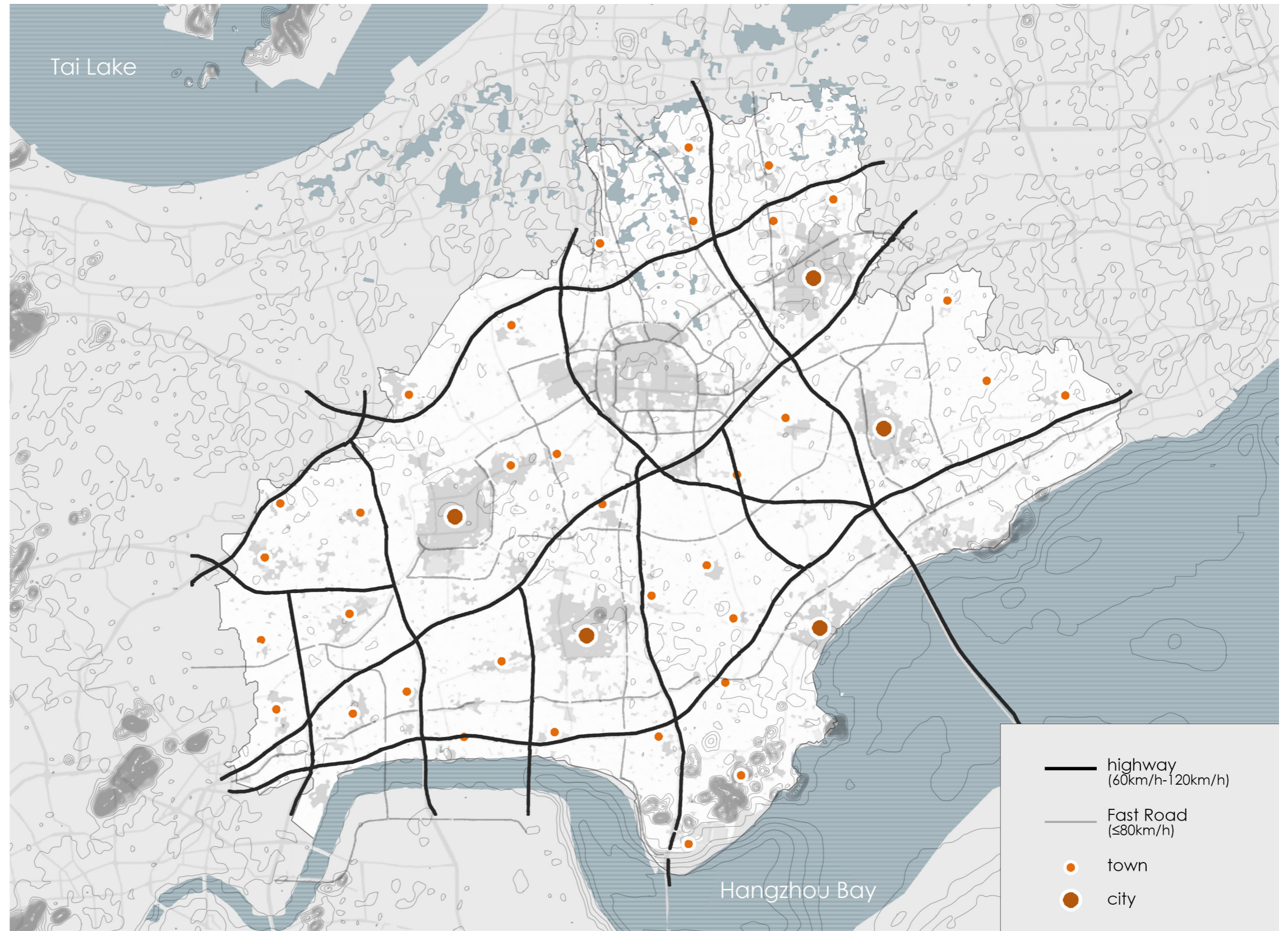


Figure 53. Jiaxing road system

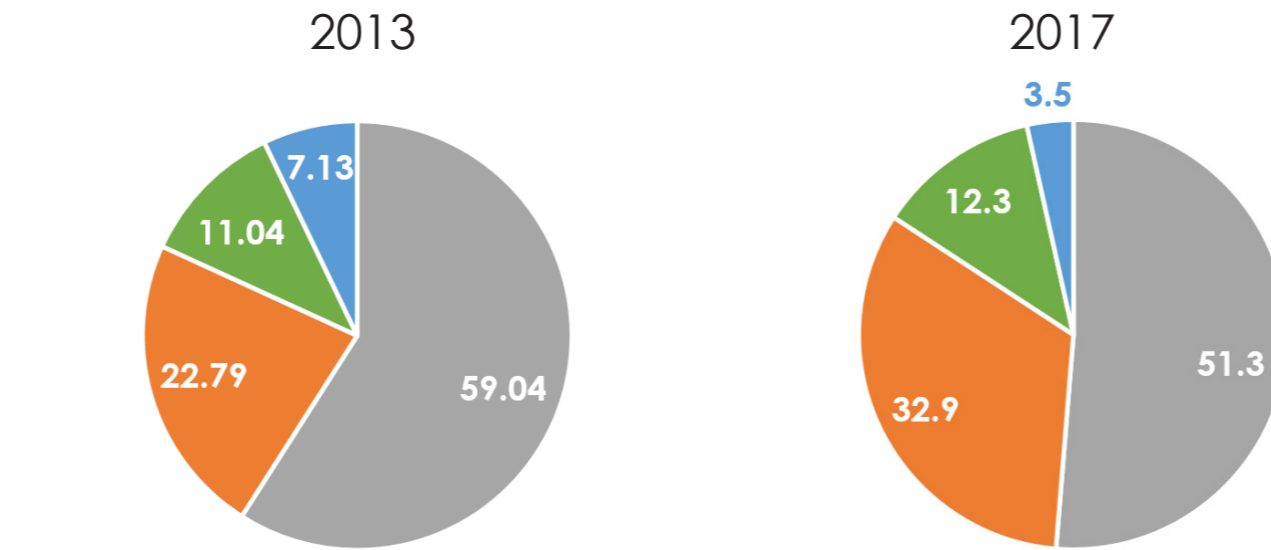
The potential of water in Jiaxing

Transportation structure and the challenges it pose

Currently, people in Jiaxing rely more on walking and non-motorized vehicles for travel, followed by car travel, with less reliance on public transportation. There is limited data on water travel, indicating its low share in overall transportation. Passenger trips by water are largely neglected, primarily serving as a means for transporting goods currently.

Furthermore, car ownership and usage in Jiaxing are high and increasing compared to neighboring cities, leading to a decrease in the proportion of non-motorized trips. This poses a significant urban challenge. On one hand, the high usage of cars has resulted in traffic congestion. According to the 2019 China Urban Traffic Report, Jiaxing has risen to 71st in national urban congestion rankings. During rush hours in 2020, the average speeds were slower than normal water transport speeds, diminishing the advantage of using cars. On the other hand, the increased reliance on motorized vehicles has contributed to environmental pollution. Vehicle emissions and road construction are gradually deteriorating the urban environment, making it less favorable and suitable for residents.

Thus, the current challenge in Jiaxing's transportation structure is its dominance of motorized vehicles and associated issues such as congestion and environmental degradation.



■ slow traffic ■ private cars ■ public transport ■ others
(slow traffic includes walking and cycling)

Figure 54. Jiaxing transport structure
Source: Jiaxing City Traffic Annual Report Series Interpretation, 2022

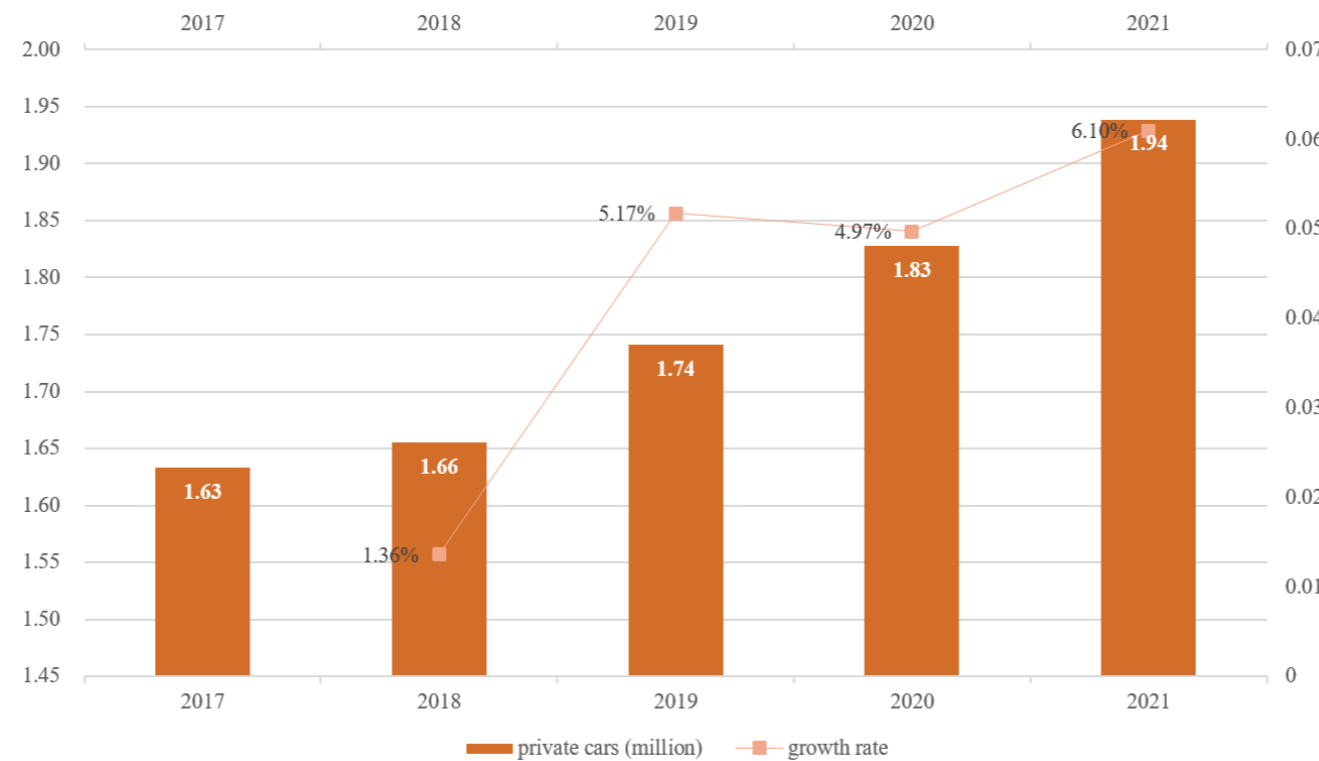


Figure 55. Jiaxing private cars amount
Source: Jiaxing City Traffic Annual Report Series Interpretation, 2022

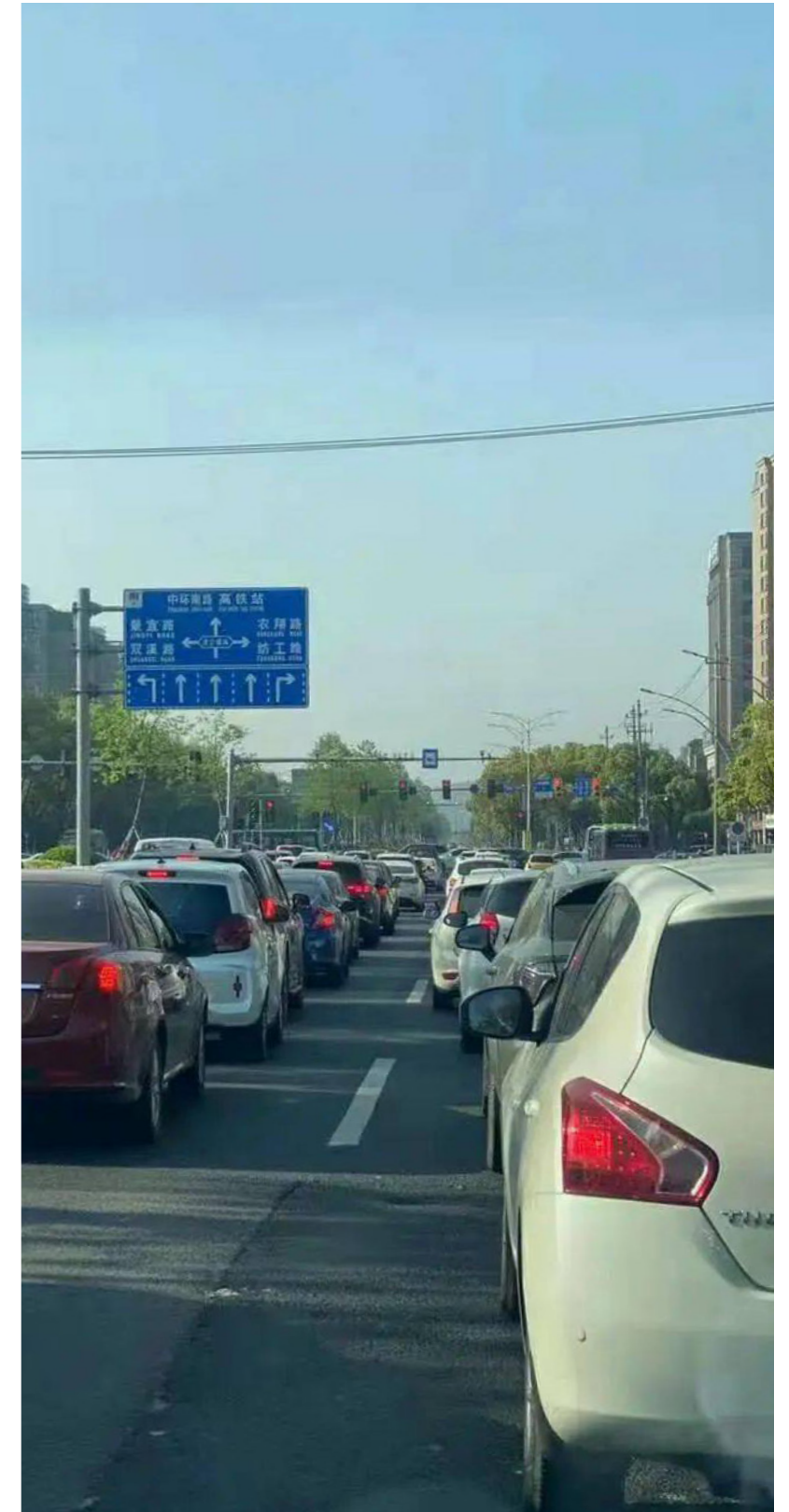


Figure 56. Jiaxing congestion problem
Source: Sohu News, https://www.sohu.com/a/536965971_100176486, 2022-04-11

Reference project

Amsterdam

The Netherlands shares a deep-rooted connection with water, boasting a wealth of canal-related cultural heritage. In Amsterdam, a city renowned for its intricate network of waterways, various canal routes offer immersive experiences that showcase Dutch culture from diverse perspectives.

For instance, the Green Line provides a glimpse into 17th-century Amsterdam, featuring iconic landmarks from the city's golden age, including historic buildings and picturesque bridges. Meanwhile, the Red Line offers a cultural journey, linking museums

across Amsterdam and highlighting the city's rich artistic heritage, with convenient stops within walking distance of prominent cultural institutions (see Figure 58).

Similarly, the Blue Line caters to tourists, connecting popular waterfront attractions and providing scenic views of Amsterdam's aquatic landscapes. On the other hand, the Orange Line showcases the charming canal landscapes of the city, offering passengers a tranquil journey through its scenic waterways.

In addition to these organized canal tours, smaller open boats offer more intimate experiences, venturing into areas inaccessible to larger vessels. These boats, manned by skilled skippers and knowledgeable guides, provide personalized tours and can also be booked for private events, offering unique activities and venues that bring visitors closer to Amsterdam's iconic waterways (see Figure 59).



Figure 57. Amsterdam Water Bus Route



Figure 58. Delft canal hopper

Concept

The significance of water in Jiaxing's urban life has been emphasized above. Water has not only shaped the city's distinctive ecological landscape but has also influenced its production methods, lifestyles, and cultural practices for millennia. However, the current utilization of water resources is predominantly limited to freight transport, neglecting its social, cultural, and ecological values and squandering the potential of the water system that traverses the city. In reality, water holds immense untapped potential. Basic waterways and associated facilities are relatively well-developed, and the population possesses a cultural foundation for utilizing water spaces.

Hence, the water system can serve as an effective tool for addressing existing challenges. For instance, water transportation can complement the existing public transport system. Currently, cars are the most cost-effective option, leading to congestion issues. While cars may be faster than water transport when traffic is light, not everyone prioritizes efficiency. Offering a transport option that is comfortable and not overly slow, such as water transport, not only provides a different experience but also alleviates congestion problems, thus enhancing efficiency. Moreover, the water system can contribute to the resolution of other social, ecological, and cultural issues, fostering a sustainable future for Jiaxing.

Therefore, my proposal is to utilize water as an infrastructure to drive urban renewal and improvement across all aspects. Different scales will have varying focal points.

At the regional scale, water transport will be integrated as a supplement to public transport. It will provide a more pleasant mode of transportation for citizens, regional tourists, and neighbourhood residents, facilitating direct connections to desired destinations and fostering a stronger connection with Jiaxing. Additionally, it will showcase Jiaxing as a welcoming city, serving as a remarkable element that highlights its identity and acts as a city landmark.

At the city scale, the multifaceted role and identity of water beyond infrastructure will be considered, delving deeper into the relationship between water, culture, and society. For citizens, water transport will not only be an alternative mode of travel but also a transformative aspect of urban life, infusing water-related activities into daily routines. By incorporating historical heritage and reinterpreting historical scenes in the modern era, a new narrative will be superimposed on historical impressions, reshaping Jiaxing's identity.

In the subsequent vision section, I will present two visions. At the regional scale, the focus will primarily be on constructing the water transport system. At the city scale, the emphasis will be on leveraging water transport to inject vitality into urban renewal efforts, enhance spatial quality, and shape the city's overall identity. Additionally, I will consider various stakeholders and devise specific strategies for implementation.

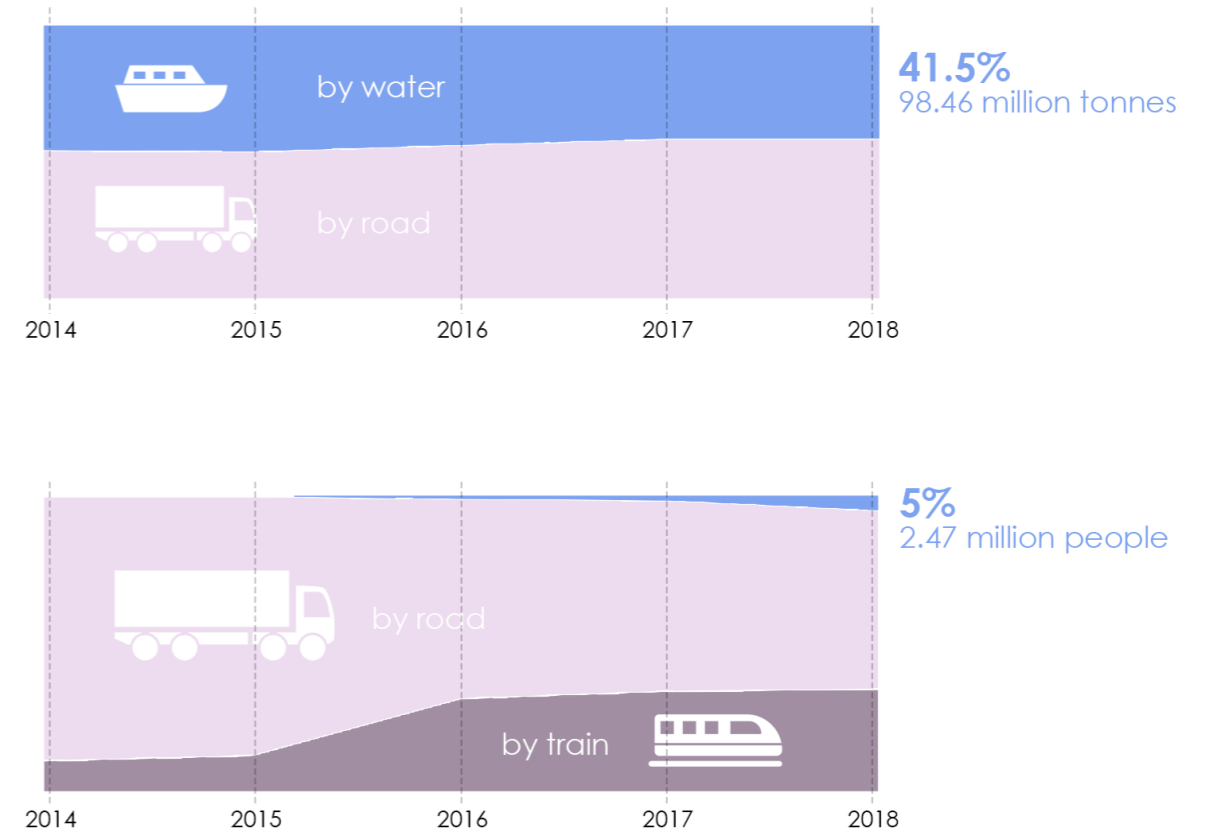


Figure 59. Present situation of water transport

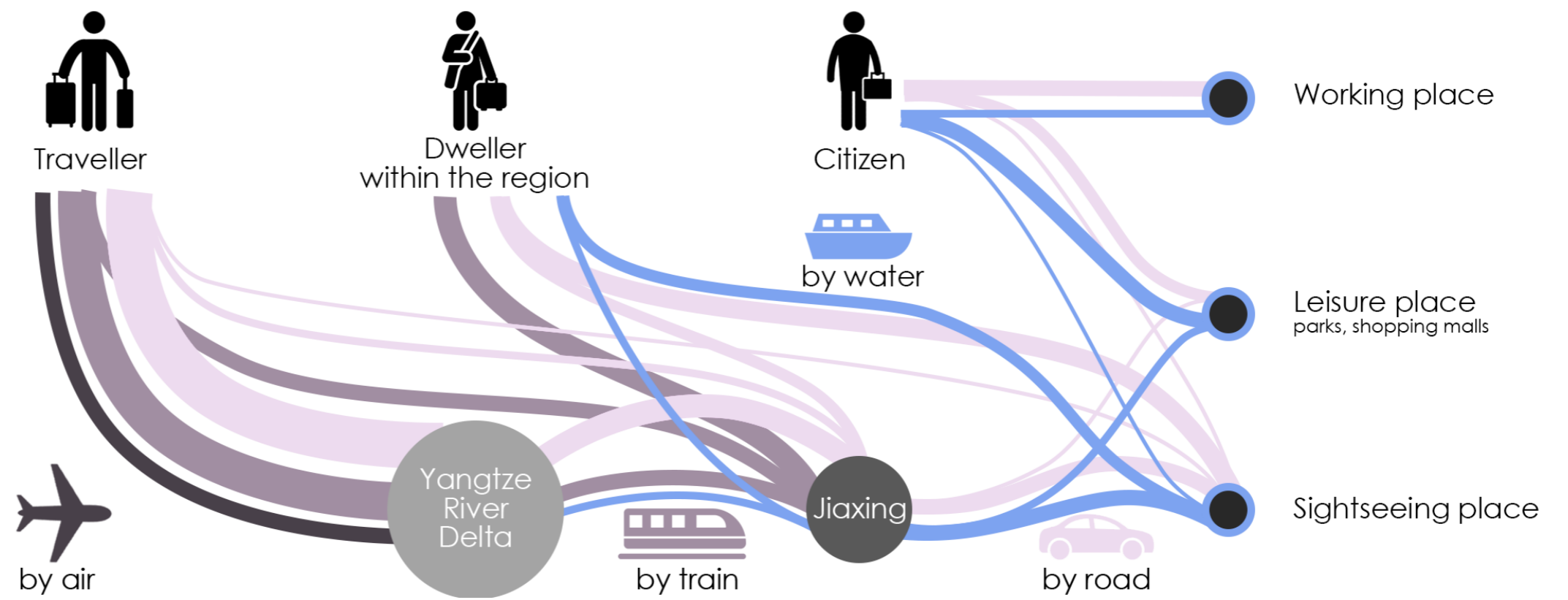


Figure 60. Water as a complement to traffic system

IV. VISION OF WATER CITY

- regional analysis
- stages
- sustainable results

Regional Analysis

Waterways

To ensure that water transport effectively supplements existing transportation infrastructure, efforts will be made to coordinate its routes with existing public transport and road facilities, while prioritizing connectivity to overlooked towns on the outskirts, particularly those with historical and cultural significance.

Based on current waterway maps, priority will be given to selecting waterways with favorable basic conditions. This selection process will also take into account the city's greenway plan, focusing on river sections with optimal conditions such as greenery and suitable transport facilities.

Moreover, ecological and cultural considerations will be paramount. Preservation of the original navigation channels and continuity of historical lineage will be prioritized. Efforts will also be made to connect key wetland resources in the northern and central core areas, creating a contiguous ecological corridor.

After evaluation, potential waterways have been identified, including the Beijing-Hangzhou Grand Canal, the Hang-Ping-Shen Line, and the Zhajiasu Line. These routes offer promising opportunities for enhancing water transport connectivity and accessibility across Jiaxing.

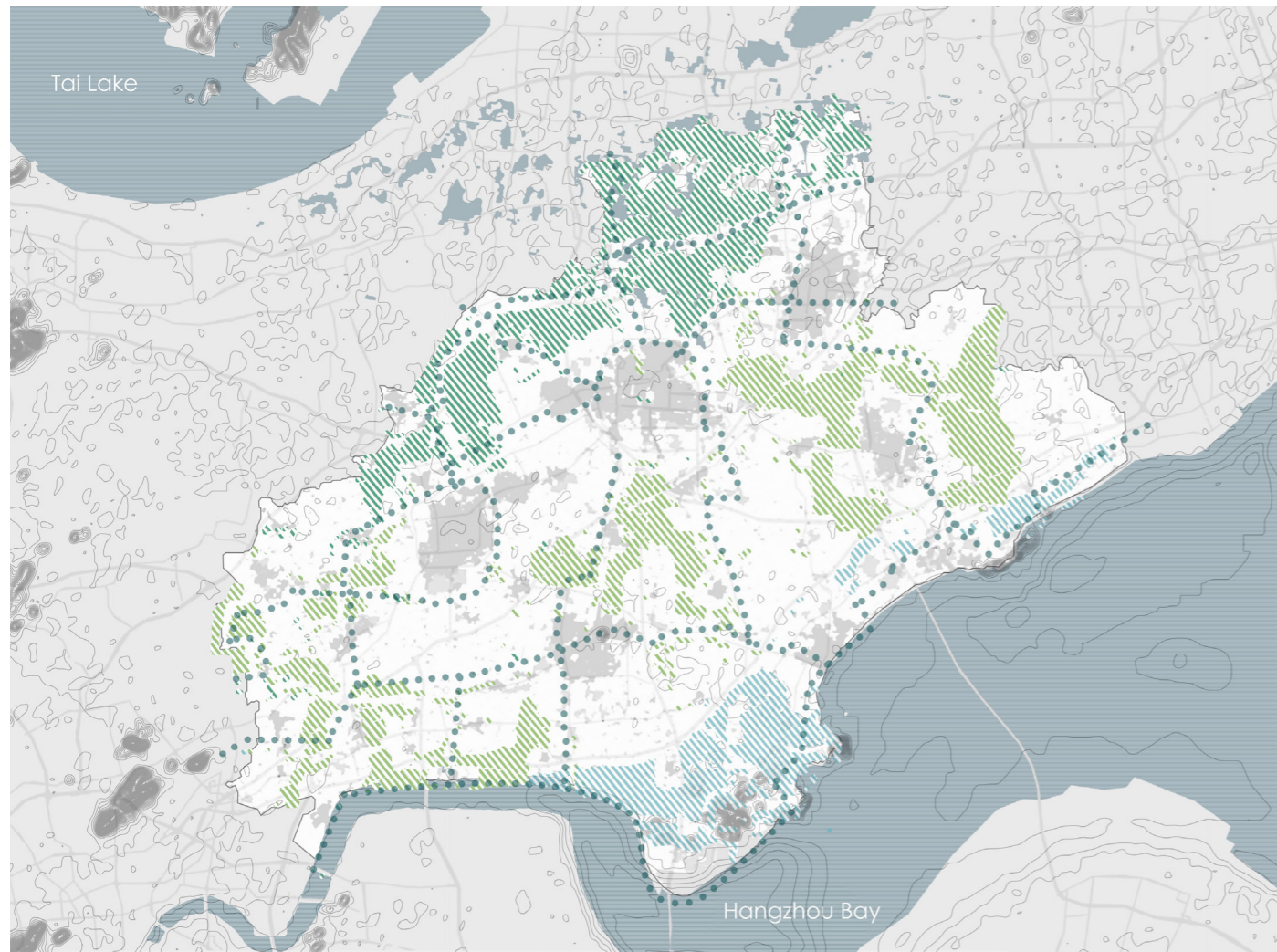


Figure 61. Potential Waterways



Figure 62. The Grand Canal (San Ta Section)

Source: Sohu News, <https://mt.sohu.com/20171020/n518799498.shtml>, 2017-10-20



Figure 63. The Hang-Ping-Shen Line

Source: Jiaxing Online News, https://jx.zjol.com.cn/201912/t20191217_11481602.shtml?ivk_sa=1023197a, 2019-12-19

Regional Scale

Ports

Despite the discontinuation of waterborne passenger transport in 1993, the restoration of original passenger terminals remains significant due to waterway conditions, geographical positioning, and cultural restoration considerations.

Additionally, as the city limits expand, the need for more terminals arises. Four new passenger terminals have been proposed based on station facilities, geographical positioning, and the location of the new urban area. One terminal will be situated near the new high-speed railway station to facilitate efficient connections with the central bus system axis. Furthermore, three additional terminals will

be strategically placed near tourist attractions and historical villages and towns to enhance the distinct roles of water transport and public transport systems.

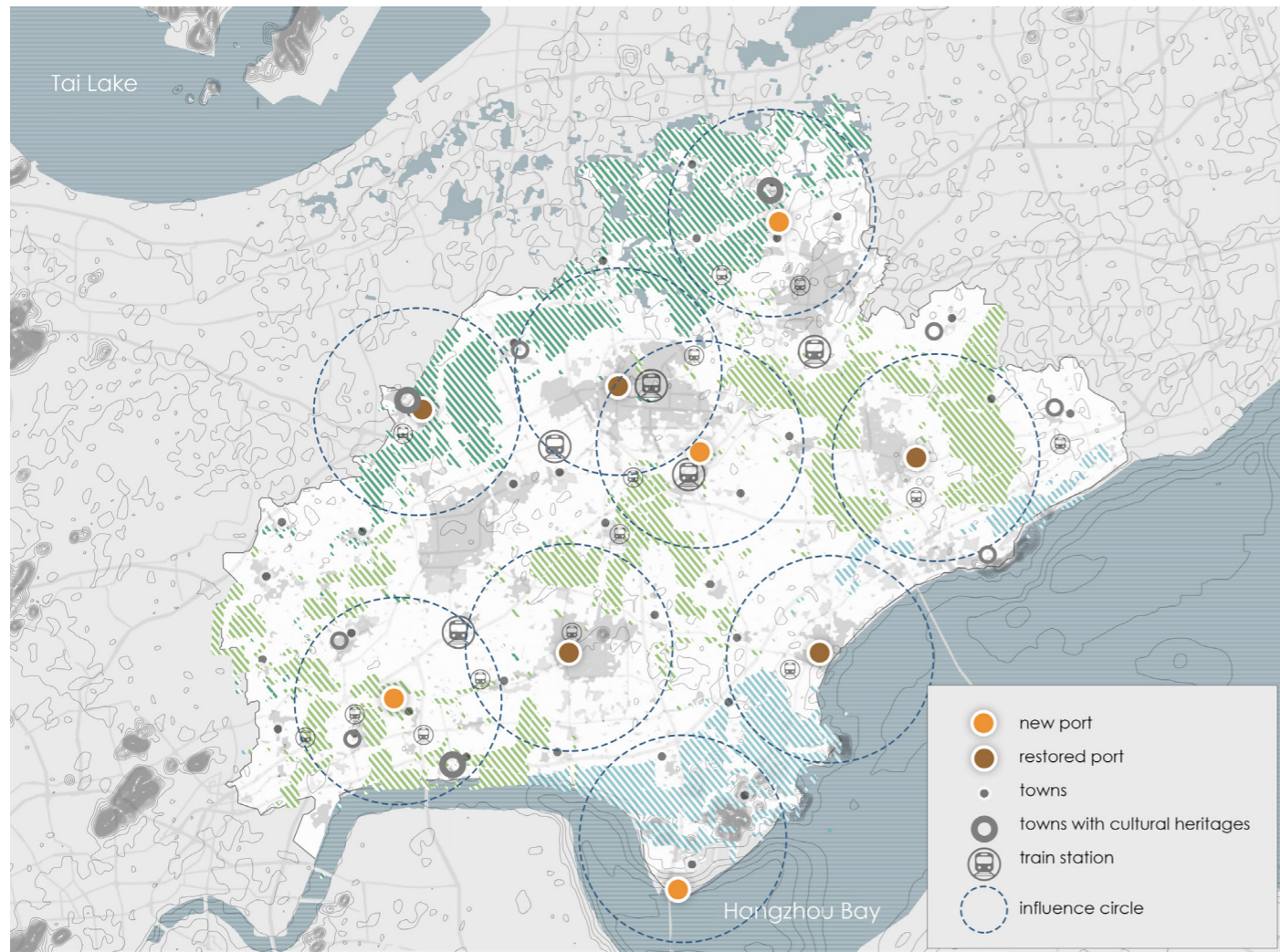


Figure 64. Potential ports



Figure 65. An old passenger port in Tongxiang, Jiaxing

Source: Tongxiang Publishing, <https://mp.weixin.qq.com/s/ScLmms-RKuIFmn8-ZedM2w>, 1970-12



Figure 66. A passenger port in Jiaxing today

Source: Zhejiang Online, https://guoqi.zjol.com.cn/yw/202201/t20220129_23715936.shtml, 2022-01-29

Regional Scale Vehicles

Before 1980s, the rivers of Jiaxing were navigated by over 20 different types of boats, each serving various purposes and featuring unique designs. Even ordinary farmers owned their own boats, known as tianzhuang boats, primarily used for transportation. Typically, these boats were anchored in front of their homes, and when needed, one person would pole from the bow while another person sculled from the stern, allowing for both rowing and steering. Additionally, there were specialized net boats for hosting guests, characterized by thin boards, flat bottoms, and lightweight structures. Other types included pen boats and book boats, designated for leisure activities by literati.

Presently, with the exception of small cruise

ships in tourist areas, which are still propelled by human power, all other types of cruise ships, ferries, patrol boats, and cargo ships are powered by machinery (Qian, 2019).

Different boats offer distinct advantages. While human-powered boats may be slightly slower, they provide accessibility and a unique experience, making them suitable for short journeys such as sightseeing trips. Conversely, water buses developed by Passenger Transport are known for their speed and interior comfort, making them ideal for longer journeys between towns and cities.

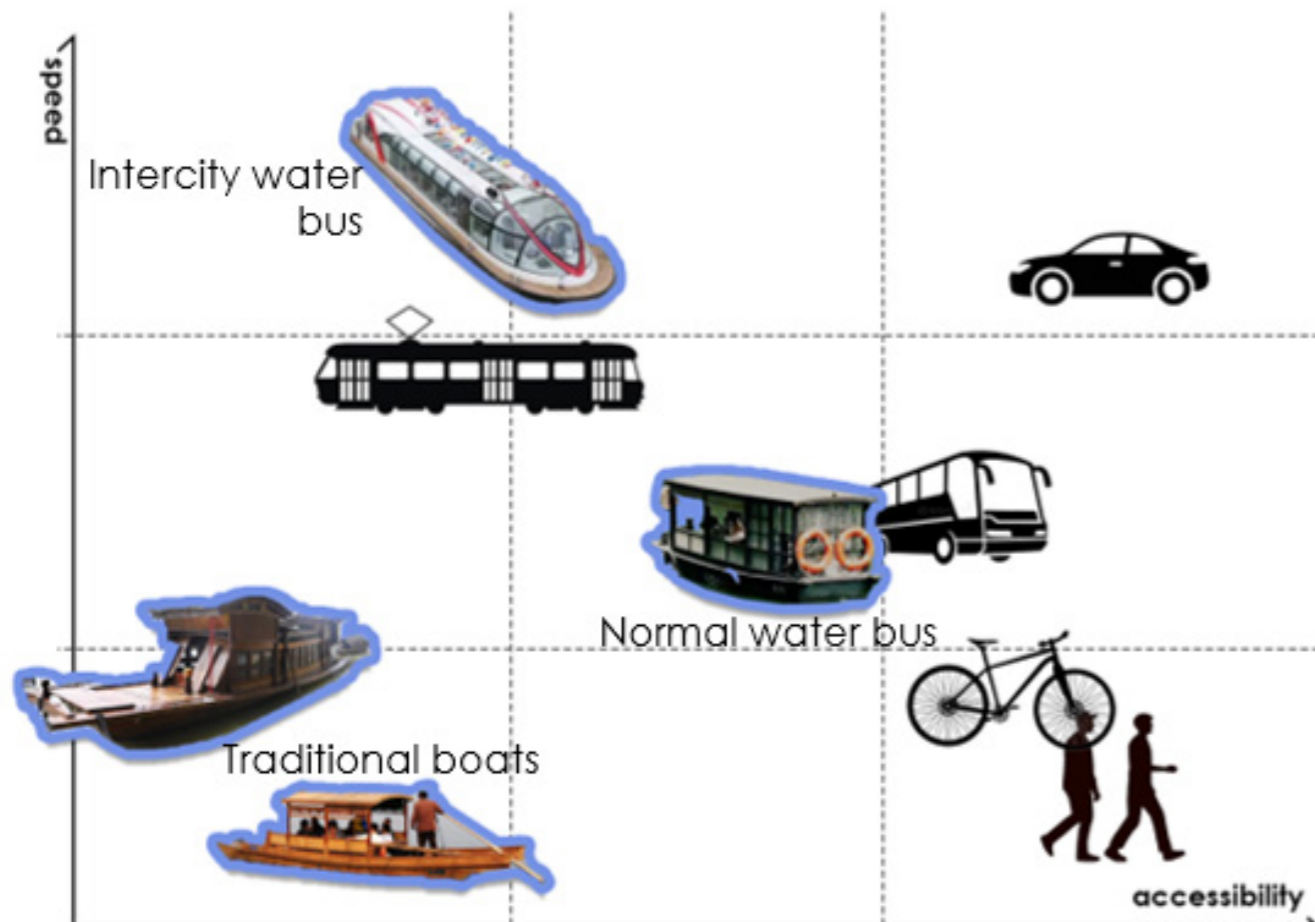


Figure 67. Potential ports



Figure 68. An old photo of a water bus

Source: Haiyan Publishing, https://mp.weixin.qq.com/s?__biz=MjM5MjI2NjY5Mg==&mid=2653046895&idx=1&sn=20665890735ae9b3d82ca8e302df27d3&chksm=bd7e08c48a0981d2d0b4268f9df8c3181c997c1791056ca170ce17e7db967d7a126558151594&scene=27, 2016-05-22



Figure 69. A passenger port Jiaxing

Source: Shanghai Tongji Urban Planning and Design Research Institute. (2020). Jiaxing Waterborne Passenger Transport Planning Special Study Report

Regional Scale

Stage 1

In the initial phase, it's crucial to capitalize on existing resources. This involves establishing water transport connections between already popular destinations and the city centre, maximizing the utilization of existing channels and terminals. This model of water transport should be implemented with adjustments made based on local and traveller needs. In the city centre, efforts will concentrate on restoring old wharves and acquiring boats to lay the groundwork for subsequent development initiatives.

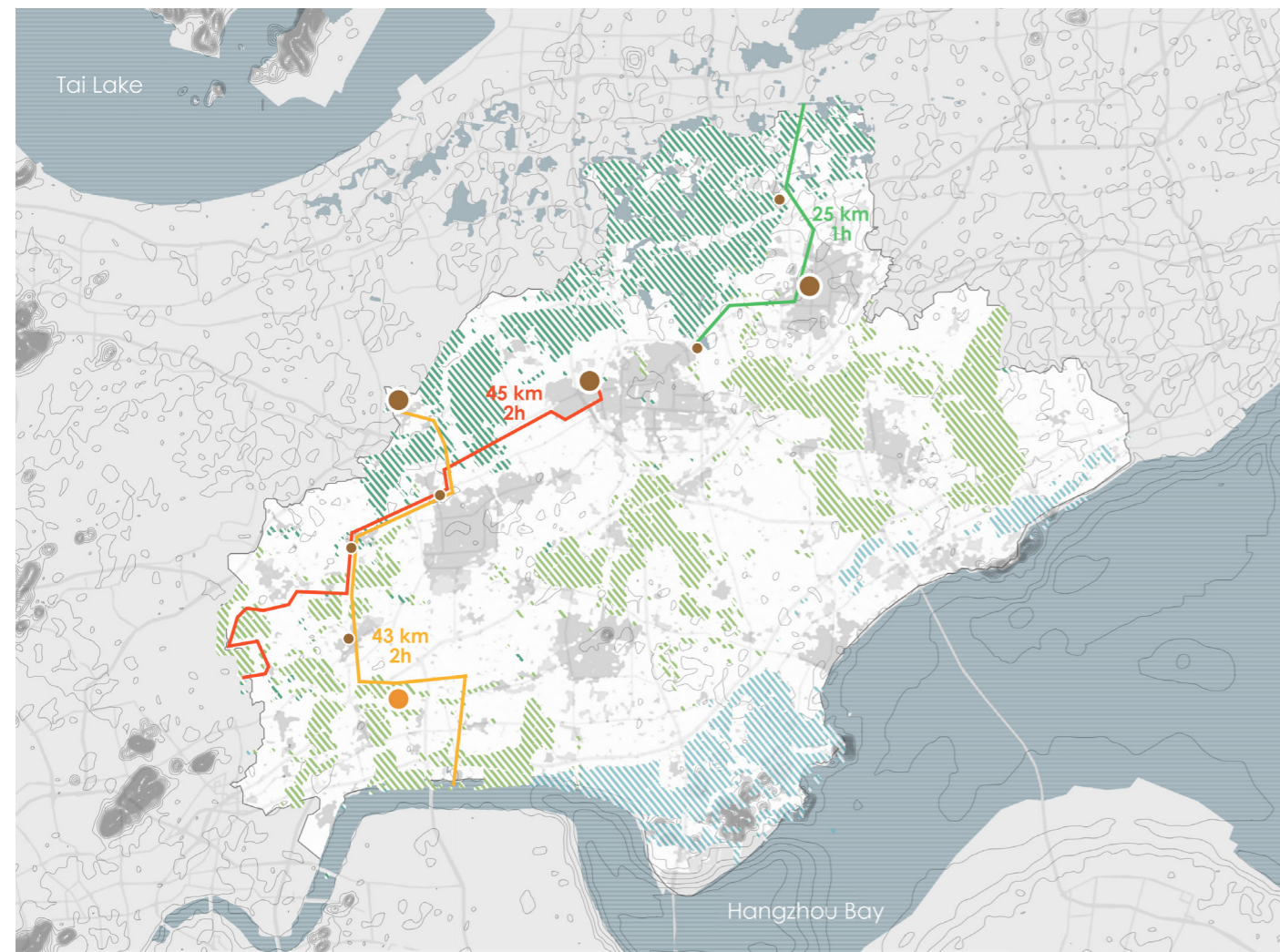


Figure 70. Regional Vision Stage 1

The first line will connect with the northern wetlands, leveraging the ancient town of Xitang as a key attraction. Xitang is not only designated as a national cultural heritage site but also a favoured tourist spot. Traditional architectural styles and cultural events like the Hanfu Festival contribute to its appeal. During this year's National Day holiday alone, Xitang welcomed over 470,000 visitors (Jiashan Government, 2024).



Figure 71. Xitang

Source: Jiashan Government, http://www.jiashan.gov.cn/art/2024/5/6/art_1229250583_59053207.html

The second line will emphasize the cluster of ancient towns in the west, particularly focusing on two provincial-level historical preservation towns, Wuzhen and Yanguan. This route will traverse diverse natural landscapes, offering a distinct experience compared to Xitang.



Figure 72. Wuzhen

Author: Hongyan, <https://www.meipian.cn/lrxfgj5u>, 2018-12-02

The third line, the Grand Canal Line, will leverage the well-established Grand Canal waterway, providing travellers with scenic views while connecting various water towns. This line prioritizes facilitating travel between towns along the route rather than focusing solely on sightseeing.



Figure 73. The Grand Canal

Author: Nanhufanghe, <https://www.meipian.cn/39iurxj>, 2020-11-18

Regional Scale

Stage 2

In the second phase, once the basic operation of the route is established, Jiaxing's diverse landscape resources will be developed further. Firstly, a new network for slow traffic will be created through convenient water transport, offering travelers a meaningful journey that allows them to traverse and experience Jiaxing's unique city identity across different landscapes. Additionally, efforts will be made to enhance the development of resorts, particularly along the city's coastline, tapping into the growing trend of recreational resorts in regional tourism.

Meanwhile, in the city center, new piers will be constructed near the new public transport core to connect different transport systems and improve the accessibility of water transport.

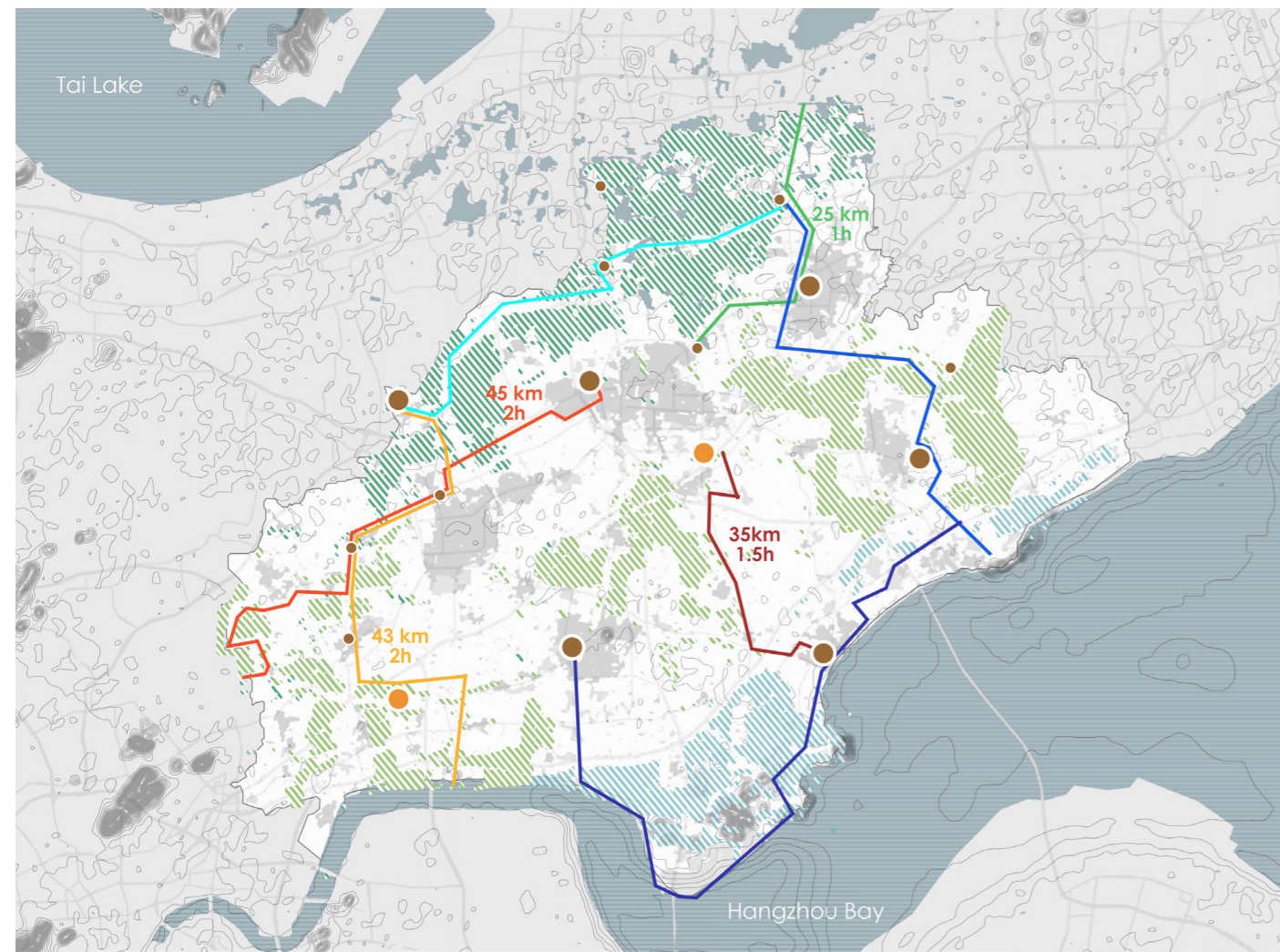


Figure 74. Regional Vision Stage 2

Jiulongshan, a national forest park near the sea, boasts a stunning combination of mountains, sea, and forests, along with rich cultural landscapes. During the peak of summer, the park attracts tourists from across the Yangtze River Delta, with daily visitors exceeding 20,000.



Figure 75. Jiulongshan

Source: <http://dovily.com/index.php/content-420>

North and South Lake, located at the mouth of the Qiantang River, features a long embankment dividing the lake into two halves. It offers a range of attractions including lakes and ponds, mountains and forests, seashores, and ancient cities, earning it a spot as one of the top ten leisure and holiday resorts in Zhejiang.



Figure 76. Nanbei Lake

Source: <https://www.19lou.com/forum-179-thread-6171489026761058-1-1.html>

Xiangjiadang, dating back to the Ming and Qing Dynasties, has long been cherished by literati for its clear waters and abundant resources. It serves as a representative of Jiaxing's wetland landscape, and the addition of this route will create a loop connecting Wuzhen and Xitang.



Figure 77. Xiuzhou

Source: <http://zjnews.china.com.cn/zj/jiaxing/cz/2022-12-01/361112.html>

Regional Scale

Stage 3

In the final stage, the waterborne transport network will be expanded to connect with neighboring cities, fostering a regional chain effect. This approach aligns with the strategies for the integration of the Yangtze River Delta, enhancing the continuity and resilience of the overall ecological environment and reinforcing cultural cohesion.

By this phase, facilities such as terminals within the main city will be fully developed, seamlessly linking the old and new piers to form a comprehensive city loop. This network will facilitate smoother connections between different parts of Jiaxing and its neighboring regions, supporting sustainable urban growth and regional integration.

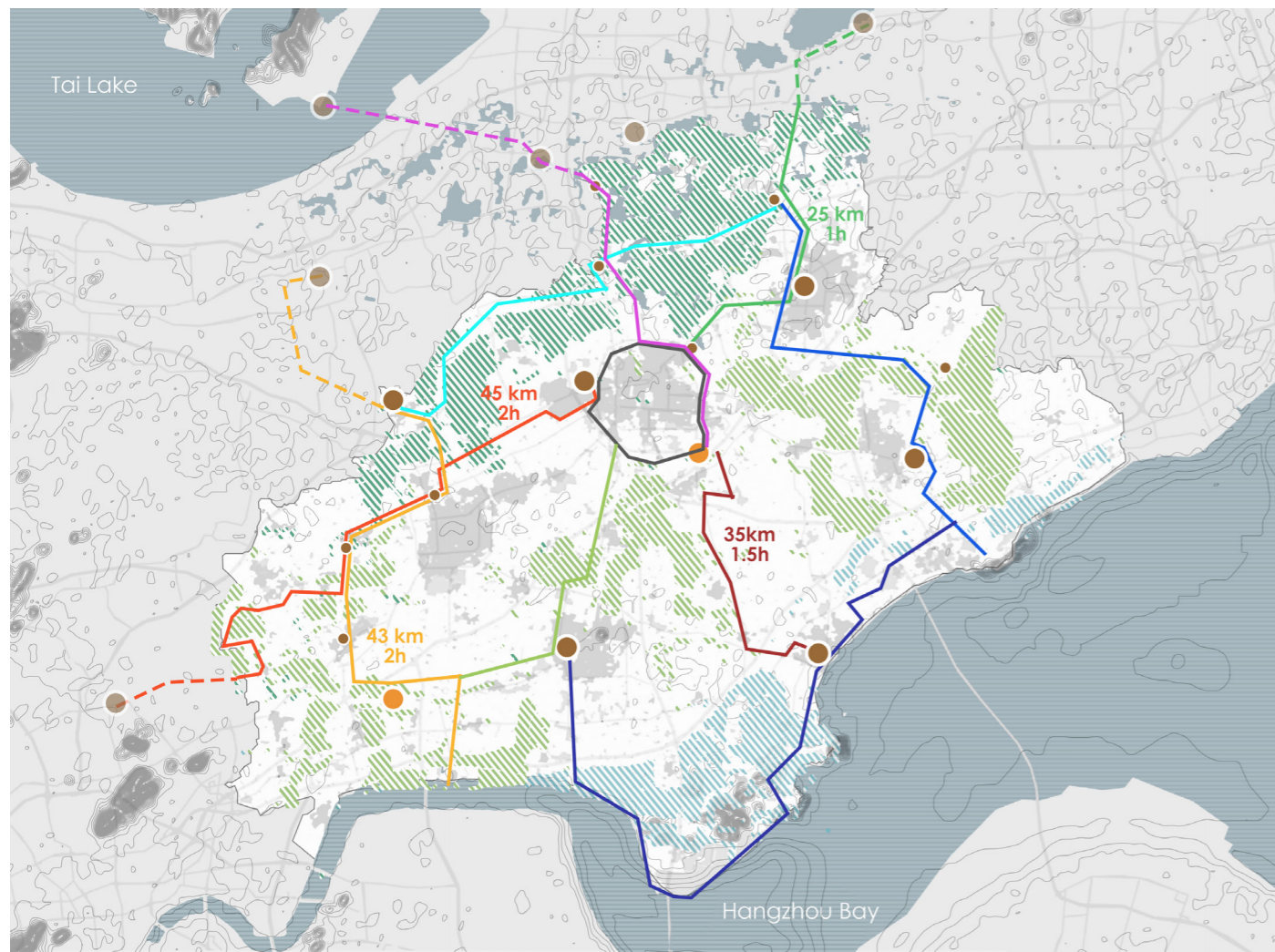


Figure 78. Regional Vision Stage 3

Dongshan is a scenic peninsula extending into Taihu Lake, known for being the origin of Biluochun, a famous Chinese tea, and is recognized as a national scenic spot. Integrating Dongshan into the water transport network will not only enhance tourism but also celebrate its cultural and historical significance.



Figure 79. Dongshan

Source: <https://js.cri.cn/20210923/abf79b66-f849-21b7-de4d-9bdebe53e3f.html>

During the Ming and Qing dynasties, Nanxun was a renowned silk town in Jiangnan and a significant silk market town. The silk produced here became the designated raw material for the royal family. The ancient town boasts beautiful and elegant traditional residential buildings that cleverly integrate Western architectural styles, forming a unique Jiangnan residential architectural art that combines Chinese and Western elements. Connecting Nanxun to the network will highlight its unique architectural and cultural heritage.

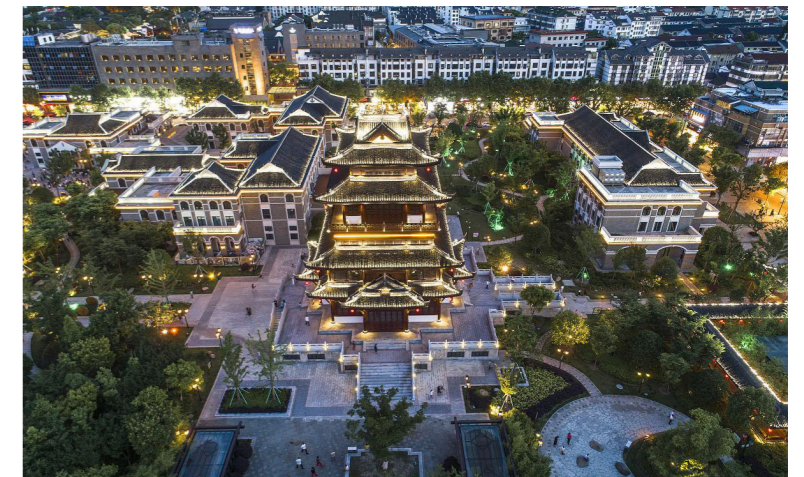


Figure 80. Nanxun

Source: <https://www.vcg.com/creative/1226812144>

Tangqi emerged as a significant town in response to the Grand Canal and has historically served as Hangzhou's water gateway. Since the Yuan Dynasty, it has been a bustling center of commerce. During the Ming and Qing dynasties, it was a prosperous area and ranked first among the top ten famous towns in Jiangnan. Including Tangqi in the network will emphasize its historical importance and enhance accessibility to this culturally rich town.



Figure 81. Tangqi

Source: <https://tuchong.com/1466112/52981392/#image300393817>

Sustainable future

Infrastructural value

Despite the shortcomings of the current transportation infrastructure, there exists significant potential for the water traffic system to complement and enhance the existing modes of transportation. The region's abundant water resources, including rivers, lakes, and canals, provide a natural advantage for water-based transportation. Over the years, diligent maintenance and investment in navigation vessels have ensured that the waterway infrastructure remains in good condition, offering an efficient and reliable mode of travel.

Additionally, the geographical layout of towns and settlements along the riverbanks has fostered a strong interconnectedness between water routes and urban centers. This connectivity is particularly beneficial for the less urbanized towns situated on the periphery of Jiaying, including the charming historic preservation towns. These water routes not only provide convenient access to essential services and amenities but also serve as scenic and leisurely pathways for residents and visitors alike.

As such, integrating and leveraging the water traffic system alongside existing transportation networks can contribute to a more comprehensive and sustainable transportation solution for Jiaying.

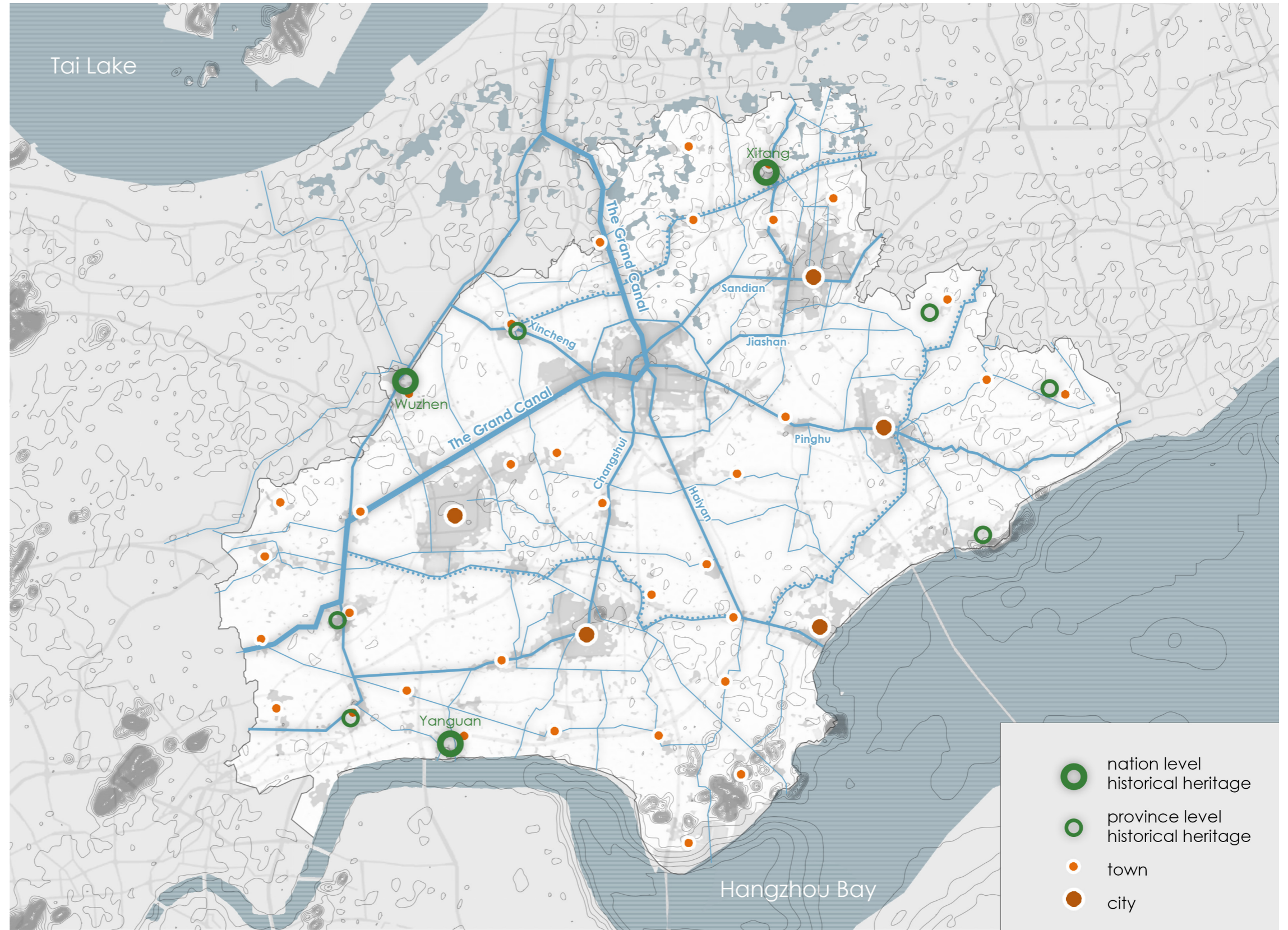


Figure 82. Water system potential

Sustainable future

Economic and social value

In recent years, there has been a noticeable trend of migration away from major metropolitan areas. Overpopulation, inadequate resource allocation, and uneven development, exacerbated by soaring housing prices, have heightened the pressures on urban dwellers. Dissatisfaction with the quality of life in these large cities has prompted many individuals to turn their attention to neighboring cities instead (Hu, 2013). This presents a significant opportunity for Jiaxing to meet the expectations of residents seeking a better life.

Situated as a second-tier city surrounded by larger urban centers, Jiaxing faces economic, technological, and cultural disadvantages, resulting in the outflow of capital and resources. Leveraging its water systems can help Jiaxing carve out differentiated advantages, allowing it to navigate the challenges posed by larger cities and capitalize on the opportunities they bring.

Firstly, by enhancing Jiaxing's tourism infrastructure through its extensive network of waterways, residents from neighbouring cities can easily have leisurely weekend getaways in Jiaxing, enjoying boat tours, waterfront dining experiences, and cultural excursions. This not only stimulates tourism revenue for Jiaxing but also fosters collaborative partnerships with neighbouring cities to create interconnected tourism circuits, allowing visitors to seamlessly explore the diverse attractions and cultural offerings across the region.

Secondly, by investing in the enhancement of the city's physical environment and amenities, Jiaxing can significantly elevate residents' quality of life. By creating vibrant and livable neighbourhoods, Jiaxing becomes increasingly appealing to human capitals seeking an enhanced work-life balance and a higher standard of living. This concerted effort to improve the city's livability not only attracts skilled professionals but also fosters a sense of community pride and well-being, laying a solid foundation for Jiaxing's sustainable development and long-term prosperity.

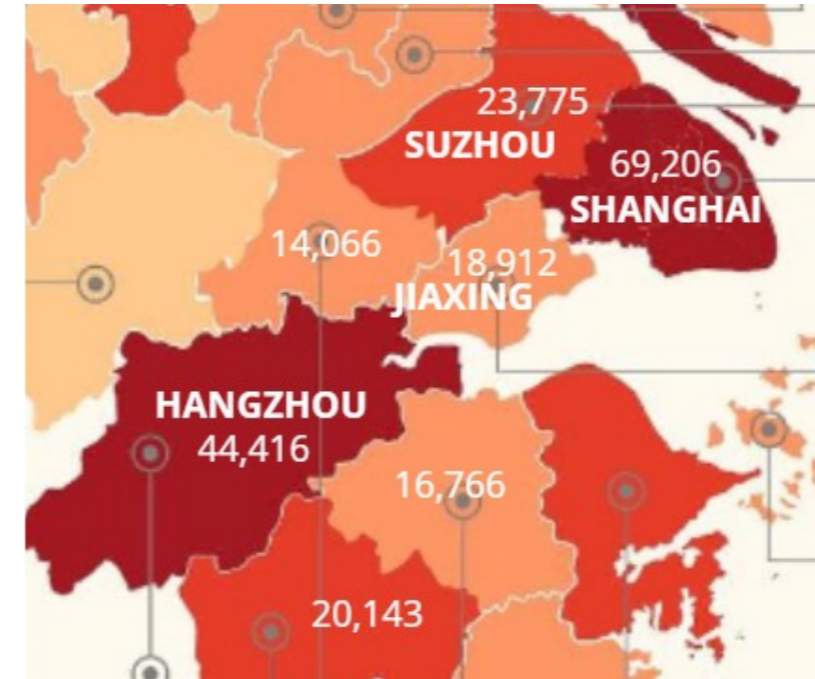


Figure 84. Average prices of second-hand houses in 2022



Figure 83. Population flow in Shanghai and Jiaxing
Source: China Statistics Bureau

Sustainable future

Ecological and symbolic value

From an ecological standpoint, the water system not only serves as a means of transportation but also plays a crucial role in linking various nature conservation parks scattered across Jiaying city. Building upon the insights gleaned from Ke's (2021) research, it becomes evident that this interconnected network of waterways enhances the ecological importance of strategically located wetlands. This interconnectedness not only fosters improved river connectivity but also bolsters the overall ecological resilience of Jiaying, contributing to the preservation and sustainability of its natural habitats.

Furthermore, the utilization of water as a mode of transportation offers a unique opportunity to traverse through three distinct landscapes within Jiaying. This journey allows individuals to immerse themselves in the rich cultural tapestry of the region, making each voyage a meaningful and memorable experience. By accentuating the narrative surrounding the navigable river, the perception of the entire urban landscape is enriched, reinforcing and solidifying Jiaying's unique urban identity.

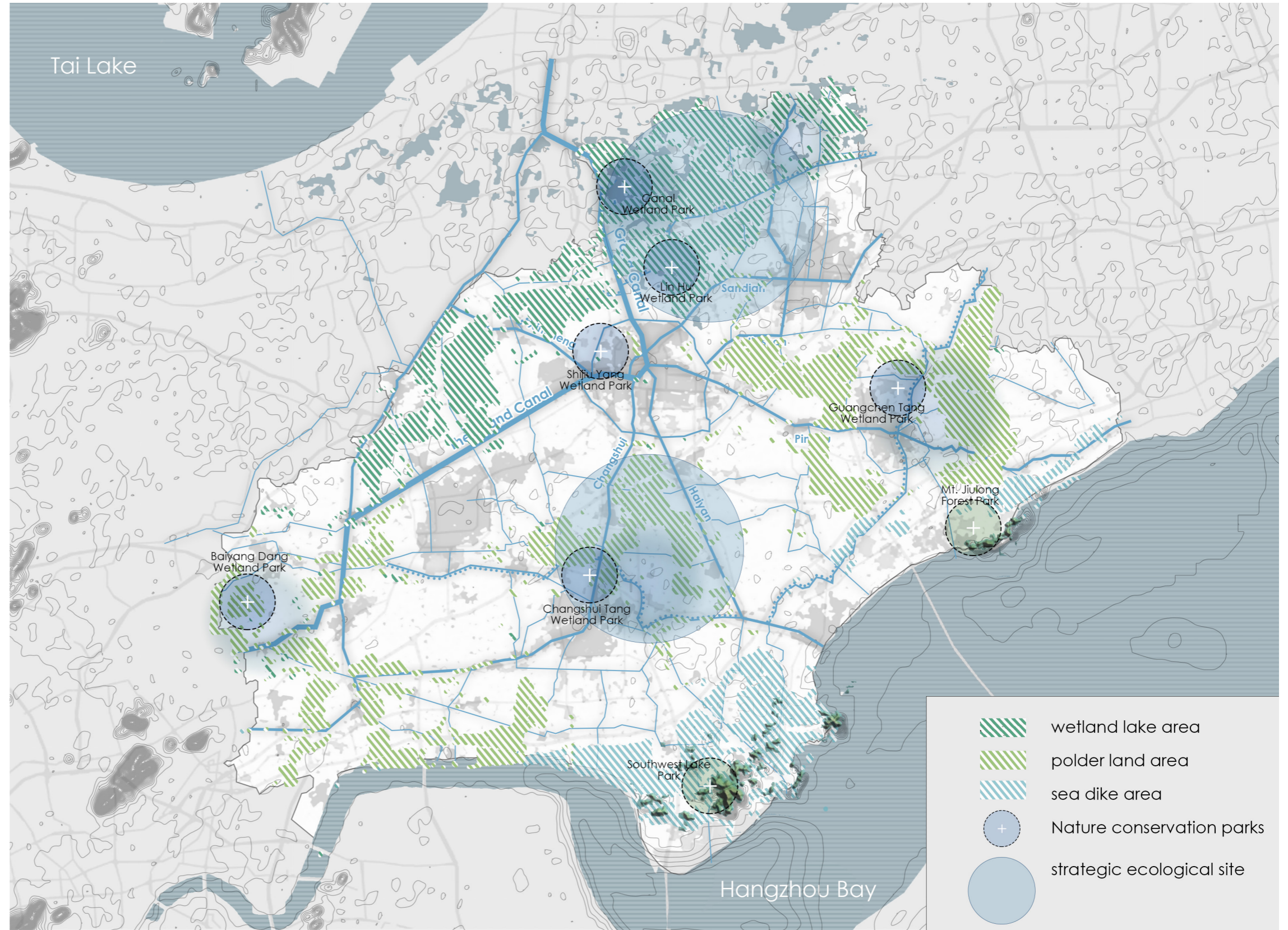


Figure 85. Water system potential

V. IDENTITY BUILDING

- city scale analysis
- strategies
- phasing

City Scale Analysis

Infrastructure

In the current scenario, public water transport is limited to specific areas around the old city centre, while freight shipping lanes are primarily located on the outskirts of the old city centre.

In the regional vision, revitalizing the old piers and constructing new ones near the new transport hub are essential for the main city's development. Moreover, there is a need for a more expansive water transport network throughout the entire urban area.

At the regional level, the feasibility of water transport as Jiaxing's urban identity is discussed. However, attention must now turn to the city centre due to its importance. The city centre holds significant cultural heritage and hosts a dense population. Therefore, it serves as a crucial starting point for incorporating broader social considerations, including the various roles water plays in the urban landscape. The upcoming section will explore how infrastructural role interacts with the social, ecological, and cultural roles, ultimately shaping the overall urban identity.

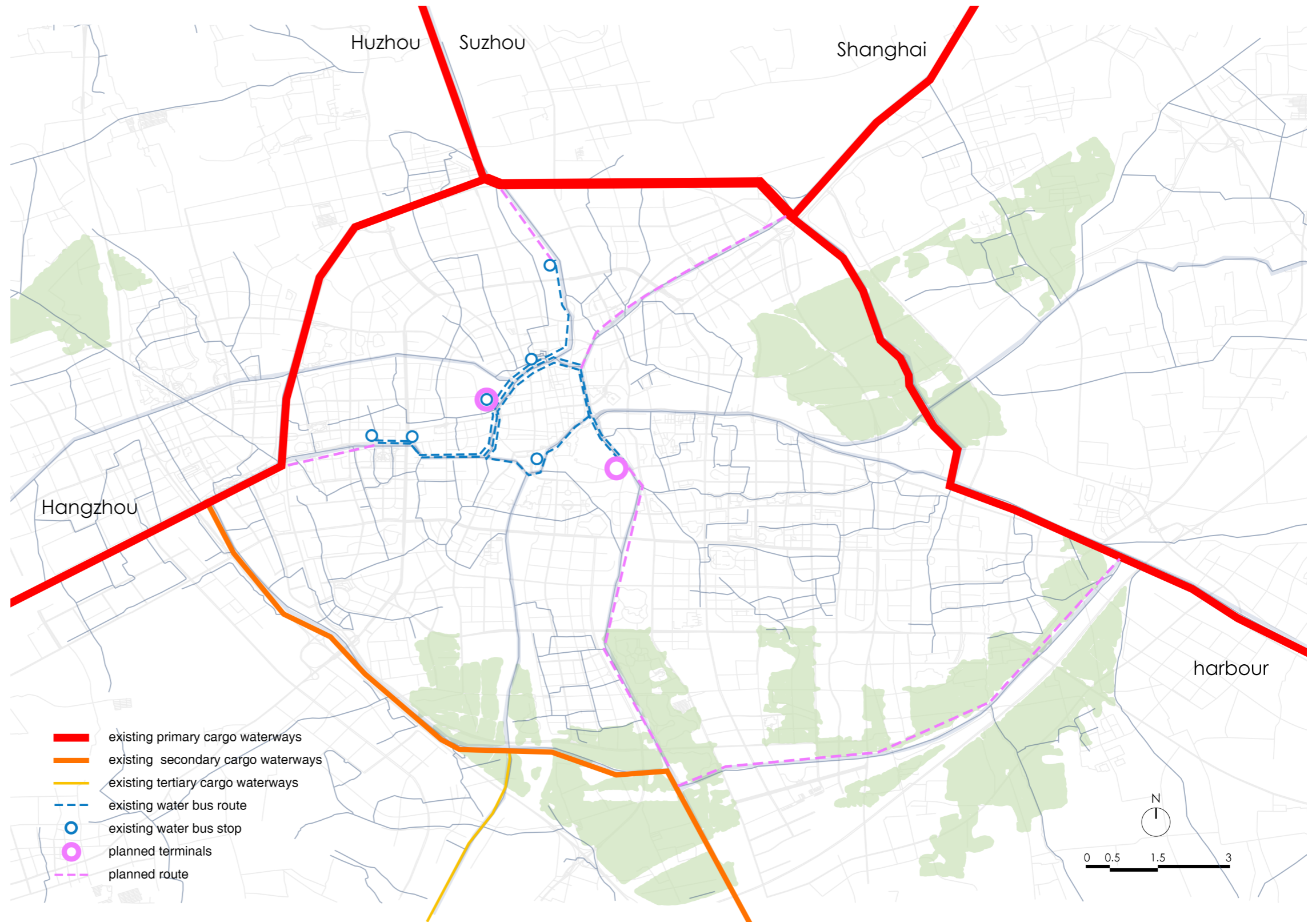


Figure 86. Current water transport network

City Scale Analysis

Infrastructure

River resources often remain invisible in the everyday lives of Jiaxing's citizens. There is a lack of water transport and social public spaces, and many water resources are underutilized, especially in newly-built area (see Figure 87).



Figure 87. Nanhu Avenue

In some areas, typically those in old city area, rivers are utilized, but they are typically integrated with greenery in a homogeneous manner, making them generally visible but not uniquely appreciated (see Figure 88).

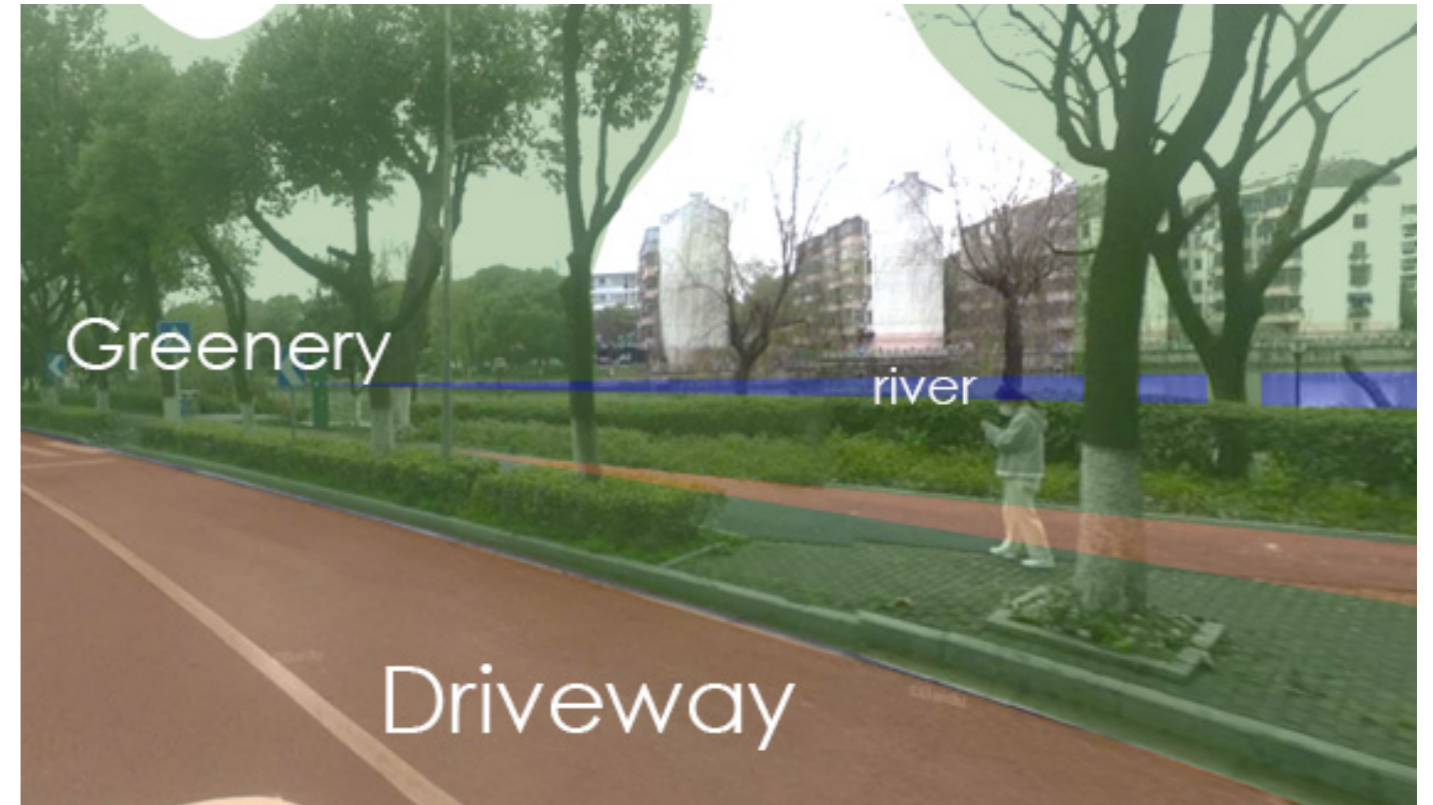
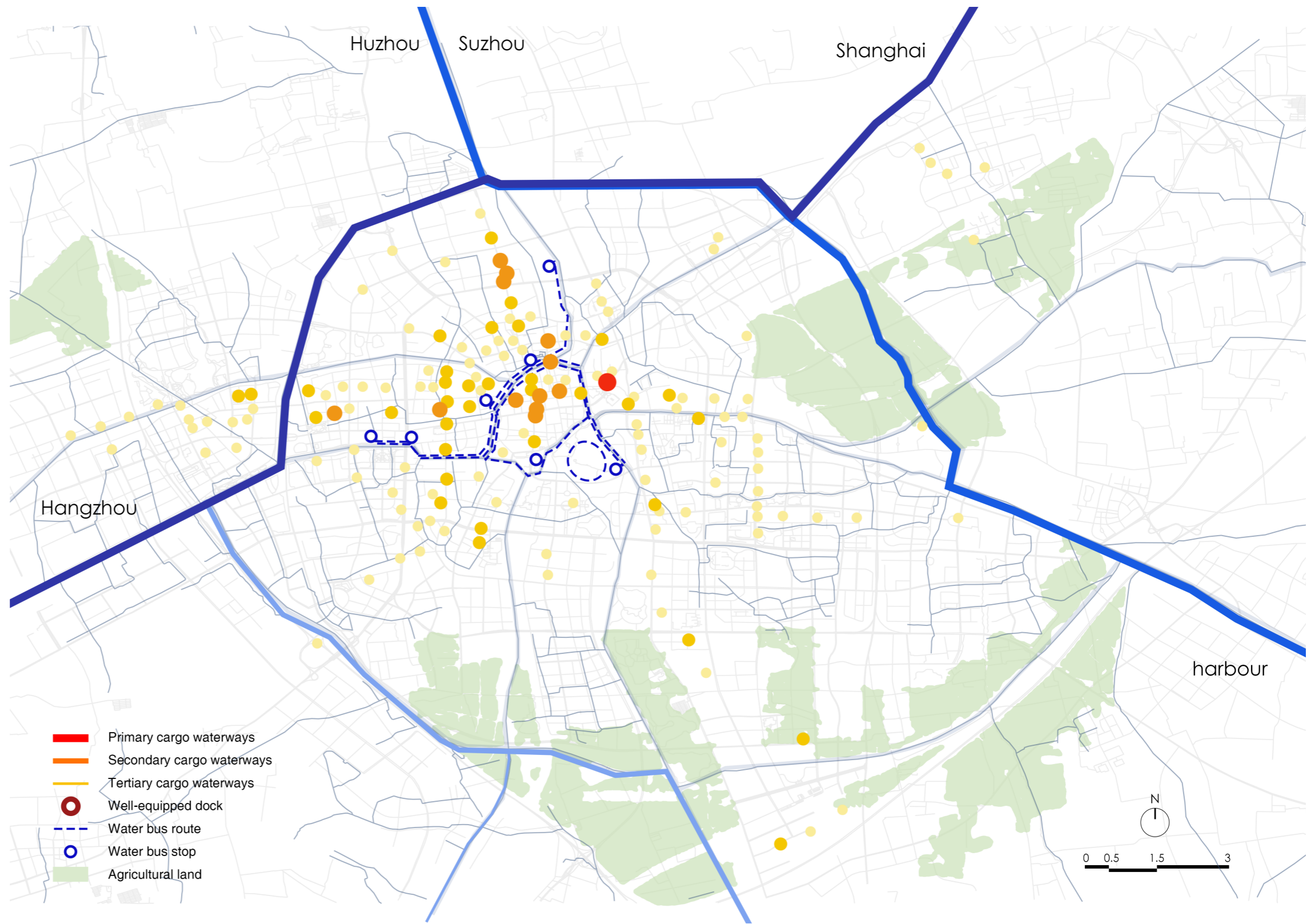


Figure 88. West Ring Road

City Scale Analysis

Infrastructure

The existing public transport resources in Jiaxing are unevenly distributed. The chart shows that Jiaxing's buses have a high duplication rate and low coverage. Bus stops are primarily concentrated in the city centre and the northwest, with low coverage in the southeast. Additionally, the existing water buses are concentrated in the same areas. This has resulted in an unbalanced distribution pattern.



	Jiaxing	Relevant requirements
Bus holdings (units/thousand person)	1.02	1.2
Bus route density (km/km ²)	2.4	3~4
Duplication of bus route network	3.79	1.25~2.5
Non-linear coefficient	1.8	≤1.4

Figure 89. Current water transport network

City Scale Analysis

Social activities

Jiaxing downtown often refers to itself as a water city, but in reality, there are not many points of interest that interact with water, and those that do are infrequently used by the public.

According to the Baidu Maps Heat Map of Interest, most of Jiaxing's hotspots for public activity are located in the western part of the city, which shows the same pattern as the public transportation. This older part of the city was developed earlier and has better commercial facilities.

The hotspot map, combined with land use data, identifies public activity centres. A survey of these public activity centres shows that only a small number can interact with water or have water features. Meanwhile, several open parks and green spaces with better infrastructure and views of the water system are less attractive to the public.

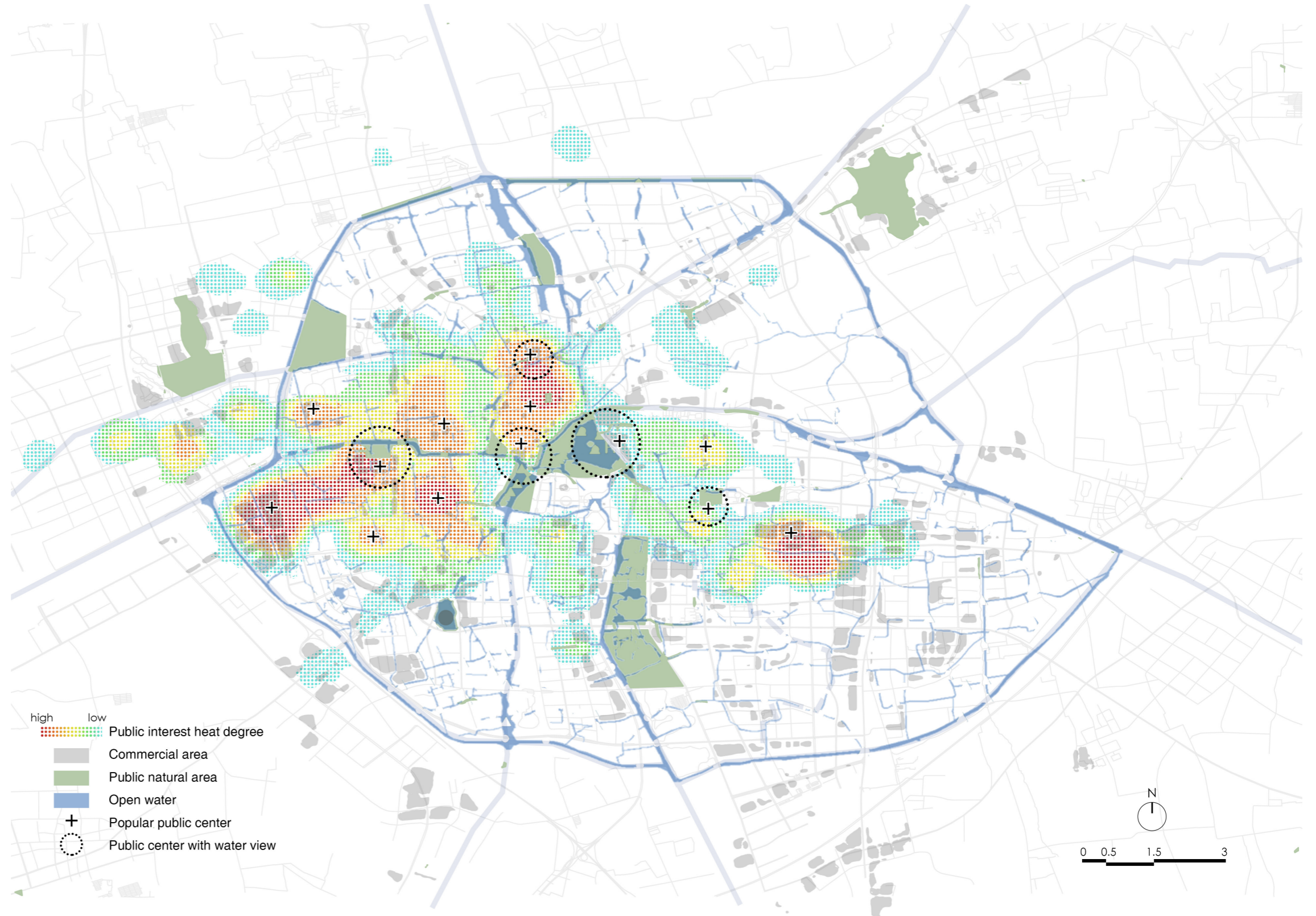


Figure 90. Water resources and public space
Source: Baidu heat map

City Scale Analysis

Social activities

Public activity in Jiaxing is fragmented and imbalanced not only at the spatial level of geographical distribution but also from a micro perspective, where suitable social activities are lacking.

Currently, Jiaxing has initiated a greenway construction project to provide continuous green corridors that allow the public to connect with nature, receiving positive feedback and results. However, the activities available on these greenways are limited mainly to quiet and individual activities, such as walking, cycling, fishing and camping (see Figure 91-94). The overall openness of the space is average, with a lack of areas for lingering and communication, and little focus on cultural attributes to maximize value.

In the actual construction process, water and greenery are still considered homogeneous ecological resources. During ecological restoration, water is often completely ignored. There is no demonstration of Jiaxing's unique water features or the characteristics of its water town heritage. Many open spaces have untapped potential for further development, highlighting the need for a more nuanced approach to integrating water into the city's landscape and cultural identity.



Figure 91. Pinghu City Waterfront Interchange Greenway (Phase I)
Source: Jiaxing Online News, https://m.thepaper.cn/baijiahao_19673534



Figure 92. Fishing
Author: Leofatfat, 150127521, from RED



Figure 93. Cycling on greenway
Source: Jiaxing Rural and Urban Construction, <https://mp.weixin.qq.com/s?biz=MzI2NzM1OTk4Nw==&mid=2247624725&idx=6&sn=7323e45884c7ae24ed14ffd7f6c22636&chksm=ea8cab89ddf229ff5dbfe31082b8285baf8e24656c35556c9aa5e470ae84cef8a81ac170e56&scene=27>



Figure 94. Camping near water
Author: Yuan peide, https://finance.sina.com.cn/jjxw/2022-05-05/doc-imcwiwst5615437.shtml?finpagefr=p_115

City Scale Analysis

Water pollution problem

The river in Jiaying runs from the northwest to the southeast. However, water pollution is particularly serious in the northwest, which is the upstream part of the urban area. This pollution is primarily attributed to the industrial areas located in this region. Although future planning aims to transition part of this industrial zone to less polluting sectors, the upstream area will continue to host manufacturing activities, posing ongoing challenges for water quality management.

The severe water pollution has resulted in substandard water quality, leading to chronic water shortages in Jiaying. Additionally, the extensive extraction of groundwater to compensate for the lack of surface water has caused another problem: subsidence. Ensuring a balance between industrial development and environmental sustainability will be critical for the future health and liveability of Jiaying.

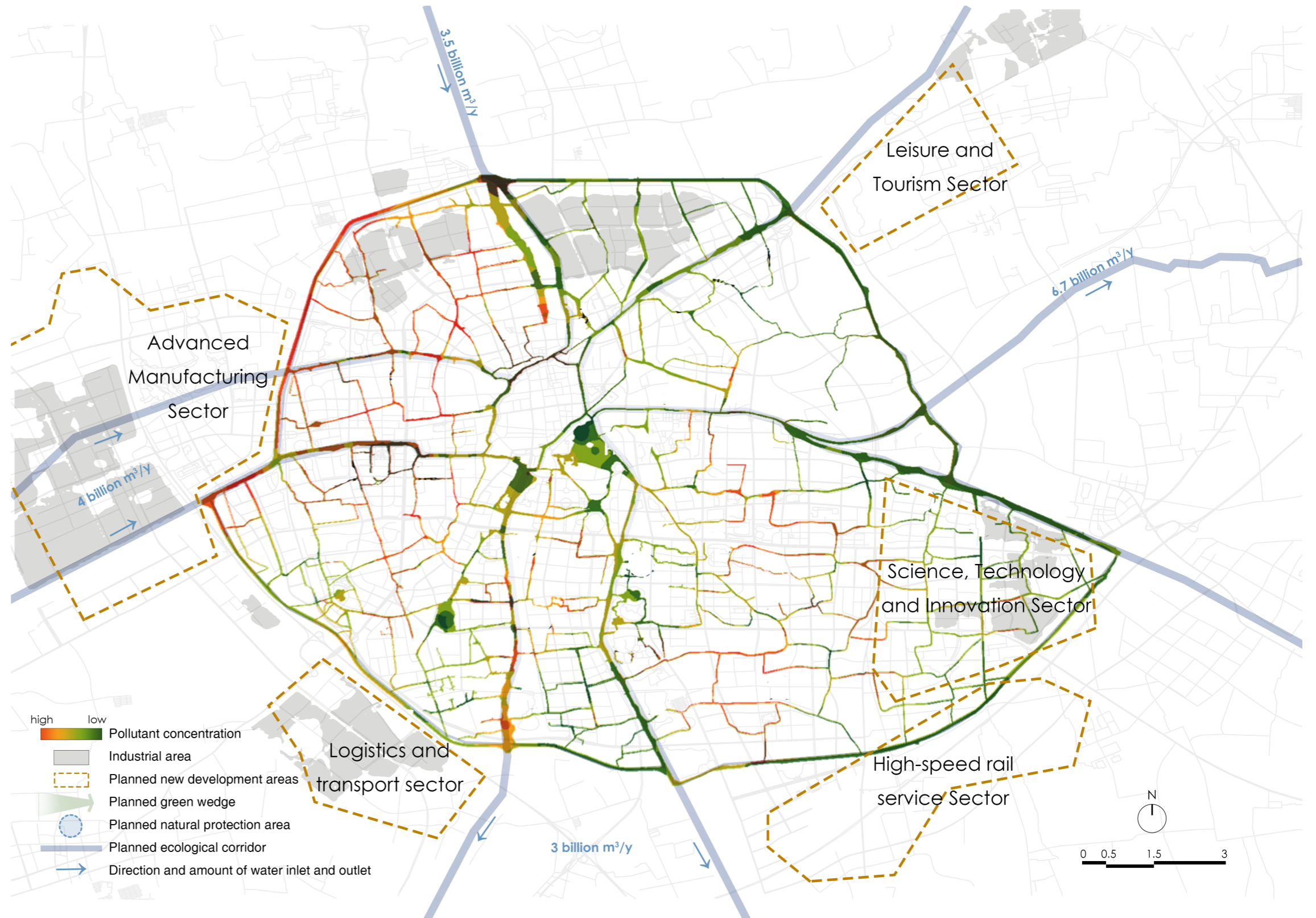


Figure 95. Water pollution map

City Scale Analysis

Cultural heritage

Cultural resources in Jiaying are concentrated along the rivers in the city centre, with many places having historically relied on the rivers for their development and prominence. However, the lack of water connection has resulted in poor connectivity with other sites, leading to a sense of isolation among them. To address this, the rivers should be utilized to establish connections, enhancing communication and cohesion between the various tourist attractions.

Furthermore, three green wedges are planned to improve the connectivity and spaces for all kinds of activities. However, the green wedge planned for the northwest is significantly hindered by the existing built-up areas. This obstruction has caused the northwest green wedge to be largely ineffective and only nominally present.

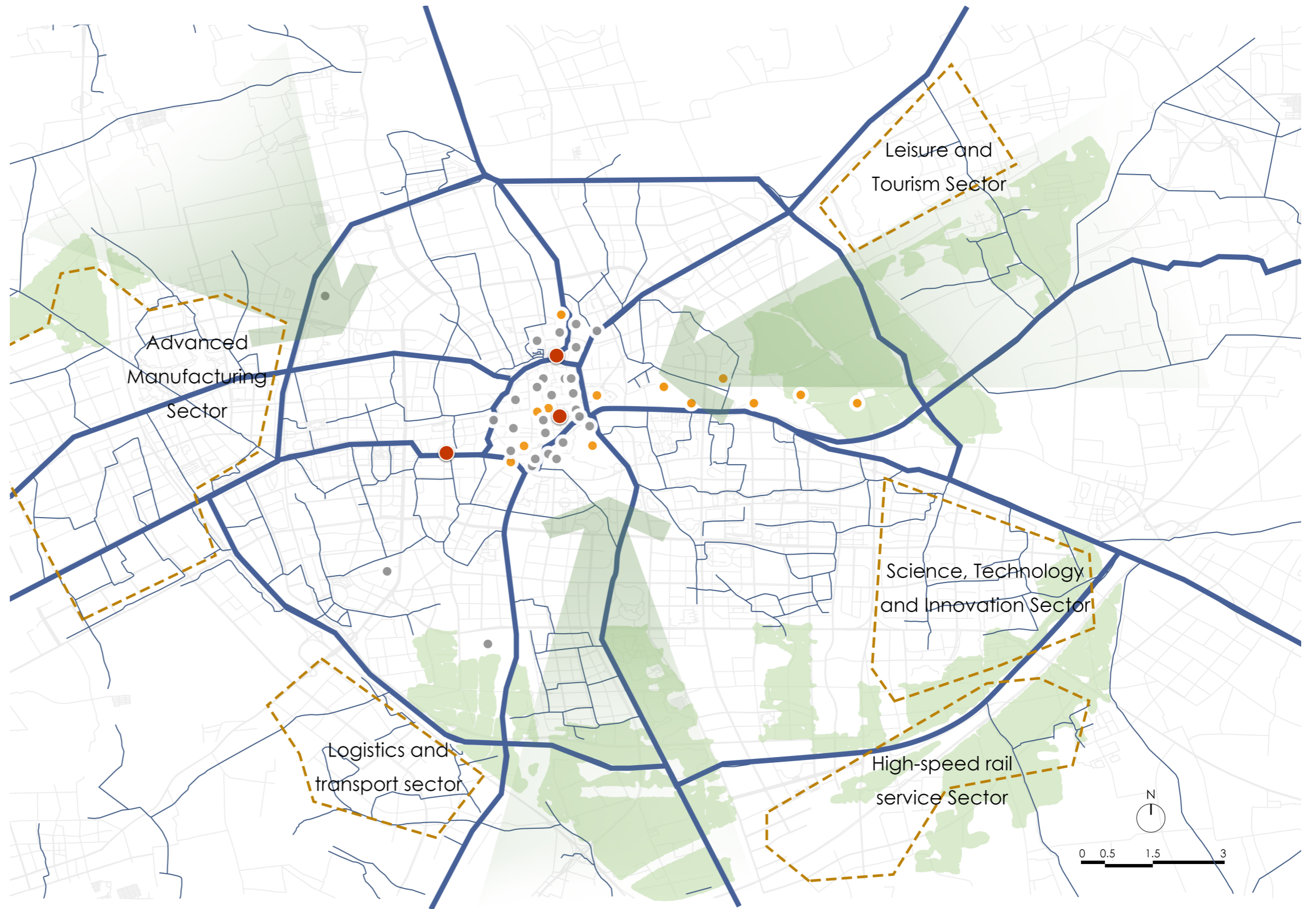


Figure 96. Historical map

Strategies

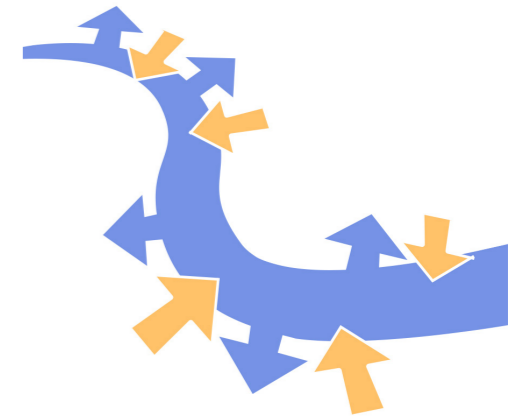
Overview

Cultural resources in Jiaxing are concentrated along the rivers in the city centre, with many places having historically relied on the rivers for their development and prominence. However, the lack of water connection has resulted in poor connectivity with other sites, leading to a sense of isolation among them. To address this, the rivers should be utilized to establish connections, enhancing communication and cohesion between the various tourist attractions.

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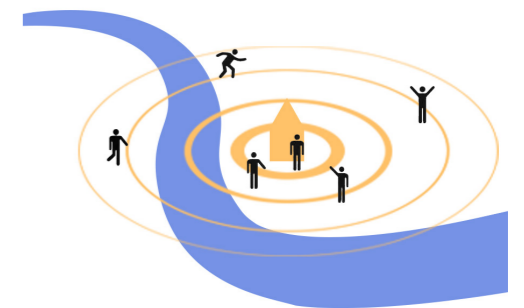
Strategy 1: Equitable Accessibility

This strategy aims to address disparities in public resources, especially in new and underdeveloped urban areas. By improving access to water infrastructure, we seek to ensure fair resource distribution among all residents. This initiative promotes inclusivity and enhances the city's overall well-being. Integrating water infrastructure with public transport and green spaces will elevate the urban landscape's quality and vibrancy.



Strategy 2: Revitalized Activities

This strategy combines traditional cultural elements with modern needs, revitalizing certain river-related functions to create hubs for community gatherings, leisure, commerce, and cultural exchange. By renewing social and cultural narratives, we introduce a variety of activities into the traditional urban setting, fostering a unique and dynamic urban identity.



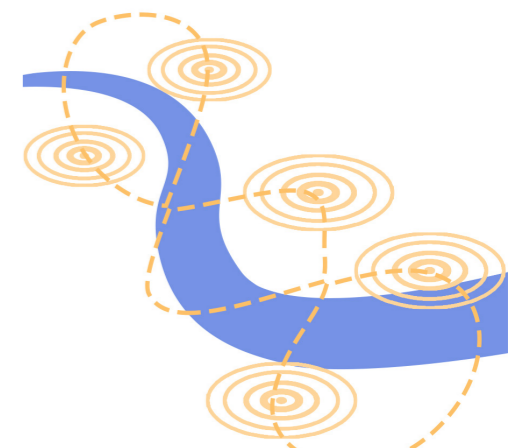
Strategy 3: Enhanced Ecological Functions

Given the current ecological issues, this strategy focuses on maximizing the river's ecological potential to reduce pollution and strengthen Jiaxing's environmental resilience. We plan to establish purification nodes along the river and expand tributary spaces to support urban ecological health.



Strategy 4: Community Cohesion

Ensuring that the new plan integrates seamlessly with the surrounding community is crucial. Rather than treating water spaces as separate entities, we emphasize their organic integration into the broader environment. By carefully allocating activities nearby, we ensure they meet community needs and enhance daily life. This approach fosters stronger connections among residents and with the natural environment, reinforcing social bonds and ecological interconnectedness. Therefore, the impression of the water city is attainable.



Strategies

Equitable Accessibility

To enhance the accessibility and integration of water in Jiaxing, it is essential to extend the functions of water into the land space and vice versa.

Firstly, water functions should be expanded into the land space. Water buses and taxis should be visited easily. And the landscape should include water features, which can create inviting public spaces that encourage interaction with water.

Conversely, land-based functions should be designed to complement and integrate with water-related activities. This includes ensuring that pedestrian pathways, cycling routes, and public transportation hubs are connected to waterfront areas, making them easily accessible. Mixed-use developments that combine residential, commercial, and recreational spaces near water bodies can also foster a more cohesive urban environment.

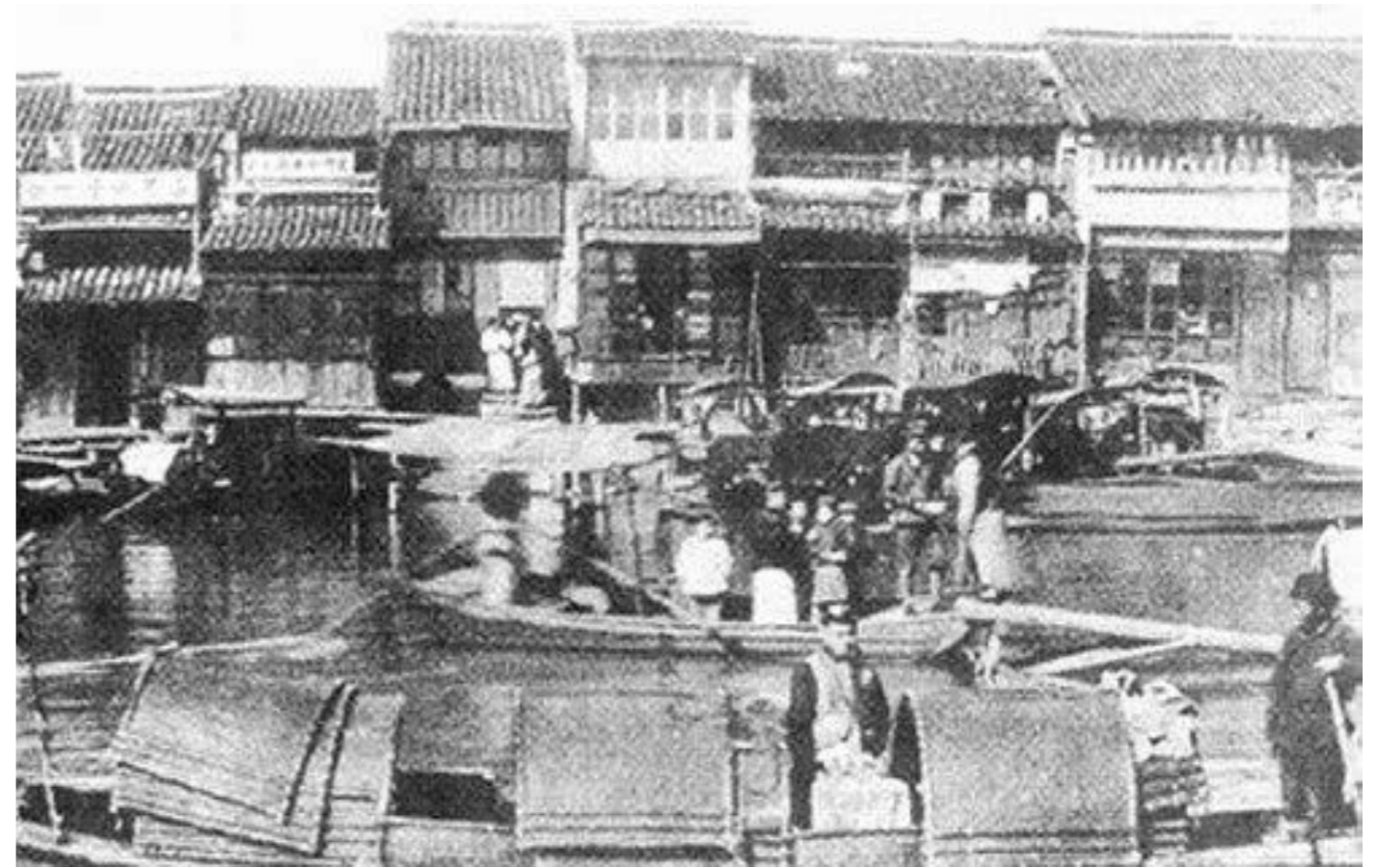
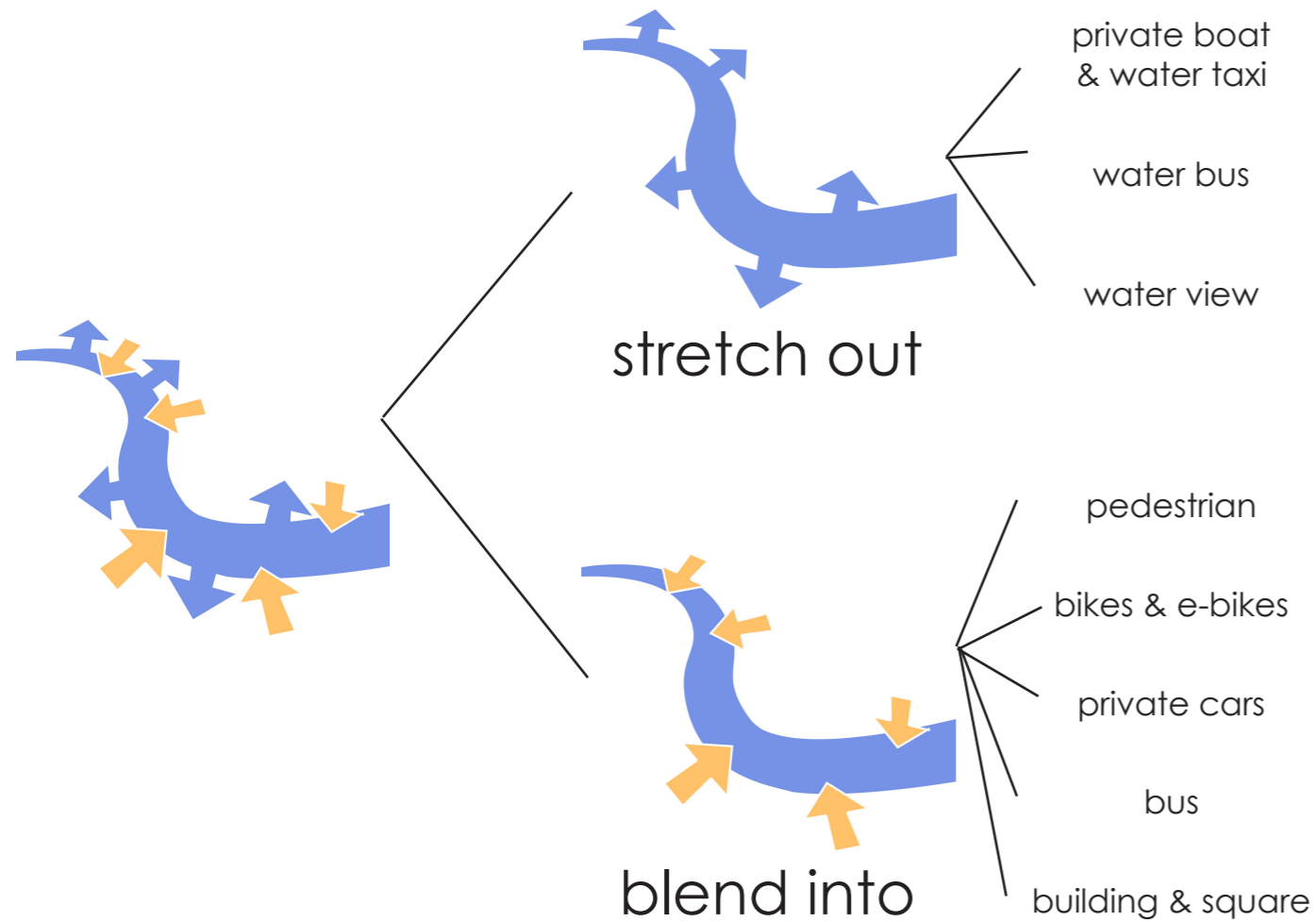


Figure 97. Connection between boats and the bank
Author: Pang Yiyong, Jiaxing Museum

Strategies

Revitalized Activities

Drawing from traditional activities, we recognize that there exist a variety of meaningful and feasible endeavours that can take place on the water. Revisiting and reviving these activities in contemporary times not only offer opportunities for urban recreation but also serve as a bridge between past traditions and present-day experiences. By reintroducing these activities into the urban fabric, we have the potential to infuse new memories with old ones, thereby fostering a sense of continuity and coherence in the city's identity.

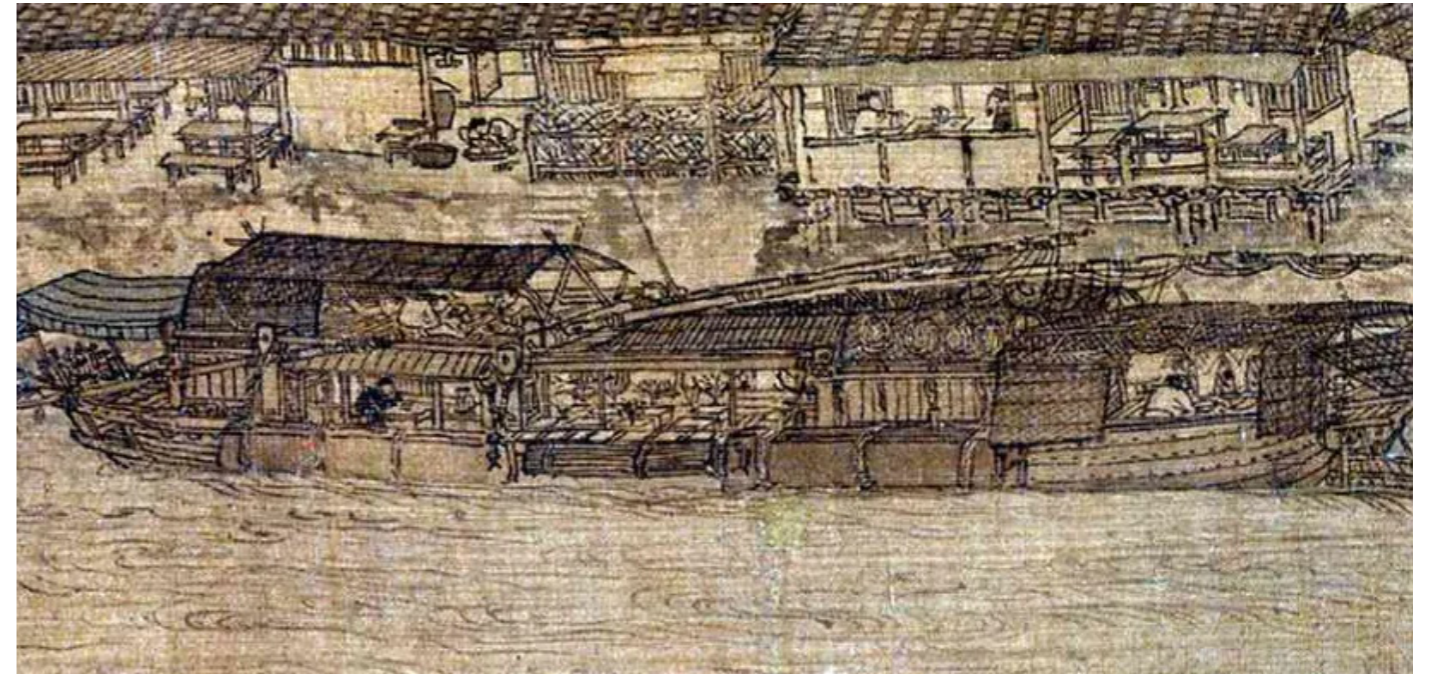
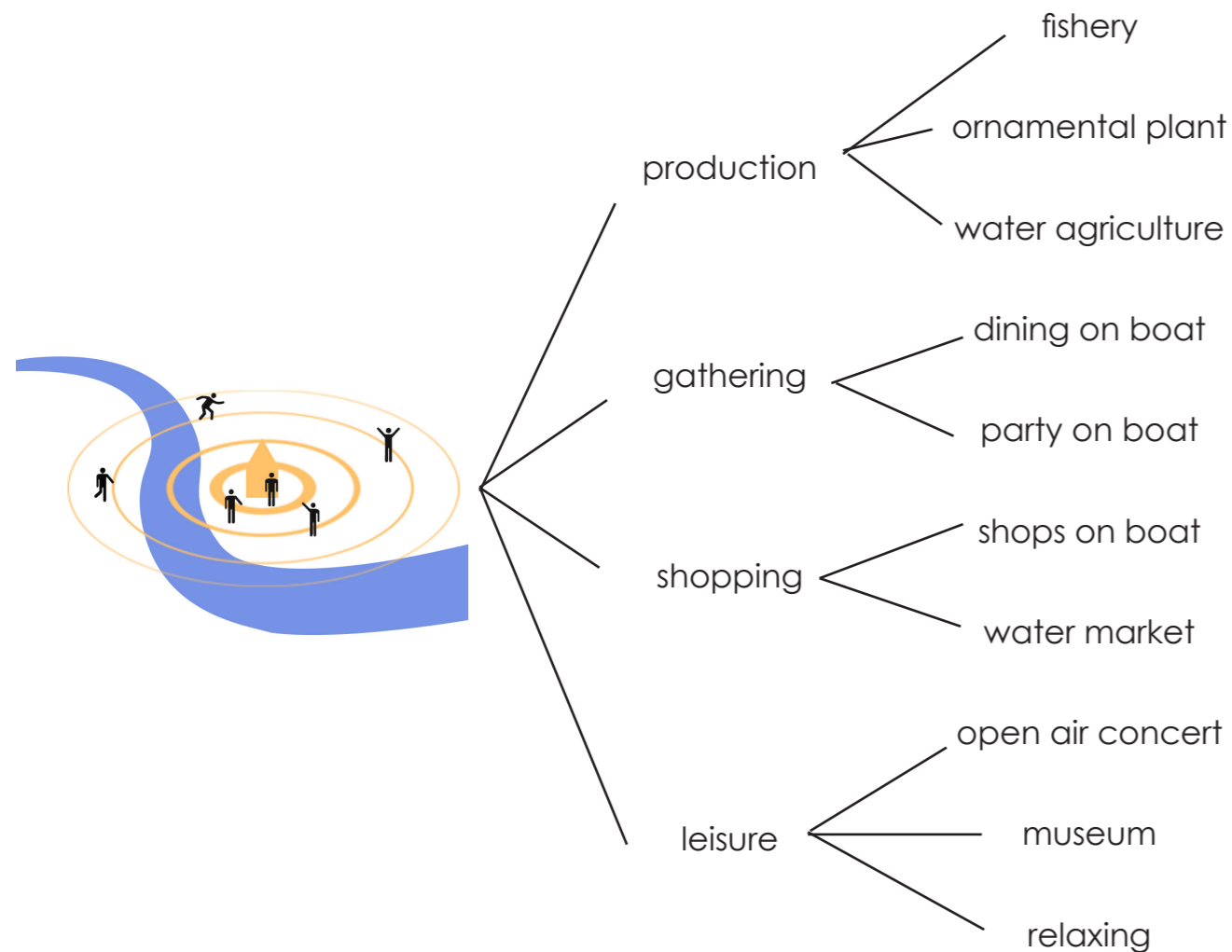


Figure 98. Restaurant on a boat
Qingming Shanghe Tu (Partial), Zhang Zeduan



Figure 99. Opera on boats
Author: Pang Yiyi, Jiaxing Museum

Strategies

Enhanced Eco-functions

The water system in Jiaxing could provide essential functions, serving as both a filtration and a storage system. This is particularly important given the city's current challenges with water quality and supply. By filtering pollutants and storing excess water, the system helps ensure a more reliable and clean water supply for residents.

Additionally, the water system enhances biodiversity by creating habitats for various plant and animal species. This contributes to a

healthier and more resilient ecosystem, which can better withstand environmental stresses.

In the long run, a well-maintained water system can help Jiaxing cope with extreme weather conditions, such as heavy rainfall and flooding, as well as rising water levels due to climate change. By managing water flow and storage effectively, the city can mitigate the impacts of these events, protecting both the urban environment and its inhabitants.

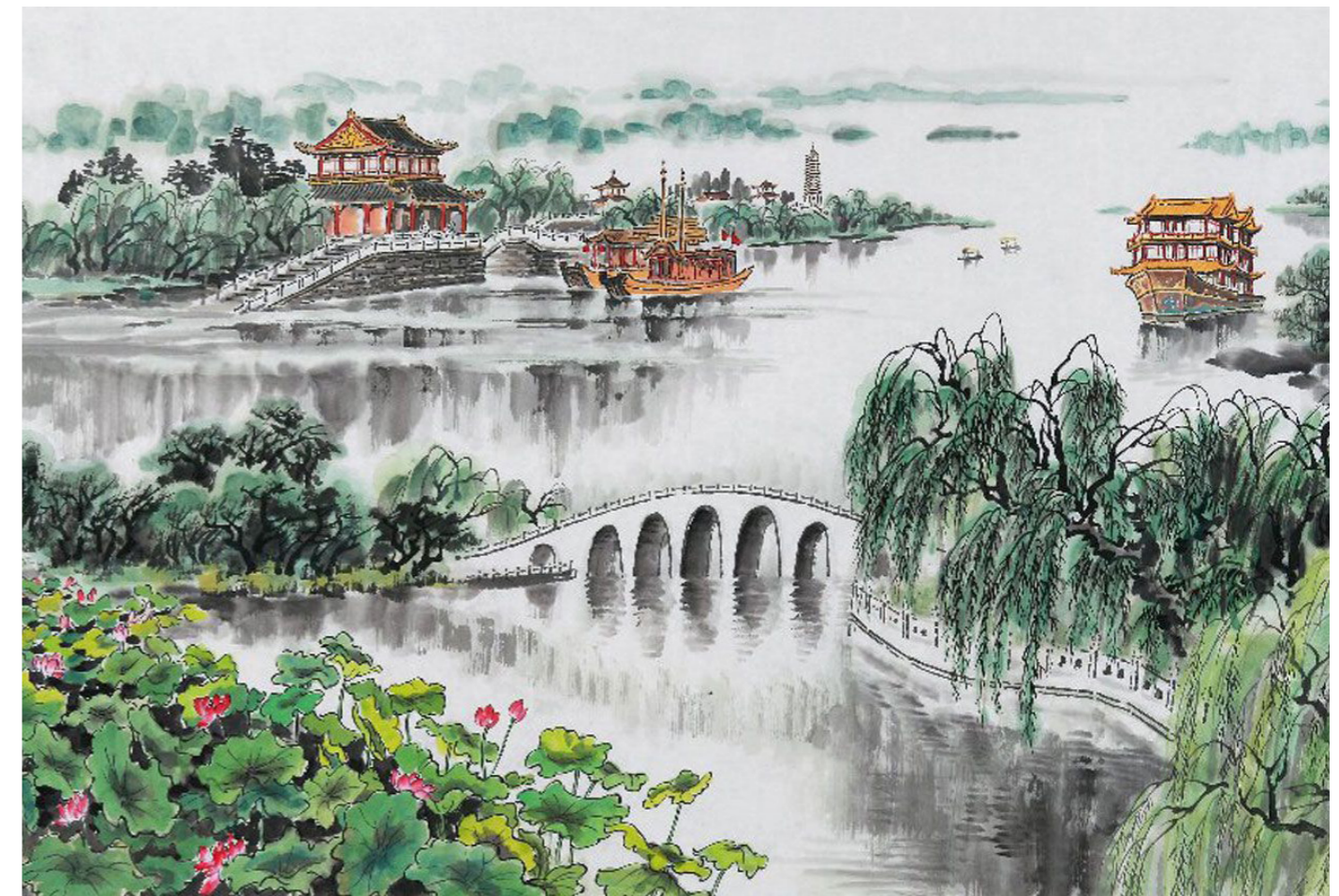
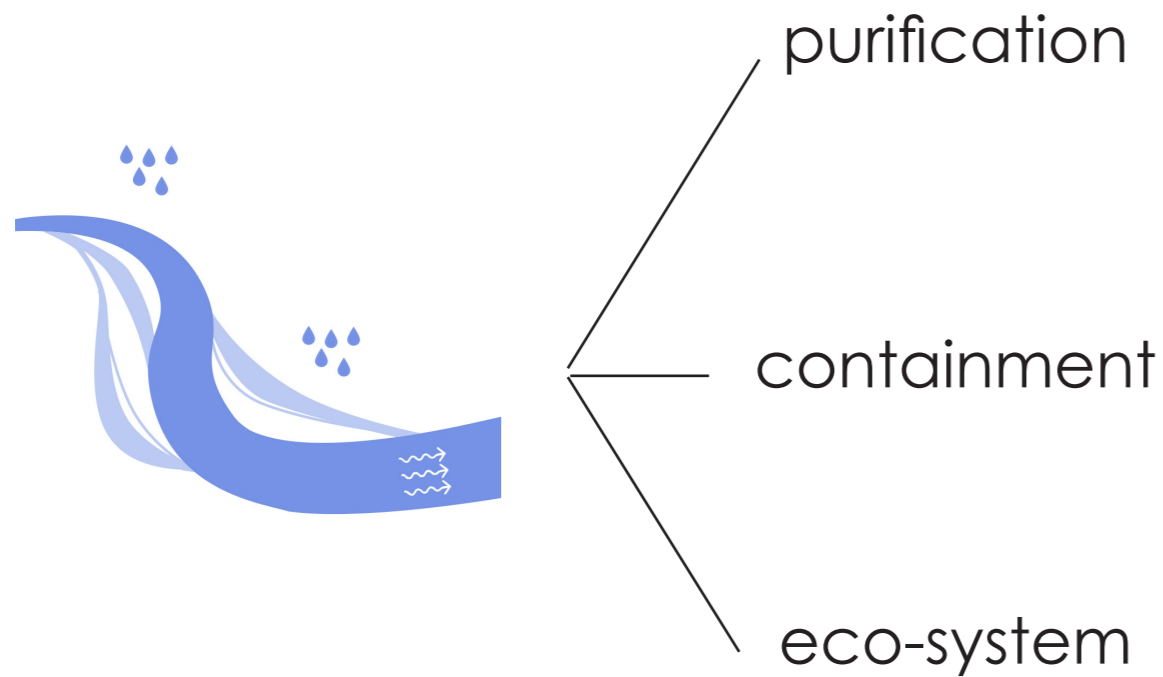


Figure 100. Green of the Canal

Author: Liang Zhenlong, <http://www.mxhy.cn/paintdetail-71489.html>

Strategies

Community Cohesion

As all the above strategies suggest functions from different perspectives, it is crucial to organize them organically. If functions are added forcefully, they may be ineffective or even detrimental to the overall environment. Therefore, it is necessary to consider the needs of different citizens.

Citizen activity needs can be classified into four types, representing different space users: tourism needs, daily activities, education and

entertainment, and nature and health (see Figure 101). Except for tourism, which correspond to foreign visitors, the other three categories are for local residents. Daily activities mainly refer to workers and students who stay in fixed spaces most of the time and have a regular daily schedule. Education and entertainment (edutainment) and eco-leisure cater to people without a fixed daily routine or to the needs of workers on their days off.

Consideration needs to be given to the following:

- **Combination of Transport Routes:** Ensure connections between different transport routes and destinations such as residential areas, work areas, scenic spots, etc.
- **Integration of Activities:** Different groups of people may need to use the same space, necessitating the integration of activities to accommodate diverse needs.

- **Time Consideration:** Different groups use spaces for various purposes at different times, allowing for staggered usage and better resource allocation.

By addressing these considerations, we can create a more cohesive and functional urban environment that meets the diverse needs of Jiaxing's residents and visitors.

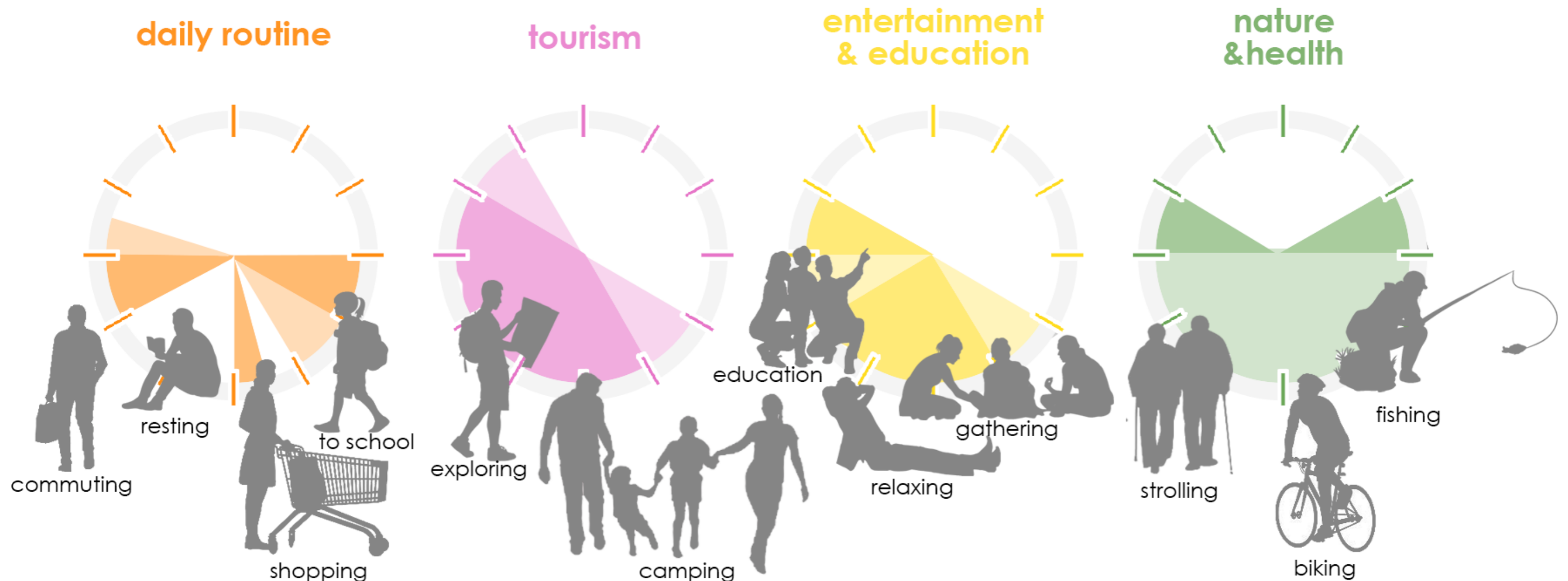


Figure 101. Different user groups and their activity preference

Strategies

Community Cohesion

Four routes have been designed to cater to the diverse preferences of different groups of people, each passing through various functional zones such as gathering areas and educational modules (see Figure 102). One route emphasizes quietness, a slow pace, and an ecological focus, while another is livelier and centers on cultural values. For example, the tourism route is vibrant and public, whereas the health and nature route is quieter and more serene. The daily routine route is straightforward, connecting both lively and quiet areas. All four routes intersect at a central traffic

hub, serving as a crucial node for all pathways.

Spatially, the goal is to create a multifunctional urban environment rather than dividing the city into tourist-exclusive or restricted areas. The aim is to integrate various functions, allowing diverse activities to coexist and complement each other. Historical and cultural heritage will be seamlessly integrated into the city's daily life, enriching the urban experience for both residents and visitors.

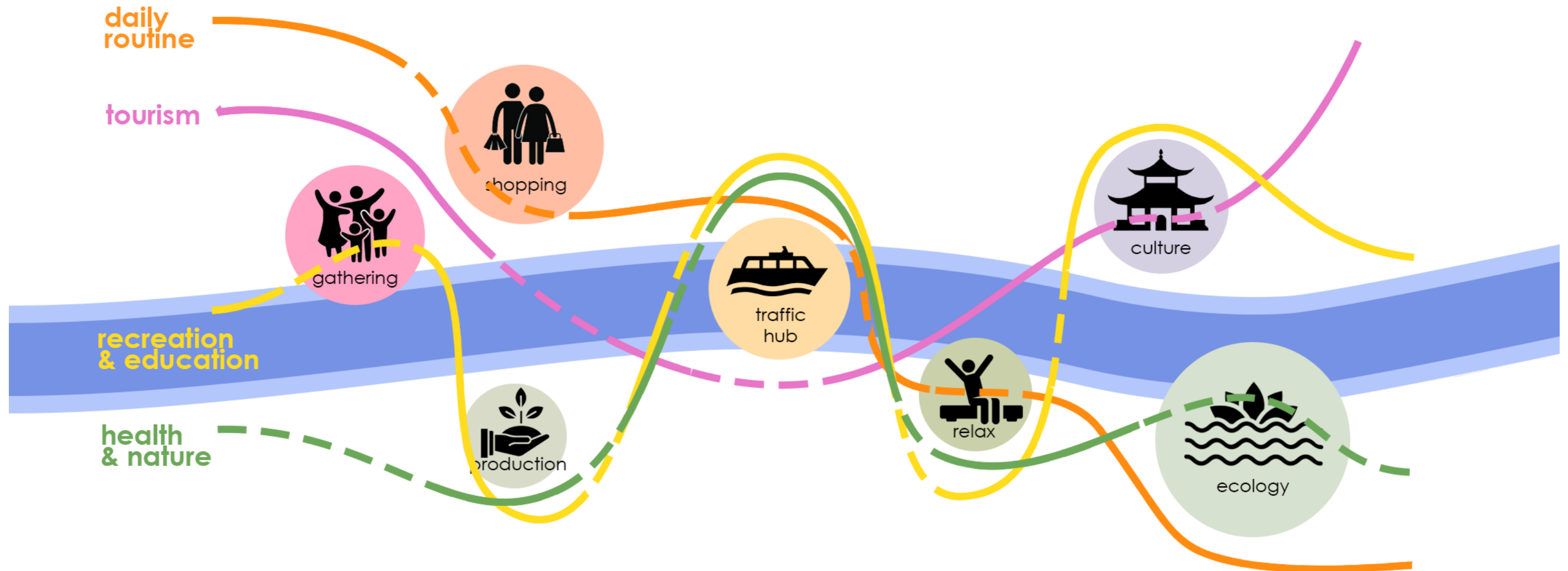


Figure 102. Different routes and function modules

Strategies toolkit

Therefore, several tools are proposed that can be used to apply the water to help achieve the strategies, which may be represented in the same space at the same time.

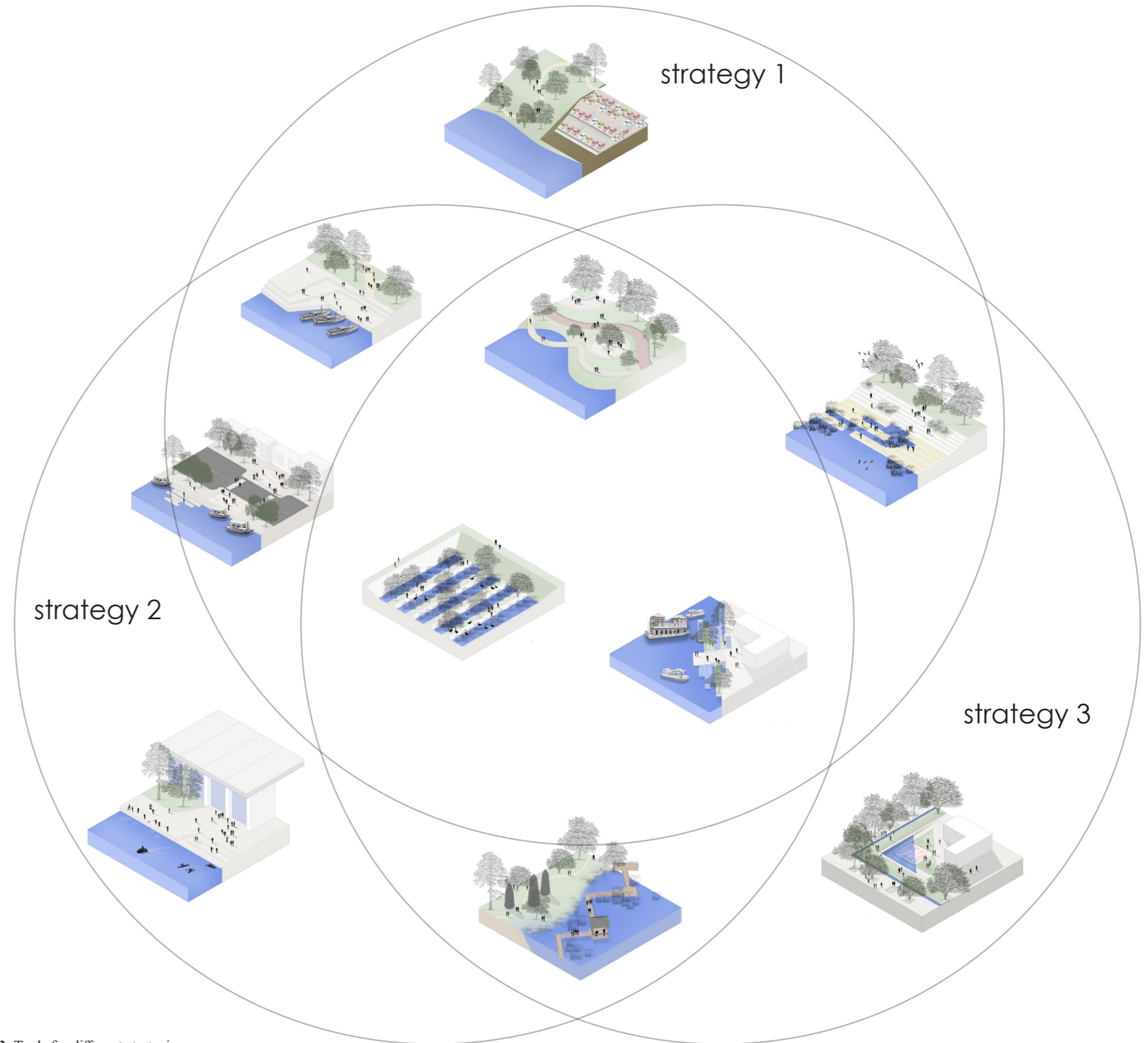


Figure 103. Tools for different strategies

Phasing

Stakeholder analysis

Rebuilding the urban identity is a complex process that cannot be accomplished overnight. This multifaceted endeavour involves various stakeholders, including the public sector, private sector, and civic sector. Effective planning necessitates the coordination of different interests, making it essential to discuss the roles, interests, and powers of each stakeholder and develop a phased strategy accordingly.

The power of government of the public sector is dominant, characterized by a clear hierarchy. At the regional level, the issue of regional integration has been a major concern for national, regional, and neighbouring governments. The local bureaus are led by the Development and Reform Commission. Meanwhile, there has been a growing emphasis on the need for a new governance approach. In response, Jiaying governmental agencies have launched a series of initiatives, such as the Jiaying Environmental Protection Union, to engage the public in local environmental protection efforts.

The private sector is highly influenced by government policies and, to some extent, controlled by them. Policy variations can significantly impact the development of different industries, leading to either smooth or challenging growth trajectories. Consequently, enterprises in various industries may adopt different attitudes and strategies based on their alignment with governmental priorities and regulations.

The civic sector, although comprising fewer and weaker stakeholders, plays a crucial role in urban identity reconstruction. Different groups, including local residents, tourists, and immigrants, have diverse demands and interests. Representation of citizens is primarily managed by neighbourhood committees, whose members are elected by the residents. In addition, education and research institutions such as Jiaying University and media platforms contribute to civic engagement and public discourse.

	ACTOR	INTEREST	GOAL	PROBLEM PERCEPTION	RESOURCE
PUBLIC	national government	● ○ ○	regional cooperation	a potential sustainable development approach, but unproved	land resources; national funding
	Development and Reform Commission	● ● ○	city competitiveness	a potential sustainable development approach, but unproved	land resources; symbolic capital
	planning institution	● ● ●	better urban structure	improving the urban environment and optimising the industrial structure	planning ability; knowledge
	Environment Bureau	● ● ●	better environment	opportunities for ecological improvement	coordination; knowledge
	Cultural and Tourism Bureau	● ● ●	heritage protection	opportunities for cultural preservation	coordination; knowledge
	Jiaying Environmental Protection Union	● ● ●	better environment	opportunities for ecological improvement	knowledge
	Zhejiang Alliance for the Protection of the Grand Canal	● ● ●	heritage protection	opportunities for cultural preservation	knowledge; regional coordination
	neighbouring cities	● ○ ○	regional cooperation	risk of disruption of established partnerships and loss of industrial supply	coordination
PRIVATE	tourism companies	● ● ●	attention; profit	increased attractiveness of cities for tourism	economic capital; knowledge
	industrial factories	● ● ○	land resource; human resource; profit	reduction of profitable land resource	economic capital; factories
	real estate companies	● ○ ○	land resource; profit	reduction of profitable land resource	economic capital
	new technology companies	○ ○ ○	land resource; human resource; profit	better urban environment; quality human resource	economic capital; technology
	investors	● ○ ○	profit	potential investment opportunities	economic capital
CIVIC	citizens	● ● ●	better environment; city competitiveness	urban ecological quality improves, but may lead to reduced economic benefits	voting; social capital
	tourists	● ● ○	better environment	potential tourist destinations	social capital
	migrants	● ● ○	working opportunities; lower living cost	environment improvement; new companies; house prices increase	social capital
	neighbourhood committee	● ● ●	better neighbourhood	environment improvement	social capital
	social media	● ○ ○	attention; profit	new places to explore and opportunities for co-operation	knowledge; social influence
	Jiaying University	● ● ○	research; educational publicity	opportunities for research and empirical evidence	knowledge; symbolic capital

Figure 104. Stakeholder analysis

Phasing

Stakeholder analysis

Public sector

In the Jiaxing Master Plan 2021-2035, the development goals outlined by the government primarily focus on integrating the Yangtze River Delta, enhancing the centrality of the central city, fostering innovative industries, promoting ecological construction, and modernizing spatial governance. The concept of a water city aligns well with these objectives and can potentially have a positive impact. However, the feasibility of the project, as well as its level of public and financial support, still require further validation.

Currently, Jiaxing has taken some steps to encourage public participation in governance. Measures such as disclosing environmental data and establishing the Jiaxing Environmental Protection Union demonstrate progress in this area. However, these initiatives are somewhat superficial and fail to effectively capture the sentiments and desires of the residents. There are several underlying challenges:

1. **Lack of Trust:** There is a mutual lack of trust between the government and the public. The government perceives the public's understanding of policies to be inadequate, leading to potential misunderstandings and prejudices.
2. **Influence of Government:** Non-governmental organizations, under government leadership, are heavily influenced by government entities in terms of recruitment, activity planning, funding sources, and organizational structure. This limits their autonomy and effectiveness in representing public interests.
3. **Institutional Deficiencies:** At the institutional level, mechanisms for public participation are still lacking. Government representatives acknowledge the absence of efficient mechanisms and a legislative framework to support meaningful public engagement. While some regulations exist, they often lack legal enforceability.

Civic sector

The civic sector in Jiaxing remains weak, despite recent efforts to enhance public participation. Systems such as random environmental spot checks on enterprises by citizens have been established, allowing the public to disclose non-compliant enterprises and requiring those enterprises to sign public letters of apology if they fail to complete remediation in a timely manner. Another system involves review panels, consisting of an enterprise representative, two experts, and two to three citizens. These measures provide citizens with some degree of decision-making power, but the coverage of the public participation system is limited.

Most NGOs are actually under government leadership, having a closer relationship with the government than with the citizens. The neighbourhood committees, which truly represent residents' opinions, manage day-to-day affairs and are elected by local residents. These committees work for residents' benefits while complying with higher government orders, organizing educational and recreational activities, and representing residents when necessary. However, they rely heavily on local government for financial and intellectual support, possess limited administrative power, and have no law enforcement authority. Consequently, residents have little incentive to participate in activities.

Academic institutional organizations, such as Jiaxing University, are more independent but have a weaker presence and fewer connections in urban life. The roles of academic departments are unclear and lack independent forms of communication, preventing them from fully contributing to urban development.

Due to the limited reach of the public participation system and the limited capacity of these organizations, the voice of the individual is almost invisible. However, the growing importance of online networks and social media provides potential for enhancing public engagement. Government, private companies, and NGOs have opened official

online platforms, making the web an increasingly important part of city life and offering potential for greater civic involvement.

Private sector

Jiaxing's economic structure heavily relies on the secondary sector, with a primary focus on light industries such as textiles, garments, and leather products. These industries are expected to continue driving industrial growth in the foreseeable future. The tertiary industry in Jiaxing remains dominated by traditional sectors like trade, with emerging industries contributing only a small fraction to the overall economic activity.

The primary objective of the private sector is business profitability. To gain public and governmental support, which is important for their development, proactive communication

and technological advancements are essential. Although some company representatives claim they prioritize the well-being of surrounding residents over economic benefits and invest significantly in environmental technologies, public scepticism remains high regarding their genuine intentions.

Businesses in Jiaxing often face constraints in their actions, lacking the autonomy to make significant changes independently. Despite their limited active participation in urban development, they are frequently the focal point of public scrutiny. To address this, businesses need a fair and balanced environment. The public often holds prejudices and harbours knowledge gaps about businesses, while businesses require fairness and measured approaches to thrive. Professional academic organizations should step in to provide expert services, helping businesses develop in a healthier and more sustainable manner.

Phasing

Stakeholder profiling

The public sector is the strongest and has a lot of influence on the other two sectors. the civic sector relatively is the weakest and its voice is hard to be heard, so its interests can conflict a lot with the other two sectors.

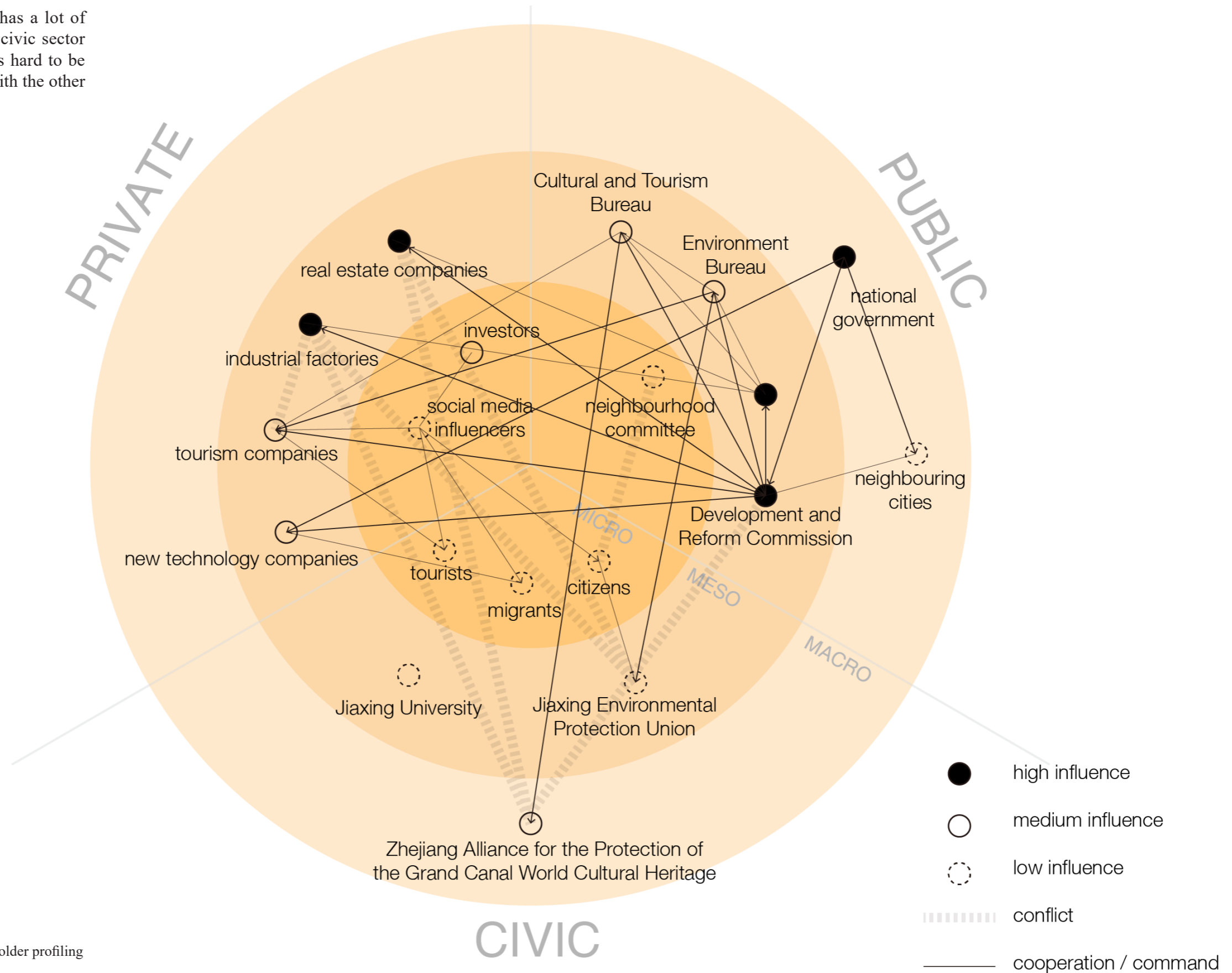


Figure 105. Stakeholder profiling

Phasing

Power interest matrix

From the position of a planning institution, several actions can be taken to promote the concept of a Water City in Jiaxing:

Empowering Civic Organisations:

1. Enhance Citizen Organizations:
 - Provide training and resources to help citizens' organizations build their economic, human, and intellectual capital.
 - Facilitate networking opportunities and collaborations with other civic groups and stakeholders.
2. Improve Public Participation Framework:
 - Create a fair and scientific communication platform where citizens, experts, and policymakers can share information and discuss plans.
 - Ensure transparency in decision-making processes to build trust between the government and the public.
3. Encourage Academic Involvement:
 - Foster partnerships between academic institutions and civic organizations to leverage academic expertise in urban planning and sustainable development.
 - Encourage academics to participate in public forums, workshops, and policy discussions to contribute their knowledge and research findings.

Arising Government Interest:

1. Demonstrate Viability and Raise Interest
 - Develop and present detailed feasibility studies and pilot projects to showcase the potential benefits of the Water City program to engage higher levels of government to secure support and funding for long-term development.

Guide Private Companies:

1. Academic Assistance and Technical Improvements:
 - Provide technical support and research assistance to private companies to adopt sustainable

- practices and technologies.
 - Facilitate partnerships between businesses and universities for research and development projects.
2. Policy Guidance on Ecology and Culture:
 - Develop guidelines and offer incentives that encourage private sector in ecological conservation and cultural preservation

Maximising Media Impact:

1. Enhance Social Media Platforms:
 - Develop and promote social media platforms to give individual citizens a voice and ensure their opinions are heard.
 - Use these platforms for public consultations, surveys, and feedback on urban planning initiatives.

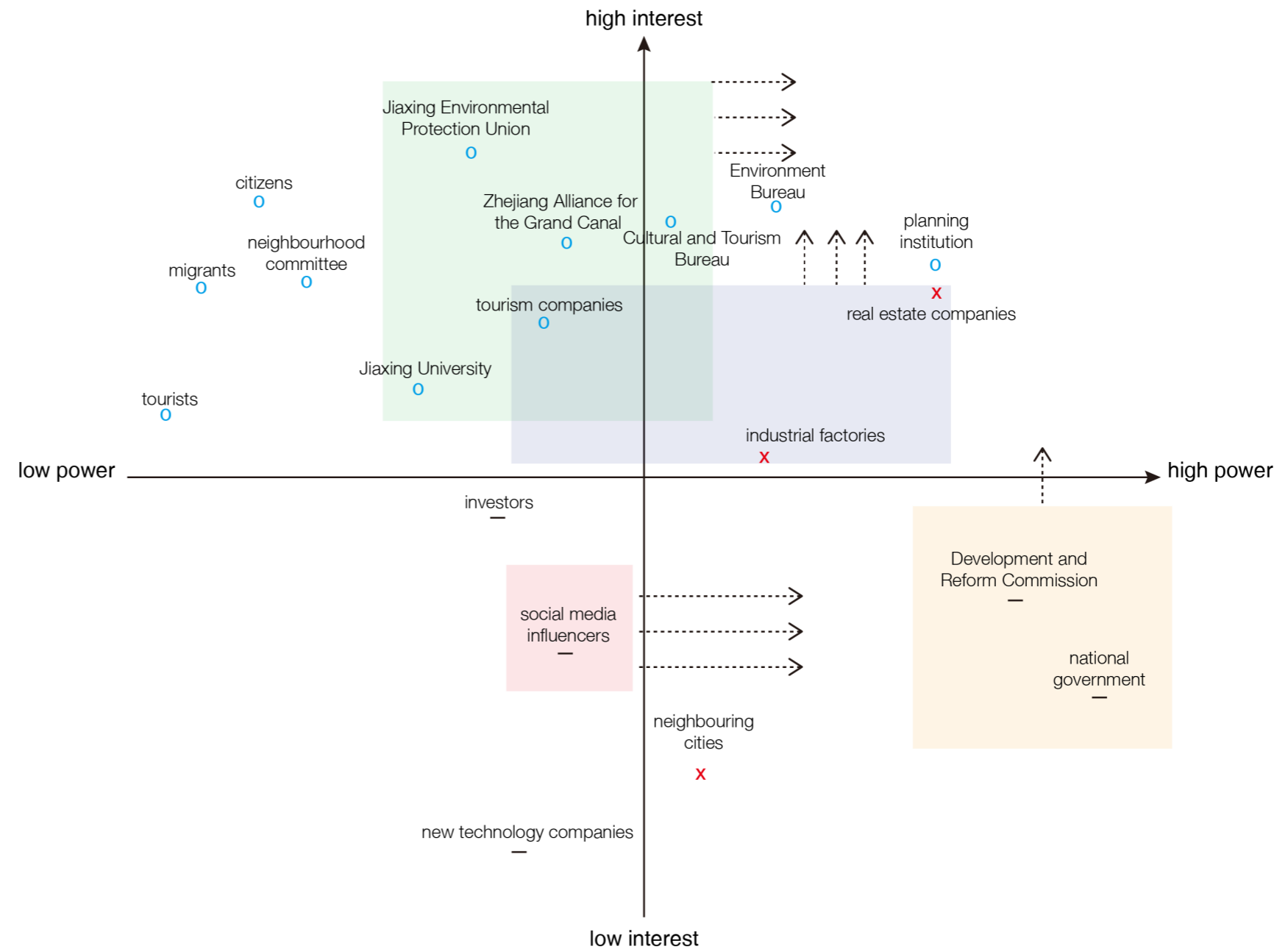


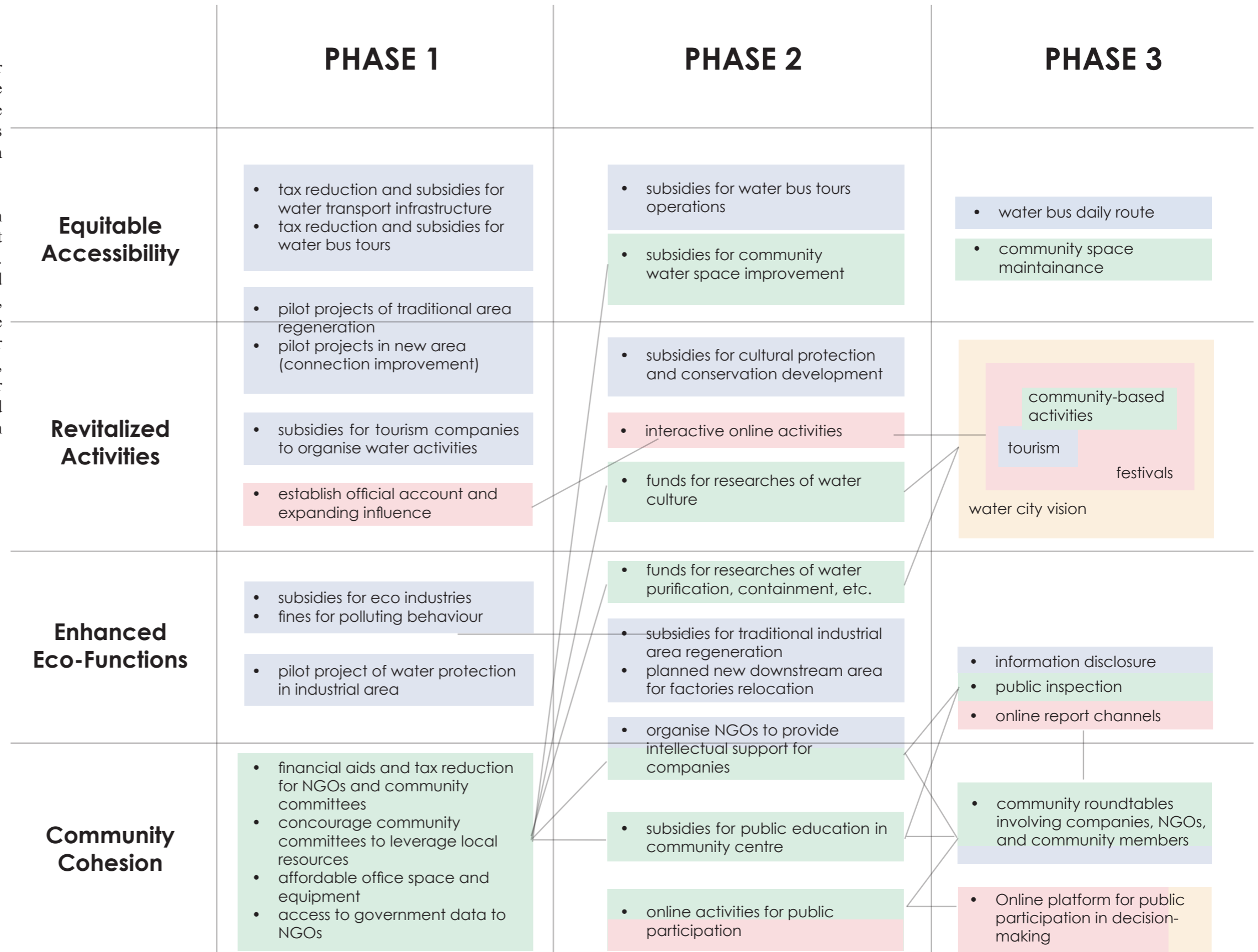
Figure 106. Power Interest Matrix

Phasing

Phasing Framework

Combining stakeholder strategies with the four spatial strategies will introduce a new governance model to drive sustainable development in the water city. This approach effectively addresses gaps created by the top-down approach's blind spots in the regional vision.

Therefore, ensuring civic participation is crucial. In the initial phase, intellectual and financial support should be provided to empower NGOs and CBOs. In the second phase, these civic organizations should be actively involved in implementing each strategy, granting them the right to participate in proactive spatial design. By the final phase, the civic sector can become a powerful actor in decision-making, supervision, and more. Simultaneously, other stakeholders should receive appropriate guidance and support to facilitate comprehensive communication and collaboration.



- Empowering Civic Organisations
- Arising Government Interest
- Guide Private Companies
- Maximising Media Impact

Figure 107. Phasing Framework

Phasing

phase 1

In the first phase, there are two main objectives. The first is to empower NGOs and community committees by providing economic, intellectual, and resource support, laying a solid foundation for the later phases. The second is to guide the private sector in sustainable city construction, including building water infrastructures and encouraging industrial enterprises to make environmentally friendly choices. Pilot projects, supported by certain preferential policies, will be initiated with enterprise collaboration.

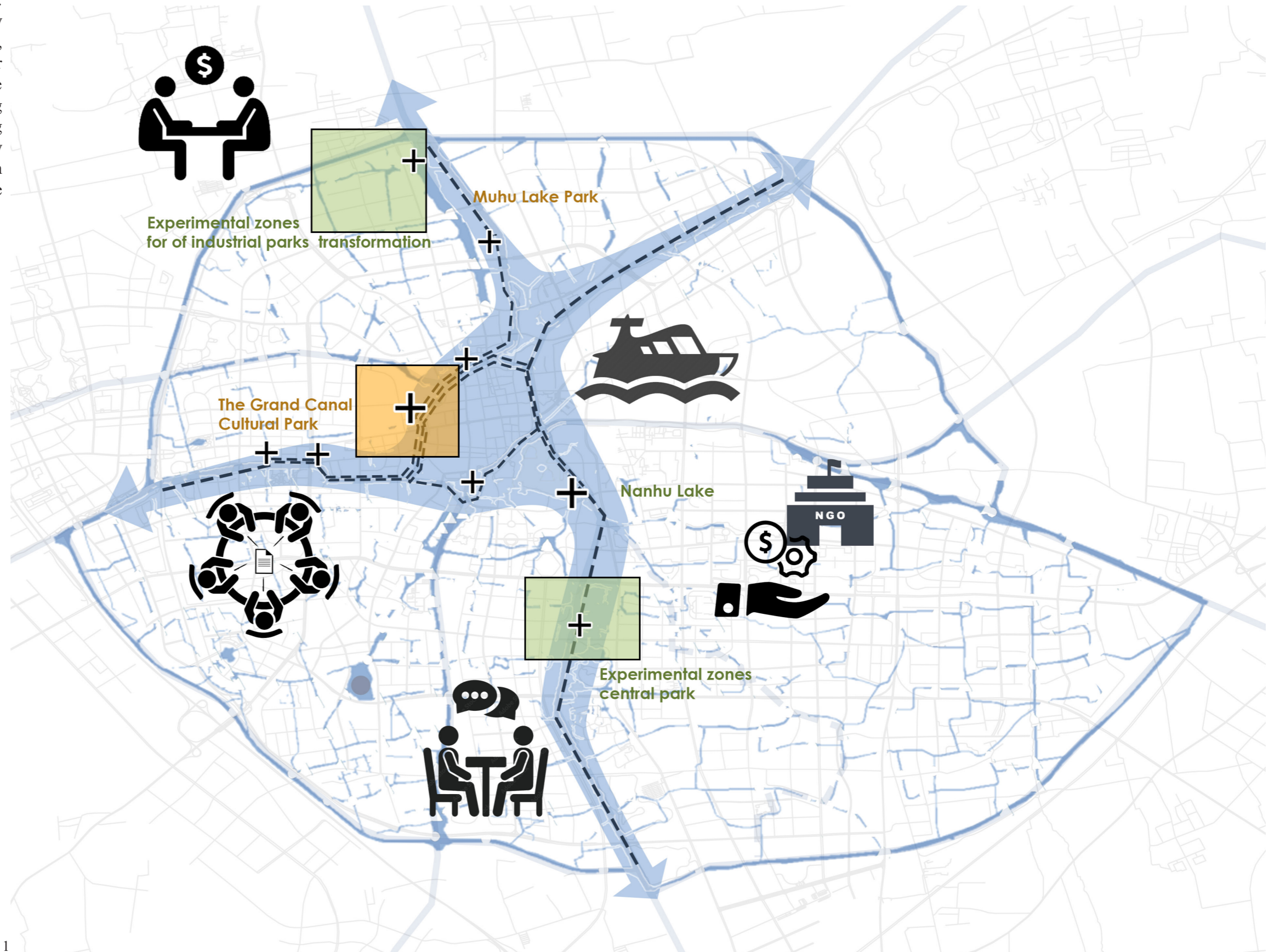
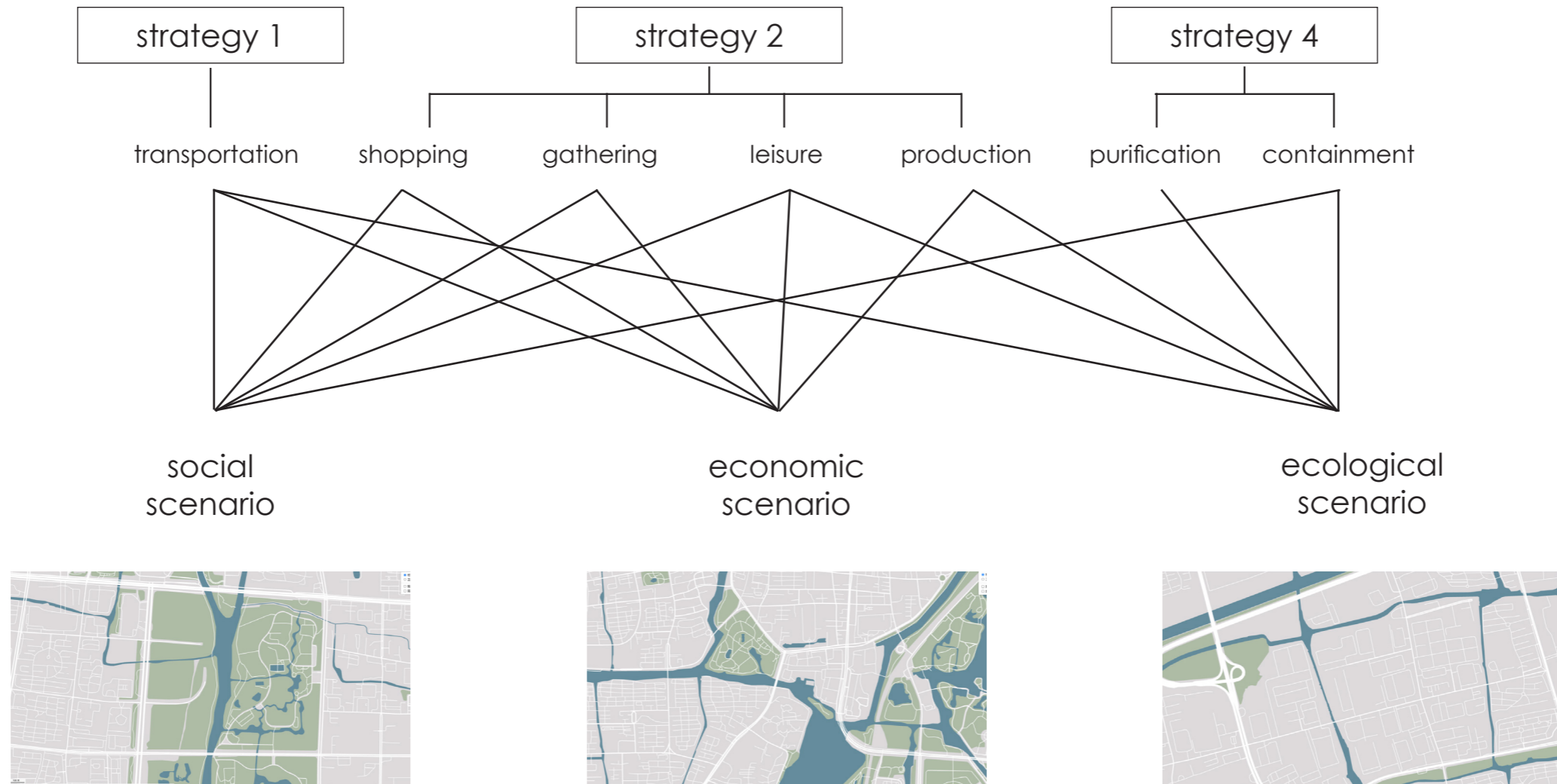


Figure 108. Phase 1

Phasing

phase 1



The first location exemplifies the social scenario, comprising predominantly the northern segment of Jiaxing's Central Park, which underwent transformation from a former rice paddy field since 2007. Despite substantial investments in its development, this area, characterized by an abundance of residential complexes and diverse public amenities such as theatres, fitness centres, health clinics, and shopping precincts, sees relatively low utilization by residents. Presently, it predominantly serves as a recreational space for camping and picnics. This design of this locale serves as a testament to how the water city identity augments citizens' daily lives through enhanced accessibility, vibrancy, and interconnectivity with neighbouring communities.

The second locale embodies the economic scenario, distinguished by a concentration of extant traditional dwellings housing a variety of enterprises, primarily teahouses, eateries, and social clubs, albeit with sparse patronage. Renowned literati sites punctuate the landscape, with a former boat pier, now defunct, marking its historical significance. Situated proximate to the city centre, traffic congestion poses a prevalent challenge. The primary objective of the design here is to leverage water transport to reinvigorate the traditional quarter, rekindling historical narratives and underscoring the pertinence of the water city identity in contemporary times.

The third site illustrates an ecological scenario, situated within the industrial precincts at the northwestern periphery of the city, predominantly housing paper mills, garment printing and dyeing facilities, and other factories notorious for water pollution. Compounding the issue, this sector lies upstream of the city's water system. The design of this locale predominantly underscores the pivotal role of the water system in ecological remediation and enhancing spatial quality, mitigating the deleterious impacts of industrial effluents on the environment.

Phasing

phase 2

In the second phase, the capacity of the civic sector will be further utilized. Building on the foundation established in the first phase, a multi-party communication platform will be organized to facilitate active resident participation in urban space creation, including physical space enhancement and activity organization. NGOs will leverage their academic expertise to conduct relevant research and share findings with enterprises, fostering a win-win situation for both parties.

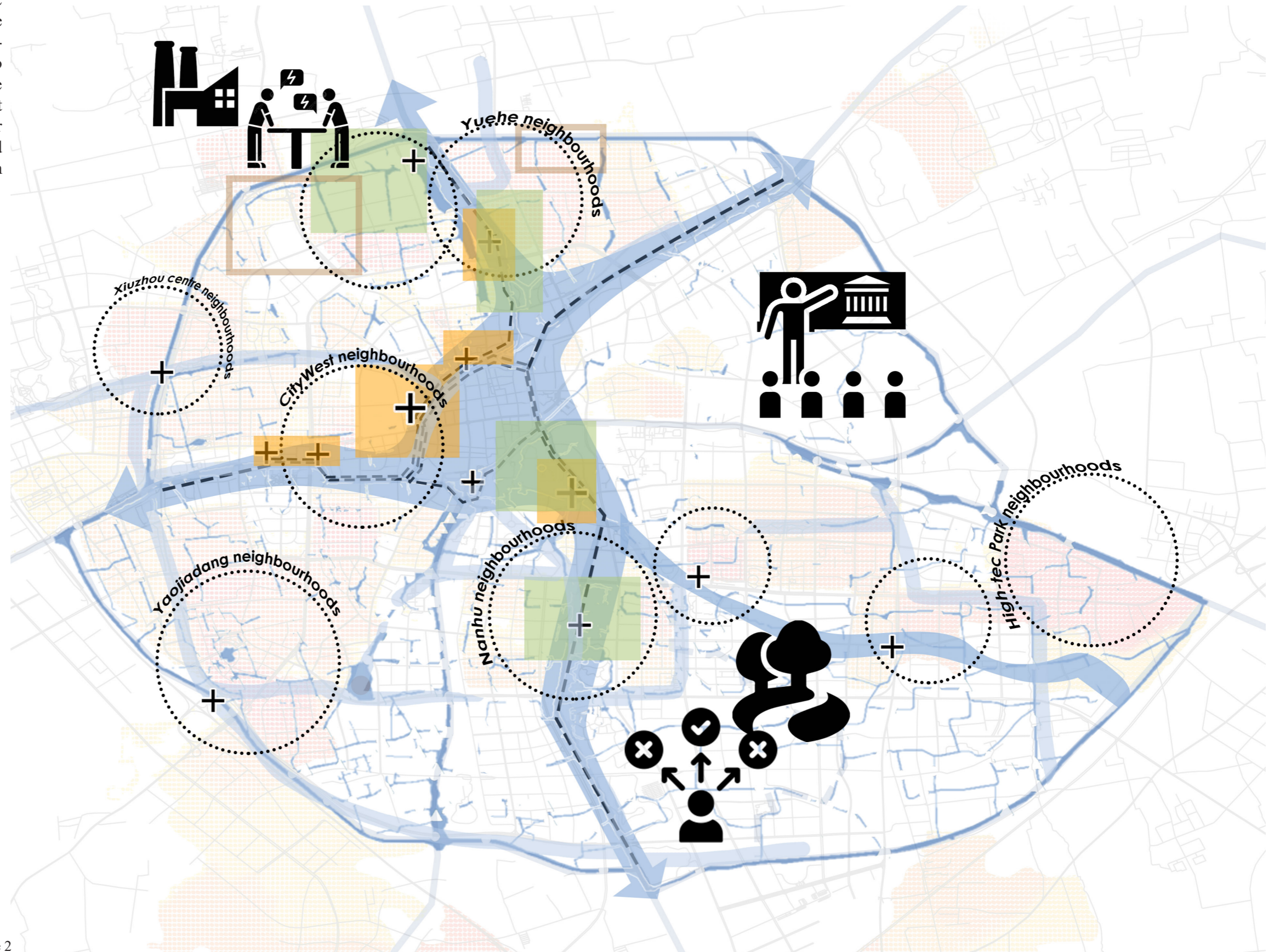


Figure 109. Phase 2

Phasing

phase 2

The Envision Columbus project is a nice example of using social media as a flexible framework that will guide the development of downtown Columbus and surrounding communities. It will identify priorities that define the downtown area in the coming years and affect the way downtown residents and visitors work, live, shop, and play. Therefore, it's important for residents to participate.

City leaders, consultants, and citizens worked together through public input sessions, focus groups, and an online survey to co-design the new Columbus plan. The plan includes key projects like the urban grocer, conference hotel, and housing opportunities to drive development throughout the area.

The EnvisionColumbus.org website plays a crucial role in the overall strategy for engaging with the people of Columbus. It serves as a platform for the planning team to actively listen to the needs, aspirations, and challenges faced by the citizens when it comes to using downtown areas. The website's visual language is compelling and easy to navigate, making it an invaluable tool for gathering constructive feedback and data. Thanks to the website, over 2,000 survey responses and 15,500 unique ideas were collected, which significantly contributed to making downtown Columbus a more attractive place to work, live, and play.

EnvisionColumbus.org serves as a central public engagement tool for the project. It is used to gather input from community members, ensuring that everyone's voices are heard. The website is updated regularly with new information to assist the citizens in making informed decisions. As the project progressed, EnvisionColumbus.org became a platform for dialogue between citizens and planners.

During co-exploration phase, EnvisionColumbus.org keeps citizens informed by providing ample information about the planning process, including interactive maps that are continuously updated,

so that the public can access the most current information in a timely manner. Additionally, citizens are invited to participate in on-site meetings, such as 12 focus groups, 8 steering committee meetings, and 4 community meetings, which are attended by hundreds of citizens.

At the same time, the site was promoted through a range of social media platforms, providing opportunities to engage a diverse group of citizens. In forums, EnvisionColumbus.org invites citizens to write a "love letter" or "breakup letter" (see Figure 110) to downtown Columbus, and users can also "like " to enhance each other's letters and notes. Additionally, the project and their thoughts could be shared on social media using the tag #envisioncolumbus, engaging people of all ages.

Throughout the project, citizens were able to participate and track the progress of the planning process through the website. At the end of the planning process, EnvisionColumbus.org was the home page for the final plan and available for everyone to download. The use of interactive before-and-after images and rendered perspectives not only engages users but also helps citizens visualize specific proposed interventions.

EnvisionColumbus.org facilitates engagement and coordination throughout the planning process by combining digital and analogue interactions to reach a wide range of citizens. The platform provides a vision and venue for ongoing dialogue, making it an important tool in planning.

From the EnvisionColumbus project, there are some success factors we could apply in the reconstruction of the water city identity of Jiaxing:

- Diverse participants: many residents are concerned about plan in the city centre; the social platforms also provide an opportunity to engage a diverse range of citizens, particularly young people who are underrepresented in traditional planning processes.
- Understandable communication: the site's interface is aesthetically pleasing and easy to navigate, balancing a compelling visual language with a thoughtful exploration of dialogue. The colour scheme is based on a design based on Columbus-related history. The graphic identity

also draws on images of the city's iconic architectural landmarks.

- Engaging interactions: Interactive maps, writing "love letters", and sharing on social media platforms increase dialogue between residents; the comparison of before&after photos visualises the interaction between planners and residents.
- Easy use: online research was adapted to user time and attention and designed for smart devices, achieving a 100% completion rate; in-person invitations to participate are on almost every page of the website, and an interactive timeline shares when and where citizens can attend and participate in public meetings.

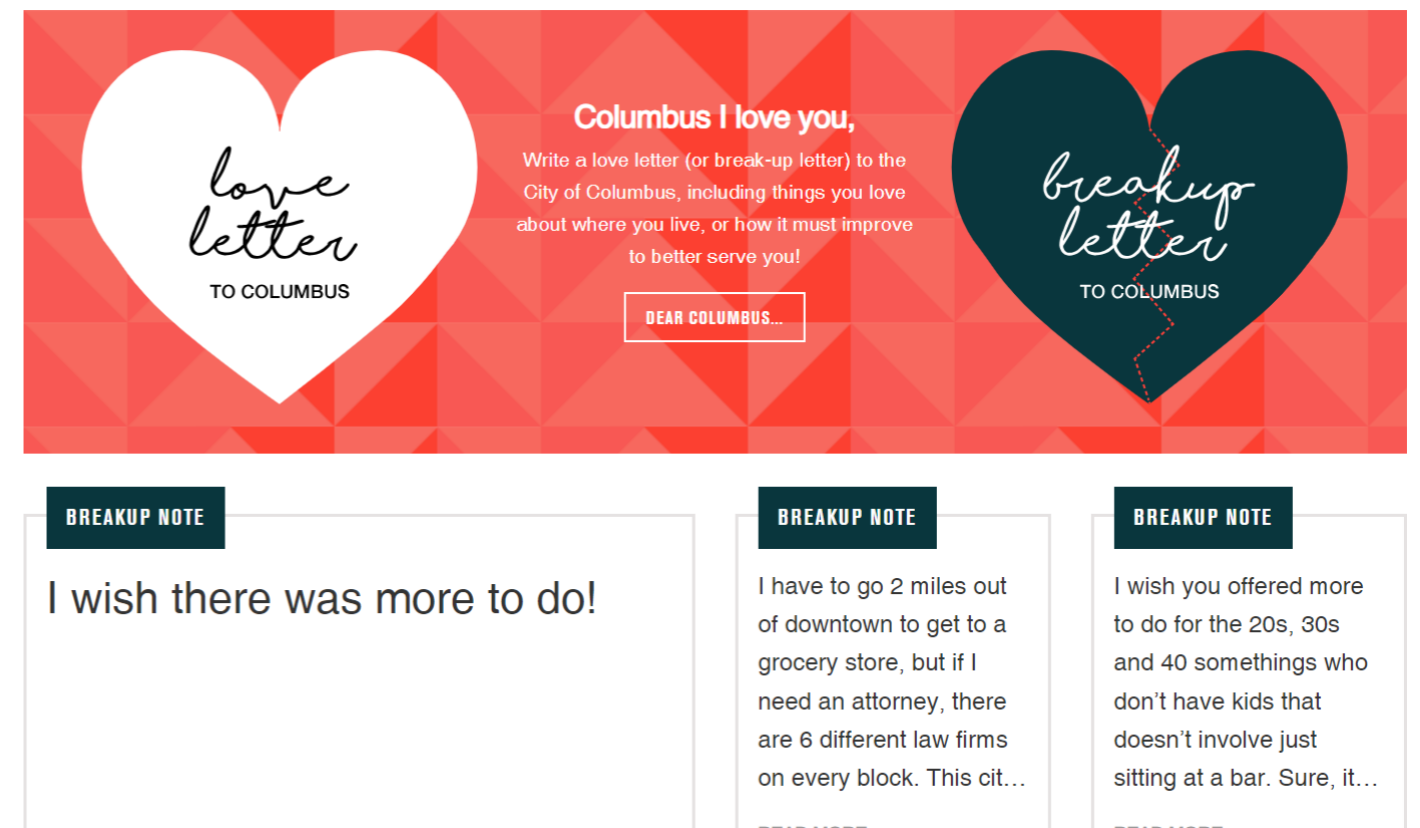


Figure 110. Love letter
Source: <https://envisioncolumbus.org/get-involved/>

Phasing

phase 3

In the third phase, all sectors will collaborate more effectively, achieving systematization and institutionalization. This includes maintaining accessibility infrastructure and monitoring the ecosystem, with oversight from both civic and private sectors. Festivals will foster a holistic cultural atmosphere, blending the tourism economy with citizens' cultural life, serving as persuasive evidence to attract the interest of higher-level governments. Meanwhile, social media will further amplify the civic sector's influence and promote mechanisms for public participation.

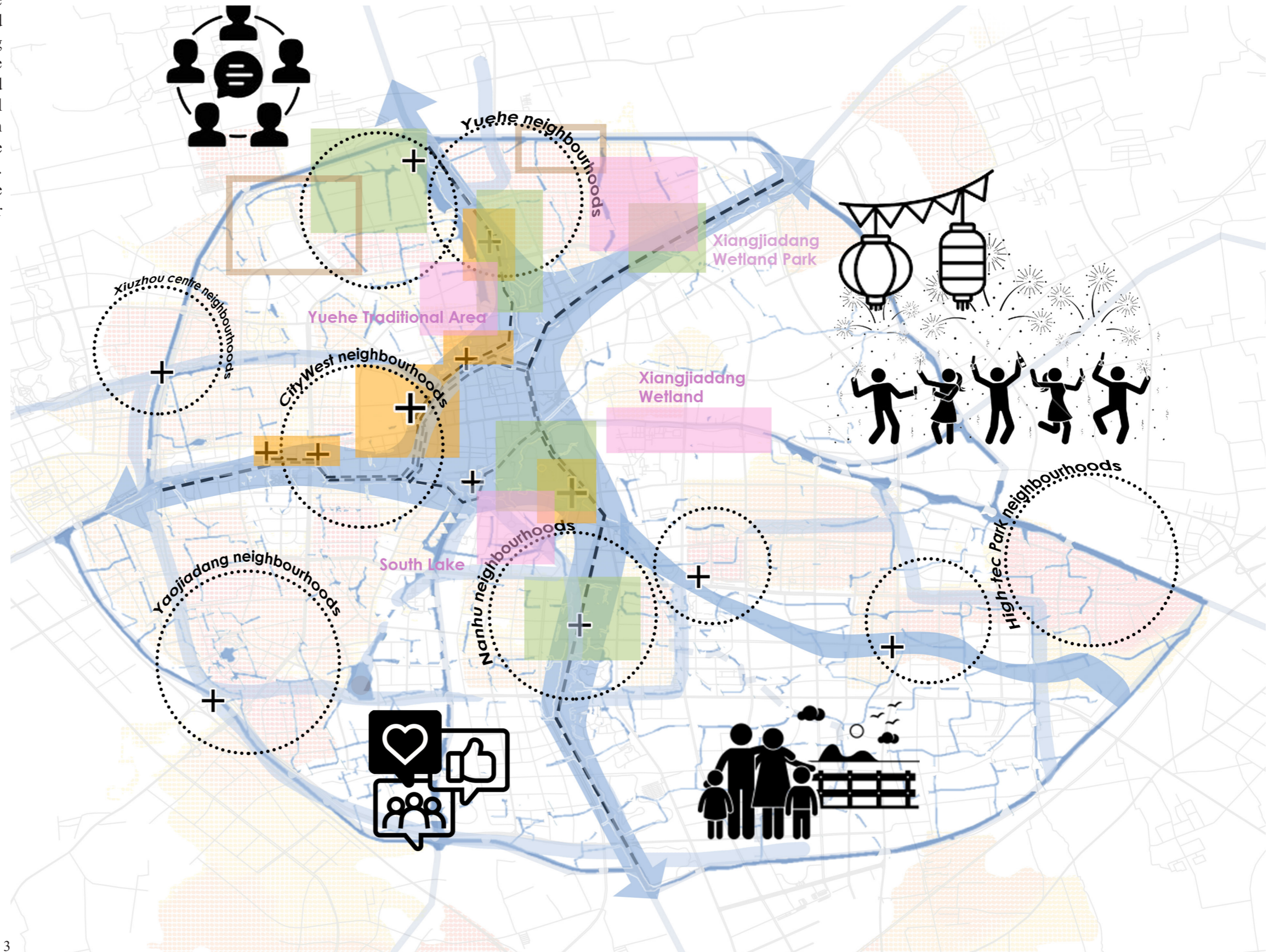


Figure 111. Phase 3

Phasing

phase 3

Due to differences in historical conditions, geography, regional culture, and folklore, each region hosts unique events that cannot be replicated elsewhere, thus carrying a great deal of locality. The cultural elements embodied in these events are deep-rooted factors that truly constitute urban identity. These activities must be created through personal participation, fostering a regular repetition of the festival. By adhering to these unique characteristics, highlighting them, and optimizing them over time, the city's identity will be continually strengthened.

In this process, the city's attractiveness to talent and capital will rise, along with the tangible benefits of the visitor economy. However, it is important to ensure that festivals remain connected to local citizens and do not become purely economic activities, which can lead to several negative impacts such as asymmetrical political processes, social inequity and exclusion, tokenism, limited public participation, and the commodification of culture and gentrification (Bonakdar & Audirac, 2019).

For example, Thailand's Loy Krathong Festival is not only popular with tourists but also deeply rooted in the beliefs of the local population. Over time, the meaning of the festival has expanded: farmers release water lanterns to thank the river gods for abundant water and to pray for good weather; young men and women send water lanterns in hopes of finding a partner; Buddhists pray for calamities to float away and for happiness to come. During the festival, the whole country is enveloped in warmth as everyone releases water lanterns with their own good wishes.

Festivals are an expression of local culture and the most condensed presentation of city life, embodying the essence of a sustainable future by integrating social, economic, cultural, and ecological benefits.

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Figure 112. Loy Krathong Festival

Source: Qingdao University Institute of Culture and Tourism,
<https://mp.weixin.qq.com/s/KpoDDkS1eKP9hTJEMUZ5Fw>

VI. PROJECT DESIGN

- analysis
- concept
- plan
- function
- perspective

Project Design Analysis

The centre of the block is a large planned park with a good physical quality environment. The Haiyan River runs through it. However the actual number of users is low.

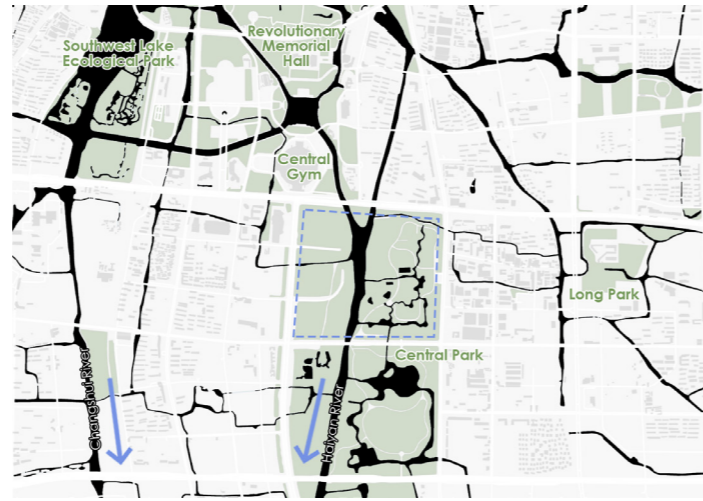


Figure 113. Blue and Green System

The surrounding area is all main roads, suitable for motorised traffic, while access to the surrounding plots is more problematic. This may be a reason for the low usage. At the same time, there is some congestion around the perimeter.

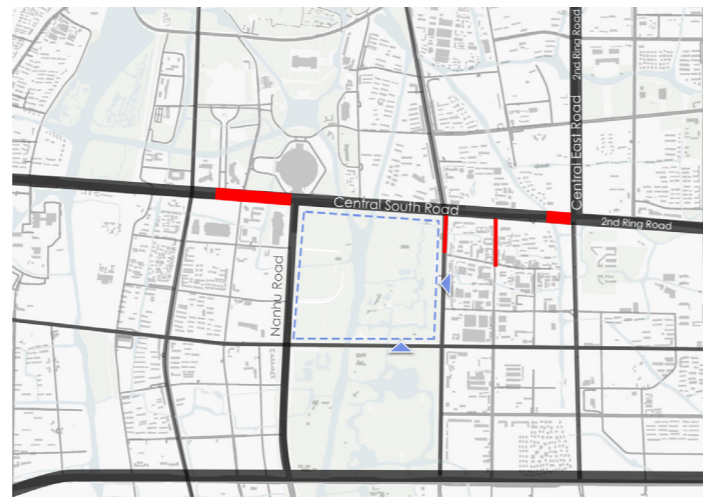


Figure 114. Road System

As it is a new district, the surrounding buildings are of high quality, mostly high-end offices and new residential areas, as well as public services such as the Opera House.



Figure 115. Buildings



Figure 116. Bird eye view of Jiaxing Central Park
source: EADG



Figure 117. Photo of road condition
Source: Baidu Map

Project Design

Concept

There is an opera house, a community centre, and a sports hall in the area, but they are poorly connected due to wide roads and vegetation. Additionally, there is a lack of public and open spaces, limiting the use of the natural environment. Therefore, this design aims to enhance water access and break down existing traffic barriers while simultaneously increasing public spaces and maximizing the potential of green and water resources.



Figure 118. Function modules

Project Design

Concept

Function modules are designed to accommodate the flow of different user groups. For example, daily activities can pass directly through the green area, facilitating movement between residential areas and the community centre. Visitors can experience the water bus and access facilities such as the Opera House and Event Plaza in the North West area. The overall design creates a seamless transition from active to quiet zones.



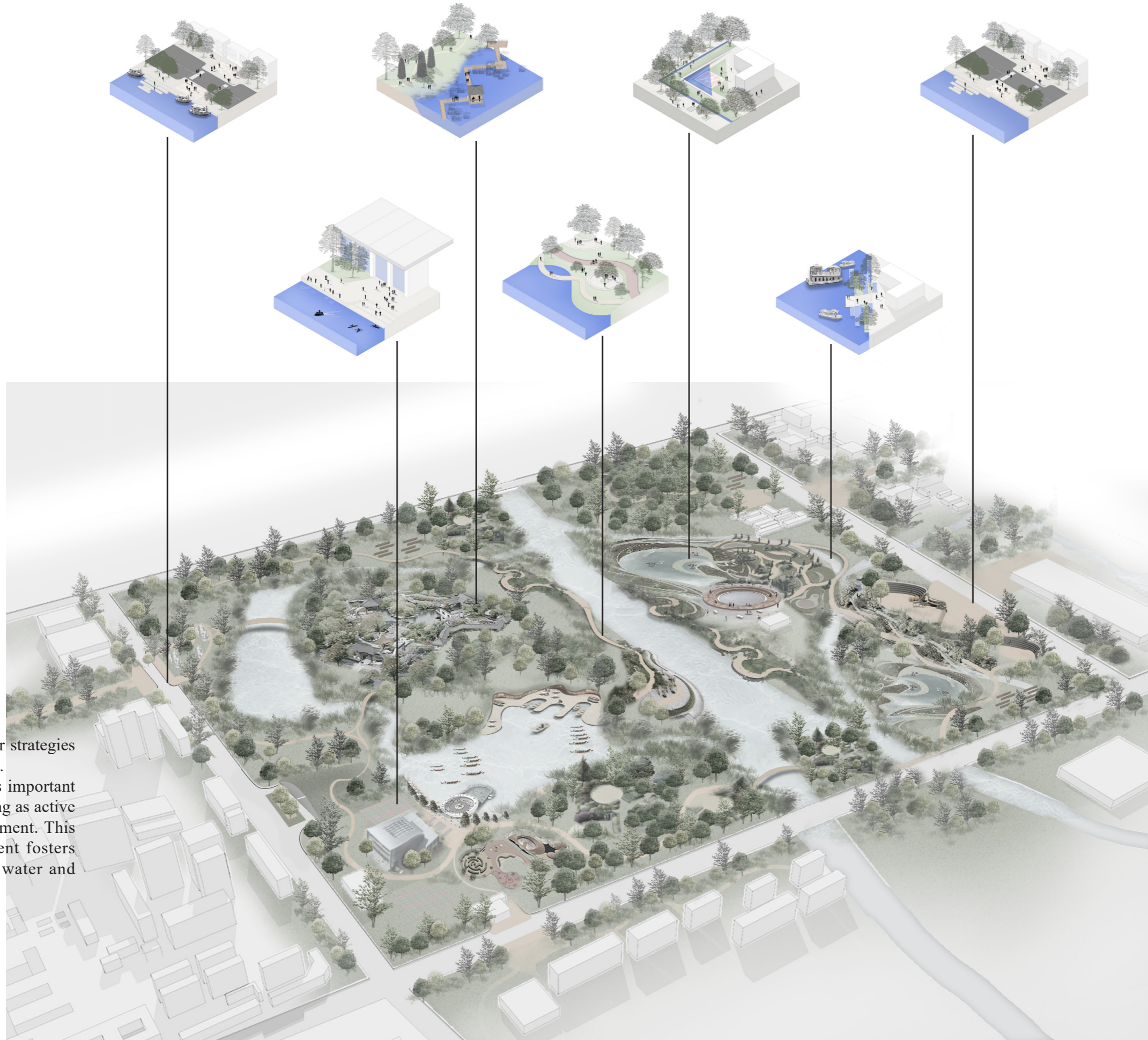
Figure 119. Routes of Different Users

Project Design plan



Project Design

function

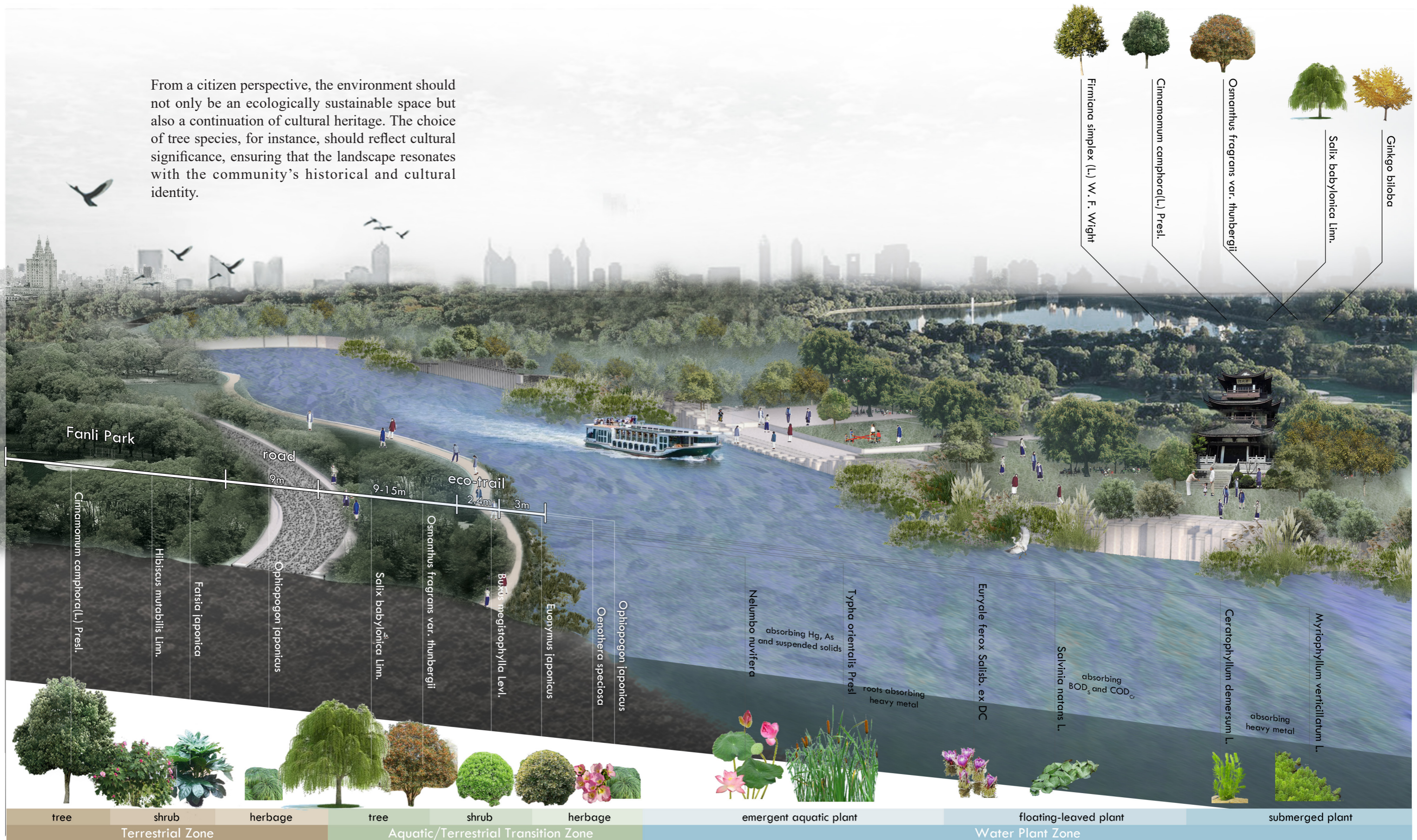


Through various tools, the four strategies are implemented in this project. Citizen participation is always important in the space, with citizens acting as active shapers of the spatial environment. This co-creation of the environment fosters a strong coherence between water and urban space.

Project Design

perspective

From a citizen perspective, the environment should not only be an ecologically sustainable space but also a continuation of cultural heritage. The choice of tree species, for instance, should reflect cultural significance, ensuring that the landscape resonates with the community's historical and cultural identity.



Project Design

perspective

The design aims to inspire citizens to connect with the water system and shape a lifestyle intertwined with water. This approach will allow traditional activities to be staged in a modern urban setting, fostering a renewed city identity for the contemporary era.



VII. CONCLUSION

- conclusion
- reflection

Conclusion

How can the **revitalization of Jiaxing's urban identity** as a water city be facilitated by enhancing the role of water as infrastructure to improve the **integral sustainability** of the city?

Jiaxing is a water city, with water serving as a crucial element throughout its history. To ensure its sustainable future development and to explore its urban identity, the ultimate goal is to leverage this identity to enhance the city's development and improve the lives of its citizens.

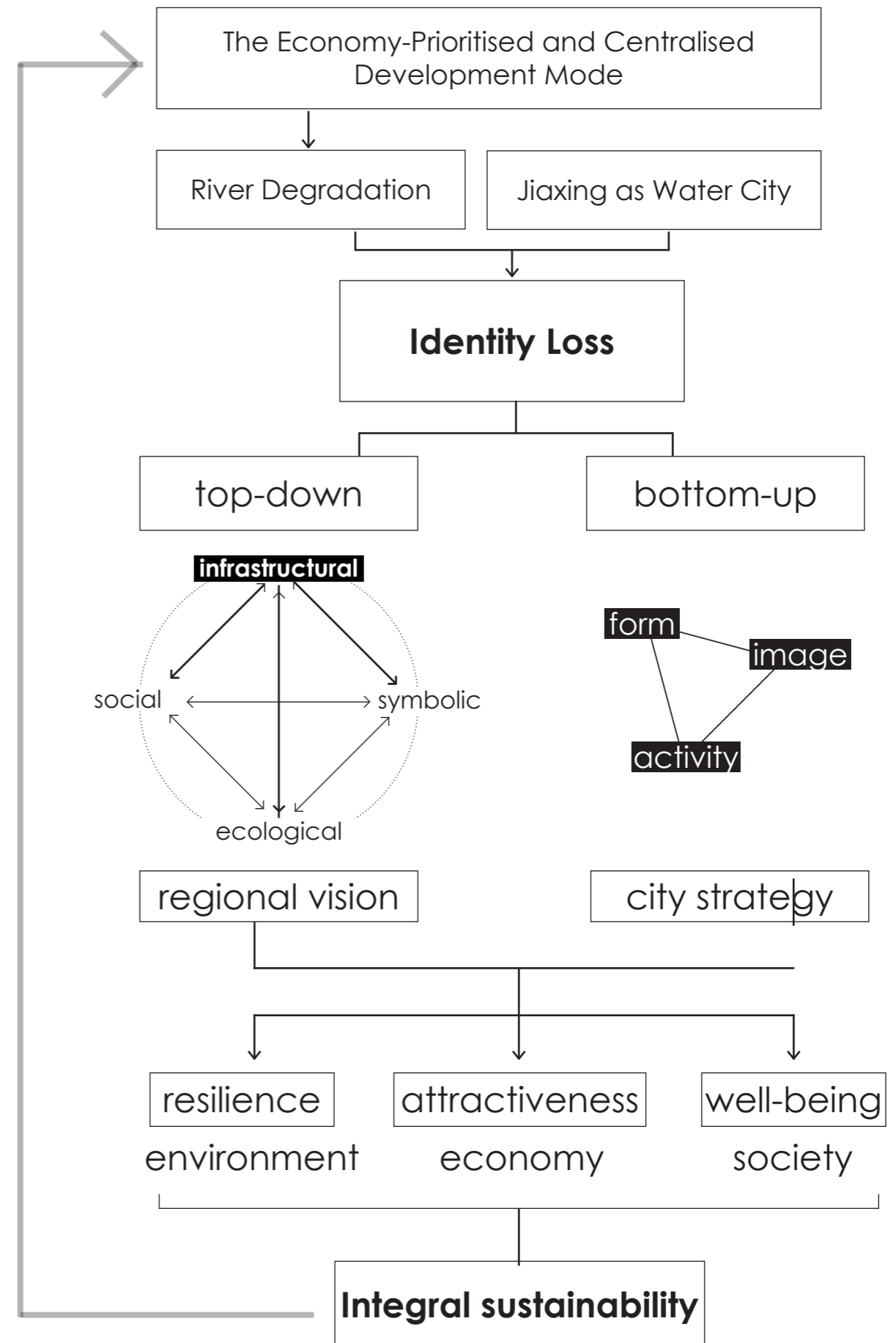
Urban identity is a multifaceted concept, encompassing both tangible and intangible elements. Cheshmehzangi's (2015) framework on urban identity offers a comprehensive approach to understanding Jiaxing's identity by addressing both top-down and bottom-up perspectives. This dual approach is essential for capturing the full spectrum of urban identity and ensuring that development is inclusive and holistic.

At a large scale, the focus is on top-down considerations of water elements in the urban spatial environment. This involves integrating water infrastructure with the existing transport system to create a cohesive urban identity that highlights Jiaxing's historical and cultural ties to water. Enhancing the water transport network, restoring old piers, and constructing new ones adjacent to

transport hubs will not only improve connectivity but also reinforce the city's unique character.

At a smaller urban scale, the emphasis shifts to addressing issues in people's daily lives. Four targeted strategies are proposed: equitable accessibility, revitalised activities, enhanced eco-functions, and community cohesion. These strategies are phased to ensure effective implementation.

This dual-scale approach aims to enhance the city's social well-being, ecological resilience, and economic attractiveness, thereby bolstering overall sustainability. By focusing on both large-scale infrastructure projects and small-scale community initiatives, Jiaxing can address current challenges and pave the way for a more sustainable and vibrant future. The goal is to reverse unsustainable development dynamics or to discover a development path with unique characteristics within the existing model, ensuring that Jiaxing remains a thriving water city for generations to come.



Reflection

Limit understanding of urban identity

The scope of urban identity in this discussion primarily focuses on urban space and its related aspects. However, urban identity encompasses a broader range of functions that are not fully explored here, such as industrial functions or personal micro-level experiences. This discussion is limited to the level of physical space and the interactions among citizen groups, neglecting other significant dimensions.

In future studies, it is crucial to delve into these additional layers of urban identity. Understanding how crucial city functions integrate with the water city concept can reveal opportunities for sustainable economic growth.

Additionally, exploring the role of water in individual experiences in the city can enrich the city's identity, making it more inclusive and reflective of its residents' daily lives.

Insufficient illustration

In terms of design, due to time constraints, only one scene is illustrated. This limited scope

does not capture the full potential of the water city concept, particularly regarding its roles in water containment and economic activities. These aspects, although not depicted, hold substantial promise and merit further exploration.

The potential of the water city in terms of water ecological value and economic activities should not be overlooked. Implementing advanced water management systems can improve water quality, support biodiversity, and enhance the overall environmental health of the city. Economic activities, such as tourism and commerce, can be revitalized by leveraging the unique water-based urban landscape, creating new jobs and boosting local businesses.

In conclusion, while the current scope of urban identity discussion is limited to physical space and citizen interactions, it is imperative to expand this scope to include regional and individual dimensions. This holistic approach will provide a more comprehensive understanding of Jiaxing's urban identity and its potential for sustainable development. By addressing these additional aspects, Jiaxing can fully realize the benefits of its water city concept, fostering a vibrant, resilient, and inclusive urban environment.

Scientific Relevance

Although many studies have been conducted on the ecological value of restoring rivers and utilizing the cultural heritage of rivers to enhance the industrial structure in Jiaxing, very few provide a comprehensive view of the water system. Economic development has always remained the dominant factor. This study aims to address this gap by considering all roles of water within a balanced system and coordinating them from the perspective of citizens. It provides a fresh perspective on how water resources can be utilized as a basis for ecological restoration, economic transformation, and well-being.

Societal Relevance

Society is gradually becoming more concerned about ecology, and the government is taking actions to address these concerns. In 2019, the construction of the Yangtze River Delta Ecological Green Integrated Development Demonstration Zone was initiated. However, the actual needs of local areas, such as the continued neglect of river network restoration, are still being overlooked. When planning Jiaxing's ecological structure, only the connection with Shanghai is given importance, while Jiaxing's own watershed structure is disregarded. Therefore, this project aims to increase people's awareness of the local water identity. Valuable resources such as water

culture, river environments, and cultural heritage can be preserved and fully utilized.

Personal Bias

As a citizen of Jiaxing, I understand that my opinions are limited to my own experiences and are only representative of my own thoughts and beliefs. Other opinions that differ from mine are equally important and deserving of respect. Therefore, I must be conscious of my personal biases and how they may impact the research process. I will ensure not to select only the evidence that supports my ideas while ignoring those that do not.

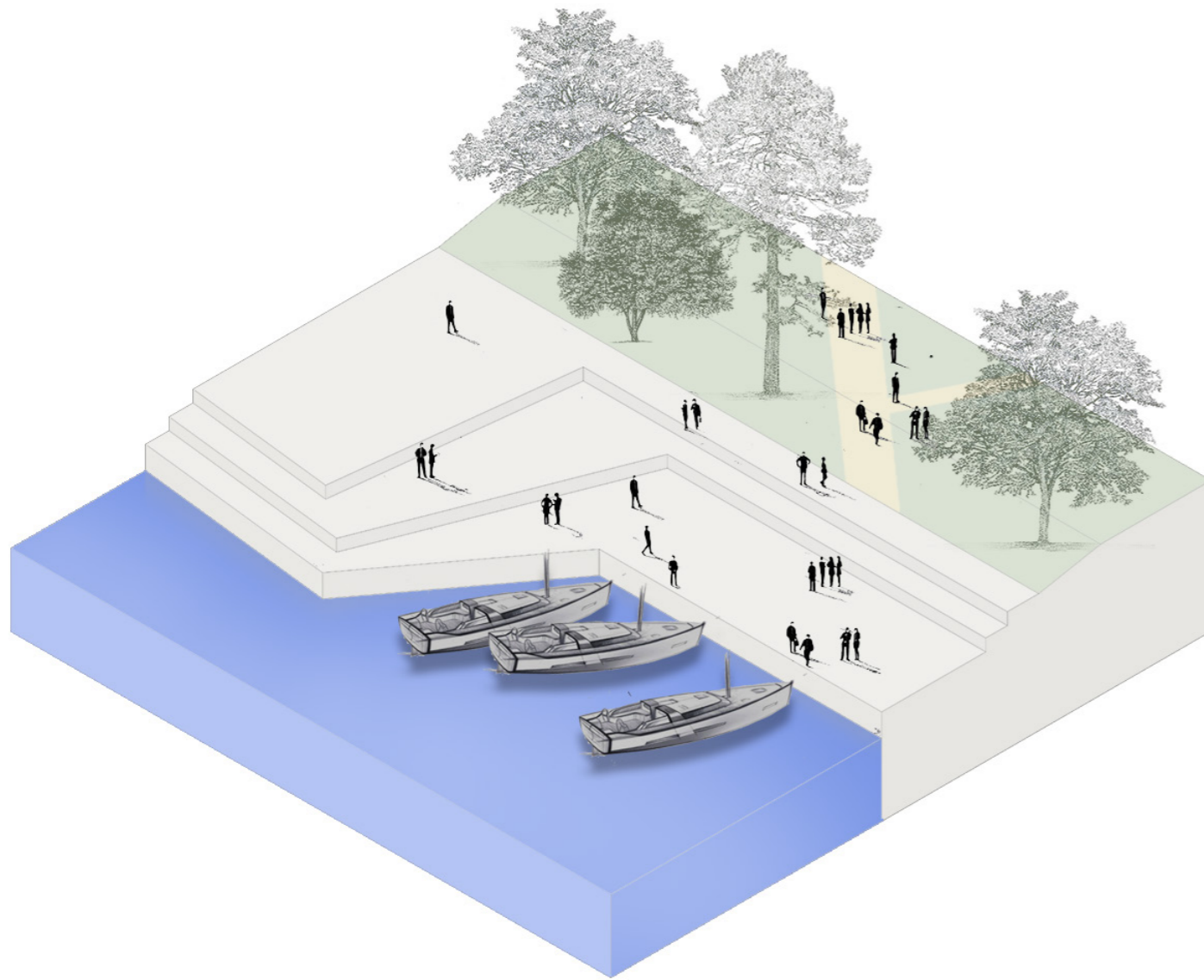
Different Context

It is crucial to keep context in mind when applying planning knowledge or conducting comparative studies. Due to different regional conditions, it is not possible to simply copy successful examples from Europe. Whether my design can be adapted to meet the actual needs of the citizens of Jiaxing still needs careful consideration. Further in-depth field research and interviews should be conducted if time permits to gain a better understanding of different stakeholders involved in this study and avoid potential misunderstandings.

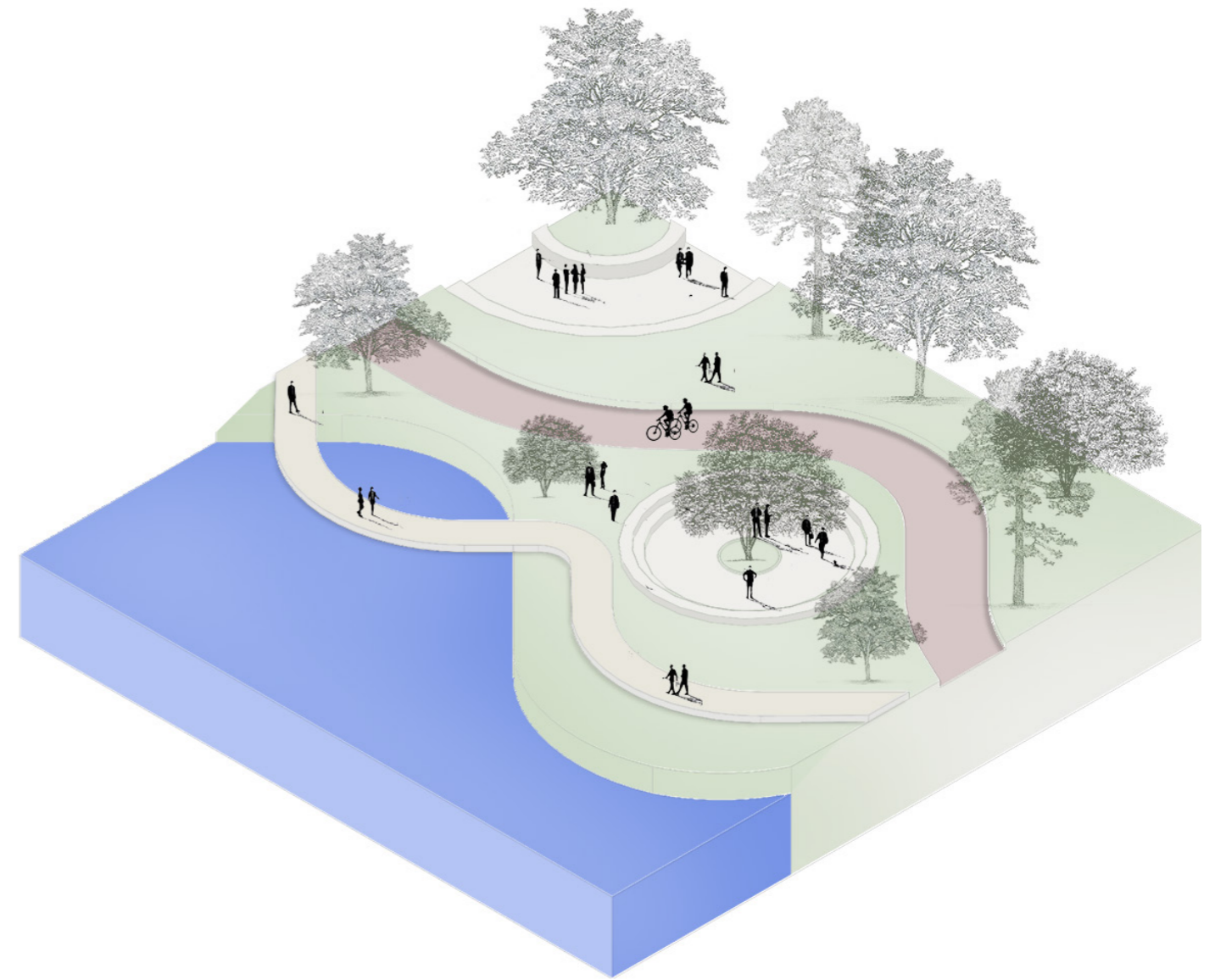
Bibliography

- Broman, G. I., & Robèrt, K. (2017). A framework for strategic sustainable development. *Journal of Cleaner Production*, 140, 17–31. <https://doi.org/10.1016/j.jclepro.2015.10.121>
- Chen, Y. (2012). The New Stage and New Tasks of China's Urbanisation Development. *Social Science Research*, 2012(1):34-37. DOI:10.3969/j.issn.1000-4769.2012.01.005.
- Cheshmehzangi, A. (2015). Urban Identity as a Global phenomenon: hybridity and contextualization of urban identities in the social environment. *Journal of Human Behavior in the Social Environment*, 25(5), 391–406. <https://doi.org/10.1080/10911359.2014.966222>
- Deng, X., Xu, Y., Han, L., Li, G., Wang, Y., Xiang, J., & Xu, G. (2016). Spatial-temporal changes of river systems in Jiaxing under the background of urbanization. *Acta Geographica Sinica*, 71(1):75-85. DOI:10.11821/dlxb201601006.
- Du, X. (2021). Composition and Protection of Cultural Heritage of Jiaxing Section of the Grand Canal. [Master's thesis, Nanjing Normal University].
- Fu, J., & Zhang, Z. (2014). Reflections and recommendations on the issue of water supply sources in water-scarce areas of water quality type. *East China Institute of Survey and Design*.
- Gu, Y. (2005). Research on Industrial Structure Adjustment and Optimization of Jiaxing's Integration into the Yangtze River Delta [Master's thesis, Southwest Jiaotong University].
- Haas, J., & Ban, Y. (2014). Urban growth and environmental impacts in Jing-Jin-Ji, the Yangtze, River Delta and the Pearl River Delta. *International Journal of Applied Earth Observation and Geoinformation*, 30, 42–55. <https://doi.org/10.1016/j.jag.2013.12.012>
- Han, L. (2015). Temporal and spatial change of stream structure in Yangtze River Delta and its driving forces during 1960s-2010s. *Acta Geographica Sinica*. https://en.cnki.com.cn/Article_en/CJFDTotal-DLXB201505013.htm
- Hu, C., Guo, X., Lian, G., & Zhang, Z. (2017). Effects of Land Use Change on Ecosystem Service Value in Rapid Urbanization Areas in Yangtze River Delta—A Case Study of Jiaxing City. *Resources and Environment in the Yangtze Basin*, 26(3), 333-340. DOI:10.11870/cjlyzyyhj201703002
- Hu, X. (2013). Migratory white-collar workers: Escape from Beijing and Guangzhou and the "urbanisation trap". *China Youth Studies*, 2013(3): 33-36,32. DOI:10.3969/j.issn.1002-9931.2013.03.007.
- Huai, S. (2019). Research on the relationship between river network structure and flood risk in the Jiangnan Plain area: a case study of Jiaxing City, Zhejiang Province [Master's thesis, Tongji University].
- Huang, J., & Sun, K. (2019). Scale, Speed of Agglomeration and Coordinated Urban Development: An Analysis Based on the Perspective of Urban Diseases. *Future and Development*, 2019, 43(8):5-13. DOI:10.3969/j.issn.1003-0166.2019.08.002.
- Huang, P. (2010). Functional Evolution of Beijing-Hangzhou Canal in Ancient and Modern Cities: Case Study of the Jiangnan Section. *Sichuan Architecture*, 2010, 30(1): 8-9. DOI:10.3969/j.issn.1007-8983.2010.01.004.
- Jiaxing Natural Resources and Planning Bureau. (2022). Jiaxing City Traffic Annual Report Series Interpretation. *Jiaxing Natural Resources and Planning Bureau*. https://zrzyhghj.jiaxing.gov.cn/art/2022/12/5/art_1229249891_58929225.html
- Kaymaz, I. (2013). Urban Landscapes and identity. *In InTech eBooks*. <https://doi.org/10.5772/55754>
- Ke, D. (2021). Research on the Construction of Blue-green Infrastructure in Jiaxing Based on MSPA and Water System Connectivity Evaluation [Master's thesis, Zhejiang University].
- Krellenberg, K., Bergsträßer, H., Bykova, D., Kress, N., & Tyndall, K. (2019). Urban Sustainability Strategies Guided by the SDGs —A tale of four cities. *Sustainability*, 11(4), 1116. <https://doi.org/10.3390/su11041116>
- Li, G., Jiang, M., & Yan, Q. (2015). A Comparative Study on the Comprehensive Strength of Jiaxing and Related Cities in the Yangtze River Delta since the 12th Five-Year Plan. *Statistical Theory and Practice*, 2015(11), 30-33,62. DOI:10.3969/j.issn.1674-8905.2015.11.007.
- Li, S., & Shi, X. (2011). Problems and countermeasures of ecological management of urban and rural rivers in Jiaxing City. *China Water Resources*, 2011(20):67-68. DOI:10.3969/j.issn.1000-1123.2011.20.029.
- Liao, P., & Wang, J. (2018). On the boat culture bred in the Jiaxing canal. *Science and Technology Perspectives*, 2018(33):40-41. DOI:10.19694/j.cnki.issn2095-2457.2018.33.016.
- Liu, S. (2022). Jiangnan cultural center city planning and high-quality development of the Yangtze River Delta. *Journal of Soochow University (Philosophy and Social Science Edition)*, 2022, 43(2), 17-25. DOI:10.19563/j.cnki.sdzs.2022.02.003.
- Liu, X. (2011). Institutional Innovation of the Further Integration Development in Yangtze River Delta. *Journal of Jiaxing University*, 23(4), 64-68. DOI:10.3969/j.issn.1008-6781.2011.04.011.
- Lou, Z. (2013). A Study on the Development Model and Cultural and Creative Tourism in Jiaxing and Its Countermeasures. *Journal of Jiaxing University*, 2013, 25(4), 258-263. DOI: 10.3969/j.issn. 1008-6781. 2013.04.014.
- Maciukenaite, J., & Povilaitienė, I. (2013). The Role of the River in the City Centre and its Identity. *Journal of Sustainable Architecture and Civil Engineering*, 4(5). <https://doi.org/10.5755/j01.sace.4.5.4820>
- Proshansky, H. M., Fabian, A. K., & Kaminoff, R. (1983). Place-identity: Physical world socialization of the self. *Journal of Environmental Psychology*, 3(1), 57–83. [https://doi.org/10.1016/s0272-4944\(83\)80021-8](https://doi.org/10.1016/s0272-4944(83)80021-8)
- Qian, Y. (2019, October 5). Boats of Jiaxing. *Huzhai*. https://www.sohu.com/a/345043434_100014684
- Ran, J., & Cheng, H. (2022). Research on the configuration path of urban talent attraction improvement from the perspective of talent ecology: Based on qualitative comparative analysis method of fuzzy sets. *Journal of Chongqing University (Social Science Edition)*, 2023(1):151-164. Doi:10. 11835 / j. issn. 1008-5831. pj. 2022. 12. 003. https://www.jiaxing.gov.cn/art/2020/4/23/art_1228921206_42663601.html
- Shao, Y., Chen, H., & Hu, L. (2019). Recognition and Characteristics Interpretation of Urban-Rural Cultural Heritage Based on Regional Culture: The Case of Jiaxing, Zhejiang Province. *Architectural heritage*, 2019(3):80-89. DOI:10.19673/j.cnki.ha.2019.03.009.
- Ujang, N., & Zakariya, K. (2015). The notion of place, place meaning and identity in urban regeneration. *Procedia: Social & Behavioral Sciences*, 170, 709–717. <https://doi.org/10.1016/j.sbspro.2015.01.073>
- Voros, J. (2003). A generic foresight process framework. *Foresight*, 5(3), 10–21. <https://doi.org/10.1108/14636680310698379>
- Wang, K. (2014). The “Jiaxing Model” and the “Polder Model”: a comparative study on public participation in environmental governance in Jiaxing and The Hague The local environmental problems are mainly air and water pollution. *International Association on Social Quality*. <https://www.socialquality.org/wp-content/uploads/import/2015/02/Final-Report-Kai-Wang-IASQ-25-November-2014.pdf>
- Wang, T. (2022). Private Cargo Trafficking in the Northern Song Canal under the Commodity Economy. *Wenjiao Ziliao*, 2022(9): 43-46. DOI:10.3969/j.issn.1004-8359.2022.09.011.
- Yao, Z., Hou, J., & Zhang Y. (2023). The Application of Digital Interaction in Jiangnan Canal Heritage from the Perspective of Diachronic and Synchronicity. *Science Innovation*, 2023, 11(4): 188-195. DOI: 10.11648/j.si.20231104.13
- Yi, G., Dou, W., Tao, Z., Yang, Y., Mao, Y., & Zhou, D. (2024). Characterizing the nature of social vulnerability to disasters in Inner-City households: Case of Jiaxing, China. *Natural Hazards Review*, 25(1). <https://doi.org/10.1061/nhrepo.nheng-1870>
- Zhang, Y., Wu, H., & Jin, H. (2022). Regional construction characteristics of eight scenic spots in Jiaxing from the perspective of water culture. *Chinese Garden*, 2022, 38(7):38-43. DOI:10.19775/j.cla.2022.07.0038.
- Zheng, D. (2020). Study on the Settlement Morphology of Majiabang Culture. *Southeast Culture*, 2020(5):85-94. DOI:10.3969/j.issn.1001-179X.2020.05.009.
- Zhou, L., & Su, S. (2005). Analysis of deep groundwater exploitation and ground subsidence in Jiaxing City. *Zhejiang Water Resources Science and Technology*, 2005(3):23-25,28. DOI:10.3969/j.issn.1008-701X.2005.03.010.
- Ziyace, M. (2018). Assessment of urban identity through a matrix of cultural landscapes. *Cities*, 74, 21–31. <https://doi.org/10.1016/j.cities.2017.10.021>

Appendix

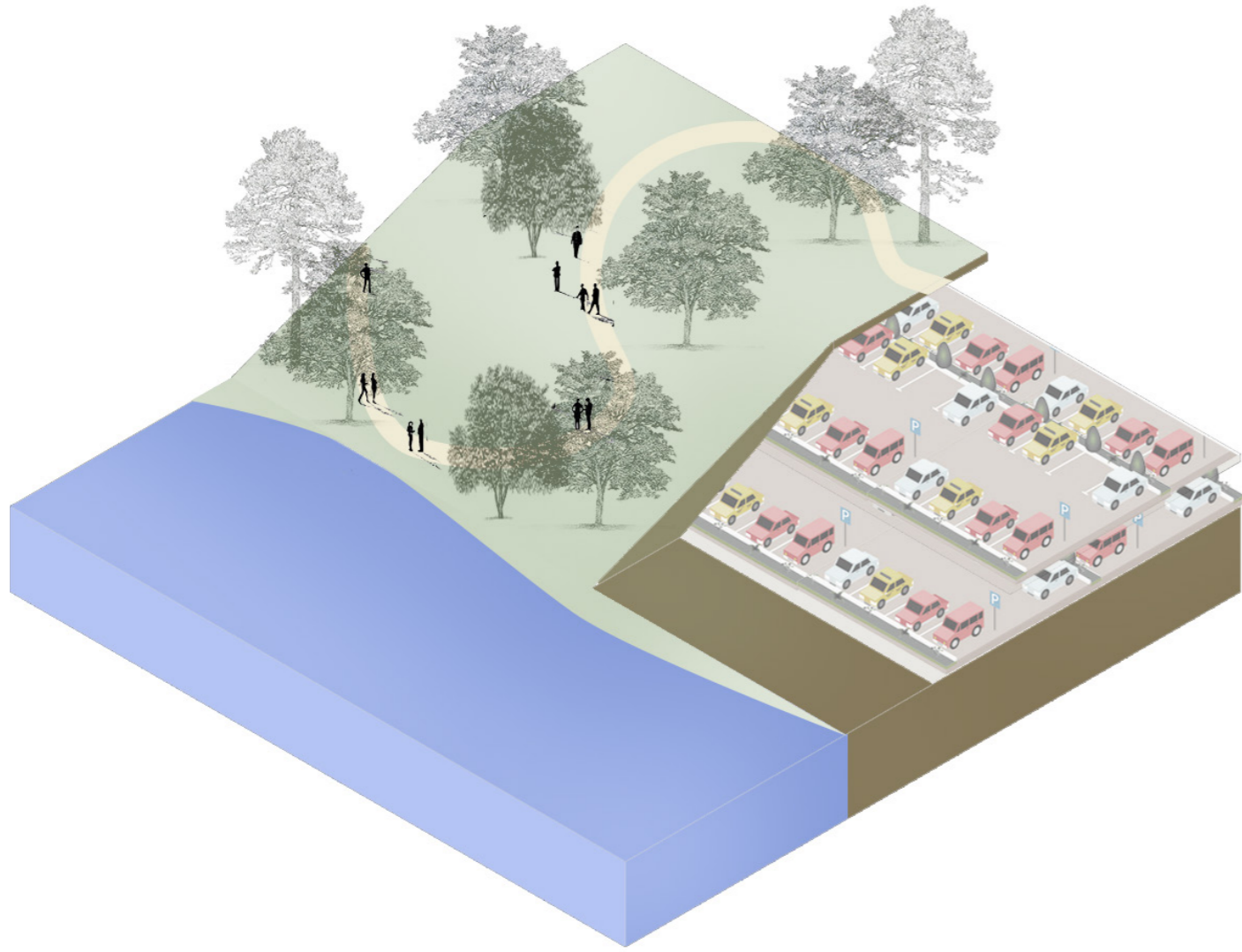


water taxi stop

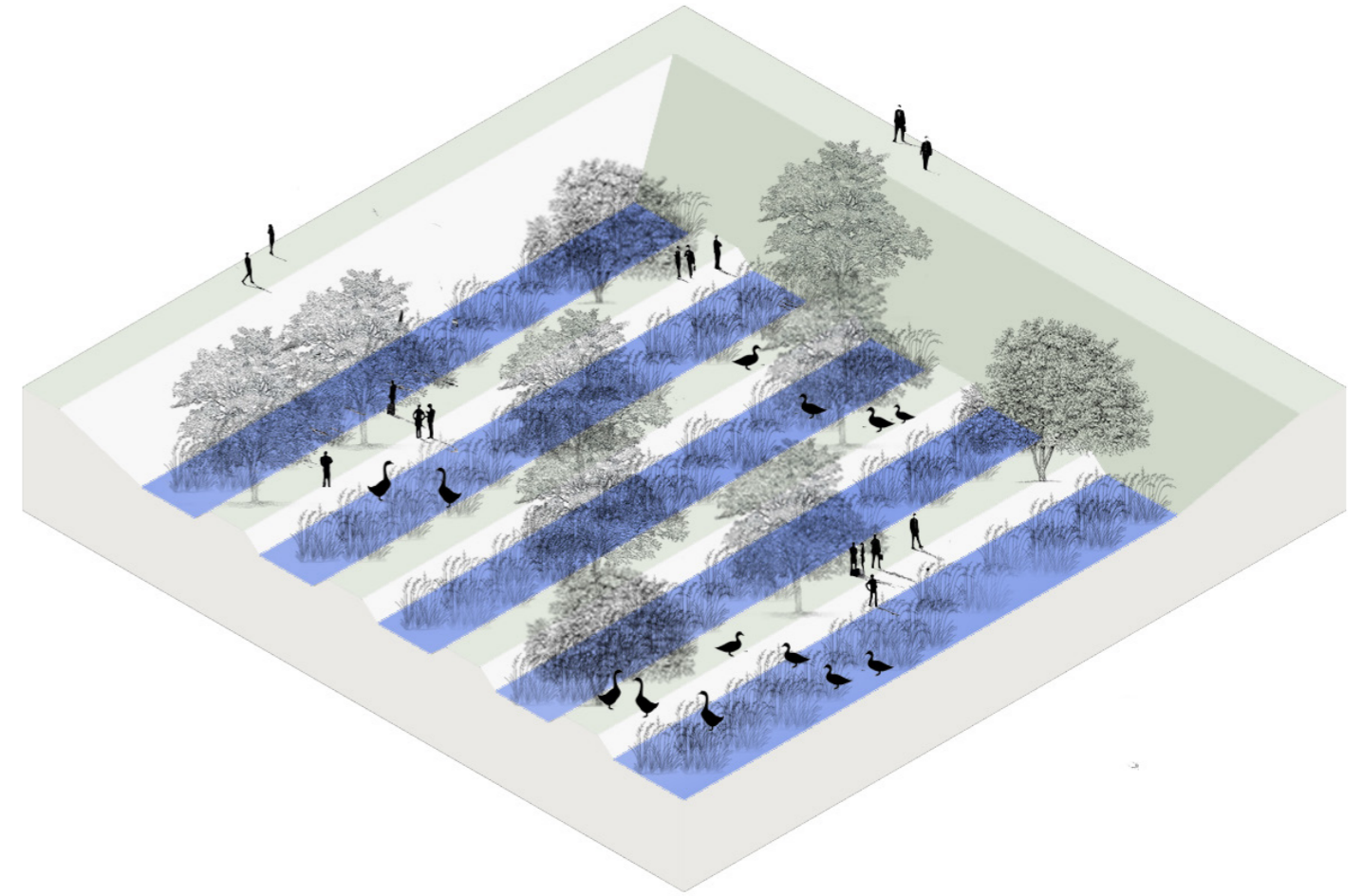


slow traffic near water

Appendix

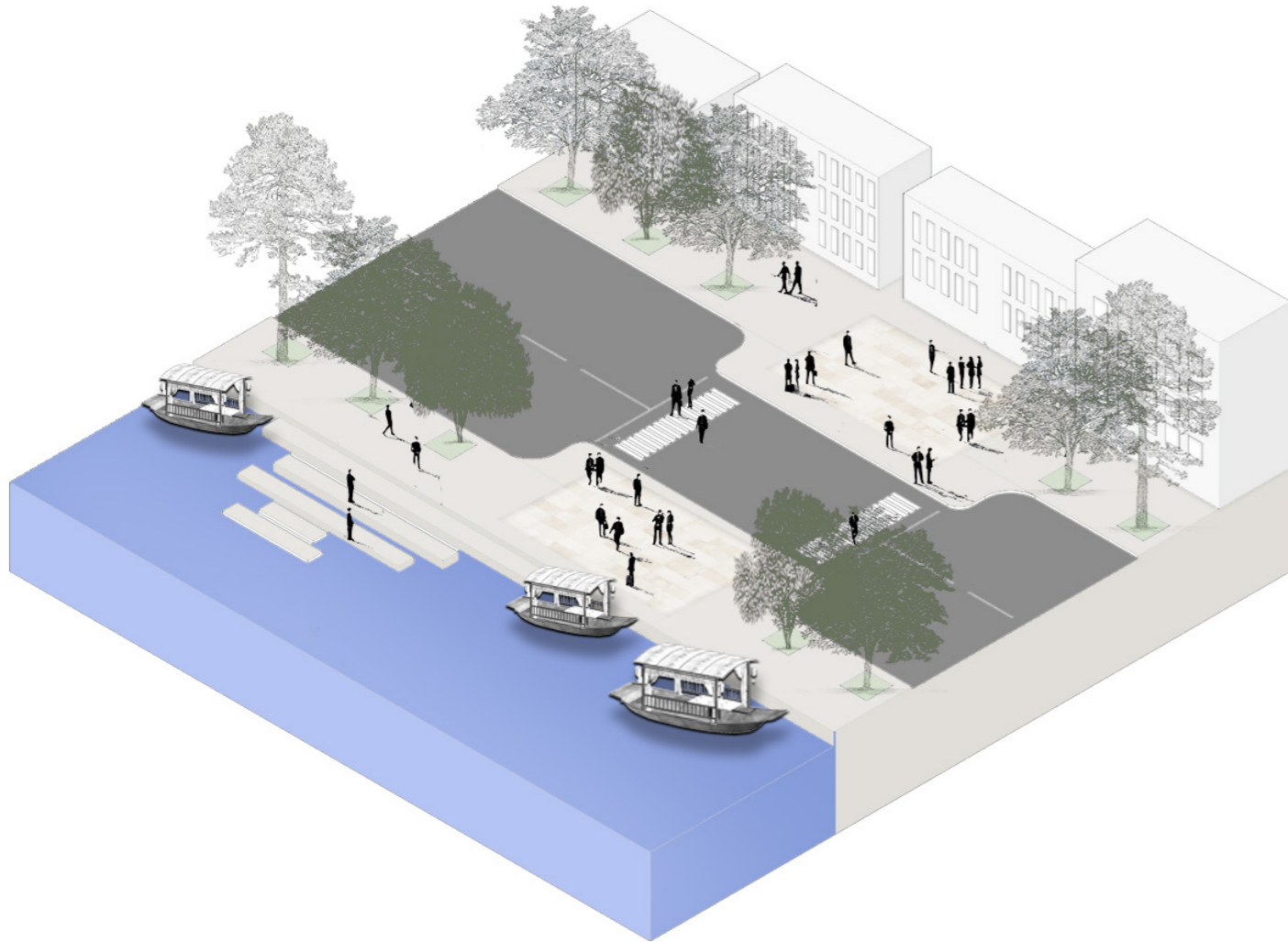


parking lot

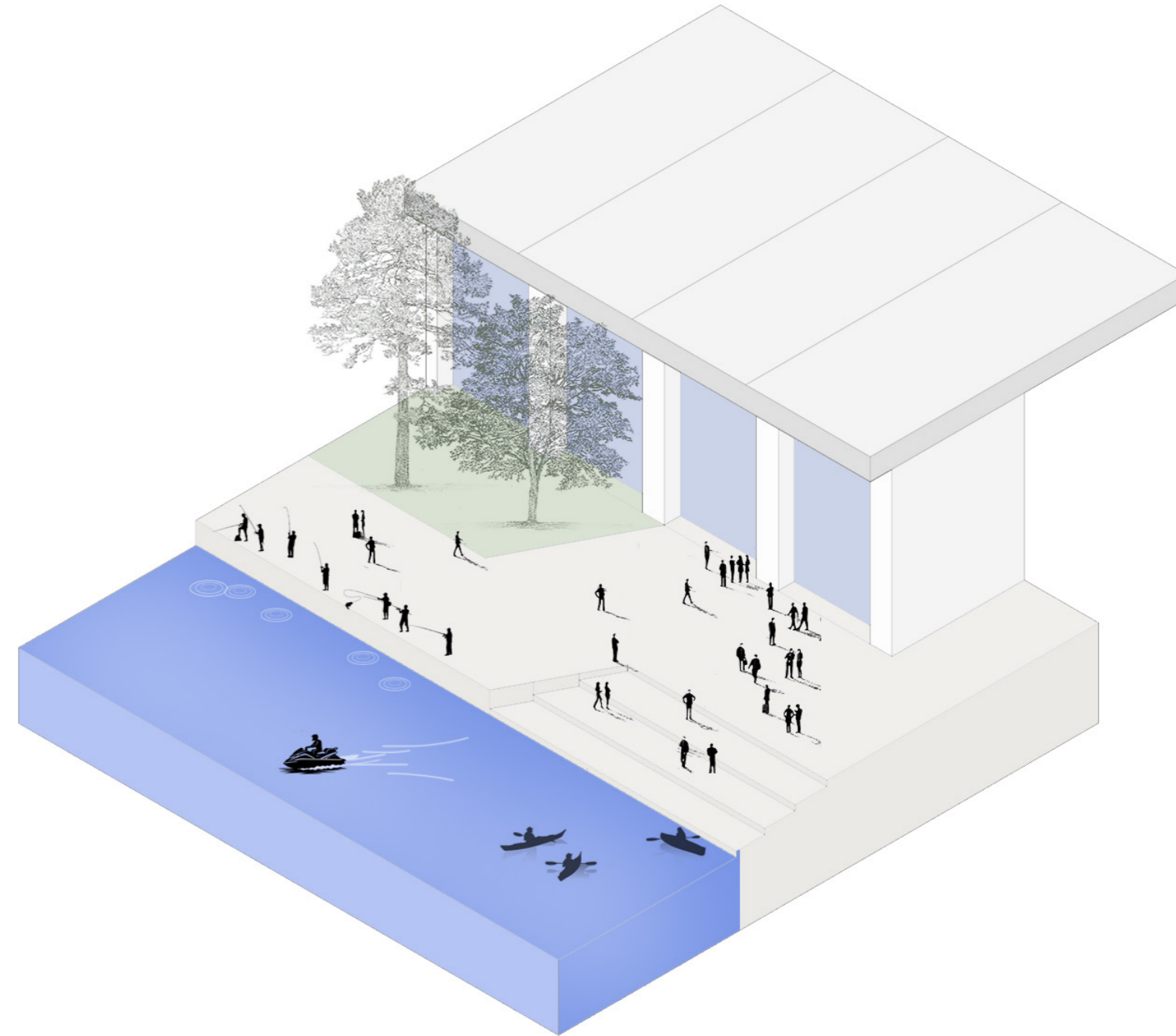


traditional agriculture experience park

Appendix

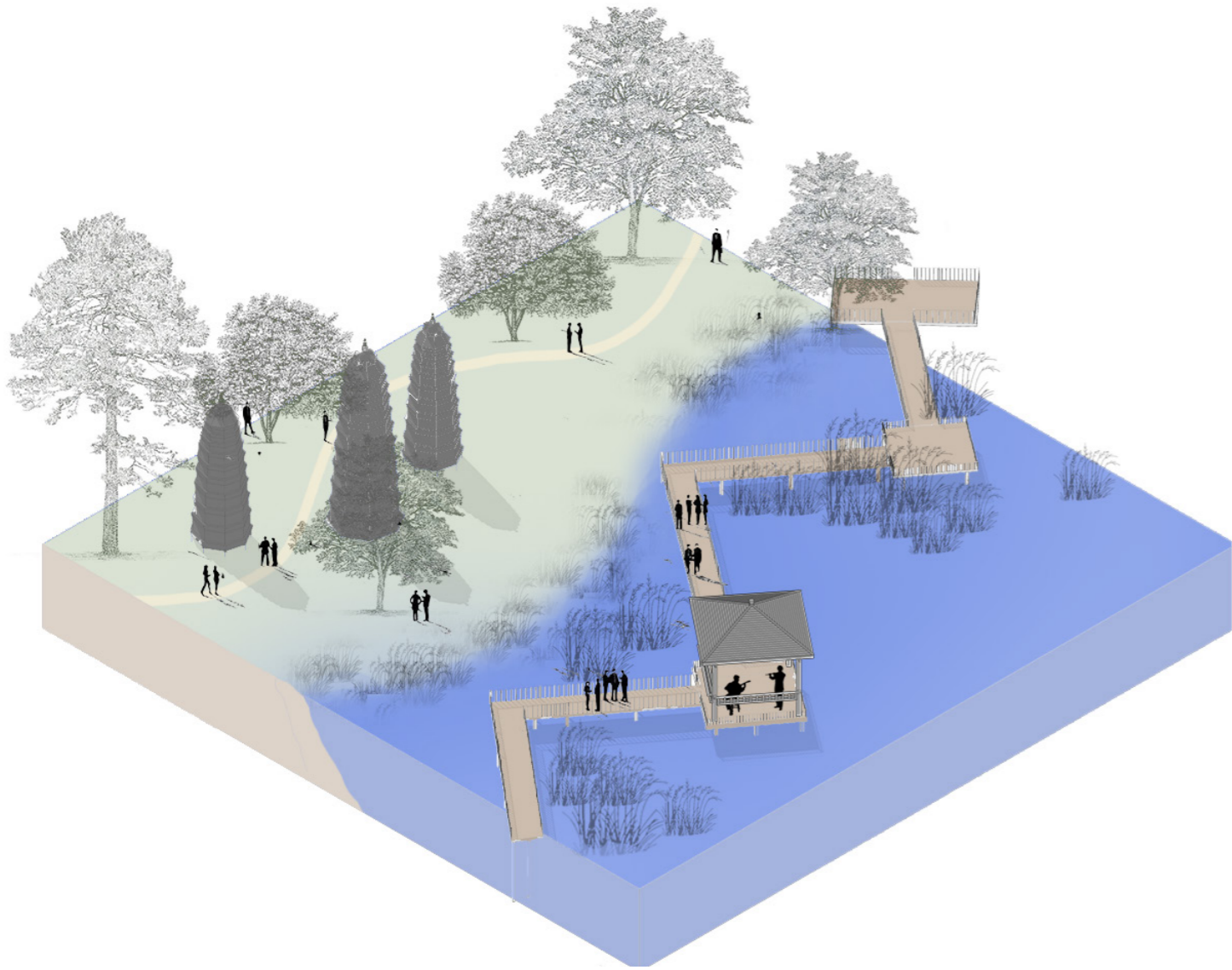


water market

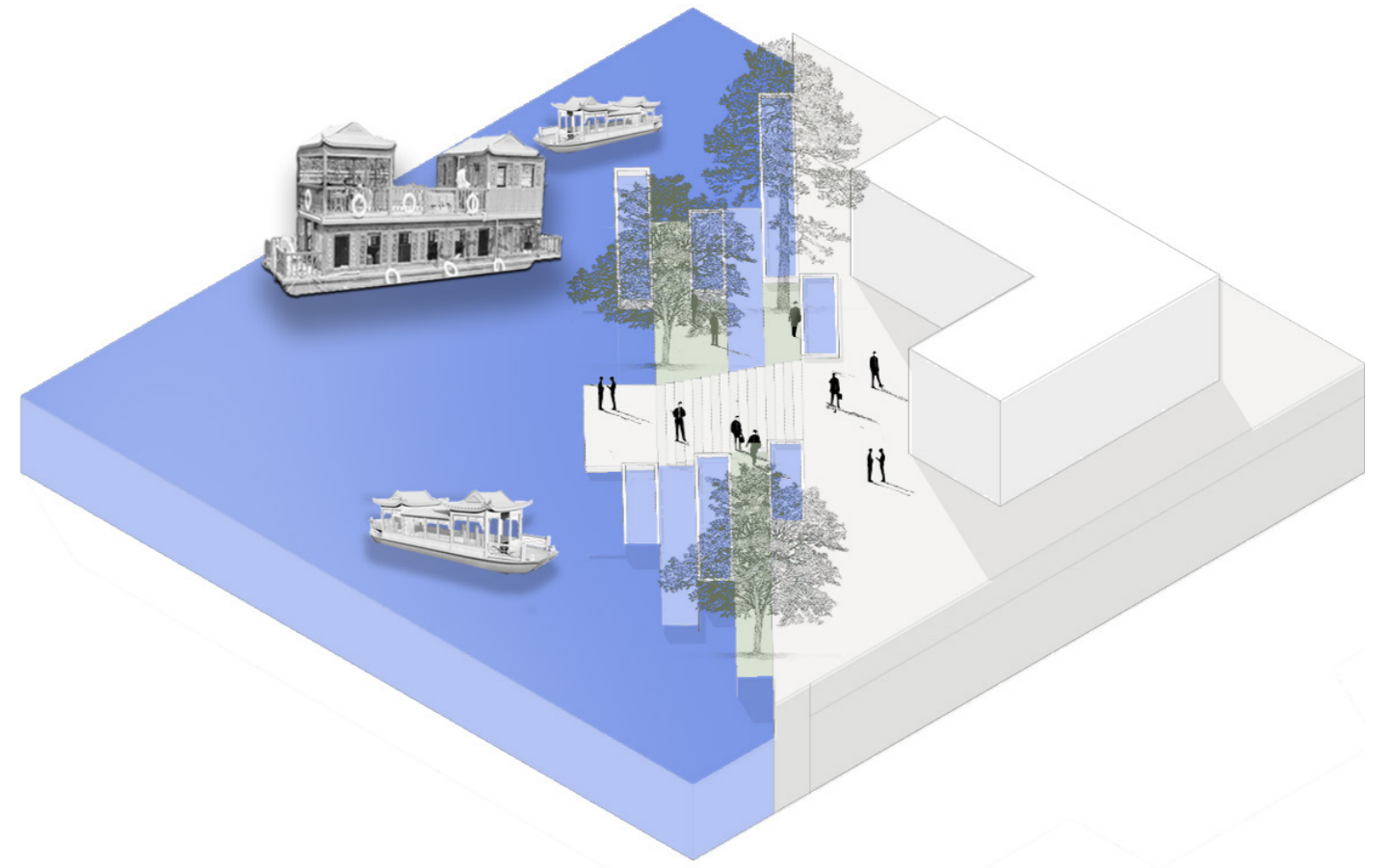


water sports

Appendix

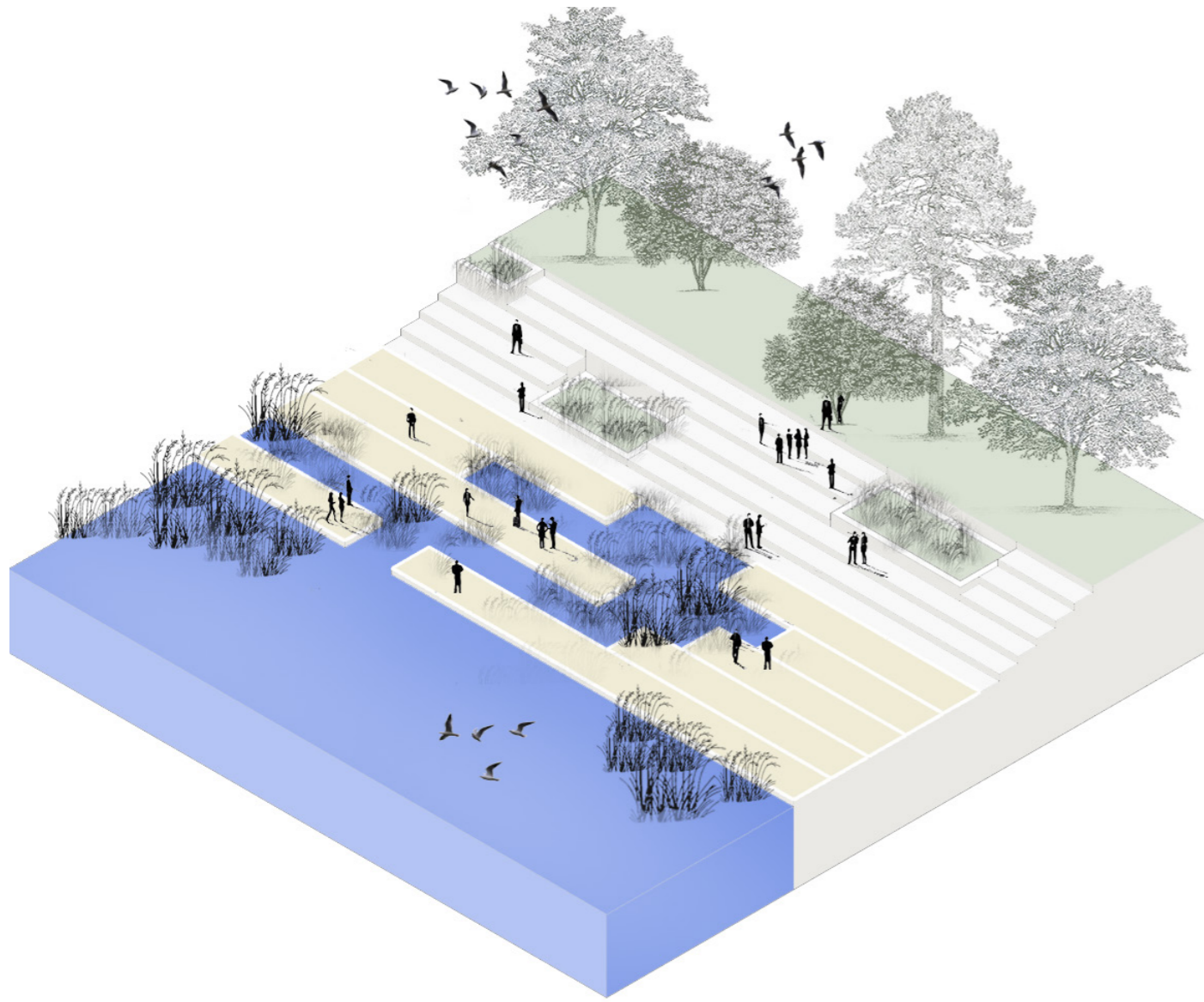


waterfront concert

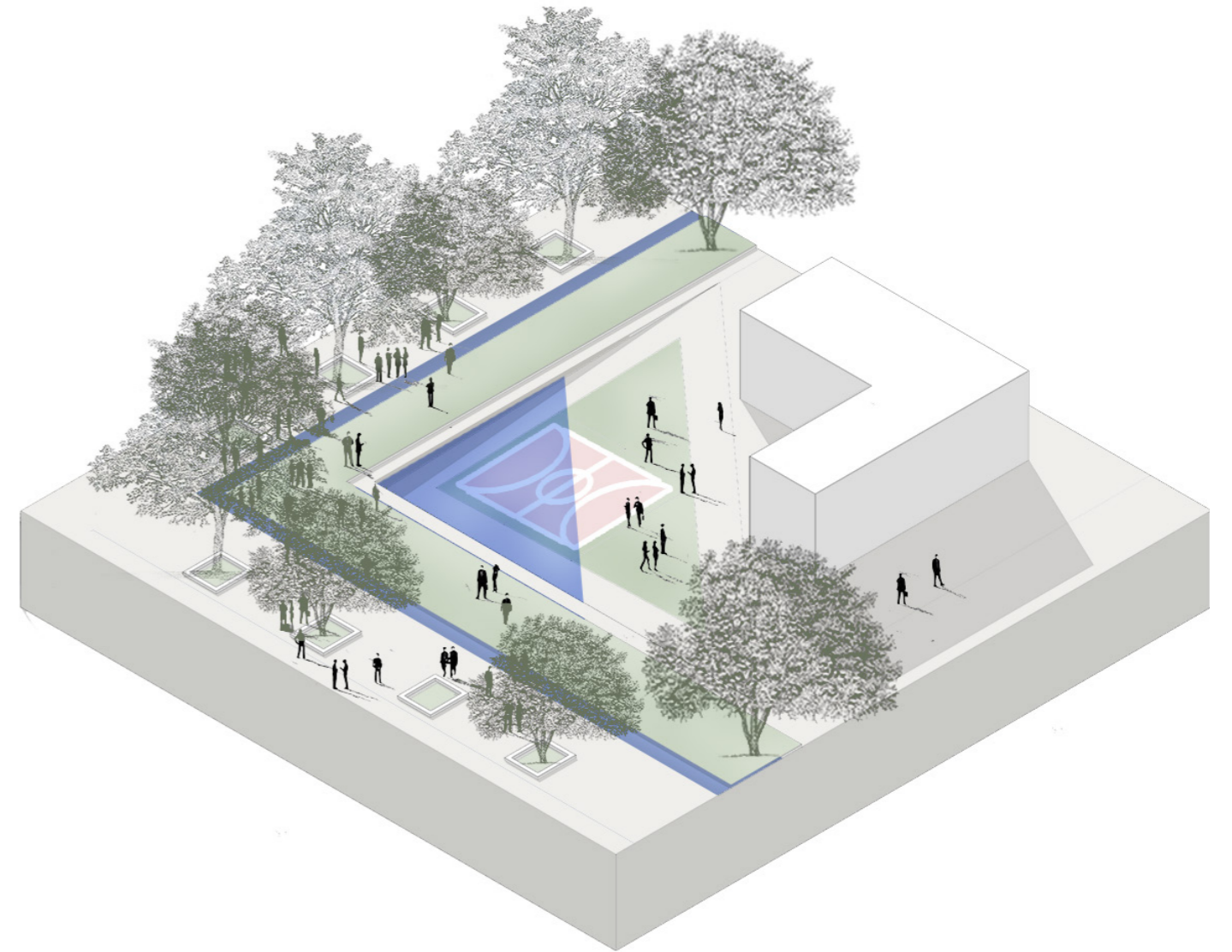


water purification and entertainment boats

Appendix



aquatic plants



water containment square

RECLAIMING
URBAN REGENERATION STRATEGIES BASED
ON WATER CITY IDENTITY OF JIAXING
THE WATER CITY

Yiwen Ji | 5704251 | Planning Complex Cities 23-24