

**Suburbanization under China's
Special Urban-Rural Relationship
—— a case study of Shaoxing**

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Chapter 1

Exploration and Progress on **SUBURBANIZATION.**

Introduction to the study

The Shaoxing Planning Competition begins at the end of 2021 and this article begins with the participation in the competition as a student of the China room at the Politecnico di Torino. Participation will take place from February to May 2022 (first phase of the competition).

Official Competition Description

Jianhu is the mother lake of Yue region. It is one of the oldest water conservancy projects in China, an important communication belt of the road of Tang poetry in eastern Zhejiang, as well as the source of Shaoxing rice wine. Nowadays, Jianhu has its essence lie in Jianhu Tourist Resort. With profound history, it is also the core development section of Keqiao District, Shaoxing. How to make use of the existing space, respect the spirit of Jianhu, transform Jianhu into a city brand and symbol with various interfaces, and depict the common picture of "Jianhu Revival". It is a "transcending" issue, and also embodies the "wisdom of new city operation" in the era of ecological civilization and cultural confidence, providing us with an opportunity to create a new development mode of Chinese cultural landmarks in urban development in the new era.

The competition includes two sections, which are conceptual planning and urban design.

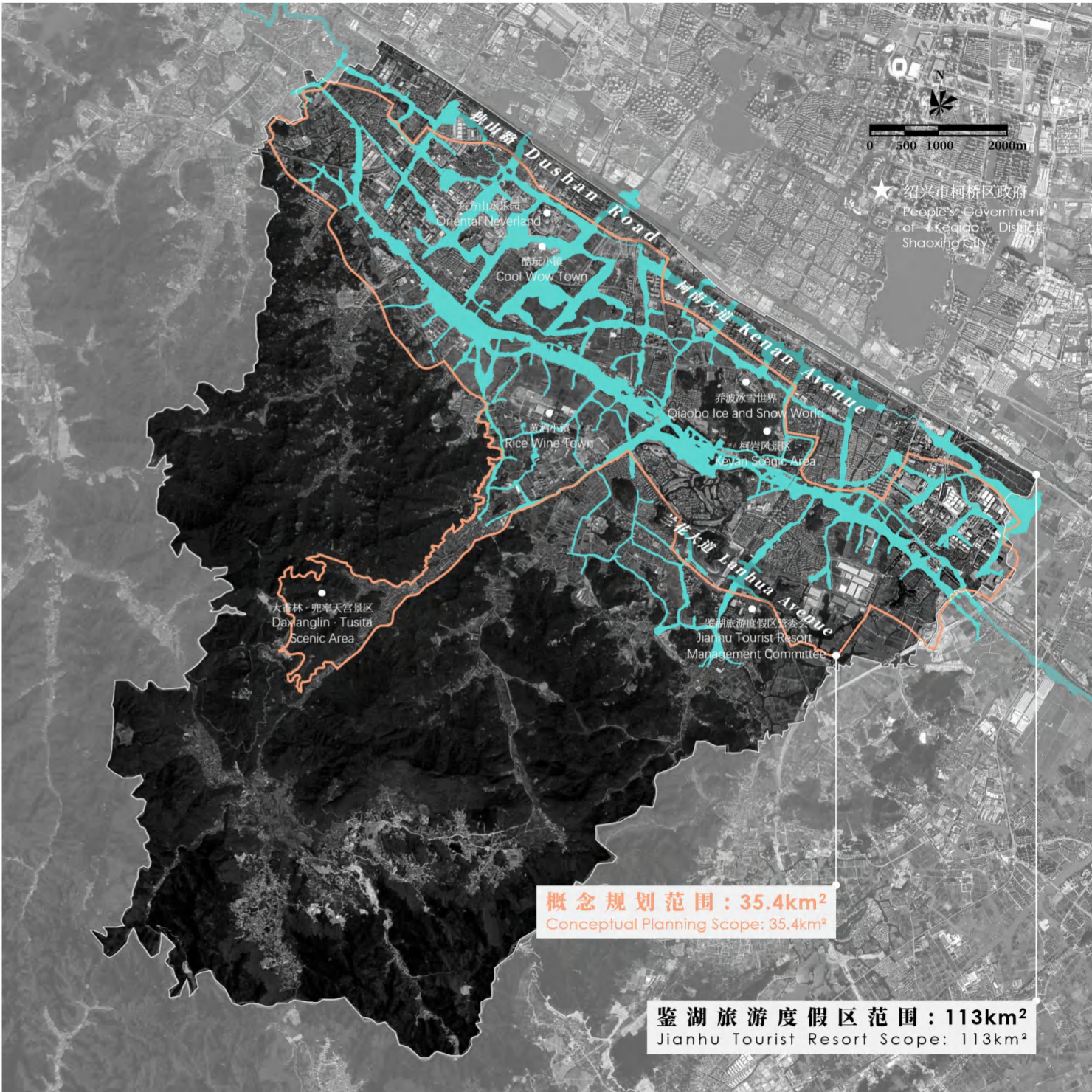
1. Conceptual Planning

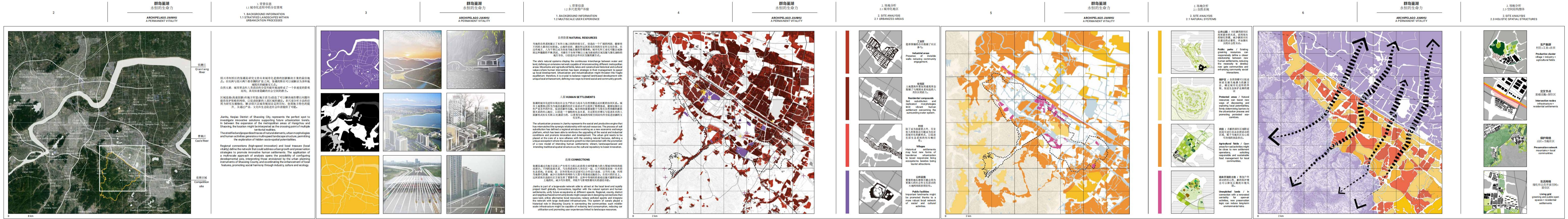
It is located in Jianhu Tourist Resort, adopts Jianhu as the core and is 12.6 kilometers long from east to west, with a site area of about 35.4 square kilometers. It covers two characteristic towns—Rice Wine Town and Cool Wow Town; 4 AAAA National Tourist Attractions—Keyan Scenic Area, Daxianglin · Tusita Scenic Area, Qiaobo Ice & Snow World and Oriental Neverland; traditional villages such as Sanjia Village, Hutang Village, Binshe Village, etc.; plenty of significant sightseeing spots like Mazhen Memorial Museum; as well as 10 areas—"Jianhu Origin Exploration", "Ancient Wine New Songs", "Yue Dream Island", "Poetry Frontier", "Dynamic Lake & Mountain", "Glorious Keyan", "Haishan Show", "Art Woven Keqiao", "Xianglin Realm", "Future Watercity" (please refer to the General Planning Brief Version).

2. Urban Design

5 core areas (compulsory) + 3 other areas (random draw), with a total area of 15.0 square kilometers. Core areas include "Jianhu Origin Exploration", "Ancient Wine New Songs", "Yue Dream Island", "Poetry Frontier", "Dynamic Lake & Mountain", covering a total area of 9.79 square kilometers. Other areas include "Glorious Keyan", "Haishan Show", and "Art Woven Keqiao". The shortlisted applicants shall select by random draw one of the three areas to design. Follow the positioning of each area, carry out urban design and shape the cultural space and features for each area. Specifically, it includes the refinement of the functional format of each area, design of spatial form, and improvement of public open spaces; At the same time, to manifest the characteristics of Jianhu, in combination with the needs of spatial layout and landscape shaping, a site should be selected to carry out the concept design of "The Jianhu Eye" as the gateway landmark building (please refer to the Technical Brief for work requirements).

Participation in the competition as a student. Starting mainly with the analysis map of the competition, collecting information about the situation and development of the region, analysing the design and participating in the analysis phase of the drawing of the final result, the following.





1. Background information

Stratified landscapes in urbanization User experience at different scales

The following maps are taken directly from the competition delivery

Credits:

ARCHITECTURAL DESIGN & RESEARCH INSTITUTE OF SCUT CO. LTD /
POLITECNICO DI TORINO – DEPARTMENT OF ARCHITECTURE AND DESIGN (CHINA ROOM)/

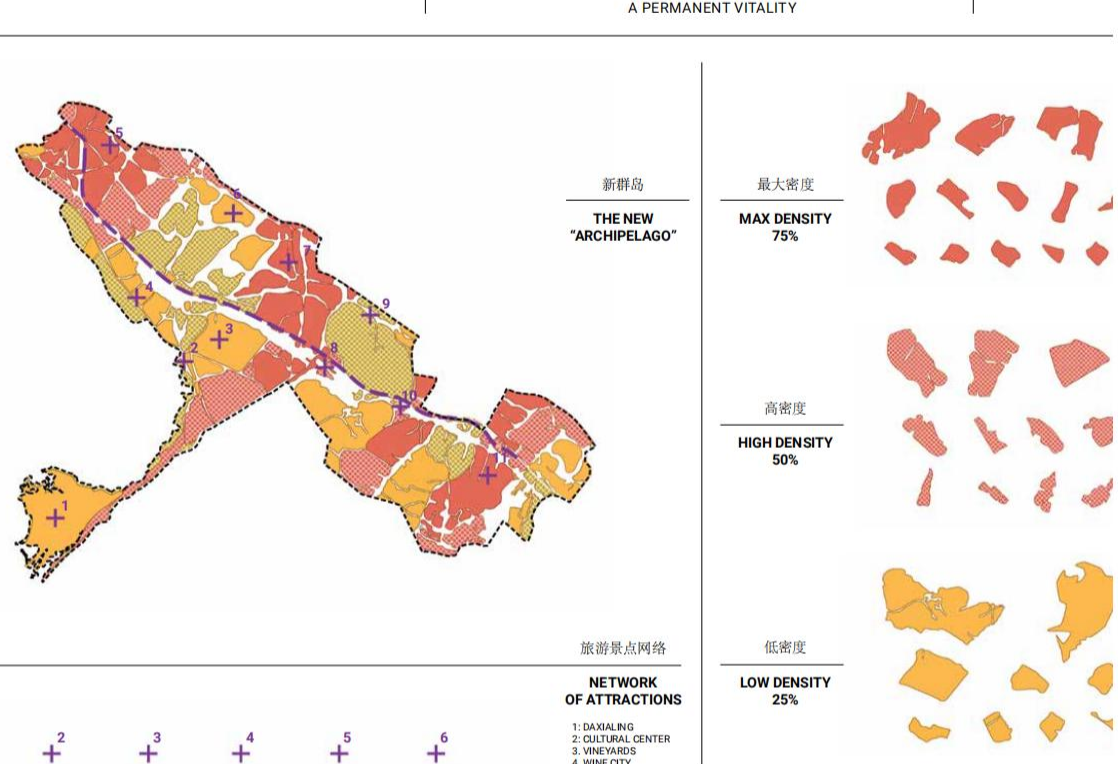
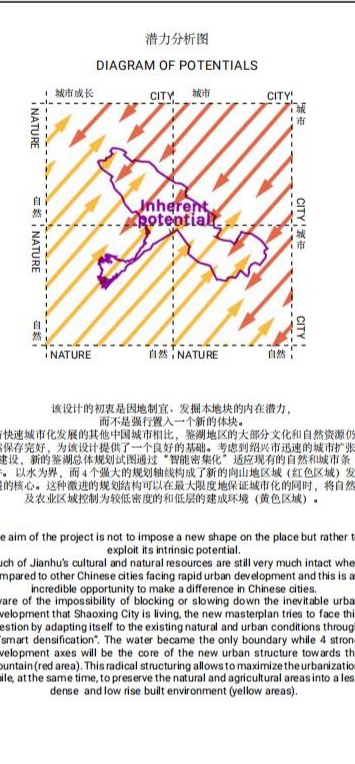
2MIX ARCHITETTI + ARCHISBANG + BALANCE ARCHITETTURA + CORBELLARO SA + EMANUELE & GIOVANNI CAVAGLION + GIANPIERO MORETTI

2.Site Analysis

Urbanization process

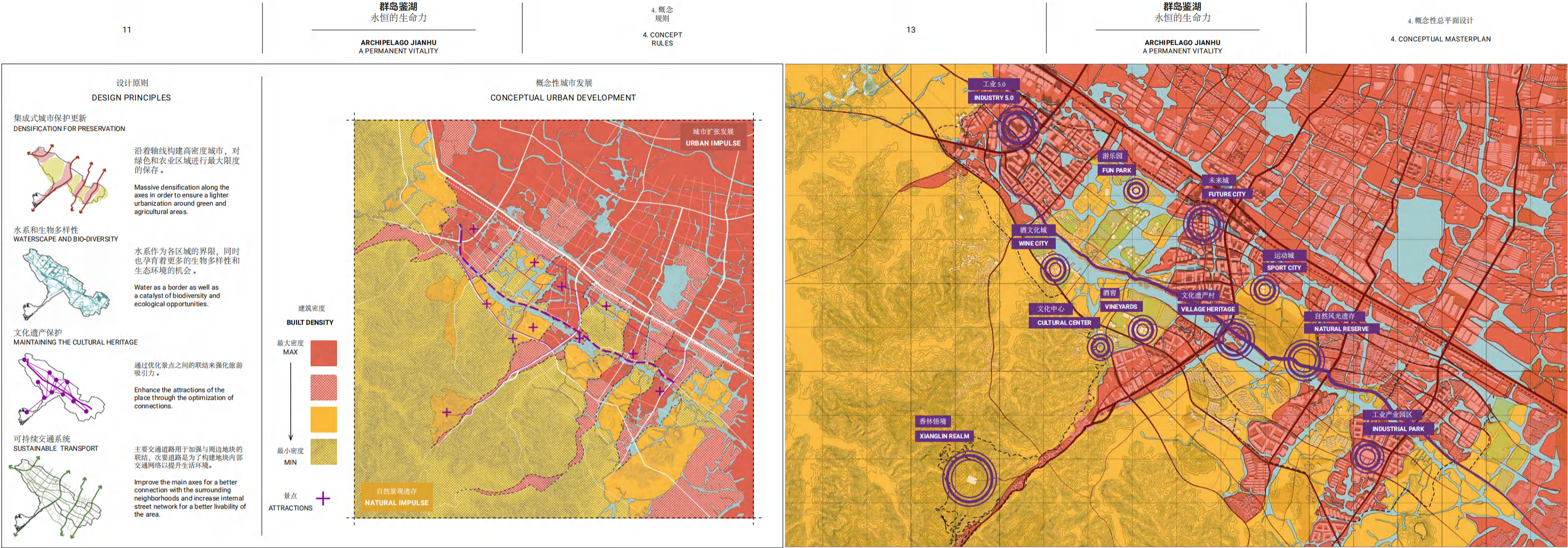
Natural situation

Spatial structure analysis



Concept design

Enhancing local identity The relationship between humans and nature



In the course of the competition participation It can be very clearly appreciated that the suburban changes in the Shaoxing area have been very obvious in the last 30 years, and that the suburbs are now a very important topic in urban design, so the next study focuses on the suburbs as a research topic. But at the beginning of the study, we were faced with a question: **what is the definition of a suburb?**

Research topics

How and why are the distinctions and definitions between urban and suburban blurred? "Cities and suburbs are not built by academic debate but by struggles in space and time" (Keil, 2018).

suburbanization is now ubiquitous, blurring the line between city and suburb. It is possible to tal k about postsuburbanization as a general experience(Harris& Keil. 2017). "Insights into these struggles reveal that debate of what is urban and what is suburban is still ongoing, albeit the suburbs are largely invisible in theoretical inquiries on the urban future "(Keil, 2018).

For that very reason, the field of suburban studies faces some unresolved issues determined by the need to comprehend the very notion of "suburb". To understand this problem requires a series of research and exploration. First, understanding the reasons behind this phenomenon is a very important step.

The study will start with two parts Theoretical foundations of suburbia

Sub-urbanisation is a widespread and pervasive urban development issue today. Although its definition is not identical in different cultural contexts, it all points to a broad urbanisation problem. With the gradual development of suburbanisation, the distinction between the suburban definition and the city is gradually blurred and a new concept is formed. In the face of this trend, it is necessary for us to explore and expand on the basis of the theory of suburbanisation and enrich its connotation. The concept of suburbs in Shaoxing is of great importance, as Zhejiang province is a very developed region in China, especially in the northern part of the country where the cities on the southern shore of Hangzhou Bay are very rich and where urban development has reached a very high level and the suburbs have entered a new stage of development.

Suburbs of the Shaoxing area

In Shaoxing, suburbs exist in a variety of forms, from satellite towns to functional settlements, as well as development zones, innovative industrial parks, and industrial parks formed by giant corporate investments, which are unique to China. The economic development of the Shaoxing region has been very prosperous in recent years, with a comprehensive range of industries, and the scope of urban design has expanded to include the countryside and the natural landscape, especially in the main urban areas of Shaoxing, as well as in Kegqiao and Zhuji. In conjunction with the special national policy for Zhejiang Province: a pilot province for common prosperity. There is therefore a strong incentive to explore the suburbs in this area. At the same time, the entire north-eastern part of Zhejiang Province has a special settlement landscape - the polder fields. It can be said that the suburbs of this region have a great variety of opportunities and possibilities.

On the introduction of the definition of suburbia

The evolution of suburban definitions In keil's discussion, we can understand that the UK and the United States were the first typical cases of suburbanization, so the original definition of suburbanization came from these cultural areas, and the Anglo-Saxon society. In addition to the ideal case of suburban governance in Anglo-Saxon immigrant societies, it is necessary to study the different cases found in other countries, such as Eastern and Western Europe, Latin America, East Asia,etc. These cases worldwide are markedly different from the urbanization and suburbanization of the early industrial age.

Across North-America, suburbs have been historically understood according to three specific characteristics: a series of low-density, automobile-dependent areas surrounding a city core. Richard Harris (2010) sees "density," "newness," and "peripheral location" as the three defining qualities of a suburb, whereas Anne Forsyth (2014) considers the latter two—peripheral location and newness—as common key features. Others, such as Dunham-Jones and Williamson (2009), rather consider suburbs as lower-density and single-use private buildings in an automobile-oriented landscape made up of a looped network with cul-de-sacs. Through specific comparative studies, Harris and Larkham (1999) have defined forms, foundations, and definitions of suburbs by emphasizing five common dimensions: (a) peripheral location related to a dominant urban centre; (b) a specific residential character; (c) low densities with decentralized settlements and high levels of ownership; (d) a distinctive way of life; and (e) separate community identities, often embodied at the local governmental level. Based on this framework, McManus and Ethington (2007) identify seven key variables: peripheral location; relationship to the urban core (as a functional dependence); relationship to the countryside; density, relative to the urban core; housing types (at a first glance, low single-family dwellings are certainly considered the most common); social segregation (mainly class or ethnic); and cultural formations (utopian traditional models versus dystopian nature-devouring sprawl).

Although the United States has continued to be an important field of research in contemporary suburbanization for a considerable time , new concepts and studies have begun to appear elsewhere. Recent contributions have addressed the diverse forms and features of " the suburban" in the Global South. A large body of investigations have explored Latin-America, from the extended urbanization of Brazil to the private- led developments of Argentina and Chile (Heinrichs, Lukas, & Nuissl, 2011). Studies of the massive urbanization in East Asia have paid specific attention to India (Kennedy, 2007), China (Wu & Shen, 2015), and the Philippines (Ortega, 2016) as well as to specific metropolises such as Tokyo , Seoul (Lee & Shin, 2011), and Jakarta. Attention has also been devoted to the suburbanization of Sub-Saharan Africa and the massive suburban growth of Istanbul (Güney, Keil, & Üçölu, 2019).

The debate continues to travel also through Western countries. In the European context, Thomas Sieverts described the contemporary hybrid locations compressed amid the old city and the open countryside as“in-between cities”, amidst living space and non-places of mobility. This observation is grounded in the German environment, but other perspectives have addressed urban expansion according to the features of each national context by providing specific tailor- made notions, such as “ciutat de ciutats” in Spain and “città diffusa” in Italy. Equally, specificities of post-socialist suburbanization have been tackled (Hirt, 2007; Hirt, 2017; Hirt & Petrovi, 2011). Since the Secondpostwar, European cities face the issue of constant urban growth by maintaining an urban dimension through densification and new territorial organizations among differently sized cities, instead of a large concentration of manymetropolises, as occurred in North-America. In this respect, “a diversity of developmental trajectories and processes operating within European setting’emerged among a nodal and fragmented pattern of relationships into a disparate urban fabric more compact than their North- American counterparts. Such divergence raises questions about the adoption of suburbs as a global concept to observe metropolitan edges.

Starting from the issue above, conceptual disputes might be summed up into a single key question: Is suburb a one - size - fits - all concept that globally travels to study those settlements at the urban edges? The response requires further debate. The suburbs may be framed according to different perspectives, i.e., as a dimension of extended urbanization, a fragment of the worldwide urban expansion or as a new space from which the urban fabric has to be understood (Keil, 2018). A general overview pushes towards a slight congruence between the suburban and the urban periphery, insofar that both concepts appear primarily subordinated to the urban (Lefebvre, 1967, 2003). Recently, naming processes of urban peripheries have been tackled by Richard Harris and Charlotte Vorms (2017) through an outline of the variety of everyday local terminologies worldwide adopted (from the Brazilian “favelas” to the Indian “slums” and from the “borgate” of Rome to the Indonesian “kampungs”). By unravelling the different meanings and connotations, they notice that the usages of such terms may substitute the broad concept of suburb. Generally, suburbs look today as parts of city regions and/or metropolitan areas distant from CBDs or downtowns. Nevertheless, the flexible and transitional character of suburbs enable a reframing according to the global processes that led to more extended urban constellations today turned suburban (Keil, 2013). in Italy, the numerous towns located at the outskirts of urban cores now represent the “new urban peripheries” of a metropolitan area, resulting from processes of suburban growth affected by uneven infrastructural developments and overlapping socio-spatial fragilities (Filion & Keil, 2016).

From the above table, we can observe that although almost all definitions try to describe the specific meaning of suburbs, here is an attempt to make some generalizations: the first definition, and the most intuitive definition, is from the spatial position of suburbs and central cities. to define. The second definition, on the basis of the first definition, highlights the independent political or legal status of the suburbs. The key words here are: "It is politically separate from the big city". If the suburb is not "politically separate" from the city, i.e. is located within the administrative boundaries of the city, or is politically annexed by the central city, whether or not it has other characteristics of a suburb, is not or no longer is suburbs. The third definition emphasizes the social characteristics of the suburbs. Fishman (1987) is the most typical representative, and he especially emphasizes the middle-class nature of the suburbs. He argues: “A suburb

can be defined first by what it contains—a middle-class settlement—and secondly (perhaps more importantly) by what it excludes: all industry, most commerce (serving excluding commercial enterprises in a specific residential community) and all lower-class residents (except servants).” That is, the suburbs should be purely middle-class residential areas, where neither industry and commerce nor lower-class residents can be called, otherwise they cannot be called for the suburbs.

Therefore, there are several factors that have a significant impact on the definition of suburbs: **first, the social and psychosocial characteristics of suburbs; second, the political independence of suburbs; third, the definition of metropolitan area boundaries.**

Definition	Author(s)	Field of analysis	Brief description
Outer city	Herington (1984)	United Kingdom	Maintaining "garden city" principles in suburbs not absorbed by "urbanization"
Web of cities	Dematteis (1985)	Italy	Reticular web of cities reproduced in less-urban contexts, led by "counter-urbanization" phenomena
Technoburbs	Fishman (1987)	United States	Overlap of housing, industry, commerce, agricultural uses, and political jurisdictions within the same area
"Città diffusa"	Indovina et al. (1990)	Italy	Compact mid-cities less dense than urban areas led by relocation of production activities and presence of urban services
Edge city	Garreau (1991)	United States	Concentration of traditional downtown activities in previously residential and rural areas through fast-growth processes
Desakota	McGee (1991)	Indonesia	Asian increasingly urbanized settlements between urban and rural areas
Exopolis	Soja (1992)	United States	Rural settlements developed on the "second" urban fringes
Flexspace	Lehrer (1994)	Switzerland	New spatial and environmental articulation between urban and rural in Western cities
Post-modern urbanism	Dear and Flusty (1998)	United States	Centres of globalizing capitalism in the urban periphery
Ethnoburbs	Li (1998)	United States	Immigrant communities' edge-towns
"Ciutat de ciutats"	Nel-lo (2001)	Spain	Articulated network of cities with strong "territorial" and socio-economic relations
Edgeless city	Lang (2003)	United States	Continuous fast-growing cities on the regional fringe of a metropolitan area
In-between city	Sieverts (2003)	Germany	New hybrid forms of European cities due to metropolitan expansion
Boomburbs	Lang and LeFurgy (2007)	United States	Fast-growing towns between 50,000 and 100,000 inhabitants, close to a metropolis or bigger city
Metroburbia	Knox (2008, 2017)	United States, UK (London)	Suburban and exurban areas distinguished by a fully metropolitan landscape

Source：De Vidovich, Lorenzo (2019). Suburban studies: State of the field and unsolved knots. Geography Compass, e12440-. doi:10.1111/gec3.12440

Research definitions of suburbia in China

Early theories of suburbanization in China summarize the suburbanization into four main stages: 1. suburbanization of population. 2. suburbanization of industry. 3. suburbanization of commerce. 4. suburbanization of office areas. In China, the reality that the suburbs of large cities exist as a space for the expansion of the central city and a transitional zone for the central city to exert its aggregation and diffusion effects on its hinterland determines that the suburbs are the first to be encroached upon for the development of land in large cities. With the development of theory, the study of suburbanisation has also generated great controversy, and there are now some dominant views: the first is that China's large cities have not fully begun to suburbanise, and scholars with this view argue that suburbanisation, as defined in the West, is a voluntary act of migration, while the decline in population size in China's core cities and the dramatic increase in population on the urban fringe is passive. It is an illusion, but in fact a sprawl of urban land use under a crude approach to urban development. Suburbanisation here should be attributed to a runaway urban development pattern. The suburbanisation of some mega-cities did not really begin until after 2010, when China's urbanisation rate exceeded 50%. Other arguments suggest that the process of suburbanisation in China began as early as the 1990s, when the population gradually began to shift away from mega-city centres such as Beijing and Shanghai. Such views differ in their definition of suburbia at its roots, and as a result research on the vague concept of suburbia is currently limited to a halt.

Suburbanization in China

In some points of view. Statistics show that China has entered the stage of suburban urbanization since the 1980s, especially in the southeast part. This situation is very obvious. In the 20 years from the early 1980s to the end of the 20th century in Guangzhou, Beijing and Shanghai, the suburban urbanization in the suburbs was very obvious, and the population in the central area of the city migrated to the suburbs to varying degrees. During this process, the functions of cities are constantly decomposing to the periphery, and an urban system consisting of large, medium and small cities is gradually formed with the big cities as the center. The data show that the major cities in China have started the stage of urban suburbanization since the 1980s, and after the 1990s, the speed of suburbanization began to accelerate. During this period, the number of households located in the center of the big city began to decline, and the city center turned into a large commercial center, while the population of the inner and outer suburbs increased at different rates. In terms of city size, cities between 200,000 and 500,000 people grow faster than cities of other sizes.

If the new type of urbanisation is taken to a theoretical level, the future of China will also become a city without suburbs, or rather, a future in which every city in China will drag along several satellite cities, like the traditional Chinese custom of the family system, at once so large as to be bloated, and so streamlined as to be divided into families.

"Ignoring those romantic episodes of reclaiming the land, for the past 150 years the real development of the American homeland has been urban", argues David Rusk, author of Cities Without Suburbs, who argues that at the end of the Second World War, all American cities were still only inner cities and almost no outer cities.

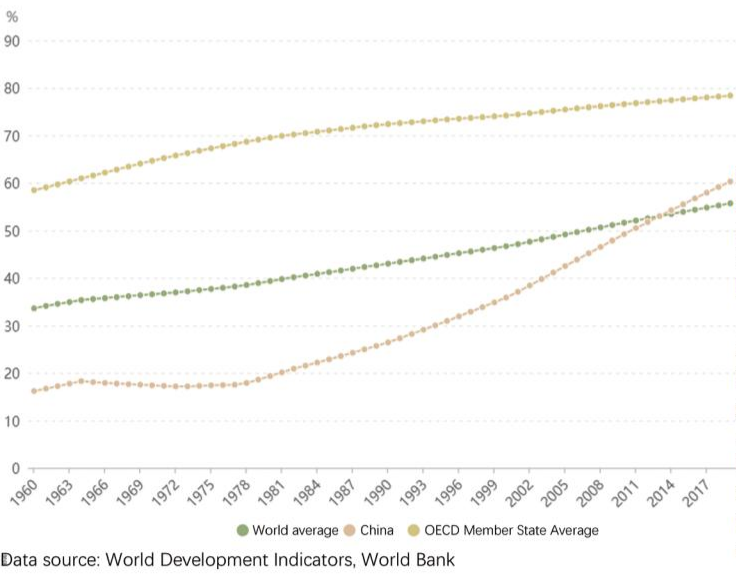
In that era when suburbs were just developing, the largest cities in the United States grew up in these urban-rural junctions. The difference in China is that the suburb has been marginalised, despite its involvement in social change, yet because there has been a lack of effective communication between China's cities and countryside, the suburb is largely just a middle ground between the city and the countryside; it brings together a mixture of urban and rural forms, and in its initial stages, the suburb settles for a short time, neither possessing the structure of the city nor continuing the appearance of the countryside.

This is because the age and seniority of China's suburbs is so young that the age of an urban or rural or suburban area can have a critical impact on the life, economy and even culture of that area. Precisely because the Chinese suburb is still immature, it is relatively more resilient, and so its development shows great instability; either it fails to adapt to the rhythms of the city, or it is bounced back by the rich traditions of the countryside. In this way, the suburbs have not completed their transformation of role in China until now. As urbanisation progresses, the differences between the suburbs and the cities in terms of hardware

infrastructure and even software services become smaller and smaller, but instead of becoming a satellite city of the city, the narrowing of the gap reinforces its function as a guest house for a short stay, a ferry that is slow to reach the shore.

On the other hand, "with the growth of suburbanisation and long-distance commuting, the long-term prospects for development are worrying", and the more the transitional function of the suburbs is not changed or even repeatedly reinforced, the more pressure is put on the city centre, and the main city becomes the only heart that supplies blood and generates raw power, exhausted and fragile. One logical explanation is that suburbanisation is a major cause of urban congestion, especially when cities do not adequately consider their future development in advance. As an example of this, a large number of city dwellers spend most of their time knowing their city by what they see along the way, from their place of residence to their place of work, and by information passed on from peer to peer or colleague.

1960-2019 Trends in urbanisation rates in China



On the world stage, China's urbanisation has experienced rapid development from lagging behind to catching up, with an urbanisation rate of only 16.20% in 1960, a huge gap from the world average of 33.61%, when the average urbanisation rate of OECD member countries had reached 58.49%.

After the reform and opening up, China's economic construction has progressed by leaps and bounds and the urbanisation level has gradually risen, with China's urbanisation rate basically catching up with the world average by 2013. As of 2019, China's urbanisation rate has reached 60.31%, exceeding the world average of 55.71%, and the average urbanisation rate of OECD member countries is 78.40%, with China's urbanisation level gradually narrowing with that of developed countries.

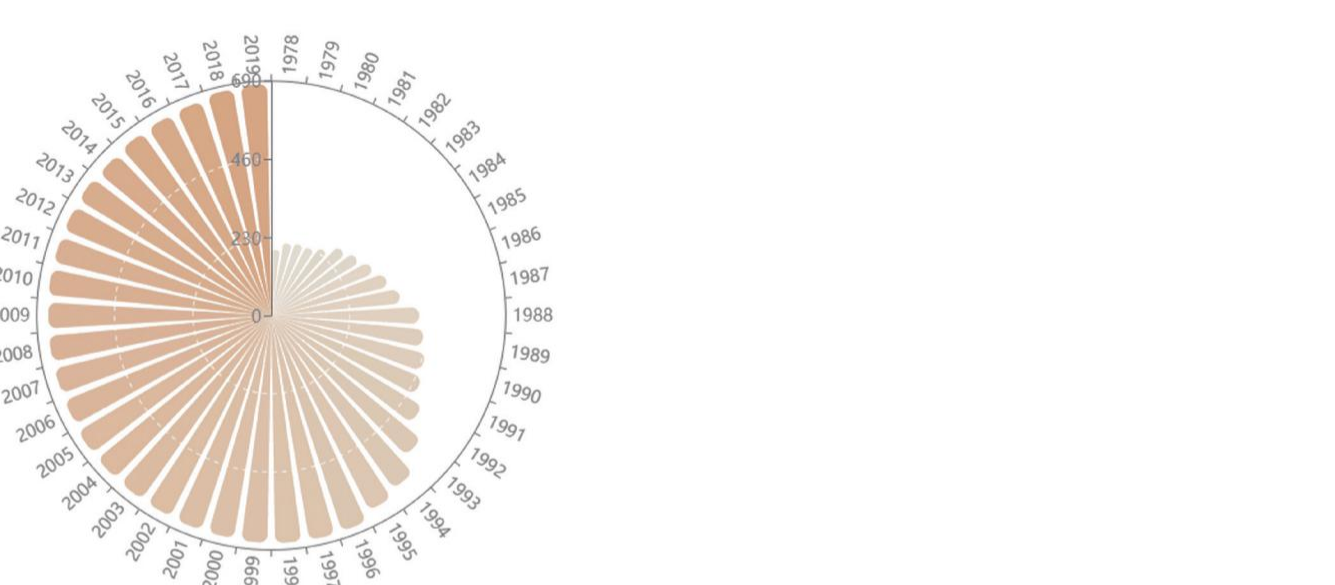
A global urban population of 50 million in 1800, an urbanization rate of about 5.1%. The global urban population reached 220 million in 1900, an urbanisation rate of about 13.3%. In 2009, the global urban population reached 3.42 billion and the urbanisation rate exceeded 50% (50.1%) for the first time; (Source: UN Urbanisation Report (2010)) In 2018, the global urbanisation rate was around 55% (Source: UN Department of Economic and Social Affairs (UN DESA) World Urbanisation Trends 2018)

The process of urbanisation accelerates as technology advances and information spreads, from the early days of the UK which took about 100 years to complete, to Germany which was 80 years, Mexico 45 years and South Korea 35 years accelerating the further back you go. So the largest and fastest urbanisation process in the world's history has taken place in the last 30 years, with an average of more than 10 million people a year moving from the countryside into the cities, bringing economic development and poverty alleviation, while also putting a certain amount of pressure on the urban infrastructure and environment.

This acceleration is even more evident in China's urbanisation, which is at nearly 60% by 2018, with an urban population size of 830 million, which is a large number. With such a highly compressed urbanisation process, it faces many problems at the same time, compressed in a limited time.

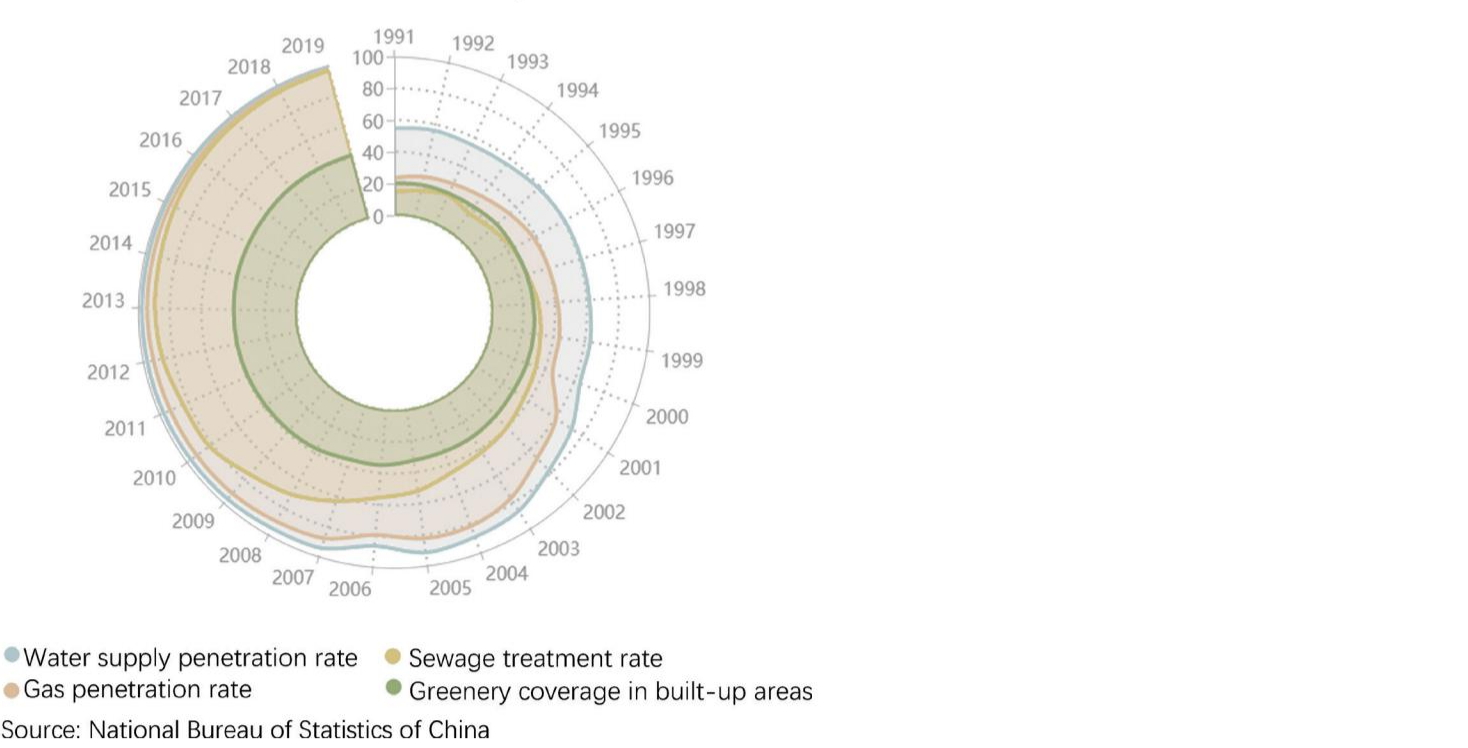
From 1991 to 2019, the urban water supply penetration rate, gas penetration rate, sewage treatment rate and greening coverage of built-up areas have increased from 54.8%, 23.7%, 14.86% and 20.10% to 98.78%, 97.29%, 96.81% and 41.51% respectively. The development of urbanisation has become more detailed and visible, and people have a more concrete sense of the city's development.

1978-2019 Number of cities in China



Source: National Bureau of Statistics of China

1991-2019 National level of municipal utilities in cities



The suburbs do not have much energy to relieve the pressure on the city, except for population density. It assists cities to accomplish population transfer on a day-to-day basis, 365 days a year, but the emergence of a large number of suburbs has allowed cities and villages to experience population loss together, and it is because of the large number of suburbs that urban-rural integration has become an intractable problem in China today.

In *Cities Without Suburbs*, urban resilience is central. David Rusk's judgement is that resilience can solve many problems for cities, especially "in the beginning years of the suburbanised mode of life, when urban development was so resilient that there was plenty of open space to develop and build on", when urban politics and legislation aimed at expanding space. The presence of resilience allowed cities to expand their boundaries in a way that relieved the pressure of high density, rather than adding to it several times over.

In his preface to *The Idyllic City of Tomorrow*, the Englishman Ebenezer Howard sets out the ideal combination of city and country. In his preface, he bluntly points out the advantages of the city in terms of high wages, employment opportunities and attractive prospects compared to the countryside, but he also emphasises that these advantages are greatly offset by high land rents and high prices. And while the countryside 'claims to be the source of all beauty and wealth', Howard draws on the 'ridicule' of the city to illustrate the countryside's lack of social interaction, its isolation, and its pennilessness.

In his view, neither the city nor the countryside fully reflected the intentions and intentions of nature. He argued that the city and the country must become one, "just as man and woman share their talents", so must the city and the country, "the city and the country must be married, and this happy union will give rise to new hopes, new life, new civilisation".

The division of the functions of the city as it now stands has also been explained by Howard - "If the city flourishes, and the inhabitants are each employed in their own way, and each subdivision has a shop or supply station, it will provide a very natural market for the inhabitants who are engaged in agriculture", and Howard believes that the city The city is able to provide assistance to the countryside, and the countryside has a wider range of choices from the city.

In the case of the rural city, its income and its sources are crucial, as it has both the characteristics of the countryside and the habits of the city. Howard uses examples to analyse the possibilities for the survival of the idyllic city, which is in fact facing the idyllisation of the city or the urbanisation of the idyllic city in the midst of unrestricted expansion at the moment.

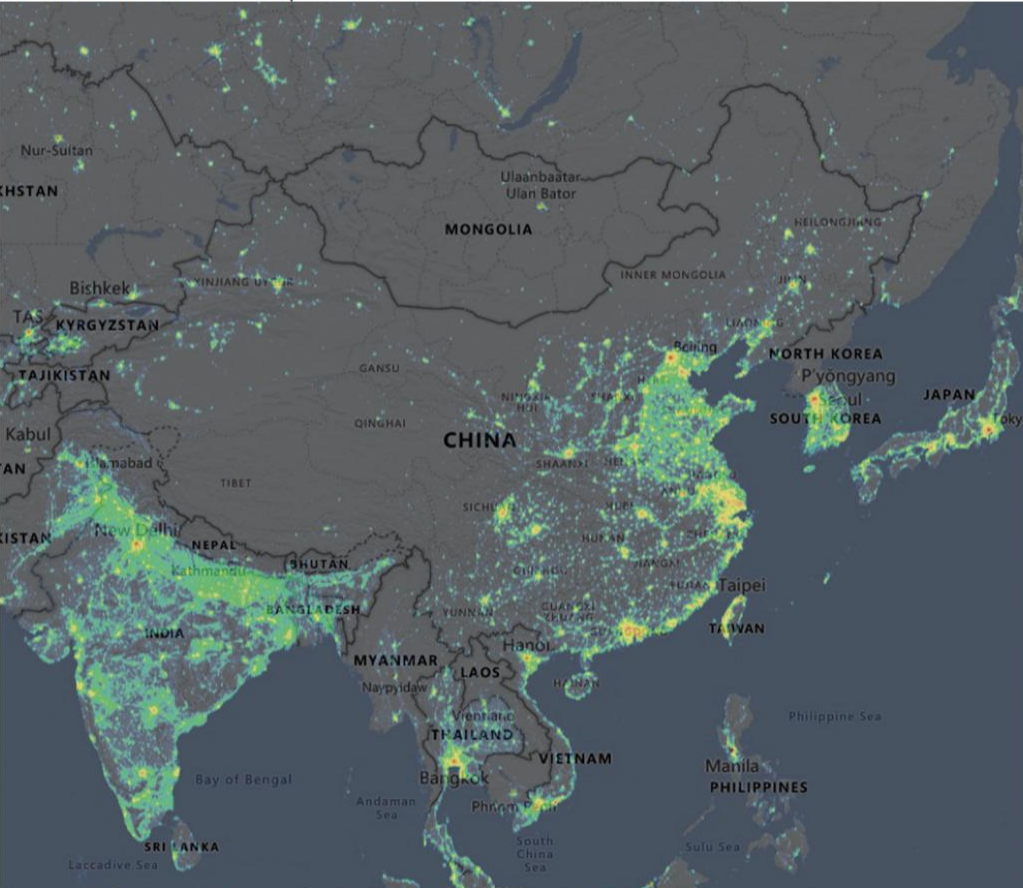
In Howard's time, the cost of transport and labour hindered farmers from growing and producing such products as vegetables and fruits due to the inconvenience of logistics, so farmers tended to produce closer to the city to reduce the high freight costs and commissions. These problems are no longer present today,

but the reason why farmers are still willing to move closer to the cities and increase their rents to do so is because, as Howard analyses, "urban waste can be quickly returned to the land without high rail freight or other expenses, thus increasing its fertility". Of course, the rubbish of today no longer has the same function of feeding the land as it did in Howard's day, with more and more waste being sorted and not recycled, but this does not prevent the city from providing additional productivity and productive information to the countryside.

Howard was born in 1850 and died in 1928. Howard's judgement of the idyllic city of tomorrow bears some resemblance to the urbanisation of China today, both planned, both planned with a view to the latest modern requirements, both using new materials and making new equipment in a more economical and fully satisfying way, both without having to cobble together and adapt old equipment. China's increasing urbanisation is a subservience to the city, cutting out the countryside as easily as it was intended.

Light Pollution Map 2021

It can show the regional imbalance and distribution characteristics of China's urban development.



Source:<https://www.lightpollutionmap.info/>

The withdrawal of inefficient resources from urban centres.

Under the planned economy, China's urban development was based on a system of free allocation of land resources, and land was not used in accordance with economic principles, resulting in inefficient use of land resources. Commercial and residential areas were also concentrated in the centre of the city. Since the 1980s, land has been used on a compensatory basis, and the efficiency of land use has increased due to the profit motive. Since the supply of land was inelastic, the low prices in urban centres began to rise. Under the principle of maximising the efficiency of land use, inefficient factories and houses are generally withdrawn from the city centre and located on the periphery of the city, resulting in a clear structural and functional differentiation between the city centre and the periphery. This shows that the planning role of the government has played an important role in China's urban development process. The inefficient distribution of resources in urban centres constrains urban development, and these resources have no desire to move voluntarily from the centre to the urban periphery. While the urbanisation process in developed countries also follows the principle of efficiency, resources are more active than passive in moving from the urban centres to the periphery, whereas in China they are more passive than active.

Industrial parks have played a very important role in the urbanisation of China's suburbs. This is very similar to the development process of suburban new towns and edge cities in developed countries. In the process of urban development, land prices in urban centres are very high and the land resources available are very limited, so industrial parks are generally chosen in the suburbs of cities. The suburban areas not only have easy access to land resources, but also have easy links to the central city. Industrial parks are built on the basis of the financial, intellectual and technological resources gathered in the city. By locating industrial parks in the suburbs, the congested resources of the central city can be attracted to the suburbs, thus contributing to the urbanisation of the suburbs. The role of industrial parks in the urbanisation process is multifaceted. Firstly, it is the urbanisation of the parks themselves. The transformation of agricultural land into urban land in the industrial parks has led to the concentration of various factors of production in the parks.

As a result, various factors of production have begun to gather here, and capital, technology, talents and services have been integrated together to promote the process of urbanisation. Secondly, the industrial parks have promoted the urbanisation of the surrounding countryside, and the lifestyles of the peasants have changed, with some of them gradually becoming industrial workers in the industrial parks. Thirdly, industrial parks have reduced the cost of urbanisation. In the industrial parks, various public infrastructures such as electricity, water supply, roads and communications can be shared, thus reducing the cost of urbanisation. The development of industrial parks bridges the urban and rural areas and promotes the development of rural urbanisation. Industrial parks under government planning play an important role in the urbanisation of China's suburbs.

Reform of the household registration system

China's planned economy was characterised by a dualistic household registration system that divided the urban and rural areas, coupled with a strict rationing system for various materials.

As a result, the economy was divided between urban and rural areas, and the migration of people from rural to urban areas was strictly limited. After the reform and opening up, as the household registration system was relaxed, the rural population began to move to the cities, and at the same time a wave of migrant workers began to emerge. The loosening of the household registration system was a Pareto improvement in socio-economic development, as the rural population entered the cities, filling up the various sectors and supporting urban development. The loosening of population movement control policies has given farmers more choices in their choice of employment and, given the price differential between urban and rural areas in terms of factors of production, the employment of farmers in the cities has contributed to urbanisation while earning more income. The increase in the number of peasants working in the cities has led to the expansion of the cities, with peasant workers becoming urbanites with rural household registration. Experts believe that the improvement of the peasant household registration system has contributed to the urbanisation process, has enabled the interaction of resources between urban and rural areas, and has prepared the system for the equalisation of factor prices. The urban-rural household registration system played a role when economic development was at a low level, but it also constrained the pace of urbanisation. The loosening of the household registration system has to a large extent facilitated urban development, allowing urban and rural development to become increasingly integrated and gradually building a new type of urban-rural relationship.

The negative impact of China's rapid urbanisation

The relationship between urban and rural areas after the founding of New China was basically one of urban deprivation of rural areas under the urban-rural dualist system. The strict household registration system confined the vast number of peasants to the countryside, and the long-standing absence of the welfare function of residential bases and village planning and management in rural China resulted in a huge rural population base corresponding to the huge scale of village land. Since the implementation of the household contract responsibility system, rural productivity has been liberated, and the control function of the household registration system has begun to weaken, making it possible for rural labour to move between urban and rural areas. With the rapid development of industrialisation and urbanisation, the shift of the rural population away from agriculture has led to a gradual decrease in the resident population in rural areas. The problem of the hollowing out of settlements has begun to receive attention. The problem of hollowing out of rural settlements has become a major concern. On the contrary, the per capita residential land in rural areas has been increasing, and the phenomenon of "amphibious" land occupation and hollow villages is serious.

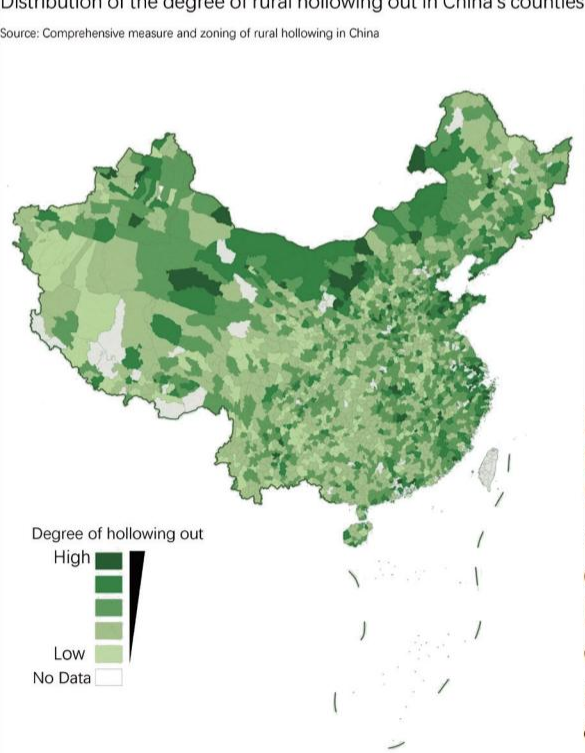
As the dualistic structure of the urban-rural system in China has not yet been fundamentally broken through, the conflict of interests between urban and rural areas and the pressure of employment of migrant workers have not yet been fundamentally alleviated, and the reform of the rural land system and planning and management have not yet been fully reformed. Therefore, the problem of rural hollowing out and its hollow villages will not only intensify, but also persist for a long time. Rural hollowing is essentially an undesirable process in the evolution of the rural territorial system in the process of urban-rural transformation and development, and is a manifestation of the complex socio-economic process in the physical form of villages. Due to the large number and wide distribution of villages in China, which are mainly concentrated in traditional agricultural areas such as the North China Plain, the Huai River and the middle and lower reaches of the Yangtze River Plain, the expansion of villages and the waste of hollow land resources in China's special institutional context are alarming, seriously threatening the protection of China's arable land and food security, and becoming the primary problem facing new rural construction and integrated urban and rural development in the new era. The State has been adhering to the red line of 1.8 billion mu of arable land, solidly promoting the construction of new rural areas, implementing the "balance" of arable land, and promoting the spatial reconstruction of the countryside and integrated urban-rural development. The Chinese government has proposed an urgent requirement for the further development of hollowed-out villages.

Changes in the number of natural villages in China from 1990-2017



Source: China Urban and Rural Construction Statistical Yearbook 2017

Distribution of the degree of rural hollowing out in China's counties



Hollow villages are the result of the development of rural hollowing to a certain extent. When the evolution of rural hollowing at a certain regional scale causes the decline of rural systems and their sustainability, hollow villages are created. The negative effects of rural hollowing out and the hollow villages are extremely harmful, and the formulation of countermeasures to regulate rural hollowing out and the promotion of comprehensive rectification of hollow villages are related to the overall situation of healthy urbanisation and integrated urban-rural development.

The blurred definition of suburbs

However, any attempt to define suburbs cannot be separated from suburbanization. Urbanization today, in its broad contemporary view, can be classified mainly as suburbanization in various differentiation due to its faster spatial development. It also consequently represents the latest phase of metropolitan expansion, where "urban regions have been stretched and reshaped to accommodate increasingly complex patterns of interdependence". While a"suburban debate" is still fed by different perspectives and terminologies, suburbs are now still best defined as a category to describe the built environment of housing settlement types (from high - rise condominiums to family homes), commercial and industrial spaces along with various infrastructures (such as transit networks or pipelines) (McGee, 2013). In order to deal with such global heterogeneity, attention on suburbanization has been recently addressed by way of the themes of governance, land, and infrastructure (Hamel, & Keil, 2012; Hamel & Keil, 2015; Harris & Lehrer, 2018; Keil, 2013;). The international research "Global Suburbanisms: Governance, Land and Infrastructure in the 21st Century" has produced a large body of empirical, thematic, and conceptual insights and acknowledges that suburbs are today outcomes of multi-scale, multi - topological process and various modalities of governance that involve worldwide interactions and aspirations in a global world (Hamel & Keil, 2015; Keil, 2017a). In this respect, the field of " suburban governance " (Keil 2012; 2017b) deals with the complexity of the worldwide suburbanization phenomenon by referring to the variety of governance modes (state - led, capital-led and authoritarian-led) and stimulating at the same time new conceptual perspectives of suburban spaces beyond a "methodological cityism".

In many ways, the term and phenomenon of suburbanization and its derivatives—suburbanism and suburbanism—are mostly directly related to the history of decentralized urbanization. Decentralized urbanization is a typical form of development idealized by liberal capitalist democracy and the centrality of property rights.

The emerging models of suburbanization in Africa, India and China (Wu & Shen, 2015) cannot be understood as Anglo-Saxon suburban "normativity" but should be It is understood as an endogenous, independent form of marginal urbanization, and is about to become the most dynamic and quantitatively the most dramatic form of urban settlement generation in the world. While these suburbs are called "emerging," they are not entirely new, but rather the continuation of various forms of urbanization over thousands of years. However, they are "emergent" because the suburbs are developing at an unprecedented rate as a new form of urbanization. Emergence here is not simply an increase in existing (typical or alternative) forms of suburbanization and governance, but an entirely new model of urbanization that rejects simple categorization and categorization, In particular, it does not belong to the existing Western interpretation mode. Thus, the models of suburban governance in Africa, China, and India illustrate the new forms of life that are emerging in a fully urbanized society on Earth. In this society, what we call 'urban' life exists in sprawling suburbs of low and high density, formal and informal, spontaneous, government-led or privately-led Spread over an area made up of cities(Keil,2018).

Through the above analysis, it can be found that the concept of suburb is highly uncertain, and there are great differences in the definition of suburb in academic circles. Some prescriptive factors in the concept of suburb have affected the investigation of the origin of suburbanization, and the concept of static has been blurred. dynamic process. In addition, the status of the suburbs is also strongly unstable. The annexation of the suburbs by the central cities in modern times has continuously transformed the suburbs into urban areas and reduced the area of the suburbs; on the contrary, the delimitation and expansion of the metropolitan area after the war has The scope of suburbanization has been expanded. Simple summary. From the discussions of different scholars, it is difficult for us to simply explain the ambiguity of this concept as the fact that due to the academic background or cultural background of different scholars, the connotation of a specific city is also different. Therefore, we can think that suburban And the ambiguity of the definition of suburbanization is due to the fact that it describes a complex space with a specific meaning as a comprehensive concept.

The opportunities presented by ambiguity.

The ambiguity of the definition of suburbia is a reflection of its dynamism, and as a side effect can demonstrate the many and varied possibilities of suburbia. Chinese suburbs are often associated with villages or market towns, and these areas are always full of character and flaws, which is where urban design can come into play. Ambiguity is caused by the variety of factors described above, but in China it can be considered more of an artificial neglect. This is reflected in the urban-rural dichotomy that tears villages and towns apart, with rapid development required to allow cities to quickly build up in size and industries to become competitive. Thus the national industrial planning of the last 30 to 40 years has been heavily biased towards the cities, leaving the villages as a neglected corner of the country's development, but today the decaying villages and towns have had many serious consequences. The relationship between the city and the countryside is a part of the urban sprawl that cannot be ignored. Today, the city is still growing, but the countryside is gradually moving from the periphery to the centre, and the so-called suburbs are arguably at the forefront of development in China.

Since the economic reforms, China's suburbs have ceased to be secondary and have instead become the forefront of China's urbanisation. The suburbs are a patchwork of spatial fragments and pockets that are very different in nature, scattered and interconnected. As studies in other countries and regions have found, the development of suburbs condenses the characteristics of the current development system, namely the multiple driving forces, and the complex governance patterns and mechanisms. From formally developed new towns to informal, semi-urbanised villages on the urban fringe populated by outsiders, each type of suburban fragmentation has a different character. Each suburban fragment represents a combination of different modes of governance. Each of these different suburban fragments is a product of the same political and economic logic of China's urban development. The central dynamic is that of territorial development: suburbs open up new spaces for capital accumulation, and in a sense 'suburbanisation is a solution [to the problem of capital accumulation]'. The suburbs have absorbed large inflows of capital through the development of middle-class real estate, key infrastructure projects, the expansion of transport networks, export processing zones, technology cities, university towns, new towns and eco-cities. Territorial expansion has become an essential element in driving growth, and the corporatisation of local government in the wake of economic decentralisation and globalisation has ensured the conditions for suburban development.

Summary of interesting points on the suburbs

1. The concept of suburbs is an important part of urban development theory in the 20th century. Research on suburbanization recognizes the importance of governance in areas of uneven development. This resulted in a number of concepts that help to better identify suburbs based on specific characteristics. But the concept of "suburban" does not yet have a comprehensive and consensus theory. The current state of the field of suburban studies provides a vibrant international debate. The definition of suburban is still shaped by today ' s process of suburbanization. Although many scholars remain skeptical about the broad definition of suburban, research and theory have demonstrated The important value of suburbs as a research perspective. It can explain issues beyond spatial expansion. Therefore, suburbanization has become a key process of urbanization in the first 20 years of this century. The definition of suburbs and its ambiguity with urban areas is itself an active manifestation of a conceptual issue. Suburbs may not represent a universal one-size-fits-all concept to look at the urban fringe, although it is used globally. Rather, innovative analytical perspectives relying on these concepts may play a key role in driving new investigations into sociospatial and socioeconomic change, as well as addressing planning and management issues in urban fringe territories.

2. The meaning of suburbs as a concept is itself a central issue of urban development in the 21st century. The research on the global suburbs, based on the empirical experience of the global suburbanization, redefines the phenomenon of the suburbanization, reconstructs the relevant interpretation theory, and provides a scientific basis for the planning, policy and practice.Suburbanization is broadly defined as the growing of the population and economic activity accompanying the urban spatial expansion process in the urban edge area.Globally, the form and development trajectory of suburbanization are diverse and complex. (Hamel, & Keil, 2015).

3.The concepts and categories of suburbs and suburbanization differ widely in academic circles, and are also related to the characteristics of suburbs and the nature of suburbanization. Since suburbanization is the product of industrialization, urbanization and urban traffic development, and is also a form of urbanization and a way of evolution of urban ecological organization, early suburbanization appeared as early as the early 19th century. Since then, suburbanization and urbanization have shown a staggered development pattern. People are always unable to describe a complex phenomenon with a simple concept. Therefore, from the perspective of history, suburb is a concept that cannot be defined temporarily, and ambiguity is a part of its essence.



Zhejiang is located on the eastern coast of China, in the transition zone between the Eur-Asian continent and the northwestern Pacific Ocean, which is a typical subtropical monsoon climate zone. The total area of Zhejiang main-land is 101,800 square kilometers. The terrain in the territory is relatively undulating. The south-west and northwest areas of Zhejiang are full of mountains and mountains, the central and southeastern areas are dominated by hills and basins, and the northeast area is relatively low and dominated by plains; In the continental area, mountains and hills account for 70.4%, plains account for 23.2%, and rivers and lakes account for 6.4%.



Shaoxing, located in the north-central part of Zhejiang Province and the south bank of Hang-zhou Bay, is a cultural and ecological tourism city with the characteristics of Jiangnan water town. It is connected to Ningbo City in the east, Taizhou City and Jinhua City in the south, Hang-zhou City in the west, and Jiaxing City across the Qiantang River in the north.

By 2021, the city will have 3 districts, 1 county, and 2 county-level cities under its jurisdiction, with a total area of 8274.79 square kilometers, a permanent population of 5.337 million, an urban population of 3.816 million, and an urbanization rate of 71.5%.



Keqiao District is a municipal district of Shaoxing City, and an economically developed county-level administrative region in mainland China. It has an area of 1196 square kilometers. The industry is mainly textile, printing, and dyeing. Commerce is dominated by textile wholesaling, and it is the largest cloth market distribution center in Asia. Located in the 0.5-hour economic circle of Hangzhou and the 1.5-hour traffic circle of Shanghai, it is the bridgehead for Shaoxing to connect with the Shanghai-Hangzhou metropolitan circle, and a key node area for the integrated development of Hangzhou and Ningbo, with an area of 1,040 square kilometers.

Analysis of macro-regional indicators using gis

On the one hand, the city center in Shaoxing moved from south to north; on the other hand, the formation of towns in Shaoxing also reflected the characteristics of moving from south to north. It is this characteristic that determines that the main rivers in Shaoxing city are in the north-south direction. Although the east-west rivers in the city are connected with the north-south rivers, most of them do not run through the east and west, and the east-west connection is inconvenient. However, due to the small amount of traffic in traditional agricultural society, the urban traffic problem is not big. On the basis of the river, the streets and the river are combined to create the unique spatial structure of Shaoxing city. Because the primary and secondary of the river in Shaoxing city are quite distinct, on this basis, the urban spatial structure formed can be called "fishbone" structure. The urban spatial structure of "fishbone shape" is mainly reflected by the shape of the water network in the city. This kind of urban structure has a great influence on Shaoxing City. Even after the liberation, the "fishbone-shaped" structure of Shaoxing City has continued, which fully reflects the inertia of urban space.

Economic analyze of Shaoxing
Shaoxing has a well-developed internal and external transportation network. The Shanghai-Hangzhou-Ningbo railway and expressway, National Highway 104 (divided into south and north lines), National Highway 329, Hangzhou-Ningbo Canal (which will be constructed as a 4-level waterway) and other land and water transportation trunk lines pass through the central part of the county. Hangzhou Xiaoshan Airport is more than 30 km (fast track will be built); local highways and river networks at all levels are all over the whole territory. The density of motor vehicle and boat traffic lines in the county is 0.9km/km2, of which the density of highways is 0.56km/km2, and the density of navigable canals (110) is 0.34km/km2. In order to facilitate going deep into the countryside and meet the transportation links between farmers and scattered enterprises, a variety of cheap mechanical power transportation tools such as trucks, small planes, motorcycles and small steam wheels and bicycles are widely used.

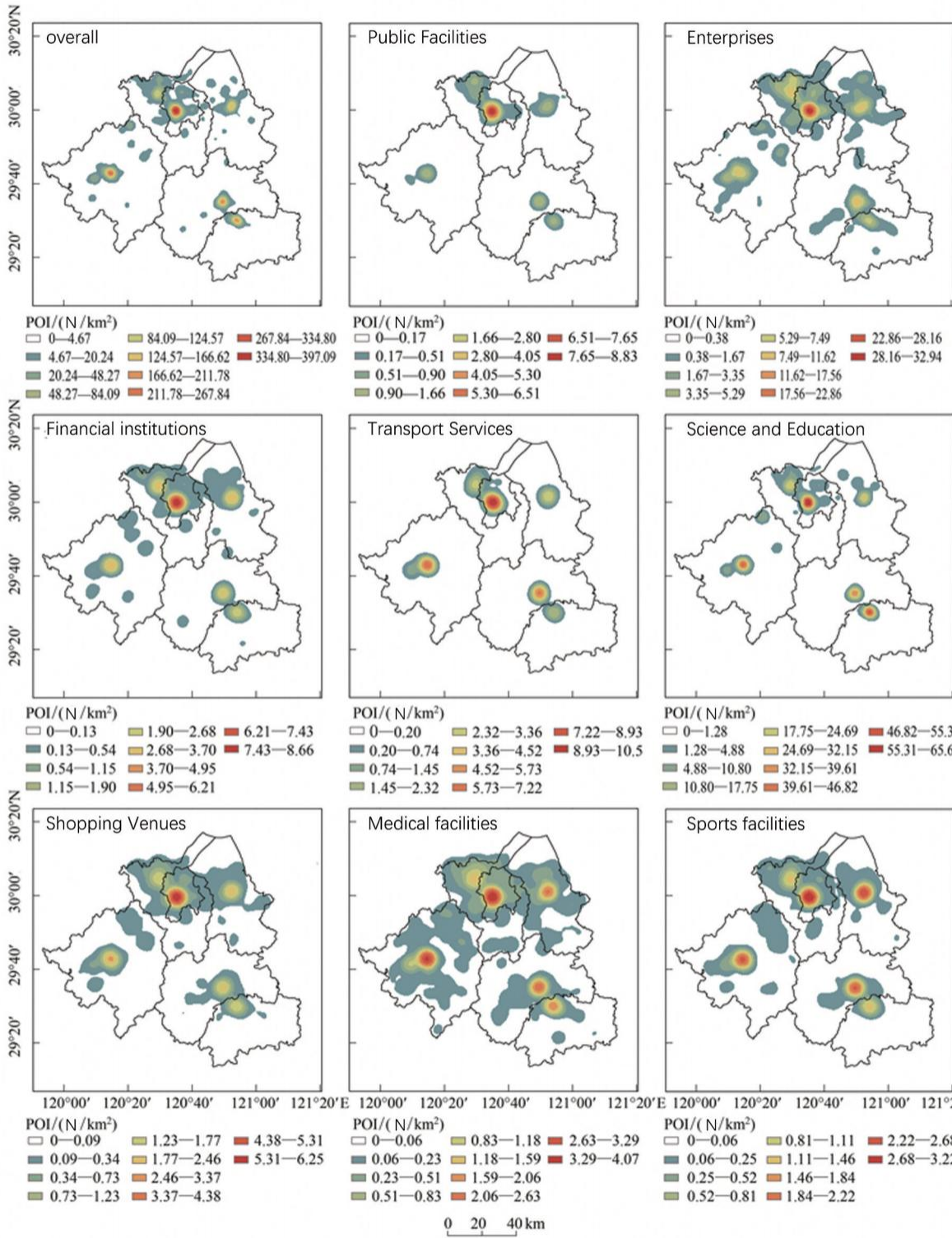
As the Shaoxing Experimental Sustainable Development Zone adopts the idea of building and improving the overall level of sustainable development within the city by taking advantage of the regional characteristics of different districts and counties, the development objectives and priorities of different districts and counties are different, For example, Yuecheng District focuses on the construction of a pilot base for the modern service industry; Keqiao District focuses on the construction of a pilot base for the modern light textile industry; Shangyu District focuses on the construction of a pilot base for the green chemical industry; Zhuji City This model of sustainable development experimental zone construction helps to drive the overall regional development level, but the quality of human and ecological environment may vary between different districts and counties, and even affect public satisfaction, which is also the focus of attention and research in this paper.

Abundant labor force and agricultural products are favorable conditions for the development of handicraft production in Shaoxing. Since the liberation war, township industry and commerce have developed rapidly. By 1992, a situation of "multi-industry development" had been formed, with textiles being "strong in one industry", machinery, metallurgy and construction, light industry, food, medicine and chemical industry. Few of them go out to work, and the income from labor services of farmers in the county is only equal to 0.86% of the total income of the rural economy. The output value of Shaoxing's textile industry accounts for 72% of the county's total industrial output value, and has absorbed 250,000 surplus rural laborers, accounting for about 79% of the total rural labor force. It has basically formed a complete industrial chain consisting of chemical fiber, weaving, printing and dyeing, clothing and other industries and auxiliary industries such as textile machinery, dye auxiliaries, and textile technical services. These closely related and frequently interacting industries constitute a huge textile industry cluster, which has an important position in the country. "China Textile City" in Keqiao District is the largest textile and fabric distribution center in the country and even in Asia.

In the past half a century, the agriculture of Shaoxing County has developed from almost pure planting industry to a prosperous situation in many sectors such as agriculture, fishery, livestock and forestry. At present, in its agricultural composition, the output value of vegetables and melons accounts for 32.1%, more than that of cereals (28.5%), tea (16.0%) and miscellaneous items (11.8%), and the output value of farmers' family concurrently operating industry accounts for 4.7%.

Source: <http://www.ecologica.cn/stxb/ch/html/2018/16/stxb201706021015.htm#zz>

Analysis of urban sustainable development level based on POI: a case study in Shaoxing



Source: <http://www.ecologica.cn/stxb/ch/html/2018/16/stxb201706021015.htm#zz>

Analysis of urban sustainable development level based on POI: a case study in Shaoxing

Suburbanisation trends in the Shaoxing region

The stage of development of Shaoxing's urbanisation - a cross-sectional comparative study
The level and extent of suburbanisation in Shaoxing is far below that of developed regional cities in China, such as Shanghai and Hangzhou, which are also located in the core cities of the Yangtze River Delta, but are far ahead of cities in central and western China. An important reason for the development of suburbanisation in Shaoxing is to expand the almost depleted urban space and broaden the channels for economic development. The completion of roads such as Shan Yin Road, Yun Dong Road and Nan Fu Road in downtown Shaoxing has built multi-shaped, multi-level and multi-functional urban roads and sections, making it possible to develop suburbanisation along the main transport routes. Now, with the construction of many new residential communities, residential suburbanisation has taken the first successful step towards suburbanisation. As a result, the city still has a great deal to offer, even if the foundation for urban construction is poor.

On a macro level, Shaoxing is still in a stage of urbanisation development where agglomeration is the main focus. The phenomenon of suburbanisation has emerged in Shaoxing, but the suburbanisation of these cities differs from that of developed Western countries in that it is reflected in the simultaneous agglomeration and diffusion effects of industry and population.

There is a two-way phenomenon in Shaoxing's industrial development. On the one hand, instead of 'hollowing out', the central region has become more prosperous. As Shaoxing's urban development is in the stage of agglomeration and development, the central area still maintains a strong attraction and remains the core of the city's economic activities. After the adjustment of the industrial structure, industries in the original central area of the city, especially labour-intensive and polluting industries, have been transferred to the suburbs, and centripetal tertiary industries such as commerce and finance have been concentrated in the central area, resulting in the strengthening of the central area. Urban modernisation functions. At the same time, a large amount of money was invested in the renovation of old cities and the implementation of a system of paid land use, and various constructions in the urban areas, especially in the city centre, gained vitality; on the other hand, due to the transfer of industries and the construction of development zones, the suburbs gained With the rapid development, some new industrial zones emerged, making the economic efficiency of Shaoxing's industrial enterprises continuously improved.

Population suburbanisation is one of the most important manifestations of suburbanisation. The population of the central areas migrated to the suburbs, and the population of the suburbs increased, but there was no relative or absolute decrease in the population of the city centre. With the relaxation of China's policy on population migration and the further acceleration of the urbanisation process, wealthy private entrepreneurs and individual businessmen moved from the towns and villages to the big cities to engage in industrial and commercial activities in the urban areas; at the same time, some middle-class and affluent people even moved to the central urban areas in order to facilitate employment and schooling for their children. For other reasons, some middle-class and affluent people even moved to the central urban areas, thus creating a unique phenomenon of two-way population movement. At this time, Shaoxing was a place where suburban and urban populations developed together.

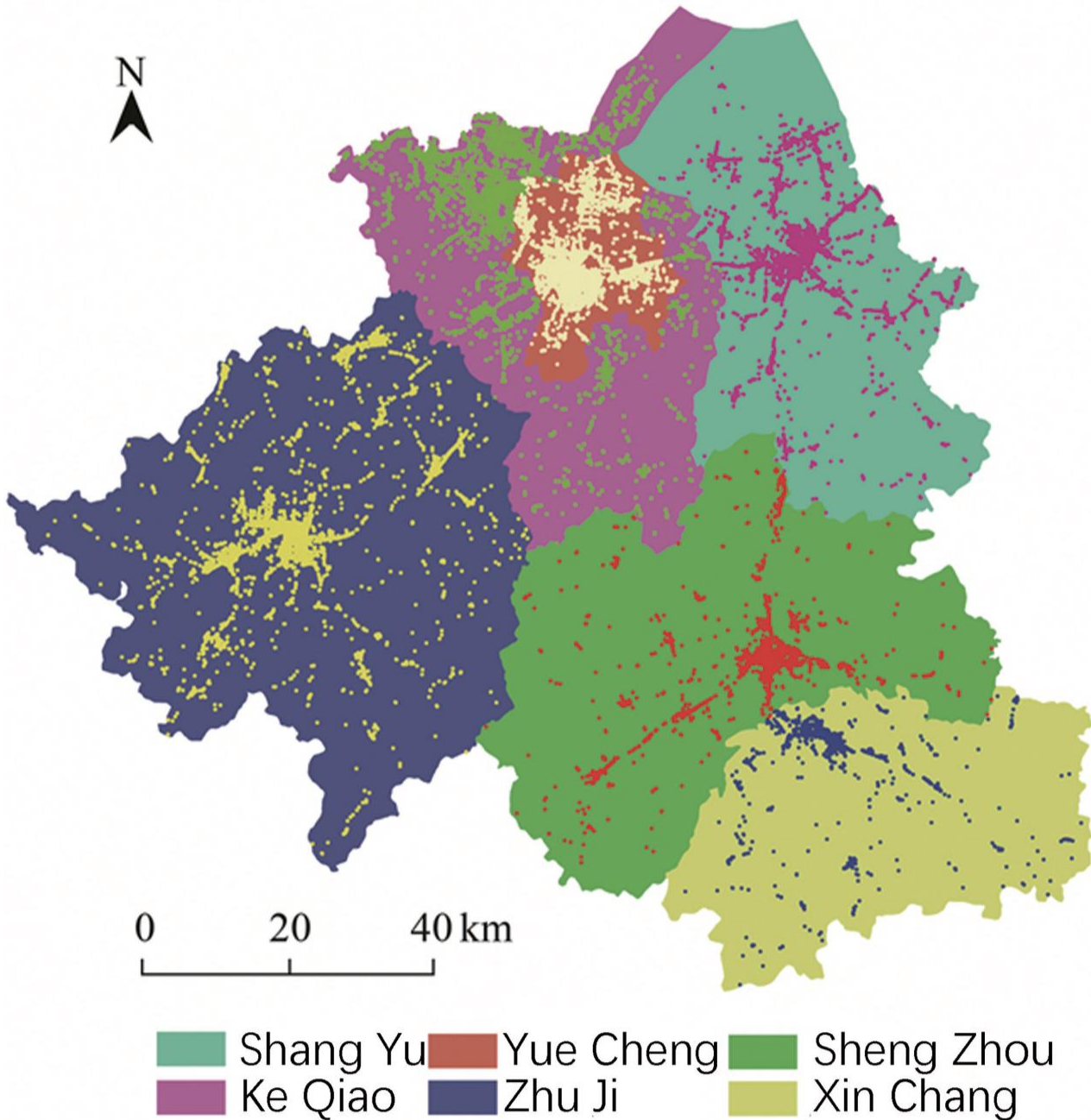
Shaoxing's rapid socio-economic development attracted a large number of migrant workers, further expanded the market, increased the purchasing power of residents, accelerated consumption upgrades and further enhanced the role of consumption in promoting economic growth. Both urban and rural markets achieved double-digit growth. The State's supportive policies and measures effectively contributed to the development of agricultural production and the increase in farmers' income. The rural consumer goods market continued its rapid development.

The spatial distribution of the overall and various types of POI density is highly consistent with the distribution of the city's population density, and the density of POIs in areas with high population density is correspondingly higher, in line with the basic concept of building public infrastructure to meet the needs of citizens. The spatial distribution of the transport network is also found to influence the layout of some industries, and the higher the road level, the greater the influence.

Based on the POI data, the statistical analysis of the POI layers was carried out with the help of ArcGIS software spatial statistical analysis extraction tool, and the POI data of each district (county and city) in Shaoxing city were obtained.

The extraction results show that there are 51,719 points of interest in the city, including 14,433 in Yuecheng District, 7,993 in Keqiao District, 7,190 in Shangyu District, 10,834 in Zhuji City, 6,225 in Shengzhou City and 5,044 in Xinchang County.

Distribution of POI in various districts (counties, cities) of Shaoxing City



Demographic analysis based on the data of the seventh census - of the city's resident population, 3,743,366 people live in urban areas, accounting for 71.02%; 1,527,611 people live in rural areas, accounting for 28.98%. Among them, 2,696,152 were male and 2,574,825 were female. Aging trend - the population over the age of 60 is 1.190931 million, accounting for more than 22%. The aging of the population is accelerating, and the degree of aging has reached or will exceed the level of developed countries. It took about 40-100 years for the aging population coefficient in developed countries to rise from 8% to 10%, and it took about 40-100 years for an increase of 2 percentage points. It took Germany 45 years, Sweden 85 years, and Shaoxing from 9.57% in 1982 to 1990. 11.25%, it only took about 10 years, and the growth rate of the elderly population is significantly faster than that of developed countries. The proportion of the elderly population is higher than the average level of Zhejiang Province, and the degree of population aging in the next 30 years is expected to rank first in the province. In 1982, the proportion of the population aged 60 and above in Zhejiang Province was 9.23%, and that in Shaoxing City was 9.57%. Shaoxing City was 0.34 percentage points higher than the average level of Zhejiang Province. Ten years later, in 1990, the proportion of the population aged 60 and above was 10.84% in Zhejiang Province, and 11.25% in Shaoxing City, which was 0.41 percentage points higher than the average level in Zhejiang Province. In 2000, Shaoxing City was 0.75 percentage points higher than the average level of Zhejiang Province. By 2010, Shaoxing City was 1.46 percentage points higher than the average level of Zhejiang Province. After that, the gap between the two continued to widen. It is expected that the gap between the two will reach the maximum by 2050, and the aging degree of Shaoxing's population will jump to the first place in the province.

Geographical environment of Shaoxing

Shaoxing is located in the south wing of the Yangtze River Delta, the south bank of Hangzhou Bay, the middle of the Ningshao Plain, and the middle section of the Hangzhou-Ningbo zone, the main axis of economic development in Zhejiang Province. The distance from Hangzhou and Ningbo is 60km and 100km respectively, and the distance from Shanghai is 240km. In 1983, the original Shaoxing area was "removed from the land to the city", and Yuecheng District was separated from the original Shaoxing County, forming two parallel administrative districts. In 2000, part of the adjustment of administrative divisions was carried out. The Yuecheng District is dominated by the central urban area of Shaoxing, including its suburban rural areas; the remaining Shaoxing County is the rural area of the former Shaoxing County, which surrounds the Yuecheng District like a "bread ring". In 2003, Shaoxing County had an area of 1152k m2 and a population of 701,600; Yuecheng District had an area of 388k m2 and a population of 638,600.

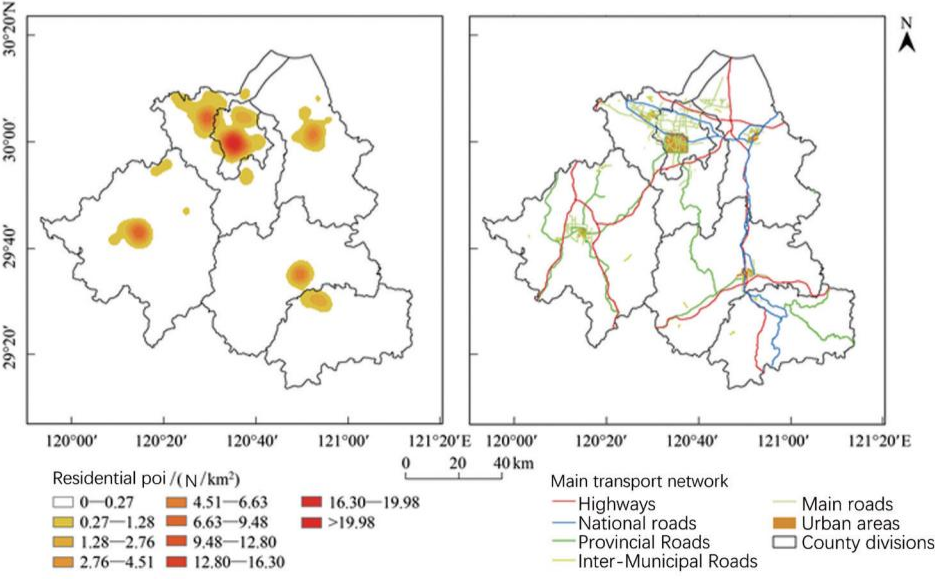
As the first batch of famous historical and cultural cities in China, Shaoxing, in the overall planning (2001-2020) completed in July 2001, determined the new urban structure of "three groups, green space". In terms of industrial structure arrangement, the old city is dominated by tertiary industries and tourism; Keqiao develops a modern new city that combines industry and trade. The recent start of the development of the

northern riverside group will further evolve the urban spatial structure of Shaoxing into "four groups, green space".

As shown by the POI classification statistics, Yuecheng District has the highest number of POIs in six categories: public facilities, companies and enterprises, financial institutions, transportation service related, scientific, educational and cultural venues, and shopping-related venues, which is closely related to Yuecheng District's position as the traditional political and economic centre of Shaoxing, indicating its position as the leader of Shaoxing's socio-economic development. Xinchang County ranks the lowest in the total number of POI categories other than shopping-related establishments; Shengzhou City ranks the lowest in the number of POI categories for shopping-related establishments; Zhuji City ranks first in the number of POI categories for healthcare establishments and sports and leisure services establishments over Yuecheng City, indicating its unique advantage in these two industry sectors.

The development of cities and towns in Shaoxing is closely related to water. The construction of Jianhu Lake and the formation of the water network system in the Shanhui Plain in the north brought prosperity to the towns in Shaoxing. The river is more significant to Shaoxing city, it constitutes the lifeblood of Shaoxing city. On the one hand, it provides convenient transportation conditions for the development of the city's commerce and handicrafts; on the other hand, it also improves the urban microclimate, prevents disasters and enriches the urban landscape. Shaoxing has also developed with the evolution of the water network, which is especially reflected in the changes of the city center. In the early days of Shaoxing City, due to the low-lying terrain in the north, it was not suitable for construction, while the natural conditions in the south of the city were superior, and the population was concentrated. Due to natural geographical reasons, the terrain of Shaoxing area is high in the south and low in the north. Most of the rivers in this area flow from south to north, and finally flow into Hangzhou Bay. Shaoxing developed on the basis of the solitary hill settlements on the alluvial plain at the northern foot of the Kuaiji Mountain, and there are a large number of plain settlements in the north of Shaoxing City. Most of the current towns in this area develop on the basis of these plain settlements. Since most of the towns in this area are distributed in the Huishan Plain in the north of Shaoxing City, Shaoxing City needs to strengthen the connection with the northern area, which also requires strengthening the construction of north-south river channels in the city.

Density distributions of house POI and traffic map of Shaoxing City



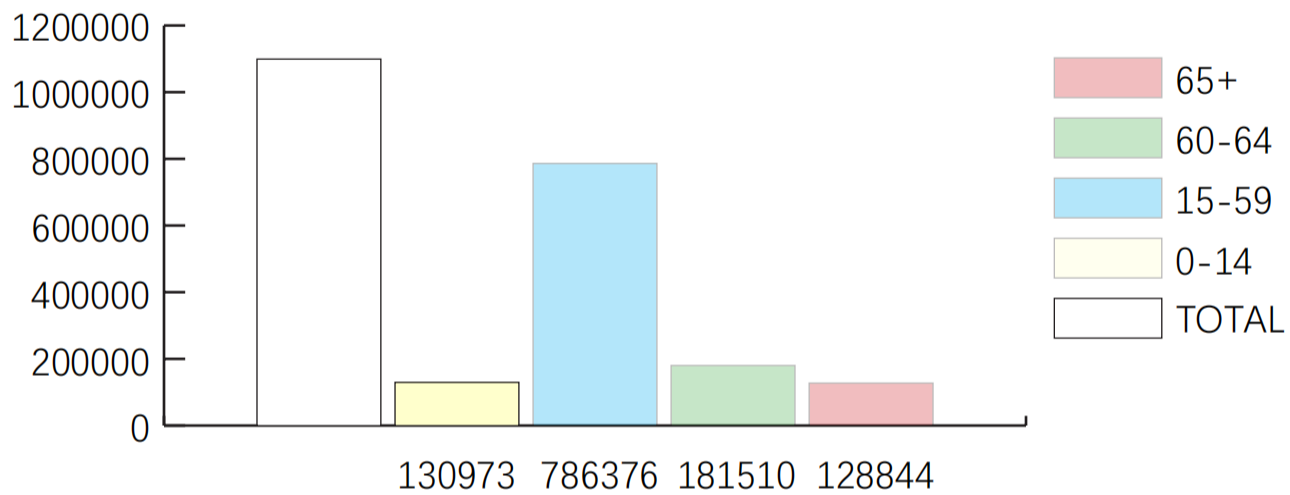
The enthusiasm and vitality of farmers and their community organizations to develop the economy is the driving force behind their transfer to non-agricultural industries. China's deepening economic system reform has gradually released the productive forces, and the factors of production have been more and more rationally allocated, which has led to rapid economic growth and urban prosperity. In order to solve the problem of the way out of the rural surplus labor force, and at the same time to prevent a large number of them from flocking to the cities, the government has successively helped the farmers to develop the "five small industries", formulated various policies and measures, and actively supported the collective economic organizations to set up township and village enterprises, making them become the mainly economic entities.

In order to avoid relying on state investment for rural development and increasing the burden of urban construction, the government adopted a scattered rural industrialization policy in the 1980s, "leaving the soil but not leaving the hometown, and entering the factory without entering the city", to absorb rural labor force on the spot; and advocated the construction of small towns in the countryside, Make them the economic and cultural centers of the rural grassroots. However, due to the lag in the reform of management systems such as household registration, land, and administration that divide urban and rural areas, township enterprises and village construction can only be carried out spontaneously and at a low level on the collective land of local farmers. Because the villages and towns set up township enterprises first and small towns later, the construction planning and regional improvement planning of various regions lag behind, resulting in the layout of township enterprises and the disorderly development of cities and towns. While promoting rural industrialization and urbanization, local governments at all levels also have multiple subjective interventions in the economy and its layout. Since 1997, the state has implemented the reform of the property rights system. Shaoxing differentiated the assets of collective enterprises, carried out transfer, sale and shareholding reform, and turned most collective enterprises into private enterprises; at the same time, it also let go of the development of a number of private enterprises. The flexible mechanism, quick decision-making and convenient operation of private enterprises have formed a new driving force to promote industrialization and urbanization.

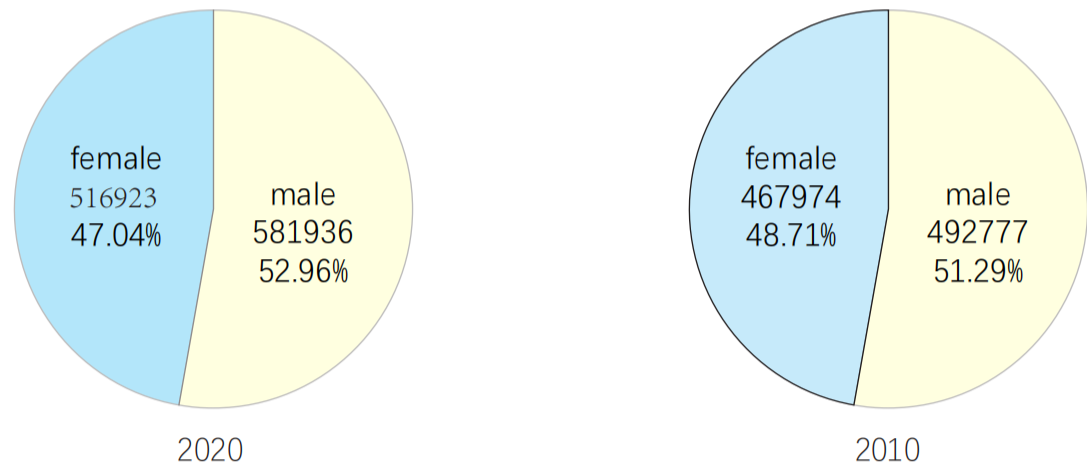
Stages of suburbanization in Keqiao district

The urbanization development process of Keqiao District is relatively fast. In 2017, the urbanization rate reached 71. 2%, which was 42. 2% higher than the 29% in 2000 when the government relocated and built the city. According to Northam’s three-stage urbanization theory, Keqiao District is in a mature stage. Industry and service industries are the leading industries for economic development and employment. The concentration of economic and social activities is increasing year by year, and the proportion of the population living in the city continues to increase. But at the same time, some problems in the mature stage of urbanization have emerged, such as extensive industries, shortage of resources, traffic congestion, environmental pollution, and intensified social conflicts, etc. The urbanization development model oriented by population migration and agglomeration is no longer suitable. At present, the actual

urban development of Keqiao District, the period when the urbanization rate continues to grow at an average annual rate of 2-3 percentage points as in previous years will no longer exist, and urban development urgently needs to shift to a new type of urbanization centered on improving the quality of urbanization development path forward.



Ke Qiao age construction



Ke Qiao gender construction

Regional characteristics of the Ningshao Plain

(1) Polder system

It is the basic agricultural development method in the southeastern waterfront lowland area of China, and forms an important rural landscape resource in China. The Ningshao Plain is one of the regions with the longest history of polder development in China, which has a profound impact on the traditional human settlements and social organization construction in the region. With the threat of floods and large-scale urbanization caused by climate change, the polder landscape of the Ningshao Plain greatly affected. The polder landscape of the Ning-Shao Plain is derived from the superposition of the natural process of water and artificial intervention. Rivers and ocean tides are the main natural landscape shaping forces in the Ning-Shao region. On the whole, the Ningshao area presents a mountain-plain-sea terraced terrain. During the transgression period, the coastline reached the foothills of Kuaiji Mountain and Siming Mountain in the south.

With the retreat of the sea water, the coastline of the Ningshao Plain continued to advance northward. Although the coastline in the eastern part of the 12th to the 15th century went back and forth from time to time, but in general, by the 15th century, the coastline receded up to about 15km. Many isolated islands in the sea are connected to form land. Therefore, there is a saying in the Sanbei area of "Qinhai, Hantu, Tangzao, and Songtian". After the 17th century, the mouth of the Qiantang River was fixed at the North Gate, and the Nansha Peninsula was able to expand rapidly through tidal transport and sedimentation. In the past thousand years, about 2,000 square meters of land have been added to the Ningshao area due to the expansion of the coastline.

Therefore, the extension of the coastline of the Ningshao Plain and the related lacustrine deposition are the natural basis for the formation of its polder landscape. Ningshao polder is an area with a high degree of urbanization, dense urban distribution and rapid economic development in my country. It can be seen from the historical satellite maps that rapid urbanization has a great impact on traditional settlements, urban expansion is very rapid, the relationship between the city and the nature map has changed, and the overall landscape of the plain area has changed a lot. Cities and towns face the important issue of how to create an urbanization characterized by harmonious environment, ecological livability and balanced development.

(2) Settlement system

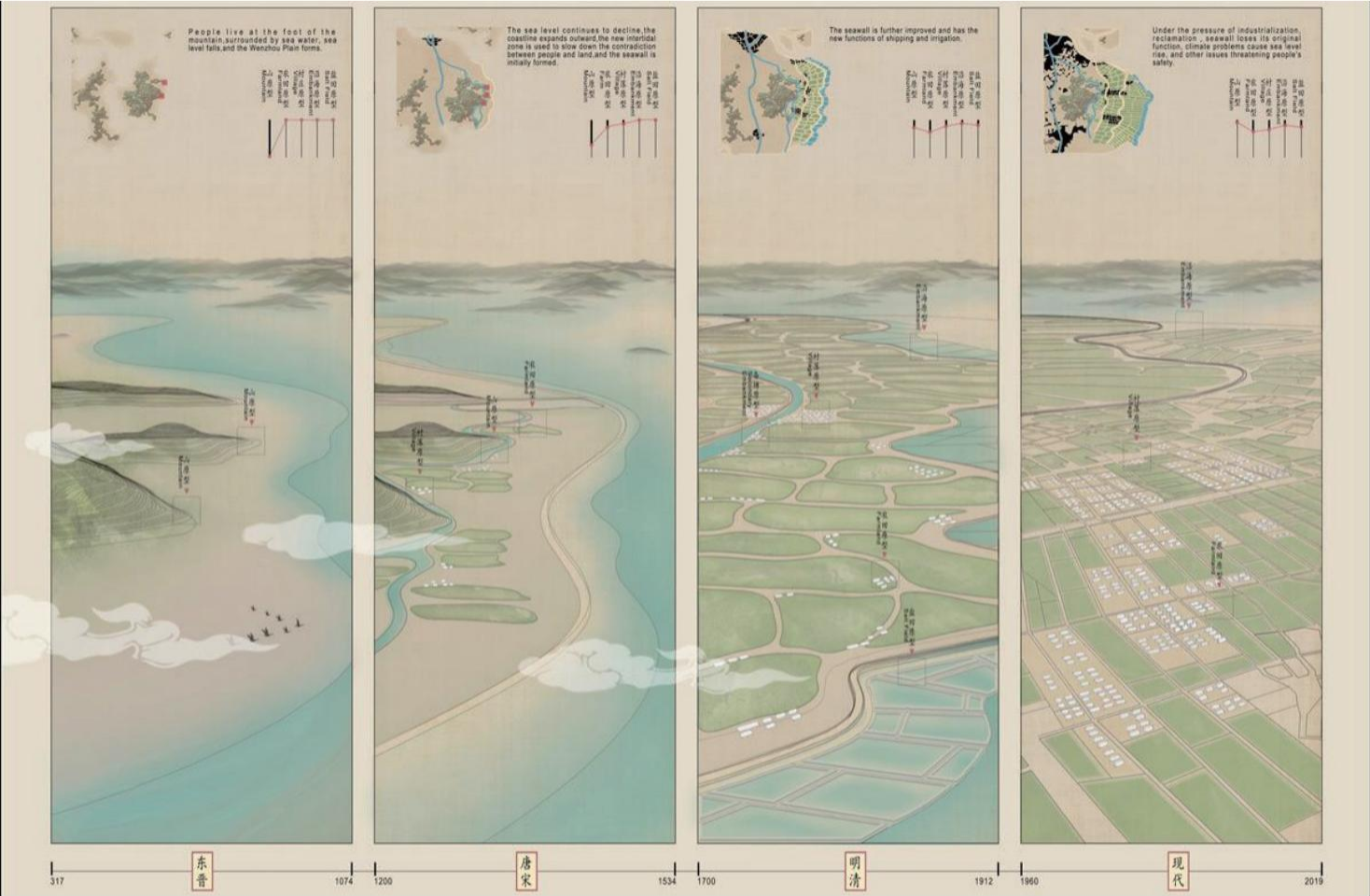
The settlement construction in the Ningshao Plain follows the logic of polder reclamation, which is a perfect combination of urban design, agriculture and water conservancy projects. According to its morphogenesis, it can be divided into foothills (solitary hills) settlements, embankment settlements, gate and dam settlements and Lugang settlements. Settlement first originated from the buttocks scattered in the alluvial plain. After the Han and Wei Dynasties, the pond and weir settlements developed by the Jianhu water conservancy gradually took the leading position. Some settlements are close to sluices and dams, developed by the management of water conservancy facilities and transportation, and their names often

include weirs, gates, and ponds. The settlements are linearly arranged and extended along the dykes of the water network. The ponds higher than the water surface often evolve into the main street of the settlement. The villages are arranged in a herringbone shape according to the polder shape, and form a dual waterway traffic structure. There are many settlements in Lugang in the Shanhui Plain, and the scale is relatively large. As the population increased, the settlement evolved from a terminal-style pond to a comprehensive river port. The production mode of the settlement has also changed from a single polder rice agriculture to a compound agriculture of rice and cotton reclamation, wheat-rice rotation, mulberry fish ponds, and tea planting. After the Ming and Qing Dynasties, sweet potatoes, corn, rapeseed, and jute also began to be planted in the polders.

(3) Shaoxing is a famous water town, and the change of water system and river network is an important part of the landscape of rural settlements in Shaoxing. The total area of Shaoxing river waters remains relatively stable, but the plain river network continues to decrease. In 2005, the Shaoxing Yearbook announced that the total length of plain rivers in Shaoxing County was 1358km, and the water area was 56.9km2. But by 2010, the total length of plain rivers in the county was reduced to 1266km, and the water area remained 45.6km2. In 5 years, the water area decreased by more than 10 km2. Moreover, with the acceleration of urbanization, the river network in the plains continues to decrease.

From the perspective of changes in the spatial distribution of Shaoxing village landscapes, most villages are divided into four types: agricultural type, production-life combination type, tourism and leisure type, and residential community type. Farmers in agricultural villages join joint-stock cooperatives to develop modern agricultural models. Some villages that combine production and life are affected by various factors such as land funds, or are small workshops and small factories that produce their own production. Tourism and leisure villages are the artificial development of the original natural conditions of the villages. In recent years, farmhouses have been actively developed with the goal of matching the natural landscape. Due to the overall demolition and reconstruction of residential community-type villages, the newly-built residential-type communities for the resettlement of villagers are no different from those built in cities and towns.

From the spatial distribution of Shaoxing villages, most of them are divided into four types: agricultural type, production and living combination type, tourism and leisure type, and residential community type. The agricultural type villages have farmers joining share cooperatives to develop modern agriculture model. Some of the production and living type villages are small workshops and factories that produce their own products due to various reasons such as land and capital. Tourism and leisure type villages are the original natural conditions of the village for artificial development again, in recent years around the farm caravans with natural landscape as the goal of active development. The residential community type villages are newly built residential communities for the resettlement of villagers due to the overall demolition and transformation, which are no different from the communities built in towns.



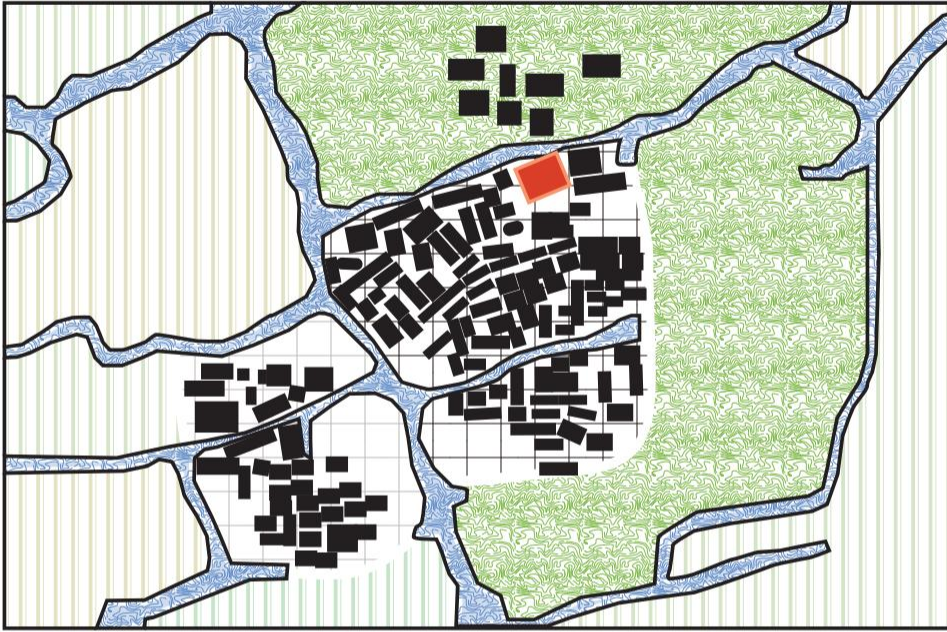
Type of village arrangement in the Shaoxing polder area.

The settlements and external polder landscapes of the Ninabo Plain in the 1960s.Stub-end type polder water in the settlements and open tpve riverwavs often become aardens and public spaces s in the settlements, usually based on the polder water system and land division.The red in image refers to the ancestral hall of the settlements.

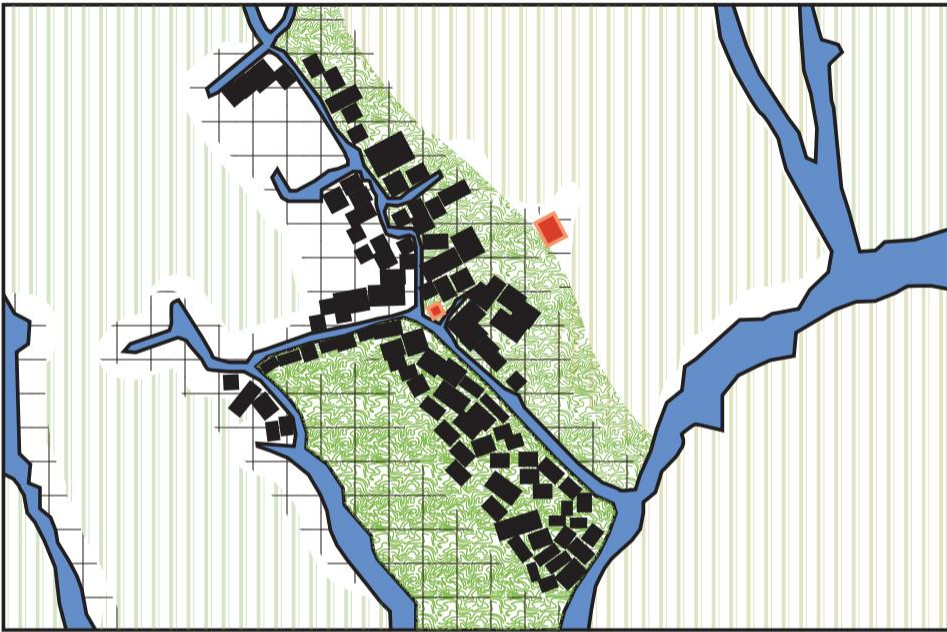
The settlement on the NinShao Plain follows the logic of polder reclamation. It is a perfect combination of urban design, agriculture and hydraulic engineering. It can be called a "polder settlement" and, depending on its morphological occurrence The polder settlements can be divided into foothill (isolated hill) settlements, dike and pond settlements The main types of polder settlements are: hill (isolated hill) settlements, dike and pond settlements, lock and dam settlements and port settlements.



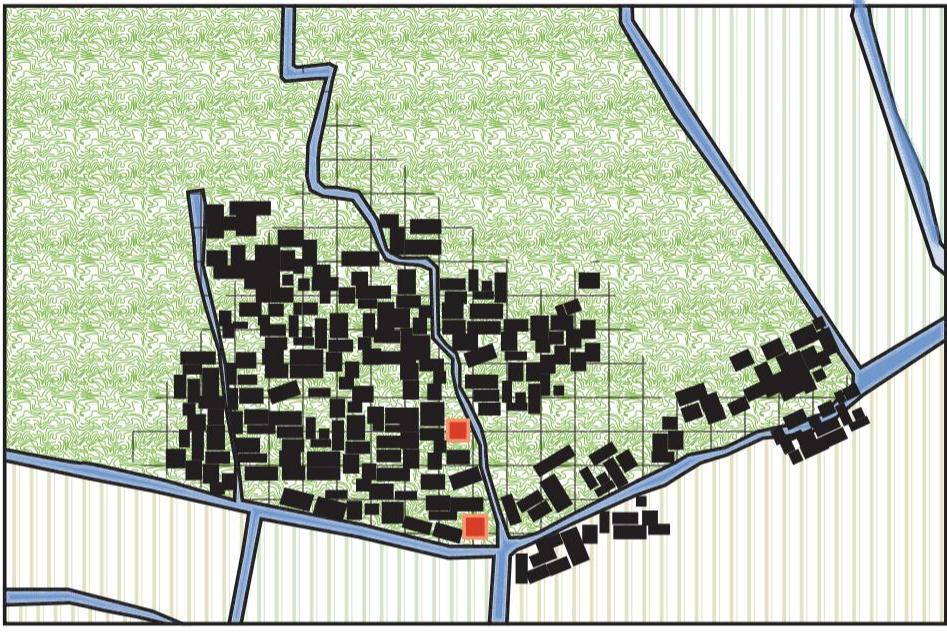
Guan Ying village



Tao Jiang village



Qian Xu village



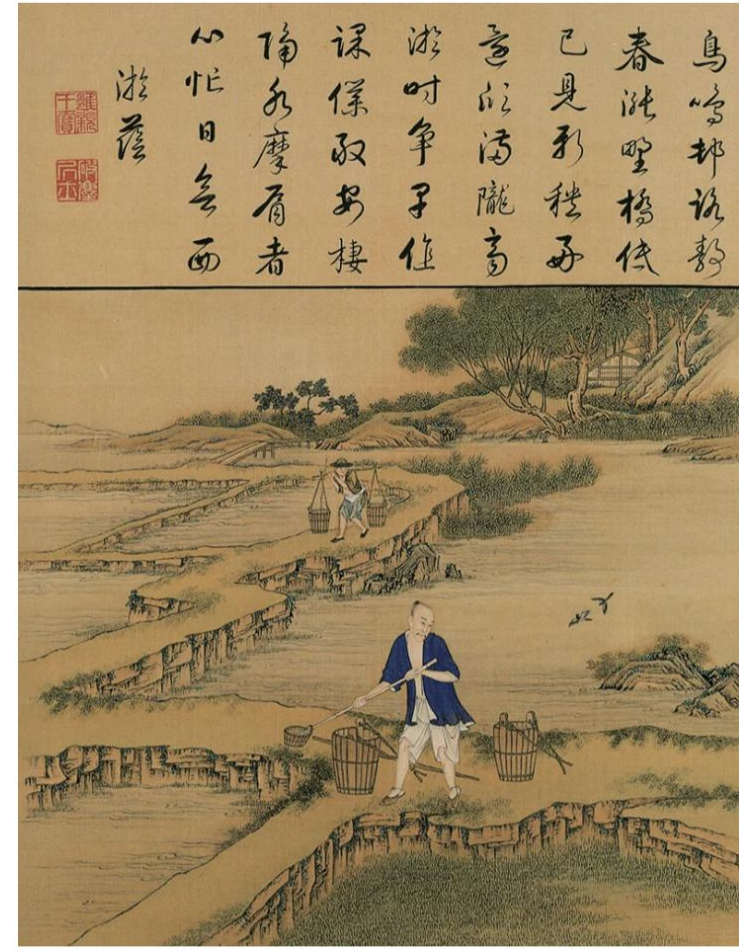
Jiang Shan village

A. The foothill (isolated hill) settlement is an early type of Ningshao polder, with high, dry land and easy access to water, so that many of the older towns originated here, typically the town of Cicheng in Ningbo, where the layout of the hill, the town and the lake reflects the influence of traditional camping patterns and feng shui concepts. The layout of the city's water system and Cizhou Lake is also an adaptation of the low-lying terrain of the Ning-Shao Plain.

B. Embankment ponds, This type of settlement is usually located along sea ponds, pond rivers and pei ponds and its pattern is linear along the dykes and ponds, with the dykes often evolving into the main street of the settlement, typical of the towns of Gua Li in Xiaoshan and Hutang in Shaoxing.

C.The lock and dam settlements are usually located at the confluence of man-made canals and tidal rivers, and the main drainage areas of the pei ponds can also be regarded as more special dike and pond settlements, with their layout pattern usually revolving around water conservancy facilities such as dai dams and weirs, typical of the towns of Yuyao Zhanting and Xiaoshan Qianqing.

D.Port settlements are the more common and more numerous type of Ning Shao polder, and their pattern is usually laid out around the polder bank, typical of such towns as Ningbo Baomatang and Jiangshan, and if the polder evolves into an inland river, the streets along the river become the main street of the settlement, typical of such towns as Shaoxing Dongpu and Anchang.

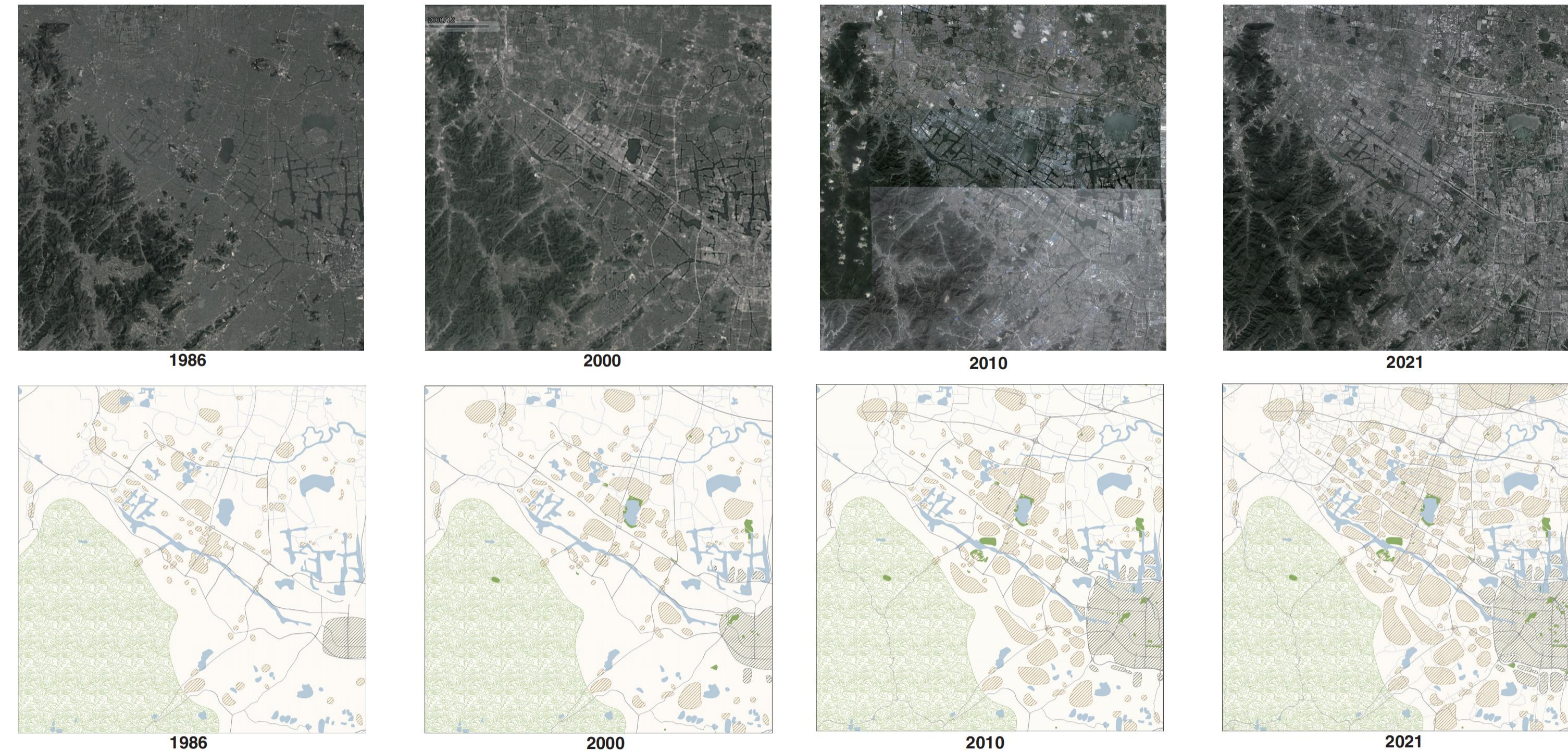


Source
National Palace Museum Online Archive
<https://www.dpm.org.cn/ancient/hall/161234.html>

The **'Tilling and Weaving'** by the Ningbo native Lou Zhuan of the Southern Song Dynasty is a distillation of the ideal life in traditional society, with the theme of agricultural farming in the Ningbo polderland landscape, reflecting the production and life of the inhabitants against the backdrop of the beautiful polderland landscape, and was so influential that it was imitated and exemplified by successive dynasties, such as the 'Imperial Tilling and Weaving', which was personally inscribed with a poem by the Kangxi Emperor and was vigorously promoted and preached.

The evolution of these lakes varies from one stage to another, as the natural landscape of the region and the process of polder reclamation have led to the transformation of Xianghu Lake in Xiaoshan, Nanhu Lake in Yuhang, and Jianhu Lake in Shaoxing into polder fields to varying degrees, as changes in the regional hydrological environment have led to the weakening of their role as ponds for irrigation and their eventual reclamation to varying degrees. Some of the lakes, such as West Lake in Hangzhou and Moon Lake in Ningbo, have survived several siltations due to their special relationship with the city and the lake, against the background of changes in the regional polder landscape.

The polders have become the support system for the regional habitat. The lakes were initially an important part of the agricultural water system, and were combined with the gradual formation and expansion of the traditional city to form a poetic urban-lake landscape pattern through generations of change and management. The degree of dependence on the relationship between the city and the lake has also been a major factor in accelerating, slowing down or even reversing the natural processes of the lake.

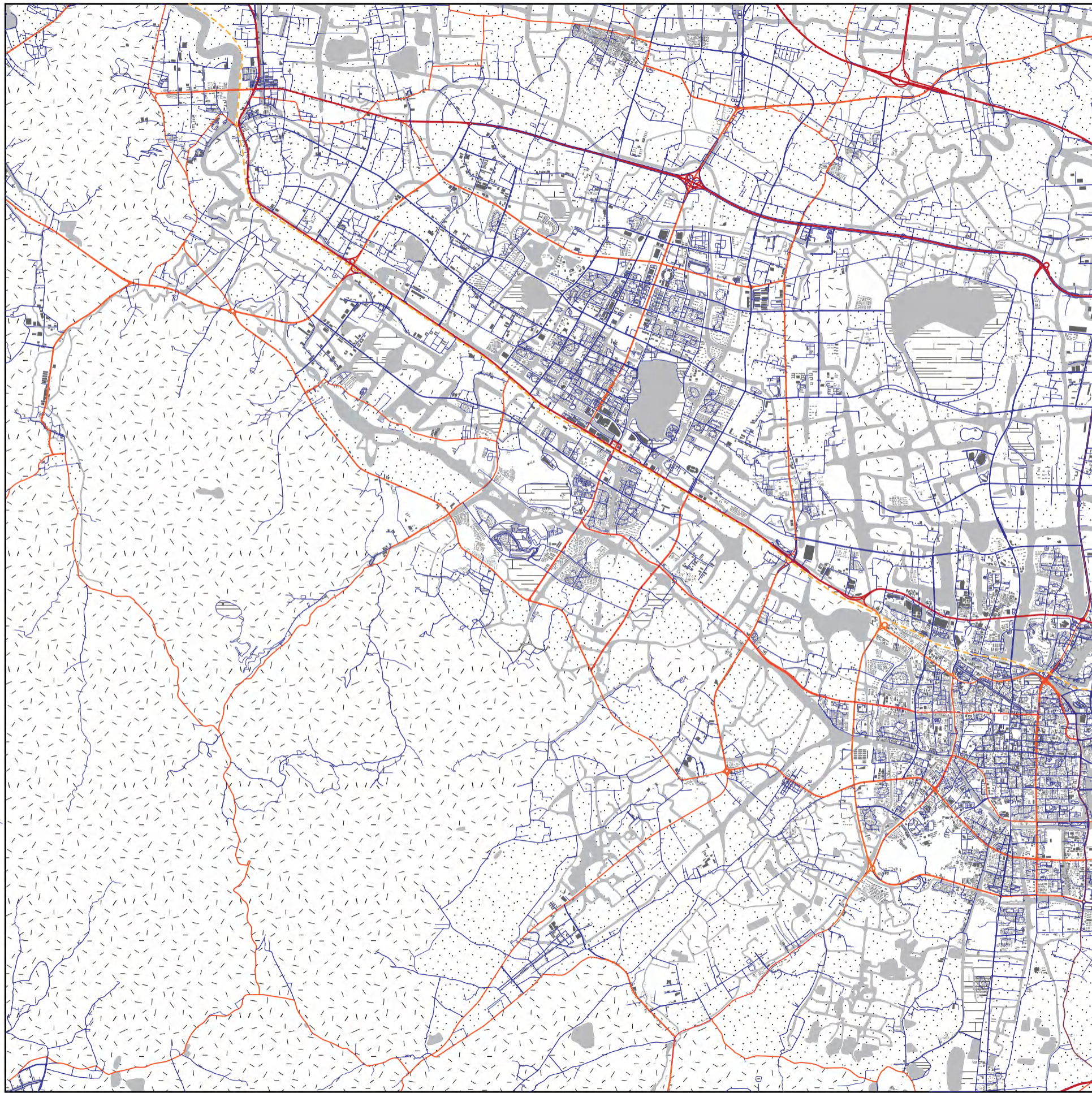


With regard to the ambiguity brought about by suburbia.

Definition of ambiguity:
Ambiguity is another type of uncertainty that exists in practical engineering projects. Ambiguity is an objective property where the concept of the thing itself is not clear, there is no exact definition in essence and no definite boundary in quantity. The mathematical method to study and deal with ambiguity is mainly fuzzy mathematics. In construction engineering practice, ambiguity is mainly manifested in the ambiguity of design objectives and constraints, the ambiguity of loads and environmental factors, and the ambiguity of design guidelines.

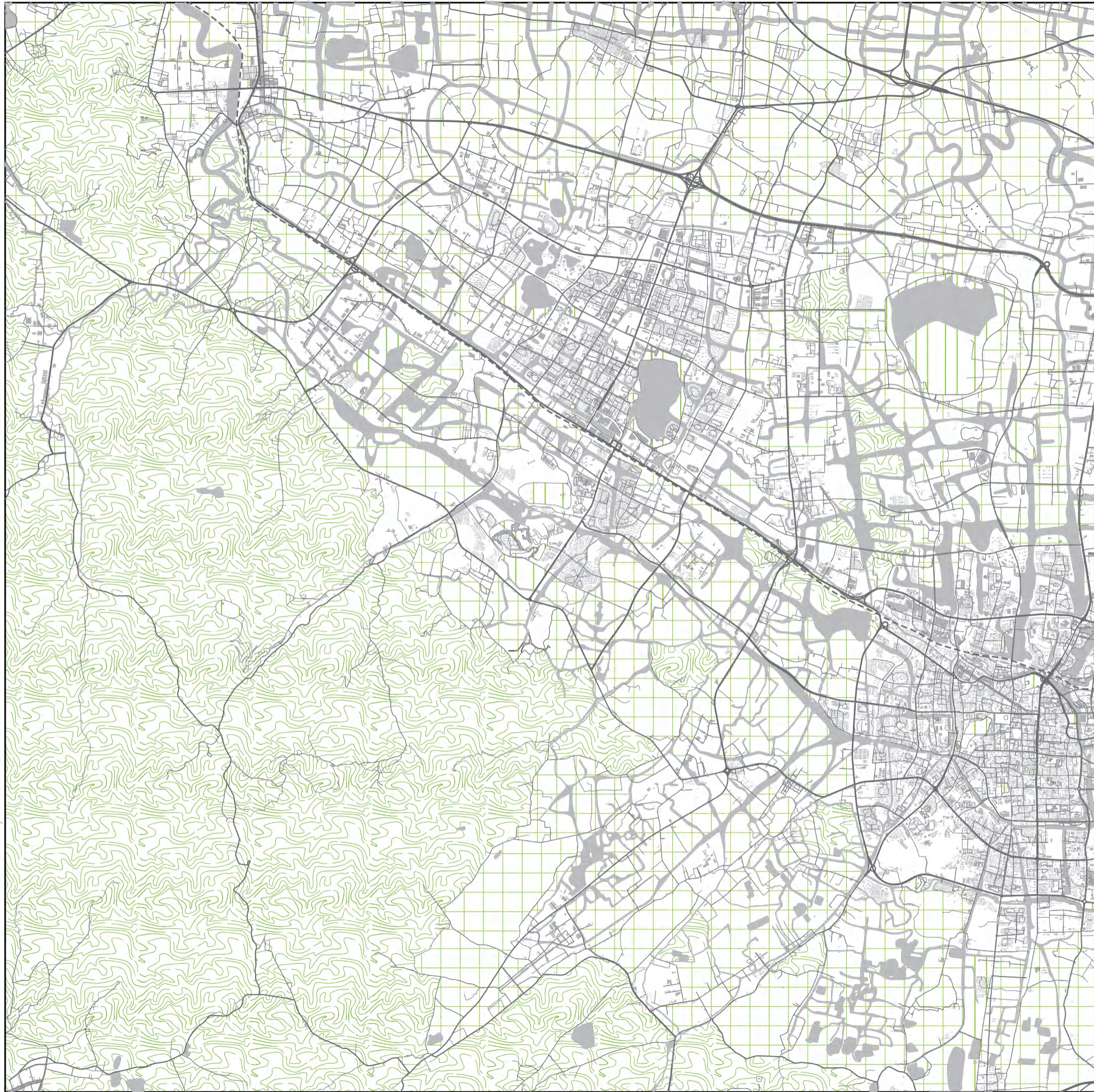
In China, the urban-rural dichotomy still prevails. In terms of institutional arrangements or social management, the suburbs still have to be classified as either urban or rural in one way or another. From this point of view, the suburbs under state socialism were for a long time only a geographical space for rural areas outside the state system and for a few state-owned farms and state-owned enterprises within the system. As such, the 'suburbs' did not represent a different form of governance from that of the city or the countryside. Indeed, it is challenging to identify the 'typical' suburb as the object of future research on global suburbanism.

Secondly, 'suburbia' refers to a way of life characterised by each family owning its own home, a way of life that has only recently emerged in China. In the past, China did not have suburbs made up of individual family homes and the 'organised local political expression' that sustained the middle-class suburban lifestyle. In the West, anti-urbanism and rural nostalgia were already well established. In contrast, modern China sees urban life as a progressive and civilised way of life, while rural life is seen as backward and underdeveloped. The pre-reform and opening-up system was heavily biased towards urban industrial areas, and the government's provision of welfare for urban residents reinforced urban privilege. While there have recently been clusters of high-end villas in China modelled on the American 'New Urbanism', they are in fact an extension of urban living space to the periphery, with a high level of security and privacy that is very different from the open middle-class suburban model. The middle class live in high-rise residences that look like the uniformly commercial houses of the city, which is the dominant lifestyle in China's suburbs, no different from that of the central city.



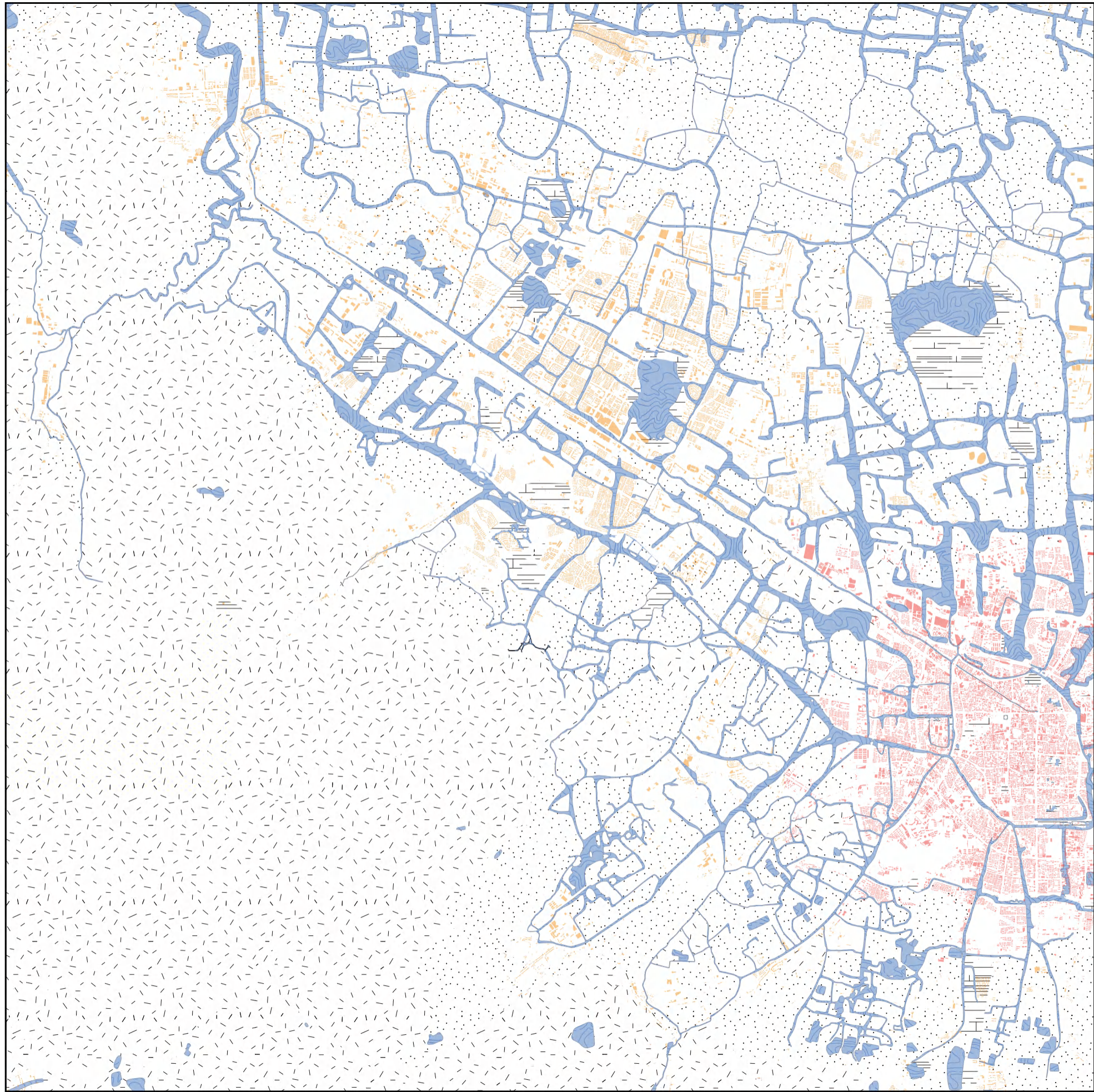
- Highways
- Main Road
- Railways
- Municipal Roads

Regional traffic situation:
Keqiao District is located between Hangzhou and Shaoxing, with most important roads running north-west-southeast. Fitting the water network and topography. It is a mature road system that has developed over decades. The railway and road grades are all high and it is a necessary route to connect the two largest cities of Zhejiang Province, Ningbo and Hangzhou. The Keqiao district therefore has a very important economic value. The overall industry has been developed earlier and the suburbs have therefore started to develop earlier (compared to the surrounding areas).



- Farmland
- Landscape green space
- Woodland

Regional green space situation.
Keqiao District belongs to the East Asian subtropical monsoon zone, with hilly terrain to the southwest and the Ning-Shao Plain to the northeast. To the north is Hangzhou Bay and to the south are the Zhejiang hills. The vegetation belongs to the evergreen broad-leaved forest zone. Agricultural conditions are very favourable, with a history of development over thousands of years. The combination of unique hydrographic conditions has created a unique landscape of polder fields. The long-term interaction between man and the natural environment has shaped the current state of the region. In addition as a coastal area it is often hit by tropical storms and typhoons in summer and autumn and is prone to heavy rain and windy weather.



- Water area
- Suburbs (Keqiao District)
- Main urban area (shaoxing)
- Municipal Roads

Urban-suburban relations:
The Keqiao district has developed rapidly over the past thirty years, with very remarkable achievements in both economic conditions and social development. Not only is the area itself located between the downtown area of Shaoxing and the core area of Hangzhou, but it also has outstanding natural beauty resources. The development vein can be clearly seen around the transport arteries that are currently already in place. The more urbanised area is bounded on the south by the Jianhu polder area and on the north by the G329 national highway linking Ningbo with Hangzhou.

24km

Location

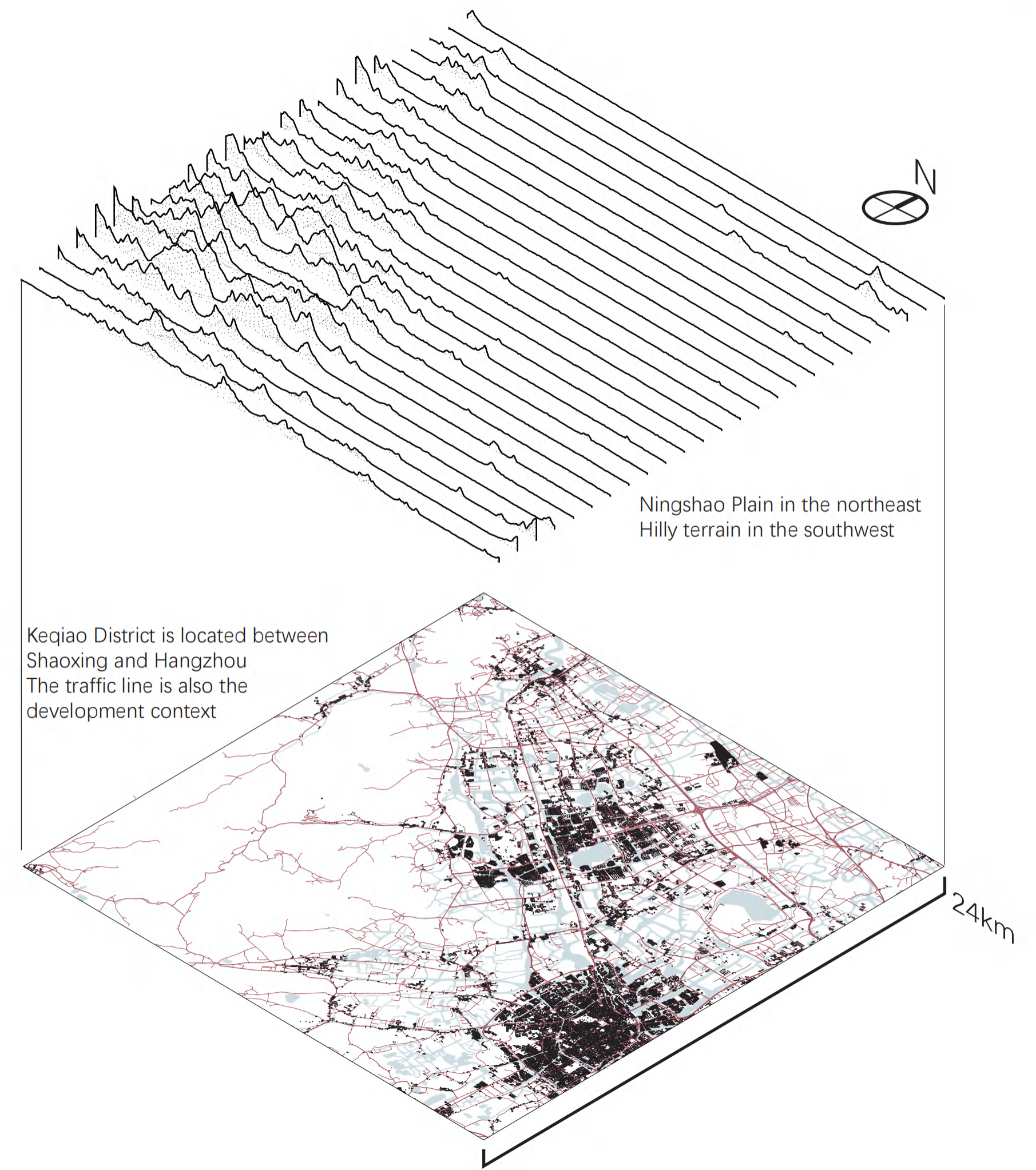
Unveiling stratigraphies

The influence of natural topography on urban development.

Shaoxing is located in the intersection of three major geomorphological units: the hills of western Zhejiang, the hills and mountains of eastern Zhejiang and the plains of northern Zhejiang, with the terrain being high in the south and low in the north, forming a geomorphological feature of mountains surrounded by mountains, a basin and a concentration of plains. The topography of the whole area slopes down from southwest to northeast. Specifically in the Keqiao area, Keqiao is located in the south of the Huiji Mountains and in the north of the sea, so it has a terraced topography of high in the southwest and low in the northeast, with both mountains, plains and coasts, and the boundary between hills and plains is relatively obvious due to the influence of the Jiangshan-Shaoxing Fracture. The south-western part is a low hill and river valley area, accounting for about 52% of the total area of the region, while the north-central part is a water network plain area, accounting for about 31% of the total area of the region, with an average altitude of 6-7 metres, with occasional isolated hills and remnants of hills distributed among them, the height of which generally does not exceed 200 metres, which is historically known as the mountain meeting plain. In the northeast is the coastal plain area, accounting for 11% of the total area of the district, with an altitude of about 5 metres, which is a siltation-type mudflat, with flat terrain.

The urban development of the Keqiao district can be clearly seen on the map as a result of the topography, with the main urban areas spread over a plain area to the north-east, and the boundaries of the whole city very clearly overlap with those of the plain and the mountains.

However it is worth noting that s a satellite city of the main urban area of Shaoxing, there is a strong ambiguity between urban and suburban areas, and it is difficult to use a clear indicator to distinguish which areas are suburban and which are urban. The south-western side of the Keqiao district was once a huge polder area, and as such was an important area of population, and modern commerce and industry also developed very well, with a large number of enterprises and factories.



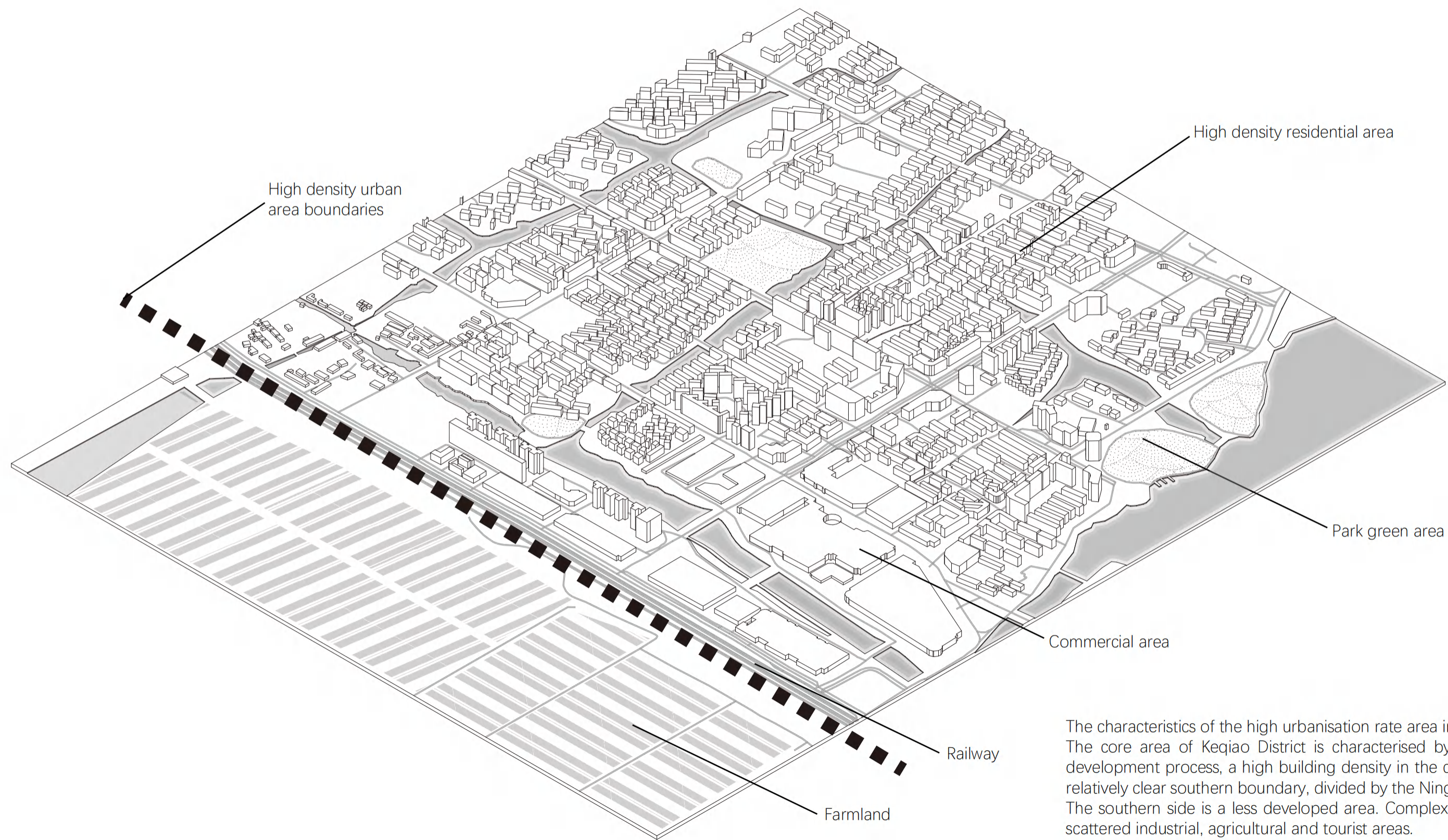
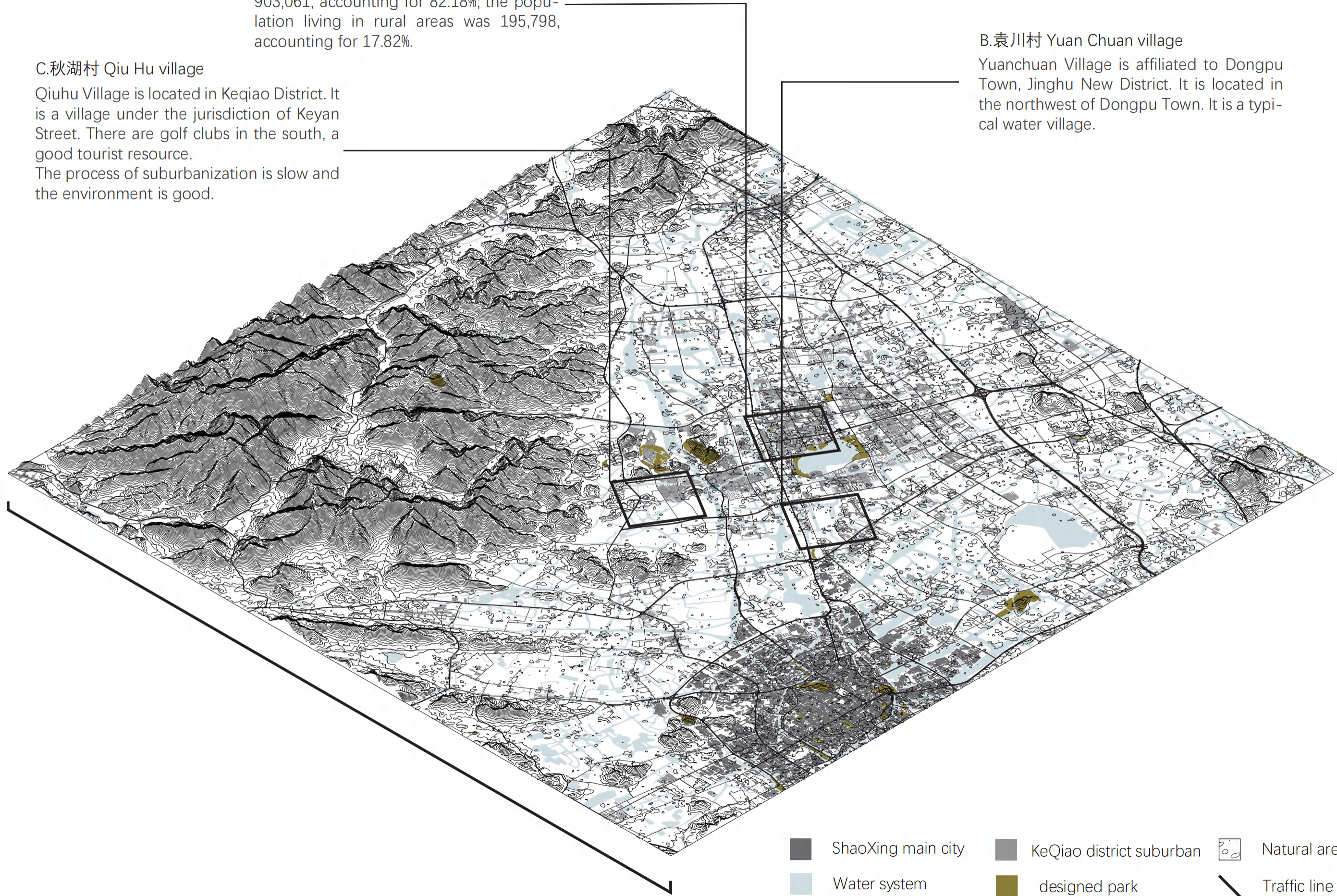
Keqiao District is located between Shaoxing and Hangzhou
The traffic line is also the development context

A.Highly urbanized areas
KeQiao District Population: 1098859.
The population living in urban areas was 903,061, accounting for 82.18%; the population living in rural areas was 195,798, accounting for 17.82%.

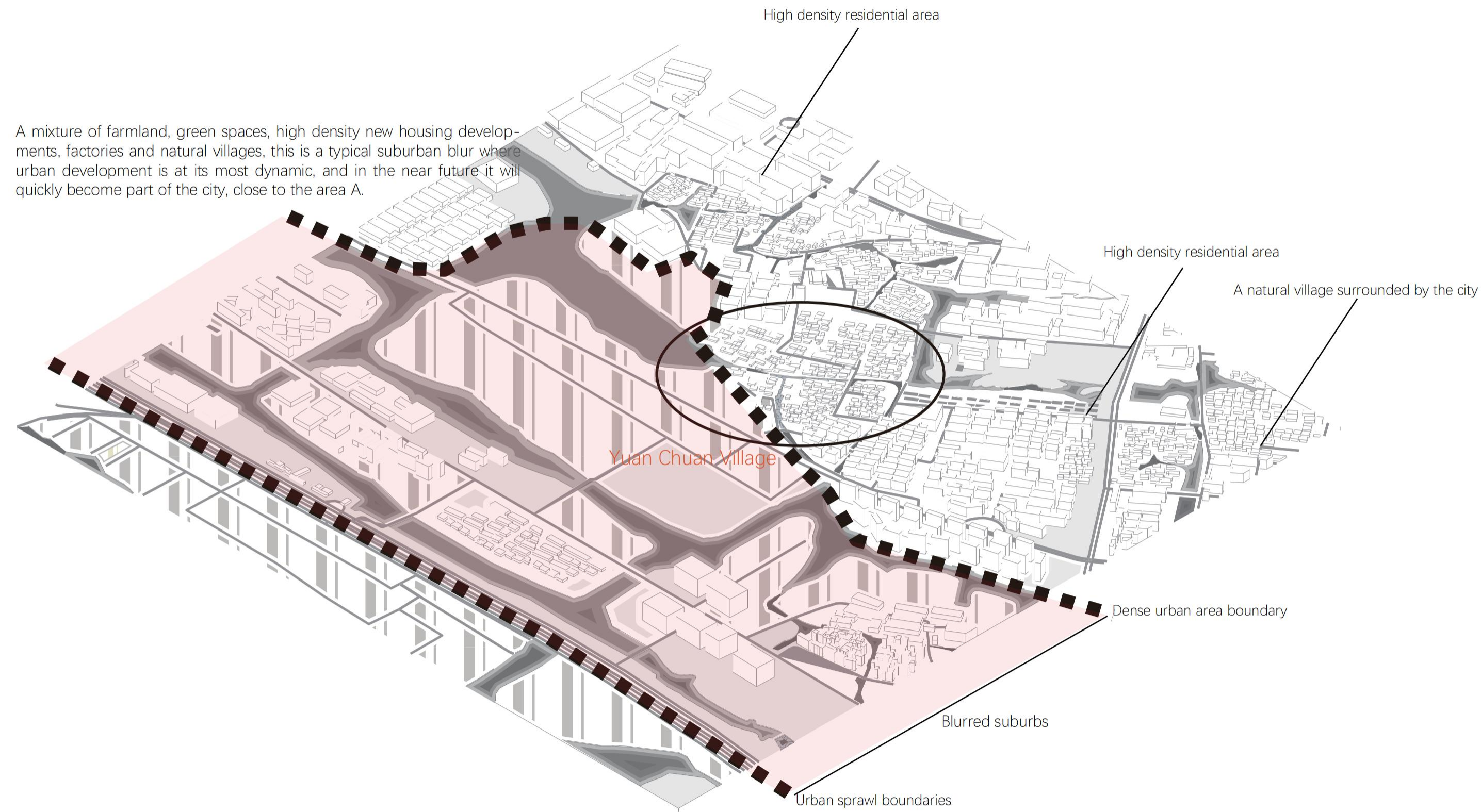
C.秋湖村 Qiu Hu village
Qiuhu Village is located in Keqiao District. It is a village under the jurisdiction of Keyan Street. There are golf clubs in the south, a good tourist resource.
The process of suburbanization is slow and the environment is good.

B.袁川村 Yuan Chuan village
Yuanchuan Village is affiliated to Dongpu Town, Jinghu New District. It is located in the northwest of Dongpu Town. It is a typical water village.

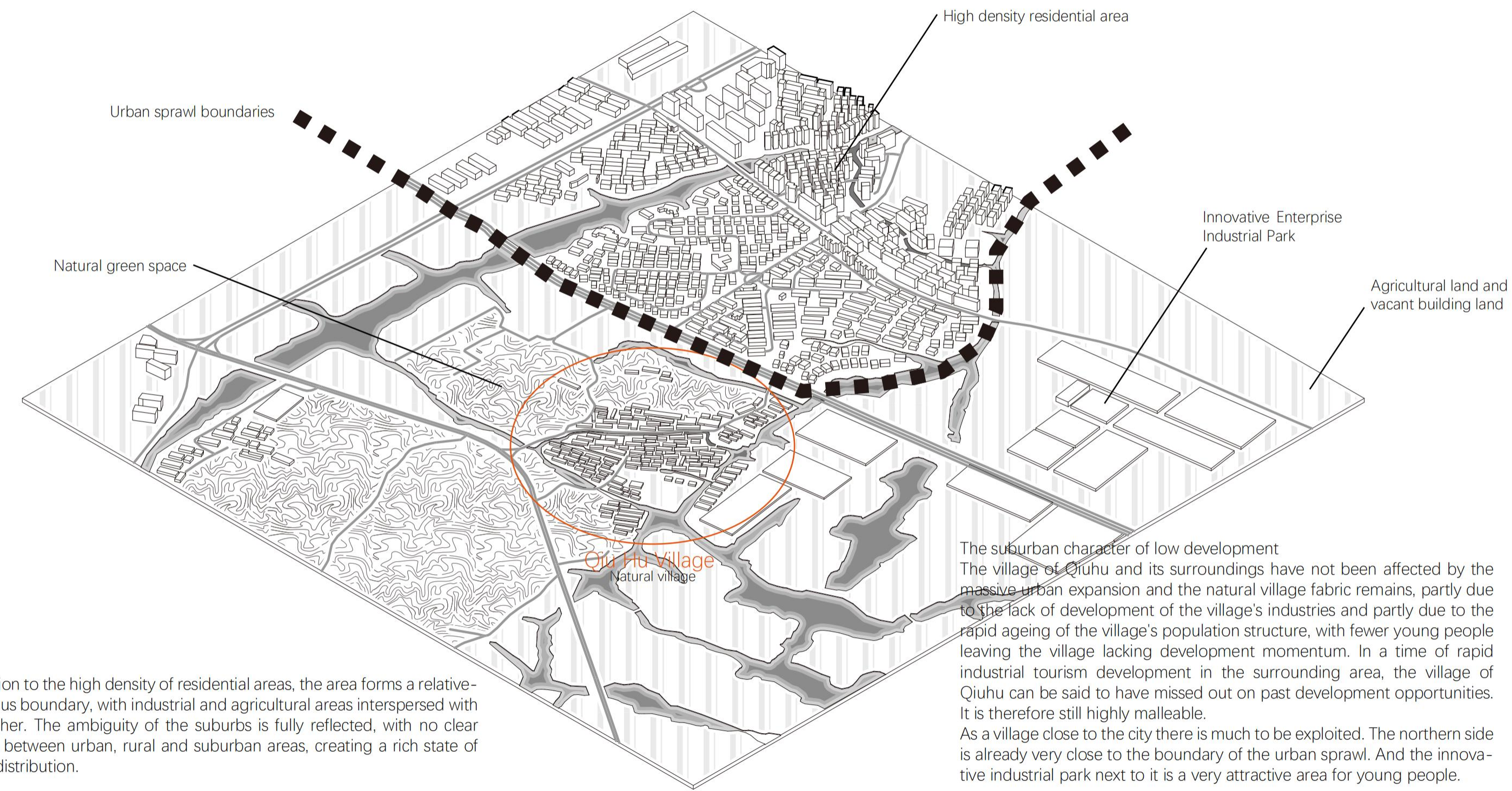
24km



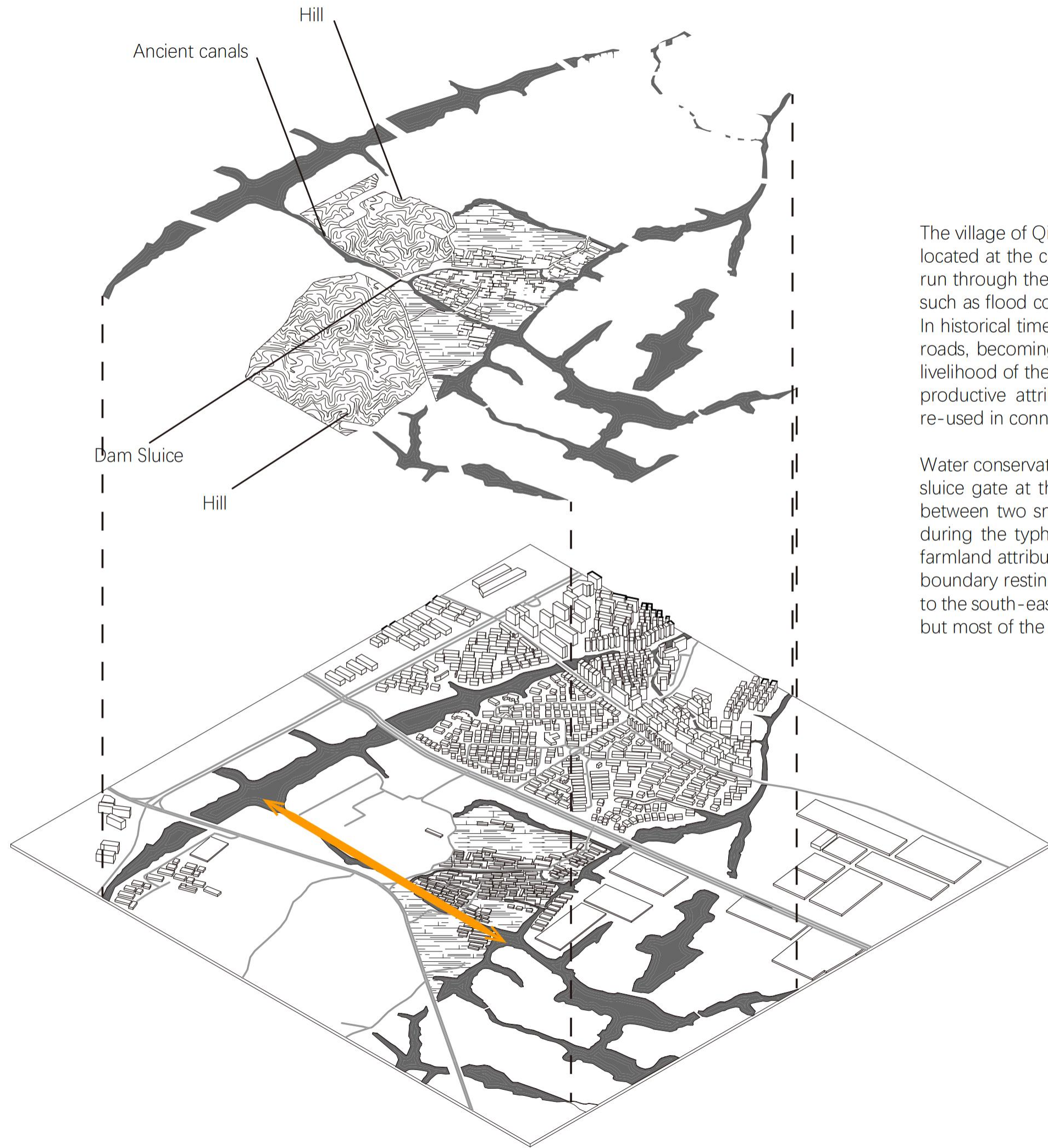
The characteristics of the high urbanisation rate area in Keqiao District. The core area of Keqiao District is characterised by a high urban development process, a high building density in the core area and a relatively clear southern boundary, divided by the Ning-Hang railway. The southern side is a less developed area. Complex functions, with scattered industrial, agricultural and tourist areas.



In addition to the high density of residential areas, the area forms a relatively obvious boundary, with industrial and agricultural areas interspersed with each other. The ambiguity of the suburbs is fully reflected, with no clear division between urban, rural and suburban areas, creating a rich state of spatial distribution.



The suburban character of low development
The village of Qiu Hu and its surroundings have not been affected by the massive urban expansion and the natural village fabric remains, partly due to the lack of development of the village's industries and partly due to the rapid ageing of the village's population structure, with fewer young people leaving the village lacking development momentum. In a time of rapid industrial tourism development in the surrounding area, the village of Qiu Hu can be said to have missed out on past development opportunities. It is therefore still highly malleable.
As a village close to the city there is much to be exploited. The northern side is already very close to the boundary of the urban sprawl. And the innovative industrial park next to it is a very attractive area for young people.



The village of QiuHu is a typical type of dam settlement. Dam settlements are usually located at the confluence of man-made canals and tidal rivers, and the canals that run through the village have multiple roles. The canal system has multiple functions such as flood control, flood retention, transportation, canal transport and irrigation. In historical times it was also superimposed on the system of sea defences and post roads, becoming a fundamental infrastructure for maintaining the production and livelihood of the Ninsho polder area, but with the advent of the industrial age these productive attributes gradually declined and the larger areas of the river were re-used in connection with the lake to form some scenic areas.

Water conservation projects on the edge of villages often have a regional effect. The sluice gate at the junction of QiuHu village and the national road to the south is between two small hills and is able to divert the flow of rivers in the polder area during the typhoon season, diverting floods and heavy rainfall. Thus, the natural farmland attributed to the village of QiuHu can also be clearly seen on the southern boundary resting on the side of the national road and the hills. The isolated islands to the south-east, on the other hand, are not directly linked to QiuHu village by road, but most of the farmland on these islands belongs to QiuHu village.

QiuHu Village Area Analysis

QiuHu Village has a high specification road leading to the outside world on each of its northern and southern sides, and also both have public transport stops at the entrance to the village. However, as the village lacks an attraction that would draw in outsiders, there are few public services, thus creating a vicious circle where the environment is unable to progress leading to a decline in attractiveness, further causing a lack of financial support for the environment and thus making the village government even less able to support the enhancement of the quality of the village environment.

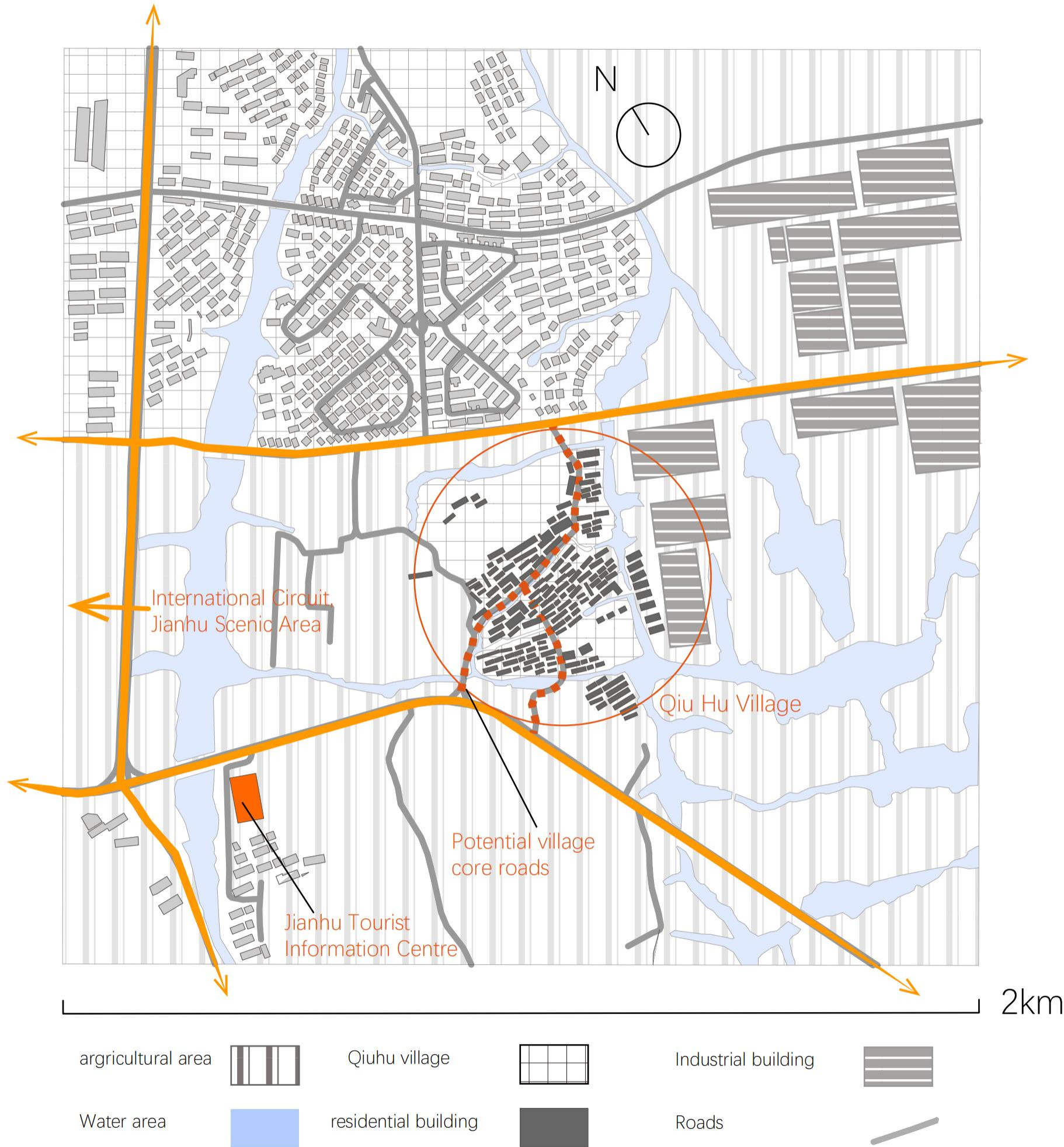
The east side of the village has been built as an industrial park and the west side is a car park for illegal vehicles, both of which belong to the village of QiuHu, from which the village receives financial support, but does not allow the village to use these businesses for further development, so this is a suitable entry point to organise the transformation of the village.

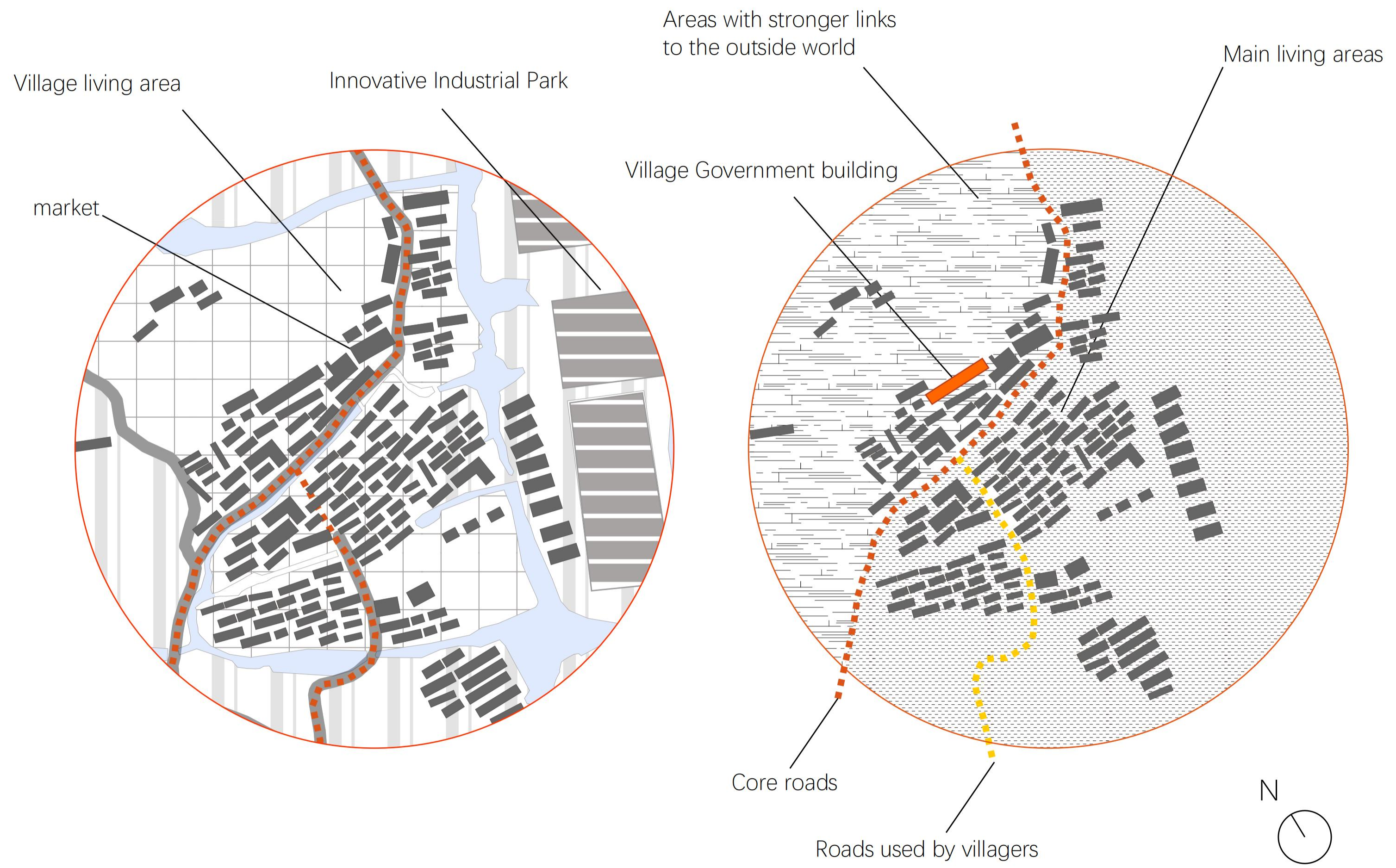
There are also three convenient access points to the outside world. One on the north side the other two are on the south side, which is related to the distribution of the water system. The western side is adjacent to the Innovation Park, but there is no road access to the main road. The number of inhabitants living in the area adjacent to the industrial park is also small. It is therefore possible to carry out basic planning improvements on the basis of these two roads.

It is also worth noting that on the north side of QiuHu Village there is a huge area of upmarket commercial housing going, dominated by low-rise townhouses and single-family houses. Due to China's new post-2019 policy restricting new construction of villa properties, this stock of buildings is very valuable and QiuHu Village could capitalise on the demand of the people living there to shape part of its service sector. This includes restaurants, urban logistics nodes and more, all of which are worth considering as directions.

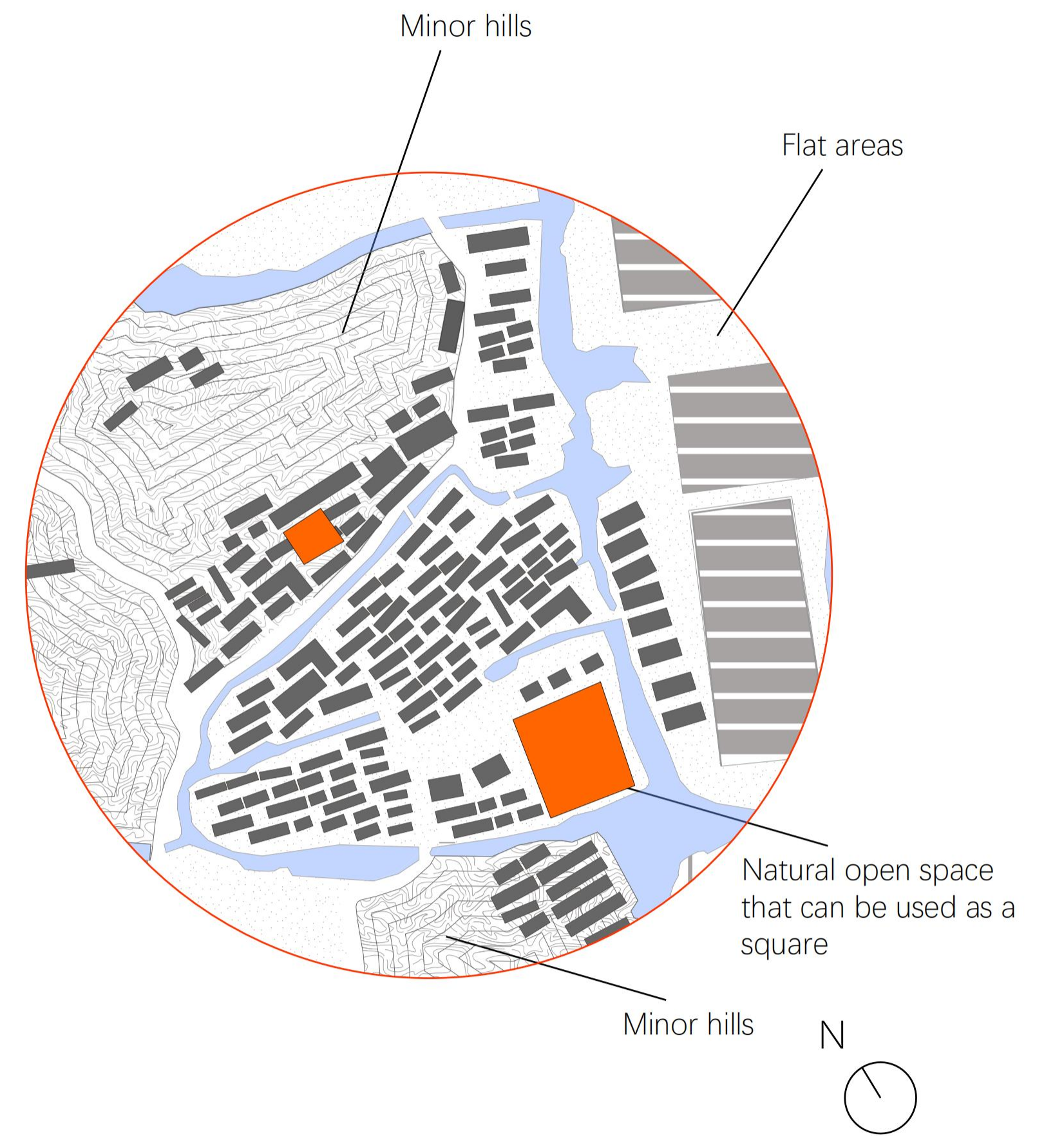
In addition, the already existing residential areas on the side of the industrial park would be in a good position to attract young people who work in the surrounding industrial parks but do not have a lot of savings or the desire to settle in the surrounding area, and are therefore in a good position to create flats for short and long term rentals. It is also possible to complement the surrounding tourist service facilities on the north side.

To the east is the Zhejiang International Circuit, which is also the western gateway to the scenic area of Lake Kanghu, and to the southwest is a small market town that provides a collection and distribution point for the surrounding agricultural products in. A regional tourist service centre is located to the southwest of the village entrance on the south side. However, the distance is long, so it would be worthwhile to arrange another tourist service facility at the south-west entrance, but the scale should be limited to the service area of the village.





Painting by the master painter Wu Guanzhong, painted in Shaoxing Water Township - 1989



I I

Design

Chapter 2

Looking for the **FUTURE**

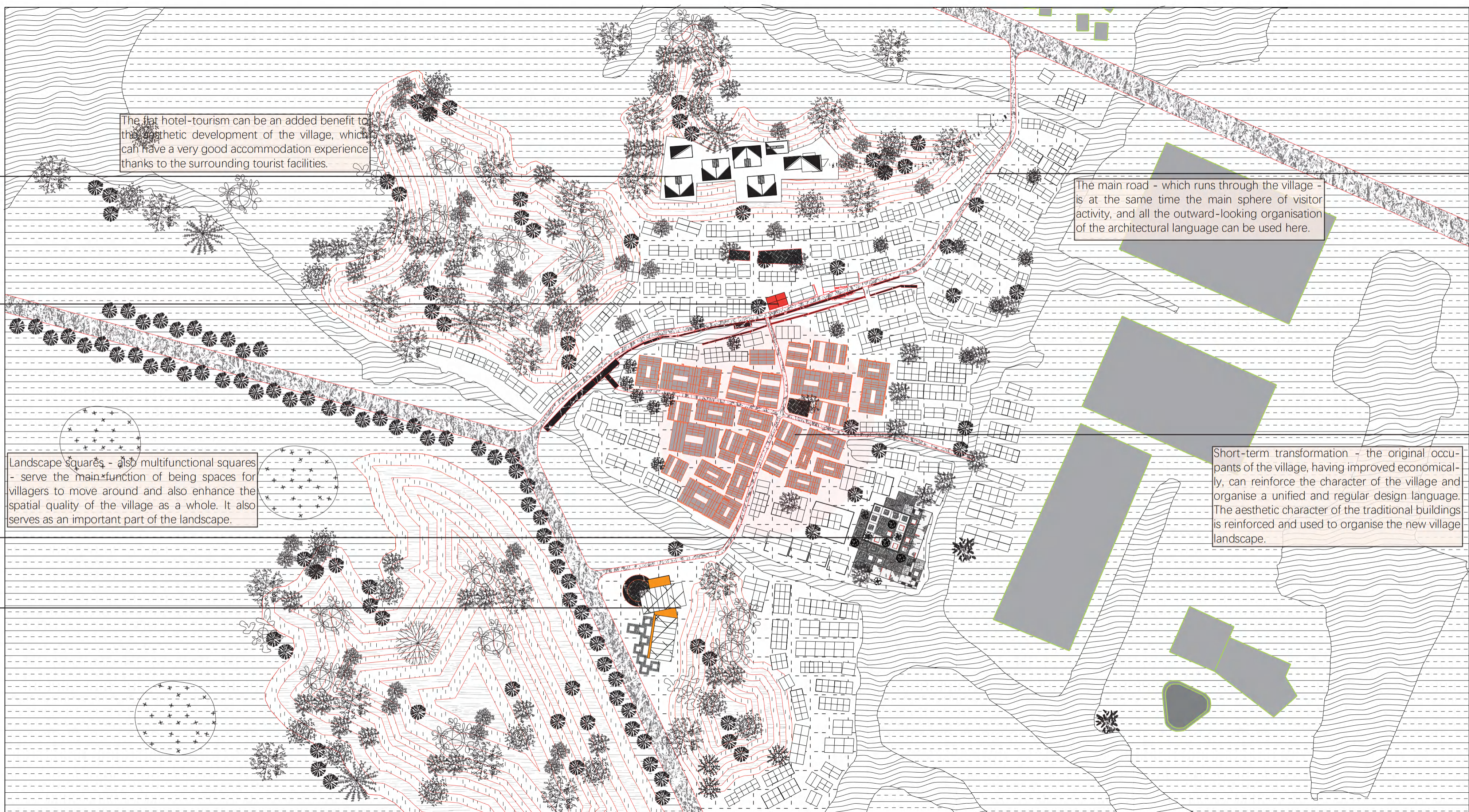
DOT

Flat Hotels

Citizen Public space

landscaped plaza

Visitor Centre



The flat hotel-tourism can be an added benefit to the aesthetic development of the village, which can have a very good accommodation experience thanks to the surrounding tourist facilities.

The main road - which runs through the village - is at the same time the main sphere of visitor activity, and all the outward-looking organisation of the architectural language can be used here.

Landscape squares - also multifunctional squares - serve the main function of being spaces for villagers to move around and also enhance the spatial quality of the village as a whole. It also serves as an important part of the landscape.

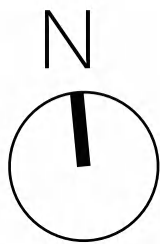
Short-term transformation - the original occupants of the village, having improved economically, can reinforce the character of the village and organise a unified and regular design language. The aesthetic character of the traditional buildings is reinforced and used to organise the new village landscape.

LINE

Main roads

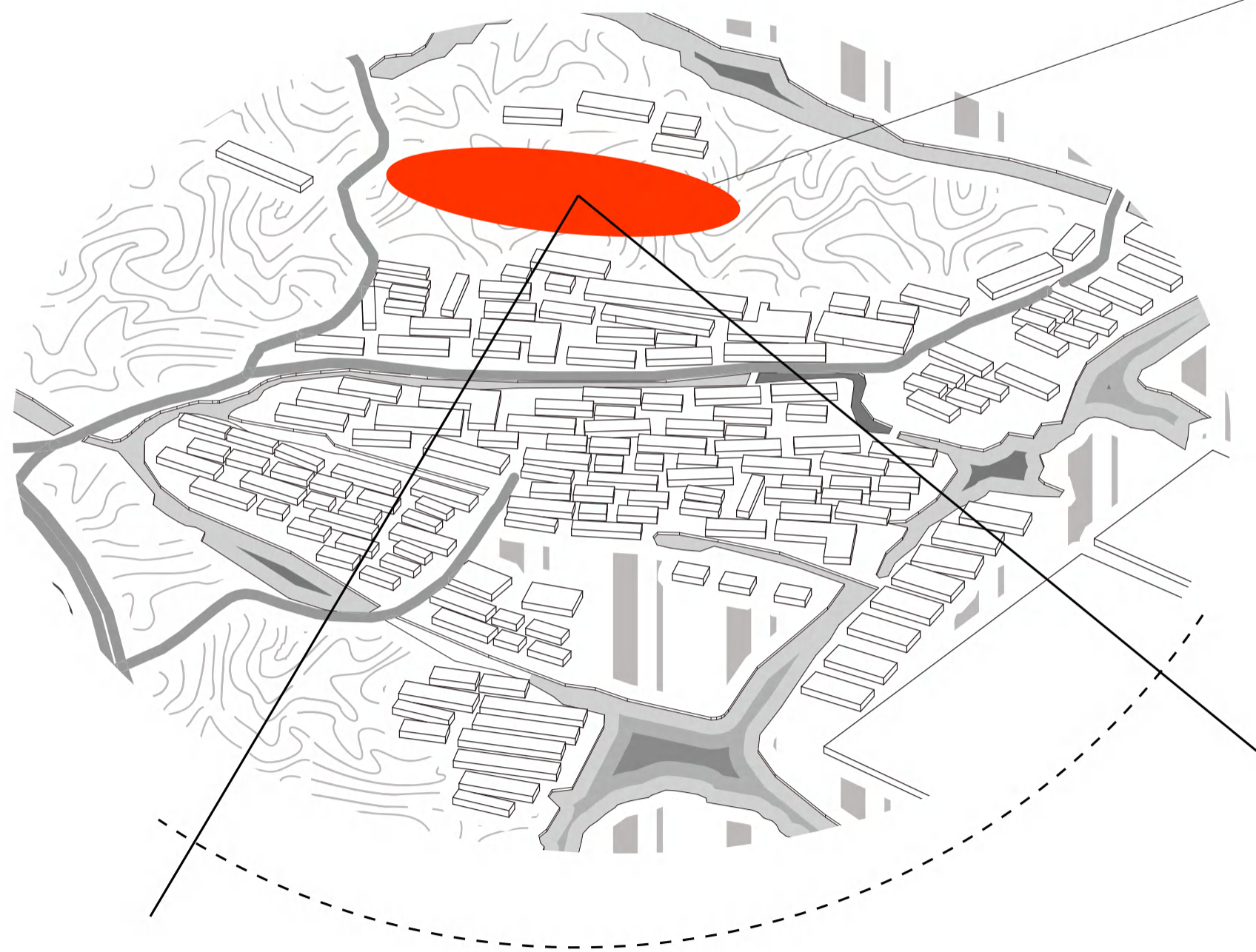
Surface

Short-term transformation



DOT flat hotel

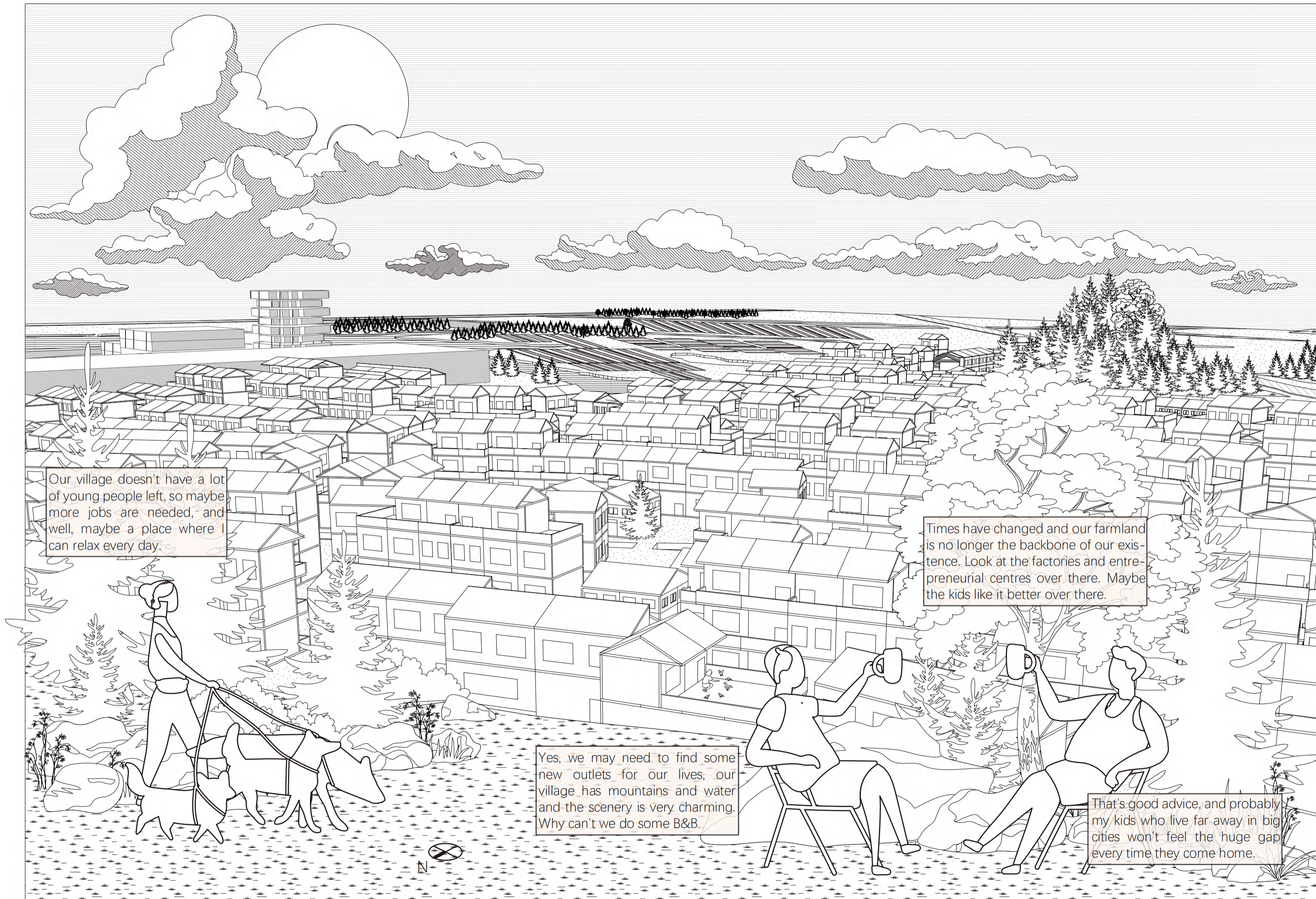
Building site selection

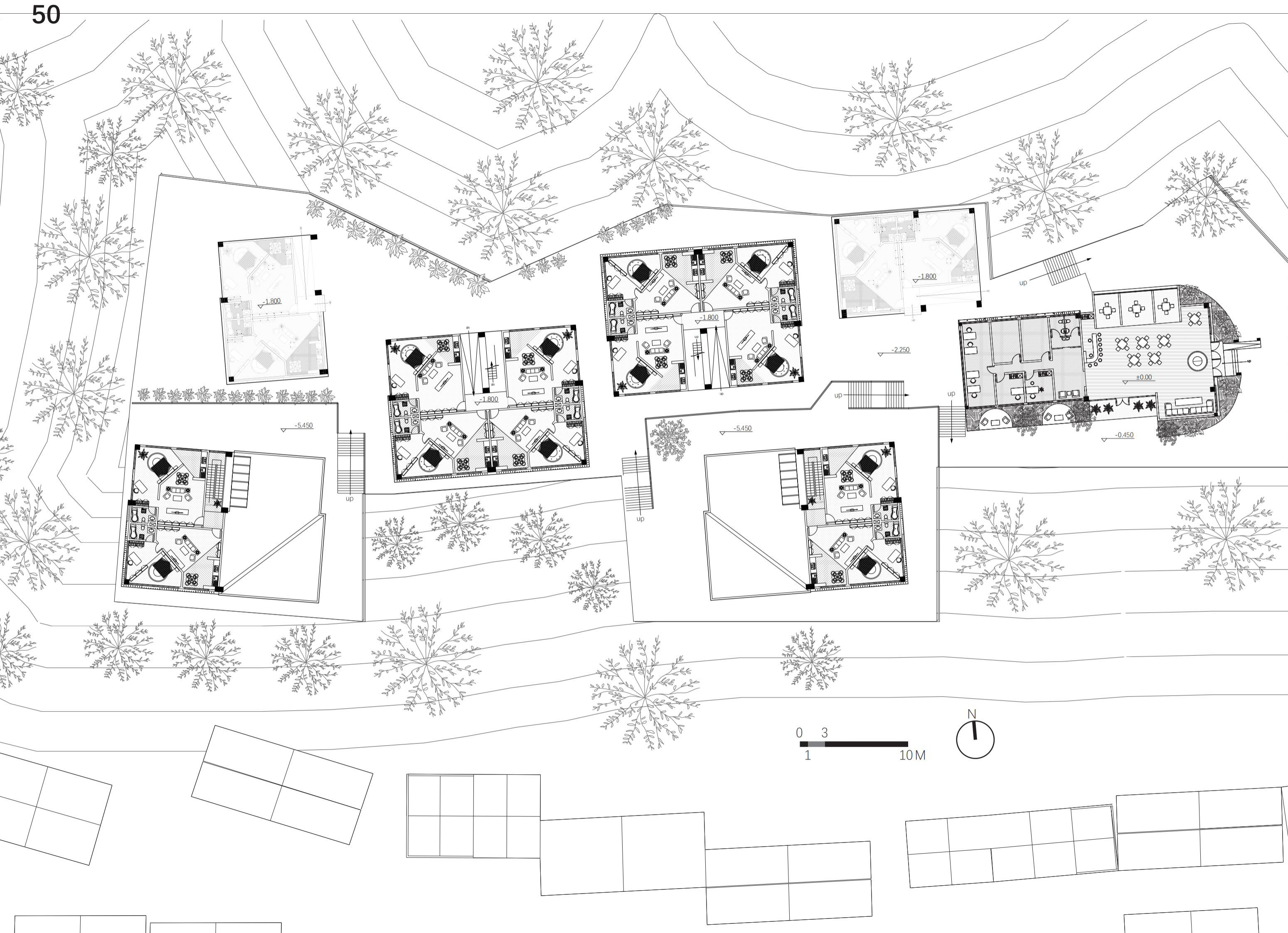


The advantages of serviced flats: low total price and flexible investment. Serviced flats are generally small in size, with an area of around 70 square metres, and because of the low total price, many investors are attracted by the return on rental. As many serviced flat projects are designed with offices in mind, they have greater flexibility in dividing space than traditional flats. Being built next to an innovative industrial park can give it full value.

Flat Hotel Site Selection

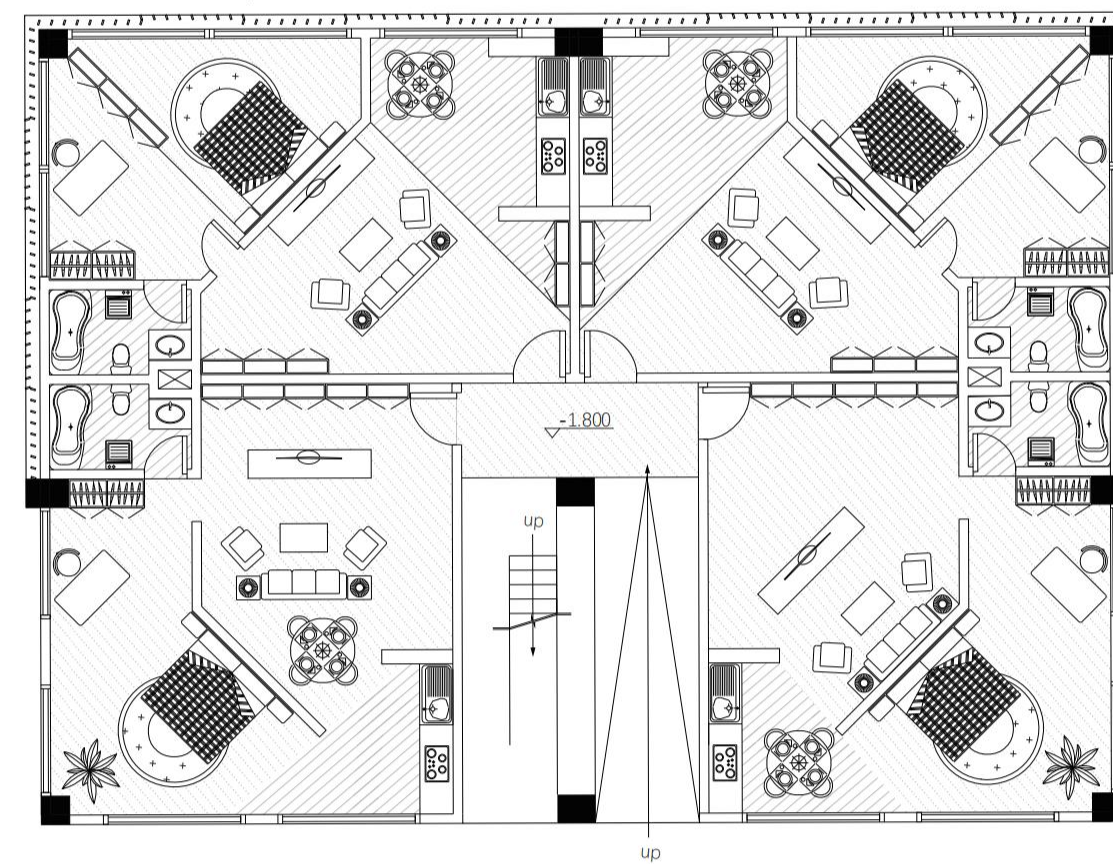
The site is located on the hilly north side of the entire village, with the main advantage of a wide view, facing south towards the farmland landscape. At the same time the land on the hills does not occupy the villagers' house sites and can become the communal property of the whole village. It is possible to create an economic income point while being able to share part of the public landscape facilities with the village, such as a viewing platform. It is also possible to maintain a certain degree of privacy, away from the potential disturbance of the hotel occupants in the village's acquaintance society.



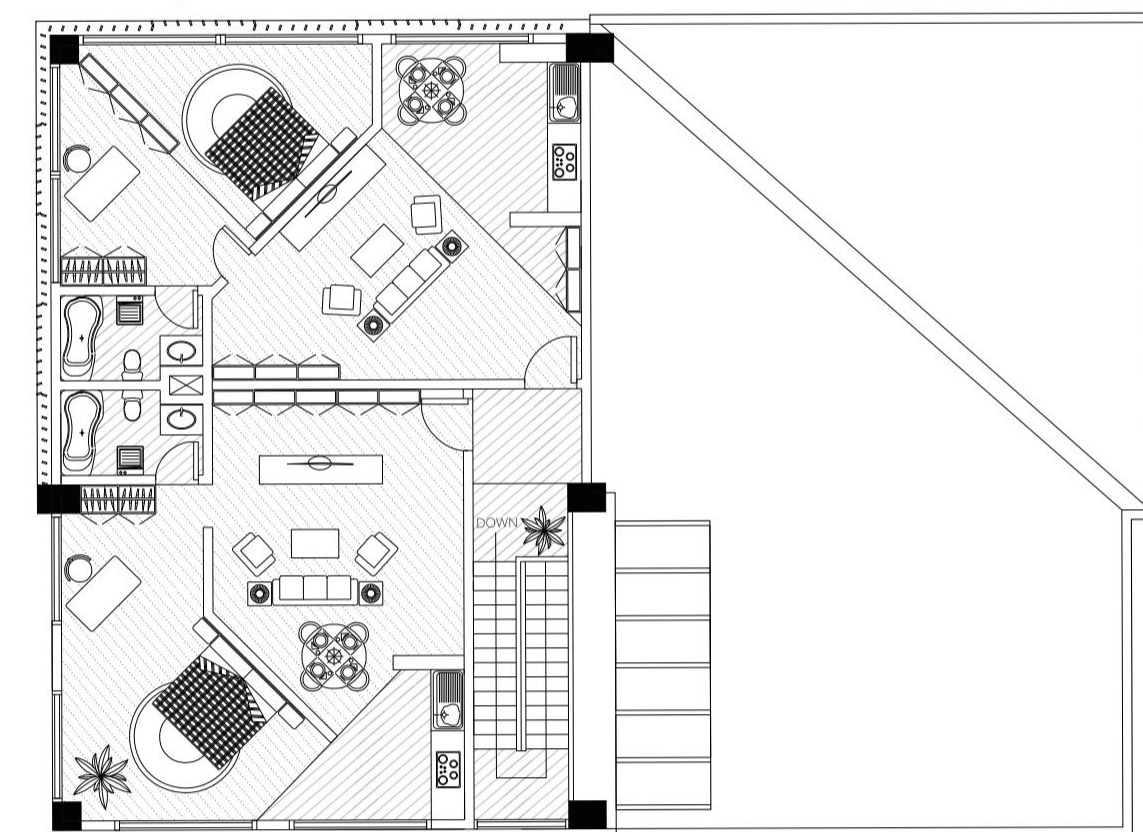


Flat hotel-Plan

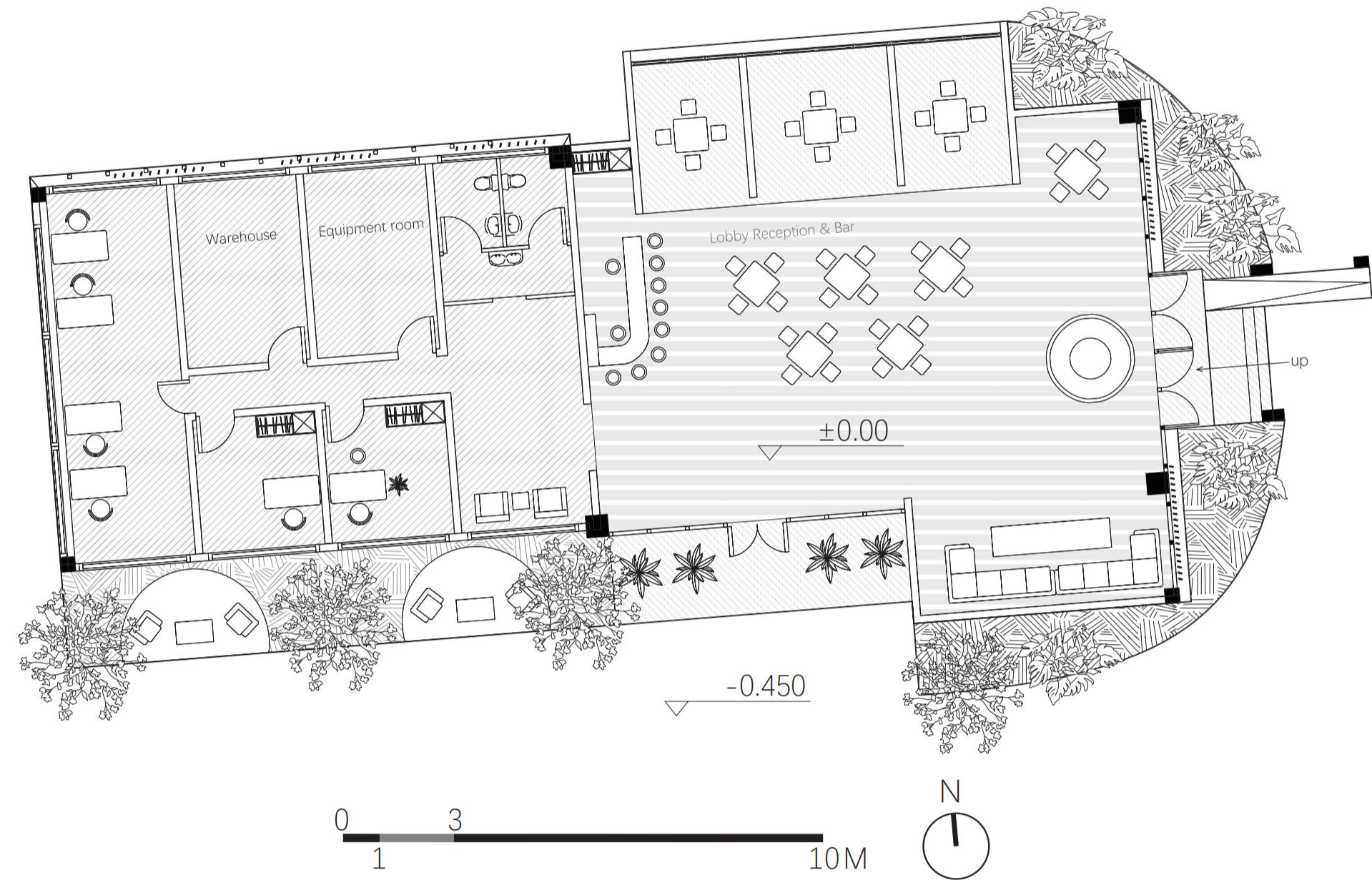
Ground floor plan



1st floor plan



Flat hotel-Plan

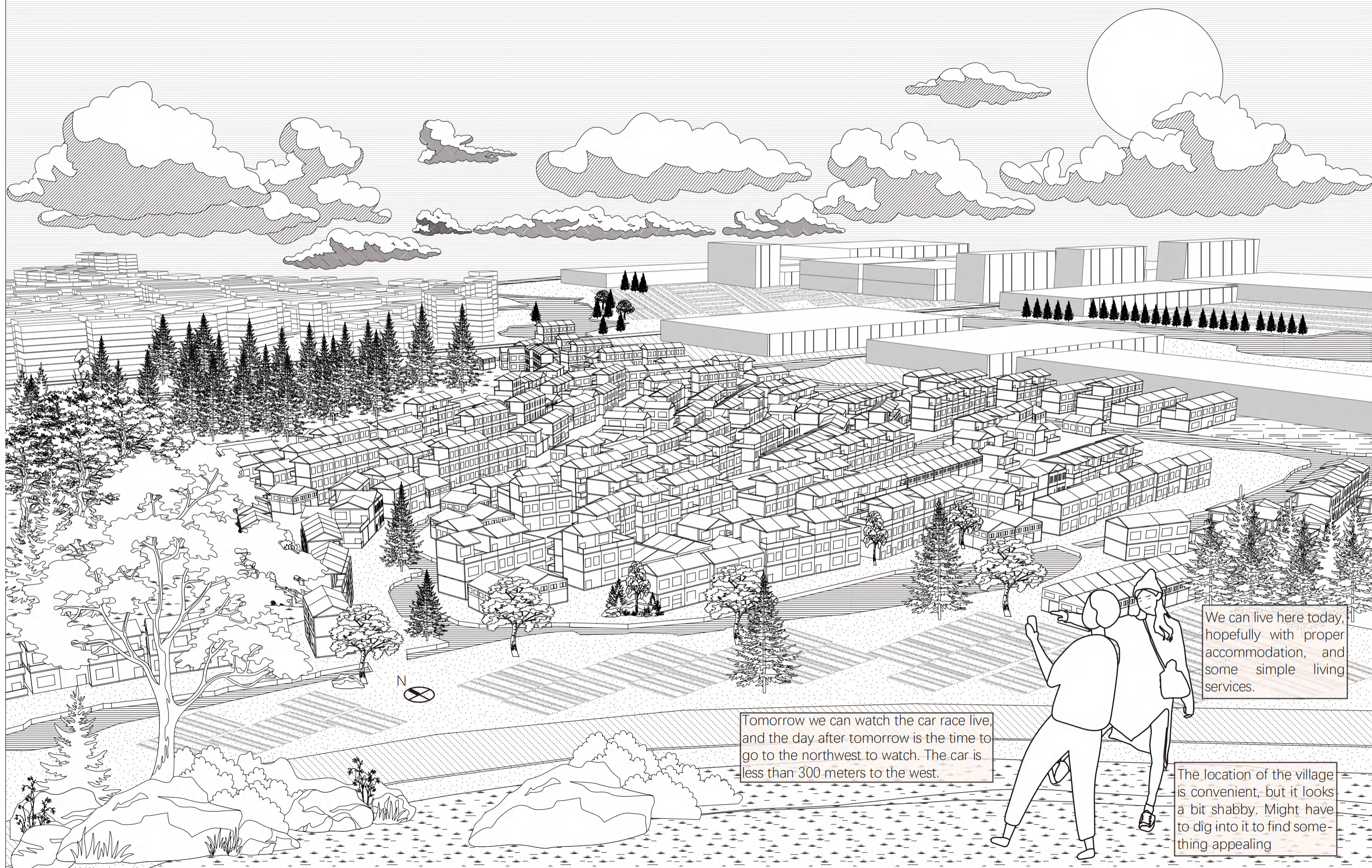


Flat Service Centre elevation



Single building elevation of the flat

DOT Citizen Public space



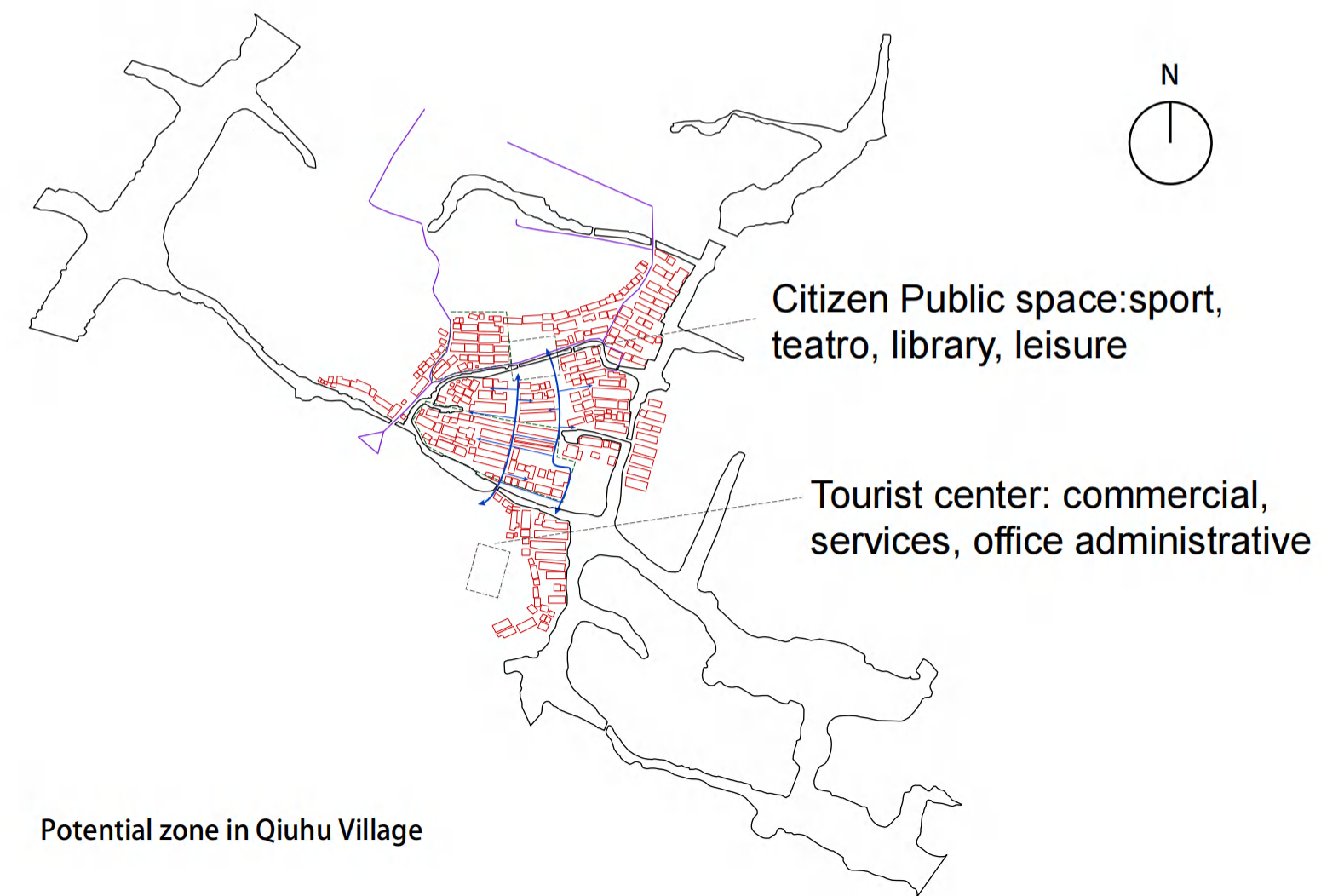
Currently situation in Qiuhu

The maps show that Qiuhu is of a not well-organized infrastructural system independt from the borders of area, and its formal buildings and indirectly village inside. The village is bewteen the two main roads, the Gaoerfu road in north and Yangzhi highway in south. On the right side is a industrial zone, and the left side is small hill and agricultural land. The morphology of the villages present the high dense of dwellings and lacking of green space and public space. Residence is the main function in village, the traces of commercial space is hardly to see, probably exist in the form of small store.

The only public services present in the area are the village committee, Veterans Service Station of- fice. Another issue emerged from the observation is the traffic congestion of the narrow streets where both cars and pedestrians are allowed. The environmental circumstance is poor, considering that the only green areas for the village are outside of it, and that the wider green areas are not accessible to people. Most of the buildings are residential and host commercial activities on their ground floor. As a conclusion what shows in the map, Qiuhu was not provided with adequate outdoor public spaces for residents.



Currently Qiuhu



Potential zone in Qiuhu Village

New infrastracural system

Going from regular to irregular as it enters Qiuhu Village’ s core.

Like many other urban villages, is characterized by the presence of roads of different types and sizes. Inside its road network can see the intersection between different scales, in contrast with each other, which is the result of the hybridization between the rural area and the village. The main roads, connect the “outside world” with Qiuhu village, bring resident to urban area like Keqiao and centre of Shaoxing. The secondary road, which instead are inside the village and guarantee the traffic circulation and accessibility in the neighborhoods. And the capillary roads are more likely to be used as pedestrian roads, they connect each family unit and is no order in morphology dimension.

The two types which have large dimensions: the main ones range from 8 to 12 meters, while the secondary ones from 4 to 7 meters approximately. The road network develops less clearly, however, within the individual fragments, where the alleys and bottlenecks probably arise from the layout of the old villages. The intertwining of these two types is very irregular, with sudden widening or interruptions into thin air. They can also represent a problem with regards to the safety and hygiene of the village, since the bottlenecks do not exceed even 1 meter in width and the alleys between the houses do not reach 4 meters; therefore it would not be possible to circulate inside this tangle with a vehicle in an emergency.

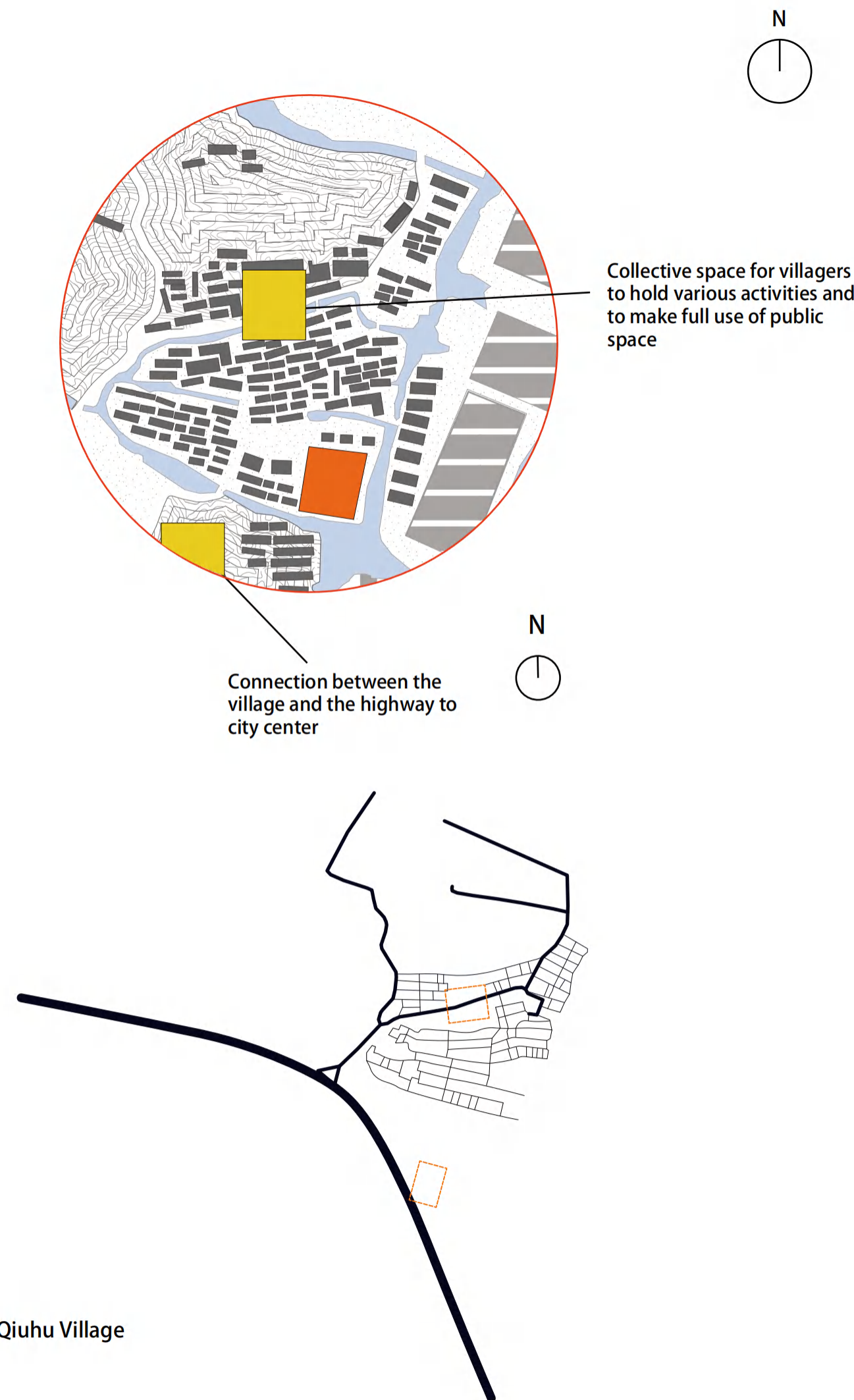
The compact and dense layout of villages is the synonymous with a chaotic and irregular landscape. The network of narrow streets, in fact, is full of services, neighborhood communication. The street in Qiuhu villages, therefore, is not simply the space for traffic, but becomes an external projection of the private space, even a centimeter of space is not wasted.

At the moment, however, this interdependence between the external and internal environment is confused. Relations between the two areas are blurred, lacking in adequate mediation, unstable, and require an improvement in the physical environment.

The street, together with its relationship with services, is therefore, necessarily, the subject of intervention in our project proposal, as a vital public space, strongly rooted in the Chinese tradition, and on a human scale, very different from the large modern urban arteries intended for to fast mobility and transport. In the village, on the other hand, the narrow dimensions of the streets lead people to prefer walking underopen air environment over cars, where these roads lead to and how they intersecting become very important.

There are two location are chosed as potential project area. One is where roads meet, in the centre of village, which playing an important role .The second is the bridge between highway and village.

Roads in Qiuhu Village



Special and social condition

The organization of Qiuhu Village is in mess, crowded self-owned houses are face to face with each other, there is no public space for resident here to hold activities. They assume more inner space than outdoor space in this contidion. The public outdoor spaces provided to residents are residual spaces where no specific activities can actually occur. These spaces can be classified following the duration of usage from the users, and can be either transitional or stationary which, in turn, can be divided into fast and slow. The narrow alleys can only allow people pass by through them, considered fast because of the absence of functions to keep people there long.

This option is given by the main streets where the alleys end into, that are slow transitional spaces for residents who can walk there contemporarily thanks to a wider section, and are attracted by the stores that define the street and keep it active through the whole day. These are spaces that are functionally attractive but where people overflow from the small sidewalks into streets dedicated to vehicles, meaning that they are not designed intentionally for pedestrian use, but also emerging as a space typology collectively enjoyed by users . On these area, the encounter between sidewalks and the buildings above them, can generate resultant areas where people can meet for a brief conversation and make use of these public space.

All these spaces are allowing “ contact bewteen resident” happens, because of the dense built environment that does not include a variety of outdoor spaces, the high-intensity activities are not possible: it is based on a system that does not give the chance to live a

Regeneration proposal for Qiuhu

In this new organization of Qiuhu, buildings and public spaces are inserted with the intention to introduce its residents to new socialization spaces, covering a series of interaction options that are currently missing in the Village. In fact, the current spatial and social conditions looked as a lack of certain social experiences. In many cases the users can take advantage of the public space not only by the attraction of interest, a common space is also more potential for village life, especially in a nealy none of outdoor space village. To create a transitional spaces, which collect amount of single individuals. From this dimension, residents no longer stay in the extreme spatial condition of their dwellings where they are alone or in small family groups, separated from the outside world. The communication in new public space is directly and emanative, they are free to choose and not trapped in small units.

As the thesis identifies this condition as one of the responsible of the missing sense of belonging in residents, and consequently a weak environment where to develop a collective identity for people to reflect in, it aims at offering new spaces and functions for daily life. The new opportunities for individuals and groups are: public courtyards, co-living residential options for turists, ground-floor collective functions space(like sport playground) and a pocket garden(not big scale but change the block contest). All these services are given to Qiuhu contributing to a updated behavioral model of use, moving from a linear alternation of two dimensions, to more parallel dimensions all available to the residents: the home, the block, the neighborhood, and the village scale.

The design put forward the idea that the presence of new functions and public realms acts positively on the creation and affirmation of self-identity in a place, and contributes to the construction of collectiveness and collective memory; this is possible in a place where people can meet and be confronted with each other. In this idea of mutual enrichment and growth between residents, the architectural choices in the design were taken aiming at the composition of a habitat where newcomers and those present can travel through, expanding their vision of places out of homes, where human relations are built, and the attachment to the Village is deepened.

Cases study



Yunzhai Village Community Activity Center / THAD +SUP Atelier
Source: <http://supatelier.com/cn/projects/593>

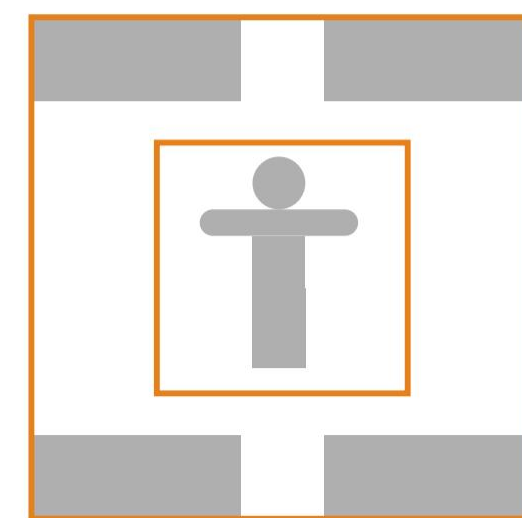
The community activity center is located at the entrance of the village where several villages meet. It adopts a progressive courtyard layout. It can not only serve as an auditorium for villagers’ cultural activities, hold festival celebrations, leisure movies, and popular science lectures, but also provide daily life for the elderly and children in the surrounding villages. A place to relax. At the same time, as a rural demonstration of transformation and upgrading, it provides external service functions such as external service reception and cultural exchange salon.



The extreme density of villages generates the need for more public space, which could be obtained on the ground floor and in the residual spaces that are currently under-developed.



The interdependence between the road and services, currently chaotic, requires a redefinition of the spaces, which maintains their diversification, and an improvement in communication between the two environments, internal and external.



The small size of the house requires an internal reconfiguration project that is comfortable and flexible according to different needs, making the most of the available space.

The community center a has only one floor, it does not have a huge scale, mainly serves as a theatre where can host various artistic activities. The community center b has three floors. The first floor is open to the outside world, and the second and third floor are connected with terrace. It has the attributes of villagers' spontaneous activities. The open space characteristics meet the functional needs of different time, together with the continuous undulating roof and the villagers' living scenes, together to build a micro world under the big roof. As a public activity place that serves all the villagers, the design considers the diversity, richness and subtlety of life in smaller scale, and the context of life is subdivided into small scenes, which for example are film screenings, family activities, study and reading rooms. People who come and go can freely shuttle and stay in the gray space connecting the inside and outside, while air, light and nature become the background of public life invisibly. For gatherings, theatre and other important and crowded occasions, the space can be re-integrated through a reasonable layout.

South part of the river is a restaurant and a playground. Even limited by the size of the venue, a sports field is necessary for all the people who live in the village.

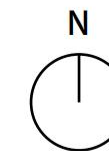
As for the outside zone of the village, considering about the sanitary issue and Chinese traditional method of trading, an open market is better than a closed one. The height of roof let the air and humidity maintain a steady state, the original architectural boundary sense of the market has been eliminated, showing a gesture of welcoming villagers to enter from all directions. The folded roof also allows light to enter from the side of the eaves, which greatly improves the lighting conditions under the eaves. The building near the market is Veterans Service Station & village committee. It originally was in the center of the village, in the new proposal it is the "village entrance", which distinguishes the boundary between the village and the field, and should have the unique indicative and public character of the "village entrance" space in terms of site characteristics.



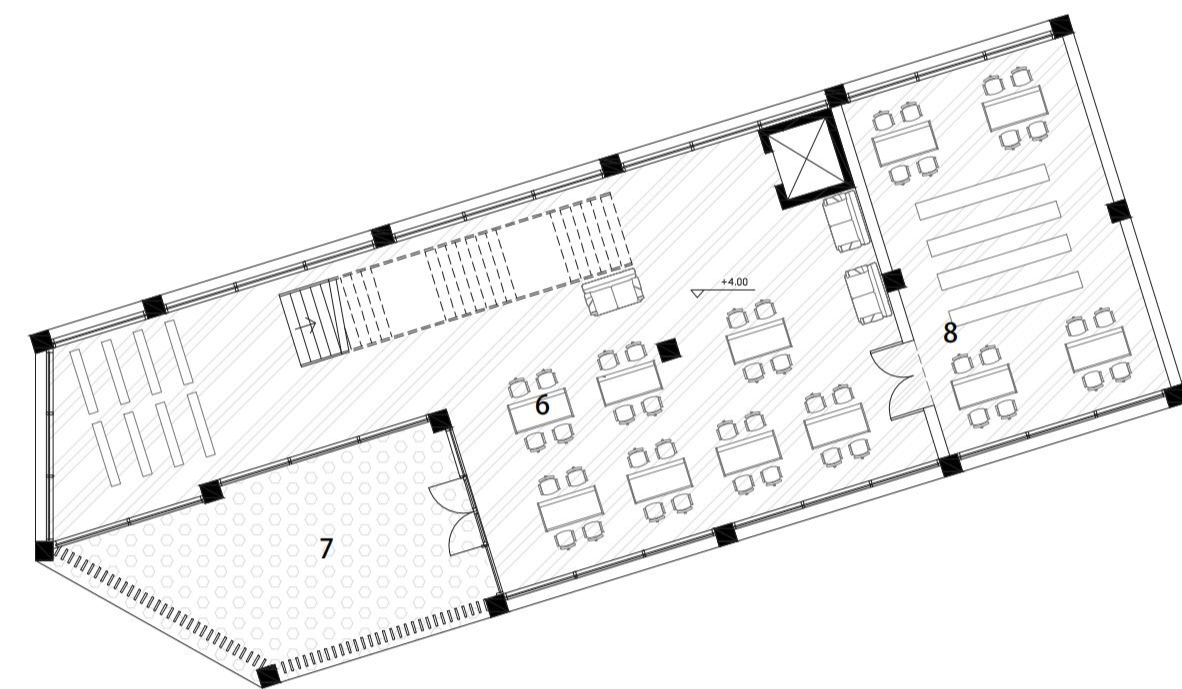
Central Qiuhu Village



First loor 1:200

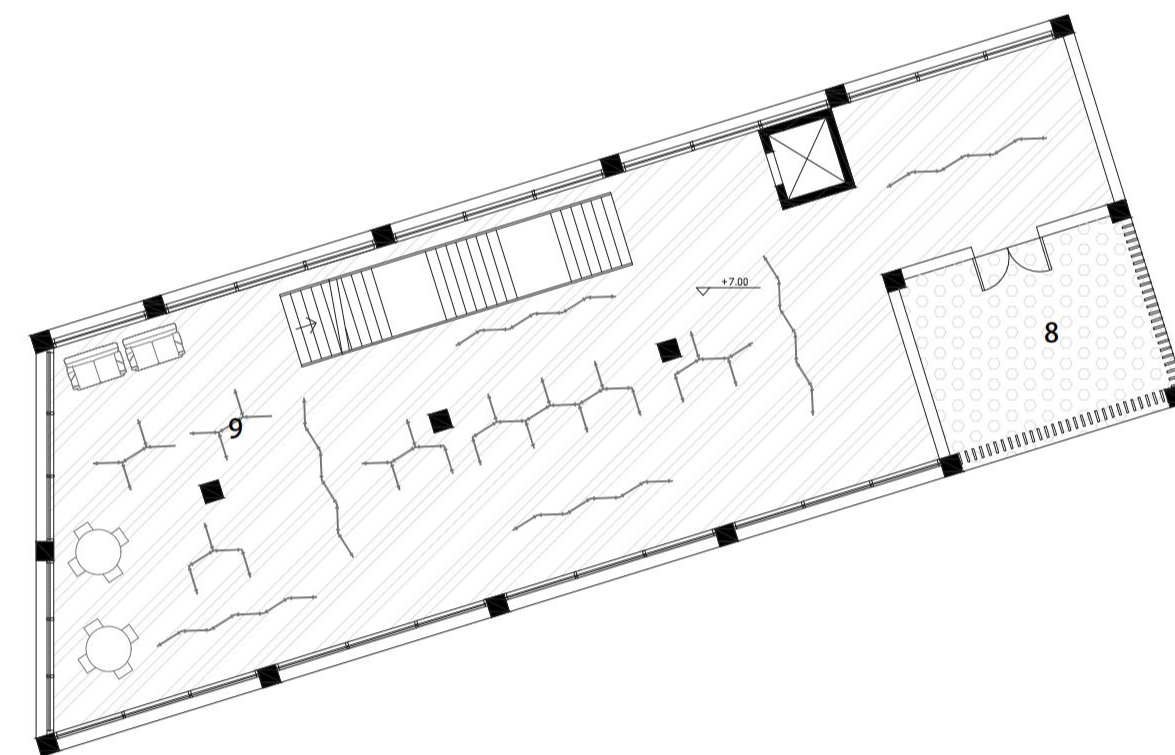


First loor 1:200



a: Community Center
b: Community Center
c: Restaurant/ bar
d: Playground

Second floor 1:200



1. Locker room
2. Meeting room/ small theatre
3. Office
4. Multi functional space
5. Restaurant
6. Study corner
7. Balcony
8. Micro library
9. Art exhibition

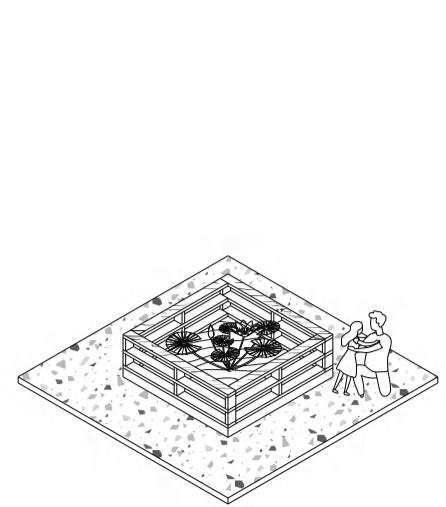
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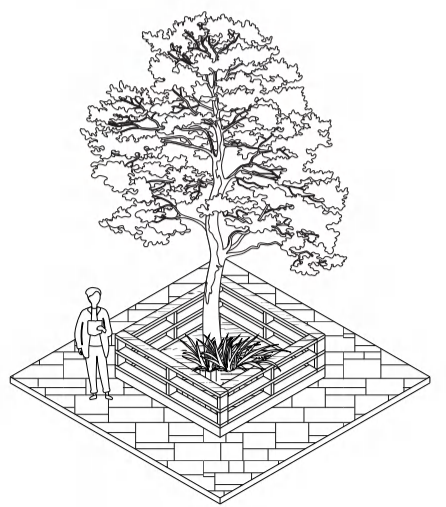




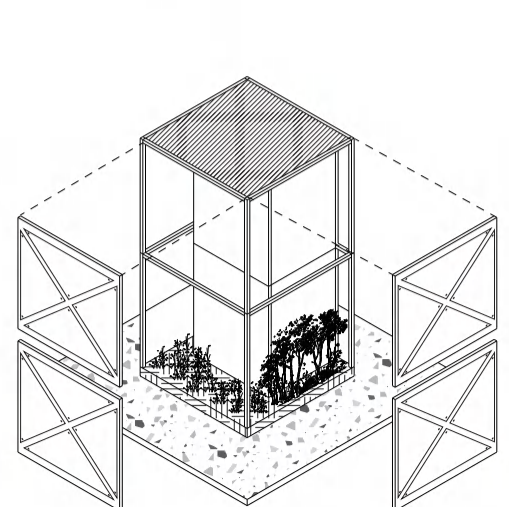
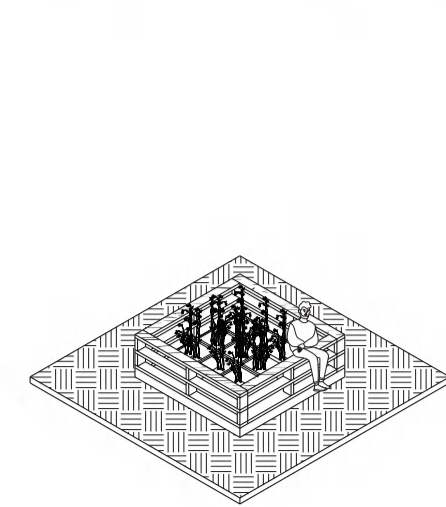
Tree fences



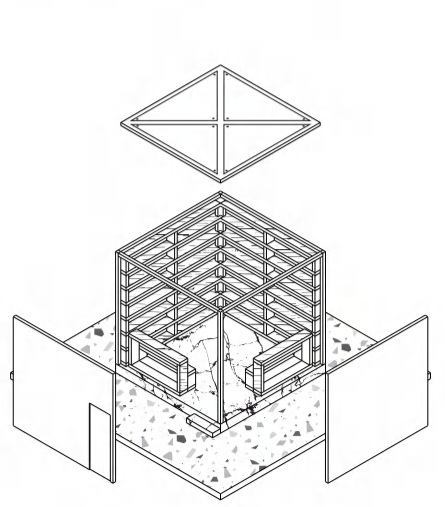
Pond with Lotus



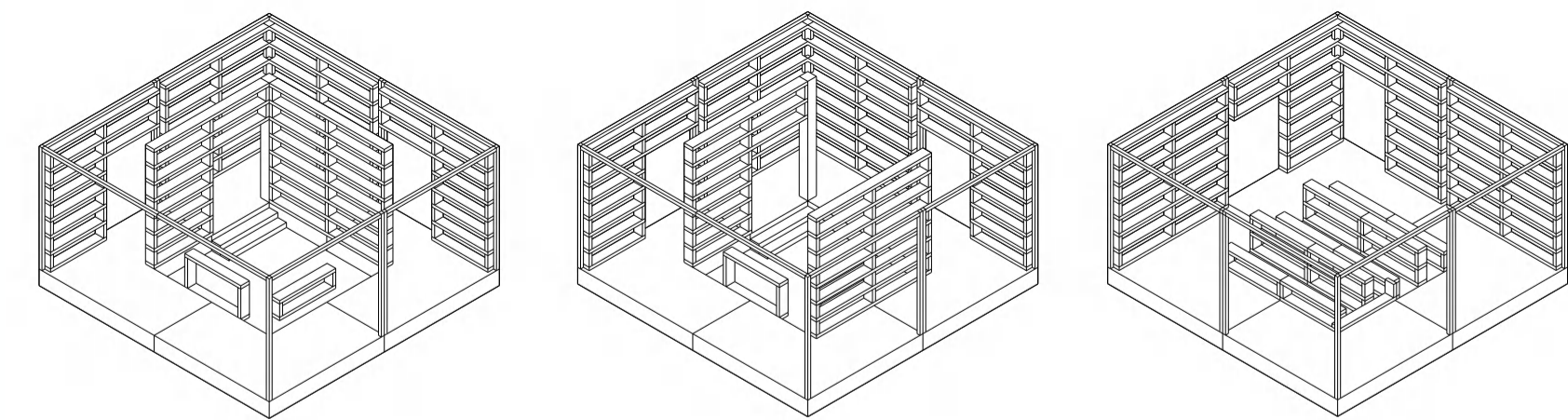
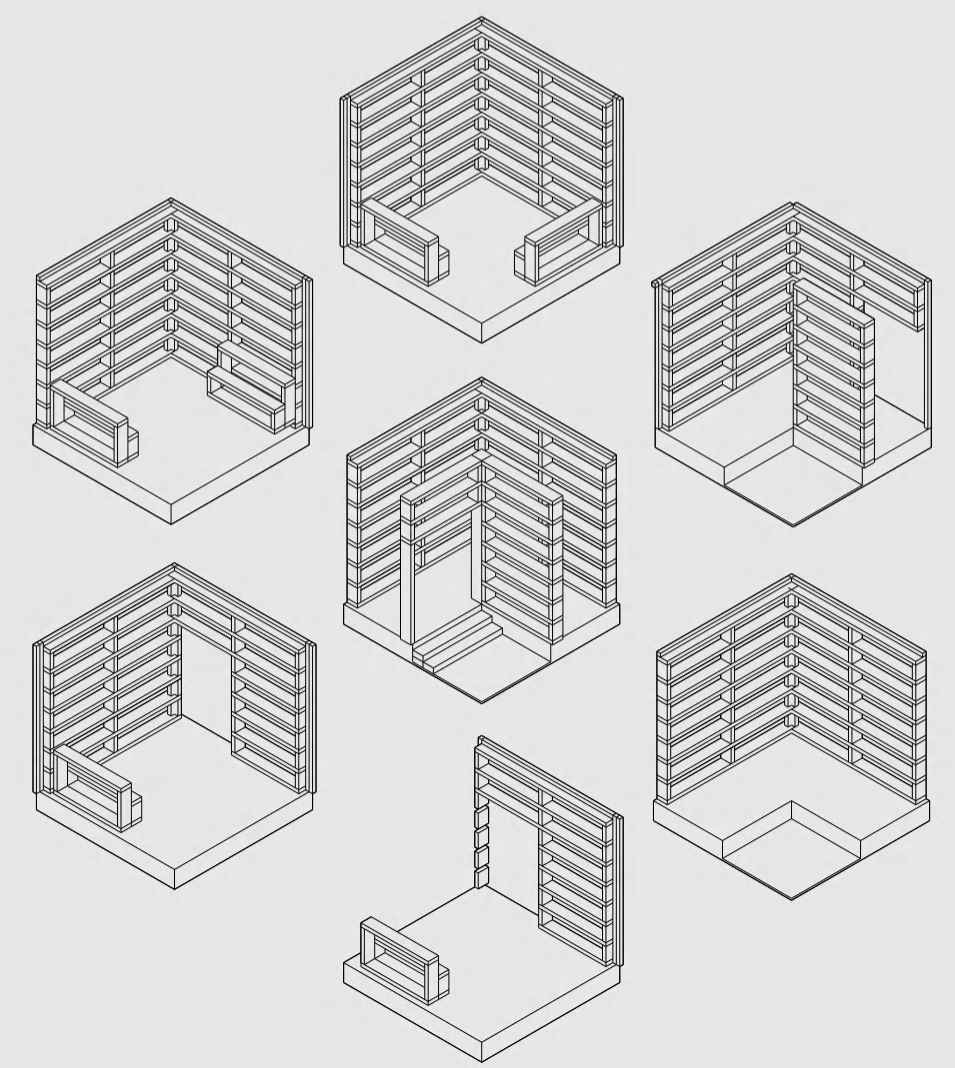
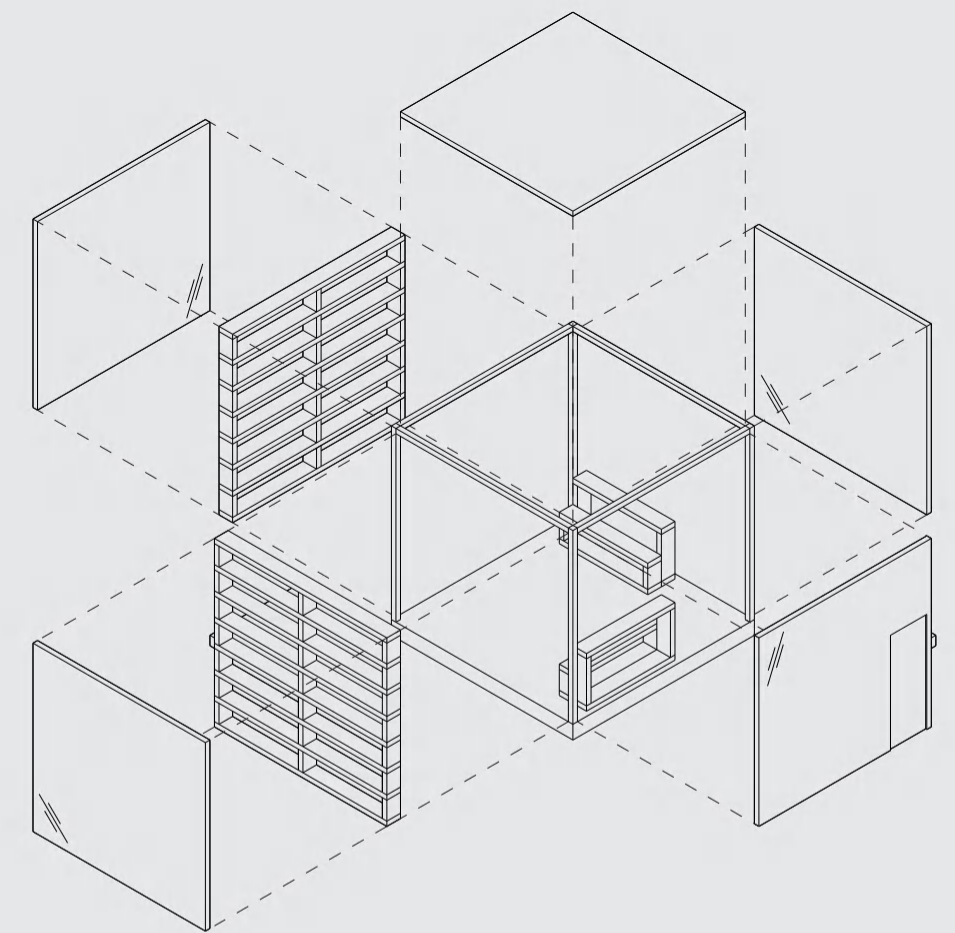
Flower garden with wooden fence



Elevator



Small Reading Room



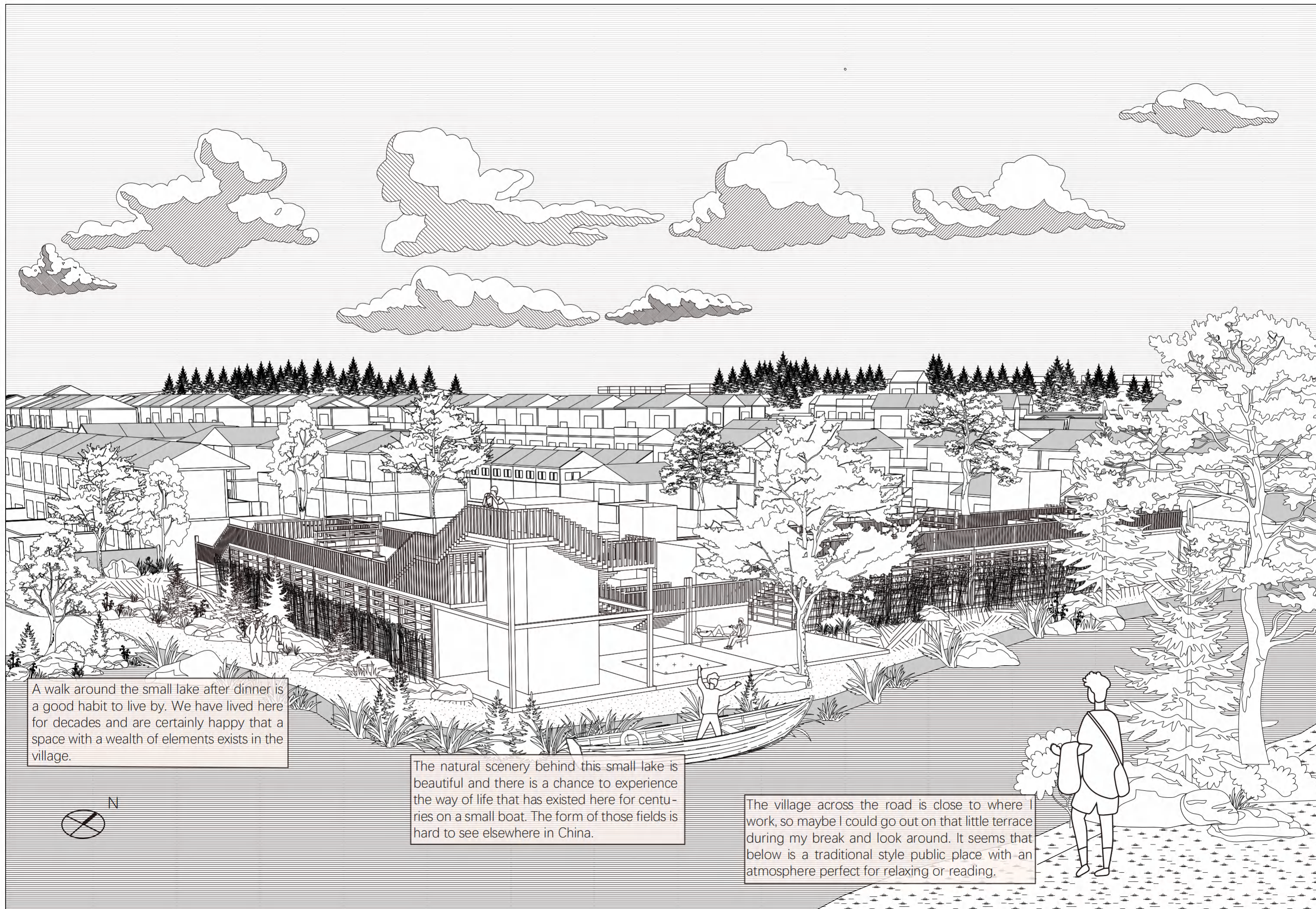
Village Node - Square

The main reason for choosing a modular design for the small node is to allow for future upgrades to the quality of the small-scale space. Without the need for building construction, villagers can also change the square to suit their own preferences, for example, Each village needs assembly areas of different sizes and this can be used as an area that has the flexibility to provide space for gatherings of different sizes. The outdoor area can be used as a variety of flower beds and small reading spaces, but also as a sandpit, a pond, and some other spaces. Inside, the shelves can be used as bookshelves or as displays for the collective memory of the village. A souvenir shop, a small post office, a convenience store, etc. Each village has a different composition of people at different stages of development.

The entire public space is intended to be a simple structure and installations that can be disassembled and freely combined to form a variety of functional spaces, using the freedom of combination to create a variability that counteracts the ambiguity of the overall nature of the suburb. Whatever the direction of development, there is a certain amount of tolerance.

The Shaoxing area is also a place with a very strong cultural atmosphere, and many cultural activities are held at the grassroots level, including book fairs and painting exhibitions, and the versatility of this small square can have ample room to play. It is also possible to take full advantage of the landscape.





A walk around the small lake after dinner is a good habit to live by. We have lived here for decades and are certainly happy that a space with a wealth of elements exists in the village.

The natural scenery behind this small lake is beautiful and there is a chance to experience the way of life that has existed here for centuries on a small boat. The form of those fields is hard to see elsewhere in China.

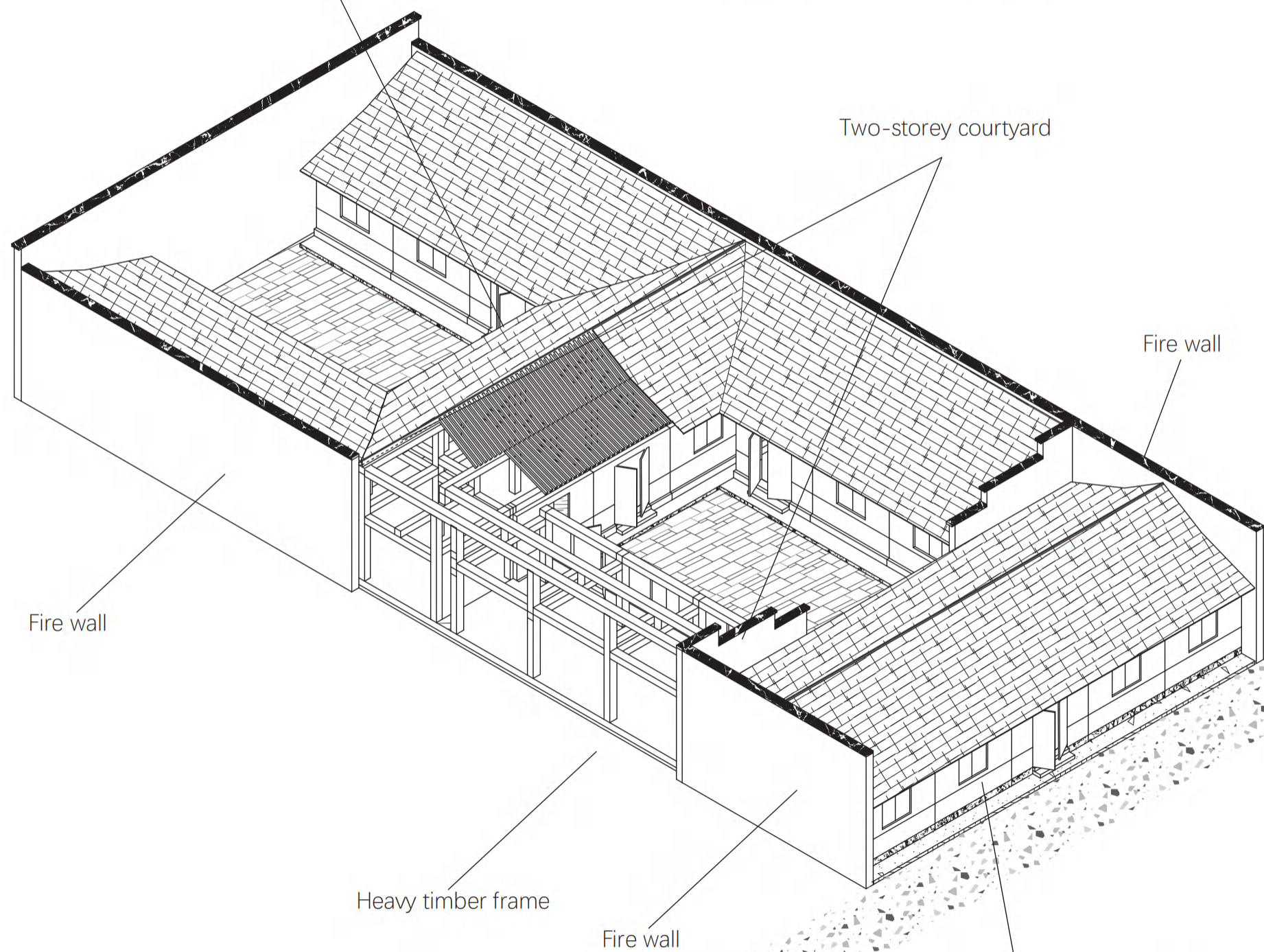
The village across the road is close to where I work, so maybe I could go out on that little terrace during my break and look around. It seems that below is a traditional style public place with an atmosphere perfect for relaxing or reading.

LINE Main Road

The backyard is used as the main living room, usually with the elders in the centre and the east and west sides divided between other family members.

The culture of living in Shaoxing is called living by the river: business along the street and living along the river.

Most of the small courtyards are one or two storeys, with an emphasis on internal lighting and adapting to climatic conditions, so that the courtyard is small and forms a hollowed out small space. The lack of ventilation in the summer avoids excessive humidity and stifling heat.

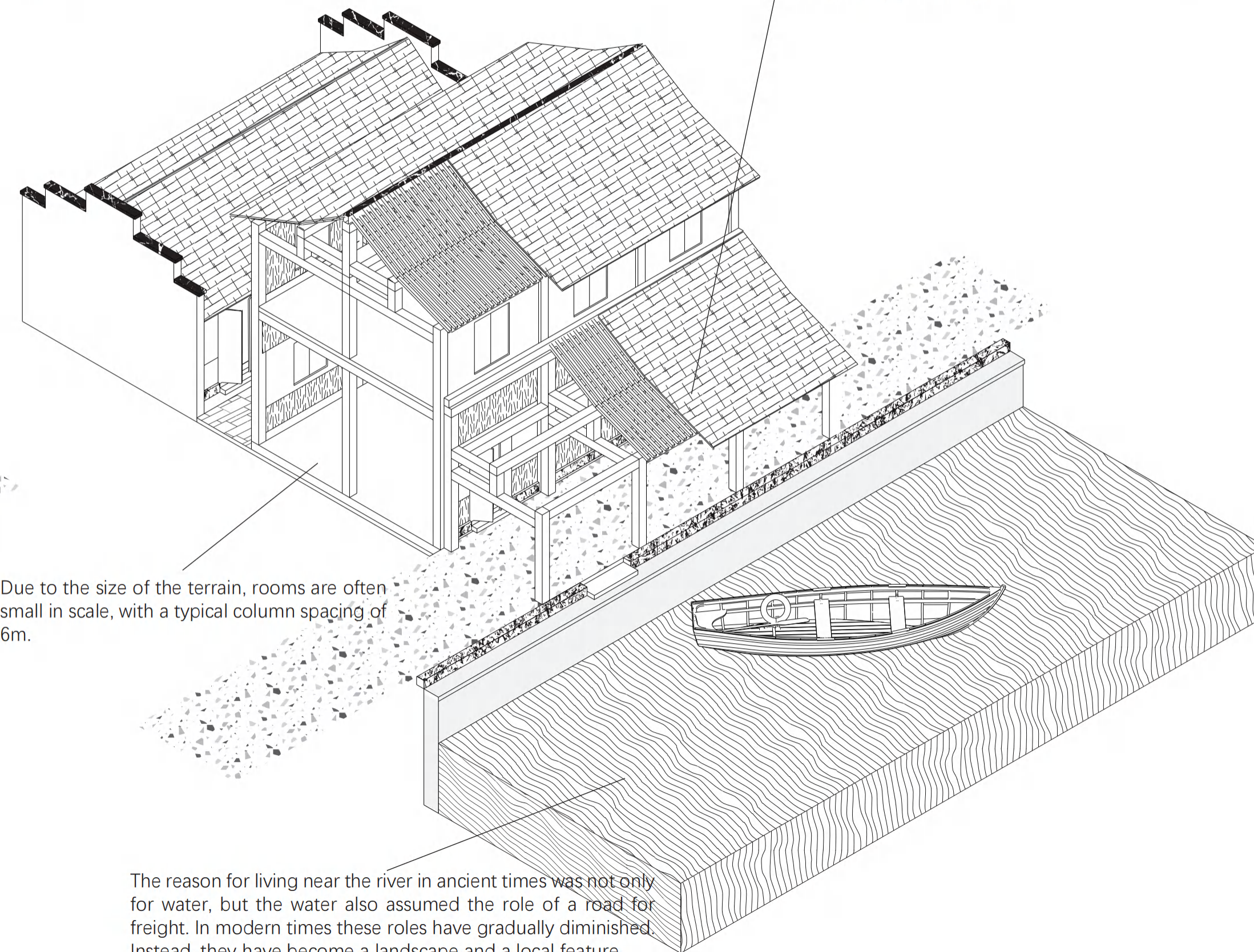


H-shaped layout of traditional houses

The entrance, the outermost room varies according to demand, and some of the street frontage will be used as shops, such as small family workshops, small restaurants or other small commercial shops. If used for the interior of a home, many of these rooms are used as shrines or parlours.

Veranda.

The building is designed as an external corridor. The ground floor of the building is built as a pedestrian corridor near the street, and above the corridor are the floors of the first floor, as if the first floor were riding on top of the ground floor, hence the name '骑楼' (Veranda)

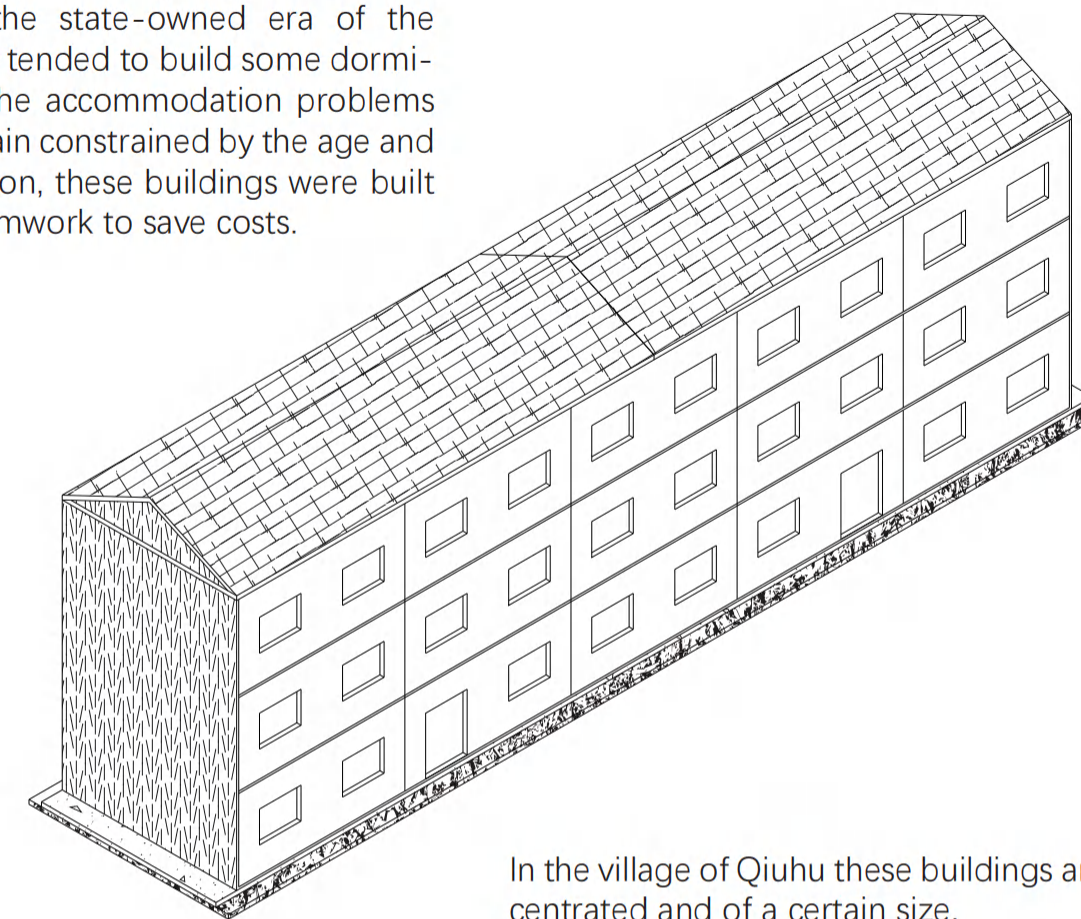


Due to the size of the terrain, rooms are often small in scale, with a typical column spacing of 6m.

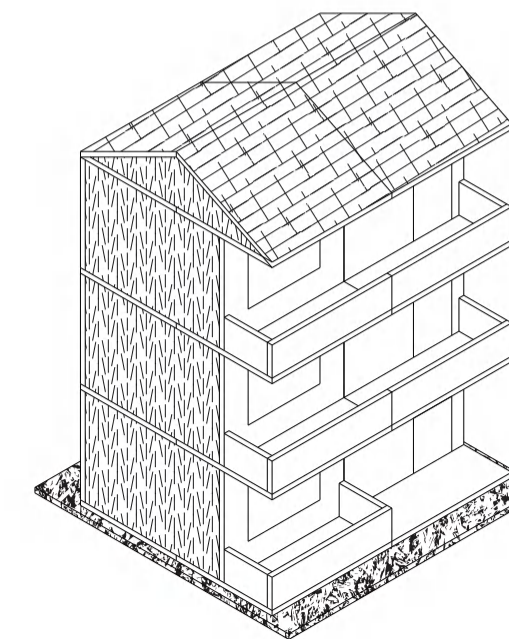
The reason for living near the river in ancient times was not only for water, but the water also assumed the role of a road for freight. In modern times these roles have gradually diminished. Instead, they have become a landscape and a local feature.

This sheltered Veranda is often ideal for commercial activities, and the Shaoxing area is subject to a long rainy season each year, as well as frequent visits by short showers during the typhoon season. This is why most shops along the river are willing to build a Veranda to connect with their shops.

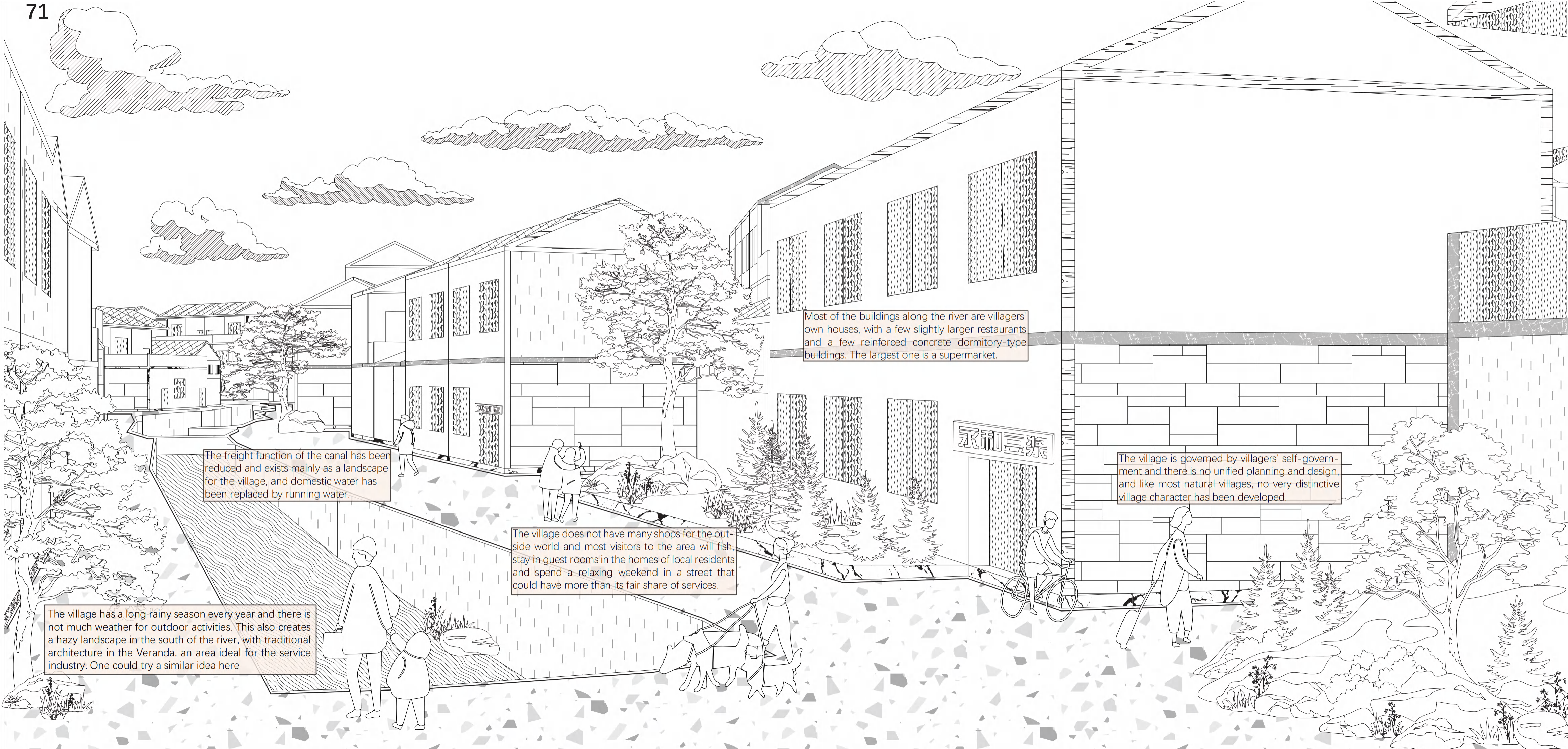
Staff dormitories for nearly 30 years, in the late 1980s a large number of village-run enterprises appeared in the Zhejiang area, and due to the inertia of the state-owned era of the enterprises, they tended to build some dormitories to solve the accommodation problems of their staff. Again constrained by the age and economic situation, these buildings were built with uniform formwork to save costs.



In the village of Qiuhu these buildings are concentrated and of a certain size.

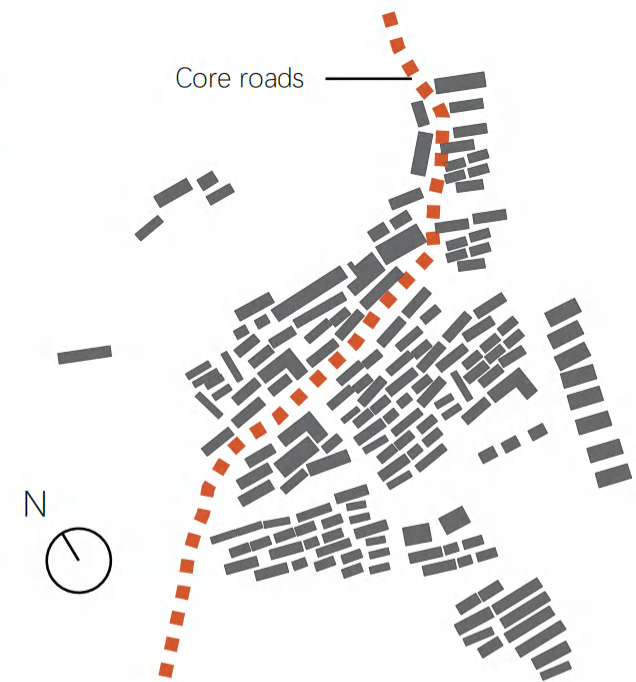


Nearly 30 years of villagers' self-built houses, the recent modern changes in building materials and technology, villagers' self-built houses are often constrained by the topography can not be spread out, but to the vertical direction to seek space, so most are single 3 to 4-storey small buildings, most of the local characteristics are constrained by economic conditions are ignored. The quality of the houses also varies.

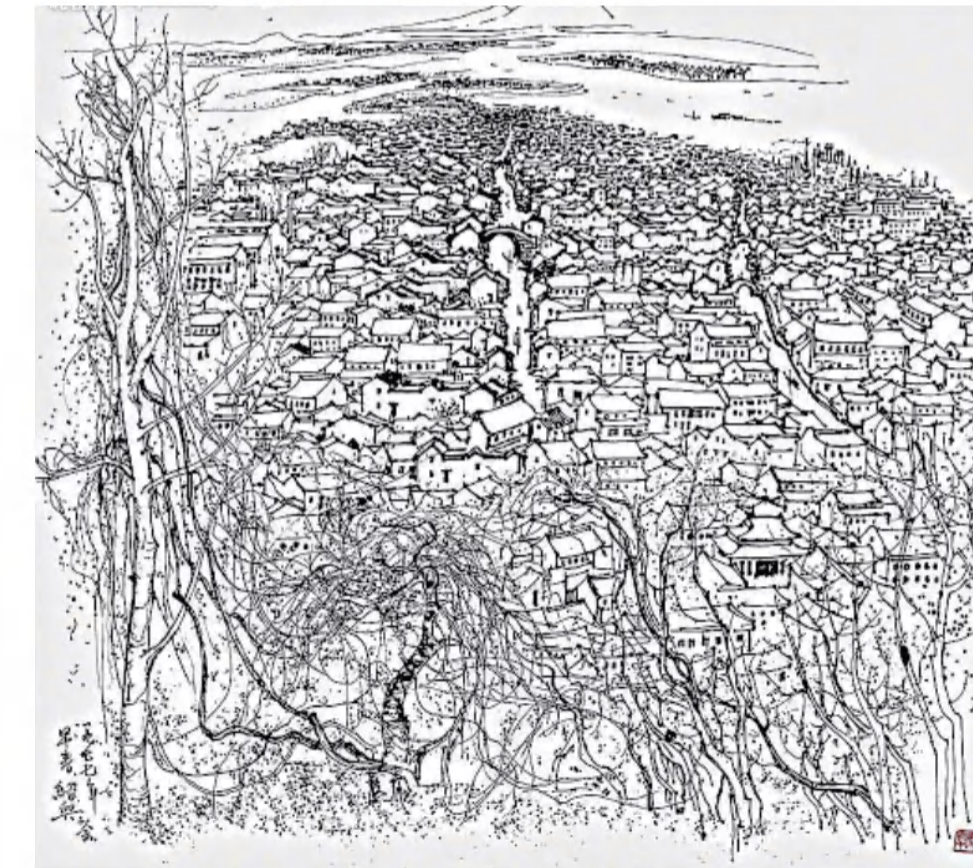


The state of the buildings in Qiuhe Village. In the village of Qiuhe, the main period of development was in the last half century and the village was not developed in ancient times as a distinctive village, so there are not many traces of the water village or most of the traditional buildings have not been preserved to their present day value. Most of the buildings in the village are therefore villagers' self-built and affordable houses from the past decades. A few traditional houses can be found on the south side, still retaining their traditional layout and architectural construction.

The northernmost bank of the river, which is also now the main road, was not designed and was mainly built spontaneously over a long period of time, limited by economic conditions and development positioning. The improvement of this road is therefore of great importance for the development of the village as a whole.



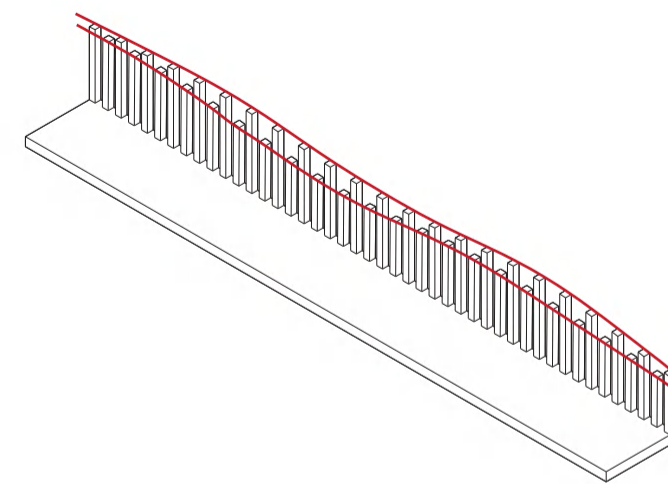
The unique streetscape created



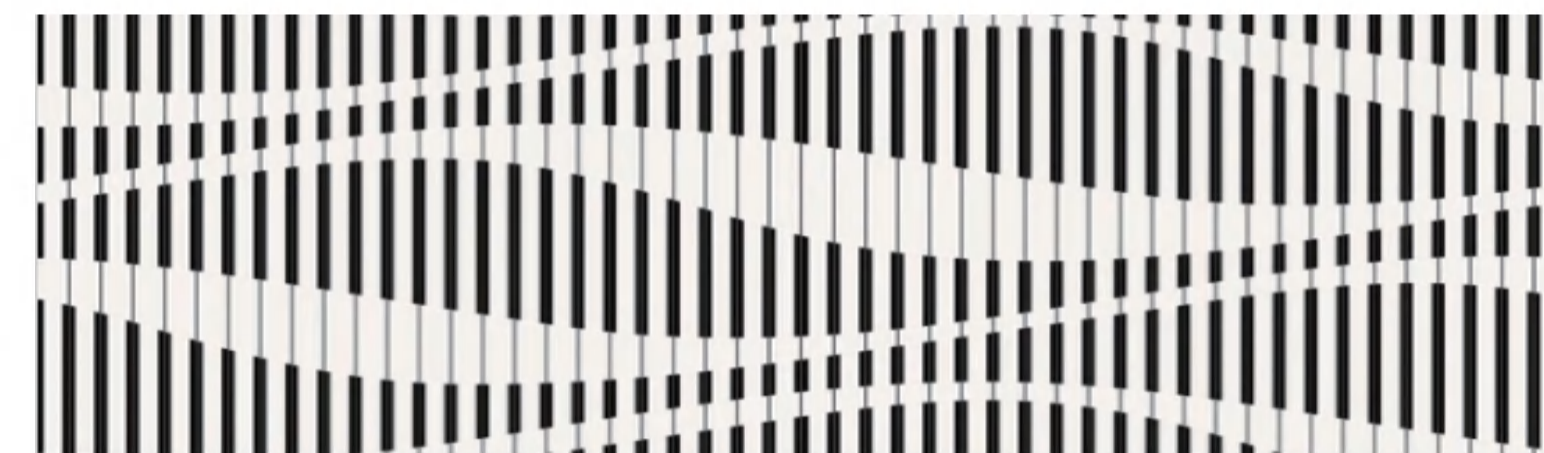
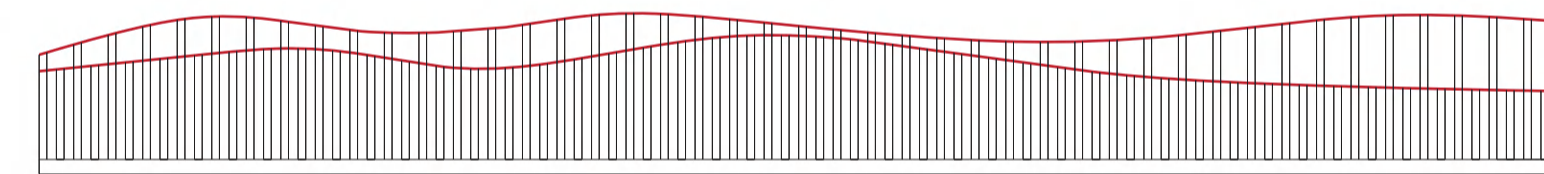
EARLY SPRING OF SHAOXING
The Complete Works of Wu Guanzhong, vol. I, Hunan Fine Arts Publishing House, August 2007, p.132



Most water towns do not have guardrails along the river, in addition if they are necessary to preserve the water town landscape, as well as taking into account the density of people and living habits, but if the river side is used as the main road it is necessary to set up the appropriate infrastructure for the basic legal norms of the tourist area.



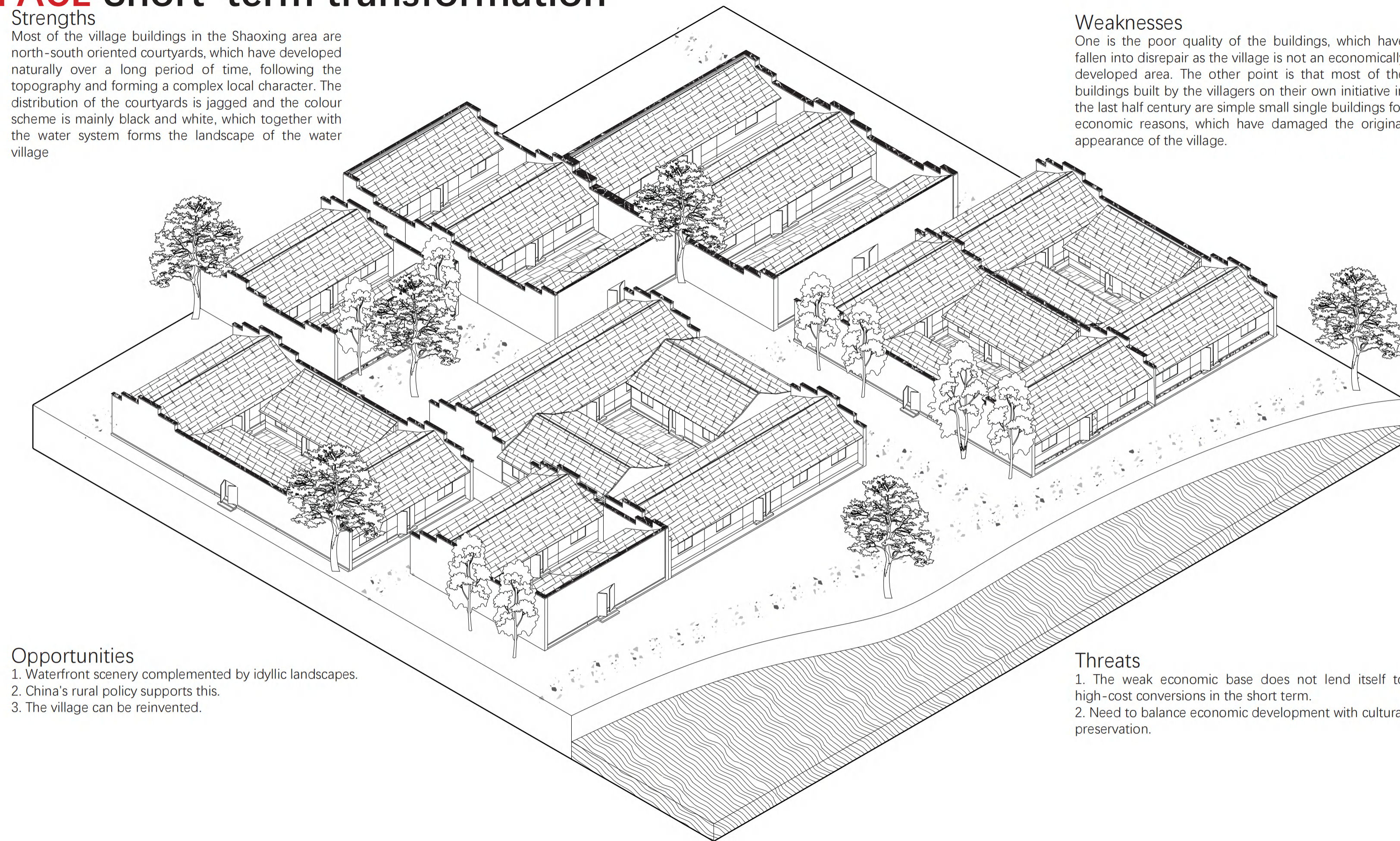
Therefore, a guardrail in line with the landscape of the water village will play a good landscape role. At the same time reduce the management costs of the scenic area. Guardrail design choose landscape painting outline material, increase the sense of hierarchy and natural atmosphere.



SURFACE Short-term transformation

Strengths

Most of the village buildings in the Shaoxing area are north-south oriented courtyards, which have developed naturally over a long period of time, following the topography and forming a complex local character. The distribution of the courtyards is jagged and the colour scheme is mainly black and white, which together with the water system forms the landscape of the water village.



Opportunities

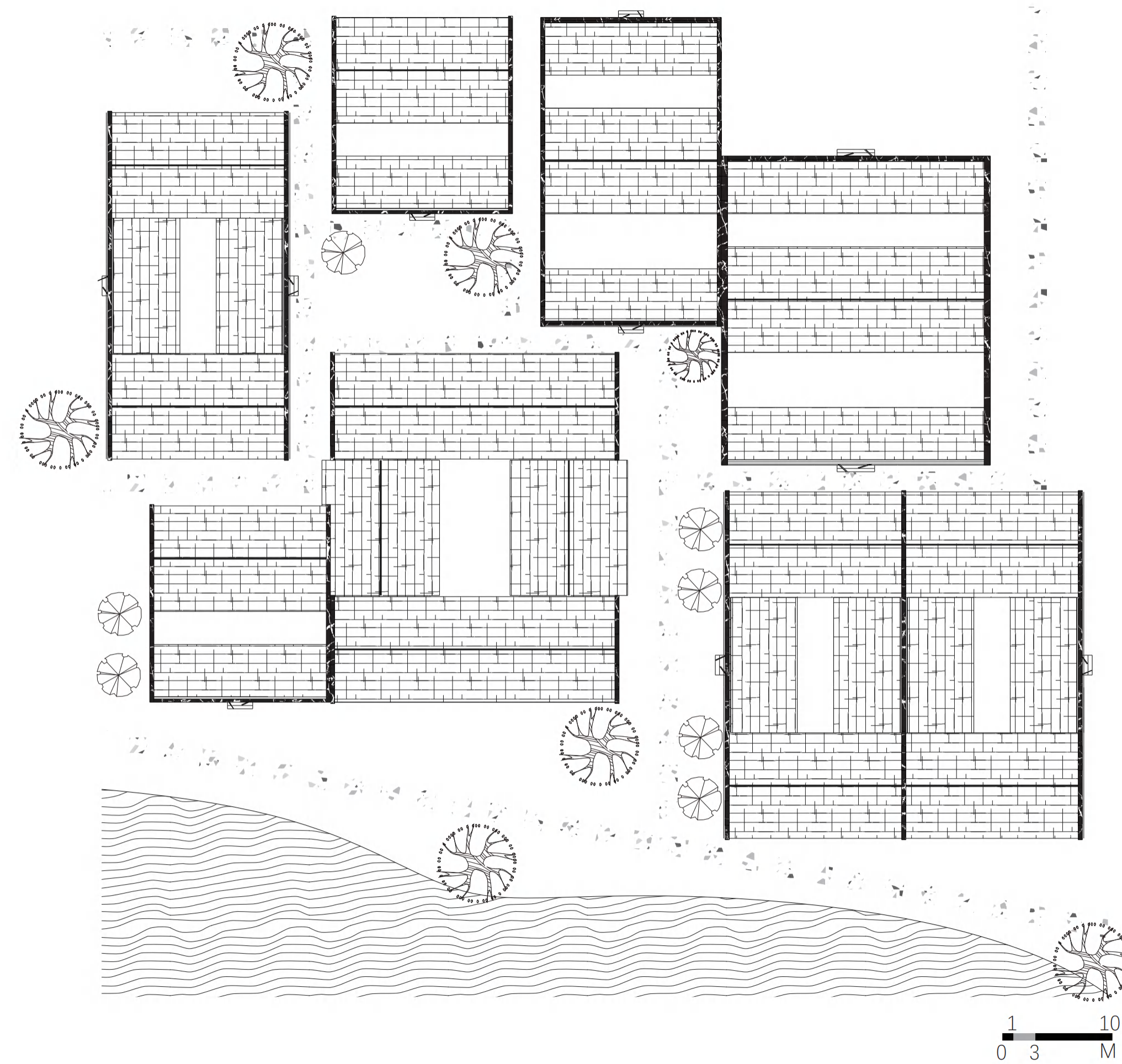
1. Waterfront scenery complemented by idyllic landscapes.
2. China's rural policy supports this.
3. The village can be reinvented.

Weaknesses

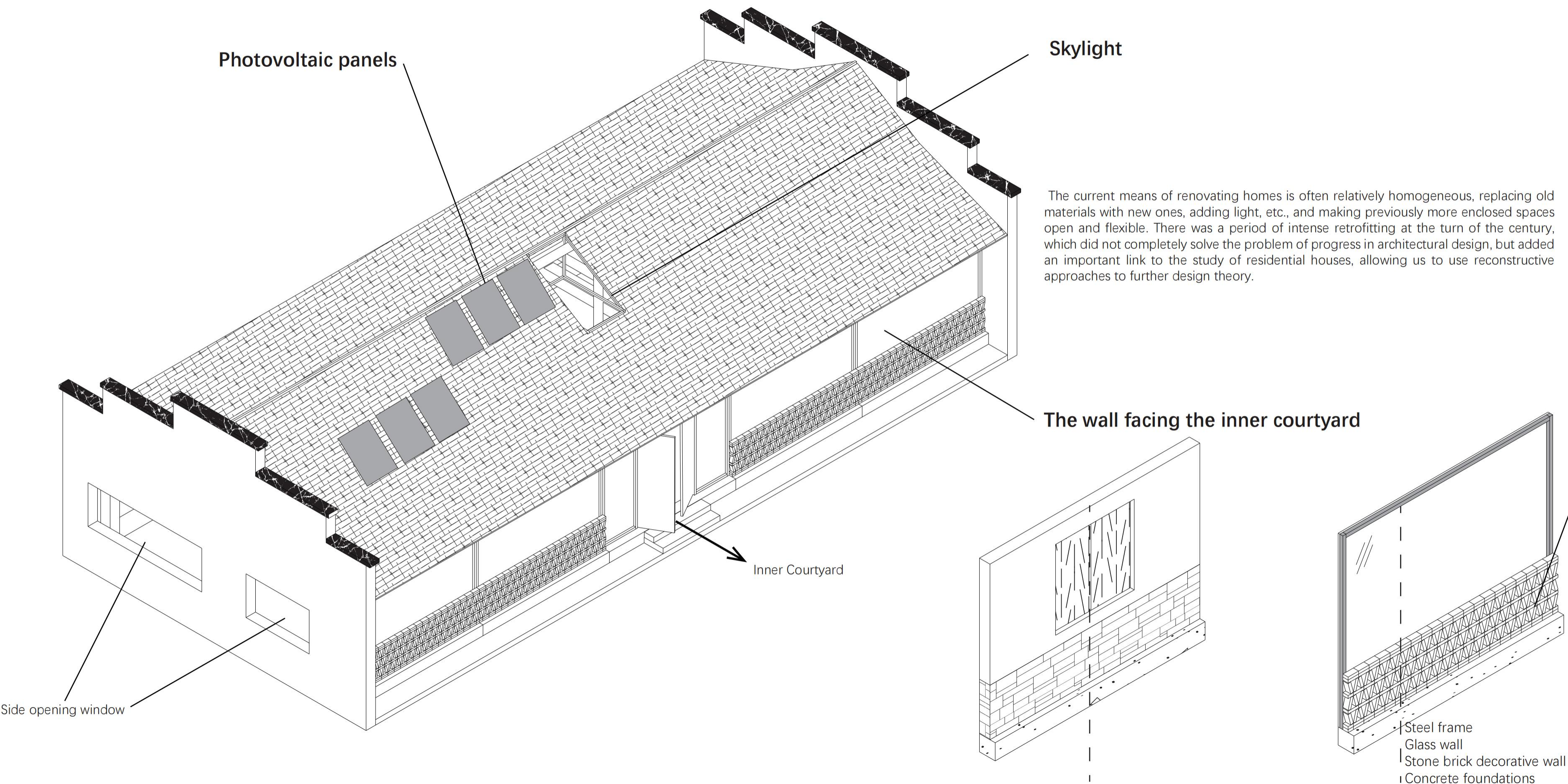
One is the poor quality of the buildings, which have fallen into disrepair as the village is not an economically developed area. The other point is that most of the buildings built by the villagers on their own initiative in the last half century are simple small single buildings for economic reasons, which have damaged the original appearance of the village.

Threats

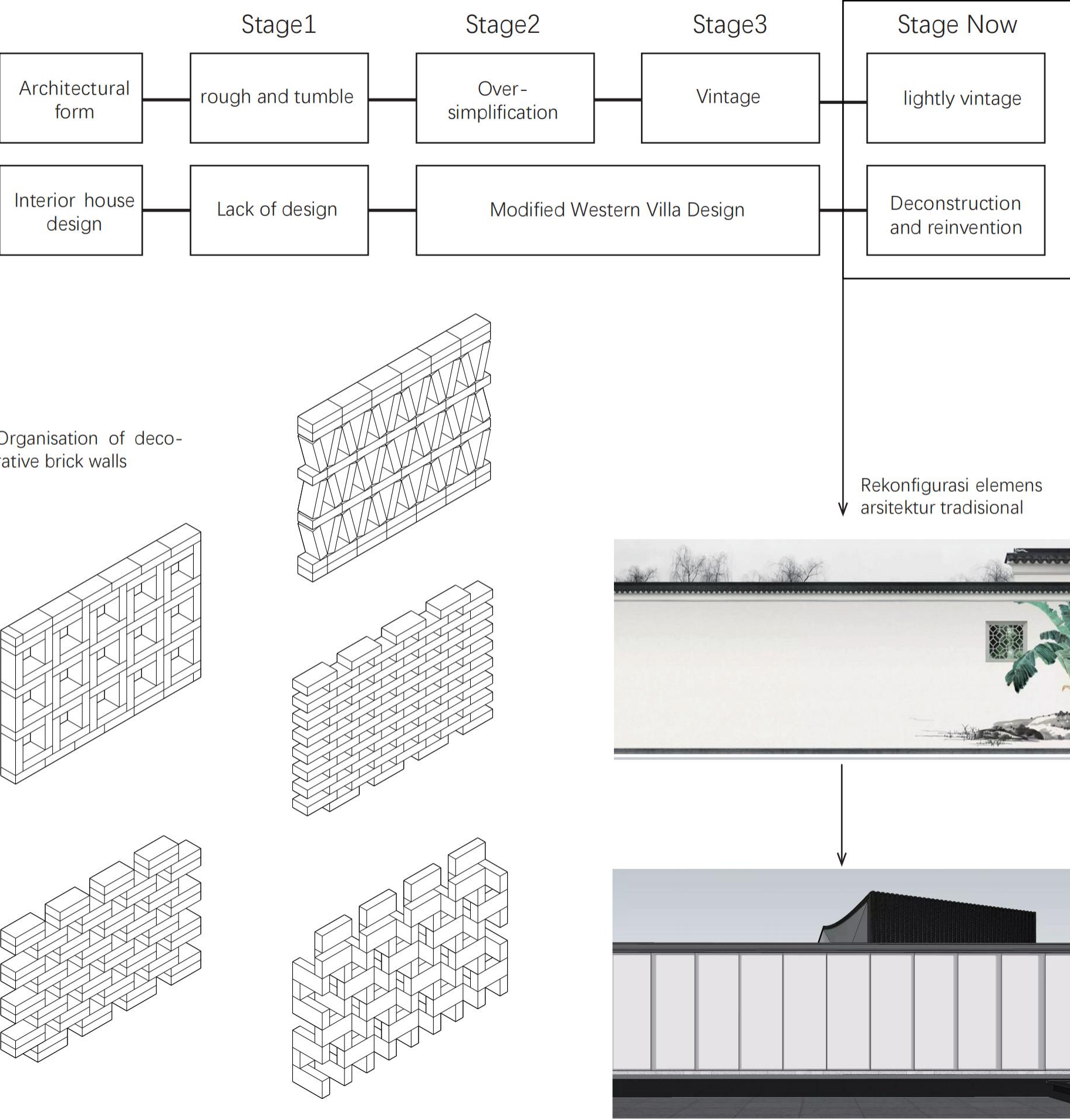
1. The weak economic base does not lend itself to high-cost conversions in the short term.
2. Need to balance economic development with cultural preservation.

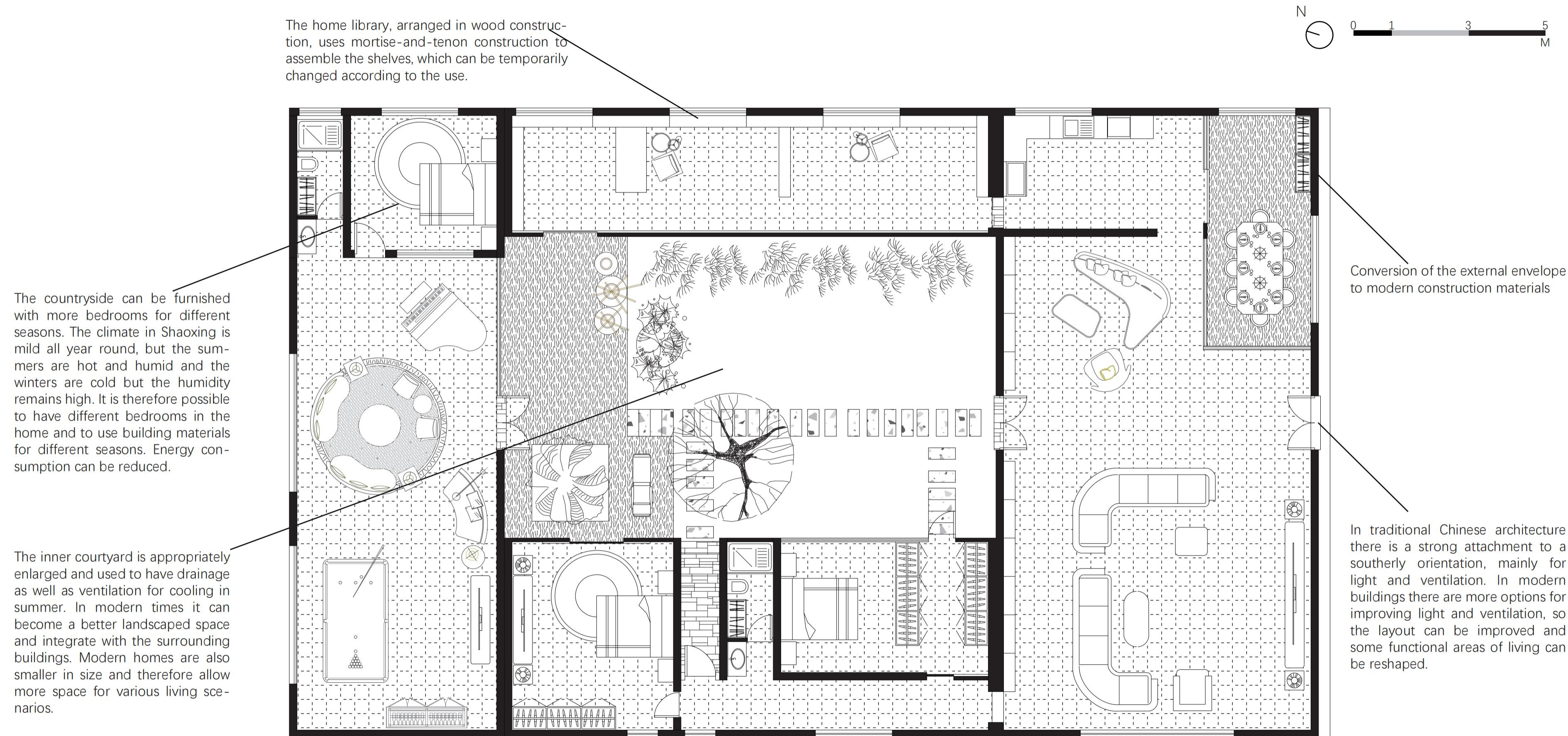


Low-cost primary retrofit (perimeter protection as well as interior)



Development of village house design trends

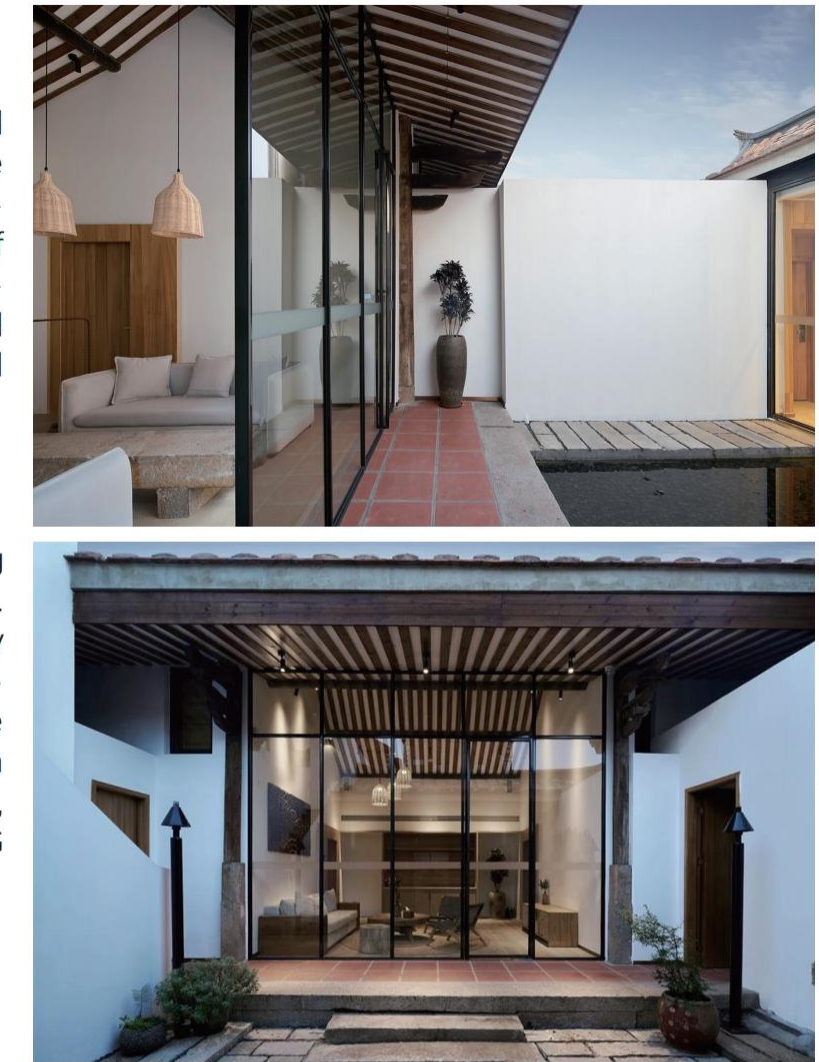




Typical cases

Architect Huang Zhiyong of the Institute of Landscape Architecture and Design of the China Academy of Art has created a contemporary space illuminated by large windows in an ancient rural building, a centuries-old traditional Chinese dwelling. The original combination of ancient and modern elements blend perfectly, creating a beautiful harmony with the rustic colours. The original building partially collapsed and was rebuilt and modernised by the architects, combining traditional architecture with a contemporary spirit.

The timber frame and red brick and tile facade of the original building was retained and the building underwent glass and steel extensions. The interior of this centuries-old traditional house is influenced by wabi-sabi and is based on the use of modern traditional Chinese building materials: wood, stone and porcelain, such as the impressive amount of ceiling height offered in the living room. The result is an impression of a place whose white walls are both refined and rustic, thanks to timber and furniture inspired by a bygone era. Photo: AOG Visual

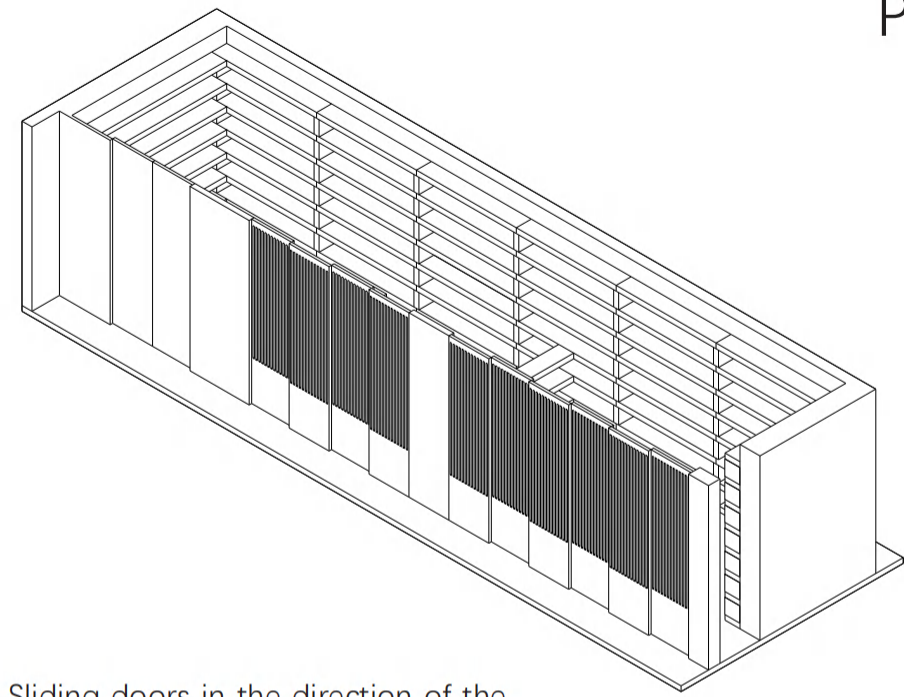




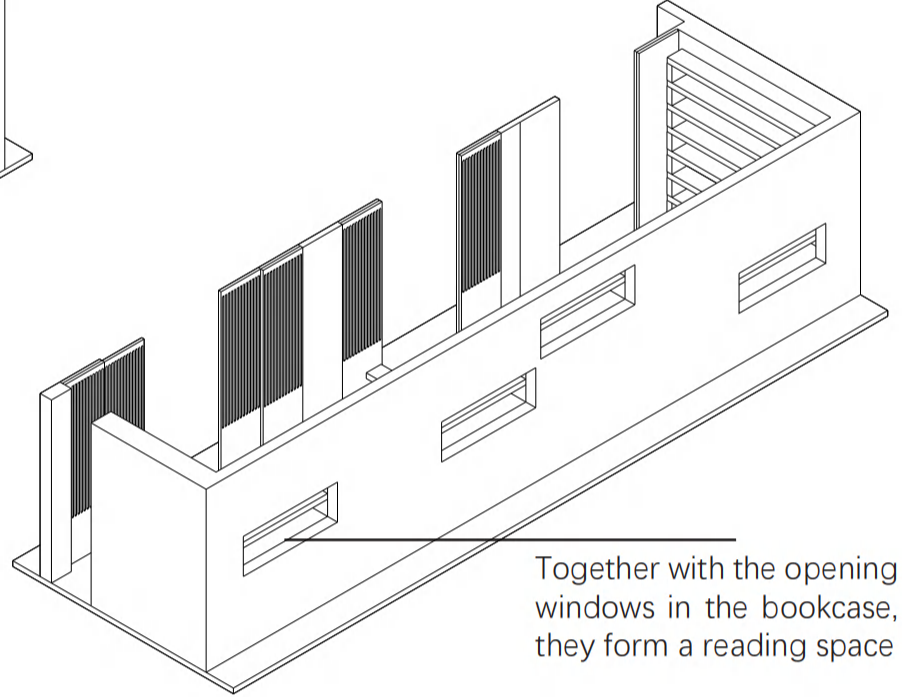
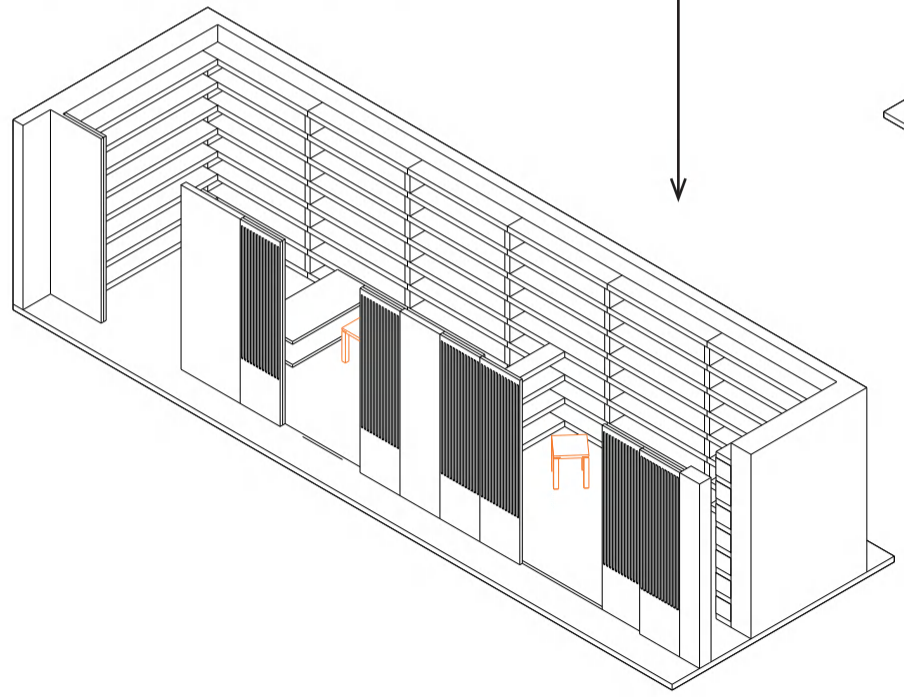
glass

glass

Partial details

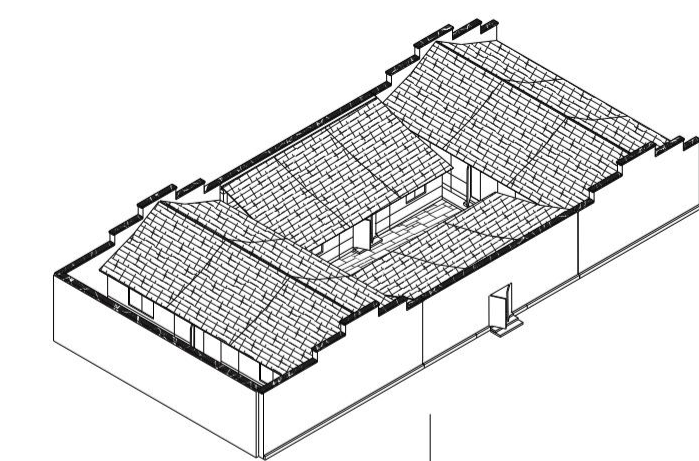


Sliding doors in the direction of the inner courtyard create a realistic open space with the inner courtyard landscape in spring and autumn.

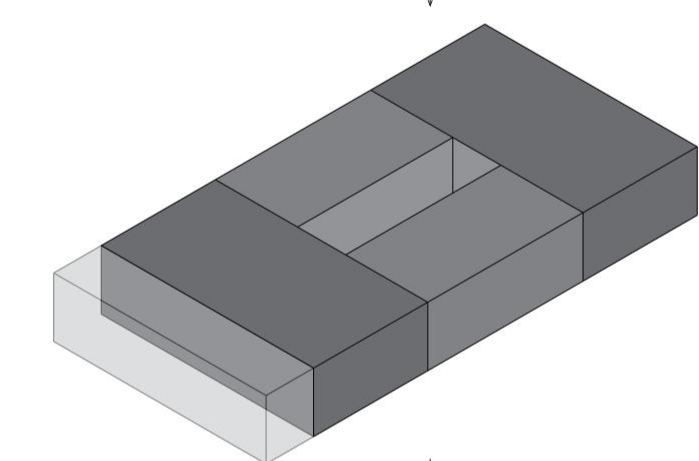


Together with the opening windows in the bookcase, they form a reading space

SURFACE Complete re-planning and redesign

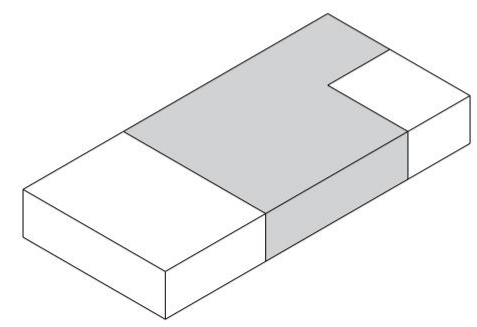
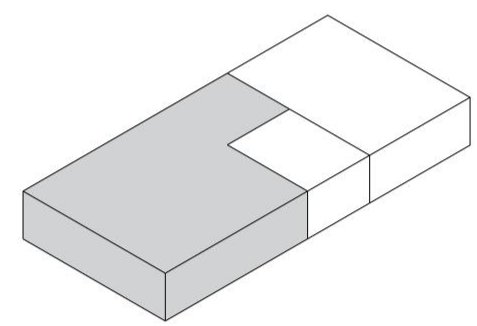
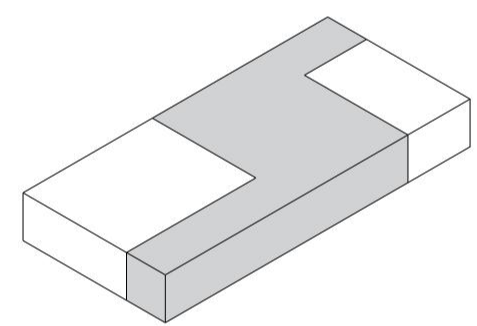
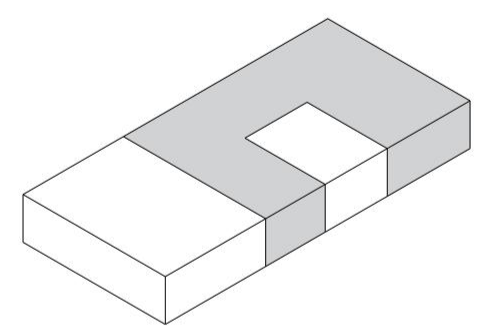


Analysis and reconstruction of the traditional courtyard space



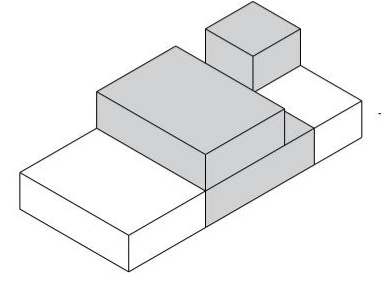
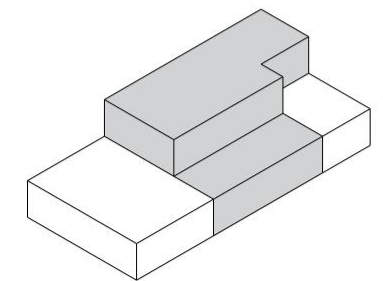
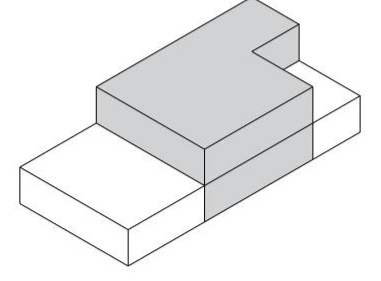
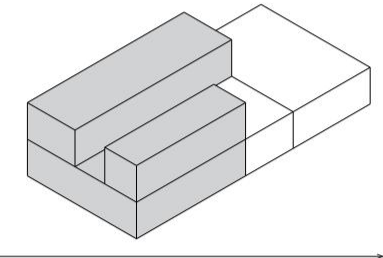
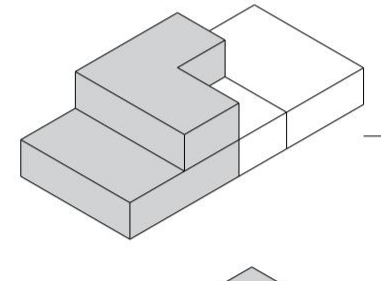
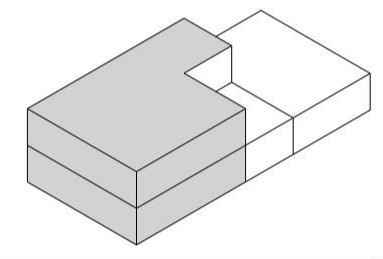
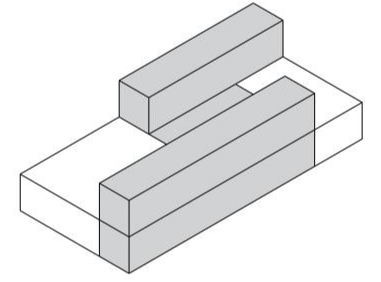
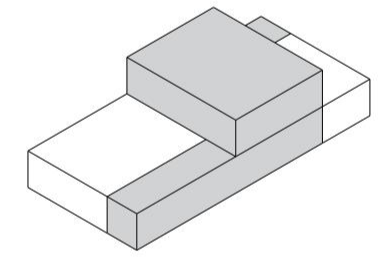
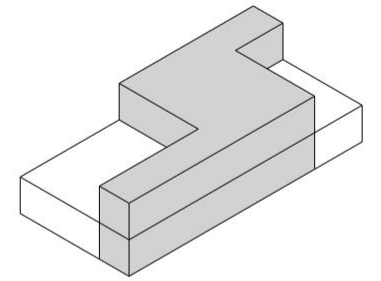
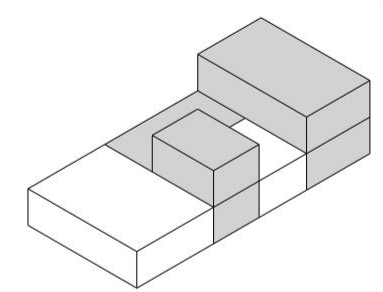
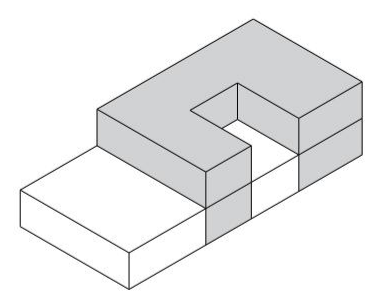
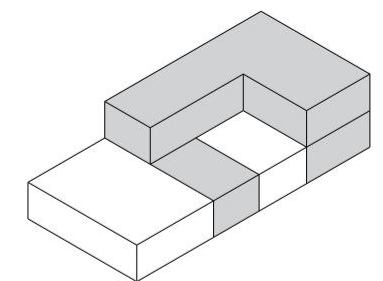
Courtyard space Building mass

Reorganised rural dwellings
Complete re-planning and redesign



In the form of a double courtyard, the small courtyard in the traditional space is an important feature of the architecture of the area and is an important part of the various activities of the home. The large courtyard in front of the house provides the necessary space for all kinds of agricultural life.

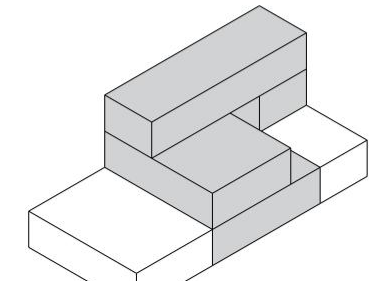
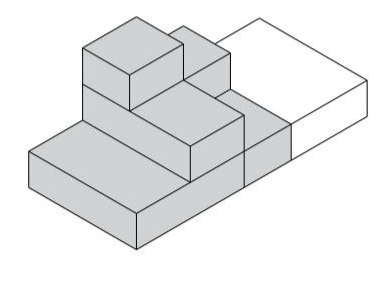
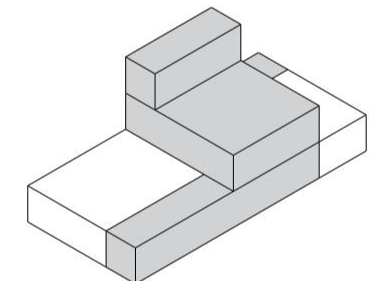
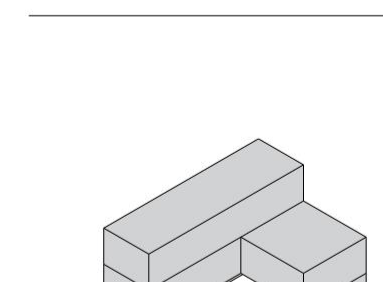
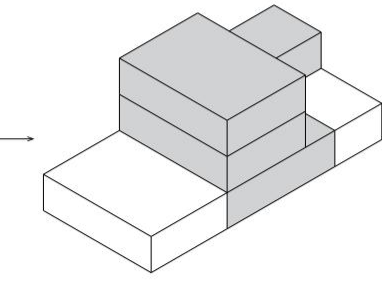
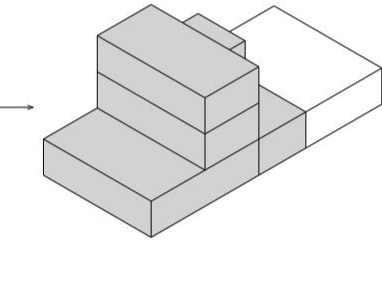
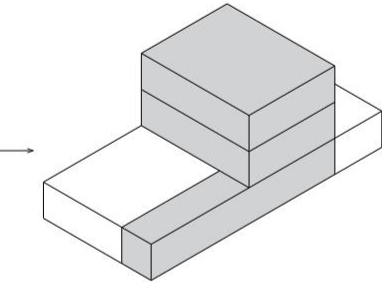
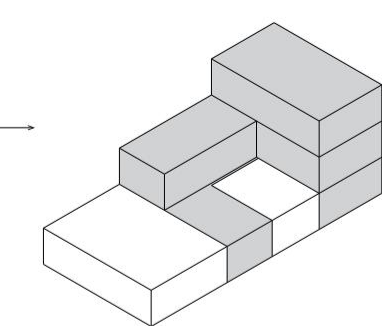
The different types of space are organised according to the needs of the different occupants, the number of family members and the family structure.



The upper floors provide different character spaces depending on the function of the building and the needs of the family production, and the roof can be used to enrich the living scene with open spaces according to the needs.

The introduction of modern building materials allows for a wider range of spatial forms. Mixed with traditional styles.

The residential houses have more open spaces that act as intermediaries between public and private spaces. Conditions can be provided for combining with each other to form an open public space.



A

B

C

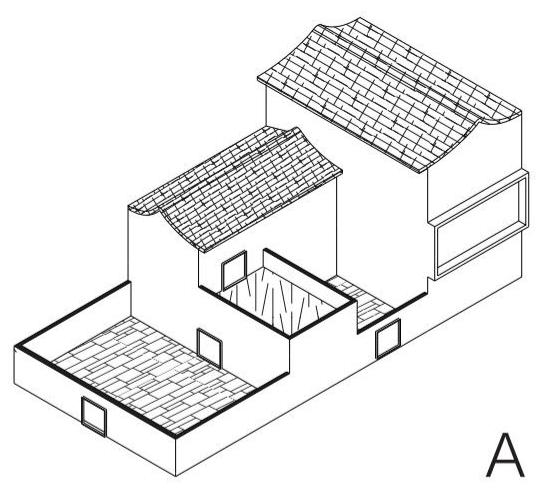
D

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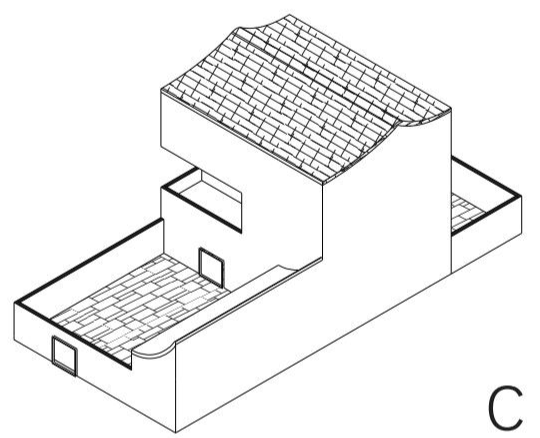
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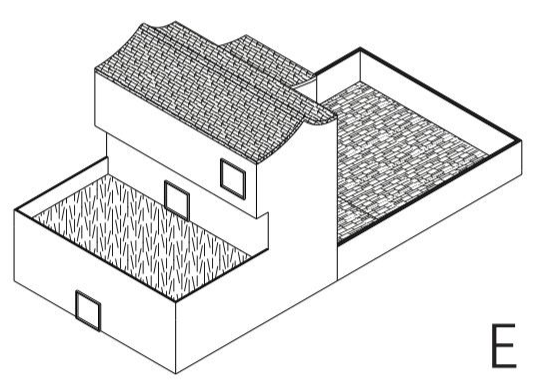
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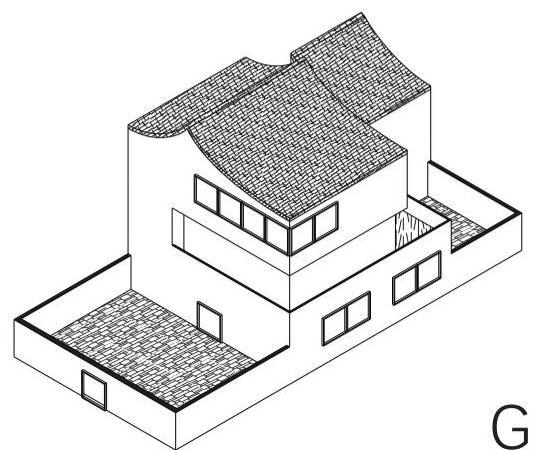
A



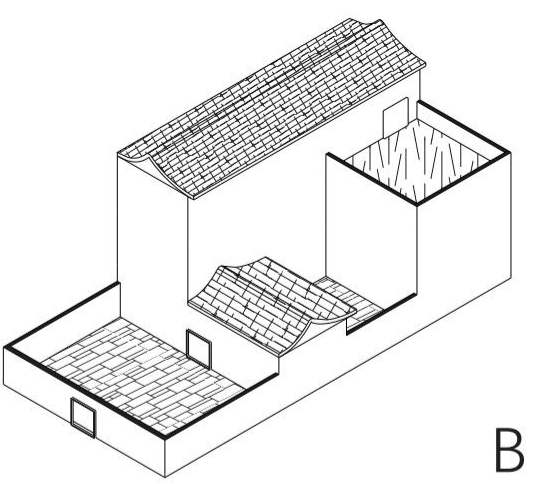
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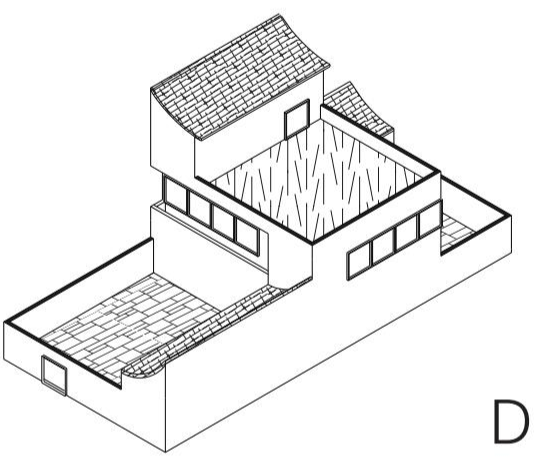
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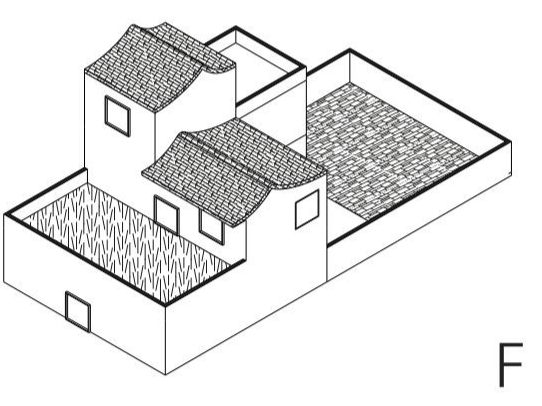
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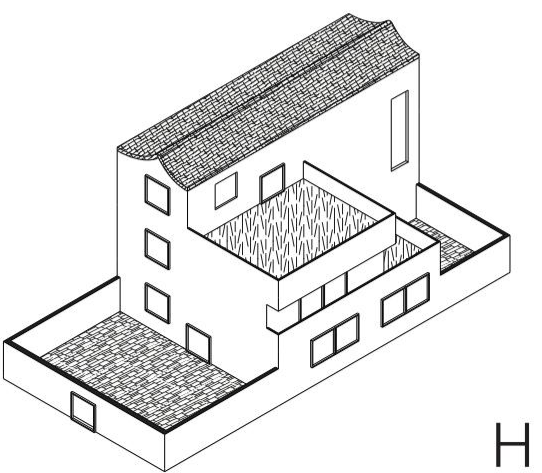
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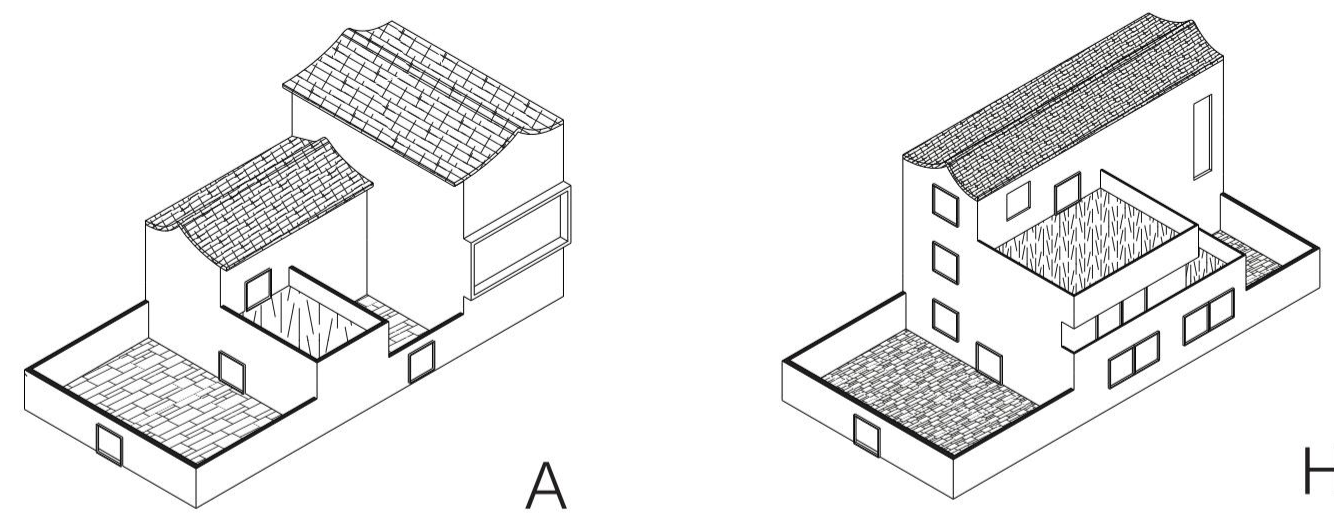


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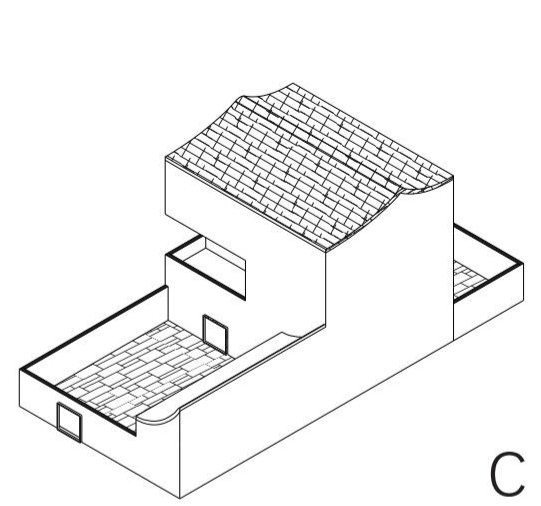
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Reinventing private and public space

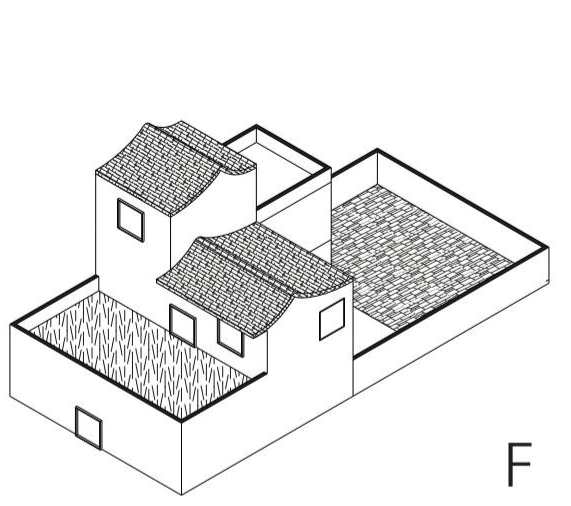


A

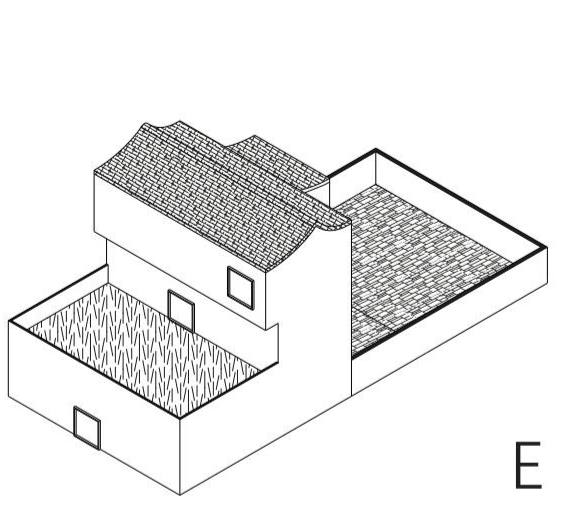
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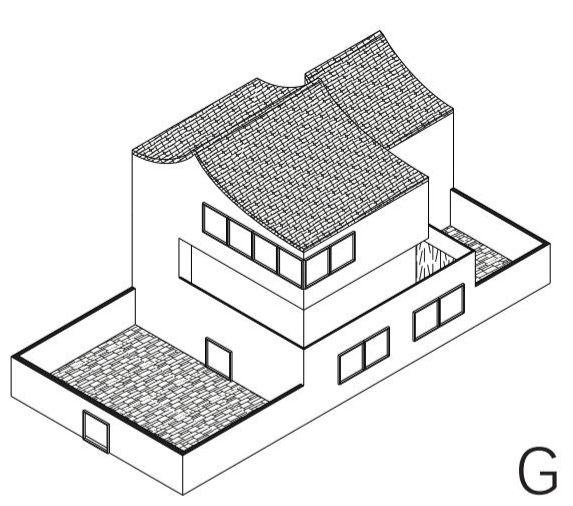
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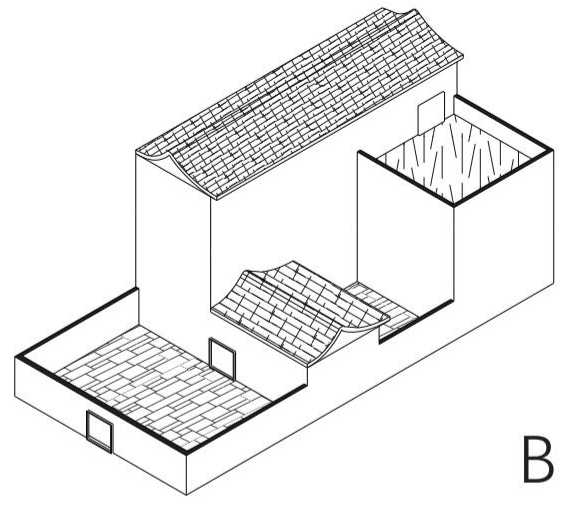
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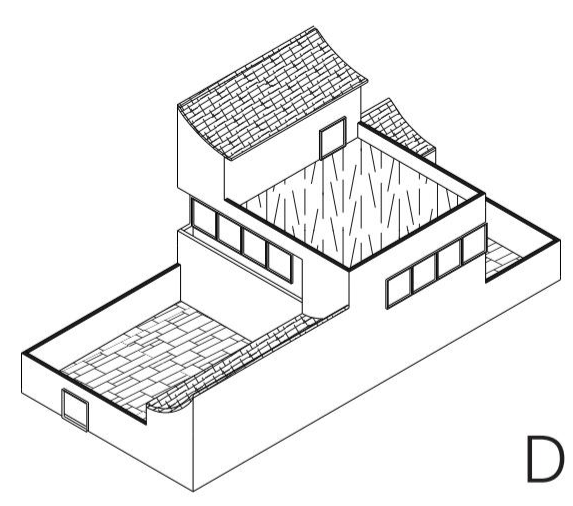
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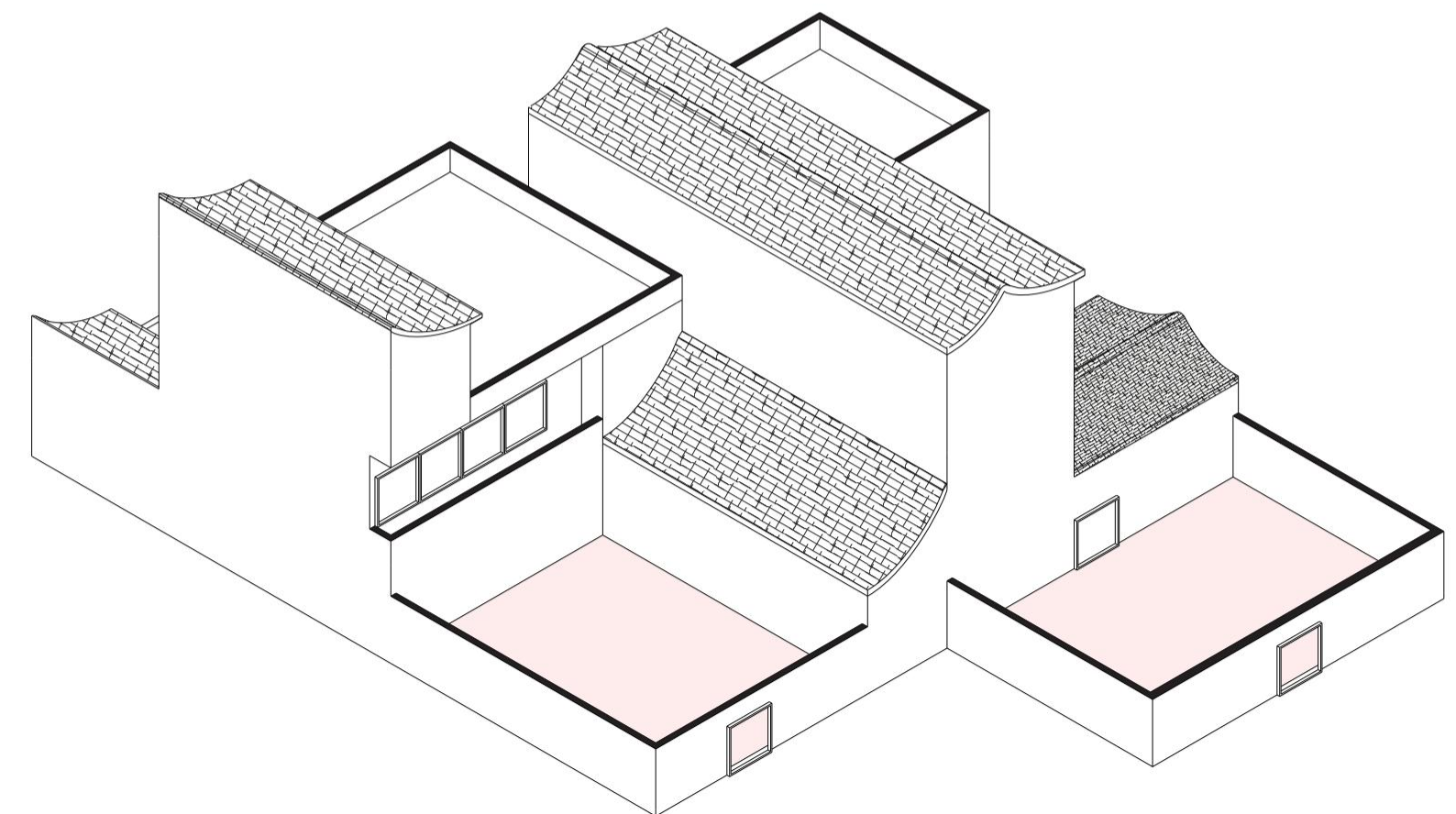
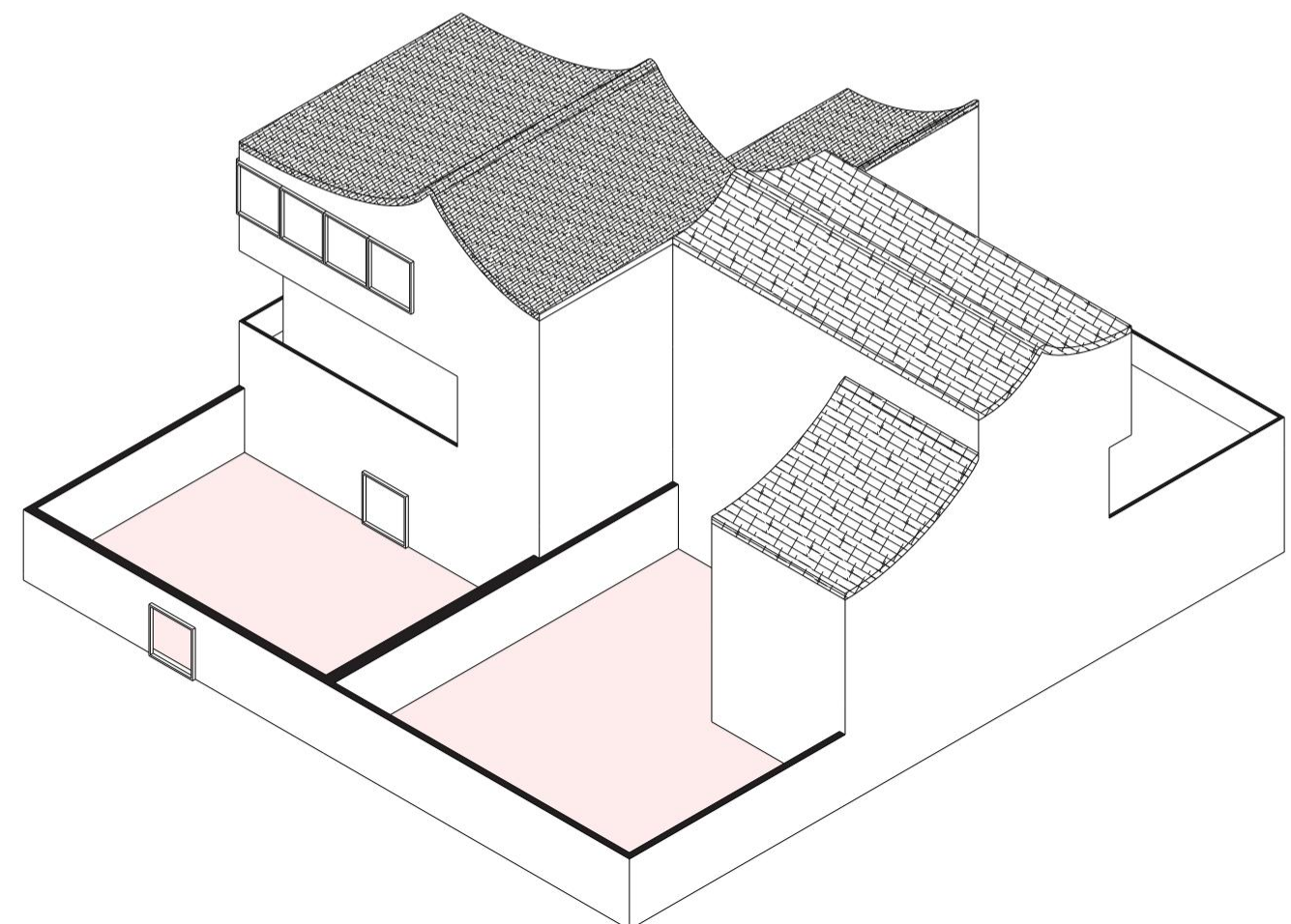
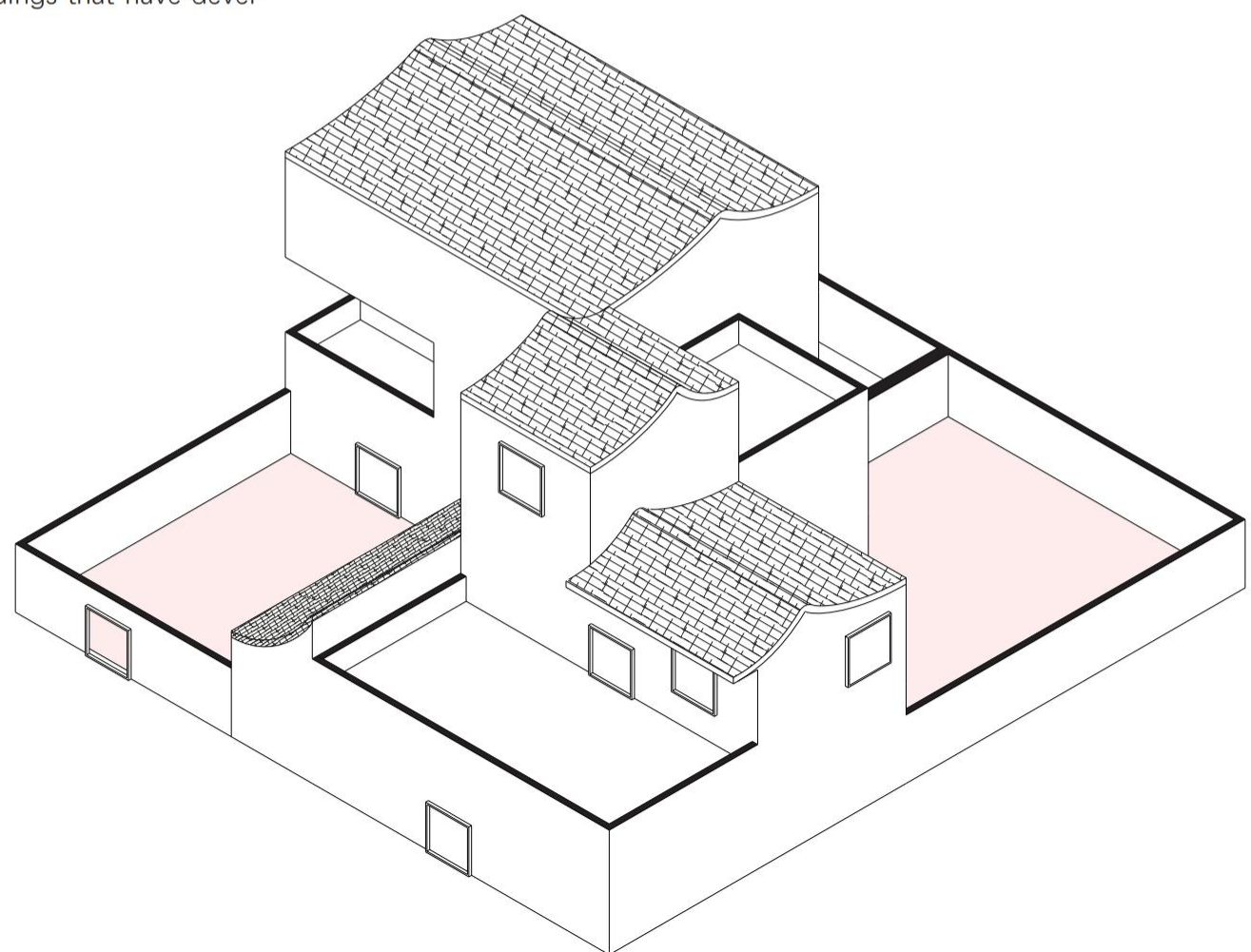
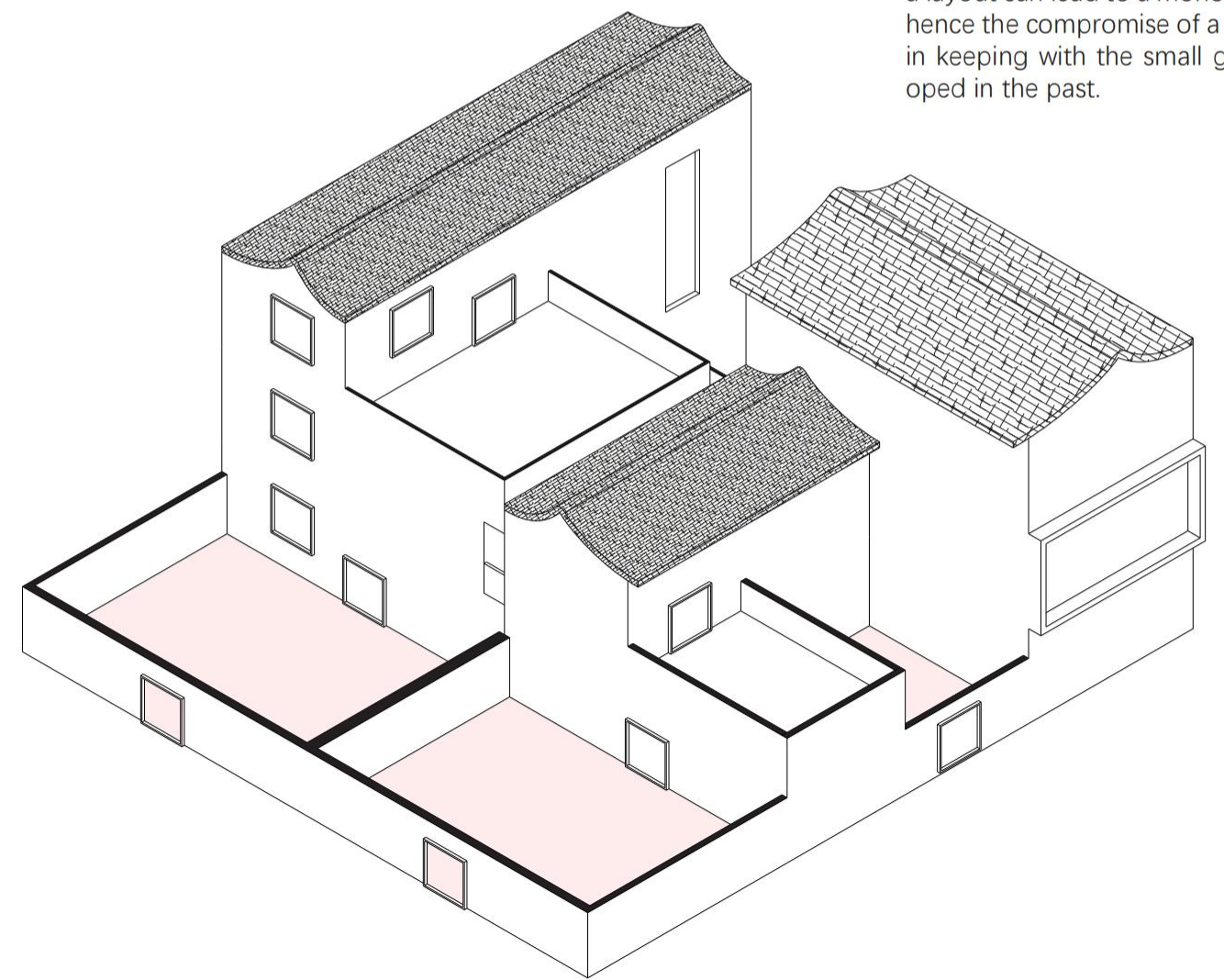


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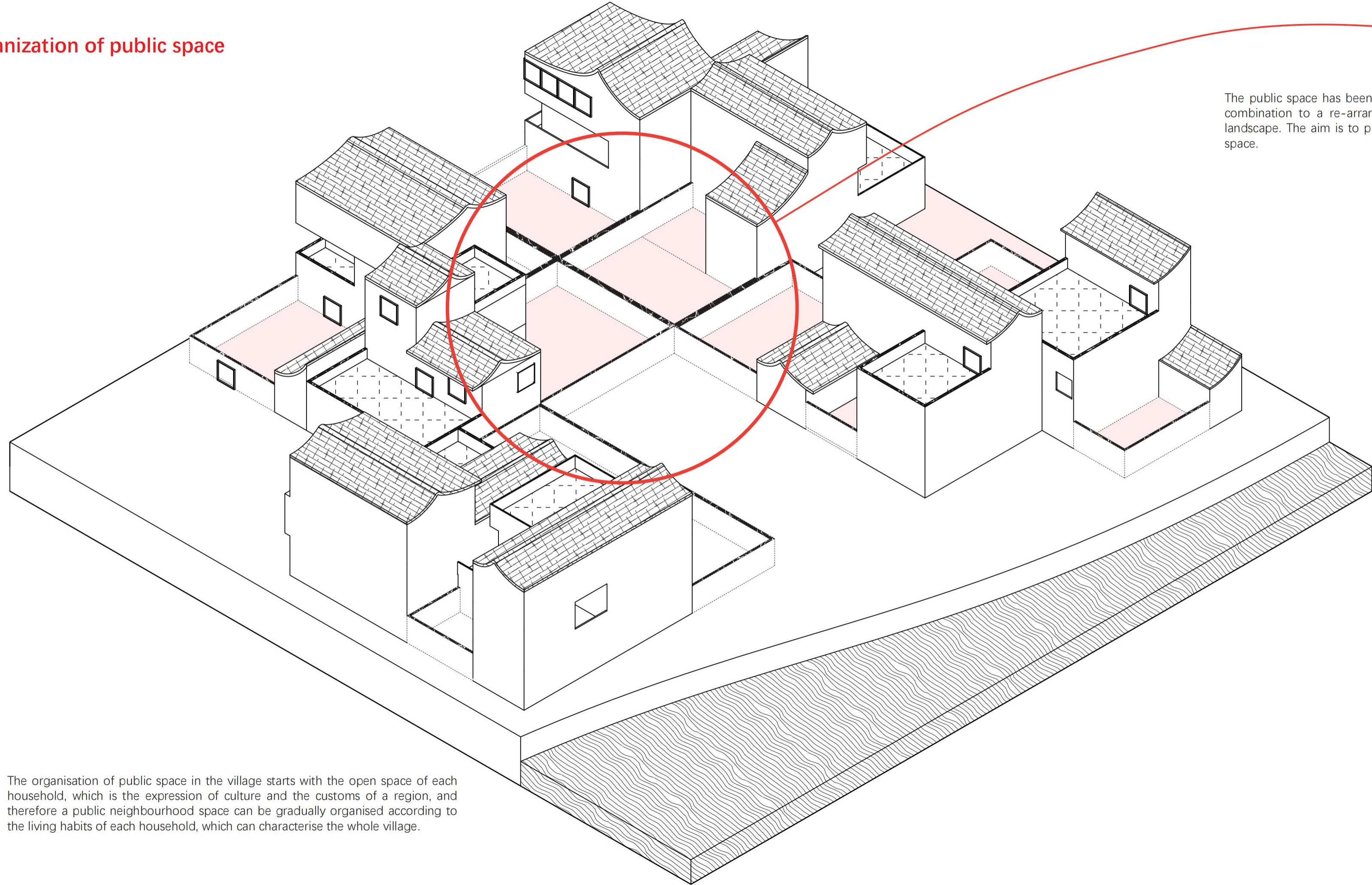
The same layout of buildings side by side saves on construction costs (infrastructure such as water and electricity), but too dense a layout can lead to a monotonous and boring village landscape, hence the compromise of a double row of houses. It is also more in keeping with the small groups of buildings that have developed in the past.

The different combinations of forms and houses form spaces that partly serve as internal spaces for the family, forming small courtyards, while the remaining parts can be combined with public spaces to form semi-open transitional spaces.

Different ways of organisation can create different roofs that become new rural landscapes. The roof can create a rolling change and part of it can be used as a balcony. Increasing the living space of the residents.



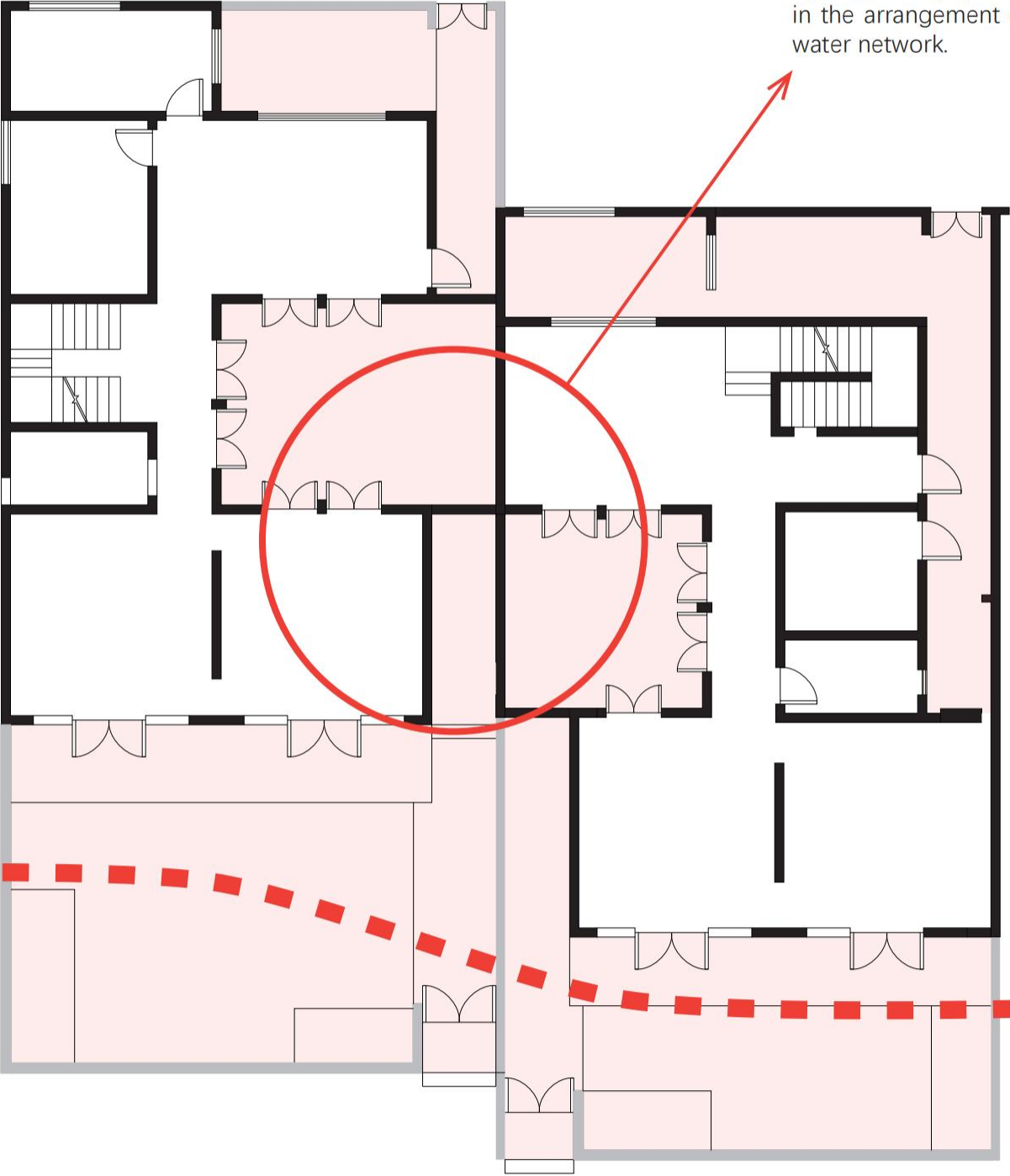
Organization of public space



The public space has been reorganised from a simple combination to a re-arrangement together with the landscape. The aim is to provide a high quality public space.

Typical means and ideas for the treatment of public space

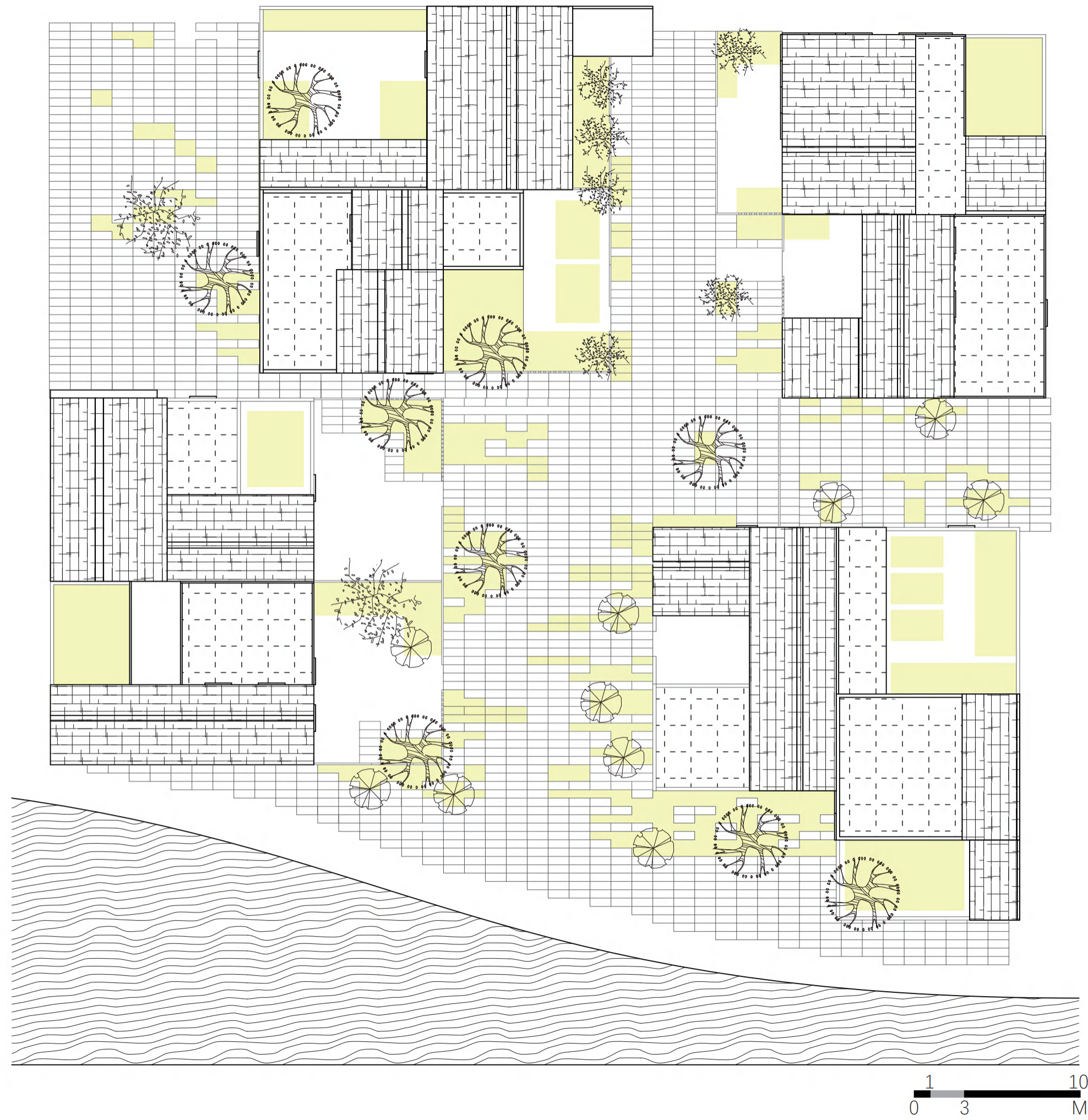
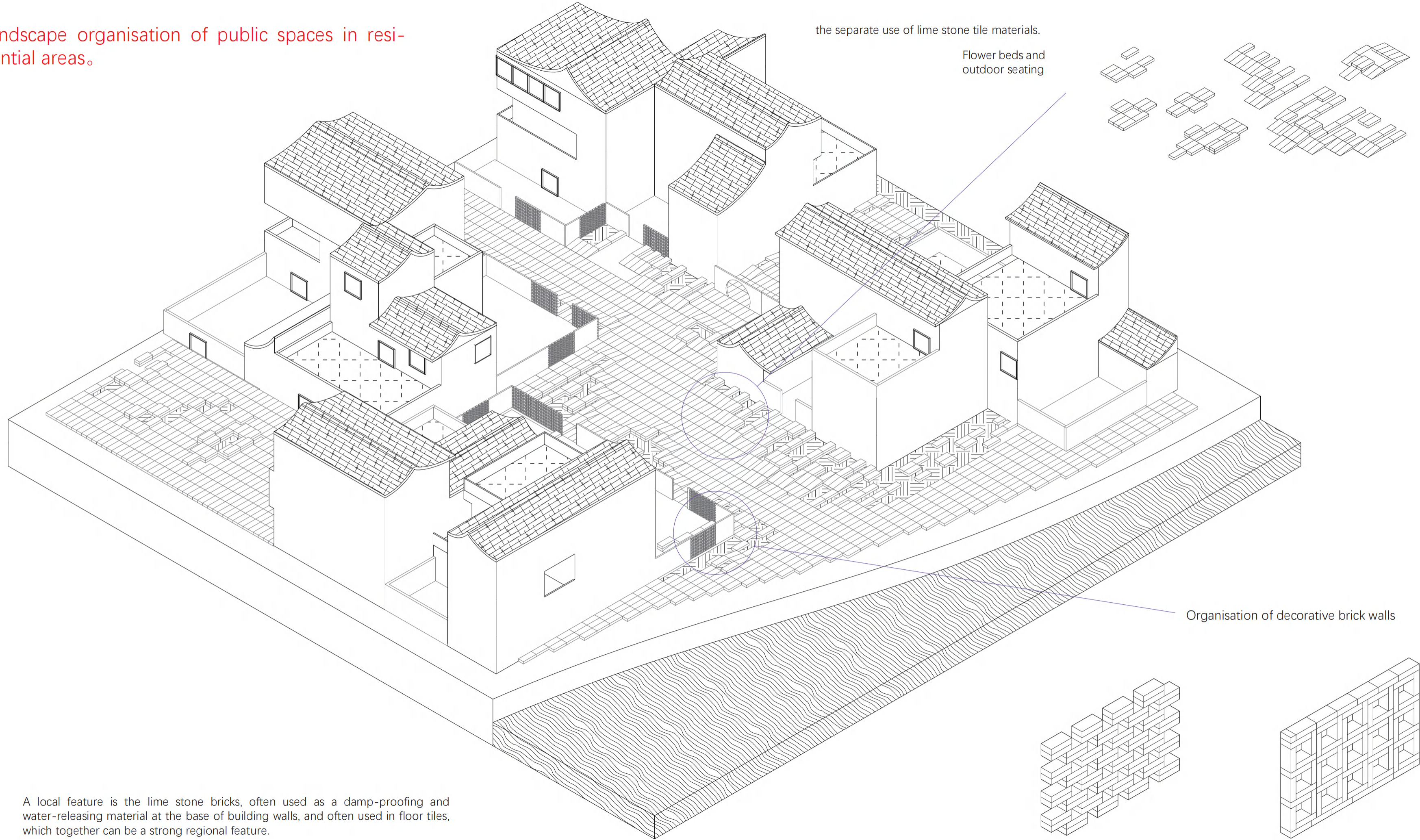
The organisation of public space in the village starts with the open space of each household, which is the expression of culture and the customs of a region, and therefore a public neighbourhood space can be gradually organised according to the living habits of each household, which can characterise the whole village.

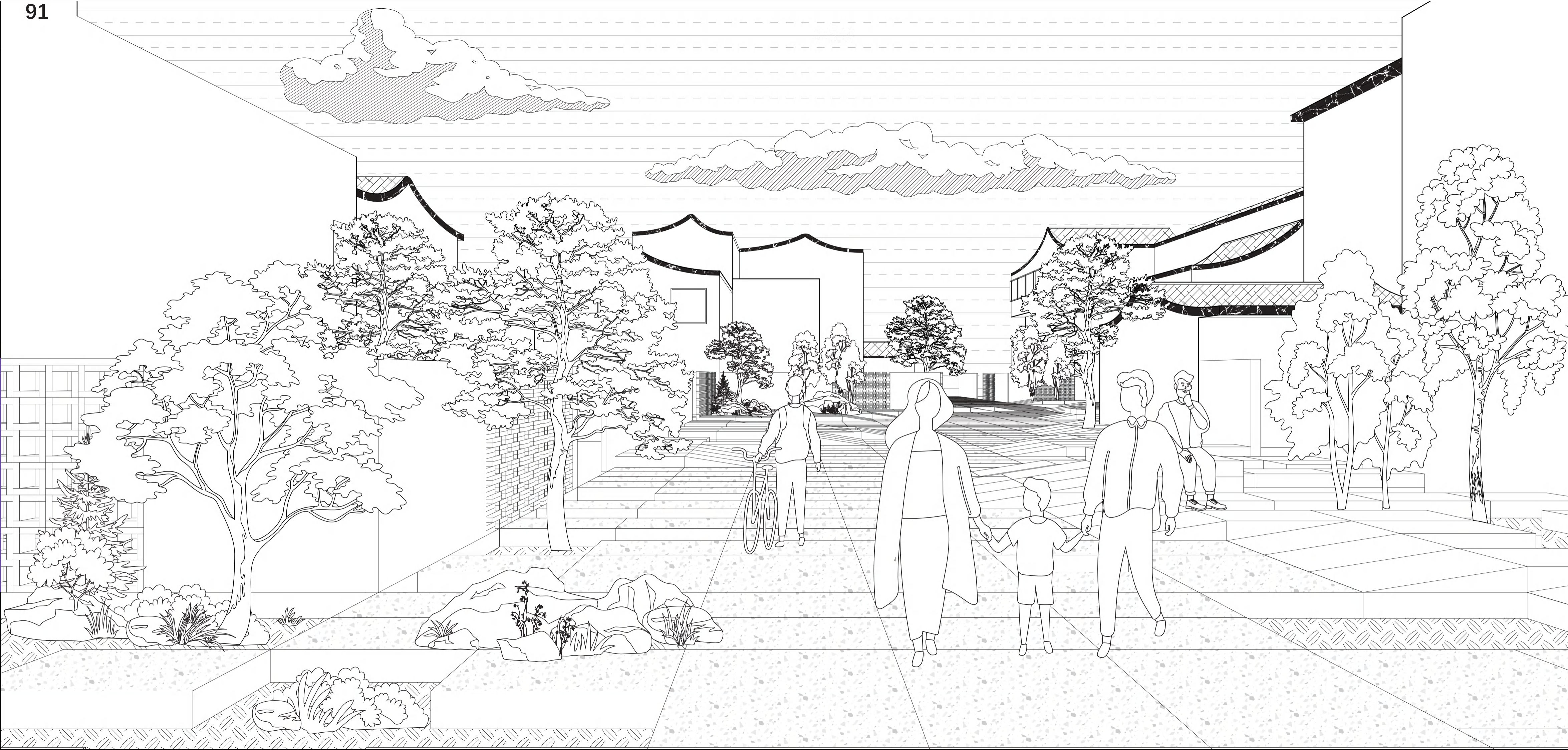


The inner courtyard of a village house usually has some important productive functions and can form some common facilities between neighbouring households, such as charging posts, agricultural equipment storage, and can facilitate in the arrangement of the village electricity and water network.

Due to the increase in floor levels, each family no longer needs a huge courtyard space, allowing more area to be yielded to the common space. The unified design treatment of the public road enhances the quality of the public space.

Landscape organisation of public spaces in residential areas.





Characteristics of Rural Intentions

The prototype varies in four different specific types of courtyard in the overall site plan which generated through the aggregation of courtyards following a fundamental principle, providing shared open space. The siteplan also reflects the pattern of vernacular clusters in historical Chinese urban tradition. Out of the fire-safety concern, each building is separated, not sharing the walls.

The buildings are designed in a vernacular language with detailed considerations to the roof. The traditional dual-slope roof is developed into continuous slope roof asymmetrically. The construction materials are mainly grey and white bricks built in different patterns. Wooden panels have been used for mediating the traditional bricks and the contemporary grass.



Paintings by Wu Guanzhong-
<https://www.mei-shu.com/artist/334/news-180638.html>

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