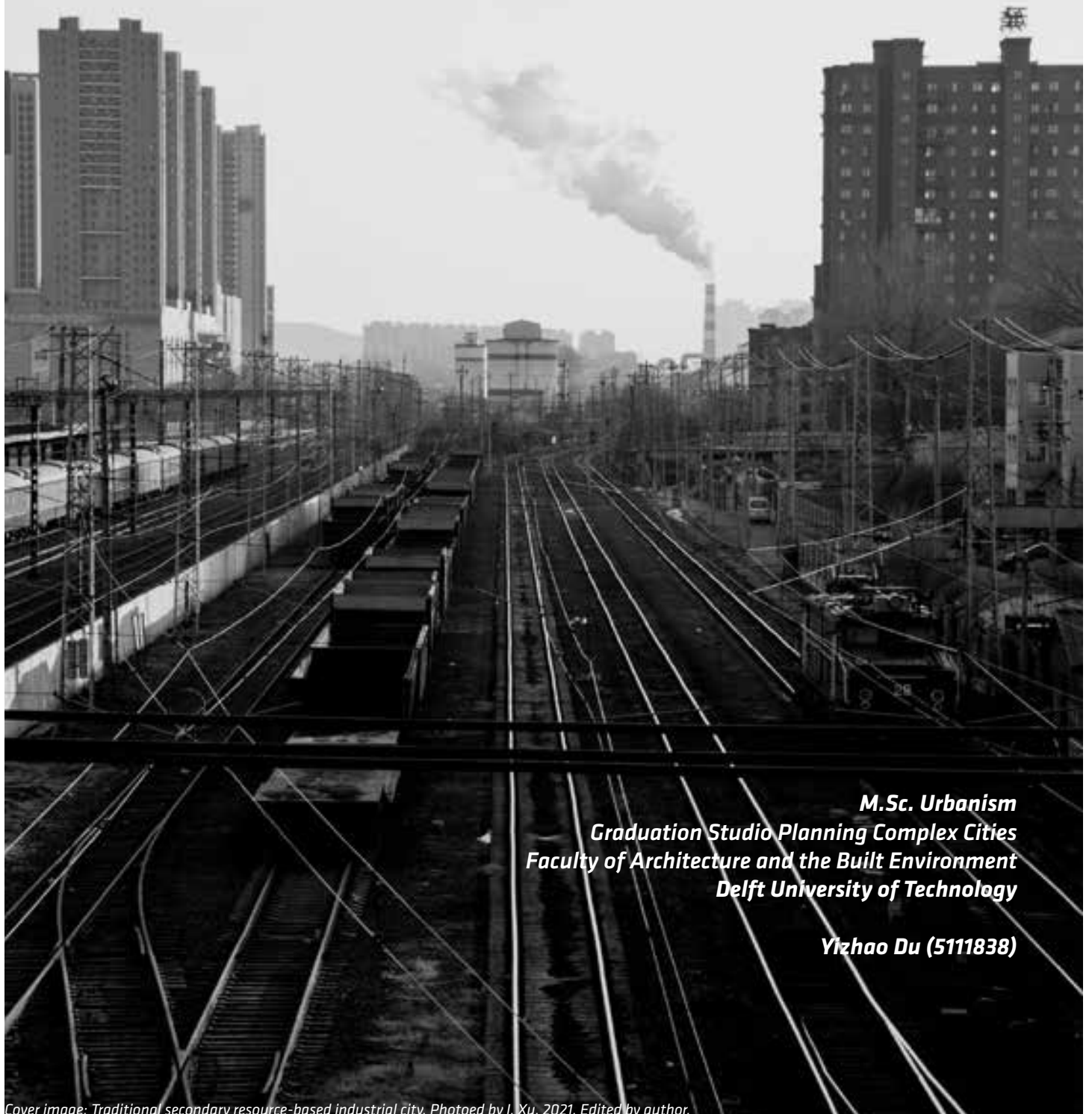


# Transformation and Revival

Research on Urban Development Strategic Planning for HanDan under the Dual Dilemma of Resource-based Industry Transition and Regional Spatial Marginalization



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Graduation Studio Planning Complex Cities  
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## ***Transformation and Revival***

–Research on Urban Development Strategic Planning for HanDan under the Dual Dilemma of Resource-based Industry Transition and Regional Spatial Marginalization

### ***Master thesis***

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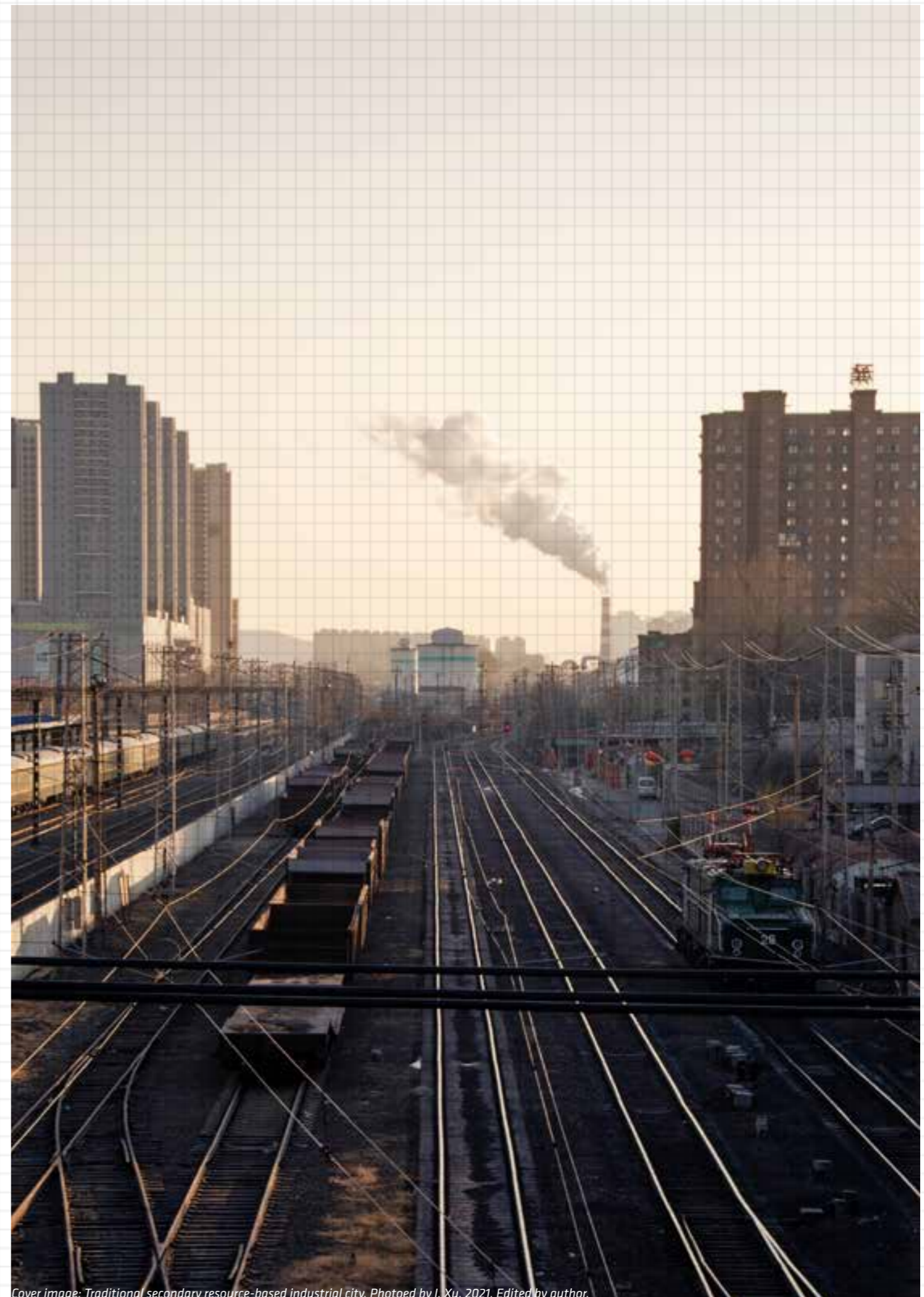
Graduation Studio Planning Complex Cities

M.Sc. Urbanism

**Faculty of Architecture and the Built Environment**

**Delft University of Technology**

**The Netherlands**



Cover image: Traditional secondary resource-based industrial city, Photoed by J. Xu, 2021, Edited by author.

## Abstract

China's industrialization process did not begin to develop rapidly until the founding of New China in 1949. With the help of the Soviet Union, China chose to give priority to the development of heavy industries, especially resource-based industries such as steel, coal, and petroleum. Such long-term emphasis on the development of heavy industry has caused environmental, social, and economic problems in resource-based industrial cities. In order to promote the sustainable transformation of these cities, in 2002 the Chinese central government promoted the "new industrialization" based on informatization throughout the country. This new development concept aims to eliminate heavy industry enterprises with high pollution and high energy consumption in order to create a better urban environment and economic development. Due to the two reasons of imbalance in the industrial structure and loss of talent and labor, these resource-based industrial cities are facing the dilemma of industrial upgrading. On the other hand, in the new stage of industrialization, regional cooperation is considered extremely important. In order to strengthen the overall competitiveness of regions, the central government put forward the development concept of "new urbanization" in 2012, in which "urban agglomeration" is a key approach to achieve regional cooperation. However, due to the complex administrative system and the unequal competition between the central city and other cities, the secondary cities cannot really benefit from regionalization and are gradually spatially marginalized. Two problems have formed a vicious circle, hindering the sustainable upgrade of these secondary resource-based industrial cities.

How to use spatial planning and strategic intervention methods to help these secondary (post-) resource-based industrial cities seek better sustainability and development is the primary research question of this project. Based on this, Handan, a secondary city with nearly 10 million population surrounded by four urban agglomerations including the Beijing-Tianjin-Hebei mega-region and the Central Plain mega-region, is selected as the research object of this project. This situation of "in-between 4 mega regions" has exacerbated the marginalization of Handan. In addition, as a traditional resource-based industrial city, the city's pillar industries, coal, steel, electric power and other heavy industrial enterprises have also been hindered in recent years. In fact, Handan, a city with 3,500 years of history and splendid culture also has its own powerful advantages. Based on these advantages, Handan has great potential to develop into a new innovative metropolis, where it will gather emerging innovative cultural industries and other regional functions to gain a better future. In this project, three planning principles derived from theoretical study were put forward: young people friendly, local culture friendly, and natural environment friendly.

After mapping the spatial consequences of industrialization and urbanization in Handan, a conceptual vision was proposed: the transformation from "industrial belt" to "innovative belt". Many studies and cases have proved that the location of resource-based industries is directly related to the distribution of natural resources geographically, and this situation is no exception in Handan. Most resource-based industrial enterprises in Handan municipality area are located in a geological belt rich in coal and iron ore. This "industrial belt" covering an area of more than 1,000 square kilometers and once contributed 60% of the city's GDP. In recent years, most of the resource-based enterprises on this belt have been (will be) shut down. Because of its previous prosperity, this "industrial belt" has the potential to regenerate in three points: 1) a very complete infrastructure, each built space is connected to each other through urban roads, and has a very convenient connection with the city; 2) a diverse landscape environment; 3) high Quality architectural space and industrial heritage. In addition, regional planning (undertaking the functions relieved from the big cities, including scientific research institutes, technology enterprises, etc.) is also an opportunity for further development of this area.

In this project, the process of transforming this industrial belt into an innovative belt is a trigger to promote the urban transformation. The innovative belt is considered to be a belt-shaped area rich in many innovative industries and complete living facilities. On the one hand, it attracts and undertakes innovative industries, advanced scientific research institutions, medical and health care, leisure and entertainment industries that have been relieved from the central cities around Handan. On the other hand, it cultivates Handan's local cultural industries, such as movies, pictures, new media, and so on. Based on the repair of the ecological environment and the improvement of industrial vitality, this belt will be transformed into a livable, workable and travelable area and further promote the development of the municipality area. This research will formulate a spatial strategic plan from the perspectives of intervention design, stakeholder analysis, and development path planning, to explore and pursue the goal of urban transformation.



# Acknowledgement

I still remember the summer two years ago, when I was in the Orange Hall for the first time, my heart was filled with both joy and anxiety. At that time, I didn't know what kind of experience I would have in TU Delft. I don't even know why people call this building "BK". Fortunately, I met the best teachers and colleagues here, which made my master's study interesting and full of hope.

The two-year master's project study and the one-year graduation thesis project are coming to the end. This is a fantasy and surprise trip for me. I would like to express my deepest gratitude, most importantly, to my supervisors Roberto Rocco, and Alexander Wandl. I still remember the first meeting with Roberto. His encouragement gave me a lot of confidence and motivation. Before P2, I went through the most difficult stage of the graduation thesis process. I couldn't decide my research focus and applicable methods, which made me fall into a confused and awkward situation. It was Roberto and Alex's help to get me back on the right track. For nearly a year, they have always helped me solve various problems and encouraged me to keep going. Moreover, I am very grateful to Verena Balz, Lei Qu, Rodrigo Cardoso, and other teachers of section of spatial planning and strategies. Their wisdom and patience have helped me a lot. Since my project is about sub-city research, Rodrigo, as an expert in this field, gave me valuable advice, and I also got a lot of inspiration from his publications.

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Thanks to my hometown, HanDan. I was born and grew up here. The observation and experience of more than 20 years not only gave me more opportunities to think about urban development issues, but also gave me inspiration for spatial planning research. I hope my efforts can provide a new perspective for the development and transformation of this city. Thanks to my family. Due to the impact of covid-19, the work place for my graduation thesis is at home. The help and understanding of my family are important reasons for my successful completion of the master's project. My mother, a professor in politics, takes care of my life every day and gives me spiritual encouragement and support. My father, a local government official, has given me a lot of useful information in the stage of background and context research and current situation investigation, and put forward valuable opinions in planning and design. Thanks to my sisters, as well as KuanKuan Zhang, my nephew, who was born this year, they made the year that should have been difficult, happy and lovely.



*Growth and Transformation-Eastern Development Zone of Handan City*  
<https://huaban.com/boards/30686182/>

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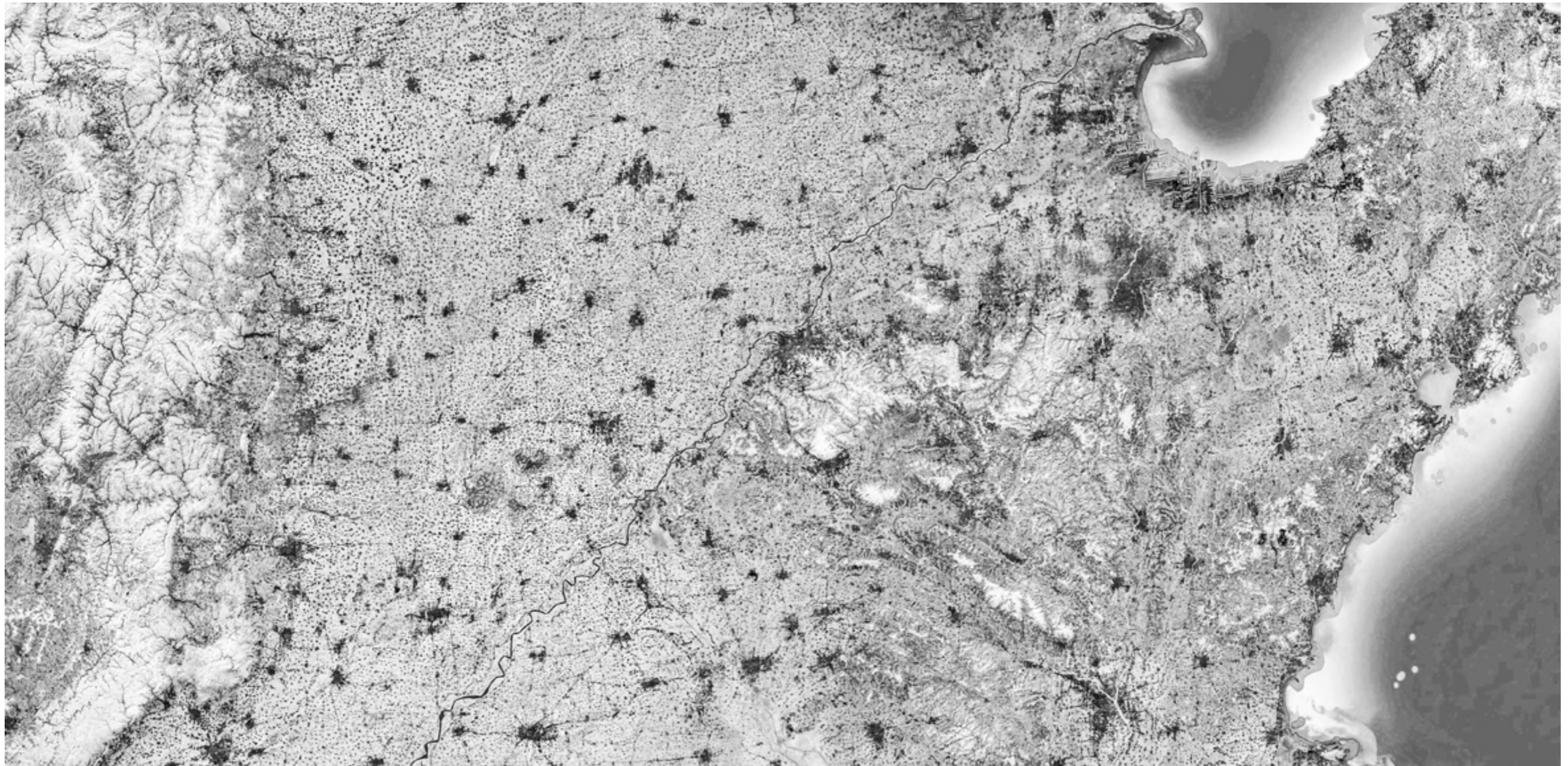
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China's urban development in transition
- B** Regionalization and governance:  
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- C** Problem positioning:  
development dilemma for secondary post-industrial cities

*Landscape in North China Plain (black dots are human settlements)  
Source: <https://www.google.com/maps>*



# A

## Industrialization and urbanization: China's urban development in transition

Traditional secondary resource-based industrial city, Photoed by J. Xu, 2021, Edited by author.

## 1.1 Pre-industrial society and urban system development

### 1.1.1 The driving force of urban development in ancient China: politics and trade, a Perspective of national Transportation

Nearly 60 years ago, Lewis Mumford pointed out that transportation is the primary factor in the formation and development of a city in his book *THE CITY IN HISTORY: Its Origins, Its Transformations, And Its Prospects*. In ancient China, the impetus for the development of cities was also the development of the transportation system. This is mainly divided into three stages, the political center cities connected by post roads, the canal trade cities promoted by the Grand Canal, and the long-distance commercial cities along the river and coastal areas.

#### Post Road Network: Urban Development under Political Authority

In ancient China, post roads were used as channels for emperors (central rulers) to convey information to princes and kings (local rulers). In the pre-Qin period (before 221 B.C.), post roads extended from the capital Xianyang to the rest parts of the country, forming a powerful transportation network. Since then, the network constructed by numerous post roads has become a core component of the ancient Chinese transportation system, the development of which have had a profound impact on the ancient Chinese urban system, especially the administrative center city system. In the Qin Dynasty (221 B.C. ~207 B.C.), the main function of a city was the administrative center of a region (Jing, & Yang, 2011).

The development of post roads strengthened the connection between the capital city (national administrative center) and other cities (local administrative centers), which greatly consolidated the majesty of the central government (Bao, 2014). The hierarchical management system, the regulation of prefectures and counties, established by the Qin Dynasty are also the main foundation of China's administrative divisions today (Bao, 2019). The cities developed under these circumstances are almost the result of political regulation, and the decision-making power of the cities' location, scale, spatial planning, functional layout, and military deployment belonged to the supreme ruler. Therefore, the hierarchical system of cities was very clear, and their development was limited to a certain level (Jing, & Yang, 2011). As a result, the "Fangshi (market blocks)" system was widely implemented in ancient Chinese cities, urban commercial developed was a high spatiotemporal limitation. Only certain places in the city could do business only at certain times.

Catalyzed by post road traffic, the emperor's rule became more and more stable, and the stability of imperial power also promoted the further development of post road traffic. In the Tang Dynasty (618 A.D. ~907A.D.), the post road traffic built around the capital of Chang'an and covered the whole country. According to historic documentation, there was one station along the post road every 30 miles (approximately 15,000 meters) at that time. There were 1,639 post stations nationwide. Each station had post houses equipped with fast horses, post donkeys, post boats and farming field served as a facility for transmitting information. The development of post road traffic is a typical product of the political centralization, and the national capital and regional political centers have also achieved greater development because the traffic system (Jing, & Yang, 2011). It is worth noting that **the research target city of this thesis, Handan City, is a regional central city developed due to such political reasons.**



Fig.1.1 Ancient post roads (south GuangDong)

Source: <https://travel.qunar.com/p-oi18715694-shaoxingguyidao>



Fig.1.2 The biggest ancient post station (ji ming station, in Hebei province)

Source: <https://travel.sina.com.cn/china/2011-02-21/1602152464.shtml>



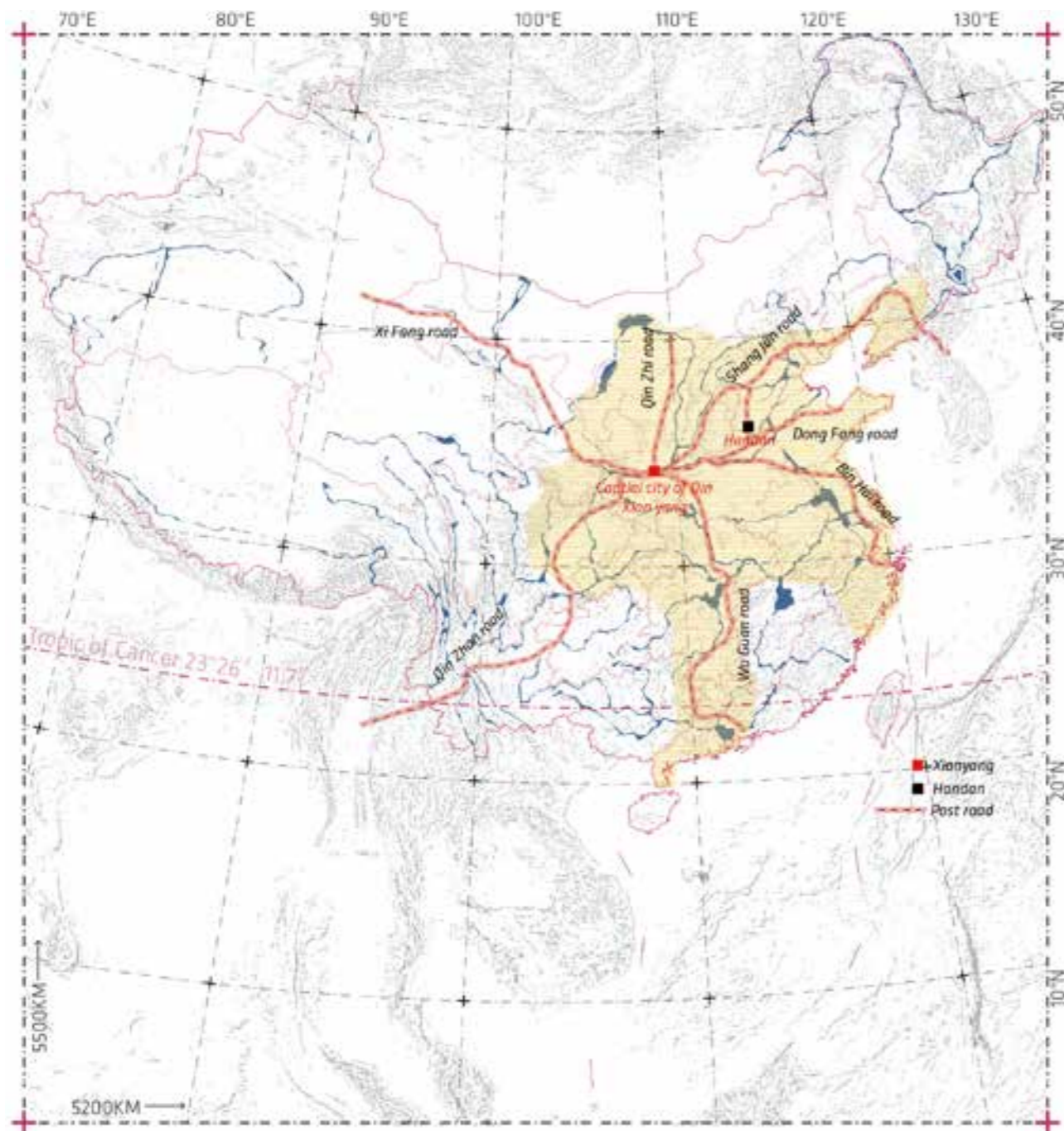


Fig.1.3 Schematic diagram of the main post road system of the Qin Dynasty Source: author, based on <https://kknews.cc/zh-cn/history/r6zxx3x.html>

### Water transport trade: commerce-oriented cities emerging

In the Sui and Tang Dynasties (581 A.D. ~907A.D.), China's economic center began to shift from the north to the south. On the one hand, the war in the north and the intrusion of foreign nations deteriorated the living environment in the north, and the population began to flow to the south. The warm climate in the south promoted the prosperity in the development of agriculture and handicrafts (Bao, 2019). However, because of the complicated political power relationship, the political center of the country remained in the north (west capital: Chang'an; east capital: Luoyang). The separation of economic and political centers posed a threat to the emperor's power. At the same time, with the overpopulation and lack of materials in the capital city, serious social problems have emerged (Bao, 2019). Under the influence of this reason, the emperor ordered the construction of the big Canal running through the south to the south, known as the "Beijing-Hangzhou Grand Canal" in history (Jing, & Yang, 2011). Due to the development of water transport trade, a new urban system emerged along the canal. Compared with the hierarchical political center cities based on post road network, these commerce-oriented cities formed along the

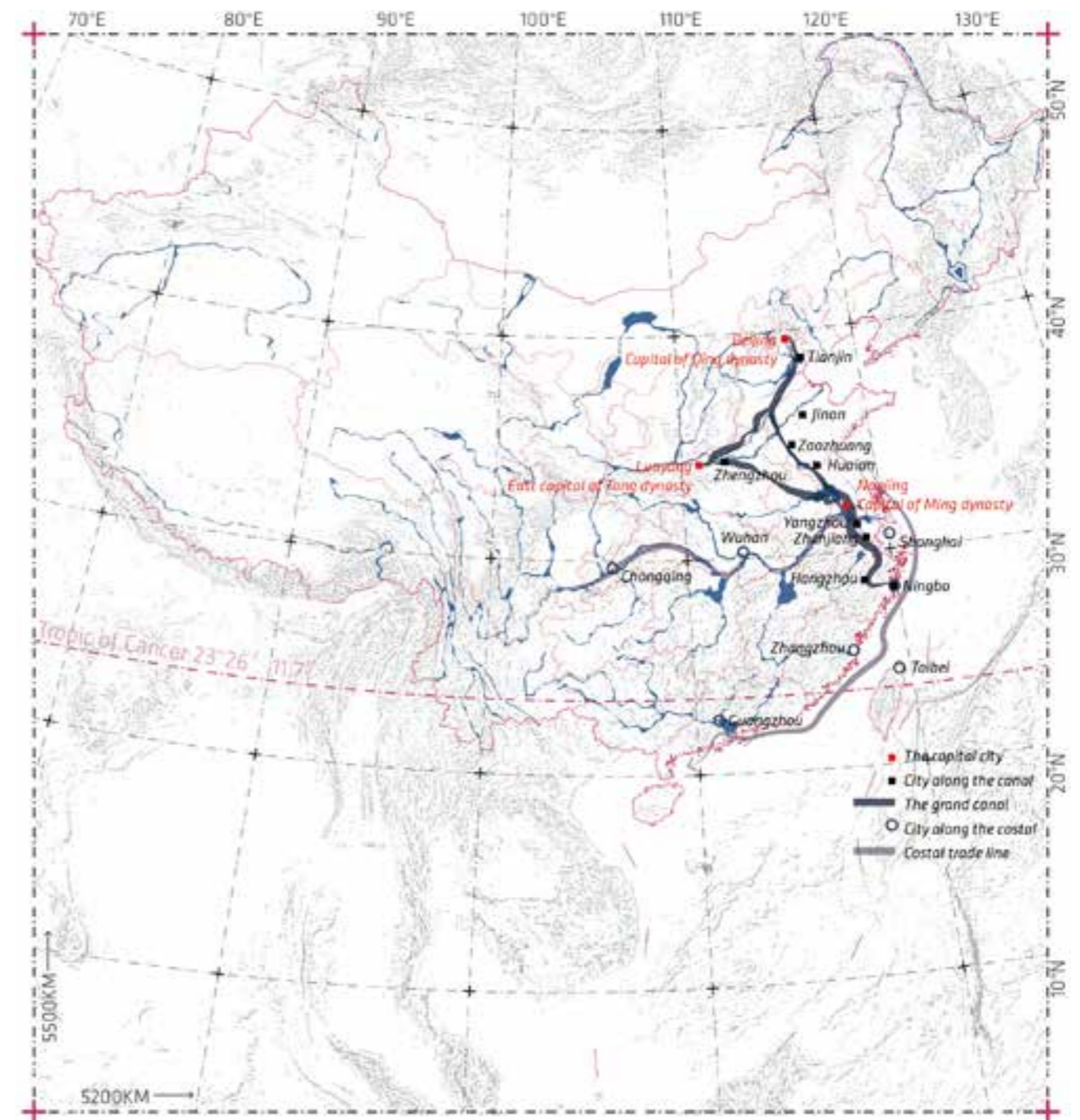


Fig.1.4 A business city system developed by the Beijing-Hangzhou Grand Canal and long-distance shipping Source: author, based on <http://www.boleyun.com/ForWeiXin/ShowBinFen.aspx?sid=635>

Grand Canal were not significant in their regional administrative functions, but they performed prominently in the economic functions (Bao, 2019). The development of the canal cities system alleviated the operational crisis of the political center city system due to the shift of the national economic center and promoted the improvement of the multi-dimensional city system.

Since the mid-Ming Dynasty (1368 A.D. ~1644A.D.), long-distance trade activities began to rise, which was due to the development of waterway transportation along the coast and the river. This has enriched the transportation network system of ancient China, thus promoted the development of cities along the river (such as Wuhan) and coastal (such as Guangzhou). Besides, with the gradual rise of cross-regional and long-distance commercial trade, many trade routes connecting all parts of the country have naturally formed (Bao, 2014). Cross-regional commercial trade has mainly caused two effects on China's urban system. On the one hand, the communication between cities

has become easier and more reasonable. This has changed the looseness of the connections between cities under the administrative-hierarchical urban structure system. Trade exchanges have become a more effective way to shape China's urban system, with the economy as the band. The relationship between cities has become closer and closer. On the other hand, cross-regional and cross-city commercial trade activities have contributed to economic division of labor (Bao, 2014). By the Qing Dynasty (1636 A.D. ~1912A.D.), regional production divisions of grain, cotton, wood, paper, sugar, etc. had been formed among different cities and areas. The benefits of comparative advantage began to appear in China, regions began to focus on the local superior production. National-wide commodity circulation had become more frequent, and a national market had initially taken shape (Jing, & Yang, 2011).

In summary, the Chinese nation, which originated from the vast river floodplains, has been relying on agricultural development for thousands of years, the urbanization has been very slow. The development of transportation played the most important role in the process of urbanization in ancient China. The emergence and development of cities are mainly divided into three stages. During the Qin and Han Dynasties, In order to strengthen the control of the country, the emperor built post roads to transmit information and strengthen contacts. Cities mainly referred to as the center of political, military and social interaction. The national capital was the political center of the country and the population was always the largest. Some scholars believed that the capital of the Qin Dynasty, Xianyang, was the first city with a population of over one million in the world. At this stage, in order to consolidate the supremacy, the rulers often curbed the development of urban commerce and trade.

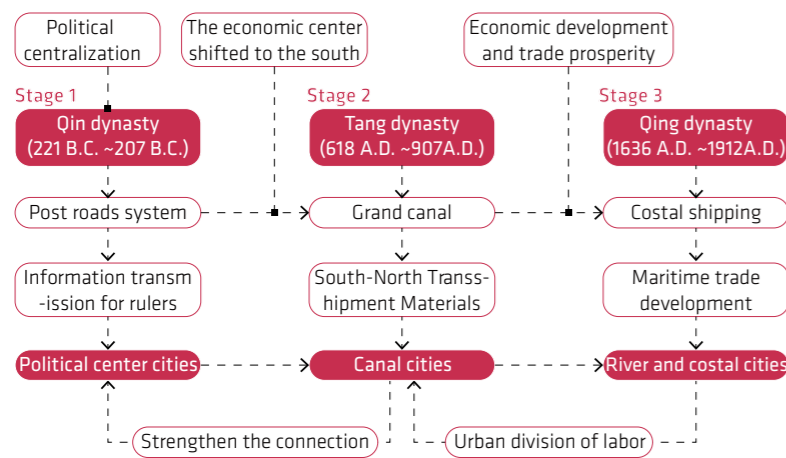


Fig.2.5 Three stages of the process of urbanization in ancient China Source: author

In the second stage, as China's economic center shifted from the north to the south, while the political center remained in the north, the rulers dug the Grand Canal to transport materials, which gave birth to the development of cities along the canal. These cities have no important political status, but their economic vitality is high. In the third stage, trade further developed, long-distance shipping and river transportation prospered, and cities along the southeast coast and the Yangtze River began to prosper and the development of trade catalyzed the division of labor between cities.



Waterborne Commercial Trade in Ancient China Source: <http://www.bjckpj.cn/xhxc/203-2017-05-27-09-23-40/6788-2017-07-24-07-35-43>

## 1.1.2 The birth of China's industrialization and urban development before the founding of the People's Republic of China (1949)

The Chinese nation, which originated in the vast plains, has been dependent on agricultural development for thousands of years. In the Qing Dynasty, the arrogant state rulers (emperors) looked down on the industrial revolution in the West and believed that China had no need to develop advanced technology for mechanized production. In the 17th century, the emperor issued a ban on "prohibition of private trade going to sea", which is known as "bi guan suo guo (Nationwide shut down)" in history. This closed development has made China's industrialization process lagging behind Western countries for more than 100 years.

China's earliest industrialization can be traced back to the "yang wu yun dong (the Westernization Movement)" in the late Qing Dynasty. In the 1860s, the Qing government established a large number of modern military enterprises, including military factories and shipyards, the earliest of which was the Anqing Ordnance Factory founded by Zeng Guofan in Anqing city. The "Westernization Movement" was the earliest use of machines in China. The modern industrialization movement attempt eventually failed due to the corruption of the feudal bureaucracy and the oppression of the capitalist powers. But after all, it took the first step of China's industrialization.

At the beginning of the 20th century, some people with lofty ideals put forward the slogan "Industry saves the country". For the sake of national prosperity and strength, they hoped to realize China's revitalization through the development of national industries. Before the end of the World War I, China's national industries appeared for a short period of time. However, under the impact of western imperialist military aggression, most of national industries went bankrupt. In the 1930s, the Japanese army occupied the northeast China, they began to build several heavy industrial enterprises for the service of the wars against the rest of China. These heavy industrial enterprises focused on steel and coal, which have not really become the pillar industries of the national economy.

From the "Westernization Movement" in the late Qing Dynasty (1861) to the founding of the People's Republic of China (1949), the Chinese nation experienced the greatest existential threat in the past thousands of years. During this period, earliest industrialization phenomenon appeared in China. Whether it was factories supported by government officials or military factories set up by Japanese army in Northeast China, these two types of industrialization have not contributed to China's urban development.

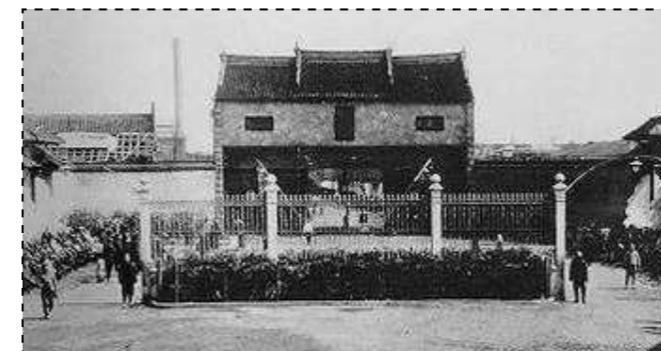


Fig.2.6 Jiangnan Manufacturing Bureau Source: <http://www.shandongshuhua.cn/shuziren-cms-content-4333.html>



Fig.2.7 Jiangnan Manufacturing Bureau Source: <http://www.people.com.cn/>



Fig.2.8-9 The Japanese army occupied northeast China and opened military factories, Chinese people were not allowed to enter, and those who defy would be shot Source: <https://kuaiobao.qq.com/404?fromId=20201016A095F000a-refer>

## 1.2 The attempt stage of industrialization and urbanization: Aggressiveness and chaos (1949-1978)

### 1.2.1 The initial stage of industrialization following the founding of New China

The theoretical study and practical exploration of how can China "turn a backward agricultural country into an advanced industrial country" have begun long before the foundation of the People's Republic of China. Although some military industries developed during the last years of the Qing Dynasty and the period of Sino-Japanese War, China's national industrialization did not begin until the founding of the country. The initial stage of industrialization received strong assistance from the Soviet Union, under the influence of which, the

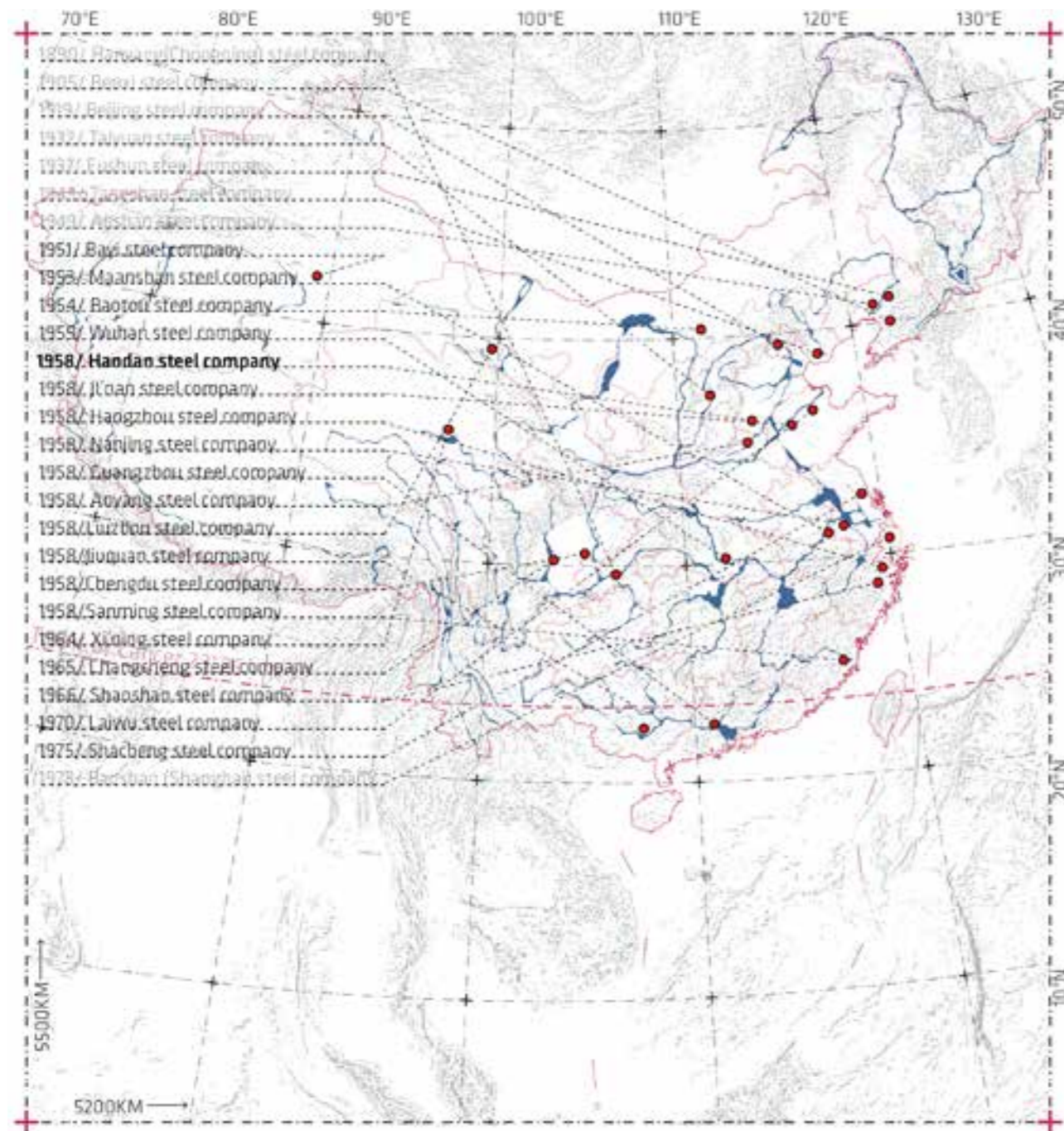


Fig.1.10 Steel company established by the country after the founding of the People's Republic of China  
Source: author, based on <http://www.pinlue.com/article/2019/06/2514/049245440112.html>

Chinese government believed that the development of heavy industry was the foundation and central mission of industrialization. Only when heavy industry was given priority, can other industrial sectors have a chance to get better promote. In 1953, the first "Five-Year Plan" for the development of the national social and economy was compiled, the core task of which was to concentrate the nation's financial, material and labor resources to development heavy industries. With the help of the Soviet Union, a total of 156 large-scale industrial projects were constructed. Some achievements have been made in the First Five-Year Plan, and a series of industrial types including electric power, coal, petroleum, steel, chemical industry, and machinery have been established nationwide.

It is worth noting that this stage is completely "planned economy". The lack of intervention by market mechanisms has laid hidden dangers for the later economic development. Regarding the layout of industrial production, the central government advocated a "regional balanced" development paradigm in which coastal industries and inland industries develop coordinately. During the First Five-Year Plan period, the focus of industrial development gradually shifted from

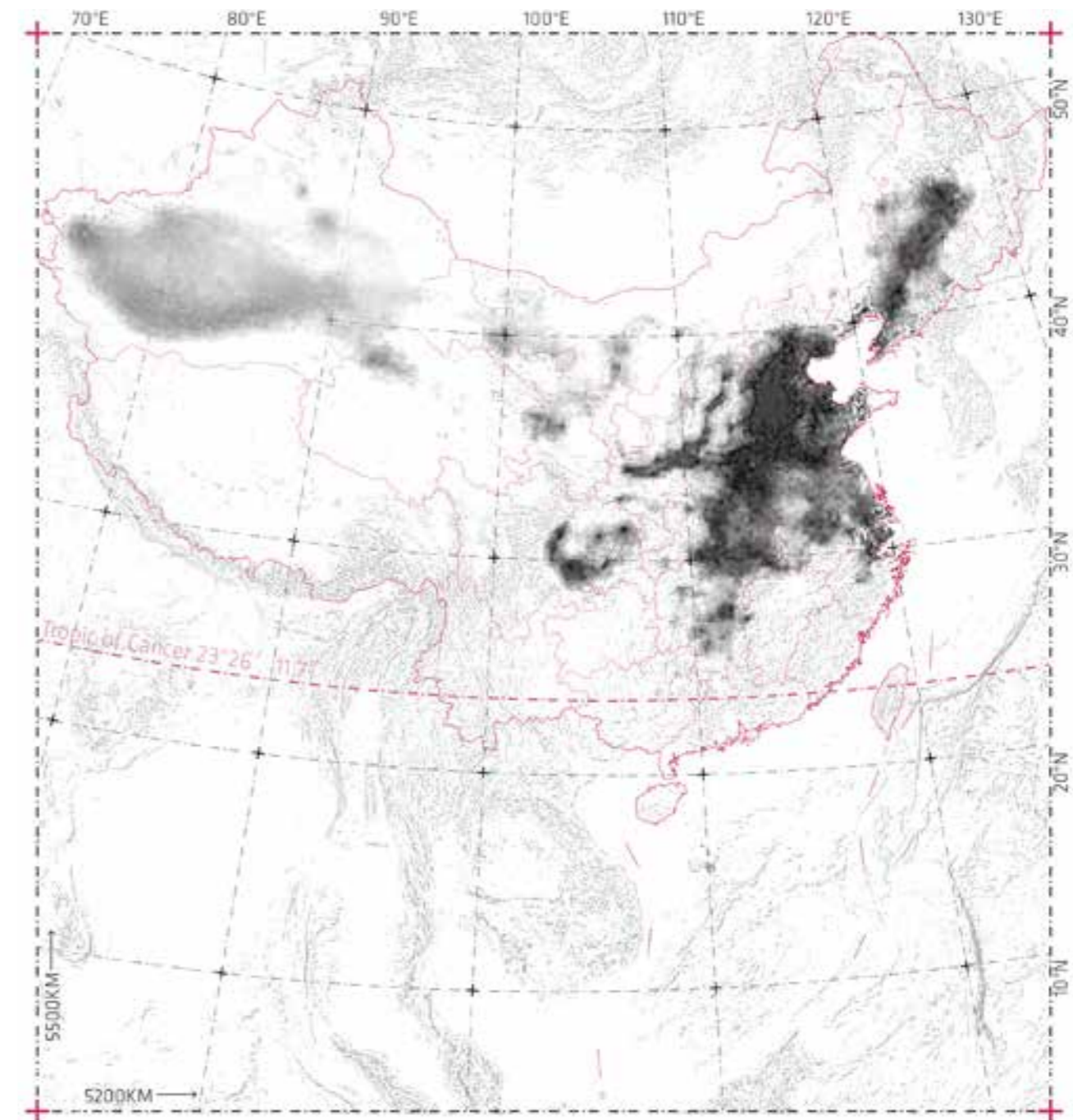


Fig.1.11 Air pollution in China (based on PM2.5 index)  
Source: author, data from <https://www.google.com/maps>; <https://www.who.int/airpollution/data/en/>



Fig.1.12-14 Soviet scientists inspected the location of the steel plant in Handan in the 1950s  
Source: <https://www.meipian7.cn/ibwa6wd>

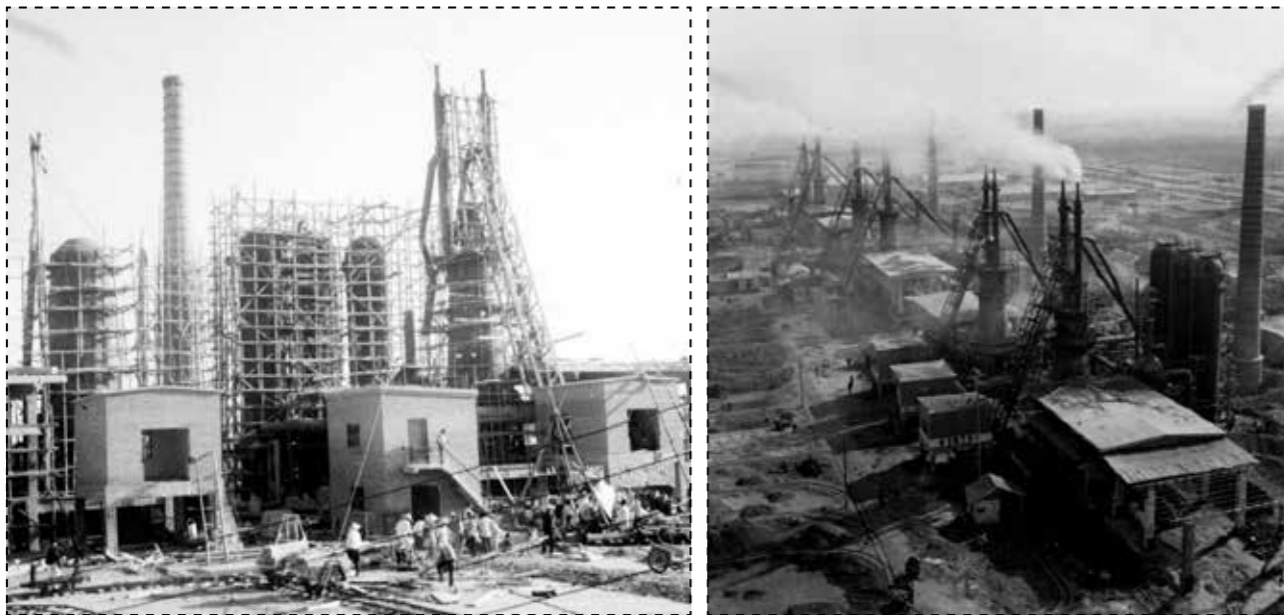


Fig.1.15-16 One of the key industrial projects of the First Five-Year Plan: Construction scene of Handan Iron and Steel Company Source: <https://www.meipian7.cn/ibwa6wd>

the southeast coast to the inland, which also brought industrial production closer to natural resource extraction areas. These heavy industries that relies on natural resources for development has caused serious environmental problems. Until today, the Northeast area, North China area, etc., the key development areas during the First Five-Year Plan, are still suffering from the world's most serious air quality problems.

The progress of industrialization has also promoted the process of urbanization. By 1957, the urbanization rate was about 15.4%, and Beijing, Tianjin, Shanghai, Shenyang, etc. became the first branch large cities of the country. At this stage, cities are regarded as places for heavy industrial production, and rural areas are places for agriculture and supply of agricultural products to cities. This development orientation put the countryside in the position of a "service provider". Thus, the development of the countryside has not been paid attention to, and rural poverty has increased.

The resulting gap in urban-rural development caused the rural population to flow to cities in order to seek a richer life. Such "urban-rural floating population" brought a heavy "burden" to the city and caused many social problems, and its impact continued to today.

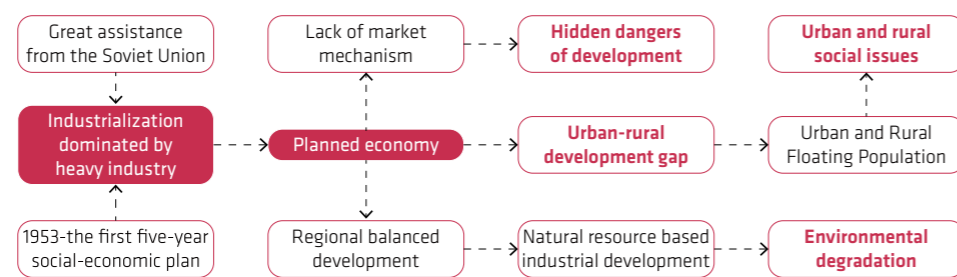


Fig.1.17 Three stages of the process of urbanization in ancient China Source: author

## 1.2.2 Chaos and rash: the abnormal development of industrialization (1958-1978)

In the first few years of the founding of New China, the progress of industrialization was witnessed by the nation. This allowed the central government to continue the industrial development with great confidence, therefore a "catch-up" mentality appeared. In 1957, the central leaders believed that China had the hope of surpassing the United Kingdom and the United States in terms of industrial output and economic development in the next 15 years. This extremely aggressive goal triggered a nationwide vigorous movement, the "Great Leap Forward". In 1958, the central government considered steel production to be the core of the development of heavy industry, mobilized all departments to join steel production, and formulated unrealistic planning goals. In 1957, the national steel output was 5.35 million tons, and it was proposed in the plan that by 1959, 30 million tons of steel would be produced, and 90 million tons would be produced by 1962. In this nationwide steelmaking boom, there is no longer a division of labor between cities and villages, small factories are also being built in rural areas. Such measures have greatly affected the development of the agricultural economy, coupled with the frequent occurrence of natural disasters, food supply crises and famines broke out.

In 1960, the wrong development direction of the Great Leap Forward was corrected, industrial development was back on track. In 1964, the military staff pointed out that China's industrial distribution was too concentrated in 14 cities with a population of more than one million people in the coastal and northeastern regions. If it encountered a war, it was easy to suffer serious losses. Therefore, the central government decided to invest in the industrial development of the Northwest region, relocating factories in the northeast and coastal areas to the northwest. Between 1965 and 1971, the actual number of factories relocated was 380, with 145,000 employees. This prompted the formation of a number of emerging industrial cities in Northwest China, such as Chengdu, Panzhihua, and Lanzhou. In addition to the strategic planning of industrial development on a national scale, the central government has begun to vigorously support the development of local industries. Especially the development of five types of small steel plants, small machinery plants, small fertilizer plants, small coal kiln plants and small cement plants. Since 1971, the central government has allocated 8 billion yuan to support the development of local industries. Even though industrial development is proceeding steadily, during the period 1966-1976, Chinese society experienced very serious turmoil, which was called the "Cultural Revolution" in history. This seriously hinders economic development.



Fig.1.18 Chinese Communist Party leader Mao Zedong encouraged everyone in the country to produce steel Source: <https://baike.baidu.com/error.html?status=404&uri=/image/32bb9c8bd26680b5fc1f107b>

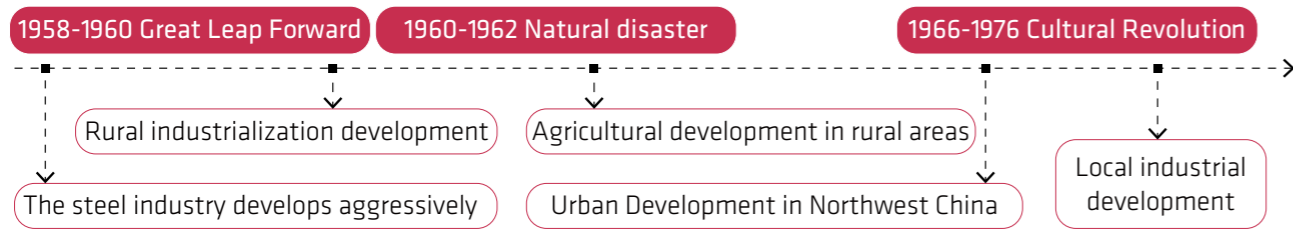


Fig.2.19 Three stages of the process of urbanization in ancient China Source: author

From the aggressive development goals of the Great Leap Forward from 1958 to 1960, to natural disasters and famines from 1961 to 1964, to the Cultural Revolution from 1966 to 1976, China has experienced severe disasters in these 20 years. During this period, the process of urbanization basically stagnated, the urban population increased by only 1.2%, and the number of cities only increased by more than a dozen small and medium-sized cities.



Fig.2.20 The Jiaoyao coal mine factory in Handan was the best representative of the development of local small industrial enterprises in China in the 1970s. Source: [https://m.fang.com/news/yz/0\\_9520395.html](https://m.fang.com/news/yz/0_9520395.html) <http://www.hynews.net/dxb/dysqxb/07/1207/20/3V4V20A0000120GU.html>



Fig.2.21-23 Due to the environmental control policy (Will be introduced in the following chapters), the coal mine plant was closed in 2017 and has undergone spatial renewal and transformed into a landscape park. Source: author

### 1.3 Rapid and stable urbanization stage (After 1978)

The theoretical study and practical exploration of how can China "turn a backward agricultural country into an advanced industrial country" have begun long before the foundation of the People's Republic of China. Although some military industries developed during the last years of the Qing Dynasty and the period of Sino-Japanese War, China's national industrialization did not begin until the founding of the country. The initial stage of industrialization received strong assistance from the Soviet Union, under the influence of which, the

#### Industrialization after the reform and opening up (1978-2002)

The Third Plenary Session of the 11th Central Committee of the Communist Party of China kicked off the prelude to the Reform and opening up and ushered in a new era in which China moved from a planned economy to a market economy. This is considered to be the second stage of the traditional industrialization under the leadership of the Communist Party. Although China's development was still concentrated on the economy, it was not limited to the development of the heavy industry. In addition, reform involved other aspects, such as politics, culture, and many social sectors. During this period of time, China's industrialization level has greatly increased. Besides, a large number of foreign companies have invested in China to build factories, because of that China has become the "world's manufacturing factory". However, the manufacturing industry has been developed rapidly based on the expense of the environment, which has resulted in a large amount of idle and waste of production resources.

#### New industrialization (2002– today)

The report of the 16th National Congress of the Communist Party (2002) put forward the concept of "New industrialization" for the first time, insisting on promoting industrialization with informatization. The operational goals and directions of new industrialization practices have been set in the report: high technology-oriented, good economic benefits, low resource consumption, less environmental pollution, and full use of human capital resources.

The 18th Congress of the Communist Party of China held in 2012 made the New industrialization clearer with the coordination development of four focuses: healthy industrialization, informatization, urbanization, and agricultural modernization with Chinese characteristics. The country started to promote the deep integration of informatization and industrialization, and the benign interaction between industrialization and urbanization.

New industrialization has also promoted the upgrading and transformation of industries. The country no longer simply pursued economic development but began to look for an eco-friendly development paradigm. Led by the idea of "Green water and mountains are golden and silver mountains", the ecological environment has been improved to a great extent. Many cities have eliminated a large number of high-energy-consuming enterprises, the state has actively developed clean energy industries, and the whole society has begun to pay attention to environmental protection issues

#### Conclusion



Fig.1.24 Urbanization and urbanization rate development statistics. Source: author, based on China year book 2018

China's industrialization and urbanization process has experienced twists and turns. **In this process, the driving force for China's industrialization process was mainly resource-based industrial cities.** After the reform and opening up, there was rapid and stable growth. **In order to promote the sustainable development of cities, the central government proposed the concepts of "new urbanization" and "new industrialization", but this caused two problems:** On the one hand, new urbanization advocates the use of urban agglomeration development models to enhance the overall competitiveness of the region. However, this has led to the problem of some cities being marginalized by space (discussed in Chapter B). On the other hand, new industrialization promotes the transformation of resource-based industrial cities. In the process of transformation, these cities are also facing many difficulties (will be Discussed in Chapter C). **These two aspects of problems are the theoretical basis for the research of this project.**



Fig.1.25 Problem positioning framework Source: author



**B**

# Regionalization and governance: Spatial marginalization in China's regional development

Traditional secondary resource-based industrial city, Photoed by J. Xu, 2021, Edited by author.

## 1.4 Regional spatial Marginalization

### 1.4.1 Uneven regional development

As early as the 1950s, the Swedish economist Gunnar Myrdal developed the theory of Circular cumulative causation (Fig. 2) aiming to rationalize the phenomenon of uneven regional development (Myrdal, 1957). In the theory, two effects were used to interpret the process of imbalance regional development: spread effects, the flow of production factors such as capital and labour from developed areas to underdeveloped areas resulted in the narrowing of the regional gap, and backwash effect, the reverse process resulted in the widening of the regional gap. Jeffrey Williamson (1965) described the dynamic process of uneven regional development in his book *Regional inequality and the process of national development* (Fig. 3). He introduced the temporal issue to the analysis of the regional spatial structure and economic development changes. Through empirical analysis, he pointed out that there is an inverted U-shaped relationship between a country's development stage and regional economic differences. This model implies that the spatial concentration and polarization of economic activities is an insurmountable stage at the beginning of a country's economic development. And as the economy develops to a more advanced stage, the regional economic gap will eventually disappear (Williamson, 1965). However, as a controversial theory, Williamson did not take technological innovation, national policies, and other factors that are also vital to economic development into consideration in the inverted U-shaped theory. The important role these economic effects play in regional development is generally accepted, and this theoretical process of uneven regional development is also vividly reflected in China (Huang, & Jin, 2019; Xiao, 2012; Sui, 2015).

After the foundation of the People's Republic of China (the New China) in 1949, "common prosperity" has always been the guiding principle for the development of this socialist country (Xiao, 2012; Zhang, 2008). The balanced development between regions seems to have reduced the wealth gap, but the real situation hidden behind was "common poverty", because people's work enthusiasm was blocked to a great extent. In 1978, the country realized that "equal development" could not be achieved in a short period of time. Therefore, with the guidance of western economic theories, the central government put forward the policy to "prioritize the development of eastern coastal areas" (Zhang, 2008; Xu, 2006). Four special economic zones were established included Shenzhen, which served as the first batch of "wealthy poles" and then acted as economic engines for the development of other areas. Although this policy has rapidly aggravated the uneven development of China's east, middle, and west regions, it has also contributed to the vigorous booming of the national economy. However, balanced development between regions has always been the goal pursued by the Chinese people (Zhang, 2008). Since the beginning of the new century, the central government has formulated a series of regional plans and policies to promote balanced development (Wu, 2015).

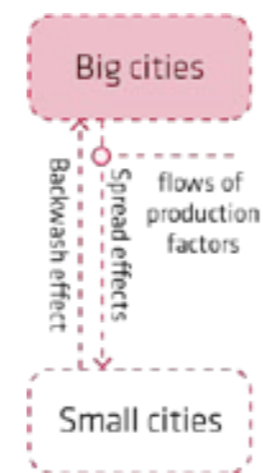


Fig.1.26 Circular cumulative causation  
Source: author, based on Myrdal, 1957

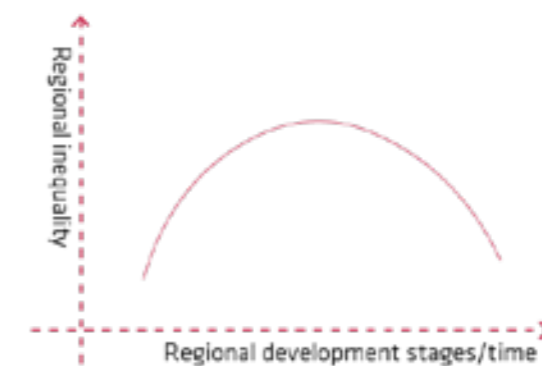


Fig. 1.27 The inverted U-shaped theory  
Source: author, based on Williamson, 1965

## 1.4.2 Cities' stratification

The realistic foundation of the uneven development theory is based on the wealth gap in the region. This uneven condition could directly lead to the unequal status of cities. Some cities are in the regional dominant position, economically, politically, and culturally (Cardoso & Meijers, 2017). In most circumstances, these cities have the power of "command and control", which are often called first-tier cities (Keller, 2012). In Europe, these cities are generally countries' capitals, which usually become overcrowded and expensive today (Cardoso & Meijers, 2017). Because of various problems in first-tier cities, second-tier cities, as an alternative for people to settle down, begin to show their importance in an urban network system. Second-tier cities are described as medium-scale non-capital cities, which play an important role in national economic development and social performance (ESPON/SGPTD, 2012). In the process of regional decentralization of economy, political power, and investment, second-tier cities also work together with first-tier cities to form a city functional network and serve as a regional development "multi-cylinder engine" (Faludi, 2015; ESPON/SGPTD, 2012). But it is undeniable that the tilt of policies and investment to first-tier cities is still obvious. Such an imbalance implies that the development of second-tier cities is facing some difficulties, which summarized by Rodrigo and Evert (2017) into three aspects: (a) smaller in scale with insufficient urban functions, (b) low urban competitiveness when striving for investment, and (c) passive position in the formulation of upper-scale policies.

Due to the huge gap in scale, the stratification of cities in China seems more complicated than that in European countries. From the perspective of the planning scale, the population and area of a province in China are roughly equivalent to those of a country in Europe. Although China has 34 administrative divisions, there are only four first-tier cities: Beijing (the national capital, the central city of Beijing-Tianjin-Hebei mega-region with a population of 23 million), Shanghai (the central city of the Yangtze River Delta mega-region with a population of 23 million), Guangzhou (the central city of the Pearl River Delta mega-region with a population of 15 million), and Shenzhen (a special economic region with a population of 13 million, experimental field of Reform and economic opening up). According to the existing literature, the stratification of cities in China is mostly a convention concept, as there seem to be no clear definition and classification standards. Admittedly, economic performance and city scale are the primary factors to be considered. Such an agreement is also in line with people's expectations of "big cities". For a long time, the GDP of the first-tier cities has been ranked in the top four nationally. However, in 2020, the GDP of Chongqing (a municipality in southwestern China with a population of 31 million), surpassed Guangzhou's GDP, marking this municipality having the fourth highest GDP across the nation. Even so, people still naturally think the four first-tier cities did not change, Guangzhou is still one of them. Additionally, Second-tier cities are generally provincial capitals and economically developed cities. Third-tier (~70 in total), fourth-tier (~90 in total), and fifth-tier (~130 in total) cities are considered medium-sized and small-sized cities. There are various opinions on the classification standards for Chinese cities, both academically and non-academically. Unlike the first-tier cities, the list of Second-tier to fifth-tier cities changes every year according to the ranking of the city's socio-economic performance.

These four first-tier cities are located along China's east coast, the richest area, and they are typical products of regional uneven development. This condition has lasted for decades. Similar to European cities, these first-tier cities have also begun to face many problems, such as crowding, excessive traffic pressure, environmental degradation, and soaring housing prices. As predicted by the inverted U-shaped theory (Williamson, 1965), capital and labour began to flood into some other cities and the regional development gap starts to narrow.



Fig. 1.28 First-tier city- Shenzhen  
Source: [http://hgjy66.51sole.com/companyproductdetail\\_156854866.htm](http://hgjy66.51sole.com/companyproductdetail_156854866.htm)



Fig. 1.29 second-tier city- Shijiazhuang  
Source: [https://www.sohu.com/a/281029215\\_99989431](https://www.sohu.com/a/281029215_99989431)



Fig. 1.30 Third-tier city- Handan  
Source: [https://jingyan.baidu.com/article/1612d5001a32c4e20e1eee0e.html?st=2&bd\\_page\\_type=0&os=e-rs](https://jingyan.baidu.com/article/1612d5001a32c4e20e1eee0e.html?st=2&bd_page_type=0&os=e-rs)

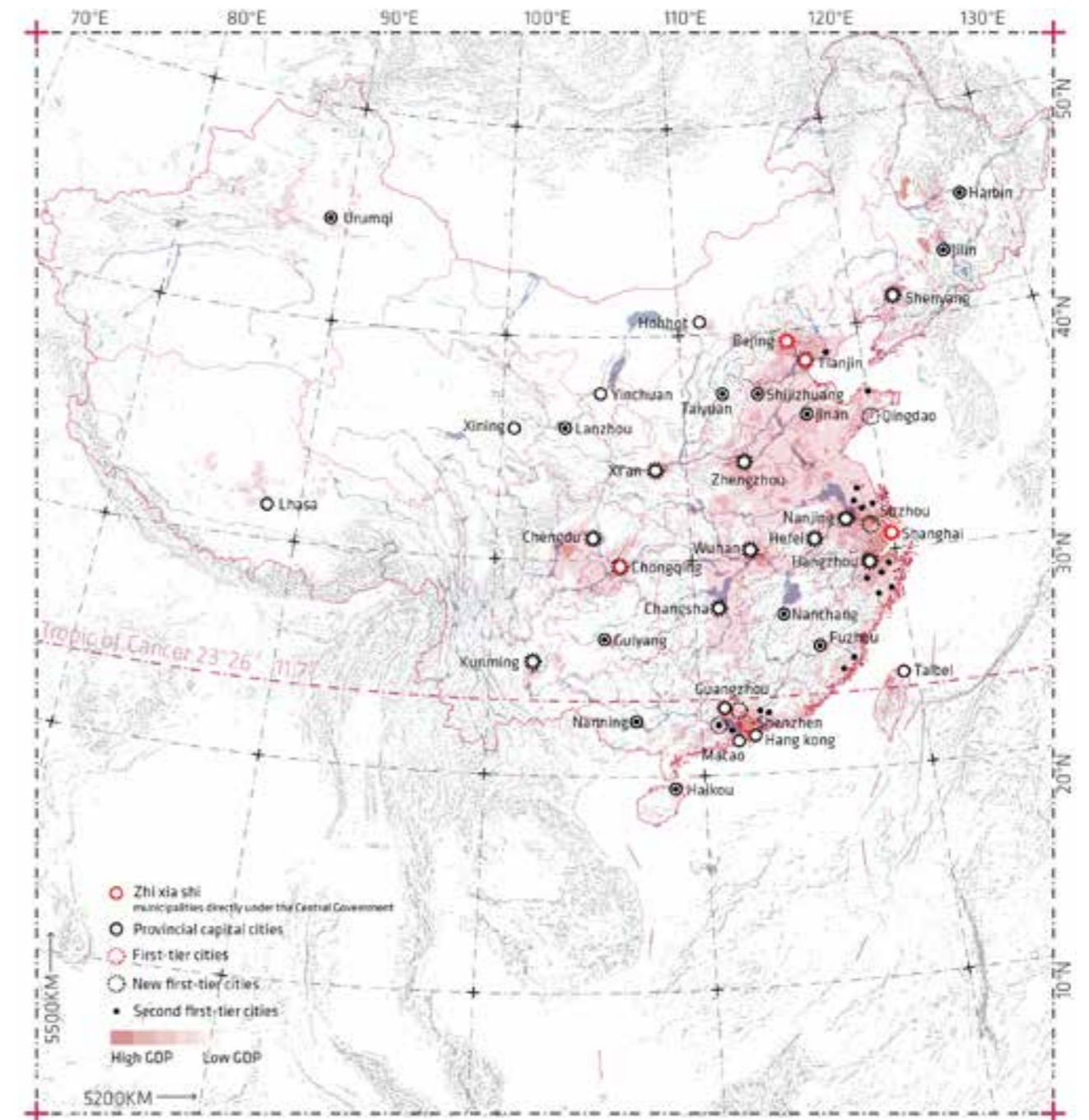


Fig. 1.31 Cities' stratification in China Source: author, based on China Business News Weekly, 2020

Since 2013, China's top business magazine "China Business News Weekly" has ranked China's cities based on a comprehensive evaluation of five indicators: commercial resource agglomeration, urban transportation hubs, urban residents' activity, lifestyle diversity, and future possibility. A total of 15 cities ranked from 5th to 19th have been selected as "new first-tier cities" (the top four cities have maintained Beijing, Shanghai, Guangzhou, and Shenzhen). These cities have a good environment for entrepreneurship and employment, the quality of life is even better than that of first-tier cities (Wang, Wang, & Zhou, 2017). China's urban structure has begun to develop in balance. More importantly, in the National Urban System Planning (2010-2020) compiled by the Ministry of Housing and Urban-Rural Development, 9 national-level central cities have been identified, and they are also listed in the first-tier and new first-tier cities. This means that in addition to the endogenous development of the cities themselves, there would be number of policy preferences to make them more prosperous (Tian, Liu, & Kou, 2013).

### 1.4.3 Marginalization: the other side of centralization

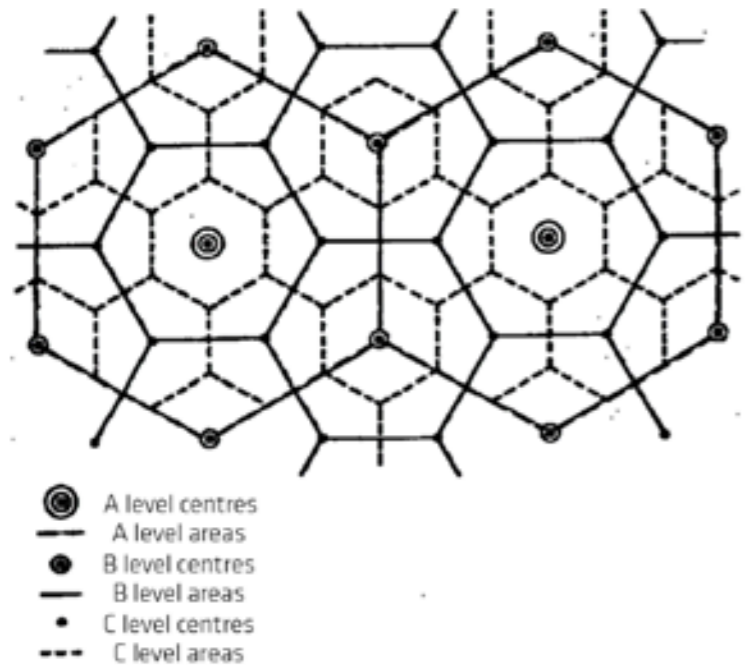


Fig. 1.32 Central place theory Source: Christaller, 1933

French economist Francois Perroux believes that it is not possible for a country (or a region) to achieve fully equal development. Economic growth is always gradually transmitted from one or several "growth centres" to other sectors economically, or regions spatially. Therefore, a specific geographic centre should be selected as the growth pole to drive economic development (Meardon, 2001). Although the purpose of the establishment of first-tier cities and new first-tier cities in China is not only for economic development, these cities are also broadly regarded as the "growth poles" of a certain region and will be the economic driving engine later on (CUPDI, 2005). The economic geographical concept of "centralization" could be traced back to "central place theory" by German geographer Walter Christaller (1933), in which he revealed the relationship between human settlements based on the study of cities' patterns in southern Germany (Fig. 5). For decades, "central place" has been the basic theory for studying cities and urban agglomerations (Xiao, 2012). In his theory, the area that can provide more services to the surrounding settlements is regarded as the "central place". It is a relative and hierarchical concept. The stronger ability to provide services, the higher level of the centre would be, vice versa. The low-level centre is the "marginal place" relative to the high-level centre (Berry & Garrison, 1958).

Whether in Perroux's theory, where developed areas act as growth poles to drive other areas to develop or in Christaller's theory, higher-level centres provide various services for lower level centres, these theories all imply the interdependence relational between central areas and non-central areas. Under the context of a highly competitive relationship among cities, the centre places (capital cities, first-tier cities, highly developed cities, etc.) would take advantages of its extremely high attractiveness to "predatory" all kinds of production materials, including but not limit to labour, investment, resources from non-centre places. This polarization phenomenon has caused the opposite consequence of centralization: marginalization.

Originally, marginalization is a sociological concept. In 1928, American sociologist Park explained the dilemma of cultural identity in immigrant groups from multiple perspectives such as ethnicity and race. He believes that in the process of immigration, there is a group of people who will be struggling on the edge of two different cultures. They cannot fully identify with any kind of cultural connotation and integrate into it, so they will feel a sense of loss and isolation psychologically (Park, 1928). This concept of "marginal man" is also considered to be an important research sample of cultural conflict and integration between different ethnic groups. More broadly, poverty is also considered a type of social marginalization, which can also be understood as a representation of the competitive relationship between social groups. Just as "no rich, no poverty", marginalization and centralization will always exist symbiotically (Van Steenberg, 2020).

From the spatial perspective, the concept of marginal place is usually built based on a regional competitive relationship (Huang, & Jin, 2019), which is in the same line as in sociology. Chinese scholars (Xiao, 2012; Zhang, 2008) believe that in the regional competition, some areas do not have enough power to take the initiative. These areas usually have weak voices which could possibly hinder their development. Additionally, affected by the polarization effect (Meardon, 2001), the city status would continue to decline, this phenomenon is called regional spatial marginalization. With the rapid increase of China's urbanization and the development of China's regionalization, regional spatial marginalization is becoming more and more common country-wide, it is more difficult for these marginal cities to integrate into the regional network system and benefit from it (Huang, & Jin, 2019).

## 1.5 Regional planning and rescaling

### 1.5.1 Urban Entrepreneurialism and economic decentralization



Fig. 1.33 Industrial parks built in various cities after the reform and opening up (1978)  
Source: <http://www.gxnews.com.cn/staticpages/20200102/newqx5e0deca1-19155659.shtml>

The competitive relationship did not have a great impact on regional imbalances at the beginning of the establishment of New China. This is because, under the framework of socialism, economic development is implemented through a series of national plans (the five-year plans for national development), hierarchical governments have coordination and control power as an authority. Almost all industries are owned by the state, not individuals. After the Reform and opening up in 1978, the central government began to allow the development of local and individual enterprises, which was called "Urban Entrepreneurialism" (Wu, 2016). Urban entrepreneurialism, which stems from the (power) decentralization of economic development by the central government, is the political basis for the development of urban agglomerations in China. Since then, cities have not only been planned uniformly by the central government but have the power to fight for their own interests. The relationship of competition also appears more frequently among cities.



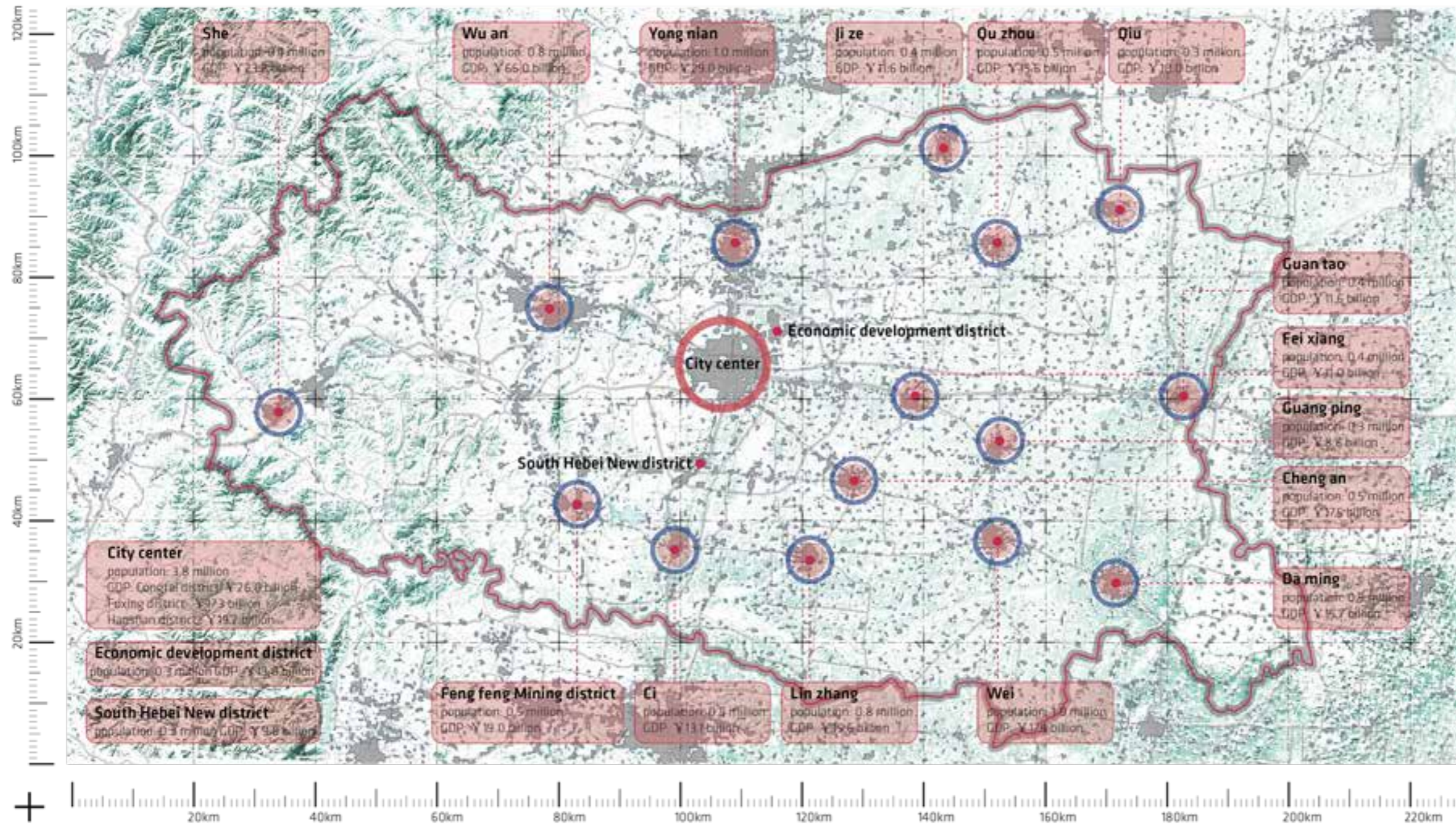


Fig. 1.38 example for "city-led-county" regulation: Handan municipality area Source: author, based on: <https://earth.google.com/>  
 Explanation: The red circle is the central city. Before 1982, it was under the jurisdiction of the provincial government as an independent individual settlement. The blue circle was counties. Before 1982, they jointly formed a prefecture under the jurisdiction of the provincial government. After 1982, the prefecture was abolished, the counties started to be governed by the central city, to form a "whole municipality area".

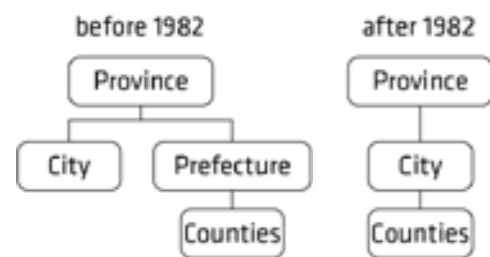


Fig. 1.39 Changes in regional governance Source: author

Entrepreneurism has also led to some changes in the pattern of regional governance. The most notable one was the "city-lead-county" regulation in 1982 (Luo, 2005). China has a strong administrative hierarchical system in terms of regional governance. The low-level administrative division government needs to follow the orders of the high-level one. For example, the provincial government governs the subordinate counties and cities. Before 1982, regional centres with a high rate of urbanization were called cities and were directly led by the province (Zhang, 2010). Other human settlements with most areas were rural were called counties. Counties in similar areas formed "prefectures" which were governed by the provincial government. This regulation system has made the distinction between urban and rural areas more and more obvious (Liu, 2014).

To support the development of central cities, promote urbanization, and reduce the gap between urban and rural areas, the regional governance system was adjusted in 1982. All counties were repositioned under the jurisdiction of the cities (Fig. 6). City officially began to manage larger areas as a new-level administrative division between the province and the county. Since then, municipal territories have ceased to be single "large human settlements" but contains surrounding counties (Fig 7). The original city began to serve as a centre for commerce and financial development, industries were relocated to surrounding counties, because of that the surrounding counties gained economic growth. This is considered to be an important part of China's metropolitanization process (Luo, 2005; Wu, 2016).



Fig. 1.34 Handan Central City Source: <https://baike.baidu.com/item/%E9%82%AF%E9%83%B8/334665>



Fig. 1.35 Wuan county-level-city (the biggest county in Handan Municipality area) Source: <http://www.hbs.cn/pcj/p/30385.html>



Fig. 1.36 Yongnian district (a satellite district of Handan central city) Source: author



Fig. 1.37 Cheng'an county (a small county in Handan Municipality area) Source: <https://dy.163.com/article/F1N96P3V0525DLEK.html>

The process of metropolitanization is no longer limited to administrative boundaries after China joined the World Trade Organization in 2001, which marked China's becoming the world's factory (Chen, Li, Kong, 2019). Because of the skyrocketing demand for land and labour, big cities began to invest in small cities around them to build factories. To gain benefits, small cities provided various conveniences, such as zero land prices and policy preference. As competition between regions has become more and more intense, some cities tried to seek opportunities for merging with other cities nearby. On the one hand, some central cities have begun to annex smaller cities (such as Zhengzhou and Kaifeng, Guangzhou and Foshan. Fig. 8, 9. Xiao, 2012), and on the other hand, non-central cities in the same geographic space formed an alliance with each other (such as the Taihu Lake metropolitan area, Fig. 10). The infrastructure between cities has also been developed to a large extent due to regional integration (Wu, 2016). "Satellite City", "new district", "intercity high-speed rail", "metro extension line", these new concepts also indicate that the relationship between cities is getting more and more close. Based on the integration trend of urban growth and the rapid development of infrastructure, China's urban agglomerations have begun to appear. Undeniably, although the integrated development of cities is an efficient approach for improving the competitiveness in the context of globalization, it may aggravate both centralization and marginalization, because big cities still seem to have "priority rights" to development.



Fig. 1.40 Kunshan Economic Development Zone, Jiangsu Province: Since the establishment of the Economic Development Zone in 1984, it has received investment from many major cities and has developed rapidly due to its geographical proximity to big cities such as Shanghai and Suzhou. Source: [https://www.sohu.com/a/286601027\\_747364](https://www.sohu.com/a/286601027_747364)



Fig. 1.41 Greater Zheng-Bian metropolitan area Source: author, based on: earth.google.com

Fig. 1.42 Guang-Fo metropolitan area Source: author, based on: earth.google.com

Fig. 1.43 Su-Xi-Chang Taihu lake metropolitan area Source: author, Based on: earth.google.com

### 1.5.2 An ideal plan: Cooperative mega-regions

Whether it is the adjustment of administrative divisions or the rise of urban agglomerations, these regionalization developments seem to be carried out for one goal: to enhance regional competitiveness, both domestically and internationally (Fang, 2015; Harrison& Gu, 2019), which could also determine the development initiative in multiscale. In recent years, the wave of globalization has sent a signal to the world that the global political-economic pattern will largely depend on urban agglomerations, instead of just countries (Fang, 2015; Harrison& Gu, 2019). It's worth explaining that in the Chinese context, urban agglomerations are still a vague concept (Harrison& Gu, 2019; Wu, 2016). But essentially, urban agglomerations can be considered as a collection of cities that are geographically close to each other, and in which, there are one or more central cities for providing the regional functional services based on the highly connected infrastructures (CNDRC, 2016). The cities work together aiming to enhance the global competitiveness, improve urban environmental quality and people living quality at a certain stage of development.

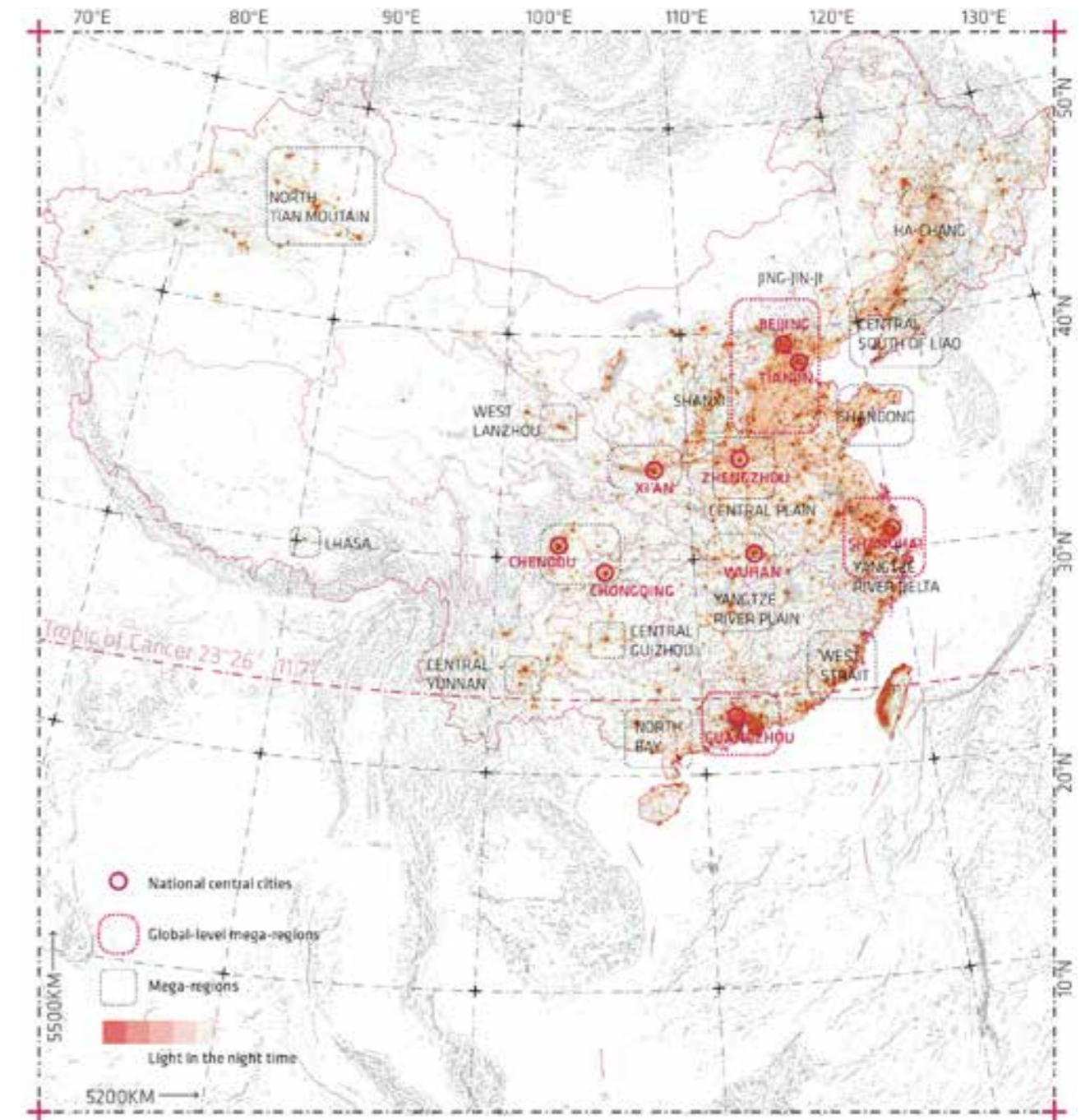


Fig. 1.44 Mega-regions and national central cities in China Source: author, based on National Urban System Planning (2016-2030)

urban agglomerations can also promote the sustainable urbanization and reduce the gap between urban and rural (CNDRC, 2016). In this chapter, the development of China's urban agglomerations in the last ten years will be focused on. During this period, interdependent relationships between cities in a region are more significant because of the promulgation of political plans. The cities often act as an indivisible region at the national scale, so the concept "mega-region" is selected to express one specific urban agglomeration in the rest of this paper to avoid confusion, take "Beijing-Tianjin-Hebei (BTH) mega-region" as an example.

The idea of urban agglomerations as the main body of China's urban development first appeared in the National Plan for Major Function-Oriented Zones in 2011. In this plan, the State Council proposes to build urban agglomerations for the intensive development for both human settlements and industries clusters (State Council of China, 2011; Fang, 2015). In 2012, the National Working Conference proposed that on the basis of optimizing the three world-class urban agglomerations of BTH mega-region, Yangtze River Delta (YRD) mega-region, and Pearl River Delta (PRD) mega-region,

the development opportunities of new urban agglomerations should be sought in the western and north-eastern areas for the service of economic growth poles (Fang, 2015). Such a proposal indicated that China has begun to pursue more balanced regional development and pay more attention to the backward areas.

In the 12th Five-Year Plan (2011-2015), the central government proposed to promote big cities in urban agglomerations to play a leading role and focus more on small and medium-sized cities in order to pursue coordinated development of cities at all levels (CNDRC, 2011). Within a few years, the plan of China's urban agglomeration structure system has changed many times, but basically, it follows the development rules of leading by eastern mega-regions and follows by promoting a balanced development pattern national wide. In the 13th Five-Year Plan (2016-2020), 19 mega-regions were finally determined (Fig. 11. CNDRC, 2016). Based on this regional development planning pattern, the proposal for the draft of 14th Five-Year Plan (2021-2025) also emphasizes the coordinated development of large, medium, and small cities by giving full play to the greater driving force of regional central cities, giving the surrounding small and medium cities more development opportunities (CNDRC, 2020). Urban agglomerations should become an important approach for balanced regional development. Therefore, inter-regional and intra-regional cooperation is particularly important.

### 1.5.3 Realistic Dilemma: Regional governance

Despite the fact that the central government has formulated a series of policies and plans to encourage intra-regional and inter-regional cooperation, if there is no effectual governance mechanism, the word "cooperation" would only exist in the documents instead of working on the realistic regional relations. China is a republic with a very clear administrative hierarchy. There are 34 provincial-level administrative regions nationwide, including 23 provinces, 4 municipalities directly under the Central Government (zhi xia shi, including Beijing, Tianjin, Chongqing, and Shanghai), 5 ethnic minority autonomous regions (Xinjiang, Inner Mongolia, Tibet, Ningxia, and Guangxi), and 2 special administrative regions (Hong Kong and Macau). After 1982 the administrative division adjustment (Wang, & Liu, 2019), the hierarchical regulation system, Country-Province- Prefecture (city) -County-Township-Village, was clarified (Su, et al., 2017). However, the components of most of China's mega-regions are usually cross provincial boundaries. For example, the PRD mega-region was originally composed of several cities intra-Guangdong Province, but after it was upgraded to the "Greater Bay Area", this mega-region included Guangdong, Hong Kong, and Macau three provincial administrative areas (Fig. 12. Chen, Li, & Kong, 2019). Obviously, there is no government at the level of mega-regions. Similarly, some provincial-level urban agglomerations also do not have corresponding inter-municipal governments. The deficit of regulation level makes the mega-region lack an "officer" who can coordinate the overall situation and promote cooperation. Therefore, each city in the region tends to participate in the regional game for its own benefit. There is another factor that causes unfair competition in this game. In addition to the city stratification based on the ranking of city competitiveness mentioned above, the classification of city political power is also clear in China. For example, provincial capital cities are often more likely to receive preferential policies than ordinary cities. In addition to provincial capital cities, there are 15 sub-provincial cities national wide, not to mention the four provincial cities (zhi xia shi).



Fig. 1.45 Governance system in the GBA area  
Source: author, based on Outline Development Plan for the Guangdong-Hong Kong-Macao Greater Bay Area, 2019

As the decentralization of economic development, small cities scrambled to create convenient conditions for investment from big cities. This has largely caused the waste of resources and the extensive development of land due to multiple reasons. First, due to the influence of the free market, the types of industries in small cities have become simplistic, the production has become redundant. For example, some cities in the North China Plain have invested in the construction of steel plants. Steel production has grown rapidly, resulting in overcapacity, while local cultural industries have also been hindered. Secondly, small cities provide development space for investment from big cities in this competition. In the absence of planning and management, newly built factories often have an excessively large scale and may even encroach on farmland. The central government is making efforts to make up for such a

deficit in administrative governance. Fulong Wu (2016) summarized 3 key mechanisms of regional regulation in China: administrative annexation, spatial plans, and regional institutions. These three mechanisms widely exist in China's mega-regions. In this section, the BTH mega-region is used as an example:

### Administrative annexation

Due to the special geographical relationship (Fig. 13), the three provincial administrative regions of Beijing, Tianjin, and Hebei have been seeking common development since ancient times. As the political centre of the country for a long time, Beijing always has a dominant position in this mega-region. Hebei was called Zhili in ancient times, which means "direct subordination". For the service of the development of the capital region, more than 15,000 square kilometres of land was transferred from Hebei to Beijing from the 1950s to the 1960s, forming the current Beijing area (Fig. 14). In addition to this cross-provincial annexation, administrative mergers also occurred within the city. For example, in order to develop the port industry, Tianjin merged the three districts of Dagang, Tanggu, and Hangu to form the Binhai New district in 2009 (Fig. 15). Moreover, Hebei Provincial government upgraded the two county-level cities of Zhengding and Xinji into city-level cities in 2013. Xinji, as an important base for modern equipment manufacturing, would undoubtedly provide services for the economic development of the provincial capital Shijiazhuang. At the city scale, in order to coordinate the development of the city centre, some counties were redefined as districts and became part of the central area (Fig. 16).



Fig. 1.46 Geographical relationship of BTH  
Source: author, based on: open street map



Fig. 1.47 Administrative annexation from Hebei to Beijing and annexation year  
Source: author, based on: open street map



Fig. 1.48 Binhai new district in Tianjin  
Source: author, based on: OSM



Fig. 1.49 Expanding of city centre in Hebei province (before and after)  
Source: author, based on: open street map

## Spatial plans

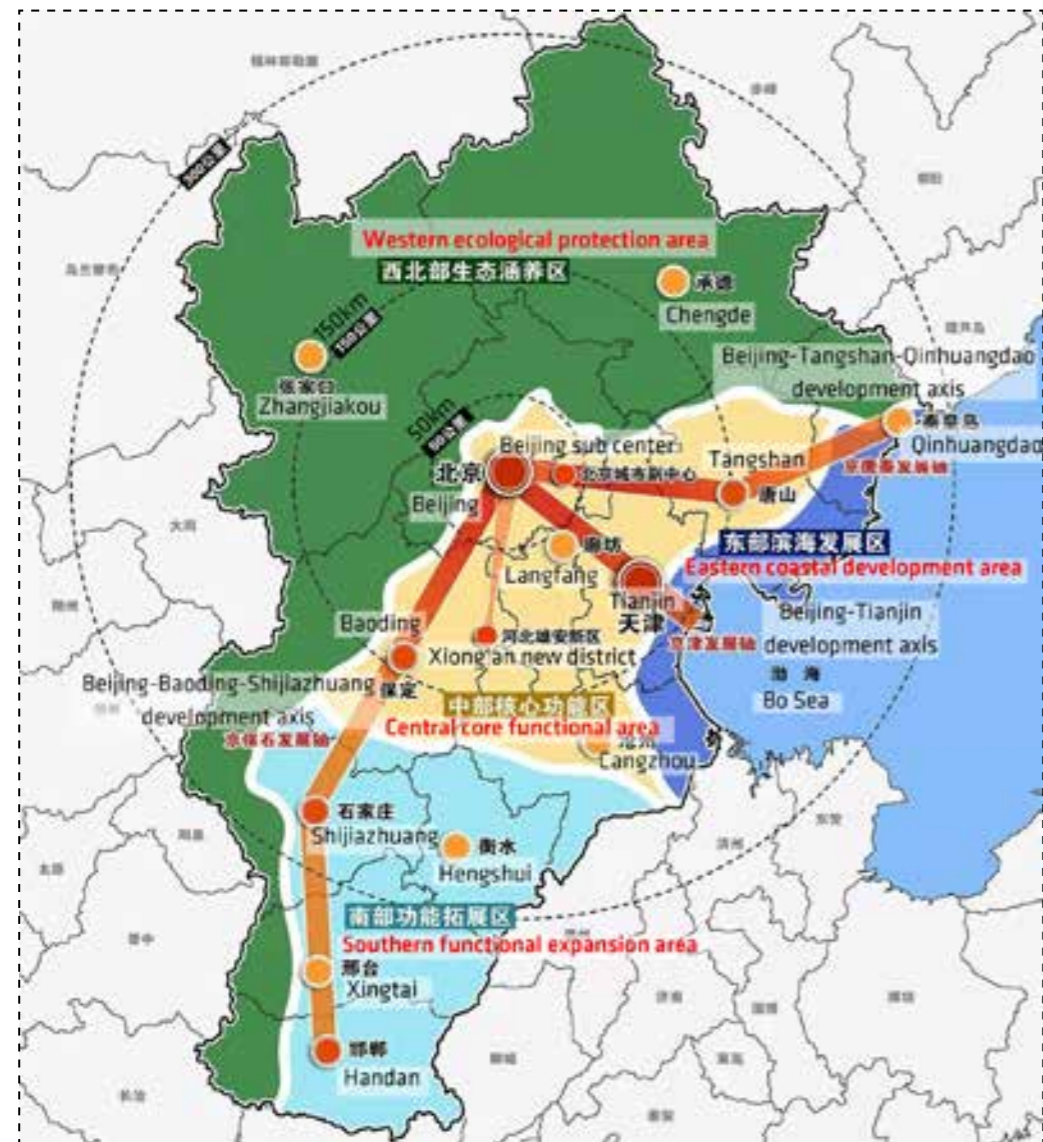


Fig. 1.50 Beijing-Tianjin-Hebei mega-regional metropolitan system  
Source: Beijing Master Plan (2016-2035), translated by the author

In 2015, the State Council promulgated the regional strategic plan for the coordinated development of this mega-region (BTH-CDLG, 2015), which marked that spatial planning has become an official approach for China's central government to manage regional issues (Wu, 2016). Prior to this, the pace of coordinated development of the BTH mega-region has been guided by various policy plans. Such as the Bohai Rim Economic Belt, the Capital Rim Economic Circle, and the Beijing-Tianjin-Tangshan region, and most of these conceptual plans are formulated with a precondition that Beijing plays a leading role in the area. In the Outline of the BTH mega-region coordinated development plan, the Beijing-Tianjin-Hebei region is divided into four functional areas (Fig. 17), namely the central core functional area, the western ecological protection area, the eastern coastal development area, and the southern functional expansion area (BMPG, 2016). It is worth noting that one of the planning goals of the coordinated development of the BTH mega-region is to "dispersion Beijing's non-capital functions" (BMPG, 2016), and relieve pressure on Beijing's urban population, industry, and transportation, in the meantime to drive the development of Hebei Province based on spill over effects. "Non-capital functions" refer to functions other than politics, culture, international exchanges, and technological innovation. The functions of economy, industry, transportation, logistics, etc. will be evacuated to other parts of Hebei. For example, Beijing Daxing International Airport was built in Langfang, Hebei, the high-polluting industry Capital Steel Company began to gradually relocate to Tangshan in 2008. The establishment of Xiong'an New District is considered to be one of the most important political decisions in China in the 21st century. Its core function is to serve the evacuation work of Beijing's non-capital functions (CPC-HB, & HBPG, 2018).

## Regional institutions

In China, regional plans such as the GBA mega-region and the YRD mega-region are often promulgated by the central government, but there are no regulatory agencies. Therefore, the implementation of the specific actions in the plan requires joint management between cities. On the one hand, this management mechanism was achieved by the establishment of government committees. In 2014, the National Development and Reform Commission established the BTH megaregion coordination development leadership team office. In 2016, the three places held a joint conference of vice provincial governors. However, due to the large scale of jurisdiction and complicated political power relations, this approach does not work efficiently (Su, et al., 2017). On the other hand, various agreements are also can be used as a tool for governance. For example, in order to alleviate air pollution problems, the BTH mega-region jointly promulgated the Air Pollution Prevention and Control Plan in 2013, requiring heavy industries in Hebei Province to reduce their production. Such an industrial transition has directly led to the decline in the economic development of some cities in Hebei that originally relied on heavy industry (changes can be observed in the ranking of urban economics: Fig. 18). Besides, there are also some agreements on inter-city high-speed rail, telecommunications systems, and other infrastructure to promote regional cooperation (BTH-CDLG, 2015).

The inter-regional governance mechanism essentially relies on the consensus between regions. However, this consensus would be dominated by regional central cities or other big cities to a large extent, thus causing disadvantages for smaller cities. In addition, under the stimulus of the free market, the trend of vicious competition is spreading in small cities. Regionalization with cooperation as the fundamental purpose is inevitably manifesting itself as unfair competition between cities.



Fig. 1.51 National ranking of urban economics of some cities in North China Plain  
Source: author, based on: National yearbook, 2019



Fig. 1.52 Air pollution in the North China Plain  
Source: [http://toutiao.chinaso.com/zg/detail/20170104/1000200033002961483514623191379872\\_1.html](http://toutiao.chinaso.com/zg/detail/20170104/1000200033002961483514623191379872_1.html)

### 1.5.4 Conclusion: a vicious circle of regional marginalization

Since the Reform and opening up, the theory of uneven regional development has been widely confirmed in China. Although this development model based on competition has promoted the vigorous development of the national economy, it is undeniable that the over-centralization of some cities is the fundamental cause of the marginalization of other cities. This is also explained by the theory of circular cumulative causation. Catalysed by the polarization effect, the central cities in the metropolitan area have various advantages such as infrastructure, talents, and technology, on the contrary, other cities cannot compete with them, leading to the further concentration of resources in the surrounding cities to the central city (Zhang, 2008). Such a process has accelerated both centralization and marginalization. When a city is marginalized, resources flow to the big city, which would reduce its competitiveness and continue to increase the degree of marginalization. Such a vicious circle of regional marginalization has caused development dilemmas in small cities, such as weak economic and industrial agglomeration capacity, labour outflow, etc., at the same time, it is powerless to face the dominant position of the central city in the region (Cardoso & Meijers, 2017).

Regionalization is considered necessary under this condition (Su, et al., 2017). China's regional planning has been following the principles of city cooperation and enhancing the overall competitiveness of the region under the trend of globalization. However, because of the combined effect of entrepreneurship and free markets, regionalization in China has become a zero-sum game. Due to the disparity of power between big cities and small cities, the cooperative relationship is not equal. On the other hand, even if many cities benefited from the "spill over effect," these cities have formed a relationship of vicious competition, vying to formulate preferential policies to attract investment from big cities. Regulatory deficits on a regional scale are one of the main reasons for this phenomenon. Although in the process of regional integration, policymaking is considered a necessary approach, the complexity of regional governance such as excessive scale and power relations, limits the implementation of regional policies, which often only works to a certain extent (Cardoso & Meijers, 2017). In China, central cities dominate the formulation of regional policies and plans. For example, in the BTH mega-region, the starting point for most of its planning is to release Beijing's urban pressure or provide services for Beijing's economic development.

In other mega-regions, marginalization is also a common phenomenon. For example, in the planning of the Guangdong-Hong Kong-Macao GBA mega-region, Jiangmen seldom receives preferential treatment due to its geographical inconvenience to the core bay area (Huang, & Jin, 2019). To make matters worse, the cities in eastern and western Guangdong Province, which are the poorest in this province, were not considered in the GBA mega-region plan primarily (Fig. 19). This phenomenon has been paid attention to by a growing body of scholars and politicians, the process of de-marginalization in some areas has begun to appear. For example, the Yellow River Golden Delta jointly planned by Shanxi, Shaanxi, and Henan is to alleviate the marginalization of cities on the edge of the administrative boundaries of these three provinces. In conclusion, the marginalization restricts the sustainable development of the region. In the future regional planning and policy formulation, the position of decision-makers should begin to shift from regional central cities to cities that are marginalized, though that, the real cooperation relationship among cities can be achieved and gain a more balanced regional development.

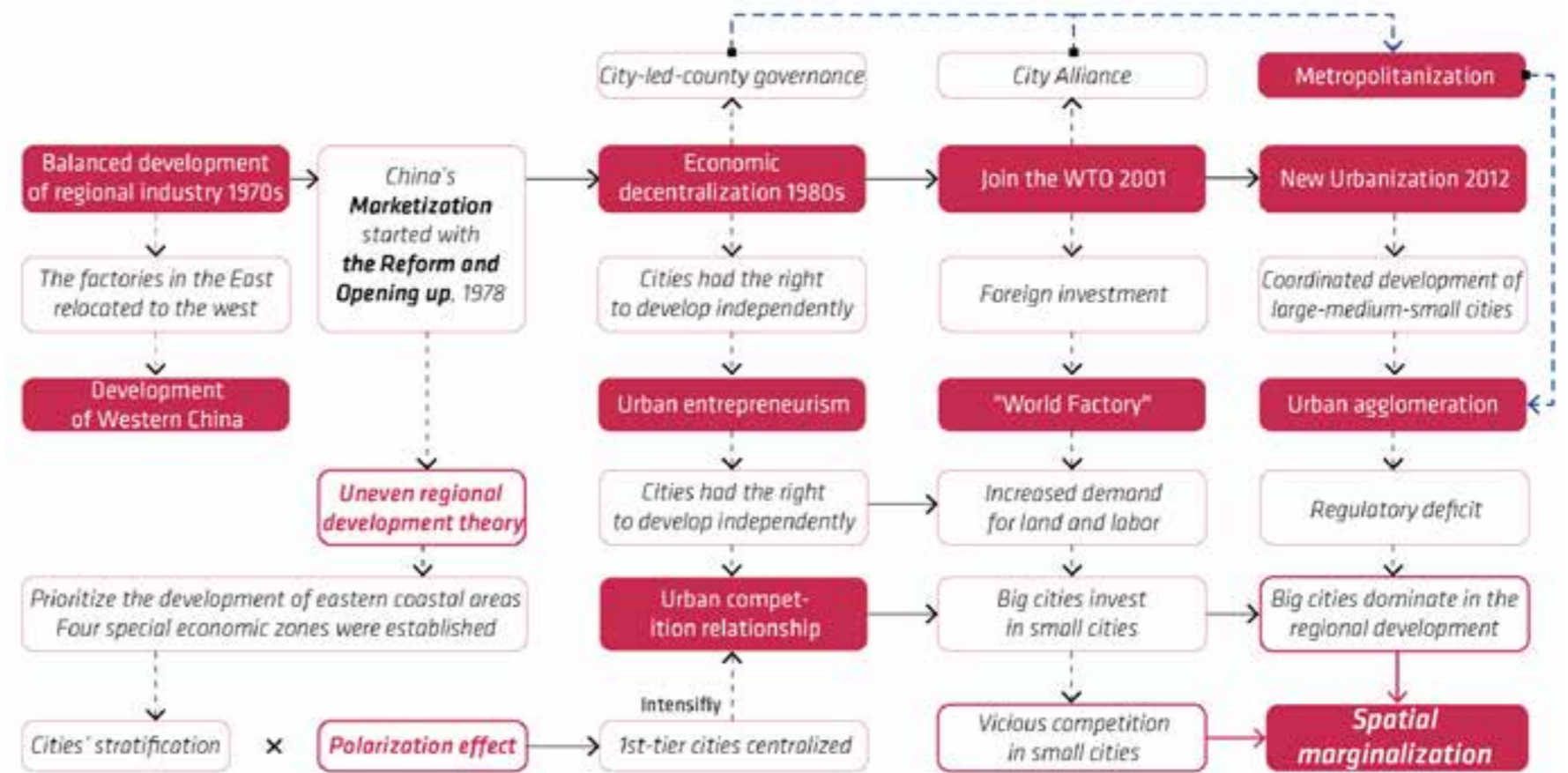
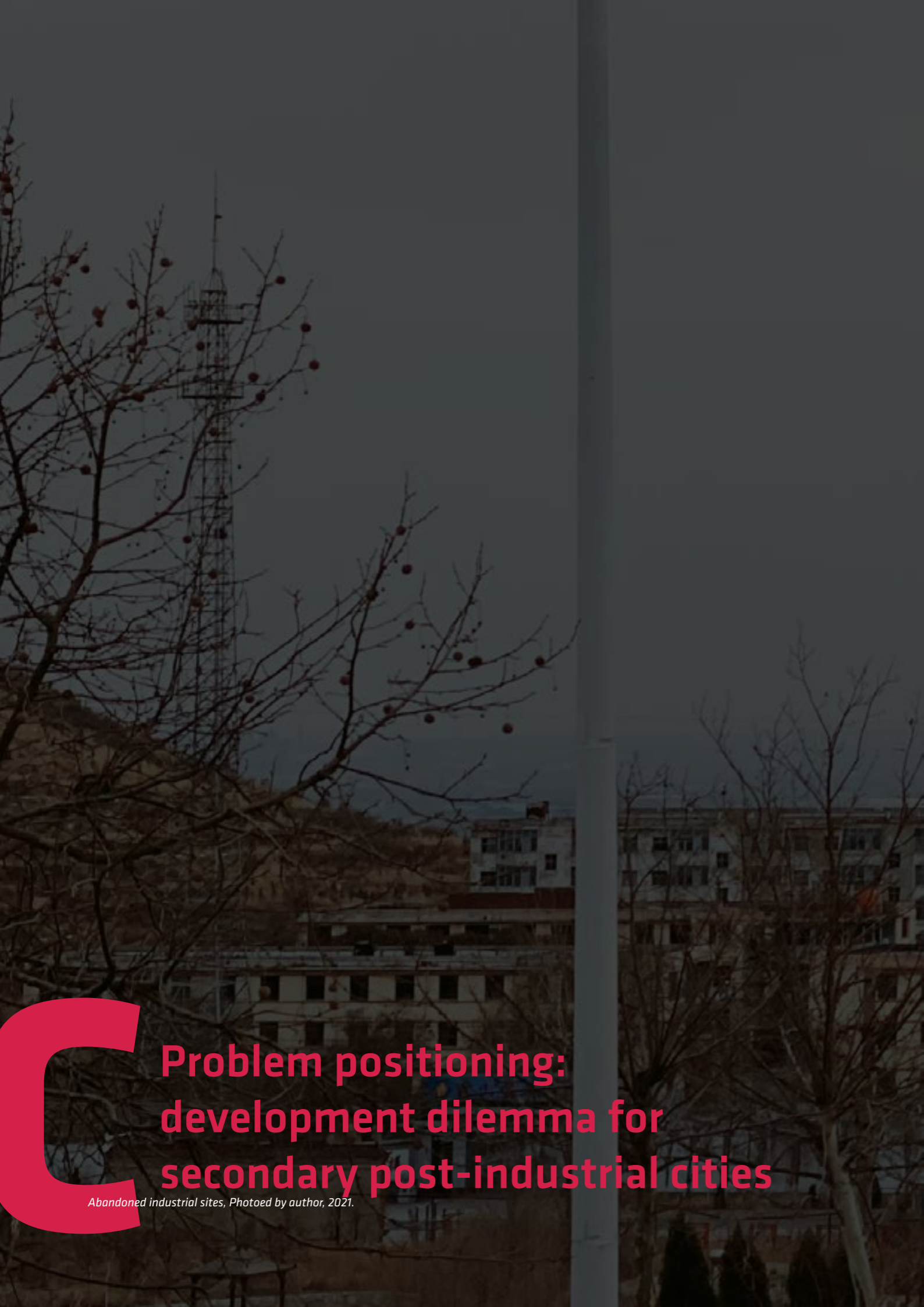


Fig. 1.53 GDP ranking of cities in GBA mega-region and other cities in Guangdong province  
Source: author, based on Outline Development Plan for the Guangdong-Hong Kong-Macao Greater Bay Area, 2019



Fig. 1.54 GDP ranking of cities in GBA mega-region and other cities in Guangdong province  
Source: author, based on Outline Development Plan for the Guangdong-Hong Kong-Macao Greater Bay Area, 2019



## Problem positioning: development dilemma for secondary post-industrial cities

Abandoned industrial sites, Photoed by author, 2021.

## 1.6 The development of resource-based industrial cities

### 1.6.1 "Resource curse"

The term resource curse was first used by Richard Auty in 1993 to describe how countries rich in mineral resources were unable to use that wealth to boost their economies and how, counter-intuitively, these countries had lower economic growth than countries without an abundance of natural resources. An influential study by Jeffrey Sachs and Andrew Warner found a strong correlation between natural resource abundance and poor economic growth. In fact, as early as the 1950s, the emergence of "Dutch Disease" also confirmed the negative correlation between the degree of natural resource enrichment of a country (region) and its economic growth. For decades, economists have attributed this "curse" to the cause of trade development. This excessive dependence on resources is an important reason for the "unsustainable" national economic development. In 2008, the US "Time" magazine published 10 concepts that lead the world to the future, including avoiding the "resource curse." From 2018 onward, a new discussion emerged concerning the potential for a resource curse related to critical materials for renewable energy (Overland, 2019). This could concern either countries with abundant renewable energy resources, such as sunshine, or critical materials for renewable energy technologies, such as neodymium, cobalt, or lithium.



Fig. 1.55 In 1959, the Netherlands discovered the North Sea oil field and started mining, using natural resources as a commodity for export. This is considered the beginning of the "Dutch disease".

Source: <https://oilprice.com/Latest-Energy-News/World-News/Equinor-Starts-Up-Major-77B-Oil-Field-In-UK-North-Sea.html>

There is no doubt that the "resource curse" is also vividly reflected in the process of industrialization of Chinese cities. Although different from the development model of "market economy" in western countries, China's "planned economy" also regards the development and utilization of natural resources as the foundation of industrialization. As mentioned earlier, in the early stage of China's founding, the development of heavy industries such as coal and oil made a number of cities in China quickly prosperous. There are generally two types of resource-based industrial cities in China based on their industrial development paths. The first is a city developed through economic activities such as mining, processing, and trading due to the discovery of mineral resources in a certain area, the development of mineral resources promotes the process of urbanization and produces many resource-based industries. For example, Pingdingshan, Tongchuan, Daqing, Karamay, Panzhihua, etc. The other is the development of mineral resources driven by urbanization, with the process of urbanization, in order to develop the urban economy, the government actively develop the mineral resources in the surrounding areas of the city and develop many resource-based industries. For example, Xuzhou, Handan, Ordos, etc. This type of city originally had a relatively strong economic foundation and prosperous cultural activities. While the development of resource-based industries promotes its rapid economic growth, it also has an impact on urban characteristic industries and local culture. This point will be discussed in more depth in the next chapter with selected research objects.

## 1.6 The development of resource-based industrial cities

### 1.6.1 "Resource curse"

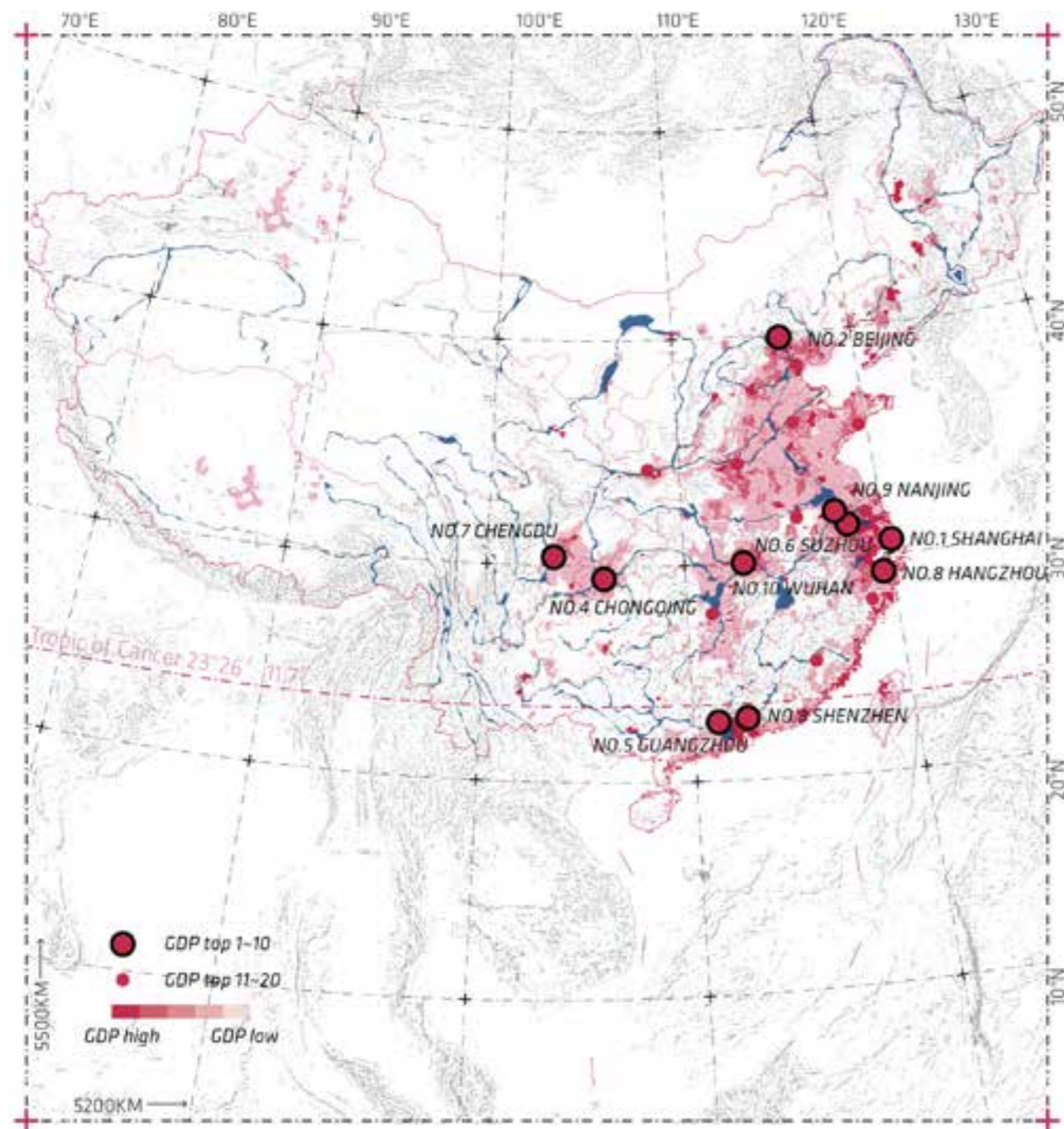
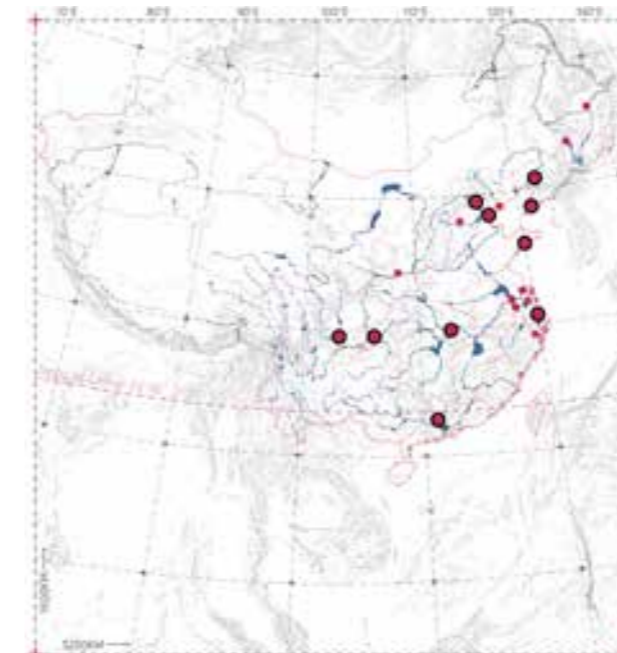
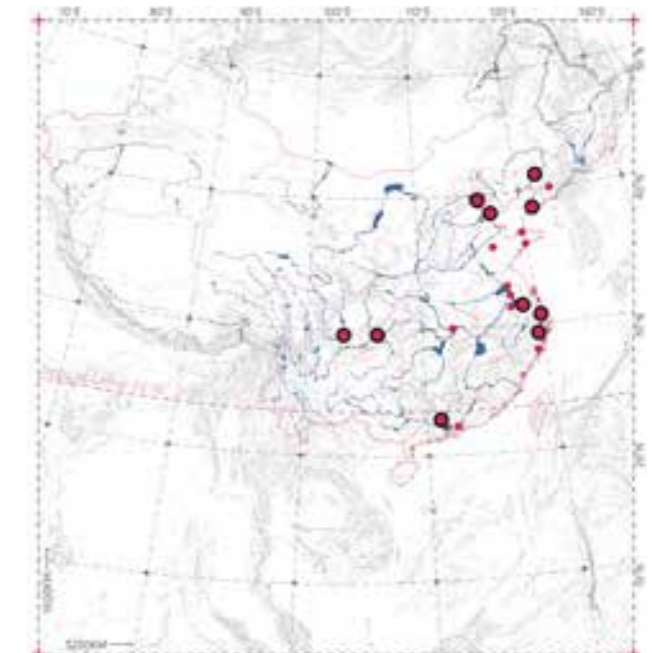


Fig. 1.56-60 Changes in the economic structure of cities in the north and south  
 Source: author, based on <https://www.google.com/maps>; <http://www.resdc.cn/DOI>; <http://www.stats.gov.cn/tjsj/pcsj/>; <https://www.worldometers.info/cn/>

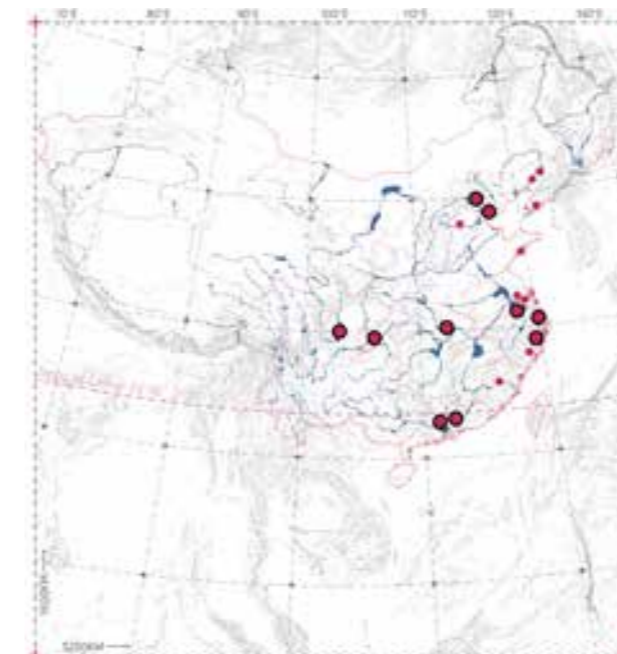
In the economic ranking of Chinese cities in 2020, the economic strength of cities in southern China far exceeds that of northern cities. Among the top ten economic cities, only Beijing is left in the north, and the other nine are in the south. In fact, since the reform and opening up, southern cities have developed rapidly with excellent trading conditions. The cities in the north, especially in the Northeast and North China, mostly developed by relying on resource-based industrial cities.



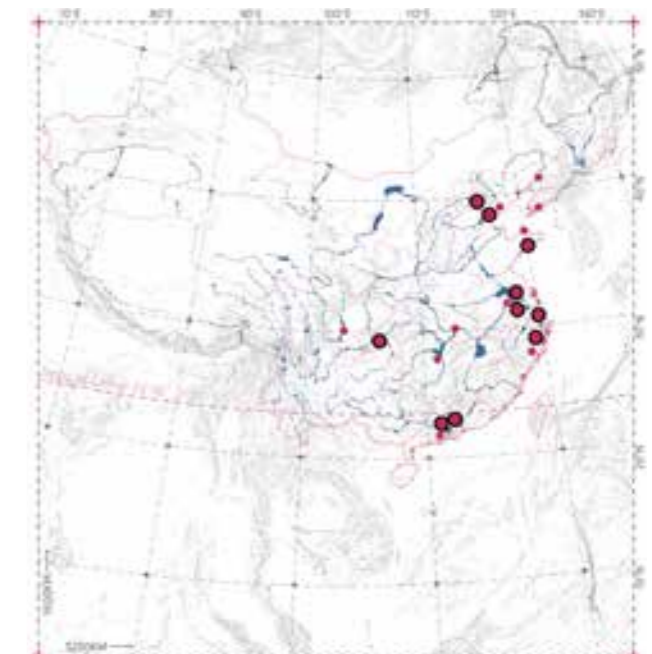
1980 GDP ranking of cities in Mainland China



1990 GDP ranking of cities in Mainland China



2000 GDP ranking of cities in Mainland China



2010 GDP ranking of cities in Mainland China

Around the 1980s, the economic strength of these cities was very strong, but they brought problems such as environmental degradation and over-exploitation of resources. In recent years, these cities have been required to transform themselves with "sustainability" as their development goal. However, due to various reasons, the process of transformation was not smooth, resulting in a decrease in urban economic vitality and attractiveness.

## 1.6.2 Development characteristics of China's resource-based industries and impact on urban development

Natural resources are not inexhaustible. Due to the high dependence on natural resources, the development of resource-based industries is also largely limited by the quantity and quality of natural resources. Once the natural resources on which the place is highly dependent are exhausted, the development of the city will also be greatly hindered. This will also cause a series of political, economic, and social issues. For example, due to the exhaustion of natural resources, factories have been forced to shut down, urban economic development is sluggish, a large number of workers have lost their jobs, and the social security system is facing severe problems. Based on the development of domestic resource-based heavy industry, many Chinese scholars have tried to explore the characteristics and problems of its development, which can be mainly divided into the following four aspects:

### High dependence on resources

Resources, especially natural resource, are the material basis for the development of resource-based industrial cities, and are very important to urban income and employment. Resource-based cities are often located in resource-rich areas, and the scale of the city also depends on the level of resource development. In a municipality area, urban construction is usually concentrated in areas where resources are densely distributed, resulting in uneven regional development, for example, in the Handan, because coal mine resource belts are located in the western part of the municipality, the economic development of western counties and districts has far exceeded that of eastern counties for decades.

### Mono-product economy structure

The mono-product economy structure is mainly reflected in two aspects: (1) The mono-product industrial structure. Resource-based industrial cities are cities built or developed relying on (natural) resource development. The secondary industries occupy a large proportion of the urban economy. The primary and tertiary industries are small in scale and low in development competitiveness, causing a series of social, economic, and ecological development contradictions, and then affecting the urban sustainable development. (2) mono labor structure. As resource-based industries occupy a dominant position in cities, a large amount of labor is concentrated on the extraction and processing of natural resources. Due to the singularity of technical requirements, the introduction and training of talents in cities are often concentrated in a certain category.

### The fragility of the ecological environment

As resource-based cities continue to expand the scale of resource extraction, resource-based enterprises consume high energy and resources, causing a series of ecological and environmental problems. Over-exploitation of mines has caused vegetation damage, soil erosion, and landscape collapse; excessive deforestation has caused grassland degradation, salinization, and desertification. In summary, resource-based cities have caused air pollution, water pollution, and solid pollution during the production process. The deterioration of the ecological environment and the depletion of resources have become a bottleneck restricting the sustainable development of resource-based cities.

### Affect the compactness of urban construction

The development of resource-based cities is mainly driven by resource-based industries, and such resource-based industries are often laid out according to the distribution of natural resources. This has caused the fragmentation of urban fabrics, which directly leads to the difficulty of the fair layout of urban public service facilities. The city cannot develop compactly, which affects its sustainability. In addition, not only the city as a whole is developing in a fragmented state, but also every urban settlements in the city tends to extend in disorder. Therefore, cities cannot benefit from agglomeration effects.



Fig. 1.61 Discrete urban structure caused by industrialization  
Source: <http://www.escogroup.com/zh-hans/caishihecaikuangye>



Fig. 1.62 Mining sites: mining of minerals has caused irreversible damage to the landscape  
Source: <http://www.escogroup.com/zh-hans/caishihecaikuangye>



### 1.6.3 Life cycle of resource-based industries and resource-based industrial cities

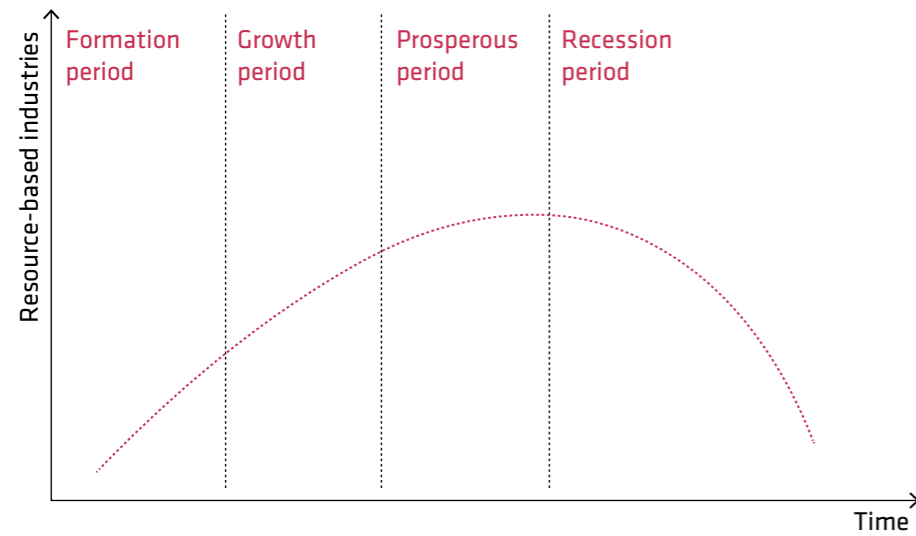


Fig. 1.63 Resource-based industry development life cycle  
Source: author

Resource-based industries are highly dependent on resources. Affected by resource reserves, they exhibit a unique law of development. With the discovery, exploitation, utilization, and subsequent depletion of resources, resource-based industries also have a life cycle following this development law. Resource-based industries are formed by discovering that a certain place has some kind of rich natural resources and exploiting them. At the growth stage, due to a large amount of production factors and foreign investment in resource-based industries, the production capacity of enterprises continues to expand. In the next stage of development, resource-based industries have developed rapidly and become the pillar industries of the city. However, as resources are gradually depleted, resource-based industries begin to decline and disappear.

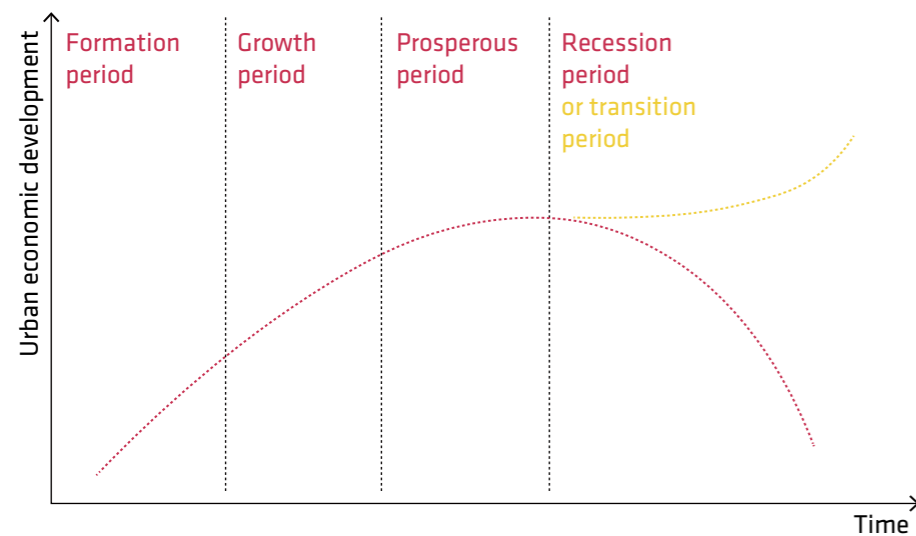


Fig. 1.64 Resource-based industrial cities development life cycle  
Source: author

Affected by the development of urban industries, the economic development of cities will also go through different stages. The difference is that resource-based industries will certainly die out as resources are exhausted, but cities still have opportunities for transformation. During the last period, social and economic problems are prominent due to the decline of urban industries. There are two situations in the development path of resource-based cities at this stage: First, due to the exhaustion of resources, the production scale of resource enterprises continues to shrink. Resource-based industries have stagnated, and the successor industries have not yet formed, which would cause the economic development and social conditions of the city to decline. Second, make use of the city's existing resource advantages to cultivate new industries or non-mineral resource-based pillar industries, optimize and adjust the city's industrial structure, reduce its dependence on resources, and form a new support point for the city through economic transformation, and achieve sustainable development of cities.

### 1.7 The dilemma of transition in resource-based industrial cities under the impact of spatial marginalization

Resource-based industrial cities have contributed a lot to China's industrialization process, but in contemporary times, these cities have encountered many problems. After a brief period of prosperity, most resource-based industrial cities have begun to enter a period of decline. In order to promote the sustainable development of cities and prevent the economic development of cities from sinking along with the depression of resource-based industries, in 2013, the State Council of China issued the National Sustainable Development Plan for Resource-based Industrial Cities (2013-2020) to guide the transformation and development of resource-based industrial cities. This plan involves a total of 126 cities and 136 counties in different types such as steel mining cities, forest industrial cities, and coal mining cities.

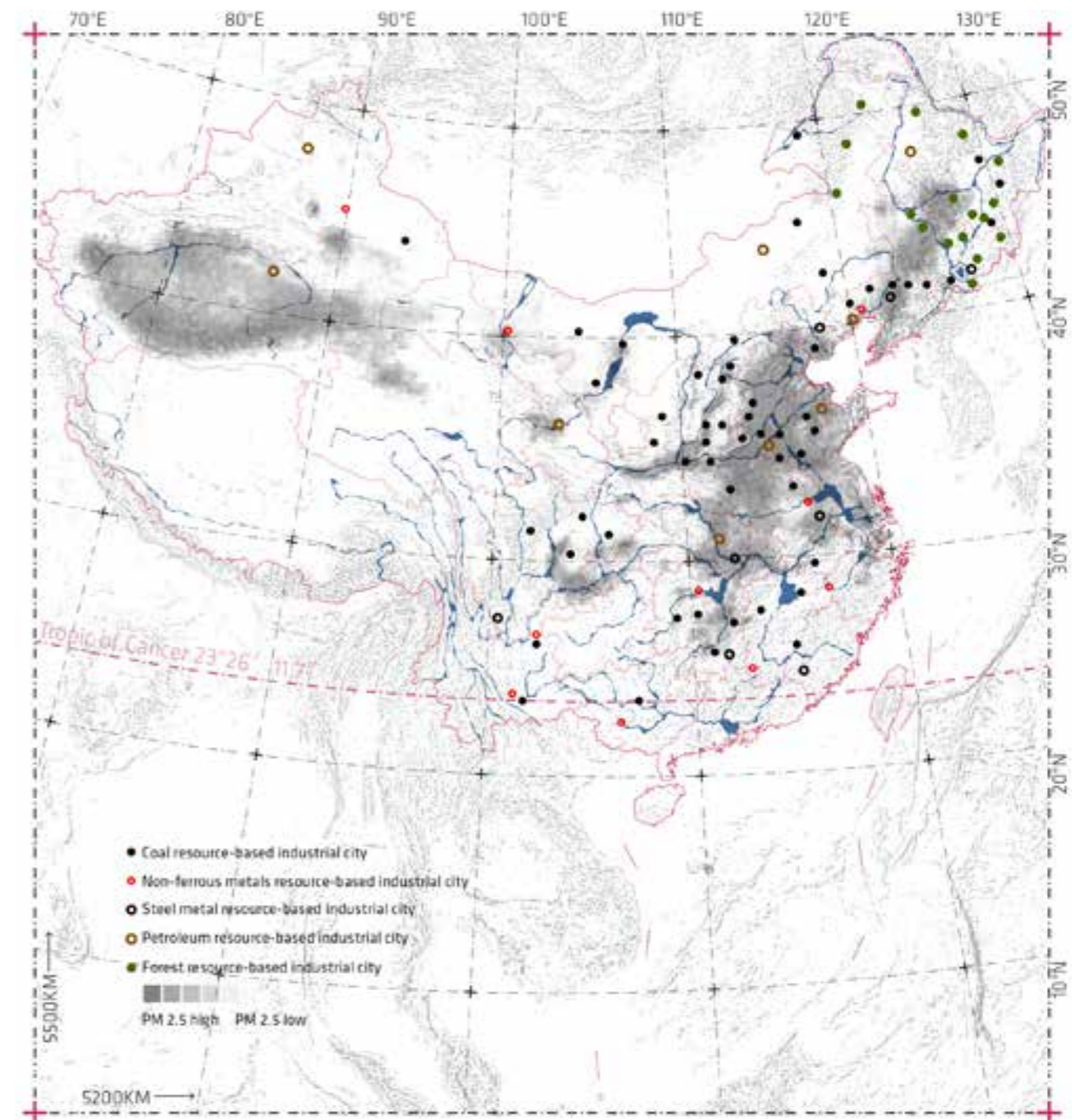


Fig. 1.65 Types and distribution of resource-based industrial cities in China  
Source: author, based on <http://www.lwcj.com/ask/w/city-planning01065655.html>

Obviously, industrial cities that have relied on natural resources for decades cannot quickly adapt to the concept of sustainable development advocated by today's society. Especially in the development of urbanization and regionalization in China to a new stage: catalyzed by the market economy, regional competition exists widely. This has caused multiple difficulties in the transformation of resource-based industrial cities, which are summarized as follows:

### Imbalance in the industrial structure

Resource-based industries have long been the backbone of urban economic growth, leading the pace of urban development, and to a certain extent contributed to the prosperity of urban development. This has increased the city's dependence on resource-based industries, causing the city to ignore the development and cultivation of other industries, the industrial vitality is low. This is the basic reason for the difficulty of urban industrial transformation.

To make the situation even worse, in the context of regional competition, resource-based industrial cities do not have diversified industry categories and lack self-characteristics, which makes the city's competitiveness low and lacks the ability to attract emerging industry agglomerating.

### Loss of talent and labor

Due to the single industrial structure and lack of innovation awareness, traditional heavy industry does not attach importance to the training of talents in the development process. Even if some corresponding research institutions are established, they will receive less policy support and only cultivate a single type of talent because of the Mono-product economy structure.

In regional competition, talents and labor are the key factors for urban development, as well as the driving force to promote urban development and increase urban vitality. However, due to the strong attractiveness of regional central cities, these cities obviously do not have enough capacity to retain labor and talent. On the one hand, the development of heavy industry for many years has reduced the environmental quality of the city, including air quality, vegetation, etc., which is not conducive to creating an environment suitable for human living. On the other hand, the downturn of local industries and the difficulty of agglomeration of new industries have made the employment and entrepreneurial environment in these cities poor. In order to seek better opportunities, people will go to large regional central cities.



Fig. 1.66 Dilapidated factories in post-industrial cities  
Source: <https://image.baidu.com/search/detail?ct=503316480&z=0&ipn=d&word>

## 1.8 The Dilemma worsens: Decreasing urban attractiveness and floating(-out) population

### 1.8.1 Problem positioning: secondary post-industrial cities

As described in the previous chapters, the real start of China's industrialization and urbanization was actually the founding of the People's Republic of China in 1949. In the first few decades of its inception, the vigorous development of resource-based industries contributed a lot to the national economy. However, when resources began to face the risk of exhaustion and the environment began to deteriorate extremely, the country finally realized that "economic development at the expense of the ecological environment" was not feasible and unsustainable. The central government put forward the concepts of new industrialization in 2002 and new urbanization in 2012, making "sustainability" a development requirement of today. Therefore, in 2013, the State Council of China issued a transformation plan for resource-based industrial cities. However, due to the long-term development of a single type of industry, the economic vitality of this resource-based industrial city is very low. In addition, due to the lack of suitable employment and entrepreneurial opportunities, cities are not attractive enough to retain talent and labor.

In the concept of new urbanization in 2012, "urban agglomeration" is used as a method to strengthen cooperation between cities in the region. This approach is intended to enhance the overall competitiveness of the region in the context of globalization. However, due to the deficit of regional control, there is no regional government organization as the regulator of regional cooperation, and the city alliance that should be aimed at cooperation has become a "zero-sum game." In this unfair regional competition, central cities (big cities) undoubtedly have a dominant position. They enjoy the most policy preferences and are the most attractive to talent and investment. This has a huge impact on secondary cities, especially those original resource-based industrial cities that are experiencing transitional difficulties. These secondary post-industrial cities lack the ability to attract various development factors, such as labor and capital. What makes the situation worse is that they also suffer from the huge attraction of central cities in the region.

*This kind of city facing double dilemma is the research focus of this project. On the one hand, they have encountered difficulties in transformation, on the other hand, they are in a weak position in the region and suffer from regional spatial marginalization. This situation seems to be a vicious circle, making the city's attractiveness and the ability to retain talent and labor less and less, thus seriously affecting the process of urban development.* This section will discuss the theories and background of urban attractiveness and floating population.

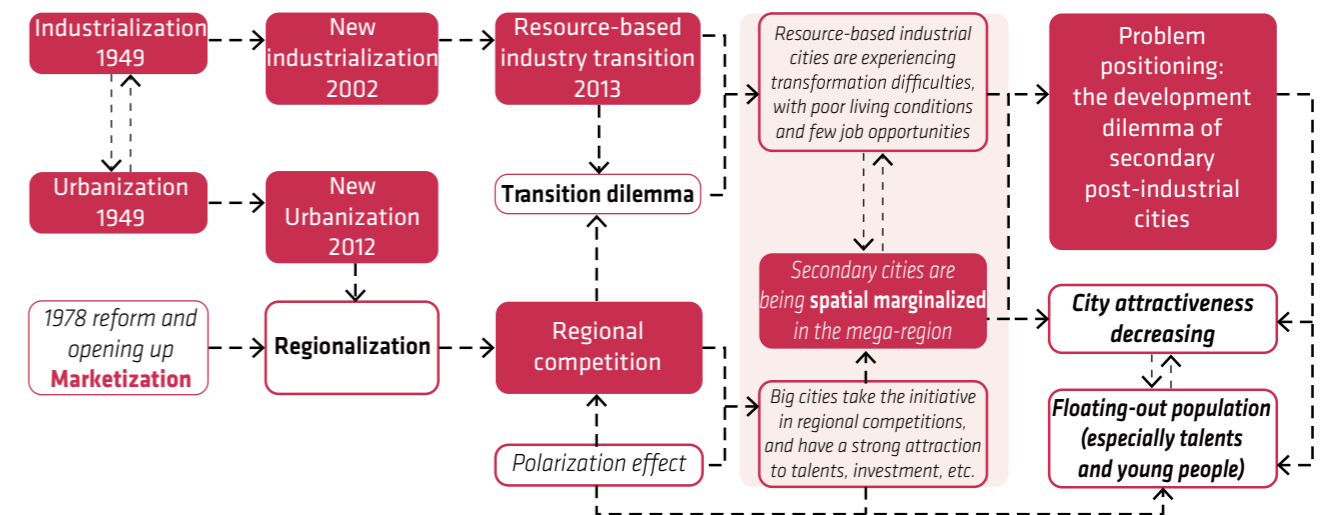


Fig. 1.66 Problem positioning framework  
Source: author

## 1.8.2 Urban attractiveness and floating population

Generally speaking, the attractiveness of a city has two meanings. First, with the process of urbanization, the gap between urban and rural areas has gradually increased, cities have incomparable advantages over rural areas in terms of economic development and industrial layout. Therefore, a large number of people migrate from rural areas to cities in search of better work and life. In China, this trend of floating population has existed with the beginning of industrialization and urbanization.

Second, after the reform and opening up, the idea of uneven regional development has been reflected in China's development plans and policies. Some cities have been given priority to develop and grow into regional central cities. With the process of regionalization, more and more people (especially young people) are migrating from small cities to big cities for better educational opportunities, higher quality of life, and more job opportunities. This is also one of the basic reasons for the marginalization of regional space. Urban attractiveness refers to the ability of a city to attract neighboring rural areas or other urban population due to its various excellent conditions. Floating population is also a direct indicator of the attractiveness of cities. This project focuses on the floating population and urban attractiveness on a regional scale.

With the in-depth study of Chinese regions by scholars, some concepts reflecting the mutual influence between cities have also been proposed, such as urban gravity, to reflect the city's ability to attract business, population, and investment. In 2018, Baidu Maps statistics and depicts the traces of regional floating population, reflecting the "sphere of influence" of large cities in attracting population, which roughly coincides with the "mega-region planning scope" from a political perspective.

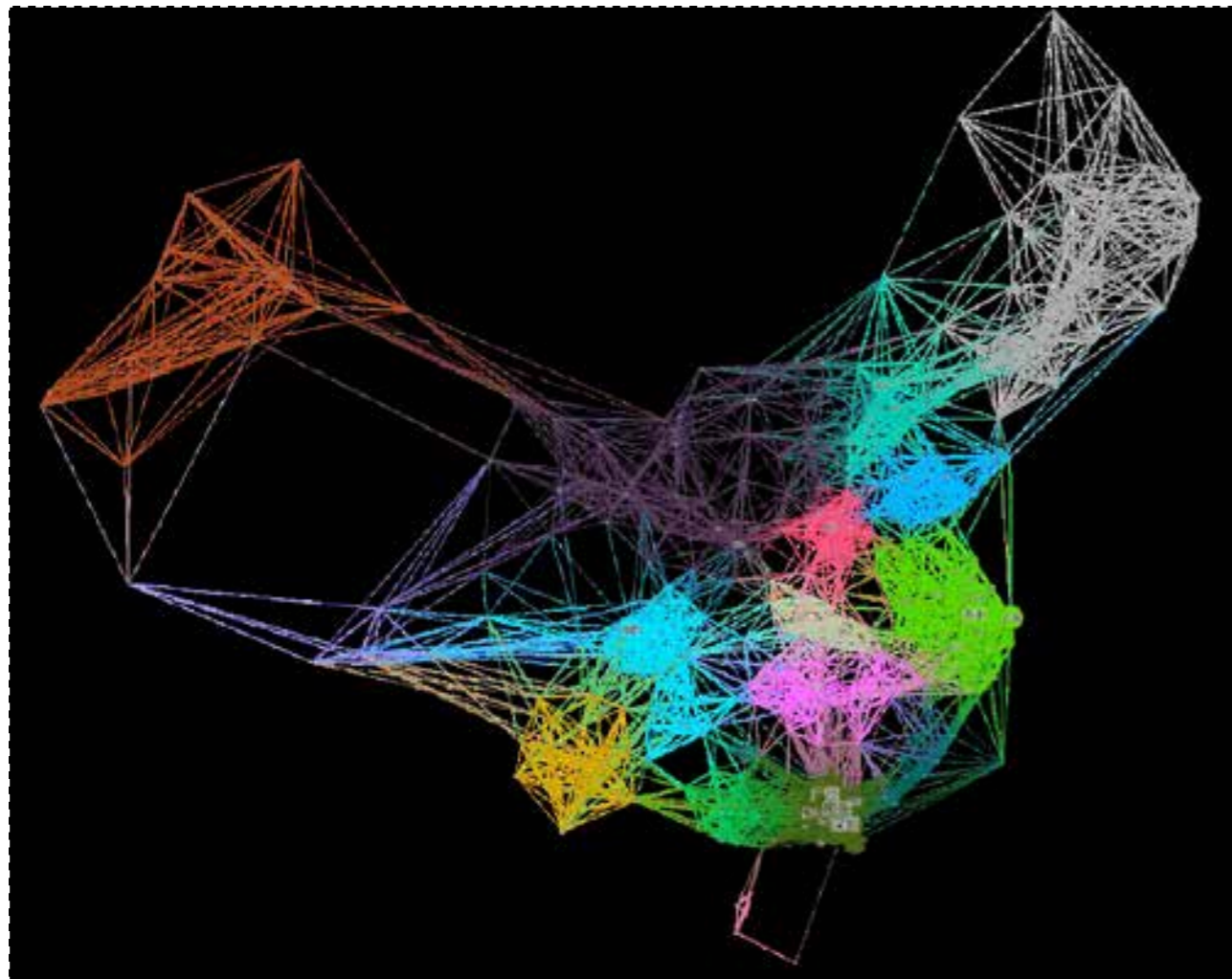


Fig. 1.67 China Regional Floating Population Tracking  
Source: <https://image.baidu.com/search/detail?ct=503316480&z=0&ipn=d&word>, Baidu data

## 1.8.3 Talent flow in China and Push-pull theory

### Regional "Talent War" in China

With the rapid development of human science and technology and rapid economic and social development, the importance of talents and young generation has become more and more prominent. If a country or region wants to gain an advantage in the fierce comprehensive competition, it must have sufficient human resources as a strategic support. President Xi Jinping also attaches great importance to the talents. He has repeatedly emphasized that talents are the first development resource. In the report of the 19th National Congress of the Communist Party of China, he pointed out that "talents are strategic resources for rejuvenating the nation and winning international competition." However, due to the total amount of human resources it is limited. Under the conditions of a market economy, there will inevitably be a phenomenon of talent flow. Some regions attract talents, while others will lose talents. Therefore, the current talent and young generation flow has gradually become the policy focus of governments at all levels, and it has also received increasing attention from academic circles.

The "Outline of Talent Development Plan" clearly stated: "Improve the talent flow mechanism, strengthen the government's policy guidance and supervision of talent flow, promote the coordinated development of industry and regional talents, and promote the effective allocation of talent resources." In the process of talent flow, whether a region can attract sufficient human resources is closely related to its talent attraction mechanisms and capabilities. Regions with high talent attraction capabilities can not only reduce the brain drain in the region, but also attract talent inflow from other regions, thereby building a solid foundation for the economic and social development of the region. Therefore, improving the attractiveness of talents is an important issue that must be considered for regional development.

In recent years, under the background of in-depth implementation of the innovation-driven development strategy, the flow of talents and young generation between regions in the country has become more and more active, and there has been a fierce competition for talents and young generation among cities in various regions. Local governments have introduced new talent policies one after another, vigorously increasing the attractiveness of talents by providing various subsidies, lowering the housing prices and other policy measures, in an attempt to seize development opportunities. For the cities, whoever can train and attract more outstanding talents and young generation will have an advantage in the future regional and urban competition; on the contrary, if the city lags behind in talent development, it will undoubtedly be at a disadvantage in the competition. The intensification of the "talent war" between cities has also attracted great attention from the academic circles. Some scholars have suggested that China's urban and regional development has entered a new era of competition for talent as its core resource (Zeng Hongying, 2018). In the context of the increasingly fierce competition for talents between cities, it is an important task for all cities to comprehensively improve their own talent and young generation attractiveness.



Fig. 1.68 In order to attract young talents, Tianjin has lowered the standard for transferring hukou, and a large number of young people lined up for registration procedures. Source: <https://3g.china.com/act/news/10000159/20180520/32428959.html>

## Push-pull theory

The push-pull theory, as a classic theory in the field of population mobility, believes that population mobility is determined by the combined action of two forces, namely the "push" of the outflow area and the "pull" of the inflow area (Liang Weinian, 2004). As early as the nineteenth century, scholars conducted relevant discussions, and they were formally summarized by Bogue (1959). Bogue pointed out that the basis and purpose of influencing population mobility is to pursue better living conditions. In this process, there is pulling force and thrust force. The factor that is conducive to the improvement of living conditions in the population inflow is pulling force, and vice versa. On the basis of this theory, Lee (1966) initially supplemented and perfected the theory, he summarized the main factors affecting population mobility into four types: push factors, pull factors, intermediate obstacles, and personal factors. Intermediate obstacle factors mainly include the geographical distance from the place of origin to the place of emigration, migration cost, geographical and cultural closeness, language differences, etc. In fact, the early push-pull theory emphasized the role of economic factors in population mobility, including employment opportunities, income levels, and career prospects. As a result, human resources should always flow directly to the regions or cities with the most developed economy, which can provide people with good job opportunities and high incomes, but this is not in line with the facts. Researchers have gradually realized that push and pull are not only affected by economic factors, but living environment, cultural and educational resources, customs, personal emotions, etc. (Chen Lizhen, 2018). Florida (2009) pointed out that compared with economic income and other factors, creative talents pay more attention to aesthetic factors and tend to choose residences that are diverse, inclusive, comfortable, and rich in cultural facilities. Talents have a higher level of value pursuit, and pay more attention to the pursuit of a comfortable working environment and higher living standards and quality. Only economic opportunities can no longer attract and retain talents.

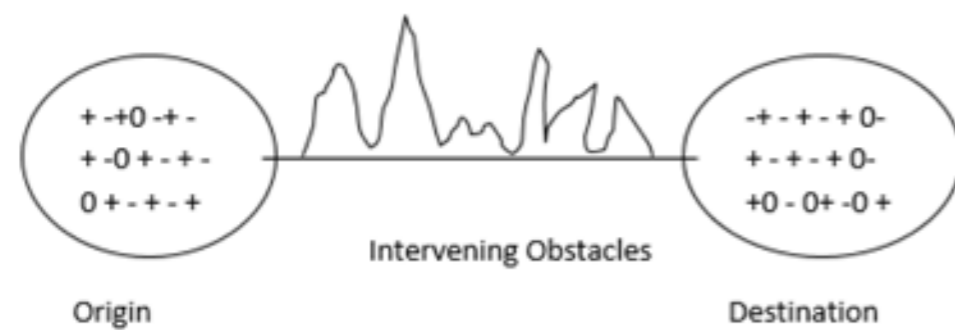


Fig. 1.69 Pull-push theory Source: Bogue, 1959

## Social debate: come or leave, a dilemma of young people

Beijing, Shanghai, and Guangzhou, as representatives of "more opportunities", "better future" and "richer life" for Chinese young people, have always been the most densely floating-populated areas in China. In recent years, the issue of "stay in Beijing, Shanghai and Guangzhou and fight hard" or "escape from Beijing, Shanghai and Guangzhou and go back to the second or third-tier cities to live a comfortable life" has become a social debate that many media pay attention to.

Due to over-centralization, the cost of living in big cities has soared, housing prices are far beyond the range of young people's affordability, work intensity is high, and peer competition is under pressure. Many young people working in big cities regard "996" (starting at 9 am, leaving work at 9 pm, working six days a week) as a norm. In this case, the powerful attraction of big cities has become a burden for young people: there are always new young talents flowing into big cities, and if you can't bear the strong pressure, you will be "expelled" from big cities. As a result, many young people began to "escape" from big cities and go to small and medium-sized cities where life and work pressures are relatively small. However, the situation is not ideal. The job opportunities, quality of life and educational resources in small cities are not as good as those in large cities. Generally speaking, in today's society, although young people represent the future of urban development and the driving force of urban progress, no matter whether it is a big city or a small city, there has not been "young people friendly".



Fig. 1.70 "floating-out population" in China's big cities Source: <http://www.hnetn.com/html/2015-11-30/201511301552592950.htm>

## 1.8.4 Evaluation criteria of city attractiveness

There are many different types of evaluation criteria for city attractiveness, and different scholars and academic institutions have different opinions on this. Weng&McElroy (2010) proposed from the perspective of human resources that the urban economic environment, regional talent policies and corporate human resource management levels will affect the attractiveness of cities to talents. Wei Hao (2012) also further pointed out that the fundamental influencing factors for China's ability to continuously attract the influx of outstanding talents at home and abroad mainly lie in traditional economic development factors and emerging higher education. In addition to the economic factors that have been emphasized, many studies have also found that living factors are becoming more and more important in attracting talents in cities. Lloyd & Clark (2001) surveyed highly educated talents and found that the city's attractiveness to highly educated talents was mainly affected by the quality of life facilities including various living facilities and cultural facilities. Lin Xiaoyan et al. (2015) analyzed in detail the importance of high-speed railways for urban talent attraction based on cases, and pointed out that cities with high-speed railways are significantly more attractive to talents than cities without high-speed railways.

The "Global Talent Competitiveness Index (GTCI)" is a special assessment jointly issued by the European Institute of Business Administration (INSEAD), Singapore's Human Capital Management & Leadership Innovation Capability Research (HCL) and FESCO Adecco. The authoritative index of talent competitiveness of major countries and cities in the world.

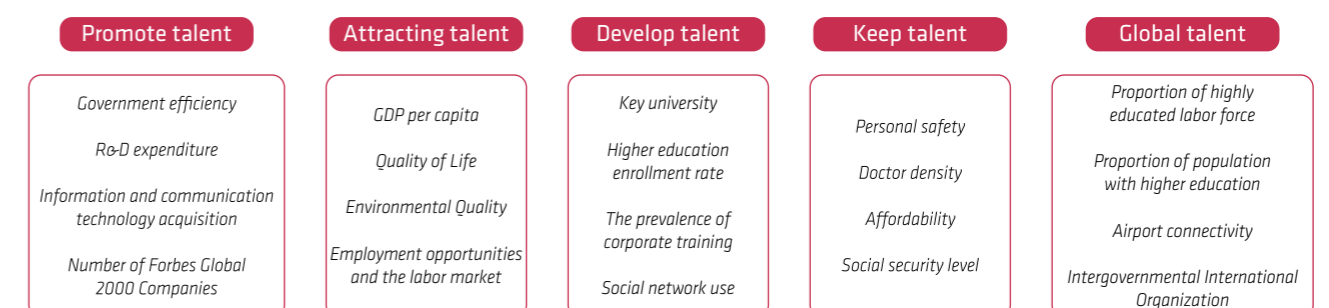


Fig. 1.71 The "Global Talent Competitiveness Index (GTCI)" is a special assessment Source: GTCI, 2010

Some Chinese academic institutions have also issued relevant evaluation standards based on the characteristics of the Chinese population. For example, the "Urban Youth Development Index" is a data research new media platform DT Finance, a subsidiary of CBN Group, in Shanghai in September 2019. The index proposed in the "2019 China Youth Ideal City Report" released. The report first put forward the concept of "qing he li (young-people friendly)", which refers to the ability of a city to attract more young people to develop.

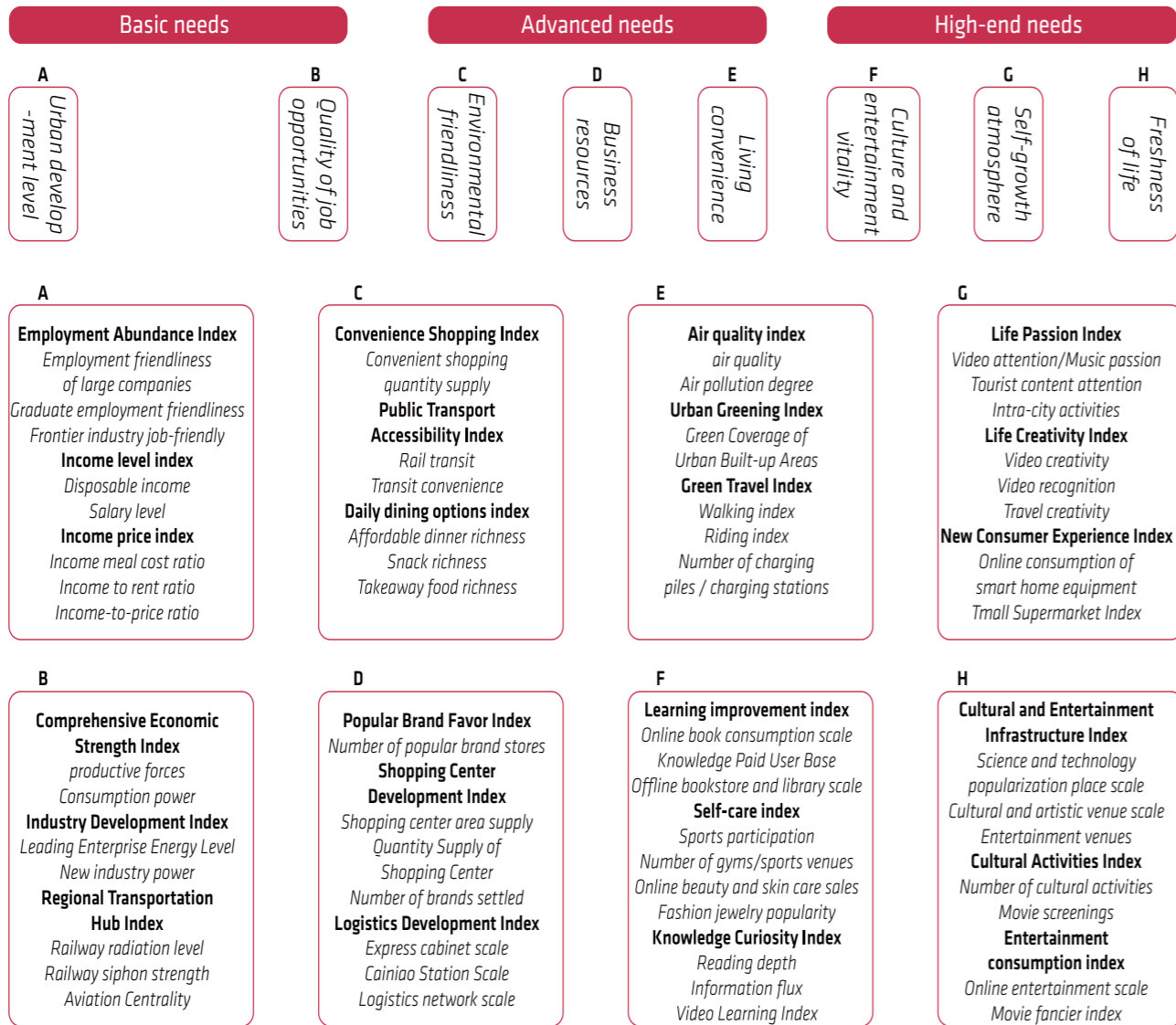


Fig. 1.72 qing he li (young-people friendly) evaluation scheme Source: CBN Group, 2019

### From floating population to floating family

In addition to the factors affecting young people and talents themselves, some Chinese scholars have also paid attention to the fact that **today's floating population is evolving into floating families**. Different from Western countries, the concept of "family" is more important in China. Most (elder) parents have the emotional needs of living with (adult) children. According to data from the National Health Commission in 2017, more than 76% of the elderly migrant population's motivation is due to "taking care of their own grandchildren" and "migrating with their children". **Therefore, urban facilities for the elderly, age-appropriate design, and activity places for the elderly are also important factors that affect the attractiveness of cities to young people.**

### City vitality and prosperity

In 2019, academic institutions such as the China Urban Planning and Research Institute published the "China Urban Prosperity and Vitality Assessment Report", which established urban vitality evaluation criteria and ranked the vitality and prosperity of major cities in China. Urban vitality has always been an important part of urban attractiveness. This evaluation system not only evaluates the economic development and social environment of the city, but also focuses on factors such as urban culture and urban characteristics. On December 31, 2020, the agency published a new report based on the 2019 one to optimize the evaluation indicators. Unlike the 2019 standard, which focuses on macroeconomics, urban supply, and government governance, and other hardware perspectives, the 2020 standard focuses more on "people as the core" and "human mobility" as the main characterization. This standard pays more attention to the influence of industry, transportation and culture on urban vitality and urban attractiveness.

The report is based on two evaluation indicators: short-term urban floating population and tourism and leisure population to determine the vitality of the city, and **establishes a three-dimensional evaluation system: creativity and social diversity, industry and innovation diversity, and the transportation convenience degree. At the same time, this report emphasizes the role of the "the third place" as a catalyst in urban interaction.** In the 1970s, American sociologist Ray Oldenburg put forward the concept of "the third place" from the perspective of urban and social studies. He called the place where people live "the first place", the place where people spend a lot of time for work is called the "the second place", and the "third space" is an informal public gathering place outside the living and working places. **The concept of "the third place" more prominently emphasizes the social role of places, such as cafes, tea houses, bars, community centers, and so on. In modern society, the third space represents the quality of life in a city and is the link between various innovative activities.**

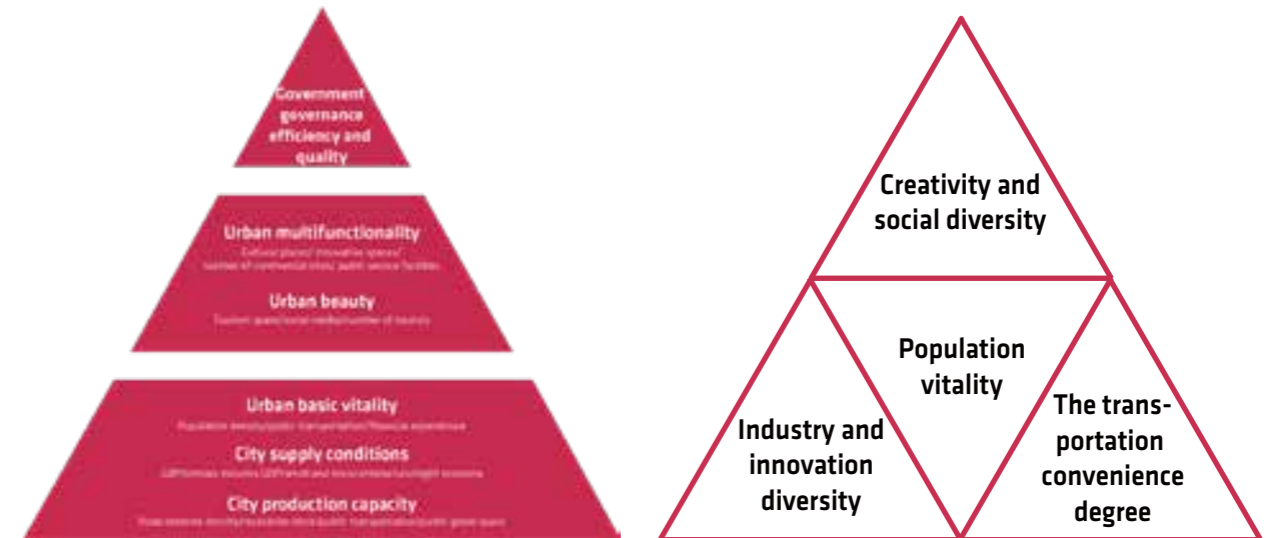


Fig. 1.73-74 City Prosperity Index Evaluation Standard (2019/2020) Source: Chinese Academy of Social Sciences



Fig. 1.75-76 Chengdu teahouses, Starbucks, etc. are considered typical "the third places" Source: [https://www.sohu.com/a/216422140\\_614738/](https://www.sohu.com/a/216422140_614738/) [https://www.sohu.com/a/245756280\\_99997284](https://www.sohu.com/a/245756280_99997284)

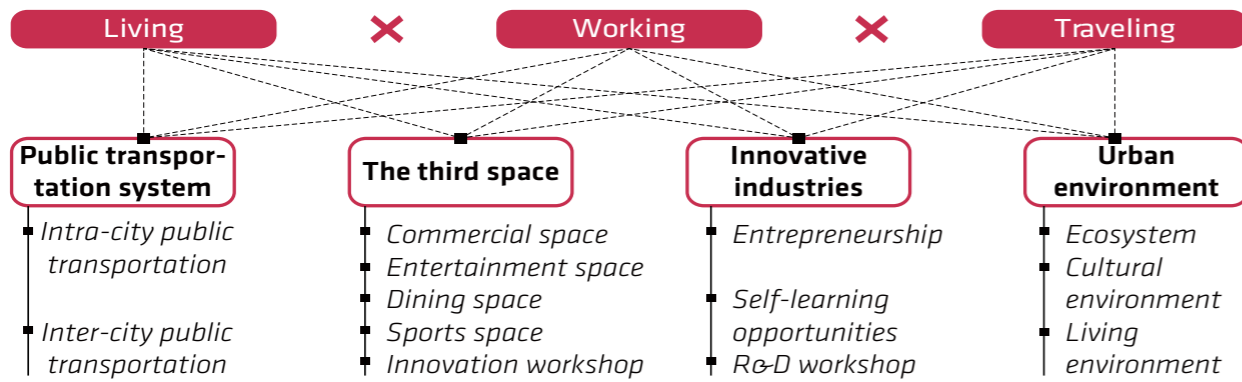


Fig. 1.77 Summary of city attractiveness evaluation Source: author

Scholars have different understandings and judgments on the evaluation criteria of urban vitality, urban attractiveness, and urban youth-friendliness. These evaluation criteria try to interpret human needs and the driving force of urban development from different perspectives. **Based on these evaluation criteria, this project summarizes the three dimensions of city attractiveness: living, working, and traveling. These three dimensions are controlled by some influencing factors, which are mainly divided into four aspects, the public transportation system, the density of the third place, the development of innovative industries, and the quality of the urban environment.** The specific evaluation criteria will be analyzed and set in the following chapters, combining specific research objects, site surveys and questionnaires.

## 1.9 Conclusion: theoretical framework

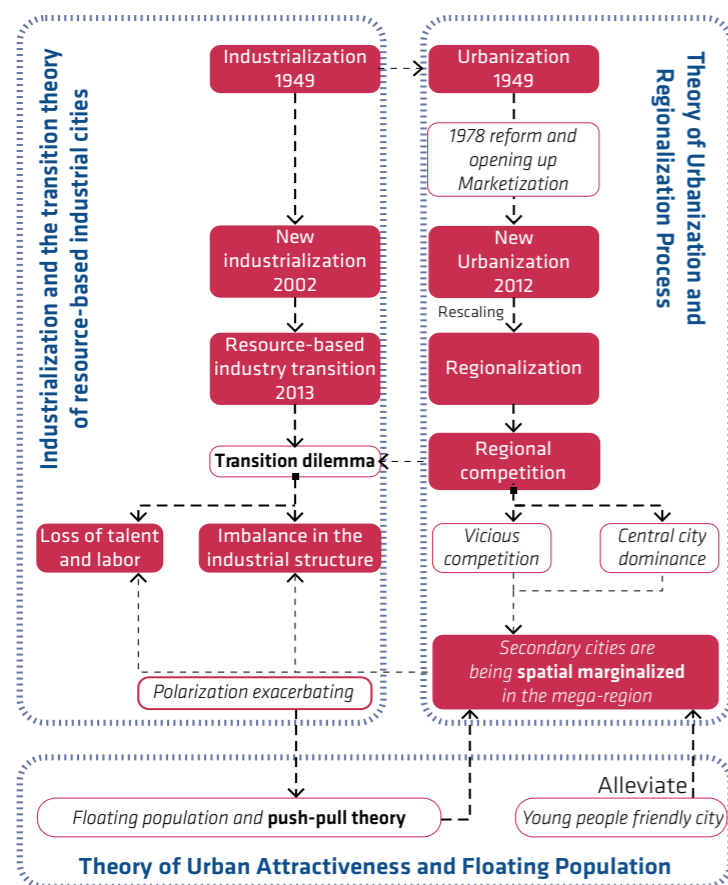


Fig. 1.78 Theoretical underpinning Source: author

### 1.9.1 Theoretical framework

The theoretical framework of this research is based on the timeline of China's industrialization and urbanization development, which is mainly divided into three aspects:

#### (1) The theory of industrialization and transformation of resource-based industrial cities

Since the founding of New China in 1949, this country has begun to talk about the process of industrialization. The country has supported a series of resource-based industrial cities to strengthen the country's heavy industry strength. However, as the concept of "sustainable development" began to develop in depth and resource-based industrial cities began to transform, the difficulties encountered in this process are important issues that this research focuses on.

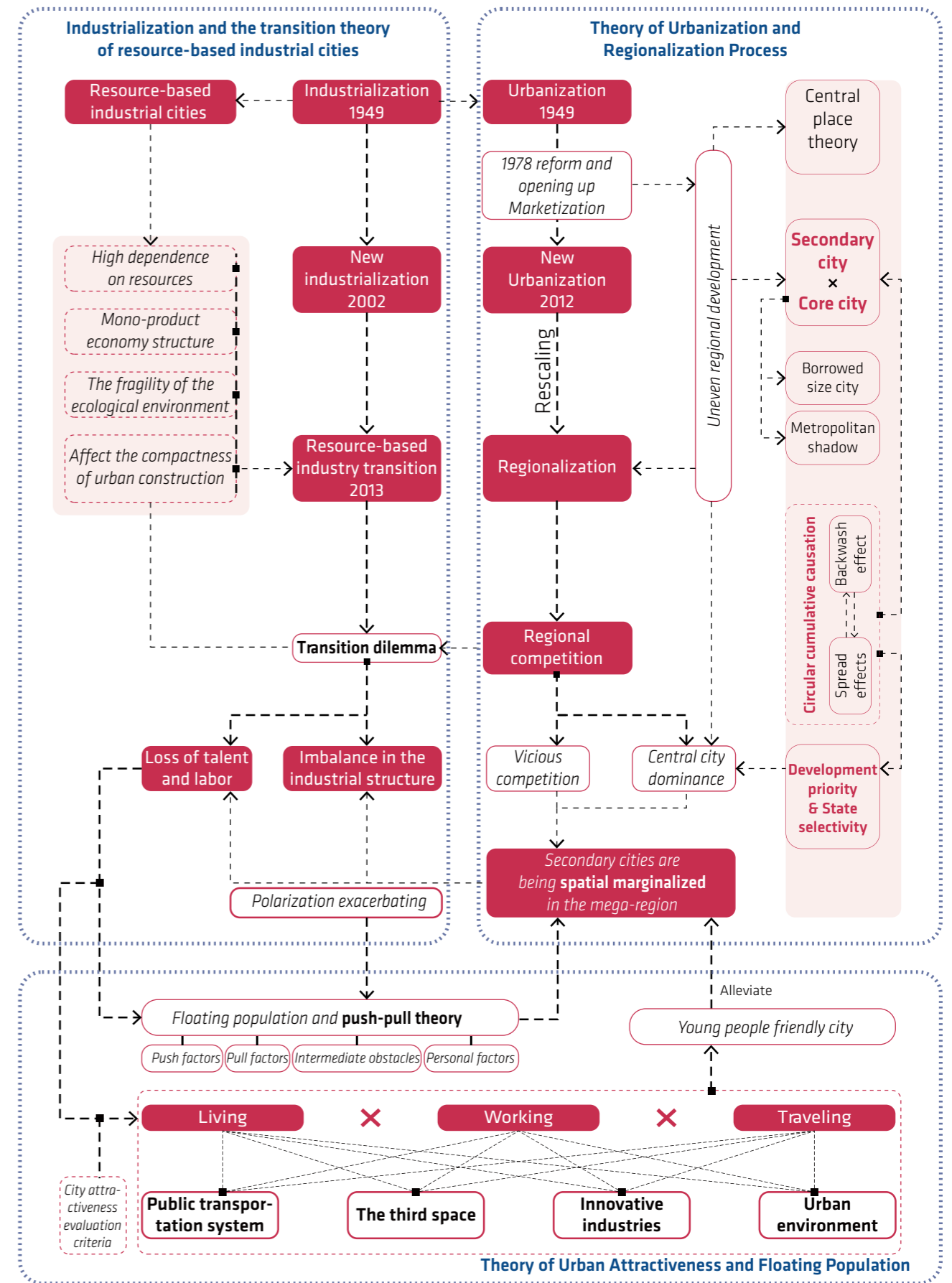


Fig. 1.79 Theoretical framework Source: author

**(2) Urbanization and regionalization process theory**

Along with industrialization, the process of urbanization in China has also developed rapidly. In the wave of globalization, the concept of "urban agglomerations" appears in national territorial planning as a mechanism for strengthening regional city cooperation. However, due to issues such as regional governance, central cities take the initiative, and secondary cities are being spatially marginalized. Among these secondary cities, there are many resource-based industrial cities that need to be transformed. There is no doubt that this regional competitive environment is a nightmare for these cities.

**(3) Urban attractiveness and floating population theory**

Urban attractiveness and floating population have been studied by many scholars as direct representations of urban development and vitality. In this project, the core of the theory is the "push-pull theory". At the same time, various urban attractiveness evaluation criteria are also included as important theoretical components discussed in the chapter.

**1.9.2 Primary research aim and research questions**

**Hypothesis based on theoretical research:**

- (1) In the process of regionalization, the competitive relationship between cities will exist for a long time. Whether it is a core city occupying a dominant position or a secondary city that is spatially marginalized, all these cities need to rely on their own efforts to strive for better development.
- (2) Talents and young people are the core competitiveness of regional development, and this type of development factor will flow in the region as the attractiveness of the city changes.
- (3) In the process of transformation of resource-based industrial cities, only necessary heavy industry production sites will be retained, and other industrial buildings are facing the future of being demolished or reused.

**Primary research aim and research approaches**

Facing the dual dilemma of internal factors (industrial transformation) and external environment (regional competition), **how the resource-based industrial city can develop** is the core issue of this project. Under such circumstances, integrate into the regional network and strengthen cooperation to benefit from it. This can achieve the important goal of attracting emerging industries can be achieved through this, and talents can be attracted, thereby creating a better living, working and traveling environment, enhancing the attractiveness of the city, and forming a virtuous circle for the development of the city.

So, **how the cities can better integrate into the regional network and in what way** are another question raised based on theoretical research. Chen Shuyi (2020) once said that **Cities that can attract young people will have a better future, When city decision-makers begin to pay more attention to the future of young people, cities will be more livable.** Young people-friendly cities can not only promote the city itself Good development, providing talents and labor for industrial upgrading, can also promote the healthy operation of the regions, ease the fierce competition between cities, and promote cooperation.

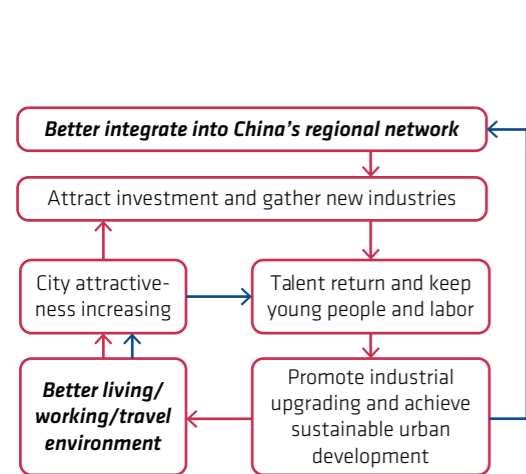


Fig. 1.80 Primary research aim Source: author

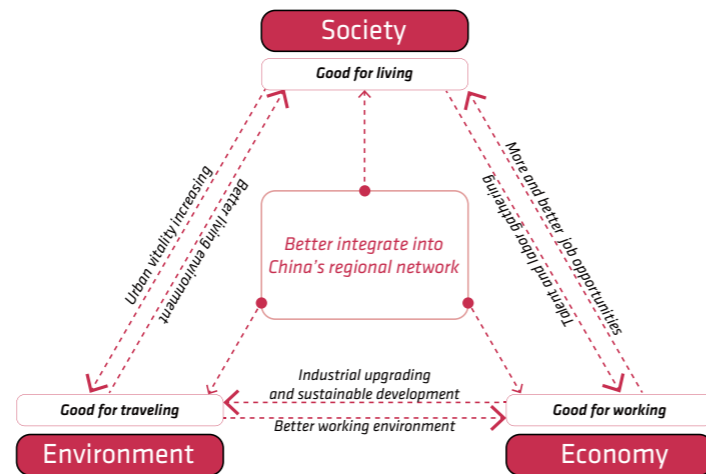
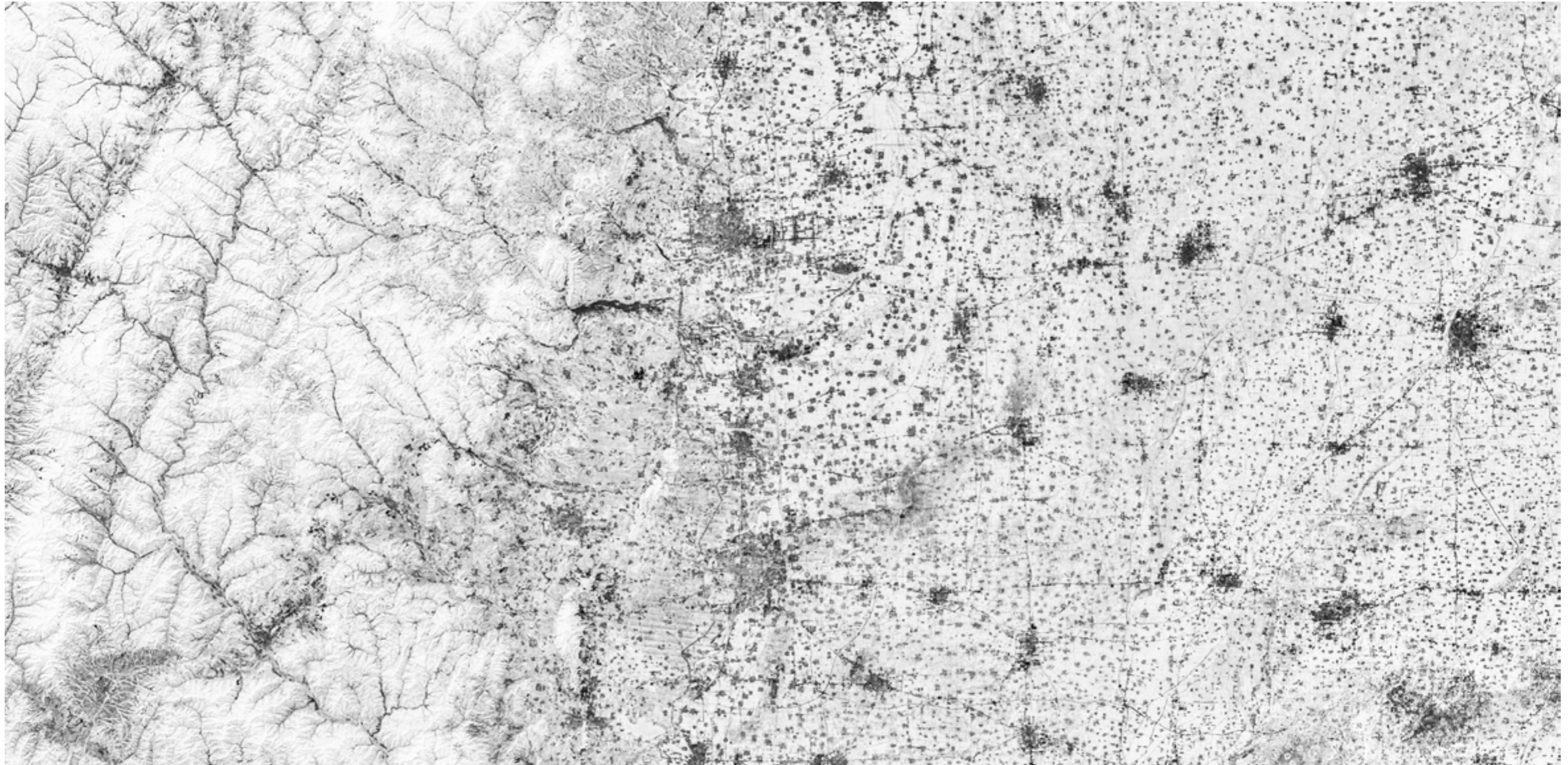


Fig. 1.81 Primary research approach Source: author



Fig. 1.81 Industrial heritage seen everywhere in resource-based industrial cities Source: author

**Primary research question:**  
*In the context of regional competition, how can the (secondary) resource-based industrial cities that are being spatially marginalized accomplish industrial upgrading and integrate into the mega-region network to benefit from it?*

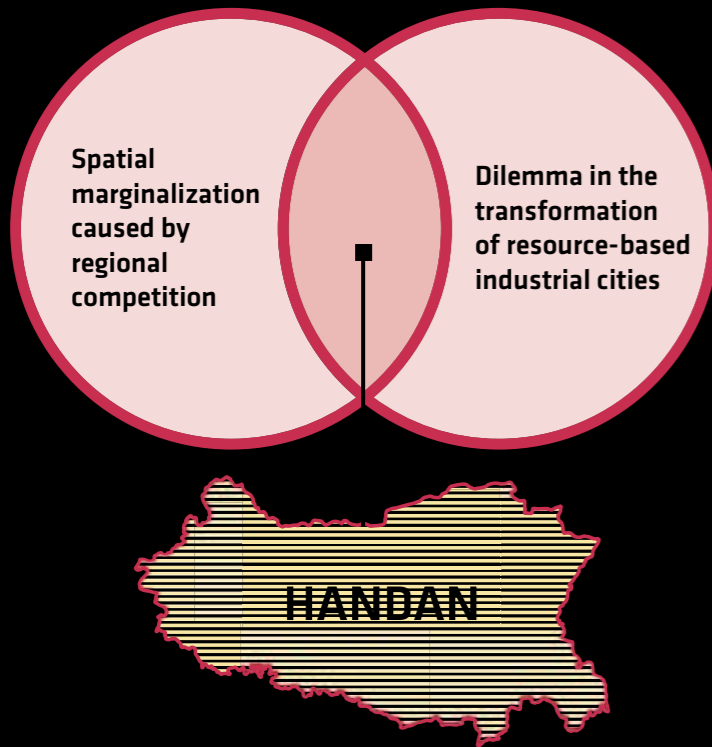


## 2 Research focus

**A** Problem field: Challenges & opportunities

**B** Research Aim





In this project, the theoretical research mainly reveals the two aspects of the problems facing China by studying the development process of China's industrialization, urbanization, and regionalization. **First, the dilemma of the transformation of resource-based industrial cities; second, the imbalance of regional development. Therefore, the research focus of this project is on the secondary cities in the region (not occupying the initiative), and has relied on resource-based industrial development. Under such circumstances, Handan seems to be a very suitable research object.** First of all, as mentioned in the previous chapter, Handan is a typical former resource-based industrial city.

Since the 1950s, due to abundant mineral resources and relatively strong economic strength, heavy industry began to vigorously develop in Handan, which has contributed a lot to China's industrialization process. However, in 2013, "Resource-based Industrial City Transformation Plan" and "Beijing-Tianjin-Hebei Regional Development" restricted the development of this industrial city. On the other hand, Handan is located between the four mega-regions, and the effect of regional spatial marginalization has intensified. How to help Handan get out of this predicament is the focus of this project.



## Problem field: Challenges & opportunities

## 2.1 Selection of research object: HanDan city

### 2.1.1 In-between 4 mega-regions

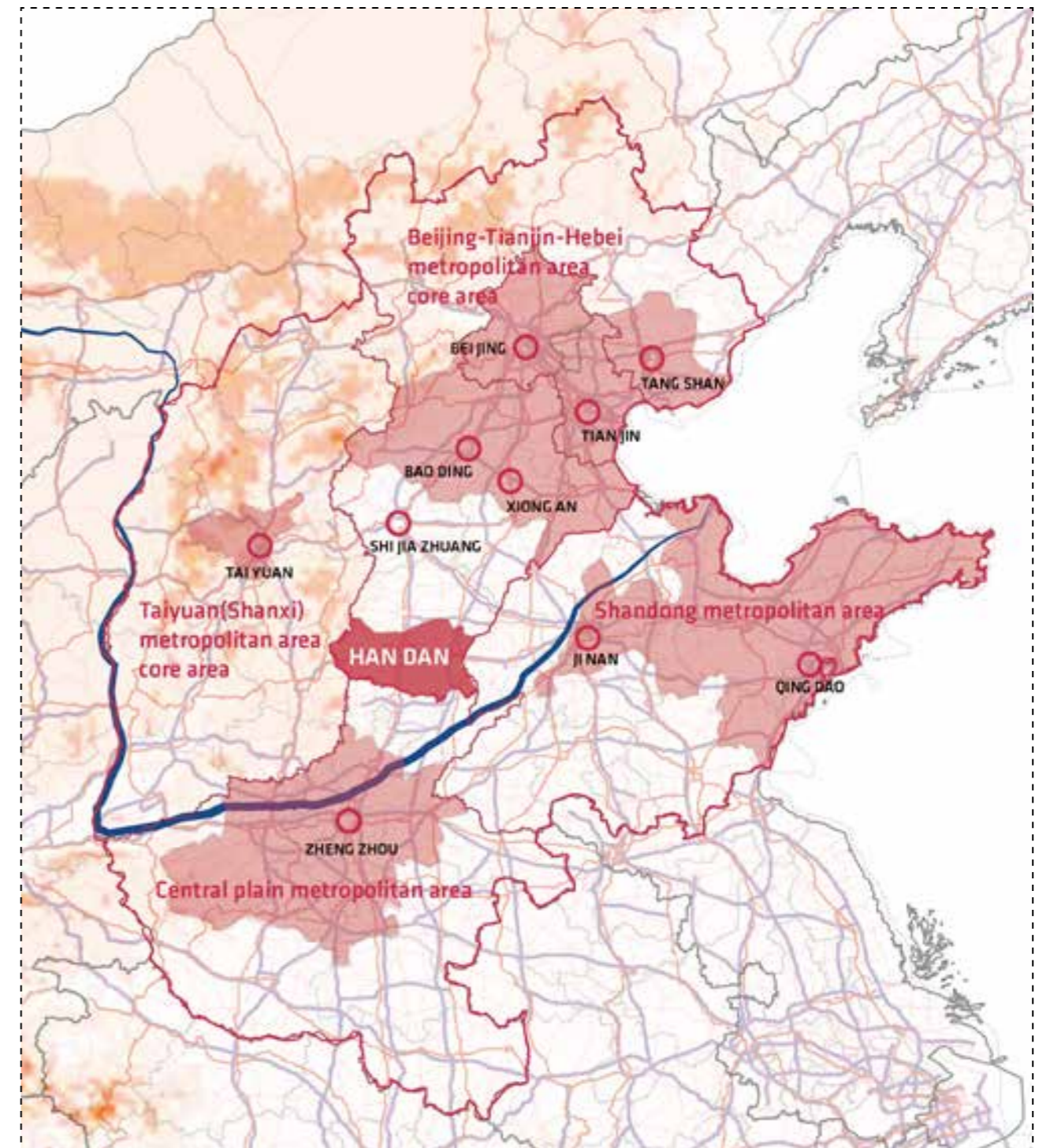
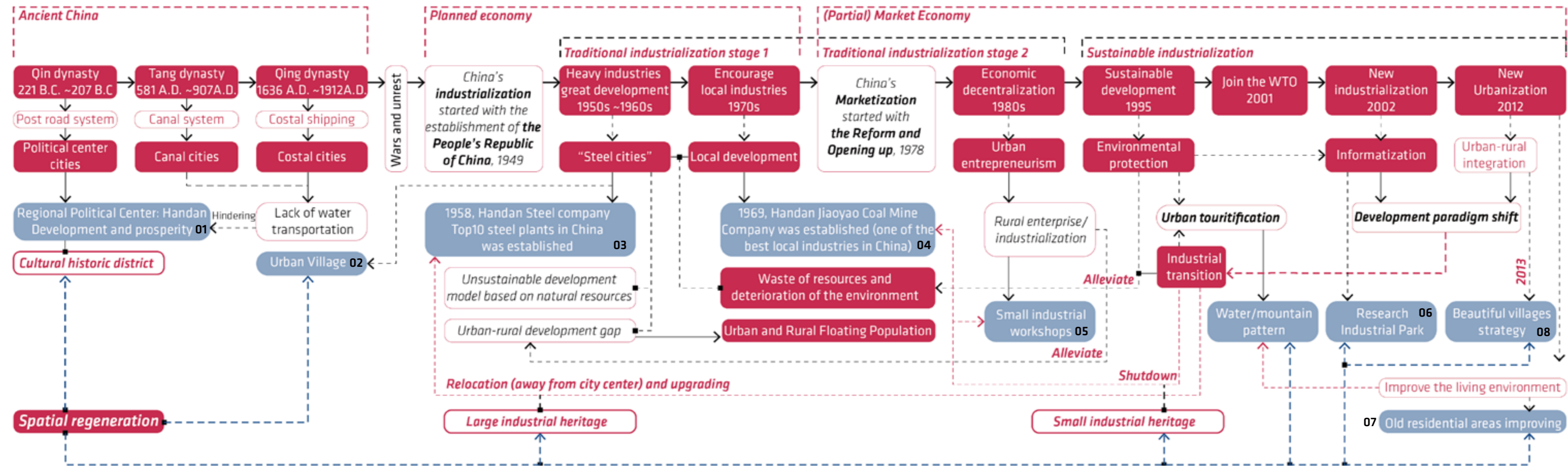


Fig. 2.1 Handan is located between four mega-regions Source: author, based on <https://www.google.com/maps>, <https://www.openstreetmap.org/#map=7/35.804/117.081>, <http://www.resdc.cn/DOI>, <http://www.bjchp.gov.cn/cpqzf/315734/tzgg27/1277896/index.html>

## 2.1.2 The reaction and spatial expression of China's industrialization process in Handan



The process of China's industrialization and urbanization is fully reflected in the city of Handan. As one of the earliest cities to appear in China, Handan has many ancient urban settlements that has been preserved for thousands of years and still retains its urban structure and texture (Figure 01, 02). As the first batch of resource-based industrial cities cultivated in the People's Republic of China in 1950s, Handan Steel Company, one of the country's largest steel plants, was established in 1958 and planned to relocate in 2014 (Figure 03). The private enterprise representative Jiaoyao Coal Mine Company ceased production in 2017 and was renovated into a landscape park (Figure 04). From the 1980s to the 1990s, catalyzed by urban entrepreneurship, many small private industrial workshops have also appeared in Handan. These workshops have also been shut down due to environmental considerations (Figure 05). In 2002, under the guidance of the new industrialization concept, the industrial compact development model was implemented in Handan. Counties and districts established a number of scientific research industrial parks (Figure 06). These industrial parks are currently an important pillar for the economic development of counties and districts. In addition, in 2009, the "demolition policy" demolished the dilapidated communities in the city and built new residential communities to improve the quality of urban living. In 2013, under the guidance of the "beautiful countryside" policy, many ancient villages in Handan were renovated to develop tourism (Figure 8).

01 Handan origin city



02 Guangfu ancient city



03 Original Site of Handan and Steel Company



04 Original Site of Jiaoyao coal mine company



05 Folk Industry Workshop



06 Research industrial park



07 Old communities



08 Wanbian ancient village



## 2.1 Selection of research object: HanDan city

### 2.1.3 The dilemma of industrial development in Handan

Like many other resource-based industrial cities, Handan is also facing many transformation difficulties. As mentioned above, the establishment of Handan Steel Company in 1958 marked that the city became a major "steel city" in New China. **For half a century, the development of heavy industry has brought prosperity to this city. In 2013, two policy documents changed the fate of this city: "China's resource-based industrial city transformation plan" and "Beijing-Tianjin-Hebei Air Pollution Prevention Agreement". Both documents convey a requirement: the reduction of heavy industry production and the transformation of urban industry.**

The dilemma of this development is also directly expressed in the data. **In 2013, the output value of Handan Heavy Industry saw an unprecedented decline.** Small businesses were shut down, medium-sized companies were merged by large companies in pursuit of "compact development", and large companies were required to reduce production. These policies are effective from an environmental perspective, and resource consumption has been reduced, but Handan's economic performance has also fallen sharply, just like its economic strength ranks in the country.

In fact, such mandatory "development transformation" is indispensable in the development process of Handan, because "sustainability" is a necessary goal for urban development. Handan's inability to deal with this "transition" also reflects the vulnerability of its own industrial system. **Lack of cultivating the tertiary industry and industries with no local characteristics are important factors leading to the economic downturn.**



Fig. 2.14 Pollution in Handan Steel Company Source: <https://image.baidu.com/search/detail?ct=503316480&z=0&ipn=de-word>

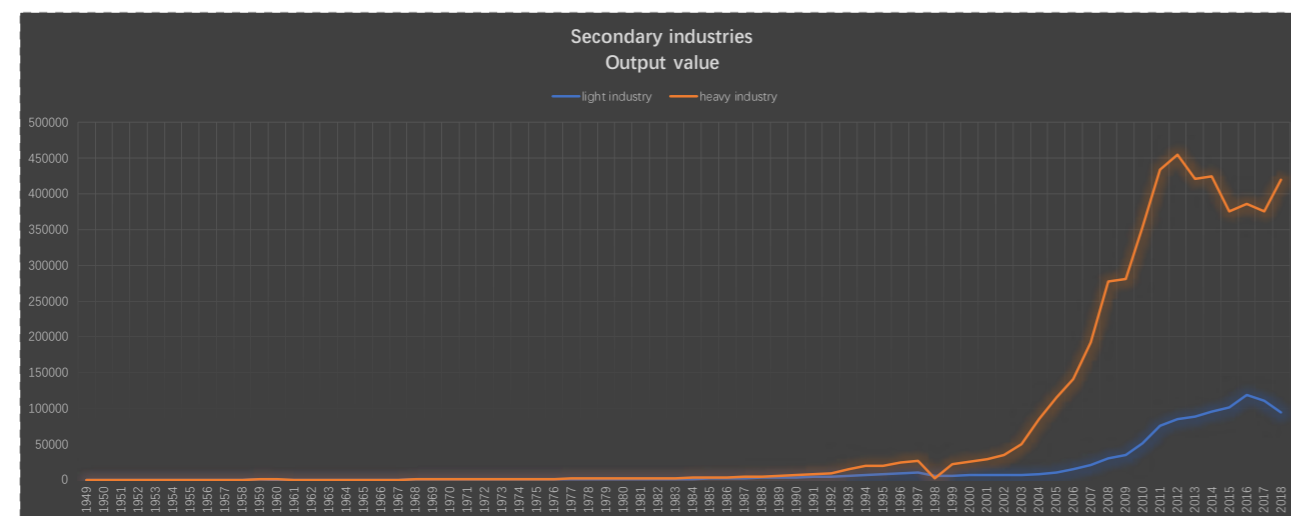


Fig. 2.11 Handan Industrial Output Value Source: Handan Yearbook

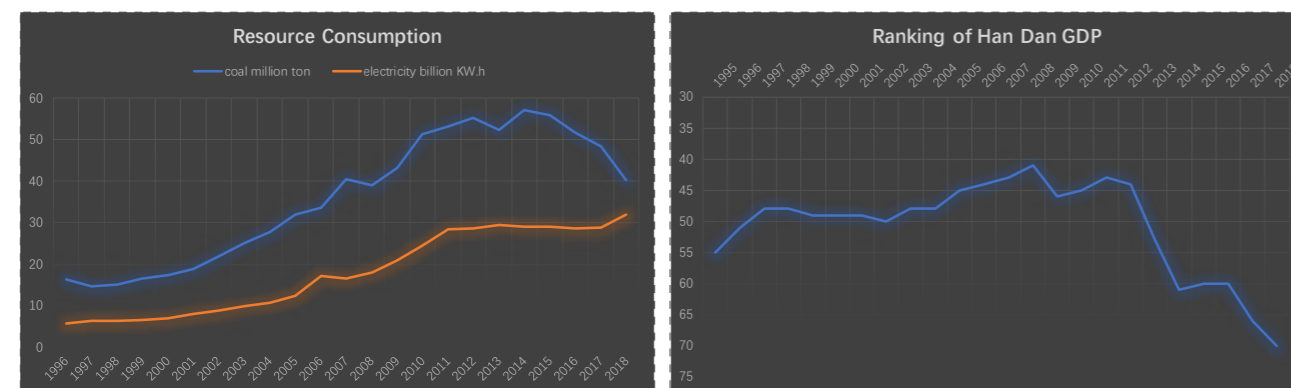


Fig. 2.12 Handan Industrial Output Value Source: Handan Yearbook

Fig. 2.13 National ranking of urban economics of Handan Source: author, based on: National yearbook, 2019

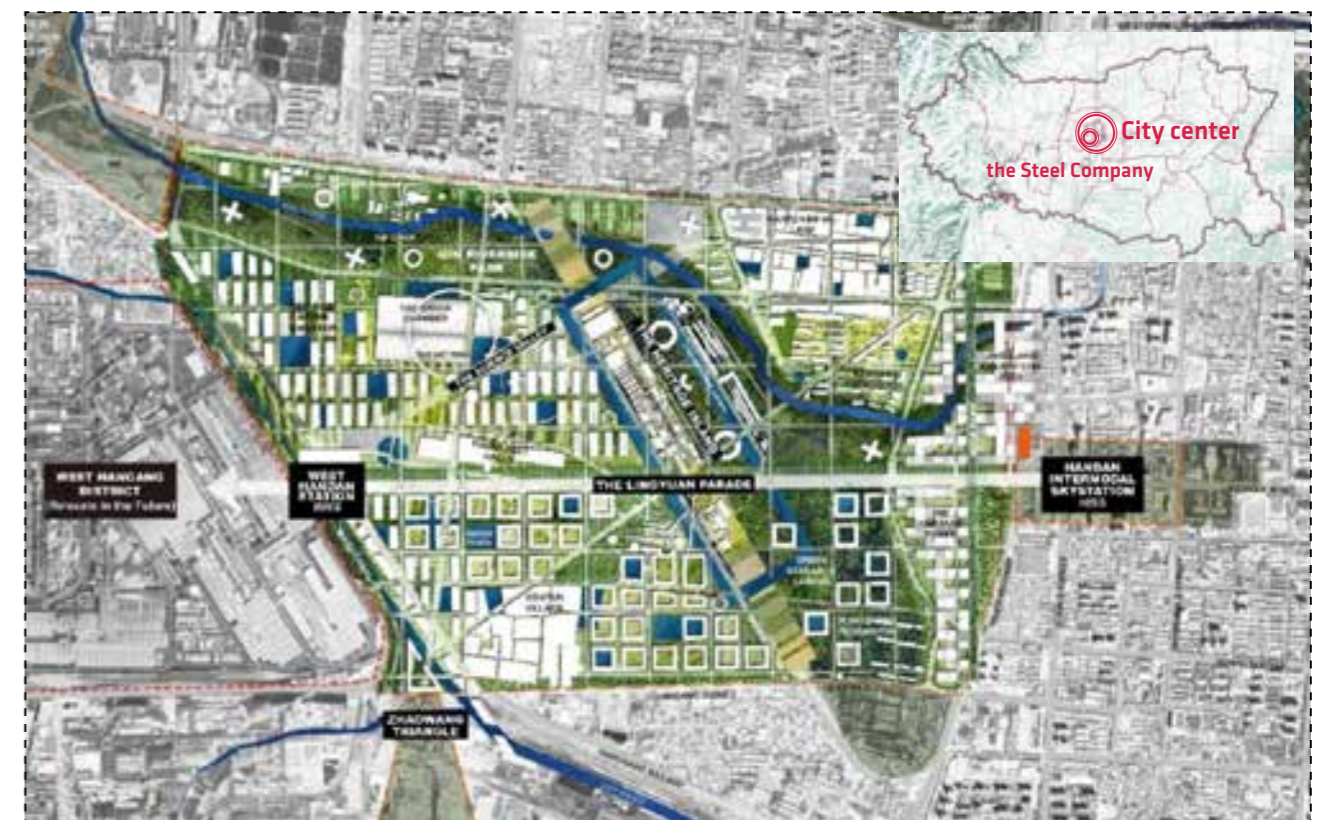


Fig. 2.15 Dominique Perrault's plan is to create a city of tomorrow that is rich in diversity, adaptability and livability. This project won the first prize of the Handan Urban Design Competition 2019. Source: <https://mp.weixin.qq.com/s/yRgleAb-PDmeKewXAoIKFQ>

The Handan Municipal Government has also made some efforts to address these issues. The original site of Handan Steel Company is located in the central area of the city, and its high pollution affects the quality of life of urban residents. In 2016, Handan Steel Company began to plan the relocation, and for the original site, a huge factory area of nearly 10 square kilometers, launched an urban renewal design competition to the world. However, due to economic factors and other factors, until today, Handan Iron and Steel's urban renewal design has not really been carried out.

## 2.1 Selection of research object: HanDan city

### 2.1.4 HanDan in Mega-regional planning

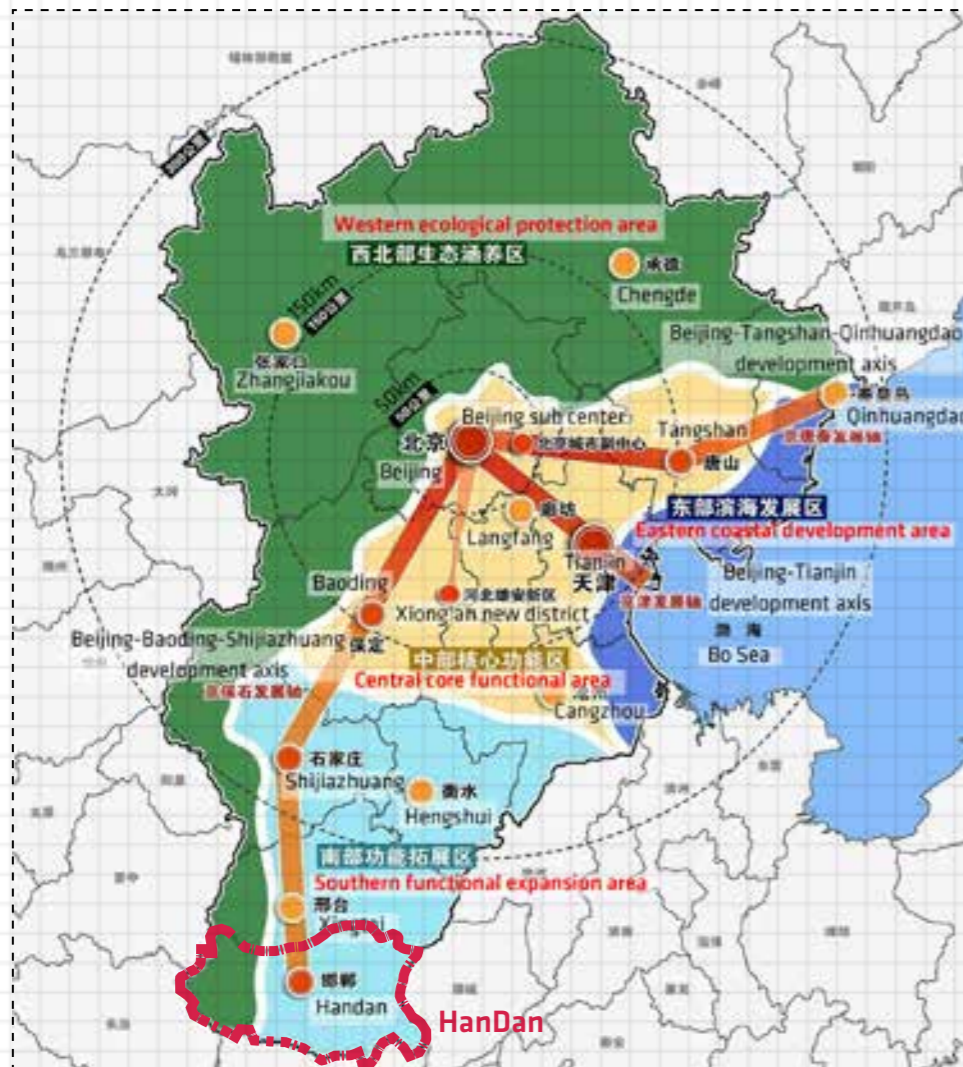


Fig. 2.16 Beijing-Tianjin-Hebei mega-regional metropolitan system plan  
Source: Beijing Master Plan (2016-2035), translated by the author

#### Beijing-Tianjin-Hebei mega-regional metropolitan system plan (2016-2035):

In the Beijing-Tianjin-Hebei mega-regional urban system planning, Handan belongs to the "southern functional expansion area". The implication is that, in order to relieve Beijing's "non-capital functions" and ease the pressure on Beijing's development, cities in southern Hebei Province will accept equipment manufacturing, chemical industry and other heavy industrial enterprises relocated from Beijing. Handan is the "important receiver" of this action.

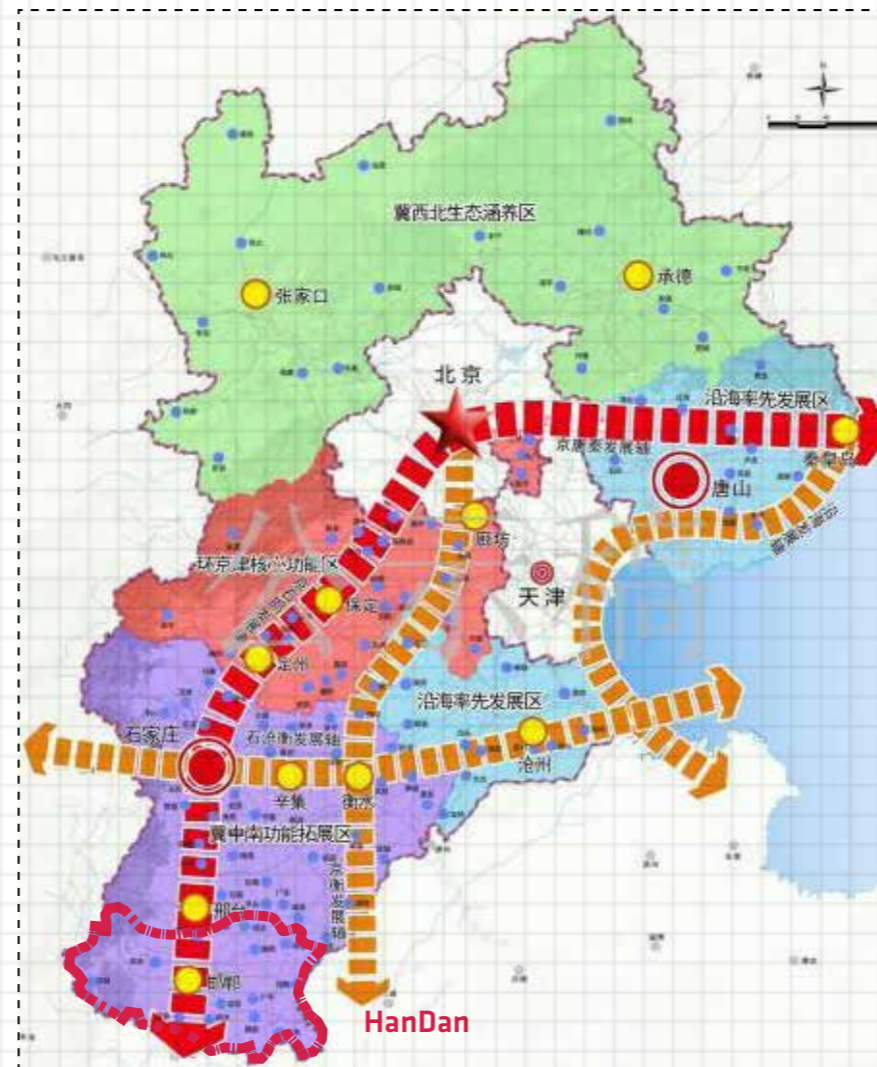


Fig. 2.17 Hebei province metropolitan system plan (2016-2035)  
Source: [http://www.hebjs.gov.cn/xgzz/ghc/tfwj\\_22909/201703/t20170307\\_226738.html](http://www.hebjs.gov.cn/xgzz/ghc/tfwj_22909/201703/t20170307_226738.html)

#### Hebei province metropolitan system plan (2016-2035):

Hebei's urban system planning follows the Beijing-Tianjin-Hebei regional planning. **Handan, as the central city in the southern region of Handan, assumes the responsibility of economic transformation demonstration.** In fact, Handan has always been the top three economic city in Hebei Province and an important economic center in Hebei Province. However, due to the disadvantages of industrial transformation, Handan's economic performance in Hebei Province has not been satisfactory in recent years.

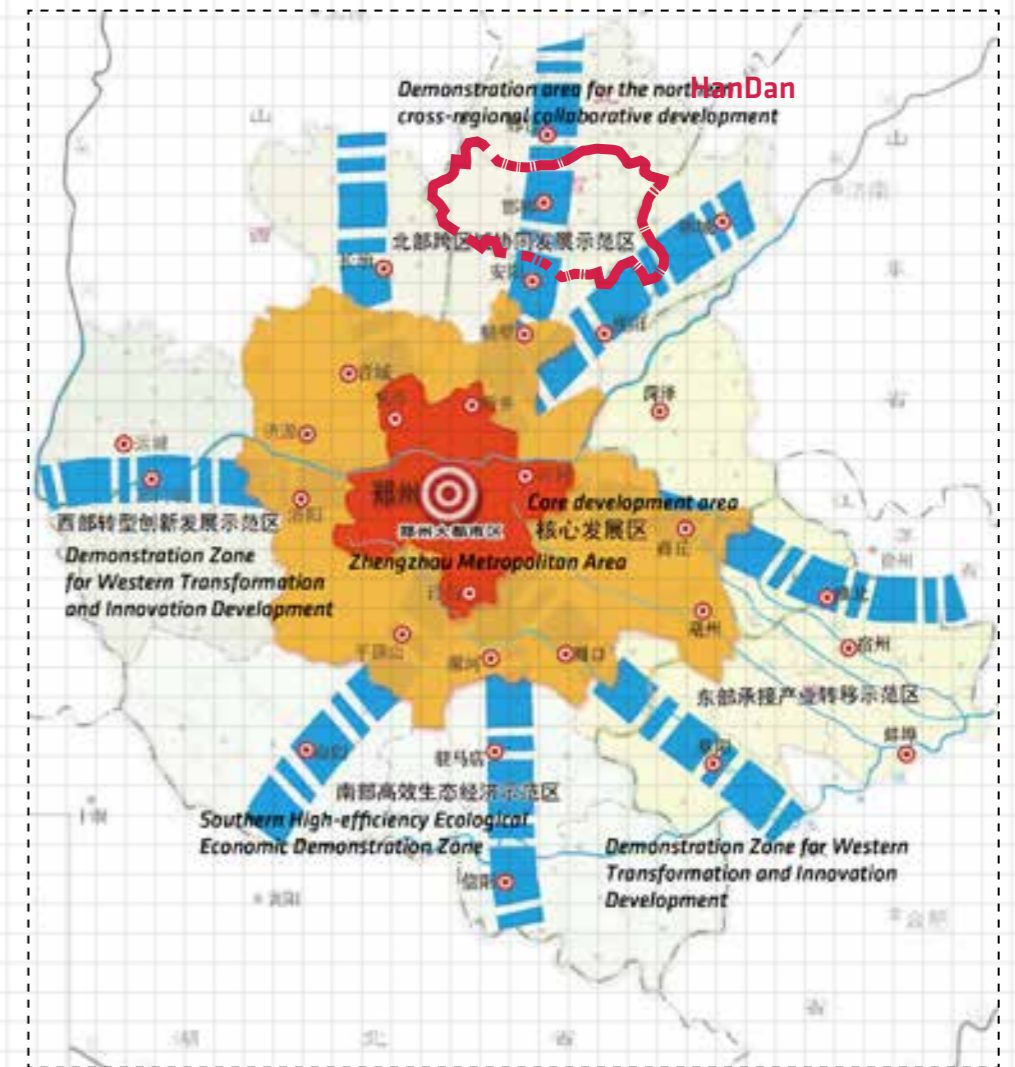


Fig. 2.18 Central Plains Mega-region Development Plan (2016-2025)  
Source: <https://www.gov.cn/xinwen/2017-01/05/5156816/files/4e3c18bb7f2d4712b7264f379e7cb416.pdf>

#### Central Plains Mega-region Development Plan (2016-2025):

The Central Plains mega-regional development plan was promulgated in 2016. This plan is based on the provincial capital of Henan Province, a national-level regional central city: Zhengzhou City as its core. Handan is located in the "Northern cross-regional Coordinated Development Demonstration Zone" of the plan. **However, due to the existence of administrative boundaries, Handan has not really integrated into the development of this mega-region.**

## 2.1 Selection of research object: HanDan city

### 2.1.5 New District for Industrial Undertaking: Jinan (south Hebei) New District

In the process of China's regionalization, Handan, as a secondary city in the region, provides important spatial resources and labor resources for the regional core cities. In 2012, the "Economic Plan for Central Plains Urban Agglomeration (2012-2020)" approved by the State Council clearly proposed the establishment of the South Hebei New District in Handan to take over the heavy industrial enterprises that were diverted from the core city. Subsequently, the South Hebei New District became an important industrial relocation site for the development of the Beijing-Tianjin-Hebei mega-region. Till today, dozens of heavy industry enterprises have settled in the New District.



Fig. 2.19 Planning Vision of South Hebei New District-Industry and City Integration Source: <https://www.163.com/dy/article/DNR3GE040518CAQJ.html>



0 1KM 2KM 5KM  
 Fig. 2.20 Distribution of industries in the South Hebei New District Source: <https://www.google.com/maps>

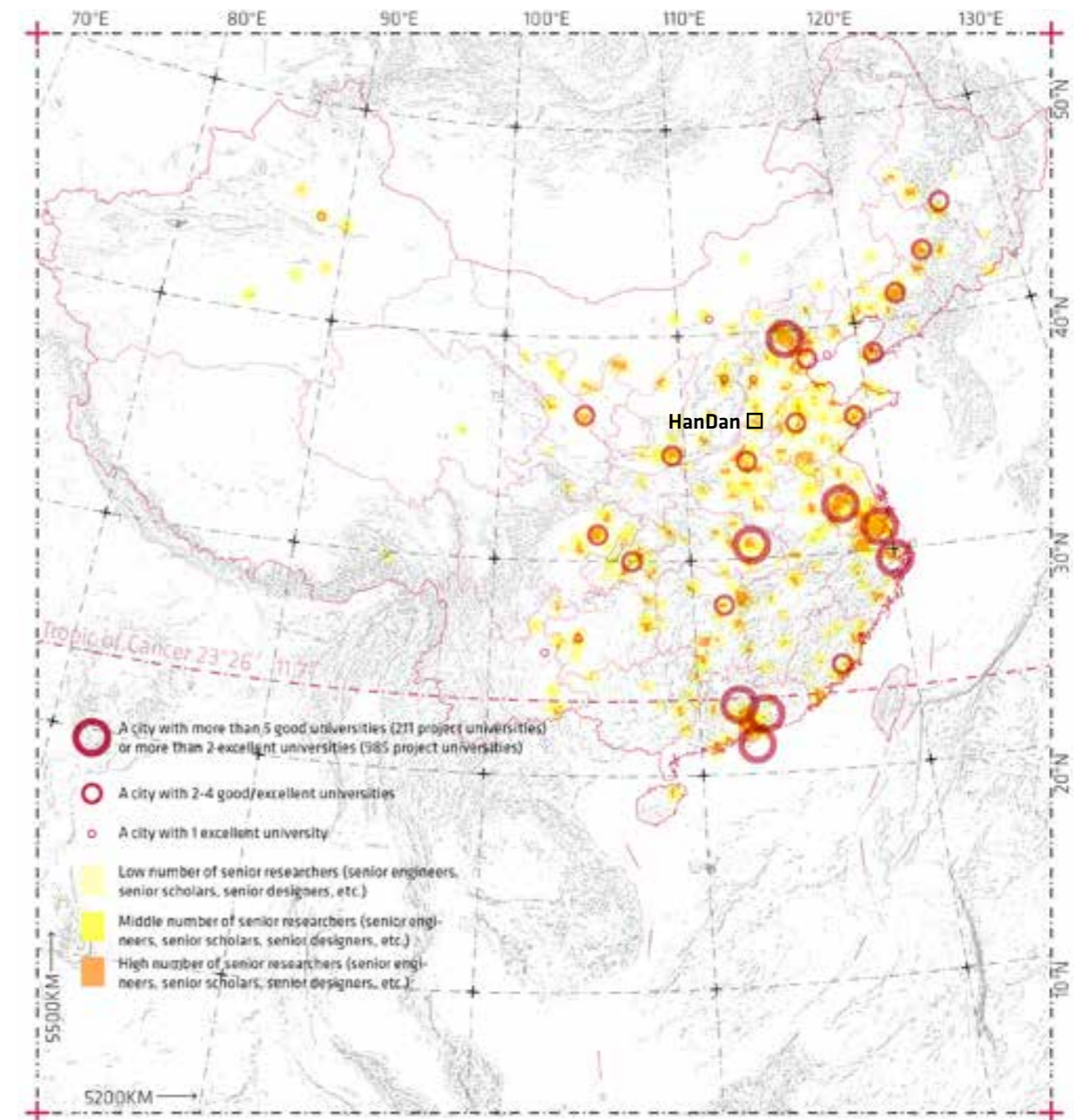


Fig. 2.21 Distribution of national scientific research institutions and senior researchers Source: author, based on <https://www.google.com/maps>; <http://www.resdc.cn/DOI>; <https://www.home-for-researchers.com/static/index.html#/>

However, according to the status quo of industrial distribution in the South Hebei New District, Handan did not use this platform to cultivate industries with local characteristics, such as cultural industries. **The establishment of this new district seems to be just a tool for the transfer of high-pollution and high-energy-consuming industries from the regional core cities to Handan.** This has not helped Handan out of the dilemma of industrial transformation. In addition, **the lack of scientific research strength is also one of the reasons for this phenomenon of "no initiative to innovate"**. Judging from the distribution of scientific research institutions and senior researchers in China, the number and quality of advanced research institutions in Handan are not high, which also makes the city's innovative competitiveness low.

## 2.1 Selection of research object: HanDan city

### 2.1.6 High-speed infrastructure system–National High Speed Rail Network

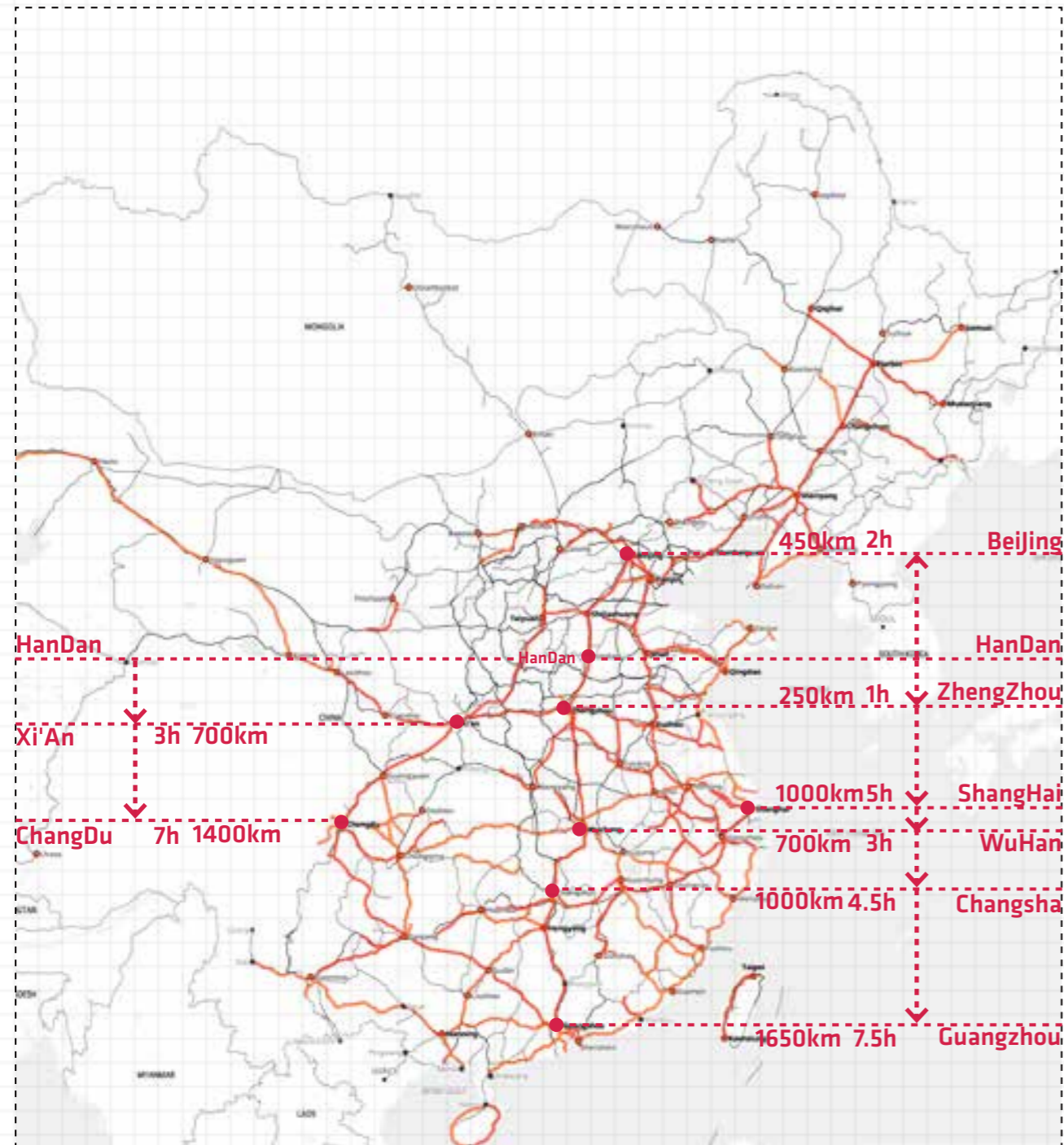


Fig. 2.22 China High Speed Railway Network  
Source: author, based on <http://news.gaotie.cn/>, <http://www.nra.gov.cn/ztl/hyjc/gstl/>, <http://roll.sohu.com/20110307/n303974036.shtml>

One of China's major cities and mega-regions interconnects of transportation is the high-speed rail network (250-380km per hour). Handan, as an important station in the high-speed railway network, is located on the two important high-speed infrastructure lines of "Beijing-Guangzhou" and "Beijing-Shanghai", connecting the mega-regions of Central Plains (Zhengzhou) to the mega-region of the middle reaches of the Yangtze River (Wuhan, Changsha)-the Greater Bay Area (Guangzhou, Shenzhen), the Yangtze River Delta mega-region (Nanjing, Shanghai, Hangzhou), and Chengdu-Chongqing urban agglomeration.

### Regional inter-city High Speed Rail Network in Beijing-Tianjin-Hebei Mega-region

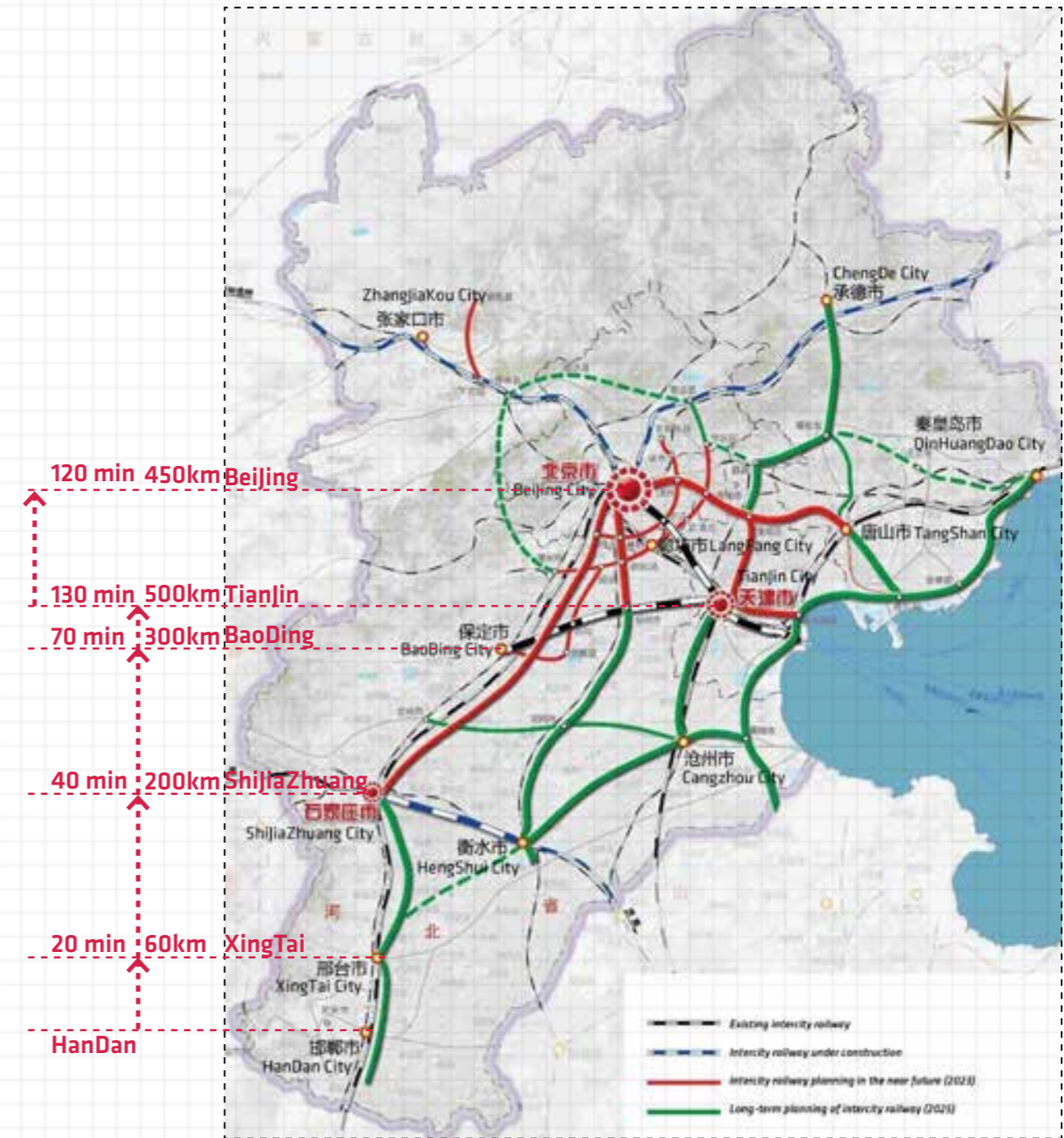


Fig. 2.23 Beijing-Tianjin-Hebei Intercity High-speed Railway Network  
Source: author, based on [https://www.sohu.com/a/270249999\\_100012021](https://www.sohu.com/a/270249999_100012021)

The Beijing-Tianjin-Hebei mega-regional high-speed infrastructure network is built on the basis of the national high-speed railway network. The cities along the Beijing-Handan line (Beijing-Baoding-Shijiazhuang-Xingtai-Handan) can all be reached easily. In 2015, the Baoding-Tianjin high-speed rail was opened, making it convenient for Handan to Tianjin and Tangshan, the sub-central cities of the Beijing-Tianjin-Hebei region. In 2015, the Beijing-Tianjin-Hebei region's intercity high-speed railway began planning and construction, and more stations will be set up in Handan to strengthen the infrastructural connection between Handan and Beijing.

## 2.1 Selection of research object: HanDan city

### 2.1.7 Declining city attractiveness

The predicament of industrial transformation, the reduction of economic vitality, and the inactive position in regional competition, these factors have led to the reduction of the attractiveness of Handan. According to the results of data analysis by the Chinese Academy of Social Sciences and Baidu data, Handan is at a disadvantage in comparing the attractiveness and competitiveness of major cities in the four national or upgraded mega-regions. *In summary, Handan is a suitable research object based on primary research questions and research goals.*

**Primary research question:**

In the context of regional competition, how can the (secondary) resource-based industrial cities that are being spatially marginalized accomplish industrial upgrading and integrate into the mega-region network to benefit from it?

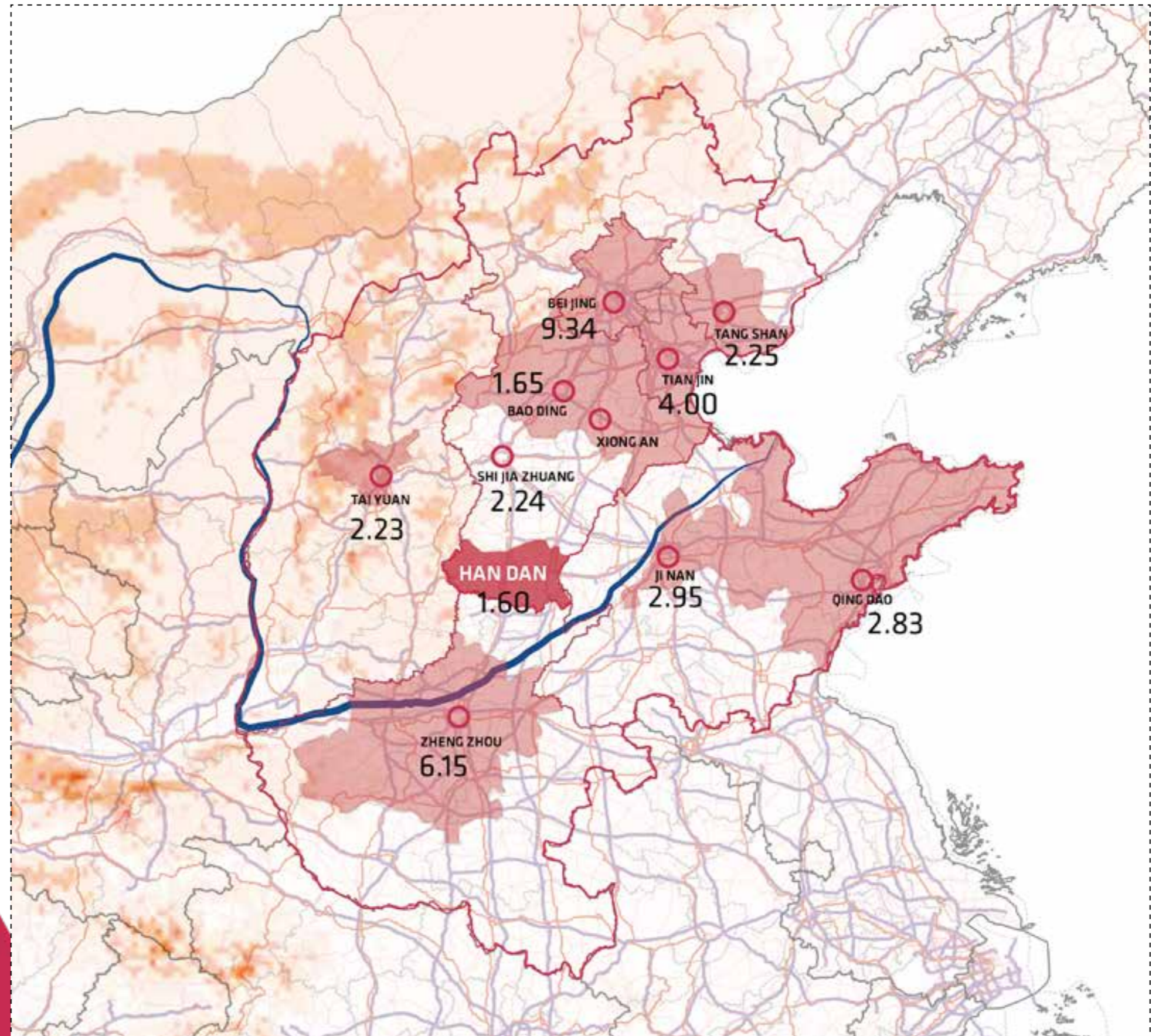


Fig. 2.24 The attractiveness index of major cities in the four mega-regions Source: author, based on <https://www.google.com/maps>, <https://www.openstreetmap.org/#map=7/35.804/117.081>, <http://www.resdc.cn/DOI>, <http://www.bjchp.gov.cn/cpqzf/315734/tzgg27/1277896/index.html>, <https://baijiahao.baidu.com/s?id=1665848376923457743&wfr=spidero-for-pc>

## 2.2 Contextual analysis of HanDan city

### 2.2.1 Population and economy

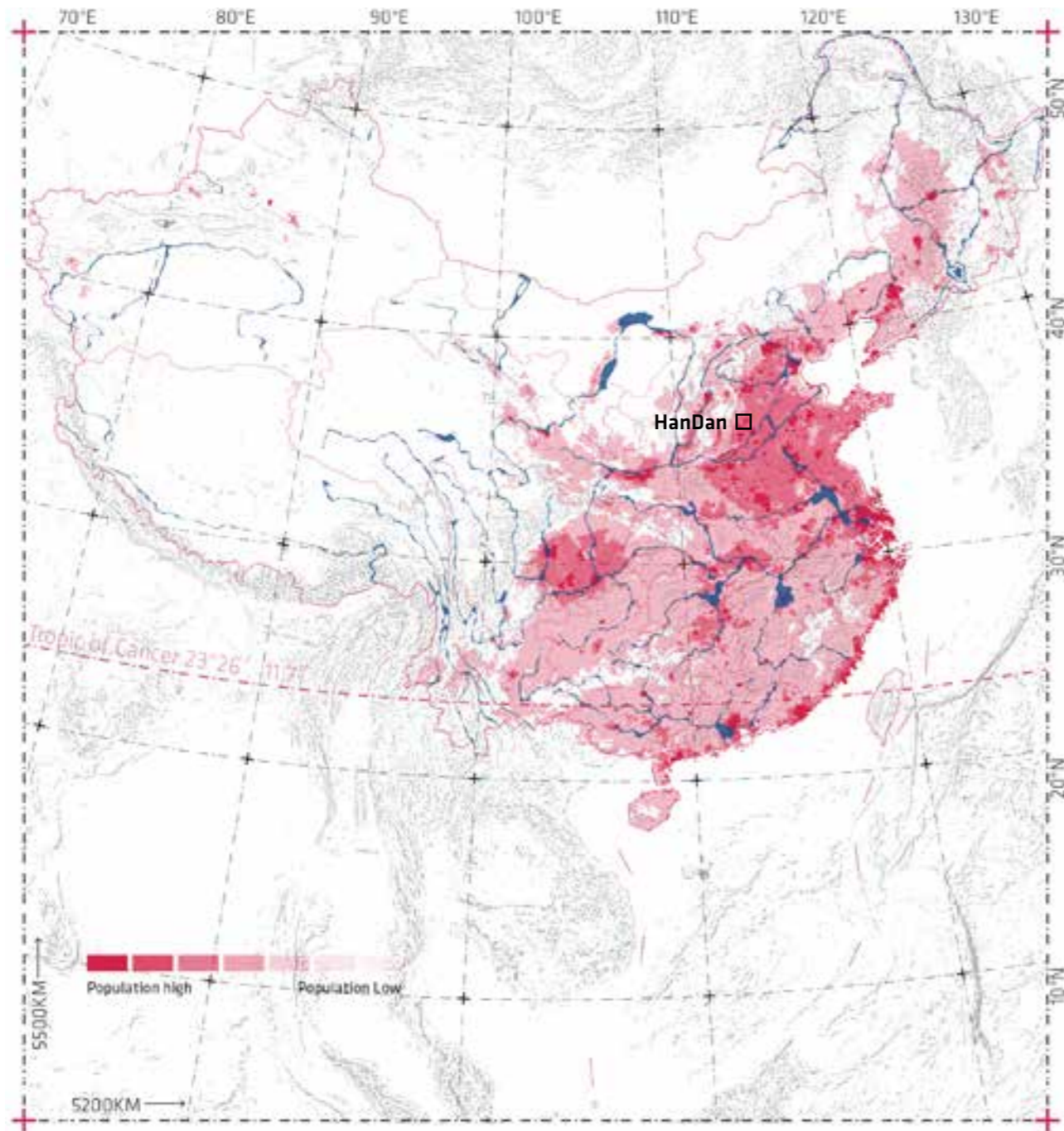


Fig. 2.25 China's population density map  
Source: author, based on <https://www.google.com/maps>; <http://www.resdc.cn/>  
DOI, <http://www.stats.gov.cn/tjsj/pcsj/>, <https://www.worldometers.info/cn/>

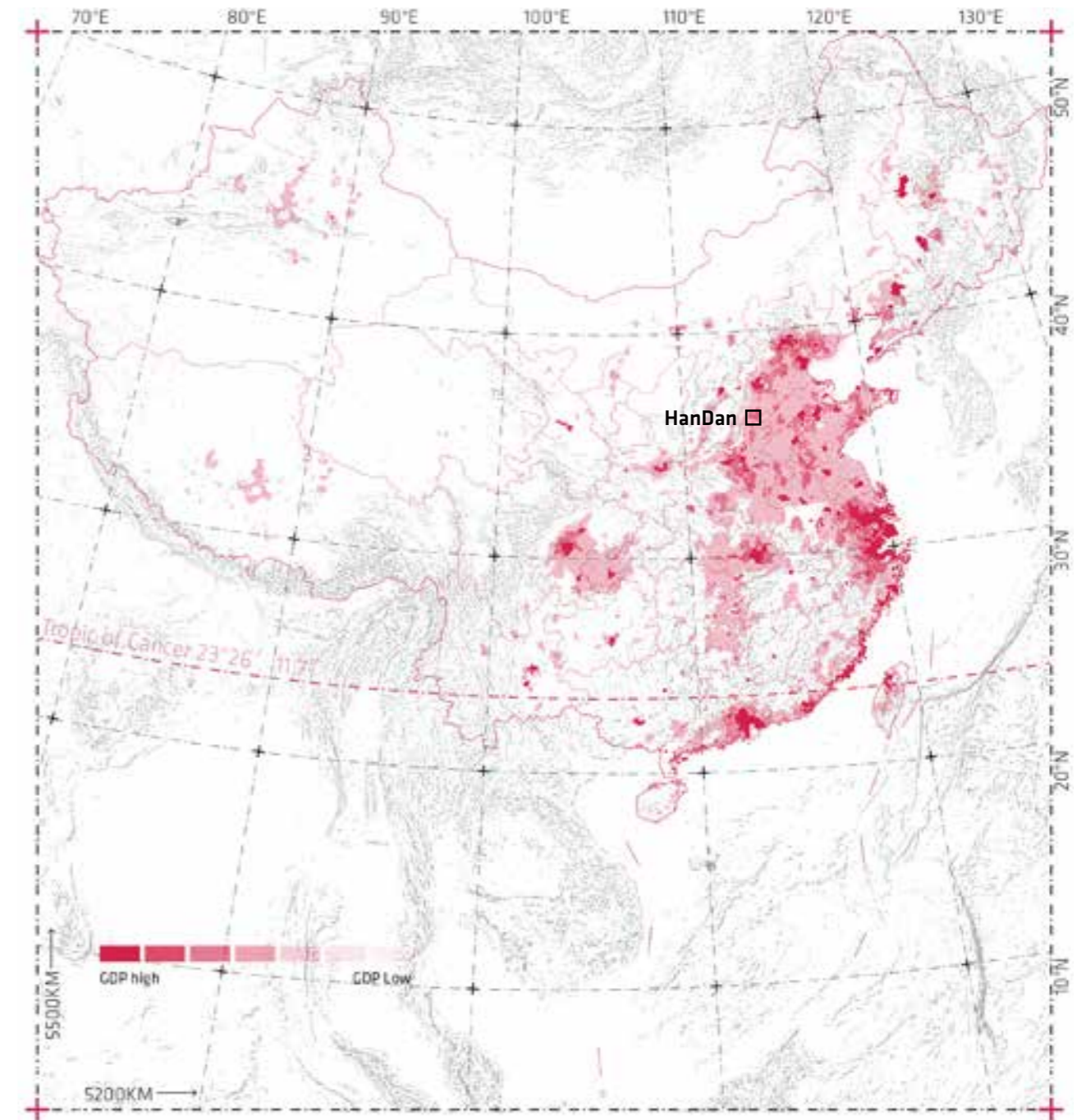


Fig. 2.26 China's GDP map  
Source: author, based on <https://www.google.com/maps>; <http://www.resdc.cn/>  
DOI, <http://www.stats.gov.cn/tjsj/pcsj/>, <https://www.worldometers.info/cn/>



## 2.2 Contextual analysis of HanDan city

### 2.2.2 Location and transportation

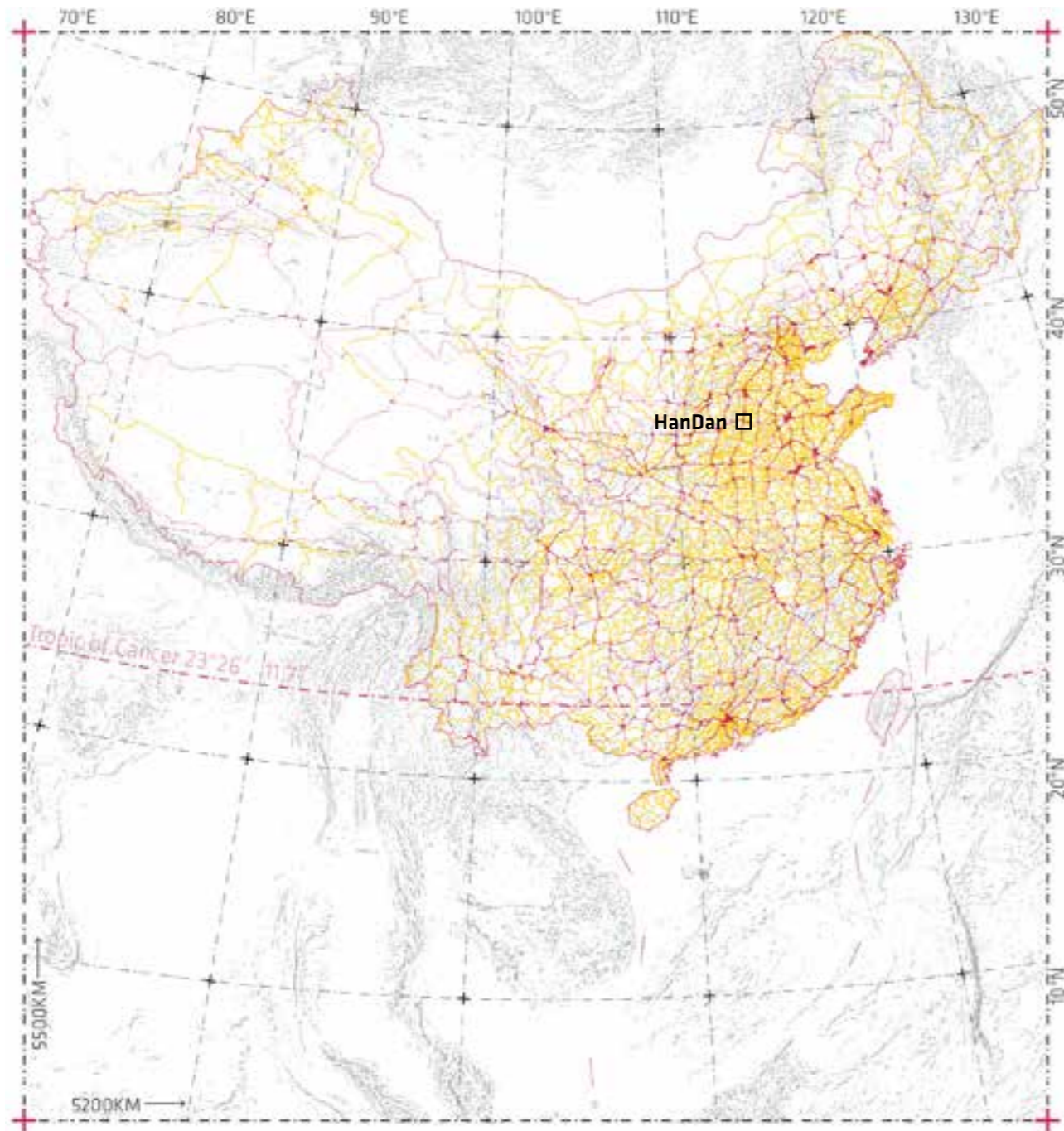


Fig. 2.27 China road network map  
Source: author, based on <https://www.google.com/maps>; <http://www.resdc.cn/DOI>; <https://www.openstreetmap.org/#map=7/35.804/117.081>

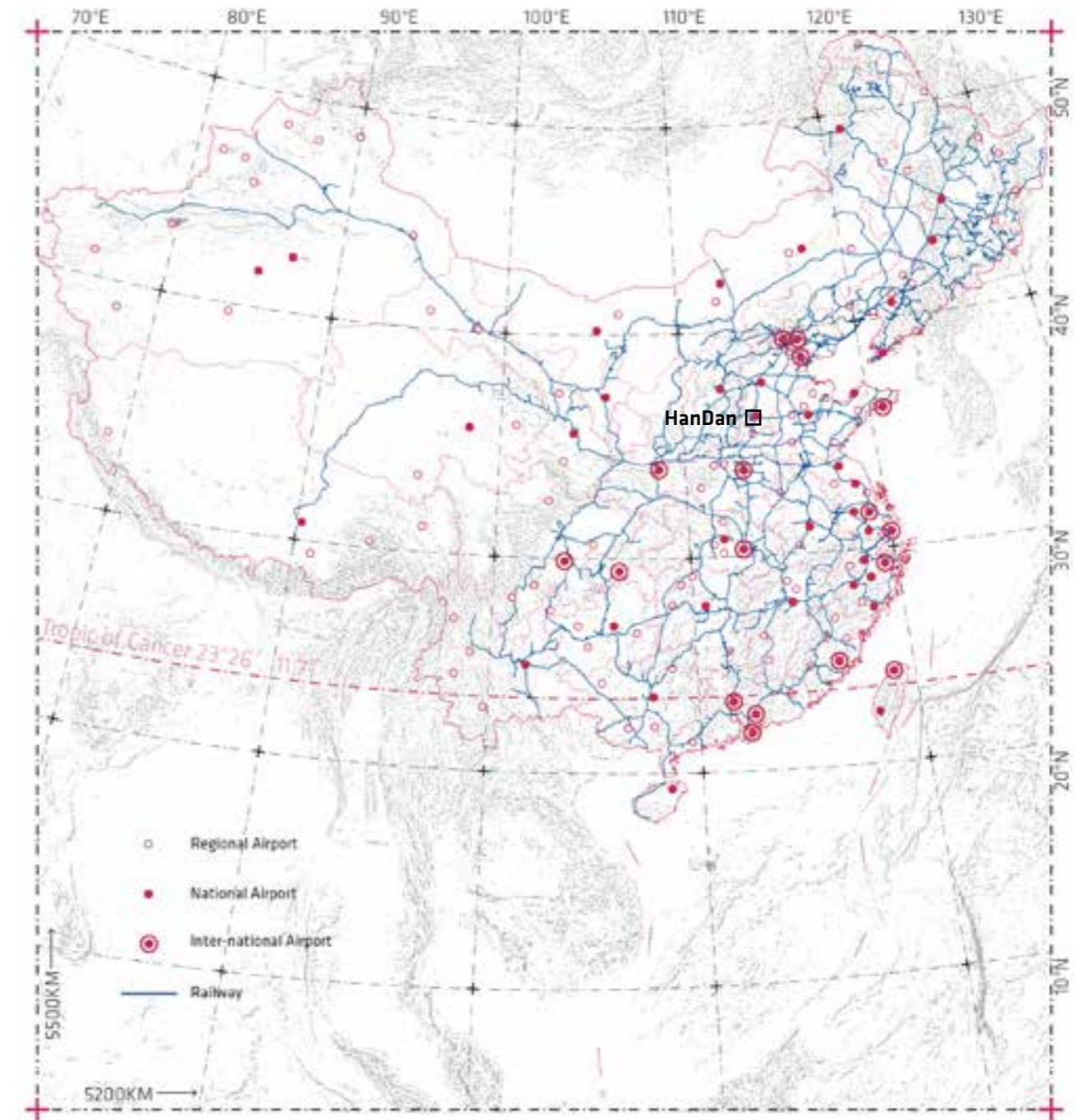


Fig. 2.28 China public transportation network map (ordinary railway and airport)  
Source: author, based on <https://www.google.com/maps>; <http://www.resdc.cn/DOI>; <https://www.openstreetmap.org/#map=7/35.804/117.081>

## 2.3 Historical development and cultural origin

### 2.3.1 Central Plains: the origin of Chinese culture

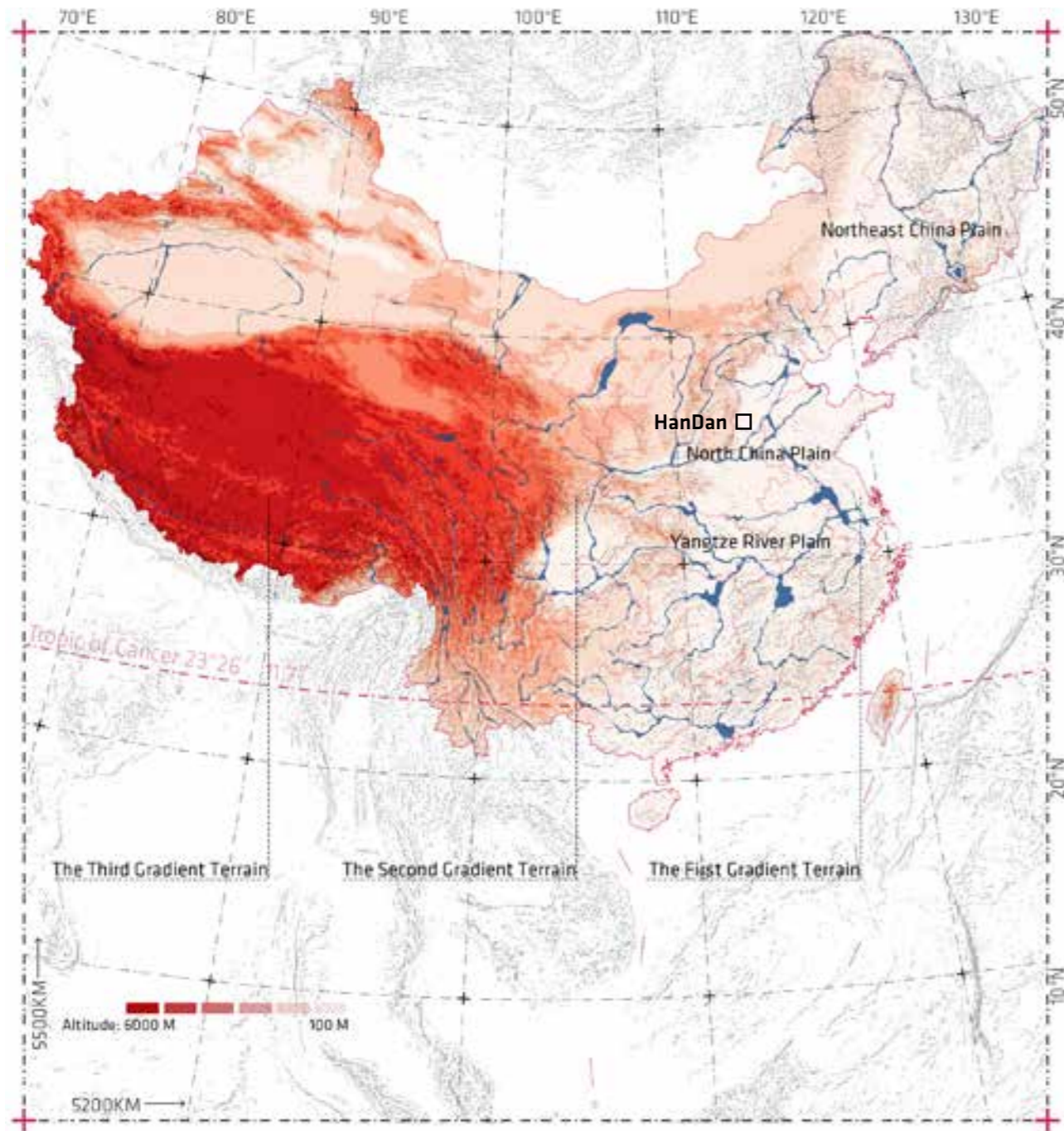
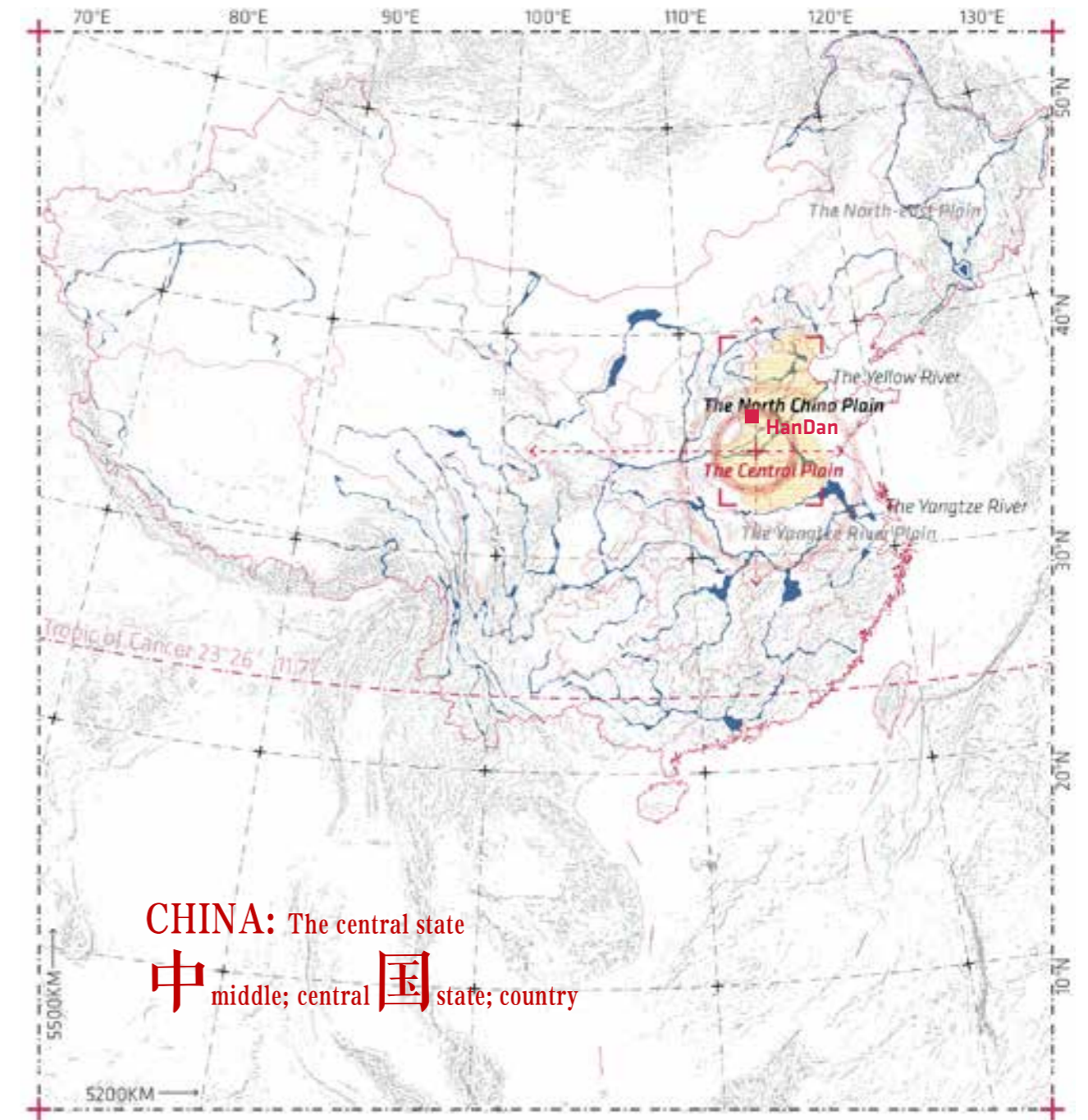


Fig. 2.45 Topography of China  
Source: author, based on <https://www.google.com/maps>; <http://www.resdc.cn/DOI>; <https://www.openstreetmap.org/#map=7/35.804/117.081>

Most civilizations in the world originated in the alluvial plains of rivers, and so did the Chinese civilization. As early as 300,000 years ago, there were signs of human activities in the Central Plains of the Yellow River Basin. In the discipline of the origin of Chinese culture, most scholars generally believe that the Central Plains region is the origin of Chinese culture. Handan is one of the earliest areas where human activities occurred in the Central Plains.

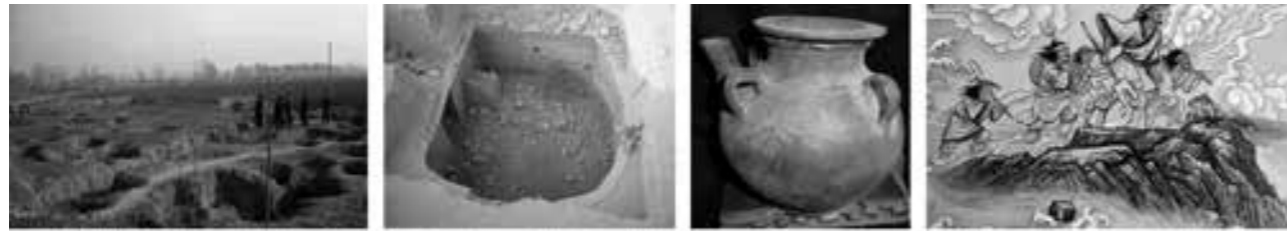


CHINA: The central state  
中 middle; central 国 state; country

Fig. 2.46 Central Plains: the origin of Chinese culture  
Source: author, based on <https://www.google.com/maps>; <http://www.resdc.cn/DOI>; <https://www.openstreetmap.org/#map=7/35.804/117.081>

## 2.3 Historical development and cultural origin

### 2.3.2 Ancient civilization in HanDan



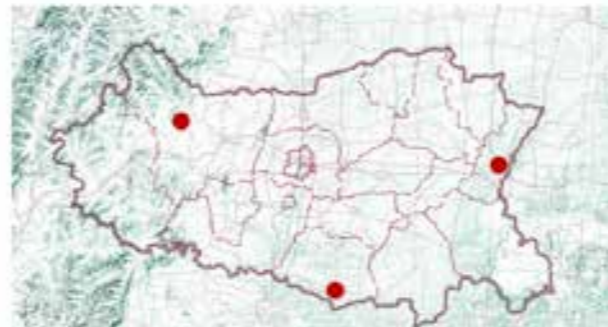
#### Cishan historical site 8,000 B.C.

Ancient human habitat  
semi-crypt housing  
Grain/food storage crypt  
Stoneware and china products  
The earliest rice cultivation  
the earliest chicken breeding  
the earliest walnut planting

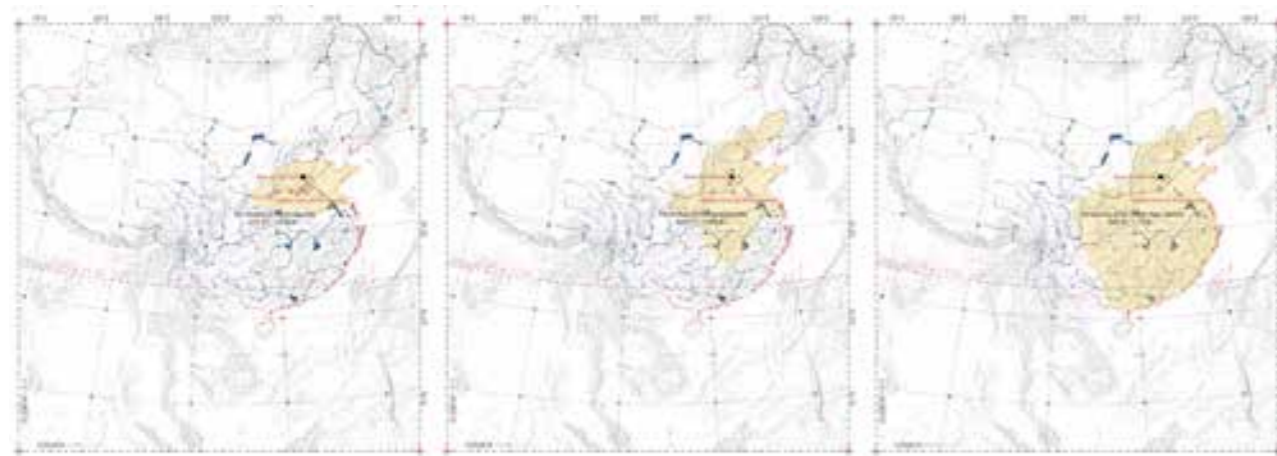
#### Black china historical site 5,000 B.C.

Black china products, business trading  
72 black china workshops  
Large-scale handicraft industry emerged

#### Water management historical site 3,000 B.C.



### 2.3.3 Feudal Dynasty: Political Center City



#### Xia dynasty: The first feudal dynasty in Chinese history

For more than a thousand years, Handan has been near to the national political center and gradually developed into an important political and military place.  
Until about 1000 BC, the two Chinese characters "Handan" were determined to represent the name of the city, which also marked the official establishment of Handan.

邯han 鄆dan

### 2.3.4 Capitals of ancient vassals: cultural and economic prosperity



#### (East) Zhou dynasty 770 B.C. - 221 B.C. Seven largest states in the warring period 475 B.C. - 221 B.C.

During this period, the power of the vassal states continued to expand, even threatening the emperor's authority. Wars between the princes occurred frequently, and eventually formed the seven most powerful states. Handan was the capital of the state of Zhao.

#### Handan

Capital city of Zhao state, one of the biggest states in the warring period

0.3 million population, the most in the nation

wine making, agricultural development, artisanal manufacturing  
building construction are top in the world

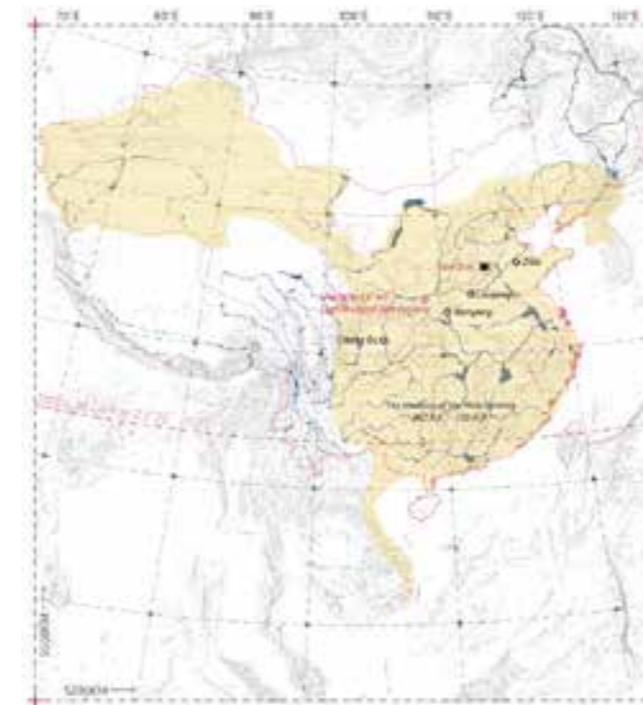
Business were booming

National center for political, cultural, military, economic, commercial

Representative of fashion and prosperity for hundreds of years.



### 2.3.5 National Center for Commerce and Trade



#### (West) Han dynasty

One of the five national greater metropolises  
0.5 million population

#### (East) Han dynasty

capital city of State Wei, center of military and politic  
The first "urban plan" in China  
Laid a paradigm foundation for (ancient) Chinese urban planning



## 2.3 Historical development and cultural origin

### 2.3.6 Conclusion: Handan cultural system

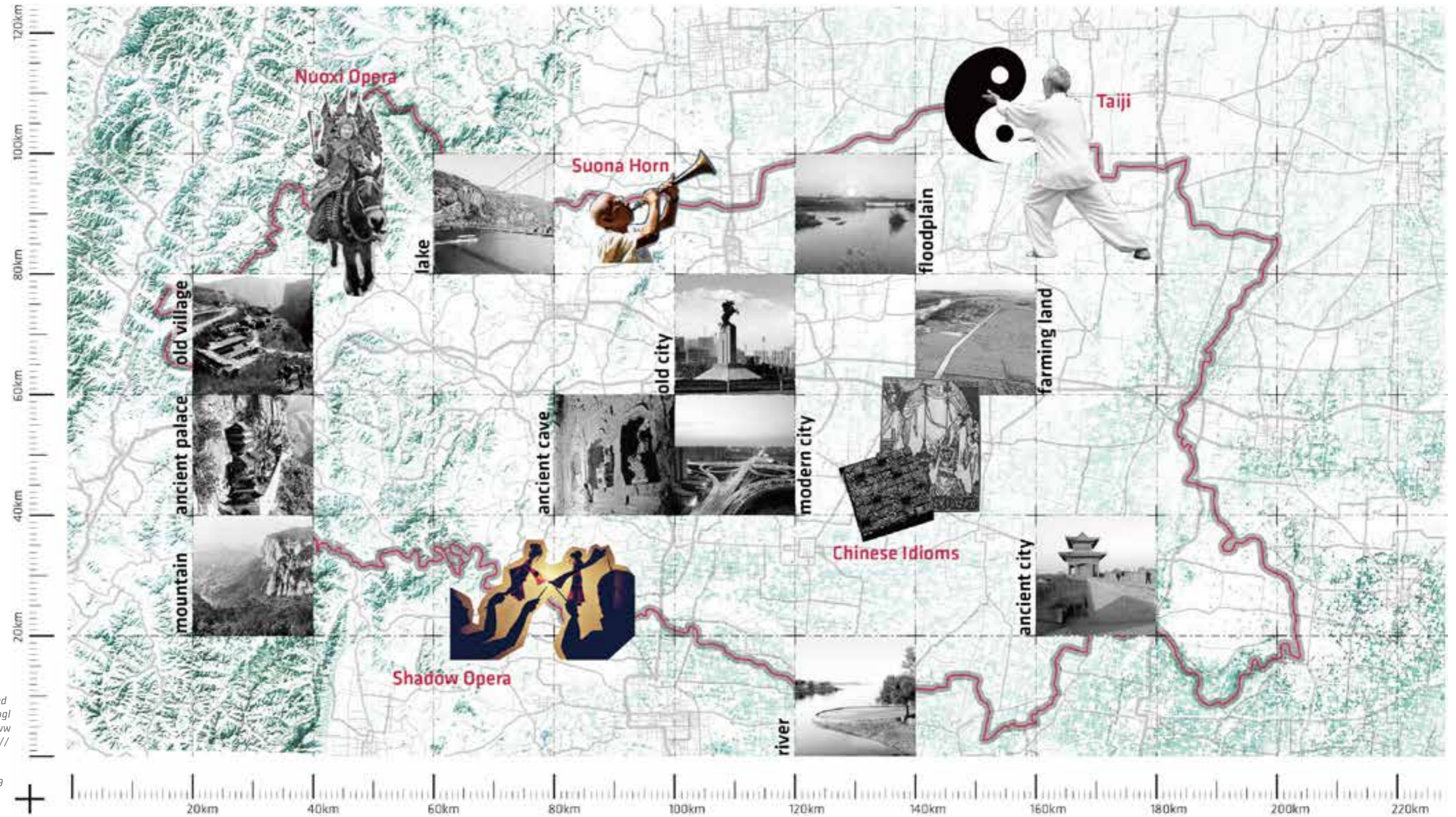


Fig. 2.58 Handan cultural system  
 Source: author, based on <https://www.google.com/maps>; <http://www.resdc.cn/DOI>; <https://zhidao.baidu.com/question/116636719.html>, year book 2019 Handan

With a history of more than 8,000 years of civilization and a history of more than 3,100 years, it is the earliest birthplace of millet in the world and the earliest discovery place of Chinese chicken and Central Plains walnut. The word "Handan", as a unique name for a city, has not changed for more than 3100 years. During the Warring States Period, as the capital of Zhao Kingdom for 158 years, it was the birthplace and growing place of Emperor Qin Shihuang. In the Western Han Dynasty, Handan was the royal capital of the Kingdom of Zhao (state of vassals). In addition to the state capital of Chang'an, Handan shared the "five commercial metropolises" with Luoyang, Linzi (now Zibo, Shandong), Chengdu, and Wancheng (now Nanyang, Henan).

During the Three Kingdoms, Wei, Jin and Southern and Northern Dynasties, Yecheng in the south of Handan (in Linzhang County today) was successively the ancient capital of the Six Dynasties of Cao Wei, Hou Zhao, Ran Wei, Qian Yan, Eastern Wei and Northern Qi. There are 1,584 idioms allusions from or related to Handan, and it is known as the "Chinese idioms and allusions". Handan is also the birthplace of Tai Chi and enjoys the reputation of "Tai Chi Holy Land". The long history has accumulated Nuwa Culture, Cishan Culture, Zhao Culture, Cao Wei Jian'an Culture, Beiqi Grotto Culture, Grand Canal Culture, Dream Culture, Cizhou Kiln Culture, Taiji Culture, Idiom Allusion Culture, Revolutionary Culture and other cultural systems.

## 2.4 Han Dan portrait and SWOT analysis



Source: Author, images from:  
<http://www.hbec.cn/WebSite/Info.aspx?ModelId=1a-Id=23666>  
<http://m.jiuwenlaw.com/zhishi/zhengdichaqian/2633.html>  
<https://coal.in-en.com/html/coal-2584207.shtml>  
[https://www.vhv.rs/viewpic/oRmib\\_transmission-tower-hd-png-download](https://www.vhv.rs/viewpic/oRmib_transmission-tower-hd-png-download)  
<https://www.kekeshici.com/shiciguilei/jingdian/2432.html>  
<https://tech.sina.com.cn/roll/2019-05-11/doc-ihvnews1246494.shtml>  
<http://m.picaow.cn/jzxx/article267.html>  
<https://ftrsk.com/wp-content/uploads/2016/12/jijiplan6.png>

### Rich cultural and historical resource

Ten thousand years ago, ancient humans have settled in the Handan area already. Three thousand years of city history gave it a unique cultural heritage.

### Solid foundation for industries and agriculture

As a traditional heavy industry and agricultural city, Handan contains a lot of natural resources and fertile land. It also transports a large amount of steel, coal, grain and vegetables. to other parts of the country.

### Great potential for tourism

Ten thousand years ago, ancient humans have settled in the Handan area already. Three thousand years of city history gave it a unique cultural heritage.

### Convenient transportation system

Handan has rich landscape patterns, many historical relics, and intangible cultural heritage. In 1994, Handan was selected as a national historical and cultural city.

### Not well protected history and local culture

Decades of relying on heavy industry development has made Handan not paying enough attention to the protection of history and culture.

### Lack of advanced science and high-tech institutes

There are few high-tech research institutions and high-level universities in Handan. Therefore, there is no platform for high-tech talents

### Environmental pollution and unsustainability

The North China Plain is one of the most severely polluted areas in the world. The long-term development of heavy industry has worsened the air quality in Handan.

### Inadequate introduction of new industries

Surrounded by many big cities, Handan's own advantages are not obvious, so it is not able to attract high-tech industries. Therefore, Handan is in a passive position in regional development.

### High speed railway and inter-city railway

The construction of high-speed railways and inter-city railways has reduced people's travel costs and provided more opportunities for people, resources, and capital to flow to Handan.

### Spatial regeneration

A series of spatial regeneration strategies implemented by Handan have achieved some good results, which stimulated the enhancement of Handan's urban vitality.

### Industrial transition

The wave of industrial transformation provides Handan with an opportunity to eliminate high-pollution and high-energy-consuming industries and develop new sustainable industries.

### Regional planning integration

The development of the Beijing-Tianjin-Hebei metropolitan area and the Central Plains urban agglomeration will inevitably provide Handan with some new development opportunities, such as undertaking the spillover of industries and capital from big cities.

### Competition in the mega-region

The competitive relationship between cities will grab Handan's resources, including but not limited to labor, talent, natural resources, etc. As a result, Handan was further marginalized in the region.

### Decreasing urban attractiveness

The decline of industries, the outflow of population, and the obstruction of the new industries' introduction, these reasons have all contributed to the continuous decline of the attractiveness of Handan.

### Industrial transition

At present, Handan's economic pillar is still heavy industry. But in the wave of industrial transformation, this highly polluting and energy-intensive industry is bound to be eliminated.

### Floating out population

Attracted by many factors in big cities, young people in Handan are more inclined to go to big cities to find work and life opportunities instead of staying in their hometowns. The construction of high-speed rail will accelerate this process.

## 2.5 Problem statement

Handan is an ancient city with thousands of years of human civilization. It was also one of the first batch cities in ancient China that developed due to the centrality of regional politics. For thousands of years, it has been a representative of fashion and prosperity, and it has nurtured a diverse and splendid cultural system. However, with the advancement of China's industrialization process, although it has a profound cultural heritage, Handan was planned as a resource-based industrial city due to its rich mineral deposits and advanced production technology. **Since the establishment of Handan Steel Plant in 1956, this city began to rely on resource-based industries to development. This has caused two industrial problems.** On the one hand, like other resource-based cities, **Handan's industrial structure is unitary**, heavy industries is prosperous, but other industrial sectors have not developed well. On the other hand, **the local culture that could have contributed to the development of the city has not been well valued**, and the corresponding cultural and creative industries have not played their roles. In addition, due to the long-term development of heavy industries, the human settlement environment of Handan has been destroyed, making Handan one of the cities with the worst air quality in the world.

In 2002, the central government began to promote "new industrialization" throughout the country, the core content of which is to promote the informatization and sustainable industrial upgrading. According to the 2013 "China Resource-Based Industrial City Transformation Development Plan", **Handan, as a "developed resource-based industrial city", was required to undergo industrial transformation to achieve the goal of sustainable development.** Obviously, Handan was not ready because of long-term dependence on heavy industrial development. **Handan's pillar industries, the steel and coal industries, were required to reduce production, and many small companies were shut down.** To make matters worse, due to defects in the industrial structure, Handan does not have the basis to attract emerging industries, Handan's economy was severely hindered. This has caused **a decline in industrial vitality**. Not only that, the city has ignored the training of talents and the support of scientific research institutions. **The lack of support from advanced technology has made Handan's industrial transformation road more bumpy.** Factory shutdowns have also led to the emergence of many abandoned post-industrial spaces in cities, which are undergoing or will undergo urban regeneration. **However, most urban regeneration projects are based on economic interests, and do not fully respect social needs and local cultural presentation.**

In 2012, in the "new urbanization" proposed by the central government, "urban agglomerations" were used as a concept to strengthen urban cooperation. **However, under the catalysis of the market economy, the competitive relationship between cities in the region still exists widely and intensified.** Handan is surrounded by four mega-regions, with national-level regional central cities such as Beijing, Tianjin and Zhengzhou around it, as well as provincial capitals such as Jinan, Shijiazhuang, and Taiyuan. **Compared with the strong attractiveness of these bigger cities, Handan does not have enough capacity to attract investment, talents and other development resources, nor can it retain young laborers because of the decline in industrial vitality, lack of good employment opportunities, and un-friendly entrepreneurial environment.** Under such circumstances, Handan's industrial development and the agglomeration of emerging industries become more difficult, and it cannot truly integrate into the development of the mega-region and benefit from it. **Within the Handan municipality area, the cooperative relations between counties are not close enough.** In order to pursue economic interests, competition relations also exist widely among counties. The fragmentation of culture and geographical inconvenience have also exacerbated this problem.

In 2015, the promulgation of the "Beijing-Tianjin-Hebei Coordinated Development Plan" meant that a new world-class mega-region was born in the northern China. In this plan, Handan, as a functional expansion zone in the southern part of the region, undertakes the task of relieving the manufacturing industry and other industrial sectors relieved from Beijing. To this end, Handan established the "Southern Hebei New District" as a new industrial zone, some factories relocated from big cities such as Beijing and Tianjin have already settled in. **However, Handan still has not cultivated an industry with local characteristics that reflects the glorious culture, which has made its status in the mega-region continue to decline, becoming a simple industrial "evacuation area", and its bright culture has begun to fade.**

## 2.6 Problematization framework

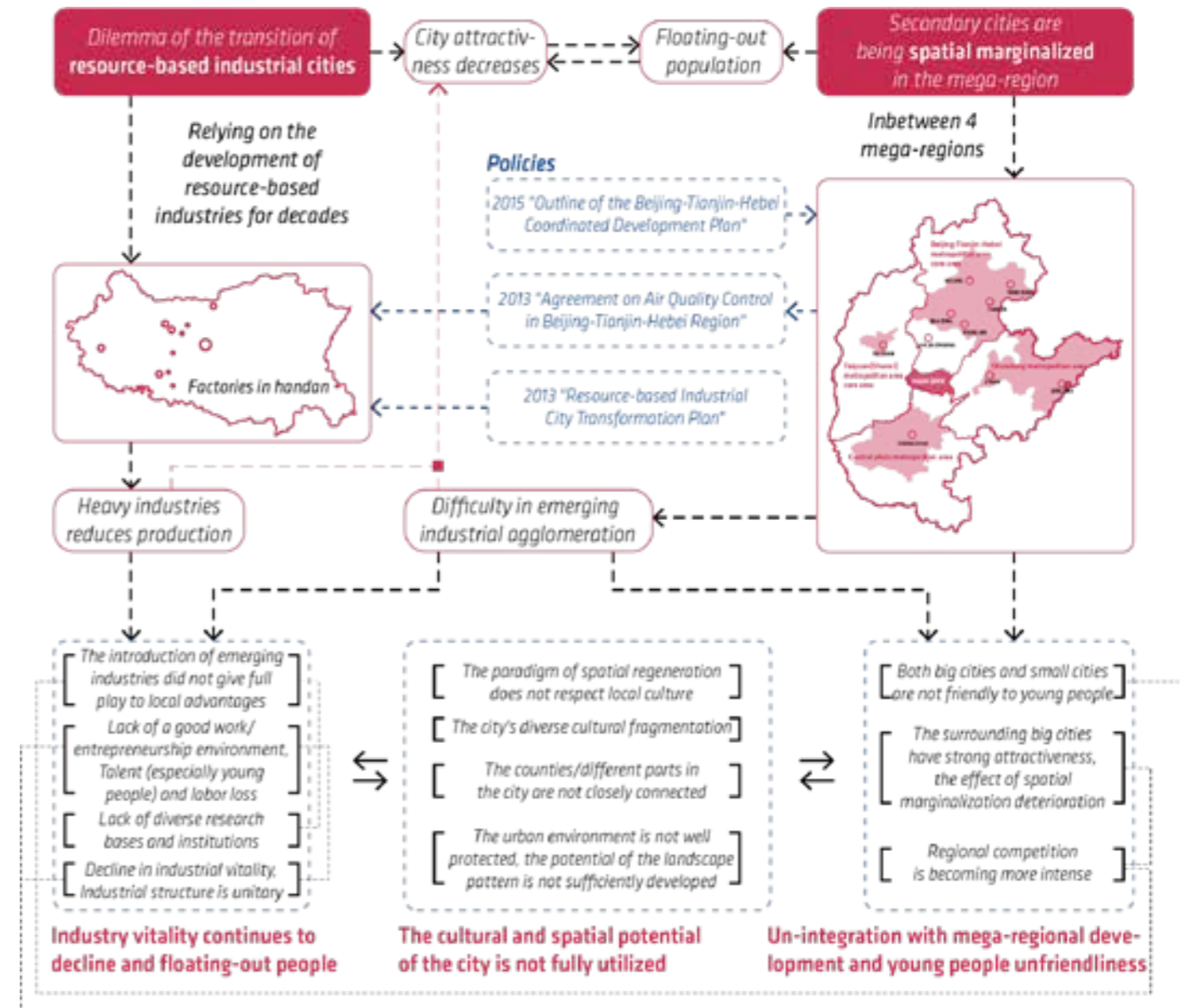


Fig. 2.61 Problem statement Source: author

**In summary, Handan, like many other resource-based industrial cities, is facing a transformation dilemma. Worse, the special location (in the middle of the four mega-regions) aggravates the disadvantage of this secondary city in the regional competition. Because of the dual dilemma, Handan has two problems. From the perspective of industry, the vitality of the industry is decreasing and the population is exodus; from the perspective of regional development, Handan is not truly integrated into the regional system and is continuously spatially marginalized. In addition to these two issues, Handan has an excellent landscape pattern, spatial resources and cultural advantages, but these potentials are not fully respected and utilized in the process of urban development.**



# B Research Aim

Traditional secondary resource-based industrial city, Photoed by J. Xu, 2021, Edited by author.

## 2.7 Research aim: transformation and integration

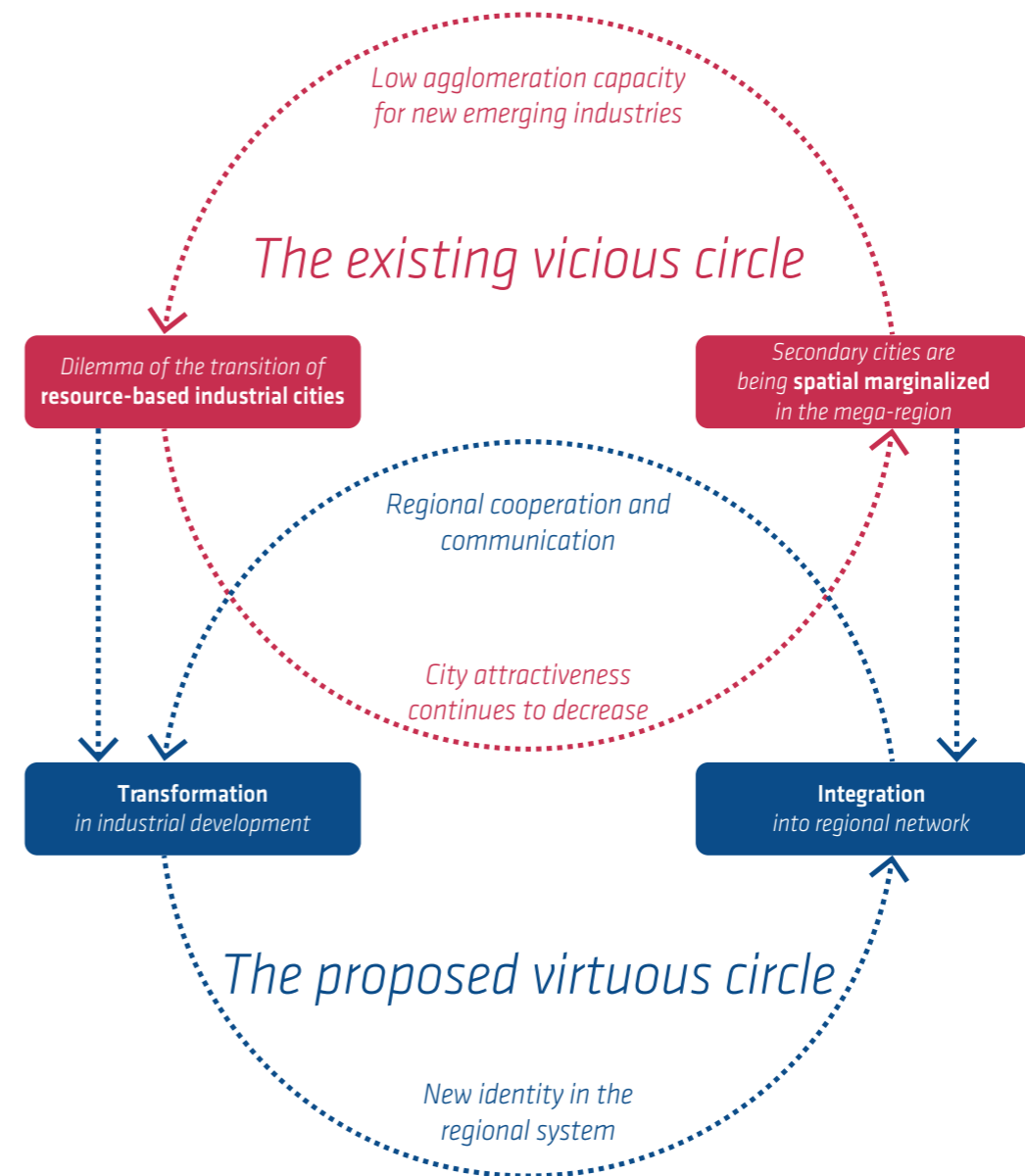


Fig. 2.62 From the existing vicious circle to the proposed virtuous circle Source: author

In view of the opportunities and challenges that Handan City faces as defined in the problematization framework, **the research aim of this project is to explore and give play to the advantages of space resources and local culture to solve the development dilemma of Handan.** First of all, this research aims to use the rich local cultural resources to cultivate new creative industries to make up for the economic losses caused by the restricted development of resource-based industries, and to enhance the vitality of urban industries, especially the tertiary industry. In this process, spatial elements are considered to be important indicators to achieve this goal. The landscape pattern and industrial heritage of Handan provide opportunities for industrial upgrading from a spatial perspective.

On the basis of industrial upgrading, more entrepreneurial potential and employment opportunities are created. The implantation of the third place, the optimization of the public transportation system, the improvement of the urban environment, and the development of innovative industries, these factors will help **the increase of the attractiveness of Handan, and therefore continue to attract people and talents to settle in, forming a virtuous city cycle.** Such a virtuous circle in the city will enhance the vitality of the industry, improve the environment for working, living and traveling in the city. **This will also promote the sustainability of the region.** Handan will take a new role to participate in regional development, share the pressure from large cities' development, and truly realize regional cooperation.

## 2.8 Opportunities for industrial transformation - innovative urbanism

### 2.8.1 Theoretical underpinning- innovation as a key driver of economic change

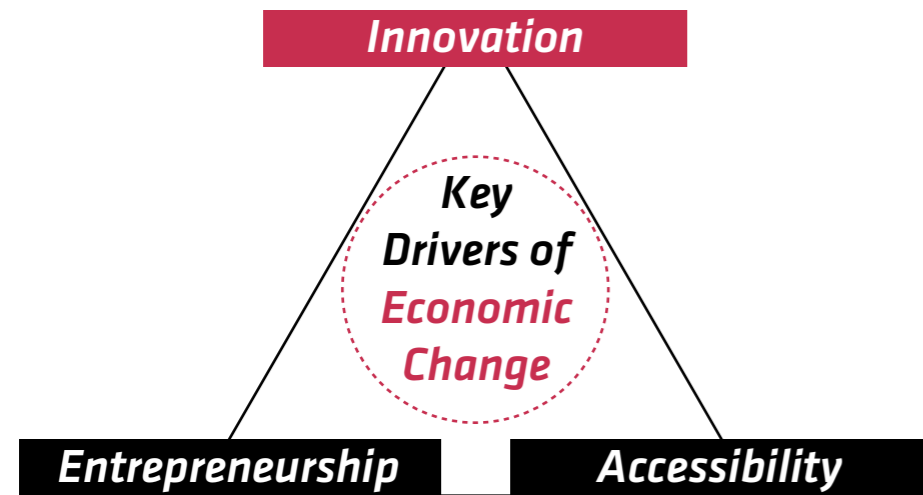


Fig. 2.63 From the existing vicious circle to the proposed virtuous circle  
Source: author, adapt from KEY CONCEPTS IN ECONOMIC GEOGRAPHY  
By Yuko Aoyama James T. Murphy Susan Hanso

According to the theory of economic geography, there are three main factors that promote urban economic transformation: innovation, entrepreneurship, and accessibility. Innovation is considered to be the core and main driving force.

The most fundamental reason why innovation can promote economic transformation is technological revolution. In the course of history, technology has always been one of the most important economic growth factors. In today's development trend, innovation still occupies the leading position of economic reform, but its scope is not limited to technological innovation. Cultural innovation, institutional innovation, product innovation, etc. are also important components of the innovation system.

Entrepreneurship and accessibility also promote innovation. Entrepreneurship is an important link in the transformation from knowledge to productivity. On this basis, innovation (technology and knowledge) can flow into the market in the form of capital, thereby promoting economic transformation.

Accessibility is considered to be the most fundamental influencing factor that promotes innovation and economic transformation. In fact, the concept of accessibility is not only geographical and physical, it can also be applied to break down social and economic barriers. It is worth mentioning that with the development of informatization, virtual accessibility (Internet space) is also considered to be an important driving factor.

### 2.8.2 Theoretical concept-innovative urbanism

In 2019, an international urban planning conference with the theme of innovative urbanism was held in Singapore. This conference emphasized the importance of innovation in urban sustainability. In fact, although scholars have extensively discussed the innovation of urban planning and urban innovation activities in recent years, innovative urbanism is still not a well-defined academic concept. Generally speaking, there are two ways of innovative urbanism. One is to implant multiple innovative spaces in urban renewal planning and design to enhance the mobility of knowledge and technology and stimulate the atmosphere of urban innovation. This method is used in places such as Singapore and San Francisco. Implementation has already begun. In addition, another mode is the innovation and intelligence of urban life. For example, smart cities have extensive practice and exploration all over the world.



Fig. 2.64 Implementation of innovative facilities  
Source: <https://www.cnu.org/publicsquare/2017/10/31/25-great-ideas-new-urbanism>

### 2.8.3 Key element of innovative urbanism

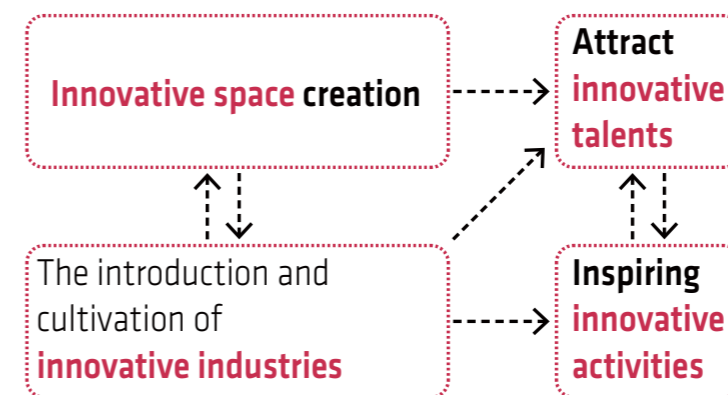


Fig. 2.65 Key element of innovative urbanism  
Source: author

In this project, innovative urbanism has a broader definition. It refers to the agglomeration of urban innovative elements, and through these elements to create a city's innovative atmosphere, to promote the development and transformation of the city's economy and industry. These elements of innovative urbanism mainly include:

**Innovative talent.** Talents are the core element to promote urban innovation, and they are practitioners of technological reform and advancement of knowledge. The accumulation of talents can greatly promote urban economic growth.

**Innovative industries.** Industry is an important platform for the practice of entrepreneurship, and it is also a platform for talents to carry out innovative activities. Industry is an institution that transforms innovation into productivity.

**Innovative activities.** Innovative activities, including innovative education, labor training, academic conferences, industrial seminars, etc., refer to various activities that can promote the spread of innovative awareness and the establishment of an innovative atmosphere.

**Innovative space.** Innovation space is the fundamental element of innovative industries and innovative activities, including physical space and virtual space.



## 2.8.4 Key element of innovative urbanism

	Innovative drivers	Evaluation indicators
<b>Core</b>	Creative group (Richard Florida, 2003; Andersson, A. E. 1985)	The third places for social interaction
		Flexibility in Place making
		Social networking
		Diversity of people
<b>Promoter</b>	Knowledge and technology (Keld Laursen, 2015)	Technology upgrading
		Knowledge flow
	Enterprises climate (Bob Jessop, 2016)	Space for start ups
		Investment attractiveness
		cooperation and communication
	Cultural activities and tourism (Martin Rønningen, 2010; Asheim B.T., & Gertier M.S. 2005)	Open marketism
		Tourism system
<b>Foundation</b>	Political support and governance (Frank Moulart, 2007; Liz Gosme, 2005)	Policy performance
		Livnig facility support
		Social insurance
	Accessibility (Yuko Aoyama, 2011)	Informative network
		Public transportation
		Full cover of infrastructure
	Environment quality	Air quality
		Bule& green structure
		Energy-clean

Fig. 2.66 Key element of innovative drivers  
Source: author

According to relevant theories of innovative city planning, innovative development, innovative industry transformation, etc., this project summarizes the drivers that can promote innovative urbanism. These drivers are mainly divided into three parts, core, promoter, and foundation. The core of innovative urbanism is the creative group (in this project), which is a broad concept that includes designers, artists, scholars, engineers and other individuals, non-governmental organizations and other social groups, and innovative industries. Knowledge, technology, and entrepreneurial spirit are important ways to promote innovative urbanism. In addition, scholars also believe that culture and tourism can also promote urban innovation to a large extent. The foundation includes three parts: policy, accessibility, and environmental quality, and it is the underlying structure that guarantees innovative urbanism.

## 2.8.5 Innovation in Beijing-Tianjin-Hebei mega region

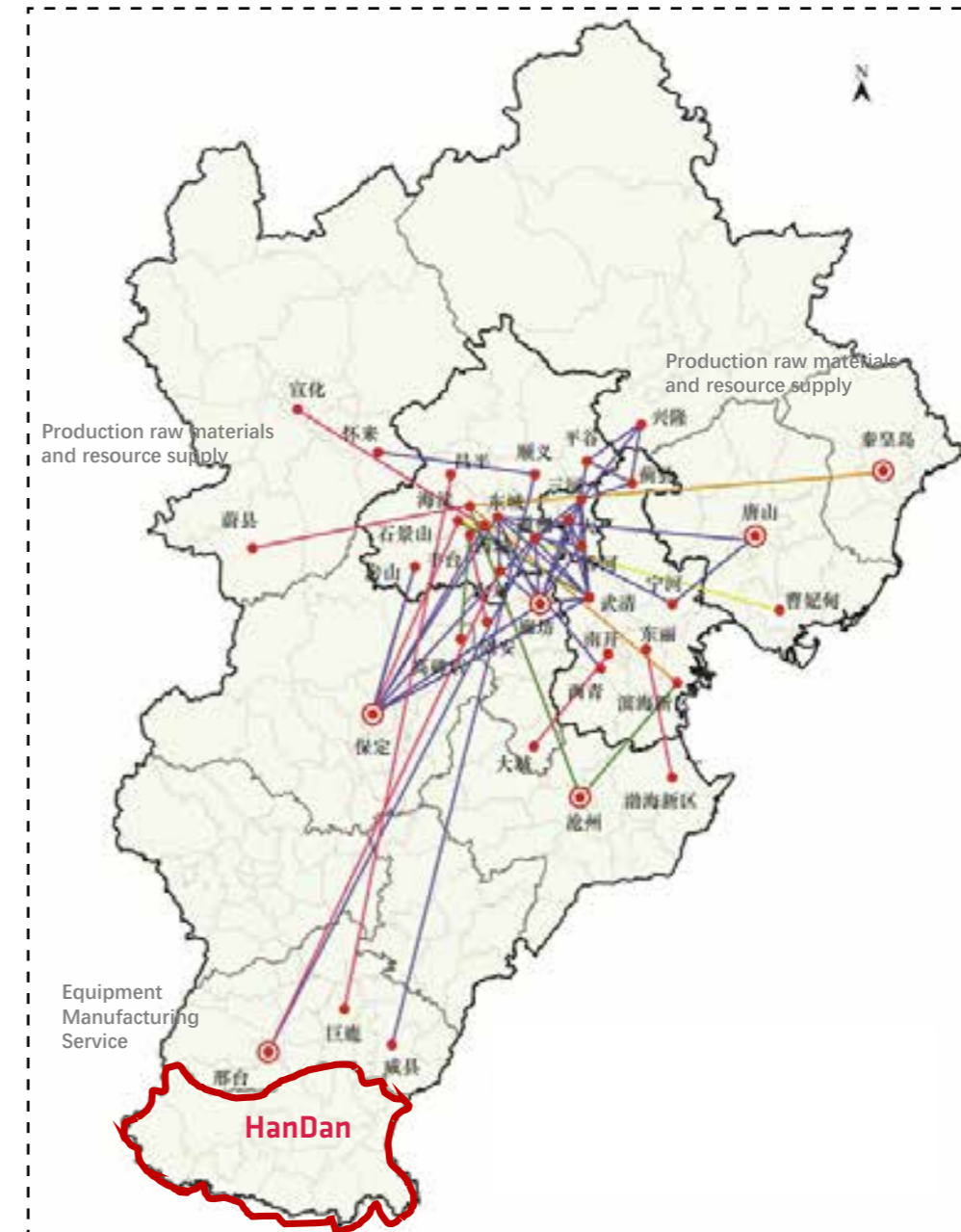


Fig. 2.67 Geographical distribution and industrial linkages of the innovation industry in Beijing-Tianjin-Hebei mega-region  
Source: <http://www.ecologica.cn/stxb/ch/html/2018/12/stxb201801120091.htm>

The Beijing-Tianjin-Hebei mega region is the most unevenly developed national mega region in China. Compared with the multi-centric urban agglomeration structure of the Yangtze River Delta and the Greater Bay Area, Beijing has an extremely high centrality in the BTH mega region. This has also led to regional innovation agents (universities, innovation industries, innovation institutions, etc.) in the BTH mega region that are clustered in Beijing and cities close to Beijing. As the ecological support area and equipment manufacturing base of the BTH mega region, Hebei Province has always lacked an innovation engine to drive the province's innovative urbanism. Handan, as the ancient regional innovative and creative center, its revival can drive the innovative transformation of the regional system of Hebei Province and the North China Plain.

## 2.9 Opportunities for industrial transformation - Regeneration of post-industrial sites

Industrial heritage is an industrial relic composed of production sites, living sites, and transportation systems. The International Industrial Heritage Protection Committee (TICCIH), China's "Wuxi Proposal" and other associations have all made academic definitions of the concept of industrial heritage. Generally speaking, industrial heritage is the sum of material and intangible cultural heritage preserved in the development process of industrialization. The development and utilization of industrial heritage is a kind of respect for industrial civilization, and it is also a great opportunity for cultural construction and tourism development.

### The multi-dimensional value of industrial heritage

**Historical Value.** In China, the industrial heritage reflects the development and change of the city. These buildings made great contributions to China's industrialization and urbanization in the 1950s and 1970s, and are an important part of the historical development of the city.

**Cultural Value.** Many scholars believe that industrial culture is an important part of Chinese culture. Industrial culture also decayed as the development of heavy industrial enterprises was restricted.

**Science and technology value.** Industrial heritage is the product of science and technology. Whether it is factory buildings or machinery and equipment, they all represent the advanced level of science and technology at that time, and they are one of the important platforms for exhibiting industrial science, technical science, and architectural science in a period of time.

**Transformation and development value.** Industrial heritage is cultural wealth as well as an industrial resource for transformation and development. Industrial heritage can become a space for the development of creative industries and cultural and artistic industrial bases, thereby promoting the transformation and development of social economy.

**Tourism and leisure value.** Culture is an important resource for tourism, industrial heritage belongs to modern cultural heritage, and nature is also a tourism resource. The tourism value of industrial heritage is manifested in two aspects. On the one hand, the unique resources of the industrial heritage itself; on the other hand, the shopping and leisure areas, hotels, restaurants, and art centers rebuilt based on the industrial heritage have high The tourist value. According to reports, more than 1,400 industrial heritage projects in France, including heritage museums and industrial bases, attract 20 million tourists every year.



Fig. 2.68-70 798 regenerative creative park of post-industrial sites  
Source: [http://blog.sina.com.cn/s/blog\\_55f14ff501017qpu.html](http://blog.sina.com.cn/s/blog_55f14ff501017qpu.html) [http://blog.sina.com.cn/s/blog\\_50f763a60101cpst.html](http://blog.sina.com.cn/s/blog_50f763a60101cpst.html)

## 2.10 Conceptual framework

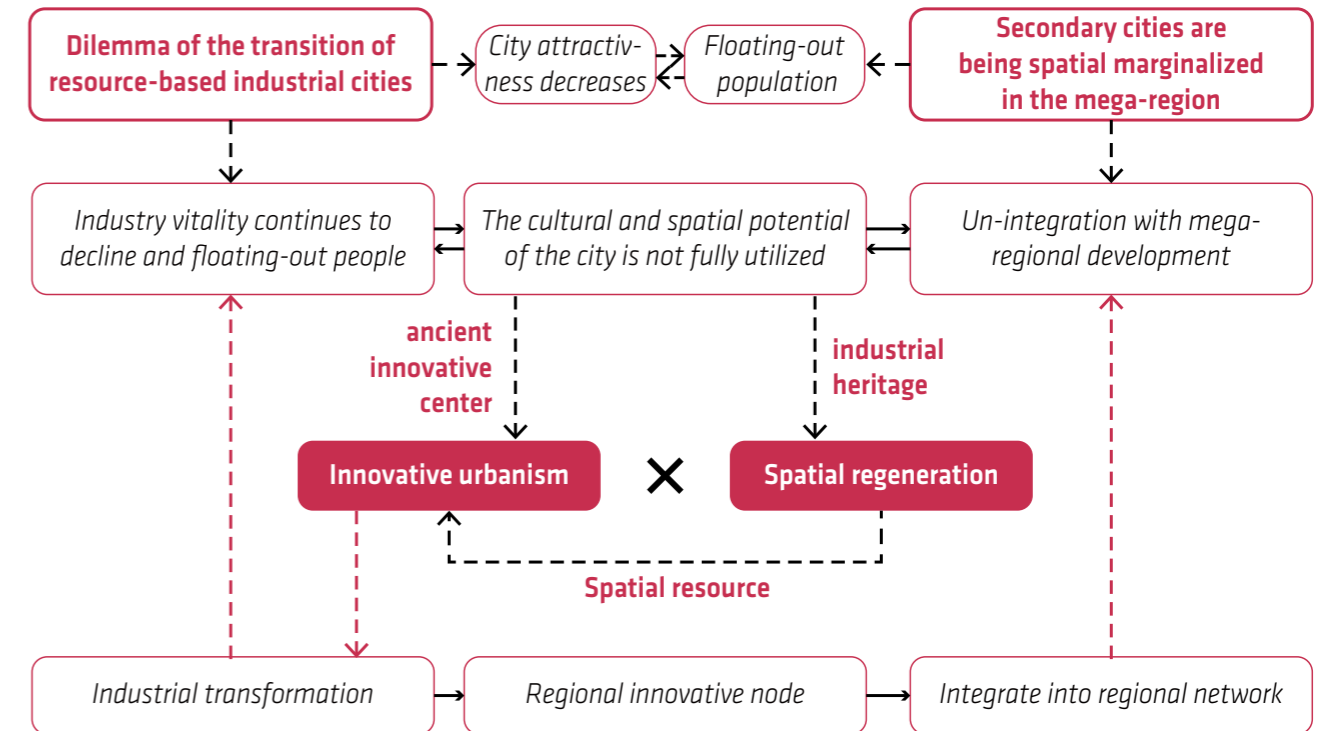


Fig. 2.71 Conceptual framework Source: author

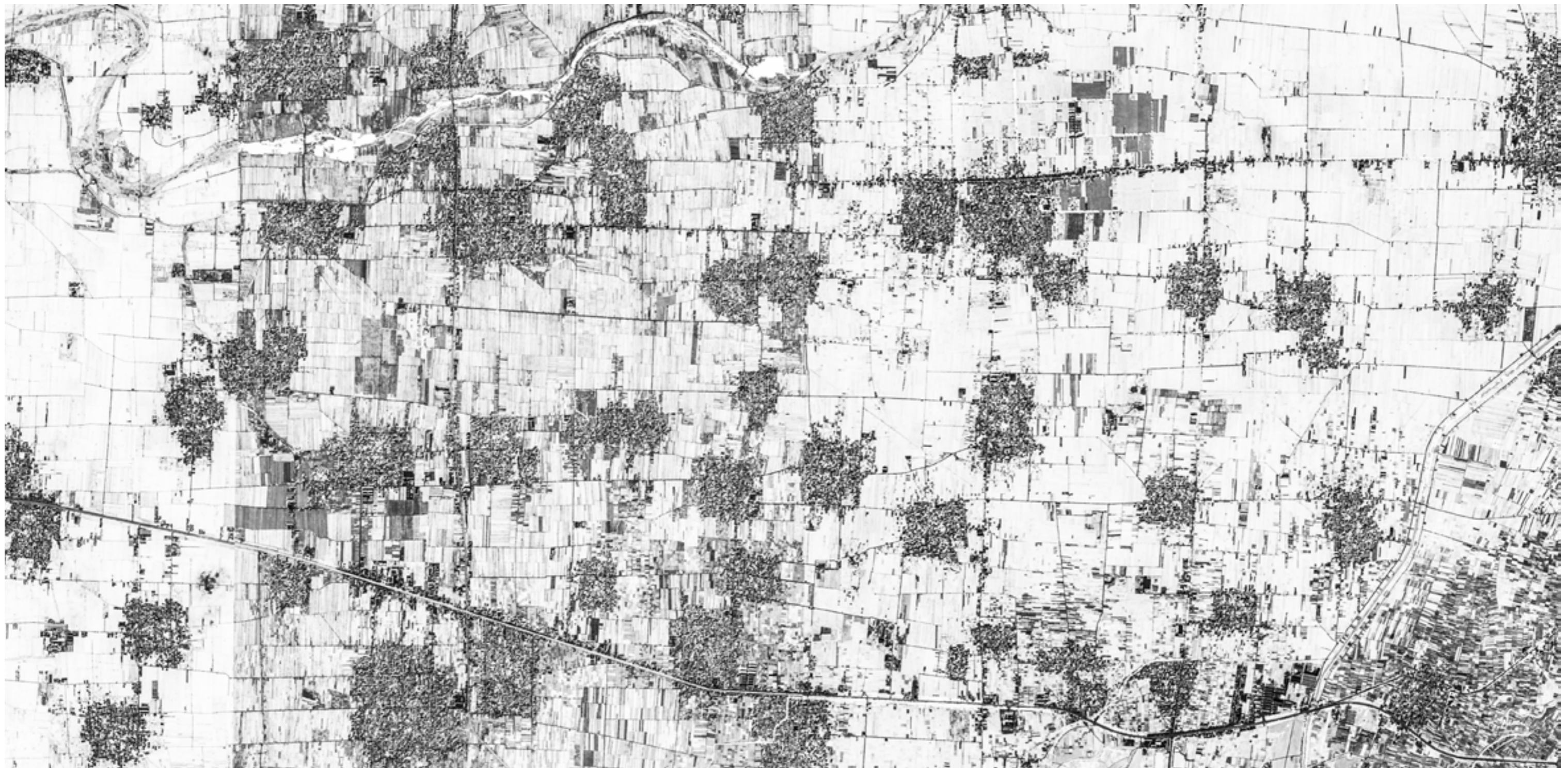
## 2.11 Research question

**Primary research question:**  
In the context of **regional competition**, how can **the (secondary) resource-based industrial cities** that are being **spatially marginalized** accomplish **industrial upgrading** and **integrate into the mega-region network** to benefit from it?

**Innovative urbanism** × **Handan: a second resource-based industrial city with thousands of years of history and culture** × **Spatial regeneration of industrial sites**

**Research question on Handan city:**  
Facing the double dilemma of regional spatial marginalization and difficulties in the industrial transition, how can **spatial regeneration of post-industrial sites** help Handan **transform from a traditional resource-based industrial city to an innovative metropolis?**

Fig. 2.72 Research question Source: author



## 3 Methodology

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### 3.1 Transformation and integration

#### 3.1.1 The existing vicious circle

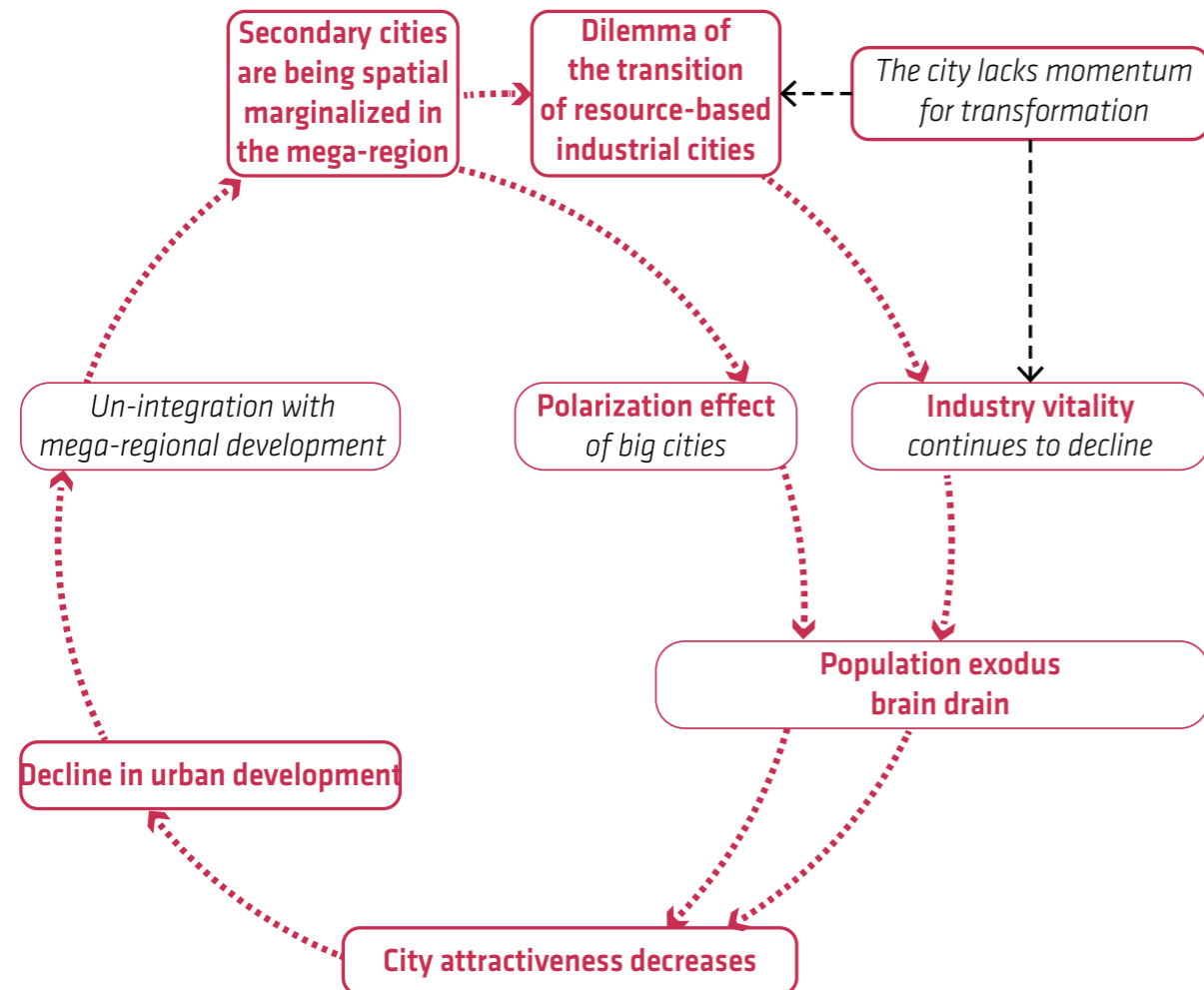


Fig.3.1 The existing vicious circle Source: author

The current urban development model of Handan is a vicious circle. Facing the dual dilemma of regional marginalization and the difficulty of transforming a resource-based industrial city, Handan lacks the ability to attract agglomeration of emerging industries, resulting in a decline in industrial vitality and a continuous outflow of population and talents. In mega-regions, the powerful polarization effect of big cities has also aggravated this phenomenon. Therefore, the attractiveness of the city is reduced, and it cannot be truly integrated into the development network of the mega-region. Furthermore, the effect of regional marginalization is aggravated.

#### 3.1.2 The proposed virtuous circle

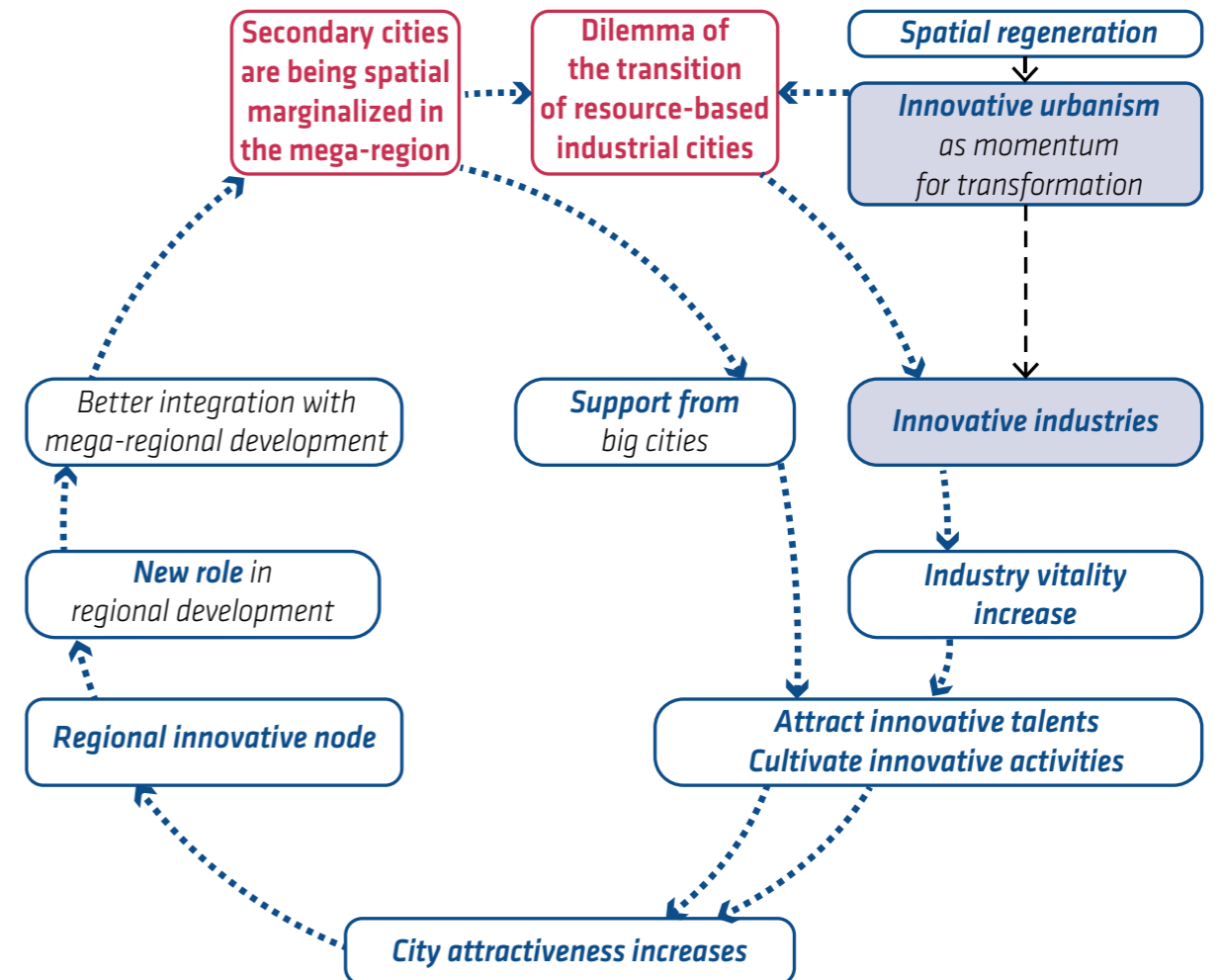
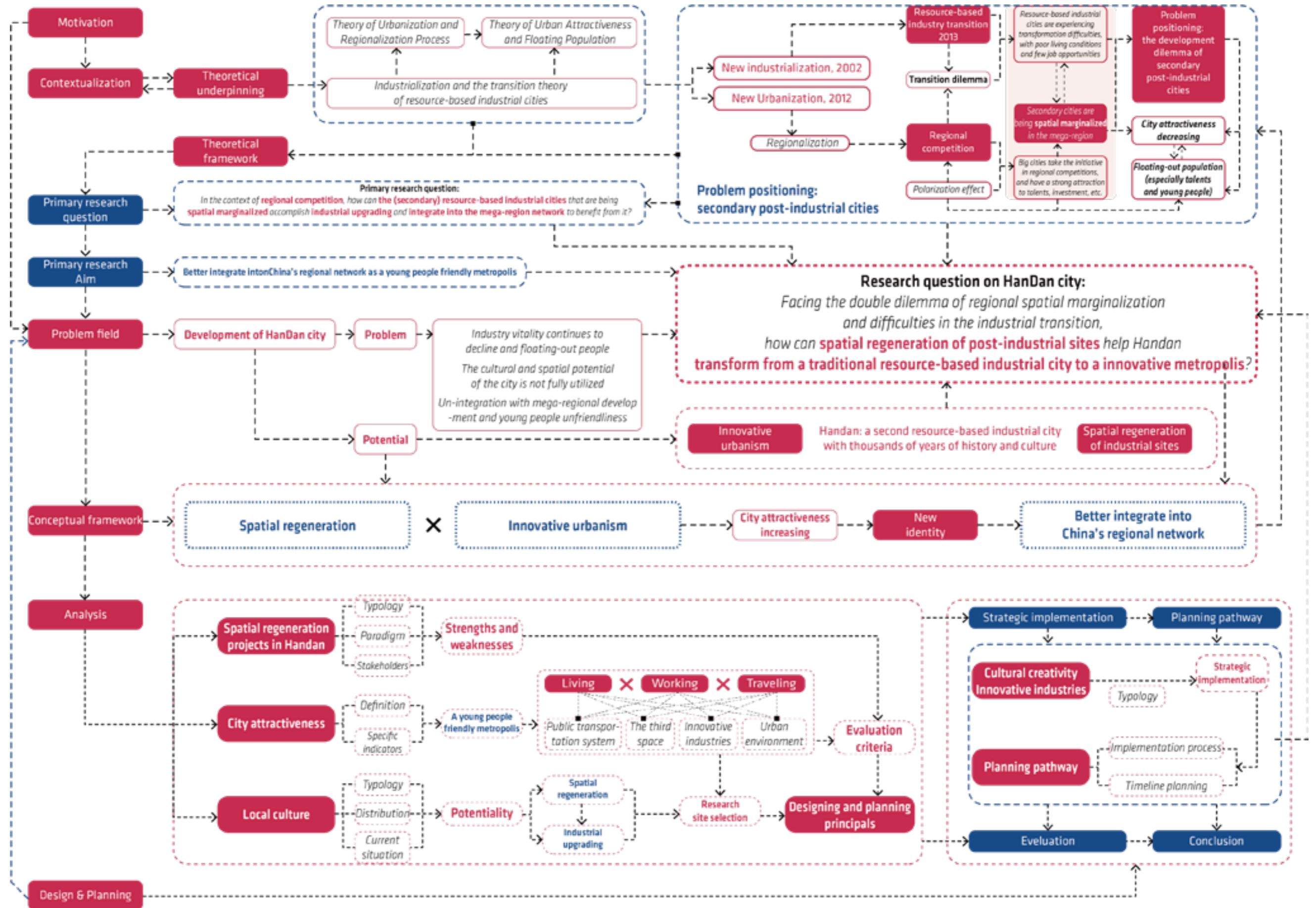


Fig.3.2 The proposed virtuous circle Source: author

The starting point of the research of this project is to transform the development of this vicious circle from the approach of strategic planning into a virtuous circle. Local culture and spatial resources are important potentials and opportunities for the development of Handan, which are also considered as the main concept of this project. Based on local culture and space resources, a number of cultural creativity and innovation industries have been cultivated, which will enhance the vitality of the industry and enhance the attractiveness of the city. On the basis of increasing the attractiveness of the city, promote the transformation of Handan's role in the region and better integrate into the Mega regional development network.

3.2 Research framework



### 3.3 Research question and sub research questions

**Research question on HanDan city:**  
*Facing the double dilemma of regional spatial marginalization and difficulties in the industrial transition, how can **spatial regeneration of post-industrial sites** help Handan **transform from a traditional resource-based industrial city to an innovative metropolis?***

**Sub-research question 1:**

*What **spatial consequences** did industrialization bring to Handan, and what **opportunities and potentials** that followed?*

**Sub-research question 2:**

*How to use the **key drivers for innovative urbanism** to create a **vision** for Handan with **multiple planning perspectives**?*

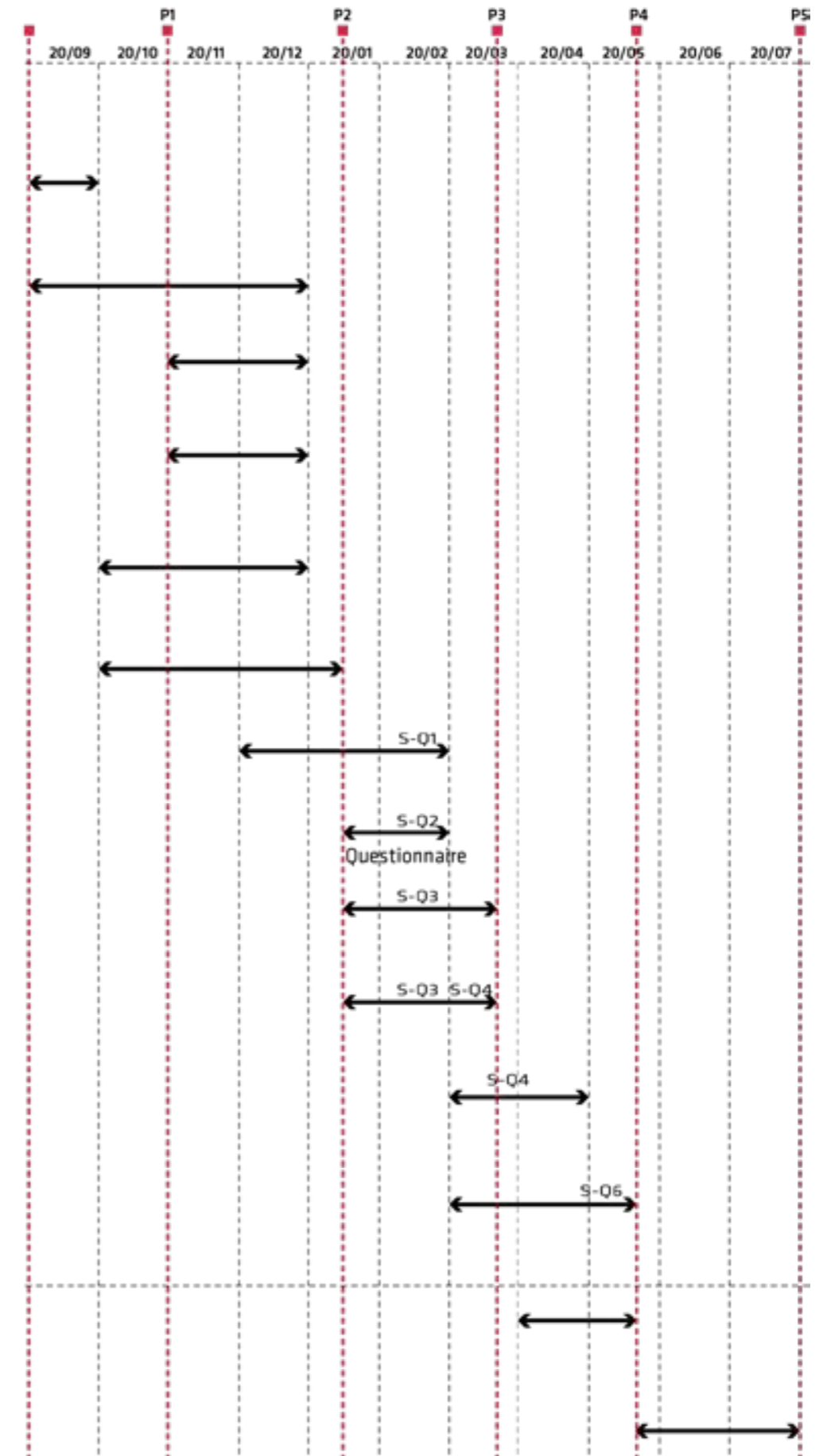
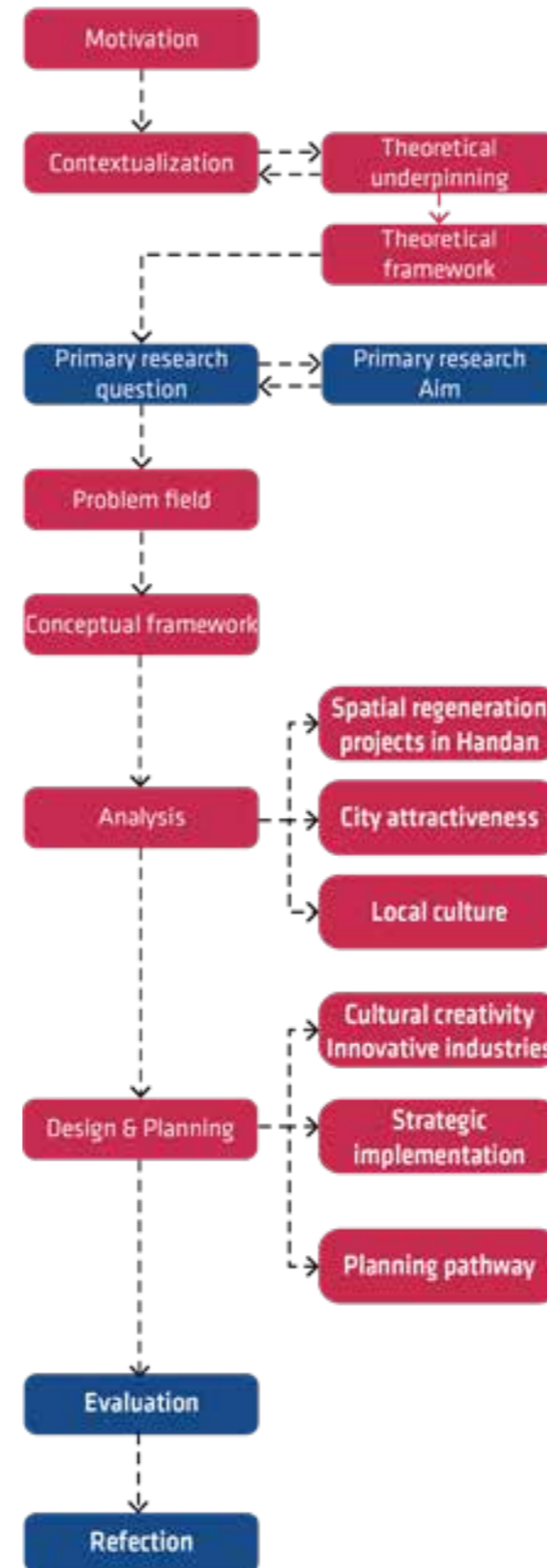
**Sub-research question 3:**

*What **regenerative strategies** can promote the transformation of innovative urbanism in Handan, and how can these strategies help the city **integrate into regional network**?*

**Sub-research question 4:**

*How can innovative urbanism strategies be **implemented spatially**, especially **at local scale**?*

### 3.4 Timeline



## 3.5 Method

### Sub-research question 1:

What **spatial consequences** did industrialization bring to HanDan, and what **opportunities and potentials** that followed?

**Local scale** **City scale** **Regional scale**

#### Question definition:

The first research question is an analysis of the status quo based on the conceptual framework. Spatial regeneration is one of the concepts of this project, and it is also considered as one of the opportunities to achieve the research aims. Therefore, this question first conducts analysis of the spatial consequence of industrialization in the Handan municipality area, based on this, the specific opportunities and potentials will be explored in this project, existing challenges and problem will be summarized.

#### Method to be applied:

The research methods involved in this question mainly include:

**Literature review:** study past research on Handan industrialization and summarize the research results;

**Policies census:** The Handan Municipal Government has issued some policies related to urban development and industrialization;

**Site survey:** conduct on-site surveys of selected typical spatial regeneration projects to check the development status;

**Mapping:** Use maps to depict the opportunities and challenges of the city.

#### Resource and material:

*Existing literature on the research of industrialization in Handan City*

*Industrialization policies provisions issued by the Handan Municipal Government*

*Data collected by field survey*

*Interview record*

*geographic data and GIS database*

#### Research objectives:

The goal of this research question is mainly to analyze the impact of the industrialization process on Handan, especially what kind of spatial consequences it has caused, based on these spatial consequences, explore the opportunities and challenges that exist, and think about how it can help planning and design.

#### Expected outcomes:

*A summary of the impact of the industrialization process on Handan;*

*An atlas of the spatial consequences of industrialization development;*

*The results of the SWOT analysis, and a summary of the potential for spatial development and renewal.*

### Sub-research question 2:

How to use the **key drivers for innovative urbanism** to create a **vision** for HanDan with **multiple planning perspectives**?

**Local scale** **City scale**

#### Question definition:

The second question is mainly based on theoretical research, summarizing key drivers for innovative urbanism, and exploring how these innovative drivers should be applied to the urban development and industrial transformation of Handan. On this basis, set the project's vision for the future development of Handan, and a multi-dimensional planning perspective to promote innovative urbanism in Handan.

#### Method to be applied:

The research methods involved in this question mainly include:

**Literature review:** study past research on Handan spatial regeneration and summarize the research results;

**Policies census:** Summarize the relevant regulations and goals of Handan City's policies on urban innovation;

**Site survey:** conduct on-site surveys of selected typical spatial regeneration projects to check the development status;

**Interview:** Interview with stakeholders (government officials, users, planners, indigenous people);

**Mapping:** Use maps to depict the opportunities and challenges of the city.

#### Resource and material:

*Innovative urbanism policies issued by the Handan Municipal Government*

*Literatures and previous studies on innovative urbanism*

*Data collected by field survey*

*Interview record*

#### Research objectives:

The research objective of this research question is to explore how to apply innovative urbanism drivers to the vision of Handan's strategic planning, and define a multi-perspective planning perspective to pursue the realization of innovative urbanism vision. Therefore, this research question will be divided into two parts. First, through theoretical research, summarize the detailed drivers of innovative urbanism, and define its related standards and influencing factors. Second, explore how these drivers affect the strategic planning in this project.

#### Expected outcomes:

*A summary of the innovative drivers for the strategic planning of HanDan;*

*An evaluation criteria for innovative urbanism;*

*Vision and planing perspectives for innovative urbanism of HanDan.*

### Sub-research question 3:

What **regenerative strategies** can promote the transformation of innovative urbanism in HanDan, and how can these strategies help the city **integrate into regional network**?

**Local scale** **City scale** **Regional scale**

#### Question definition:

This question mainly studies the regenerative strategy to promote Handan's innovative transformation, which is based on the planning vision. These strategies not only promote Handan's innovative transformation, but also help Handan integrate into the regional development system with a new identity.

#### Method to be applied:

The research methods involved in this question mainly include:

**Case study**

**Mapping:** Region mapping;

**Pathway designing:** From the dual perspectives of time and space, explore the pathway of planning and development;

**Stakeholder analysis:** Discuss the stakeholders that may be involved in the implementation of the plan and explore the relationships between them;

#### Resource and material:

*Maps and evaluation criteria for innovative urbanism in HanDan*

#### Research objectives:

The purpose of this research question is to formulate a strategic plan for the transformation of Handan's regional development domain, combining Handan's own development potential and innovative drivers, and propose specific strategies for innovative transformation.

#### Expected outcomes:

*Strategies for innovative vision in HanDan;  
Master plan for regional strategic planning.*

### Sub-research question 4:

How can innovative urbanism strategies be **implemented spatially**, especially **at local scale**?

**Local scale** **City scale**

#### Question definition:

The last question will continue to zoom in and eventually reach the local scale. On the one hand, test planning Whether the strategies can really promote Handan's innovative urbanism and promote its completion of industrial transformation and integration into the regional development system, on the other hand, explore the stakeholder engagement in combination with the existing stakeholder system. Eventually form the path of implementation and the steps to realize the planning vision.

#### Method to be applied:

The research methods involved in this question mainly include:

**Case study:** study the local case and applied designing tools.

**Mapping:** Region mapping;

**Pathway designing:** From the dual perspectives of time and space, explore the pathway of planning and development;

**Stakeholder analysis:** Discuss the stakeholders that may be involved in the implementation of the plan and explore the relationships between them;

**Scenario building:** Establish a sequence of scenarios and discuss how strategy implantation can promote the city to become a regional innovative node.

#### Resource and material:

*Master paln of regional strategic planning*

*Mapping for current situation in local scale (and related GIS database)*

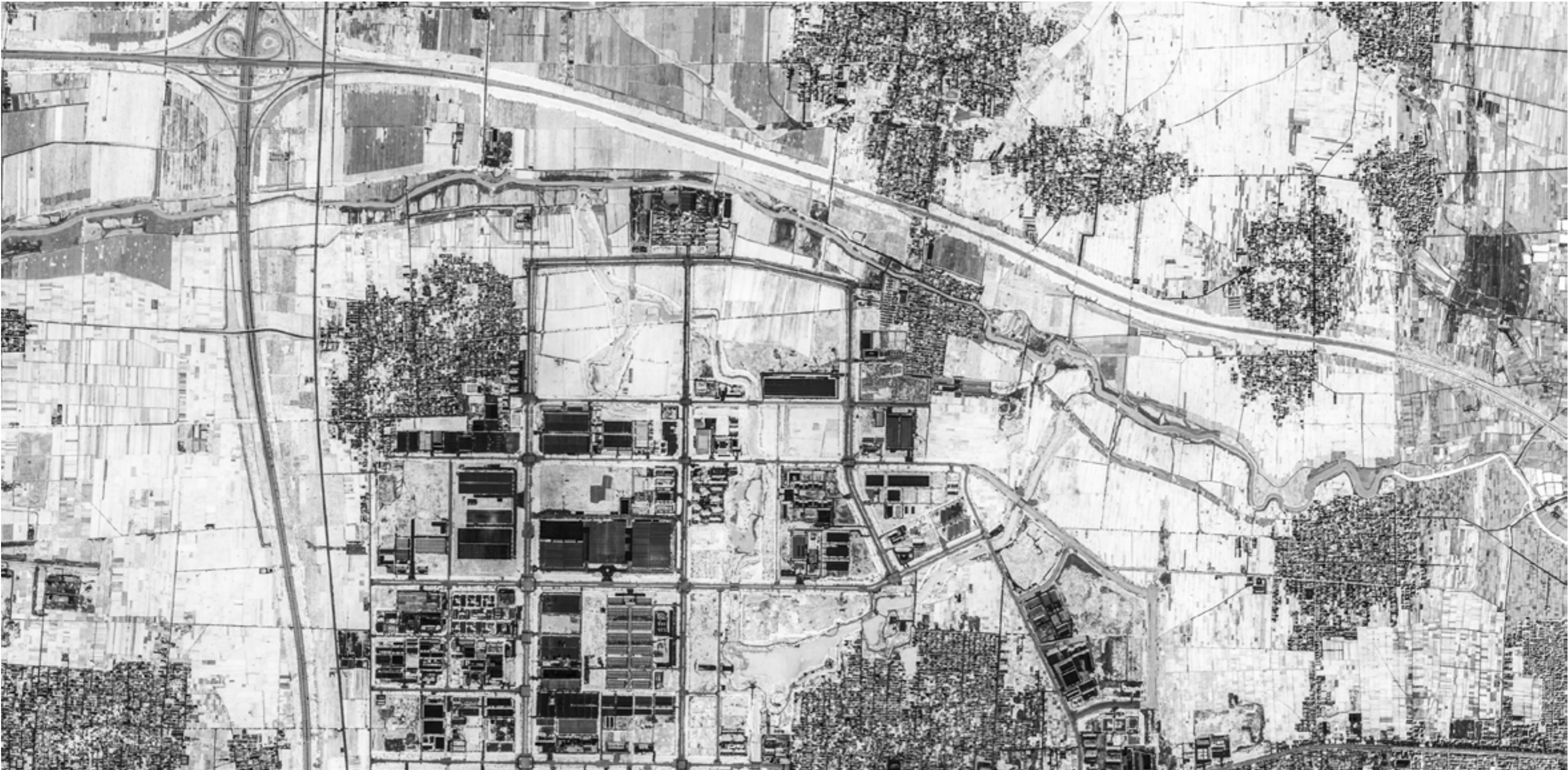
#### Research objectives:

The purpose of this research is to develop planning strategies, and to explore how regional-scale planning strategies can play a role at the local scale to truly promote innovative urbanism. On this basis, designing principles and spatial tools will be defined and applied in local scale design.

#### Expected outcomes:

*Spatial principles and tools for strategic implementation at local scale;  
Site design for local scale.*

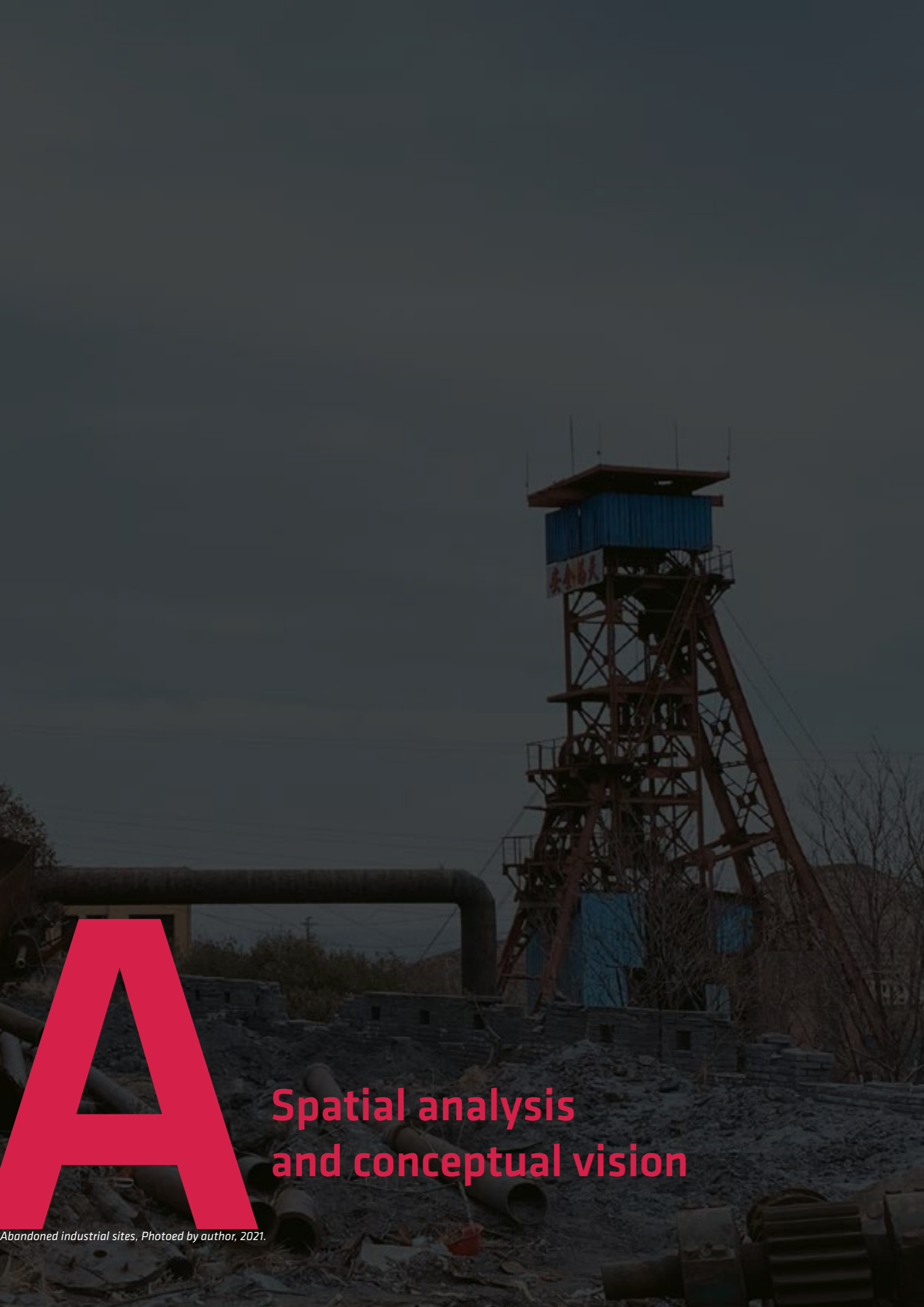




## 4 Conceptual vision

**A** Spatial analysis and conceptual vision

**B** Strategic planning



**A**

## Spatial analysis and conceptual vision

Abandoned industrial sites, Photoed by author, 2021.

### 4.1 Spatial analysis and key concept

#### 4.1.1 Geological distribution of natural resources in the Beijing-Tianjin-Hebei mega region

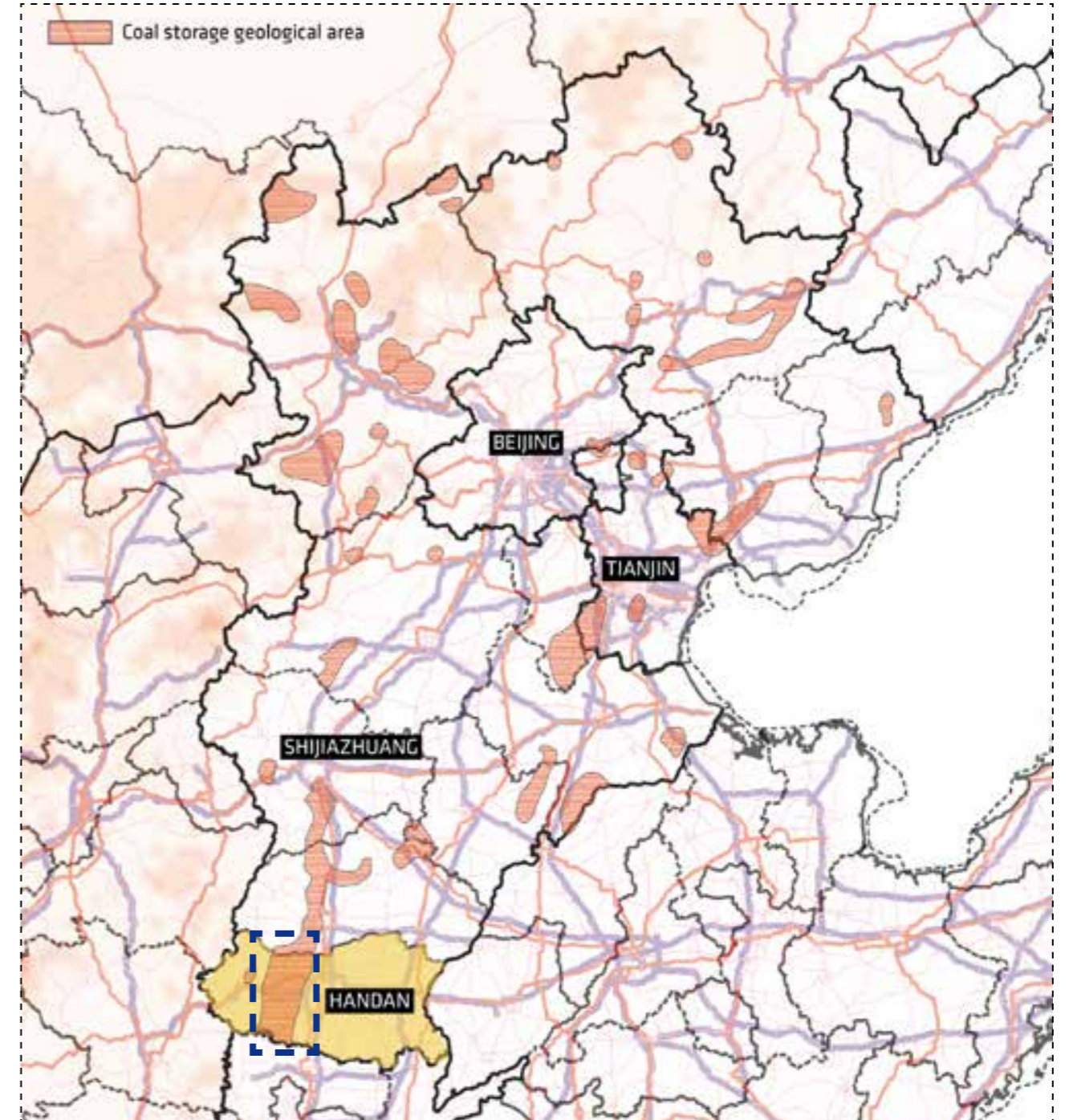


Fig. 4.1 Geological distribution of natural resources in the Beijing-Tianjin-Hebei mega region Source: author, based on Geological Bureau of Hebei Province, <https://www.google.com/maps>, <https://www.openstreetmap.org/#map=7/35.804/117.081>, <http://www.resdc.cn/DOI>, <http://www.bjchp.gov.cn/cpqzf/315734/tzgg27/1277896/index.html>, <https://baijiahao.baidu.com/s?id=1665848376923457743&wfr=spidero-for=pc>

Hebei Province is rich in natural resources, coal and steel are the most important components. In central and southern Hebei Province (North China Plain), the geological distribution of natural resources presents a belt shape, extending from Shijiazhuang (the capital of Hebei Province) in the north to Henan Province in the south, running through the entire Handan municipal area. It has provided a solid resource base for the industrialization of this area.

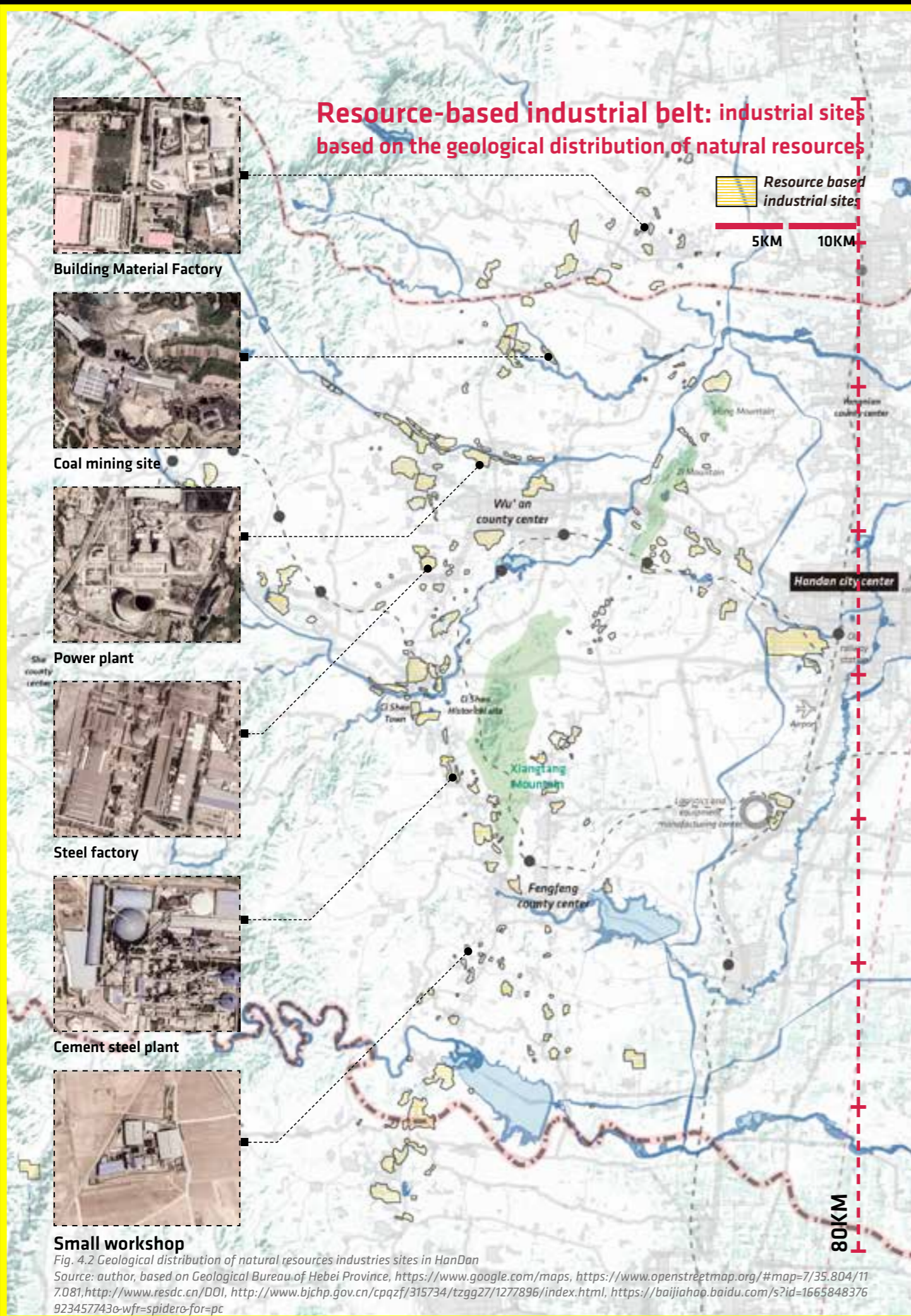


Fig. 4.2 Geological distribution of natural resources industries sites in Handan  
 Source: author, based on Geological Bureau of Hebei Province, <https://www.google.com/maps>, <https://www.openstreetmap.org/#map=7/35.804/117.081>, <http://www.resdc.cn/DOI>, <http://www.bjchp.gov.cn/cpqzf/315734/tzgg27/1277896/index.html>, <https://baijiahao.baidu.com/s?id=1665848376923457743e-wfr=spidero-for=pc>

#### 4.1.2 The development of the industrial belt

In the 1950s, Handan was hoped to develop into a resource-based heavy industry city because of its abundant reserves of natural resources. As mentioned earlier, resource-based industrial enterprises tend to be closer to the regions where the resources are geologically distributed. Most of the resource-based industrial enterprises in Handan are located in this geological resource belt. In addition to large state-owned enterprises, many private factories have also appeared in large numbers, including illegal small industrial workshops. The type of industry is dominated by high-polluting enterprises such as coal, steel smelting, thermal power generation, and construction materials. **Due to the prosperity and development of heavy industry, this belt once contributed more than 70% of the GDP of the entire municipal area.**



Fig. 4.3 Industrial belt construction [https://www.sohu.com/a/340272423\\_750659](https://www.sohu.com/a/340272423_750659)

After 2013, under the influence of the policy of restricting the development of resource-based industries in the Beijing-Tianjin-Hebei region, **the enterprises in this belt were gradually shut down or moved to other areas. This once prosperous industrial belt has gradually been abandoned.**



Fig. 4.4 Industrial belt construction <https://www.ybzhcn.com/news/detail/61280.html>

#### 4.1.3 Concept: from an industrial belt to an innovative belt

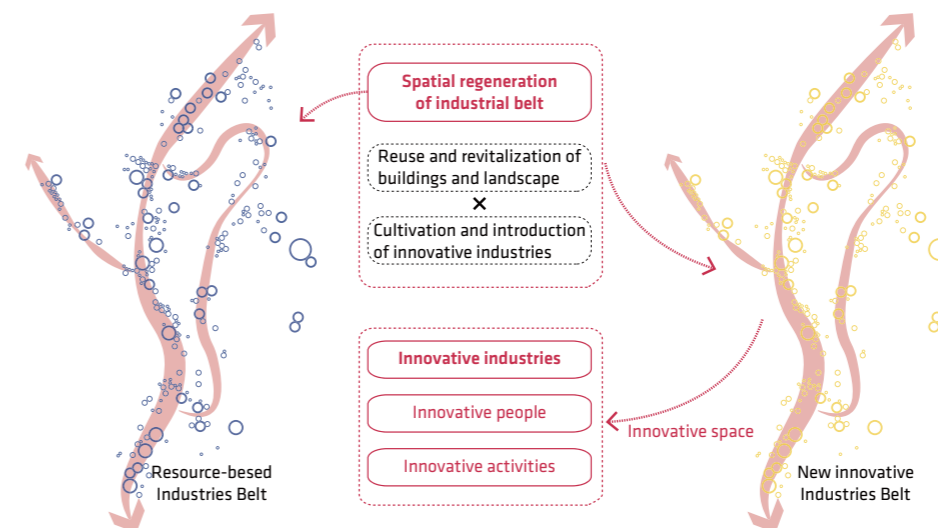


Fig. 4.5 Concept: from an industrial belt to an innovative belt  
 Source: author

**The core concept of this project is the transformation and revival of the industrial belt, from a resource-based industrial belt to an "innovative belt" enriched with innovative industries, innovative talents, innovative activities, and innovative space, thus playing the role of a driver and promoting innovative urbanism and industrial transformation of the city. In this process, the space in the industrial zone, including but not limited to industrial buildings, landscapes, and natural environments, will be reused. On the basis of space regeneration, innovative industries will be introduced and cultivated, thereby promoting the accumulation of innovative talents and the occurrence of innovative activities.**

## 4.2 Spatial analysis – industrial belt in the municipal area

### 4.2.1 The relationship between industrial belts, built-up areas, and administrative divisions

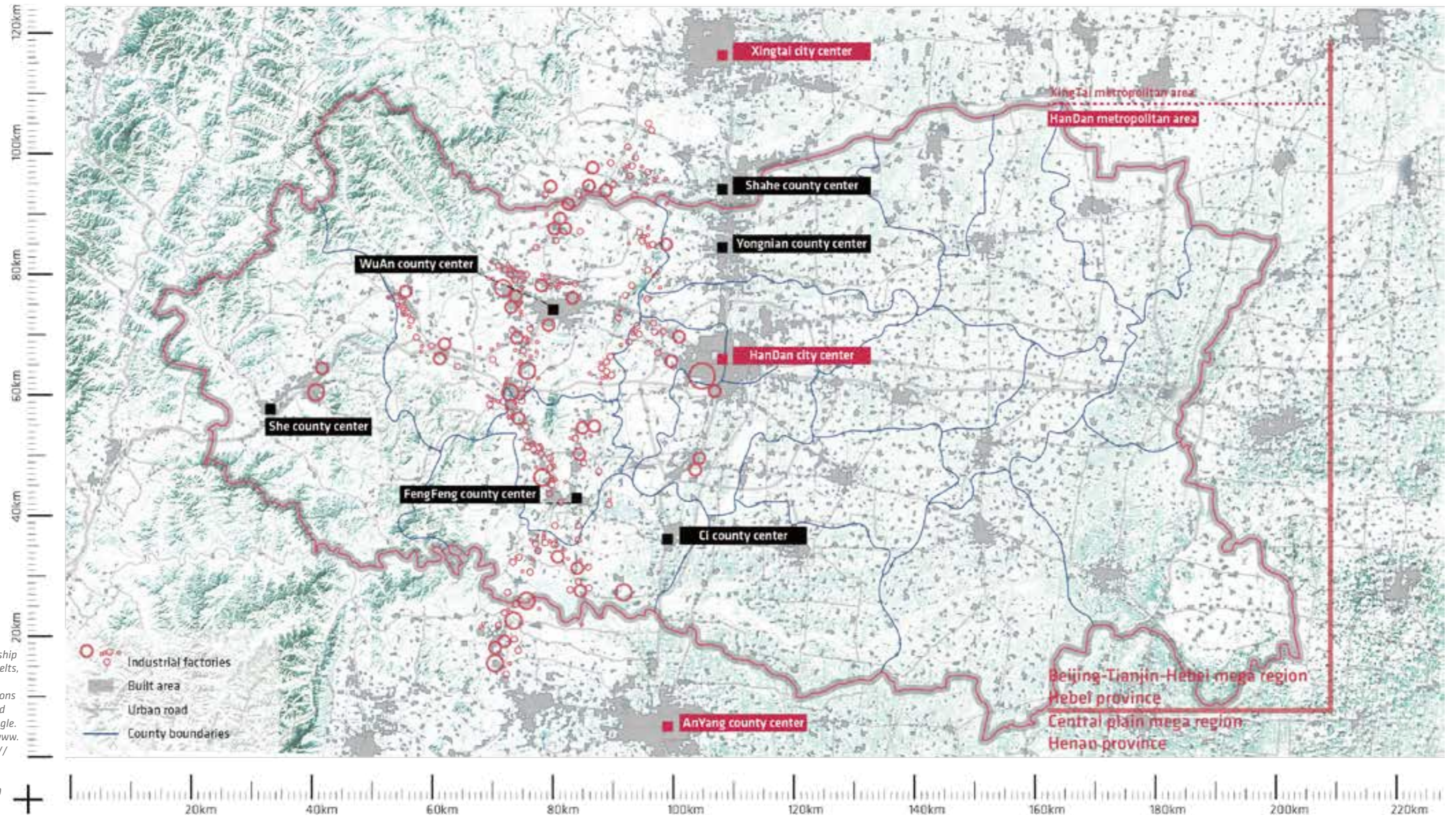


Fig. 4.6 The relationship between industrial belts, built-up areas, and administrative divisions  
 Source: author, based on <https://www.google.com/maps>; <http://www.resdc.cn/DOI>, <https://zhidao.baidu.com/question/116636719.html>, year book 2019 HanDan

The construction of factories on this belt does not seem to be affected by administrative divisions. Most resource-based enterprises pass through the peri-urban areas of Wu'an County and Fengfeng District from north to south, which are also linked to county centers and Handan City center. In addition, the northern part of this belt extends to the Xingtai municipal area (which belongs to the Beijing-Tianjin-Hebei mega region together with Handan), and it extends south to the Anyang municipal area (which belongs to the Central Plains mega region). It presents the characteristics of cross-regional distribution.



## 4.2 Spatial analysis – industrial belt in the municipal area

### 4.2.2 The relationship between industrial belts, and urban road system

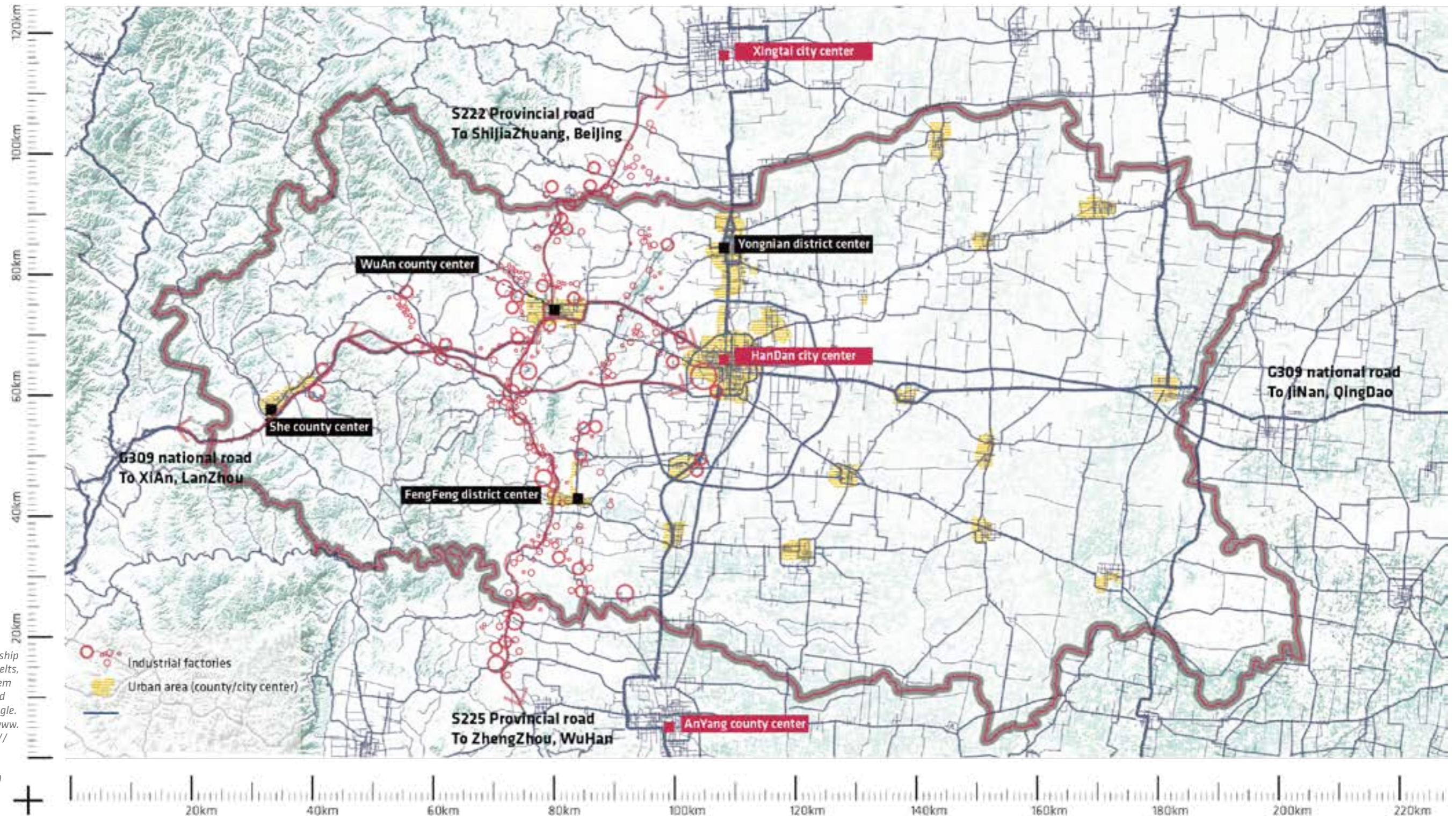


Fig. 4.7 The relationship between industrial belts, and urban road system  
 Source: author, based on <https://www.google.com/maps>; <http://www.resdc.cn/DOI>; <https://zhidao.baidu.com/question/116636719.html>, year book 2019 HanDan

The provincial road No. S222 connects the factories on this industrial belt and also makes good connectivity with urban area and town area. In addition, some city-level roads, county-level roads and small roads have also enhanced the accessibility of this area and formed a road system with perfect borders. The photo on the right shows the scene of the S222 road.



## 4.2 Spatial analysis – industrial belt in the municipal area

### 4.2.3 The relationship between industrial belts, and public transportation

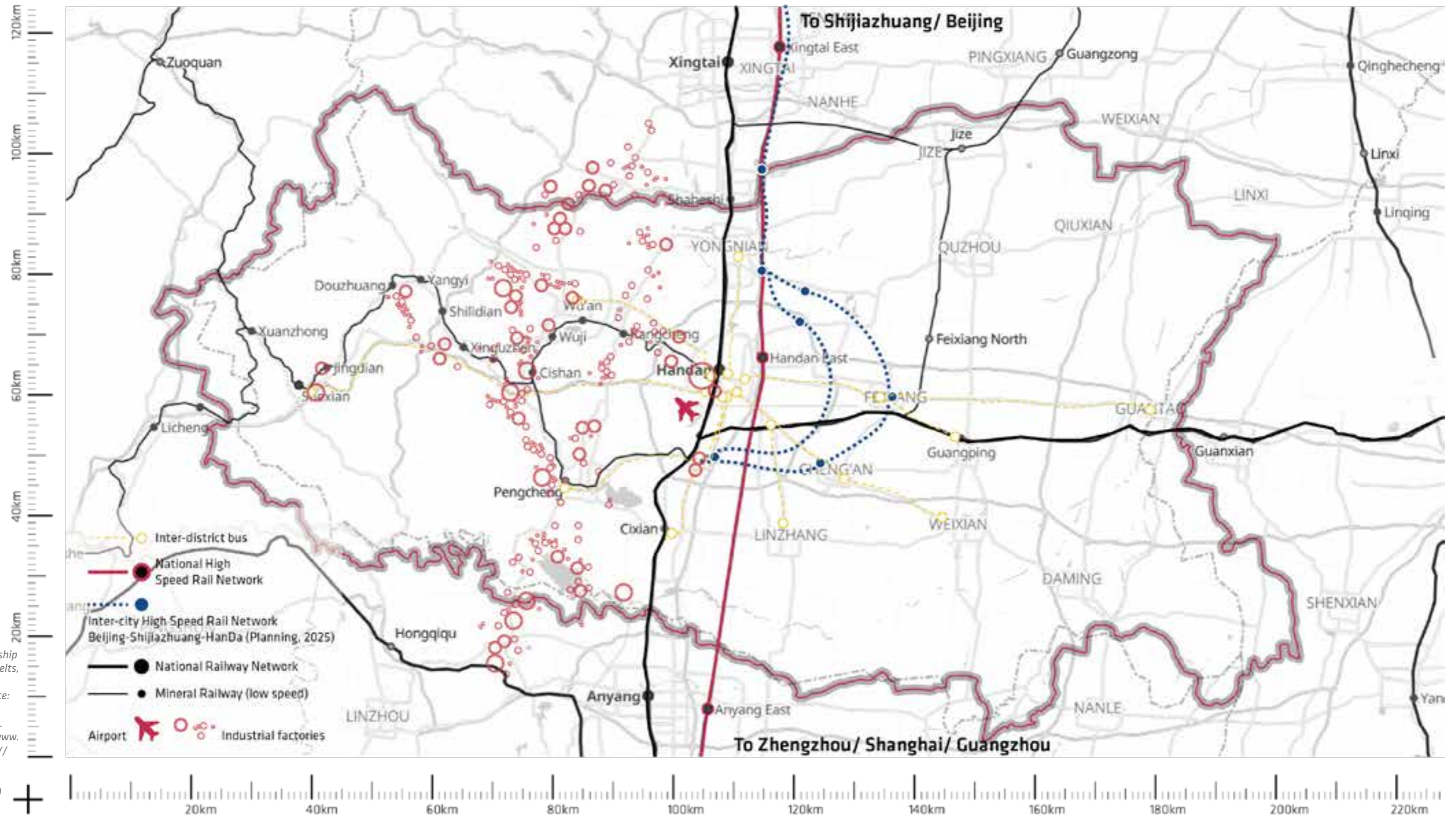


Fig. 4.8 The relationship between industrial belts, and public transportation Source: author, based on <https://www.google.com/maps>; <http://www.resdc.cn/DOI>; <https://zhidao.baidu.com/question/116636719.html>, year book 2019 Handan

In the 1960s, for the transportation of products from the mining areas, a train track was established to connect the city center with various mining areas and towns. Until today, this train track is still in operation, but it is used as a track for low-speed, slow-moving trains to carry passengers. There is only one train per day between the city center and these post-industrial towns. The photo on the right is the scene of the vehicle running. The high-speed railway system of Handan City mainly passes through the west side of the municipal area and cannot serve this area.



## 4.2 Spatial analysis – industrial belt in the municipal area

### 4.2.4 The relationship between industrial belts, and local cultural sites

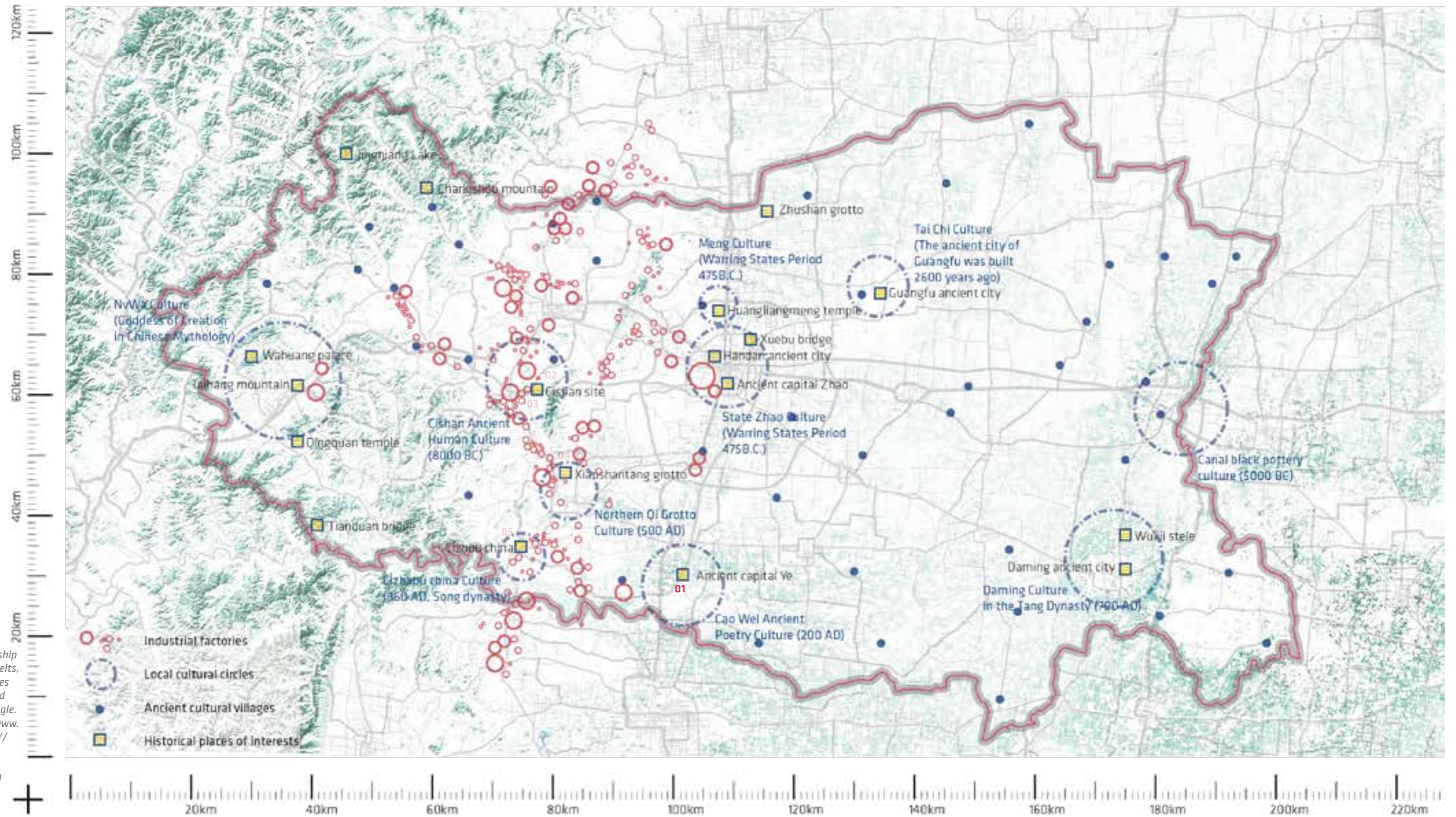


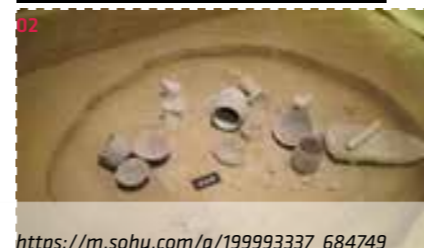
Fig. 4.9 The relationship between industrial belts, and local cultural sites  
 Source: author, based on <https://www.google.com/maps>; <http://www.resdc.cn/DOI>; <https://zhidao.baidu.com/question/116636719.html>, year book 2019 HanDan

As early as 8,000 years ago, ancient humans settled in this land of Handan. Thousands of years of civilization development history has made Handan rich in historical relics, and it has also nurtured different cultural circles. The industrial belt runs through many cultural circles, such as Cishan Culture, Cizhou Kiln Culture, and Tangshan Culture. It is worth mentioning that **most scholars believe that "industrial development" since the 1950s is also an important culture in China.**

Capital Ye (Wei Dynasty) Tower (Reconstruction)



Cishan Cultural Heritage (in the museum)



Cishan Cultural Site



Xiangtangshan Grottoes Heritage



Cizhou Kiln Historical Site



## 4.2 Spatial analysis – industrial belt in the municipal area

### 4.2.5 The relationship between industrial belts, and landscape

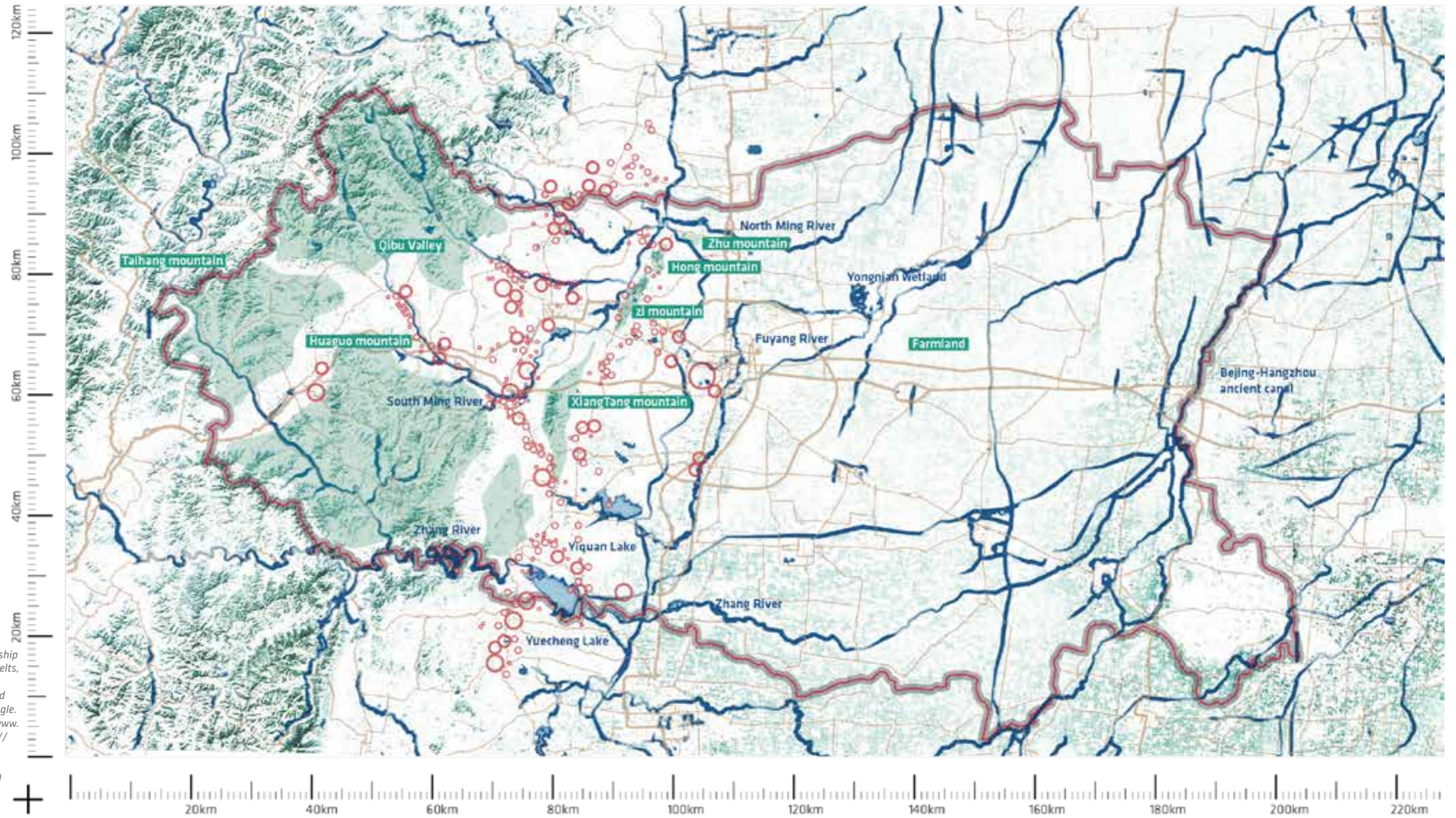


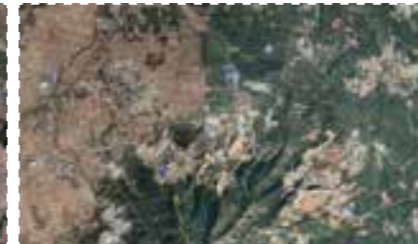
Fig.4.10 The relationship between industrial belts, and landscape  
 Source: author, based on <https://www.google.com/maps>; <http://www.resdc.cn/DOI>; <https://zhidao.baidu.com/question/116636719.html>, year book 2019 Handan

The industrial belt is located between the mountainous area in the west and the eastern plain, which makes this area rich in landscapes. The landscape in this area are mainly divided into four categories: **1 Mountain**, The industrial belt surrounds the important tourist area of Handan, the Xiangtang Mountain. The western part of the industrial belt relies on Along the Taihang Mountains. **2 Lake**, both of the two large lakes in Handan are located on this belt. **3 Rivers**, mainly North Ming River and South Ming River, both of which are seasonal rivers with small flow, suitable for daily entertainment landscapes. **4 Farmland**, as a plain city, Handan has a large amount of farmland.

Farmland



Mountain



River



Lake





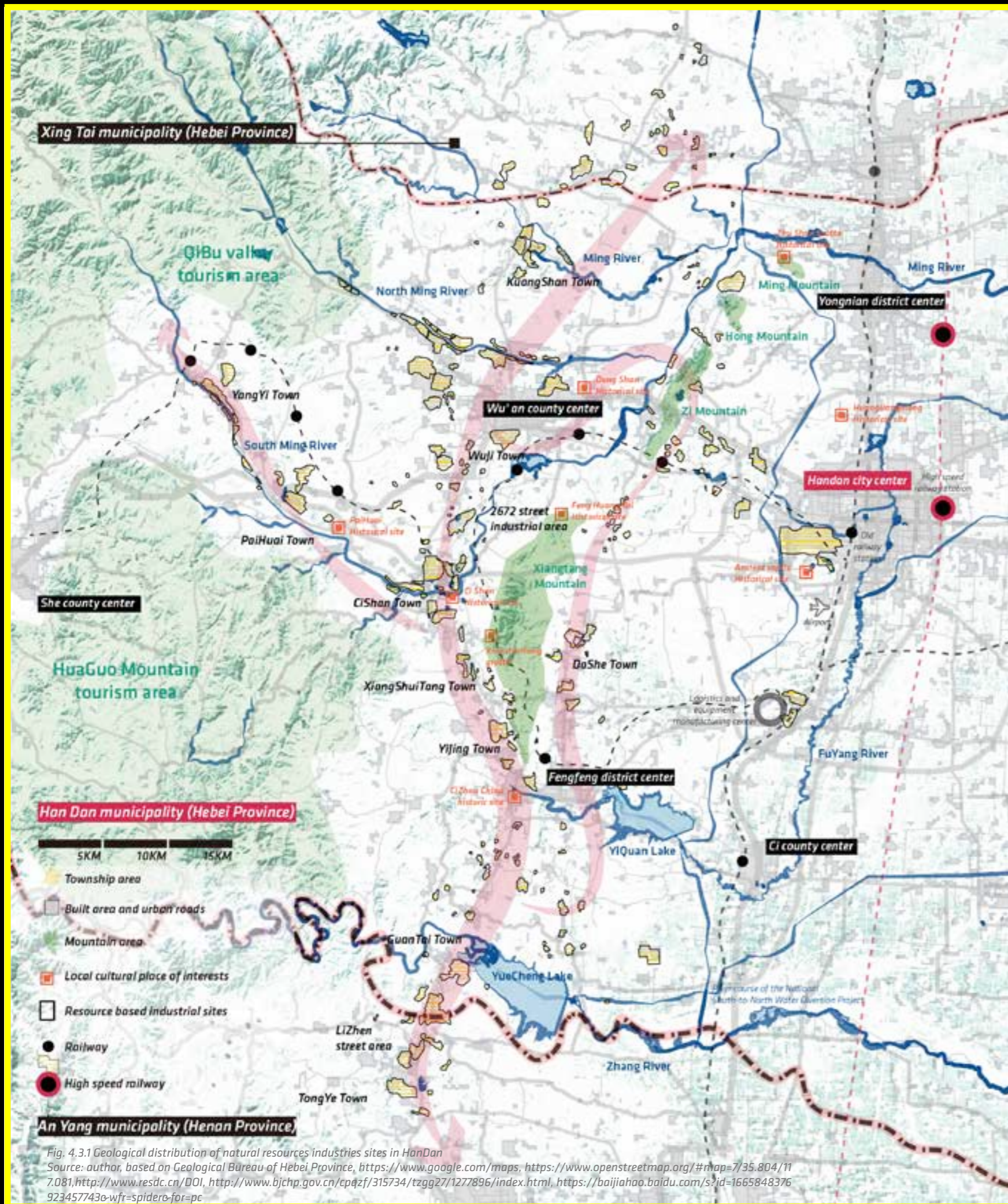
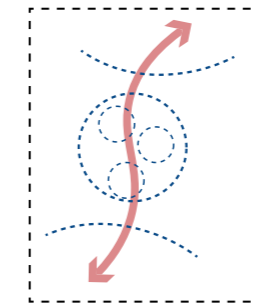


Fig. 4.3.1 Geological distribution of natural resources industries sites in Handan  
 Source: author, based on Geological Bureau of Hebei Province, <https://www.google.com/maps>, <https://www.openstreetmap.org/#map=7/35.804/117.081>, <http://www.resdc.cn/DOI>, <http://www.bjchp.gov.cn/epqzf/315734/tzgg27/1277896/index.html>, <https://baijiahao.baidu.com/s?id=1665848376923457743e-wfr=spidero-for=pc>

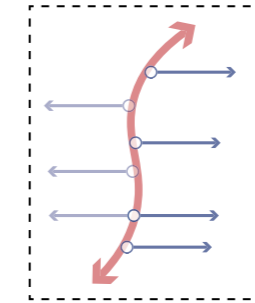
### 4.3 Conclusion of Spatial analysis

#### Opportunities of the industrial belt



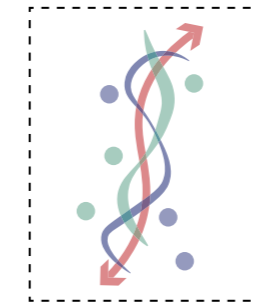
**Cross-regional borders**  
 - Promote inter-regional cooperation

The industrial belt runs through three municipal areas from north to south: Xingtai, Handan, and Anyang; and two mega regions: Beijing-Tianjin-Hebei mega region and Central plain mega region. This cross-regional status provides a convenient platform for regional cooperation.



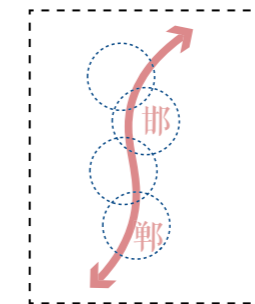
**Convenient transportation system**  
 - Promote the implantation of innovative industries

As the most developed and richest area in Handan, the complete road system closely connects the factories on this belt with the surrounding cities, towns, and villages. It reaches the city center and the regional transportation hub (airport, high-speed rail). Station, etc.) is also very convenient. But there is a lack of public transportation connections.



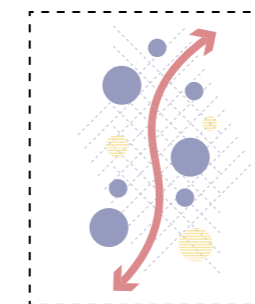
**Rich landscape environment**  
 - Promote the construction of environmentally friendly areas

The industrial belt is embedded in the rich landscape system of Handan as a linear element. It is surrounded by mountains, lakes, rivers and farmland. These landscape elements are valuable resources for leisure and tourism, and at the same time can promote the environmentally friendly transformation of this area.



**Connecting different cultural circles**  
 - Promote the revitalization of local culture

The industrial belt is connected with different cultural circles in Handan. In the process of reshaping the industrial belt, cultural resources are an important development advantage, which can drive the cultural revival of this area and promote the city brands. At the same time, the local culture has a huge influence and help to keep identity.



**Close relationship with built-up area**  
 - Promote urban transformation

After a long period of development, the development of the industrial belt and the surrounding cities and towns present a mutual promotion relationship, thus forming an inseparable connection. The regeneration of the industrial belt will drive the transformation of urban areas, and urban areas will also provide basic services for the industrial belt.

## 4.4 Planning perspectives for innovative urbanism

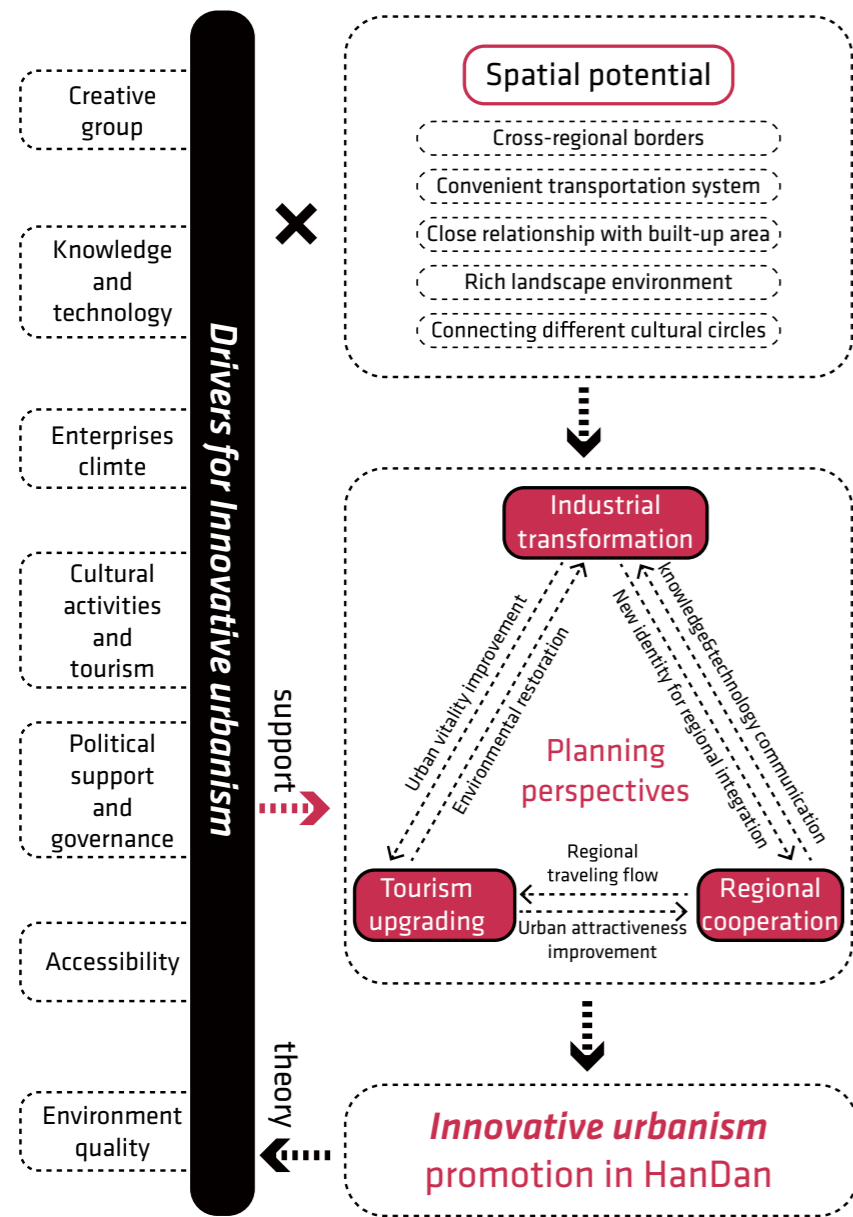


Fig. 4.4.1 Planning perspective framework Source: author

In the previous theoretical review, seven drivers of innovative urbanism were defined. On this basis, this project attempts to give full play to the spatial potential of the industrial belt to promote the good operation of innovative drivers.

The combination of innovative drivers and spatial potentials provides guidance for the definition of planning perspectives. **In this project, there are mainly three planning perspectives: industrial transformation, tourism upgrading, and regional cooperation.** It is worth mentioning that these three planning perspectives are also promoting each other's development and implementation.

	Cross-borders	Transp-ortation	Built-up area	Land-scape	Cultural circles
CG					■
KT				■	■
EC				■	■
CT	■	■	■	■	■
PG				■	■
AC				■	■
EQ			■	■	

### Tourism upgrading

Tourism and cultural activities are important driving forces for the promotion of innovative urbanism. On the one hand, tourism can promote the identity and brand of the city, enhance the attractiveness and popularity of the city. On the other hand, tourism and cultural activities can play a role in protecting the ecological environment and local culture. In this planning perspective, Handan's rich tourism resources will not only contribute to residents' leisure activities, but also an operation platform for enterprise climate, knowledge and technology flows and so on.

	Cross-borders	Transp-ortation	Built-up area	Land-scape	Cultural circles
CG	■	■	■	■	■
KT	■	■		■	■
EC	■	■	■	■	■
CT					■
PG	■	■			
AC	■	■	■	■	■
EQ			■	■	

### Industrial transformation

Industrial transformation is the core of this project's planning. On the basis of making full use of the space heritage of the industrial belt, innovative industries are implanted in this belt, which is the core action of the transformation from the industry to the innovation belt. In this process, creative group, knowledge and technology, enterprise climate, and accessibility are considered the most important drivers. The industrial transformation will also promote the implementation and well function of these drivers.

	Cross-borders	Transp-ortation	Built-up area	Land-scape	Cultural circles
CG	■	■			■
KT	■				■
EC	■	■	■		
CT	■				
PG	■	■	■		
AC	■	■			
EQ	■		■	■	

### Regional cooperation

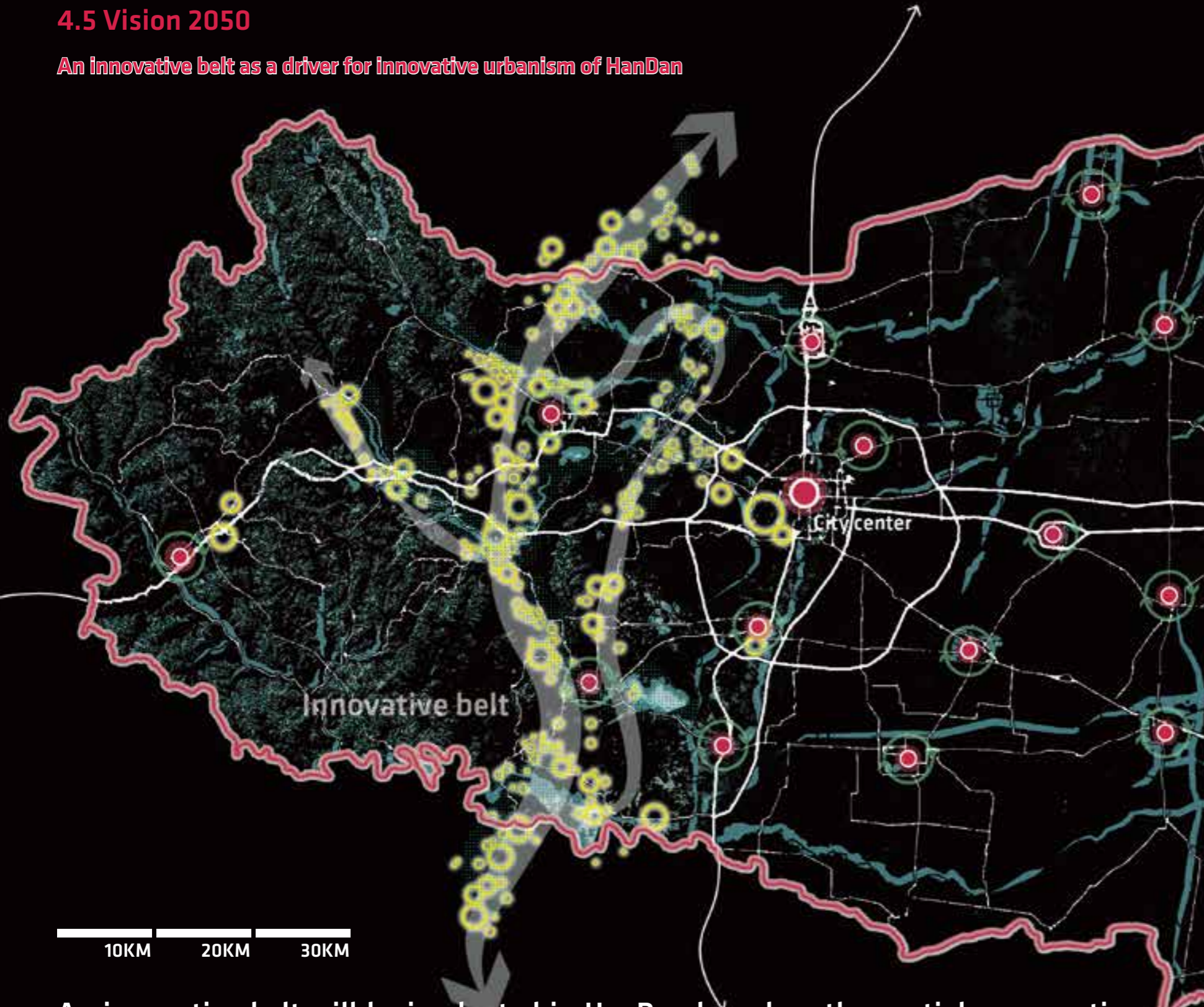
Regional cooperation is an important goal of this project. For a long time, in the process of China's regionalization, the competition between cities has become increasingly fierce. Under such circumstances, Handan, as the geographic center of the four mega-regions, will provide a spatial foundation for regional cooperation. The cross-regional geographic situation of the industrial belt provides opportunities for regional cooperation, which will also promote the development of accessibility to a large extent.

		Spatial potential for innovative urbanism					
		Cross-regional borders	Convenient transportation	Close relationship	Rich landscape environment	Connecting different	
Innovative drivers	Core	Creative group	■ ■	■ ■	■	■	■ ■ ■
		Knowledge and technology	■ ■	■		■ ■	■ ■ ■
	Promoter	Enterprises climate	■ ■	■ ■	■ ■	■ ■	■ ■
		Cultural activities and tourism	■ ■	■	■	■	■ ■
		Political support and governance	■ ■	■ ■	■	■	■
	Foundation	Accessibility	■ ■	■ ■	■	■ ■	■ ■
		Environment quality		■	■ ■ ■	■ ■ ■	

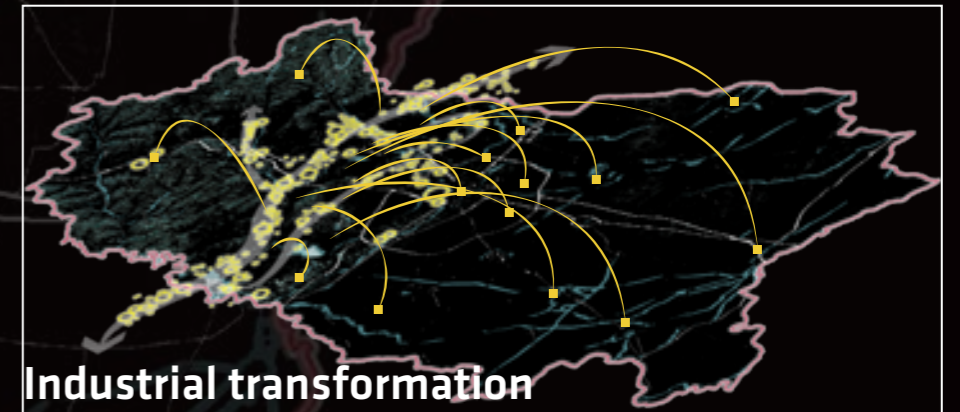
Fig. 4.4.2 Evaluation table - Planning perspective-how to use and promote innovative driver and spatial potential

## 4.5 Vision 2050

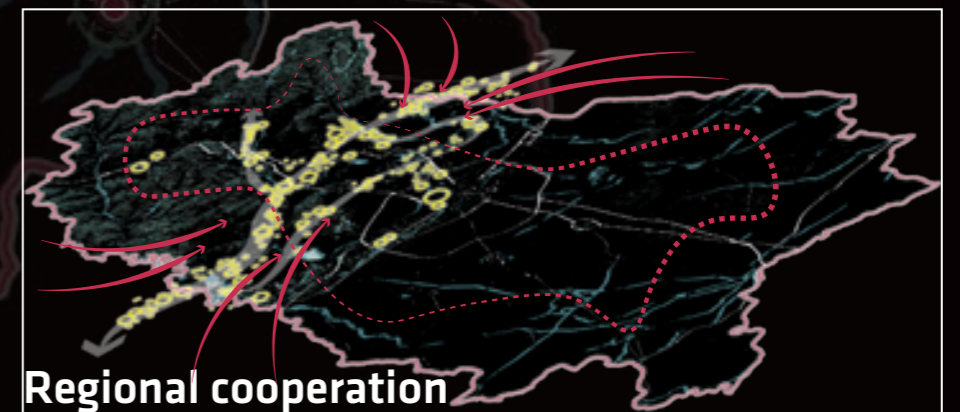
An innovative belt as a driver for innovative urbanism of HanDan



**Tourism upgrading**  
As an area with more than 8,000 years of human habitation and a city with more than 3,000 years of history, the potential of rich culture and diverse landscapes will be fully utilized to increase the attractiveness of the city and serve as a trigger for the development of innovative urbanism.



**Industrial transformation**  
As a regional innovation node, industrial buildings, structures, and the environment will be repaired and reused to the utmost extent as a space resource for innovative industries, activities, and talents gathering.



**Regional cooperation**  
As the geographic center of the North China Plain urban agglomeration, the disadvantage of spatial marginalization will be overcome by creating Handan as a center for regional cooperation, innovative knowledge and technology communication.

An innovative belt will be implemented in HanDan based on the spatial regeneration of post-industrial sites, and act as a driver of innovative urbanism for the city. By 2050, Handan will complete its industrial transformation, and integrate into regional development as an innovative node in the North China Plain regional system.

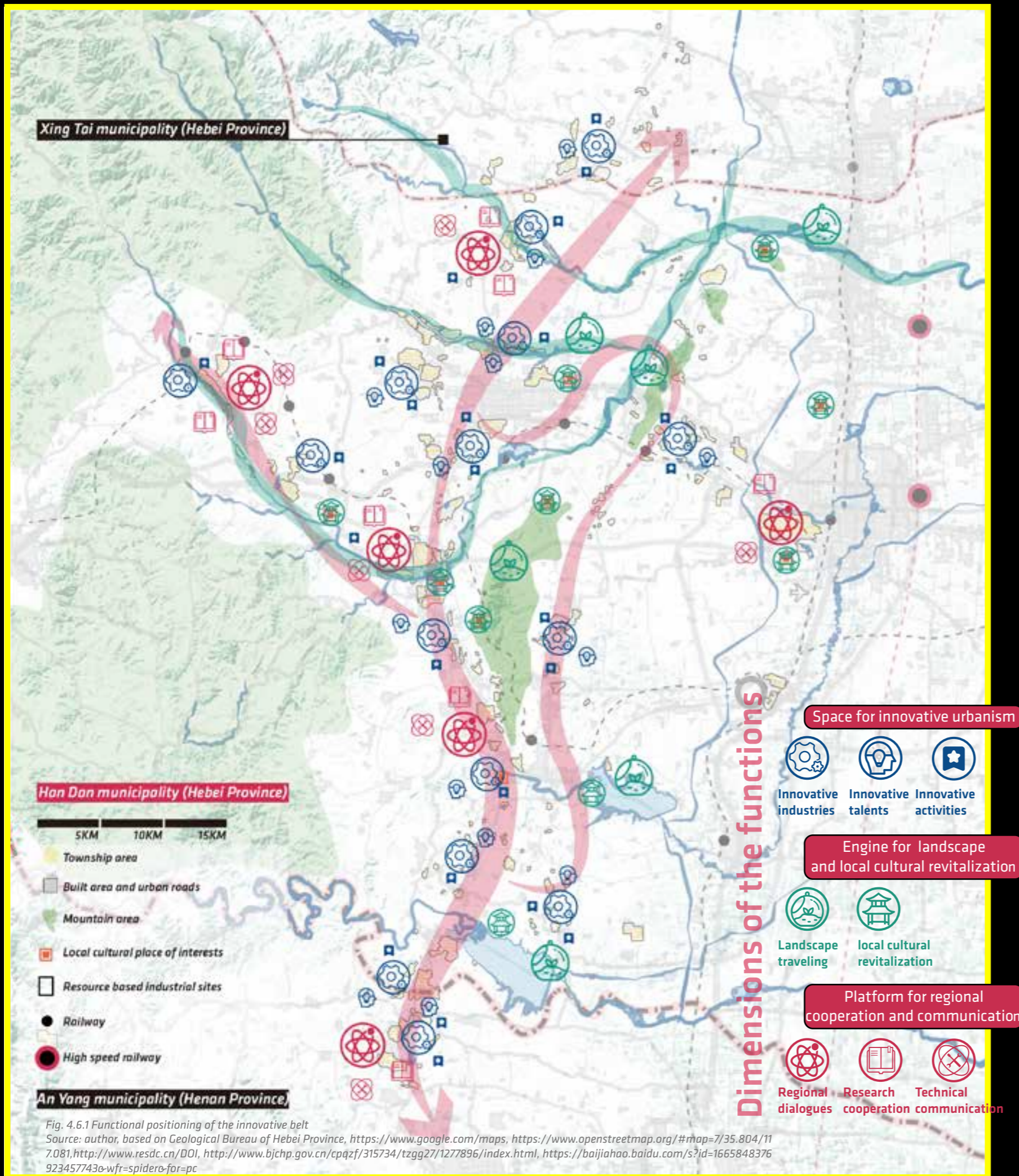
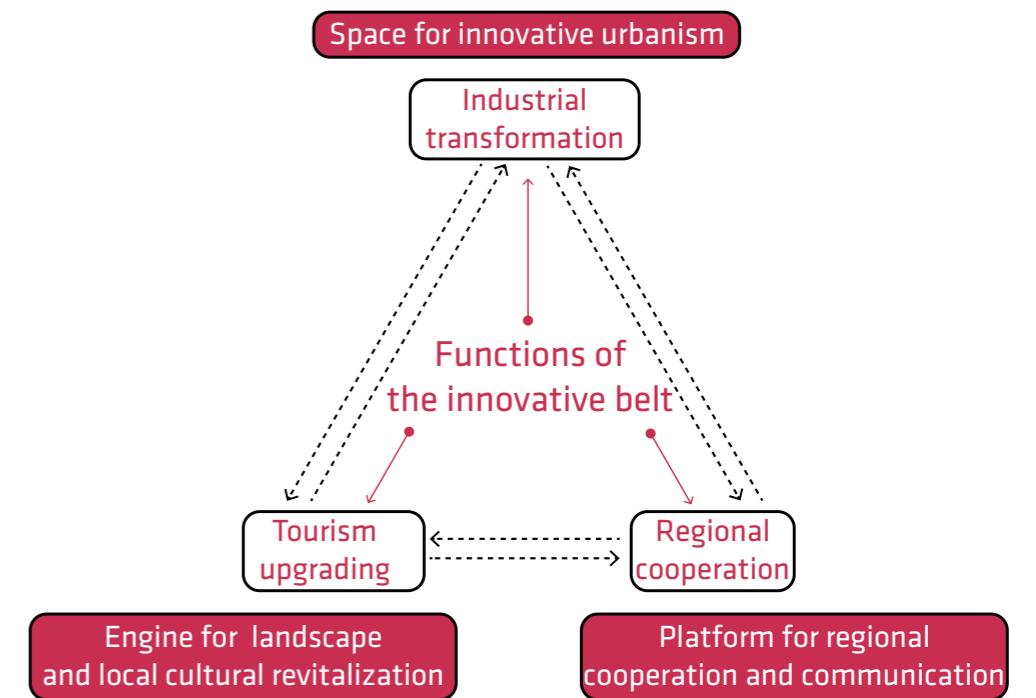


Fig. 4.6.1 Functional positioning of the innovative belt  
 Source: author, based on Geological Bureau of Hebei Province, <https://www.google.com/maps>, <https://www.openstreetmap.org/#map=7/35.804/117.081>, <http://www.resdc.cn/DOI>, <http://www.bjchp.gov.cn/cpqzf/315734/tzgg27/1277896/index.html>, <https://baijiahao.baidu.com/s?id=1665848376923457743e-wfr=spidero-for=pc>

## 4.6 Functional positioning of the innovative belt



### An innovative space for the cultivation and development of innovative industries, talents, and activities

The core elements of innovative urbanism mainly include innovative space, innovative industries, innovative talents, and innovative activities. According to the planning vision, the innovation belt will be planned as an area rich in innovation industries. Under the catalysis of innovation industries, the original industrial space will be reshaped into an innovation space for various innovation activities, and to attract innovative talents, to promote the operation of the entire system.

### An innovative engine for landscape and local cultural revitalization, and improvement of urban attractiveness

In the innovation belt, the rich local cultural resources will gain the stage to fully develop, promote, and display. In addition, diverse landscape resources will also be used as an important tool to enhance the attractiveness of the city. On the one hand, the revitalization of local culture and ecological landscape will enhance the vitality of the innovative belt, on the other hand the innovative belt will also promote the protection and development of culture and landscape.

### An innovative platform for regional dialogues, scientific research cooperation, and technical communication

According to the planning vision, regional cooperation is an important way for Handan to integrate into the regional development system, and the innovative belt provides spatial and atmospheric support for various cross-regional activities. The various urban agglomerations in the North China Plain with Handan as the center will carry out various activities in this belt from academic research, technical exchanges, and cultural dissemination.



B

# Strategic planning

Abandoned industrial sites, Photoed by author, 2021.

## 4.7 Planning strategies framework

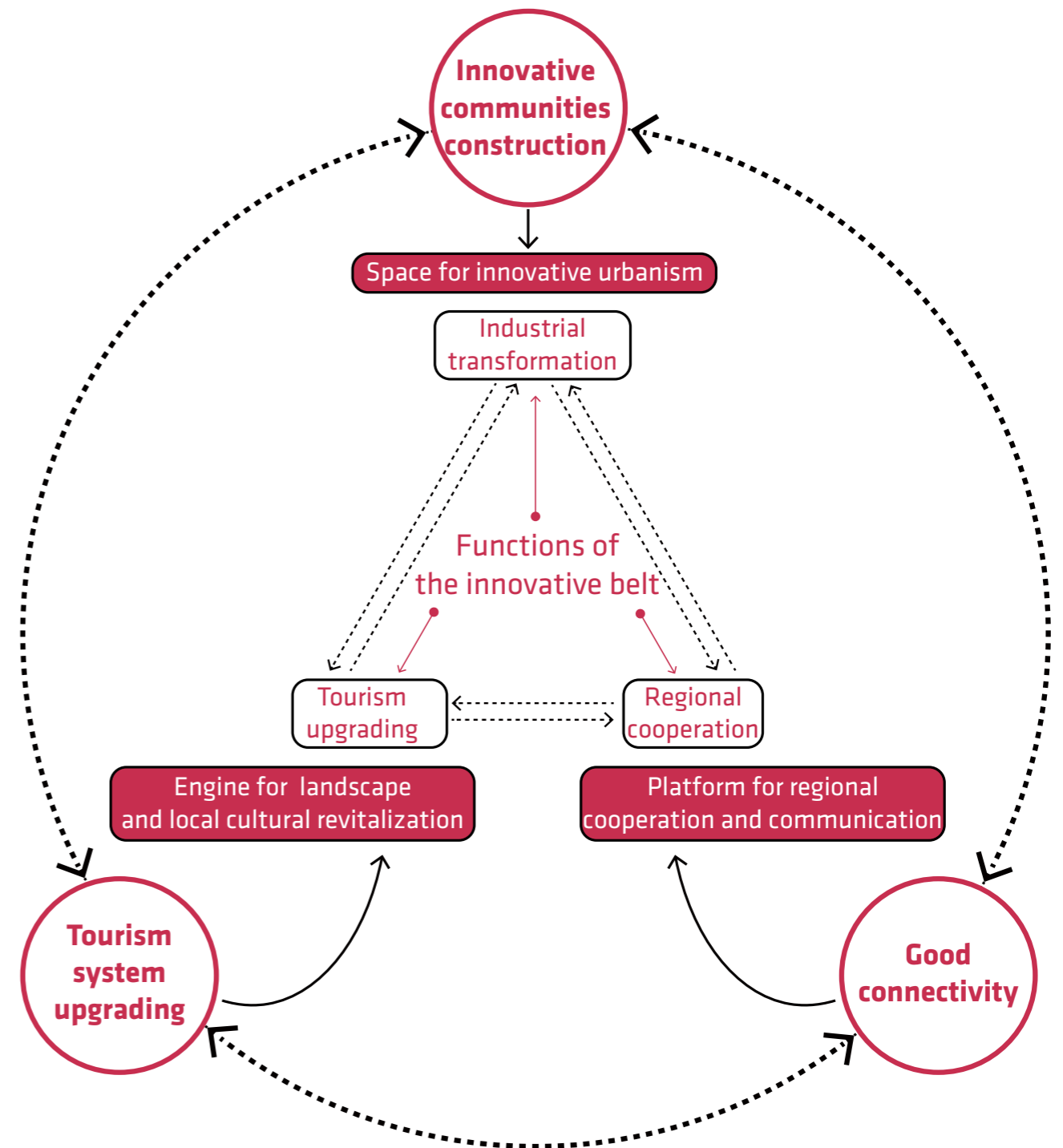


Fig. 4.71 Planning strategies framework source: author

Based on the functional positioning of the innovation zone in the planning vision, three planning strategies were proposed: innovative communities construction, tourism system upgrading, and good connectivity. **The spatial planning of this innovative belt also follows these three strategies, which will be explained in detail in the following chapter.**

## 4.8 Strategy 1-Innovative communities construction

### 4.8.1 From industrial community to innovative community



Fig. 4.8.1-4.8.5 The decaying living quarter source: author, www.google.map.com

In fact, in this belt, large-scale resource-based industrial enterprises do not exist as an independent plant, but also with living areas near the production plant to meet the job and housing needs of their employees. This common phenomenon is regarded by Chinese scholars as a "community (da yuan) culture". With the decline of the industry, these living quarters attached to the factory are also abandoned.

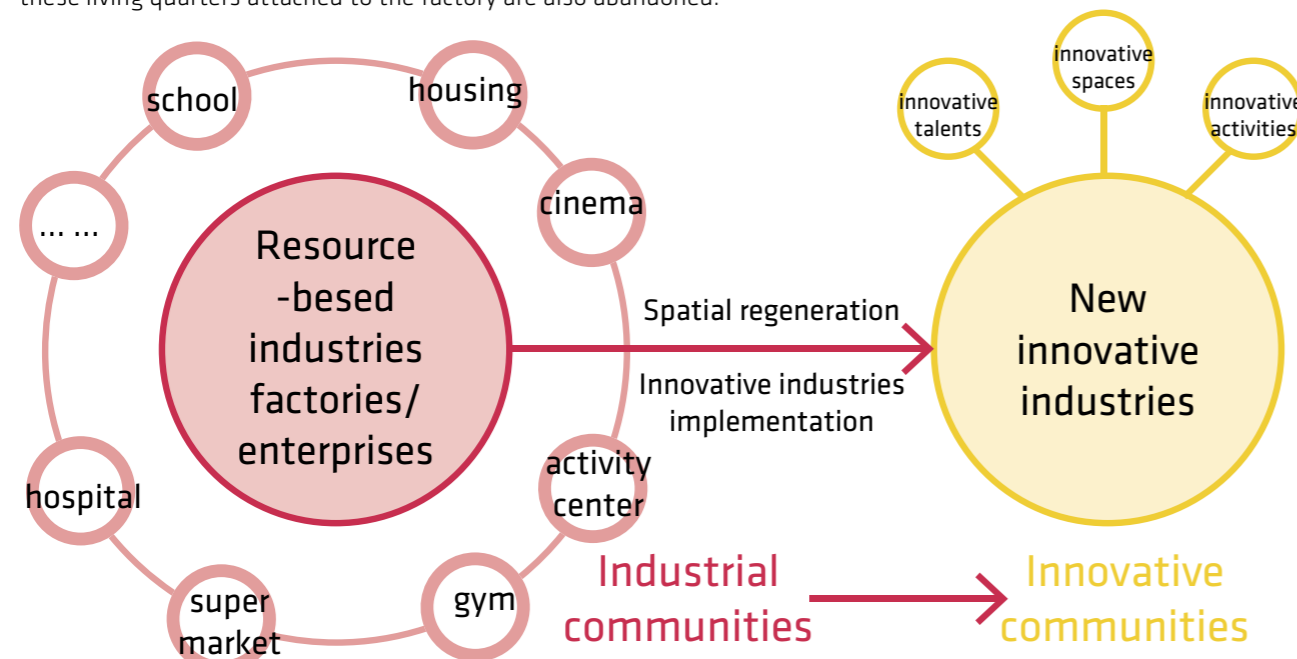


Fig. 4.8.6 Transition of industrial community source: author

Based on this, the first spatial strategy proposed by this project is the construction of an innovative community. In the process of spatial planning, the paradigm of the industrial community was followed and upgraded to an innovative community. The industrial feature of the community has been replaced, from traditional resource-based industries to innovative companies, but related living facilities are still considered an important part of the community.

### Relationship with functional positioning of the innovative belt

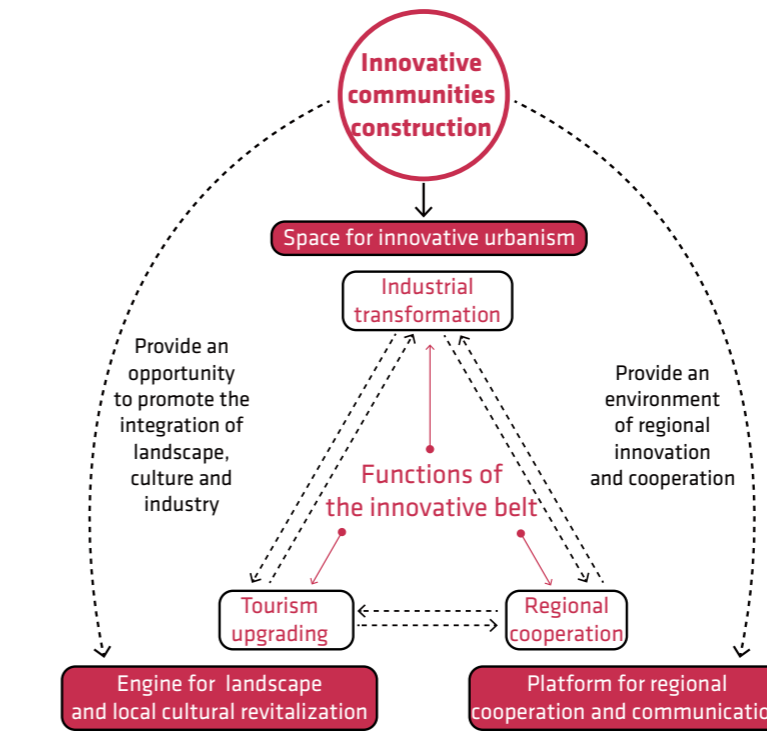


Fig. 4.8.7 Relationship with functional positioning of the innovative belt source: author

The construction of an innovative community is the core planning strategy of this project. **The essence of this strategy is to retain the original community paradigm of "symbiosis of working and living" in the industrial production process, and to replace the original resource-based industries with new innovative industries to achieve the purpose of regeneration.** On the one hand, it will provide space and environment for regional exchanges and innovation activities, and on the other hand, it can promote the mutual promotion of culture, landscape, and industry.

### Theoretical underpinning: key agents for urban economic transformation

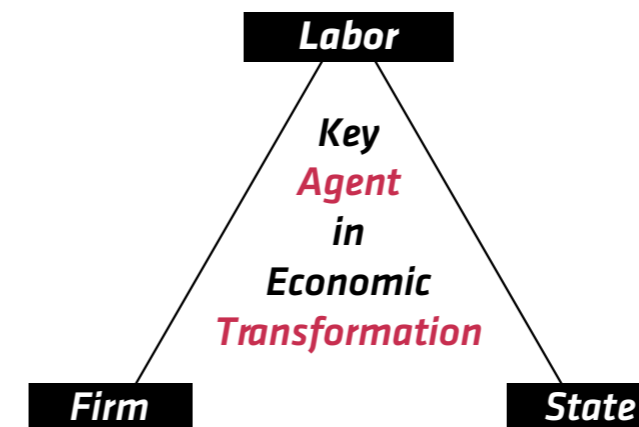


Fig. 4.4.8 Key agents for urban economic transformation  
Source: author, adapt from KEY CONCEPTS IN ECONOMIC GEOGRAPHY  
By Yuko Aoyama James T. Murphy Susan Hanso

According to the relevant theories of economic geography, there are three main key agents that can promote and influence urban economic transformation: labor, firm, and state. These three agents often act together in the economic transformation of a city, and exert their effectiveness at different levels. In this project, innovative urbanism can be considered as a way of economic transformation, so these three key agents are also considered to be important roles in promoting innovative urbanism.

This study designed a table to evaluate the ability of different agents to promote innovative urbanism, as shown in the table next page.

## How can key agents of urban economic transformation drive innovative urbanism?

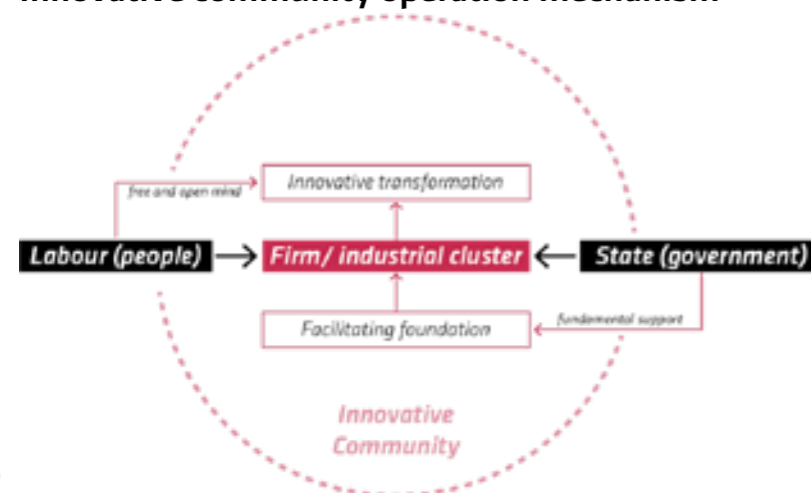
	Innovative drivers	Evaluation criteria	State	Firm	Laour
Main body	Creative group	Place making and interations	○	○○	○○○
		Social networking	○	○○○	○○
		Diversity of people	○	○○	○○○
Promoter	Knowledge and technology	Technology upgrading	○○	○○○	○
		Knowledge flow	○○	○○○	○
	Enterprises climte	Space for start ups	○○	○○○	○
		Investment attractiveness	○○○	○○	○
		Open marketism	○	○○○	○○
	Cultural activities and tourism	Tourism system	○○○	○○	○
		Local culture conservation	○○	○○○	○
City branding and promotion		○○	○○○	○	
Foundation	Accessibility	Informative network	○○	○○○	○
		Public transportation	○○○	○○	○
		Full cover of infrastructure	○○○	○○	○
	Political support and governance	Policy perferance	○○○	○○	○
		Livnig facility support	○○○	○○	○
		Social insurance	○○○	○○	○
	Environment quality	Air quality	○○○	○○	○
		Bule& green structure	○○○	○○	○
	Energy-clean	○○	○○○	○	

**State** The state mainly plays a role at the level of innovative foundation. This is due to the role of the state in coordination of large-scale construction projects, which has great significance for accessibility and environmental repair. In addition, the "overall situation perspective" of state is also reflected in the use of marginal space and the regulation of market economy.

**Firm** The role of the firm is most importantly reflected in the development of the industry. As the main body of industrial operation, firm plays a decisive role in economic transformation. From the perspective of innovative urbanism, the agent of firm can promote the exchange and communication of knowledge and technology, and create an enterprise climate. Under the promotion of the firm, the potential of cultural activities and tourism will also be stimulated. In addition, firm can also provide an innovative platform and atmosphere for the creative group.

**Labor** As the "terminal" of urban economic transformation, labor has extremely high mobility. The employment of labor is also affected by the market economy. In innovative urbanism, the labor (individual) level can mainly promote the development and communication of the creative group.

## Innovative community operation mechanism



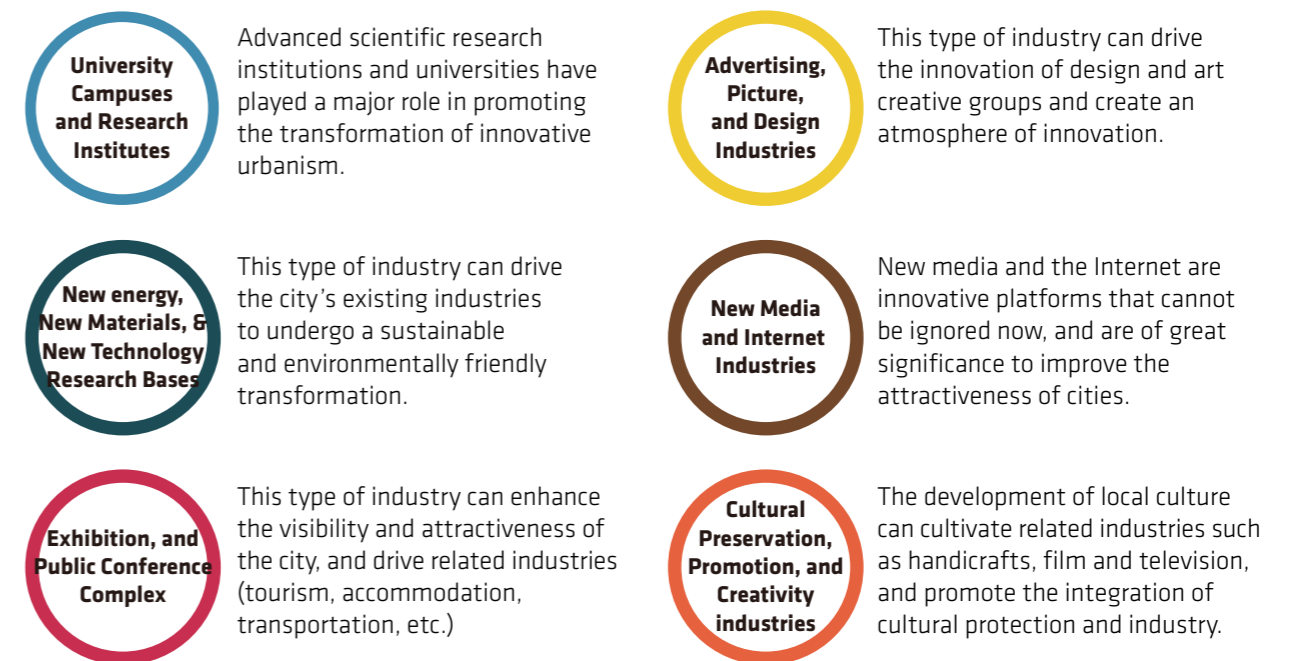
In this project, the innovative community is the basic space unit for the implantation of innovative enterprises and the cultivation of innovative activities. In this unit, the state (government) sector provides support for infrastructure and living facilities and other infrastructure, and uses this to ensure the sound operation of the firm sector. Firm provides labor with a platform for innovative activities and social interactions, creating an atmosphere of innovation.

## 4.8.2 Defining types of innovative industries



Fig. 4.8.9 Innovative industries source: author

Innovation industries play a dominant position in the innovation community. Different types of innovation industries will attract and cultivate different types of innovative talents, stimulate different types of innovative activities, and require different forms of innovation space. Therefore, the type of innovation community is determined by the difference in innovation industries. In this project, the innovative industries mainly come from two aspects. First, as a regional sub-city, one of Handan's responsibilities is to undertake some functions relieved from the big city, such as scientific research institutes, medical care and other industries; second Handan should focus on cultivating industries with its own cultural characteristics to maintain urban identity and increase popularity. Such industries are mainly based on local culture-based industries and industries based on the local landscape environment.



### 4.8.3 Typology of innovative communities

The types of innovative communities in this project are differentiated by the core innovative industries. According to the previous definition of innovative industries, there are 6 main types of innovative communities. Based on the characteristics of their industrial development, these main innovative communities can be divided into two types: driving type and growing type. In addition, in order to enhance the innovative climate and provide people with bases for innovation and entrepreneurship, this project also plans some small-scale start ups communities as supplements for the main communities.

#### Driving type communities

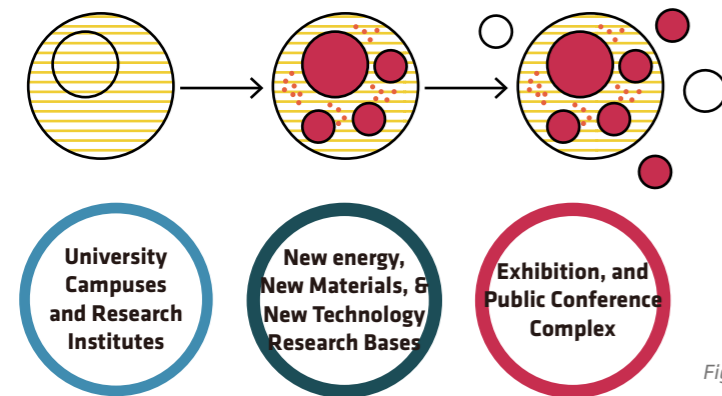


Fig. 4.8.10 Driving type communities source: author

Driving type innovative communities refer to larger industrial clusters with large numbers of users, consumers, and producers once built. This kind of industry will promote the development of other industries in the surrounding area, such as tourism, food, daily necessities, and transportation. **When distributing such communities, this plan mainly considers its driving force for industrial transformation and regional development.**

#### Growing type communities

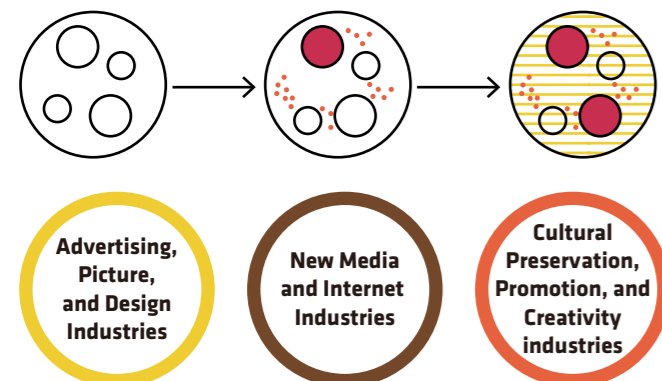
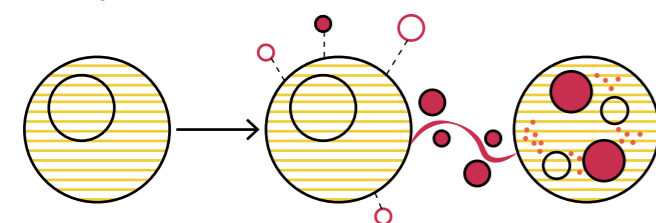


Fig. 4.8.11 Growing type communities source: author

Growing type innovative communities refer to industrial clusters composed of a series of small enterprises, which require a relatively long time to gather and grow. Some of these industries may develop into large-scale enterprises, thus playing a leading role in the community. **When planning such communities, this project mainly considers providing them with good growth spatial conditions and strengthening the interactive relationship between the community and the urban area.**

#### Start-ups communities



Start-ups communities are the supplements of the main communities. The industries of a major community may lead to the development of more small industries, and start-ups provide a space foundation for these industries. These communities are of great significance for stimulating innovative climate and entrepreneurship.

142 Fig. 4.8.12 Start-ups communities source: author

### 4.8.4 Distribution of innovative communities

The spatial distribution of these innovative communities is the first problem to be solved in planning and design. In this step, this study mainly draws on two theories. First of all, this project starts from the current spatial conditions and classifies the existing architectural elements according to different spatial characteristics. Furthermore, summarize the spatial characteristics of each type of industry and plan the distribution.

#### Theoretical underpinning

##### Layer approach

The layer approach is the traditional Dutch approach to analyze complex spatial systems. This method splits the complexity of geographic space into different levels for analysis. The project divides the space into the following levels: industrial heritage buildings, urban areas (built-up area), landscapes (mountains, rivers, lakes, farmland).

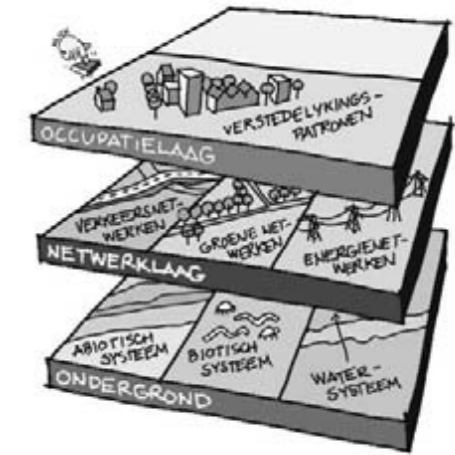


Fig. 4.8.13 Layer approach-illustrates that each layer can be elaborated into detail Source: Stadsgewest Haaglanden (2003)

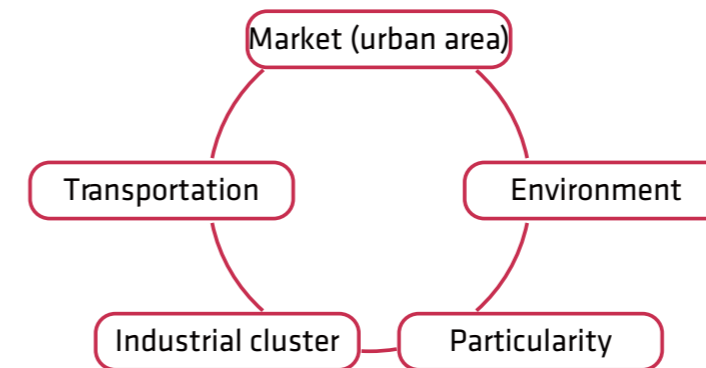


Fig. 4.8.14 Location selection of industries: indicators setting source: author

##### Location selection of industries: indicators setting

In the 1990s, with the innovation of classical location theory by many regional economists such as P. Krugman and M.E. Porter, modern location theory began to prevail. Its core views mainly include economies of scale, external benefits, spread effects and backwash effects, and location competition.

**In this project, different location choices of industries mainly consider the following indicators, industry and market (mainly urban area), industry and transportation, industry and environment, industry and industrial clusters, and the particularity of the industry itself.**



## Spatial typology

Type D Buildings along rivers



Type A Large scale buildings in urban areas



Type E Buildings along lakes



Type B Large scale buildings in peri-urban areas



Type F Buildings along/ in mountains



Type C Small scale buildings in peri-urban areas



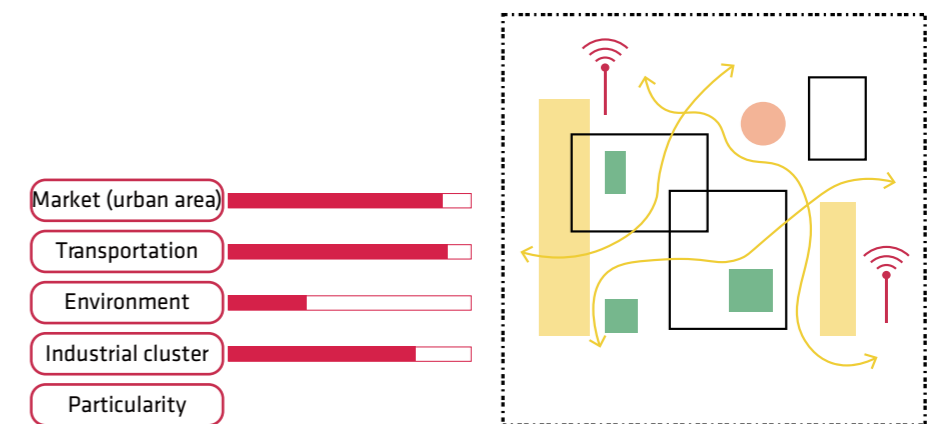
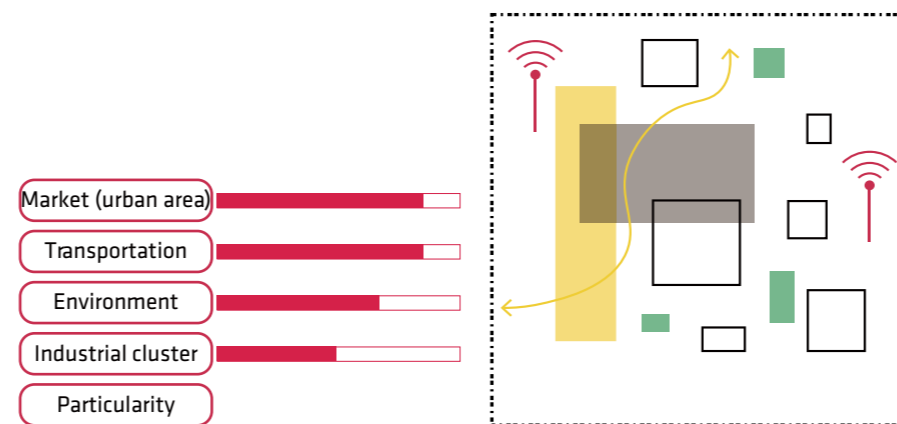
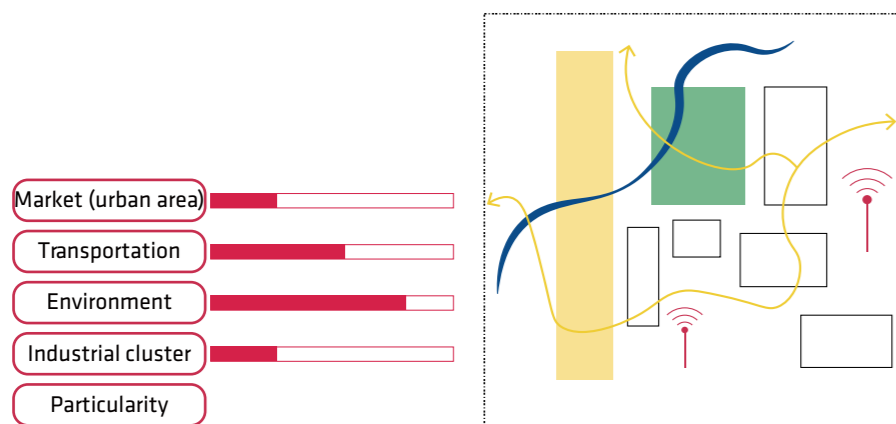
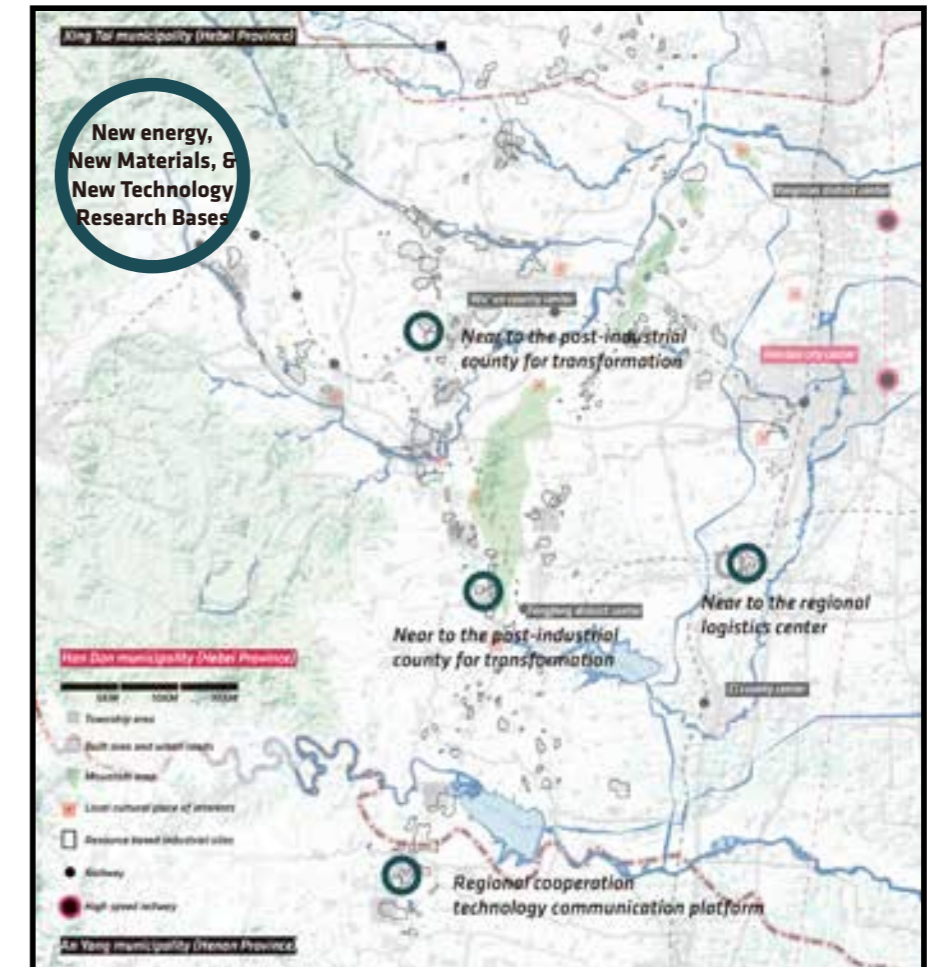
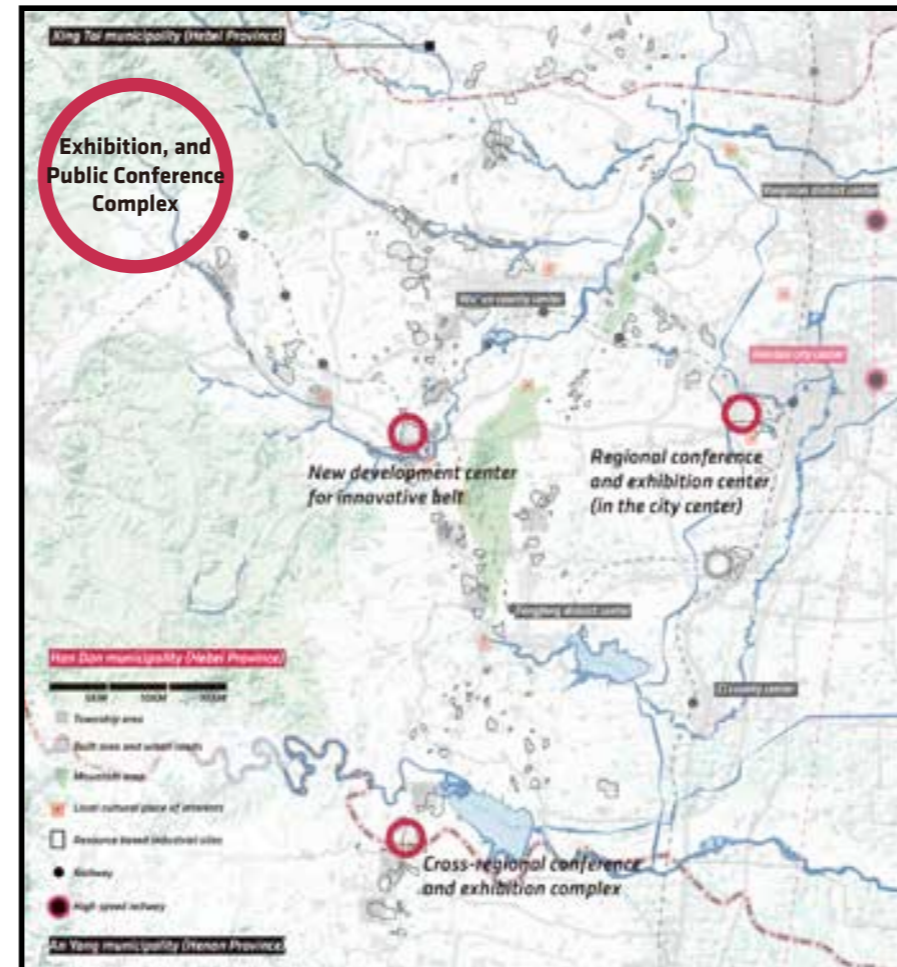
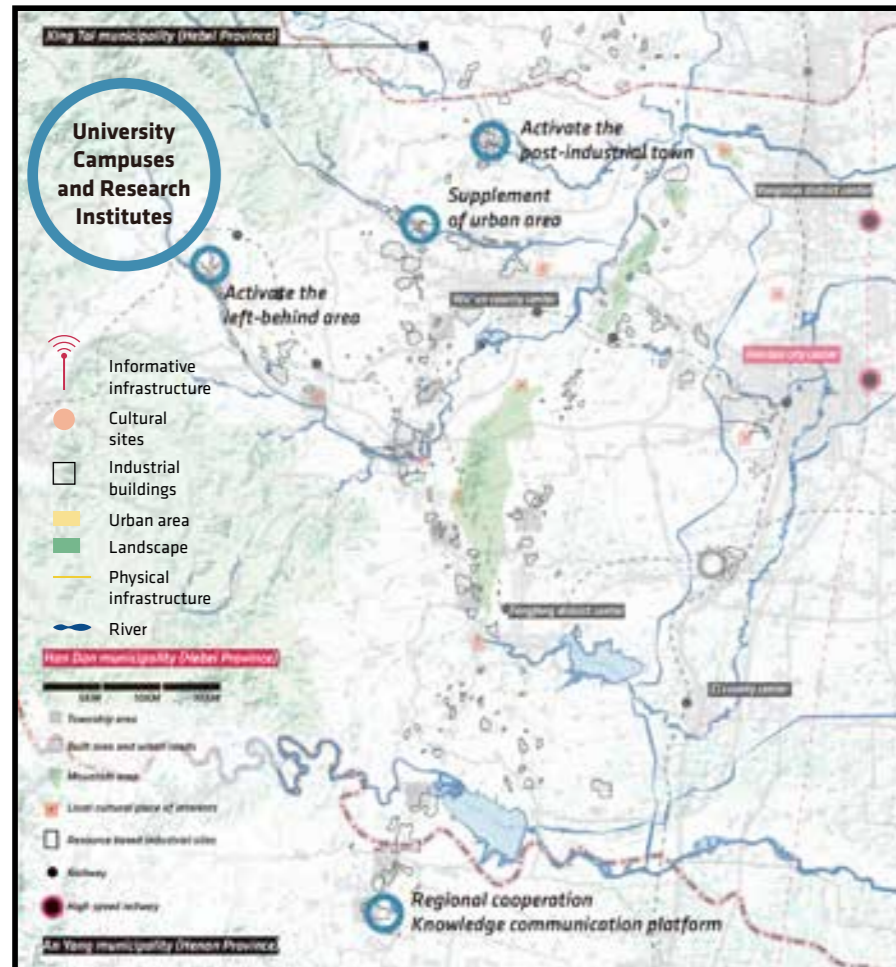
Fig. 4.3.20 Building typology of the innovative belt  
 Source: author based on Geological Bureau of Hebei Province, <https://www.google.com/maps>, <https://www.openstreetmap.org/#map=7/35.804/117.081>, <http://www.resdc.cn/DOI>, <http://www.bjchp.gov.cn/cpqzf/315734/tzgg27/1277896/index.html>, <https://baijiahao.baidu.com/s?id=16658483763234577430&wfr=spidero-for=pc>

According to the relationship between different spatial layers and spatial elements, the industrial sites on this industrial belt can be divided into 6 types. The classification standards mainly include the size of the building scale, the relationship with the urban area, and the relationship with the landscape (including mountains, rivers, lakes, and farmland).



## Spatial distribution of different types of innovation communities

Fig. 4.8.21-23 Spatial distribution of different types of innovation communities  
 Source: author, based on Geological Bureau of Hebei Province, <https://www.google.com/maps>, <https://www.openstreetmap.org/#map=7/35.804/117.081>, <http://www.resdc.cn/DOI>, <http://www.bjchp.gov.cn/cpqzf/315734/tzgg27/1277896/index.html>, <https://baijiahao.baidu.com/s?id=1665848376923457743&wfr=spider&for=pc>



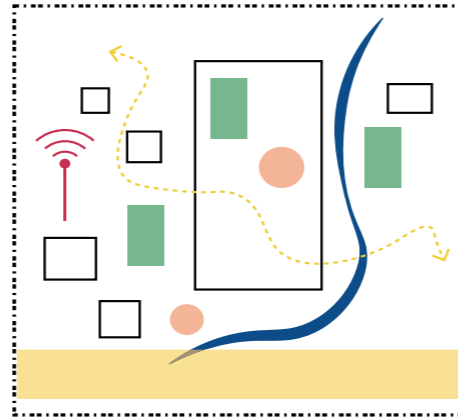
The innovative community of university campuses and research institutions does not have much demand for markets and industrial clusters, but requires a relatively good environment and open space. In addition, due to the large size and the large number of people in the community, this type of community has a strong role in driving the development of marginal spaces. **Therefore, in this plan, university campuses and research institute communities are distributed in marginal spaces, as well as in cross-regional areas, with a view to inter-regional scientific research cooperation and communication.**

Exhibition, and public conference complex is a platform for city brand promotion, regional cooperation, and industry communication. At the same time, it is also a space for the cultivation of cultural industries such as art exhibitions and cultural performances. This will promote the development of tourism, cultural creativity, technological exchanges and other industries. In this plan, it is considered the role of "regional center". **Therefore, it is planned in the city center, inter-regional area (as a platform for regional dialogue and cooperation), and large towns (as the development center of the innovative belt).**

New energy, new materials, and new technology research bases mainly serve the transformation of existing industries with high pollution and high energy consumption. The research results of this industry should be undertaken by corresponding industrial clusters for promotion and optimization. This kind of industry should be localized in the vicinity of urban industrial (logistics) centers and post-industrial counties that are in urgent need of transformation. At the same time, the industry community should also be deployed across regions to promote technological exchanges and research communication.

### Advertising, Picture, and Design Industries

- Market (urban area)
- Transportation
- Environment
- Industrial cluster
- Particularity

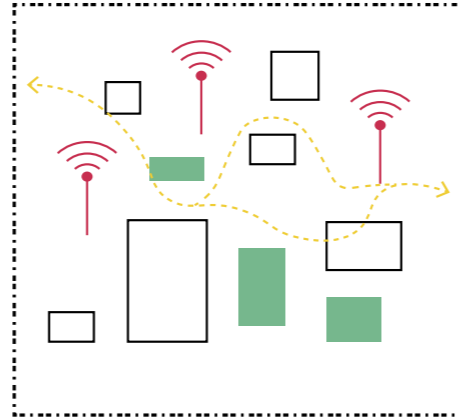


The particularity of the advertising, picture, and design industries is that this type of industry has high flexibility in the use of space and can be applied to various types of spaces.

Advertising, picture, and design industries have certain demands on the market and industrial clusters. At the same time, these industries can also be used as space for citizens to experience, travel, and visit. **Therefore, in this project, these innovative communities are planned in the suburbs of cities, large towns, As well as the cultural relic area, in order to have an interactive relationship between this type of industry and tourism.**

### New Media and Internet Industries

- Market (urban area)
- Transportation
- Environment
- Industrial cluster
- Particularity

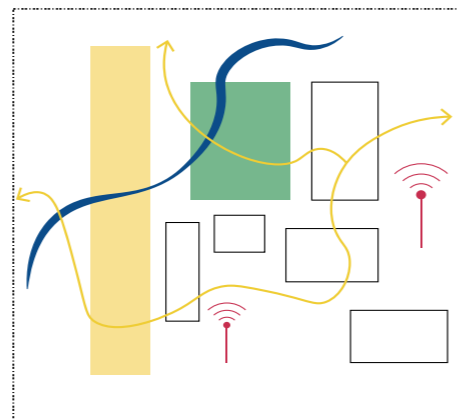


The new media and Internet industries have less demand for various spatial elements, but they need a complete information infrastructure. The output of these industries is generally information products, which need to be delivered on a virtual platform.

**New media and Internet industries are generally deployed in small factories that are far away from urban areas and are not easy to use. This promotes the full development of spatial value of the innovative belt, and its prerequisite is the construction of information infrastructure.**

### Cultural Preservation, Promotion, and Creativity Industries

- Market (urban area)
- Transportation
- Environment
- Industrial cluster
- Particularity



Cultural protection, promotion, and creative industries have certain requirements for the environment and the market, but it is more important to be close to historical and cultural relics.

Cultural protection, promotion, and creative industries can also be used as areas for urban residents to visit, experience, and visit. This will promote the interactive relationship between culture and industry and enhance vitality. **This type of industry is distributed in this plan in areas close to historical sites or cultural origins.**

## Master plan of Innovative communities construction

On the basis of driving type communities, growing type communities and start ups communities are distributed on this innovative belt according to their spatial characteristics. As an extension of larger communities, start ups will play a great role in creating enterprise climate and encouraging innovation. At the same time, startups will serve as a supplement for large communities, which are planned for multiple functions based on the type of innovative industry.

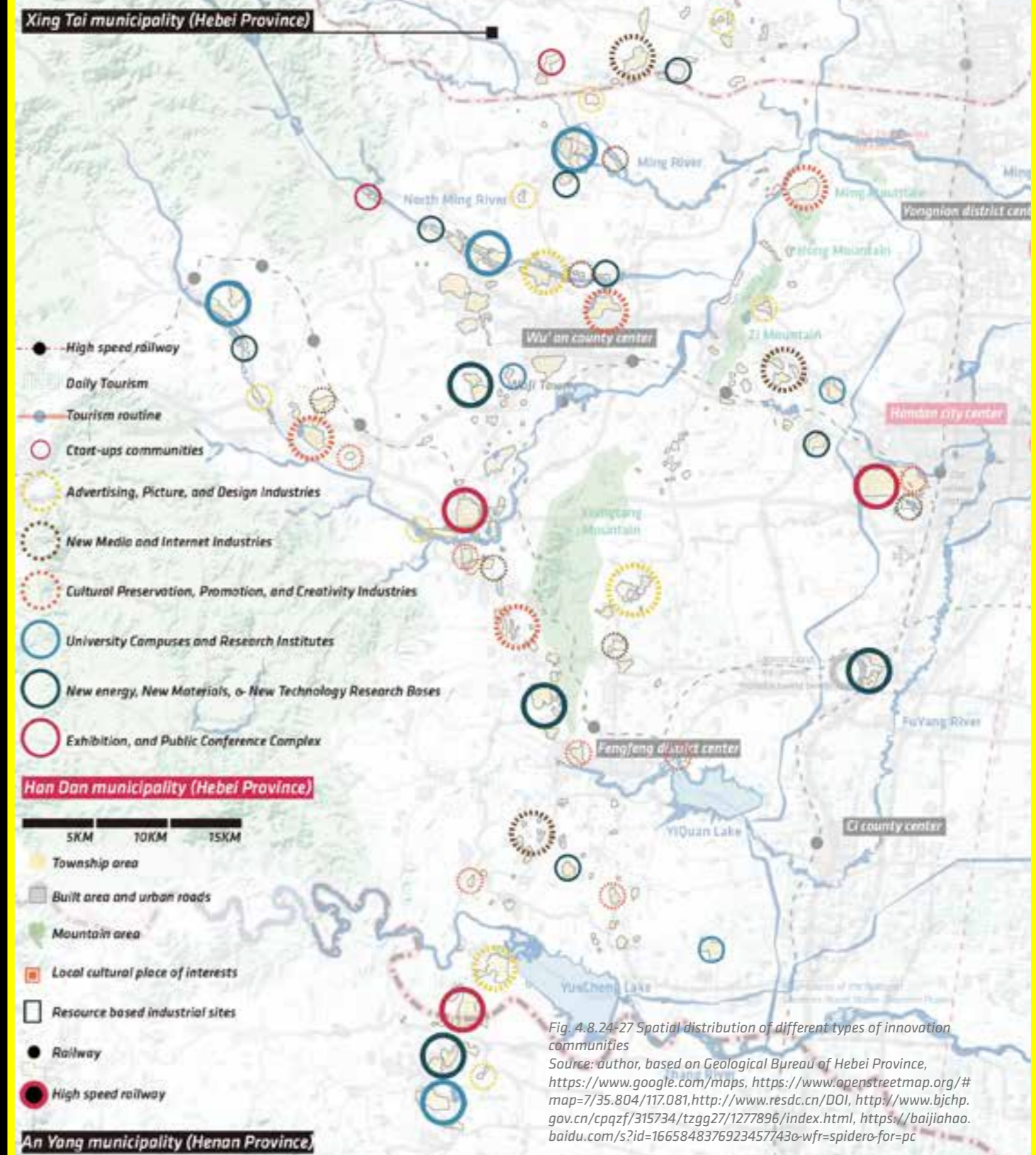


Fig. 4.8.24-27 Spatial distribution of different types of innovation communities  
 Source: author, based on Geological Bureau of Hebei Province, <https://www.google.com/maps>, <https://www.openstreetmap.org/#map=7/35.804/117.081>, <http://www.resdc.cn/DOI>, <http://www.bjchp.gov.cn/cpqzf/315734/tzqg27/1277896/index.html>, <https://baijiahao.baidu.com/s?id=1665848376923457743e-wfr=spidero-for-pc>

## 4.9 Strategy 2-Tourism system upgrading

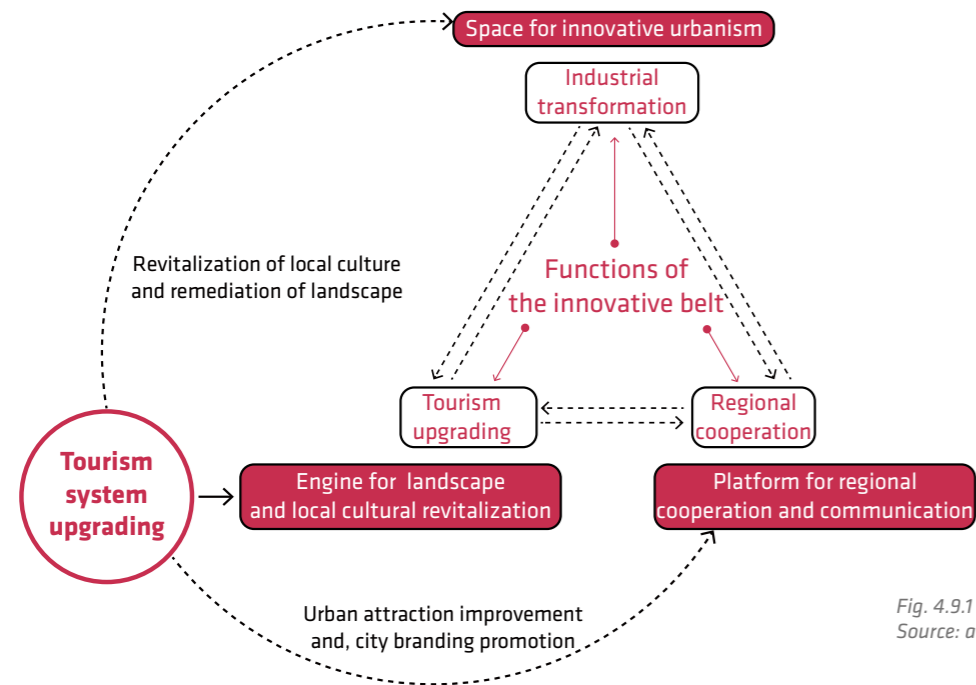


Fig. 4.9.1 Strategy 2-Tourism system upgrading  
Source: author

The upgrade of the tourism system can firstly promote the revitalization of local culture and landscape, thereby enhancing the attractiveness of the entire city and supporting the promotion of city brands. This will strengthen Handan's reputation and identity in the region to create more possibilities for regional cooperation and exchanges. In addition, the promotion of the tourism system is based on landscape remediation, which is of great significance to environmental purification and ecological protection.



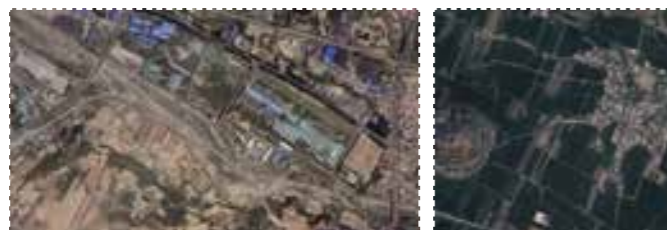
### Mountain and lake-Landscape tourism

Mountains and lakes surrounded by innovative communities are important tourist areas in Handan City. These spatial elements have the potential to develop into regional-scale tourism activities, attracting larger-scale populations, and driving the development of the tourism industry.



### Historical sites-Cultural tourism

Historical relics and intangible cultural heritage are also important resources for the development of tourism in the region. These resources can support the protection and promotion of local culture and stimulate the development of cultural and creative industries.



### River and farmland-Daily tourism

In the process of industrialization, many factories were built along the river. In this project, these factories are regenerate into innovative communities, and the rivers and farmland around the factories can be activated as daily recreation tourism and service agriculture.

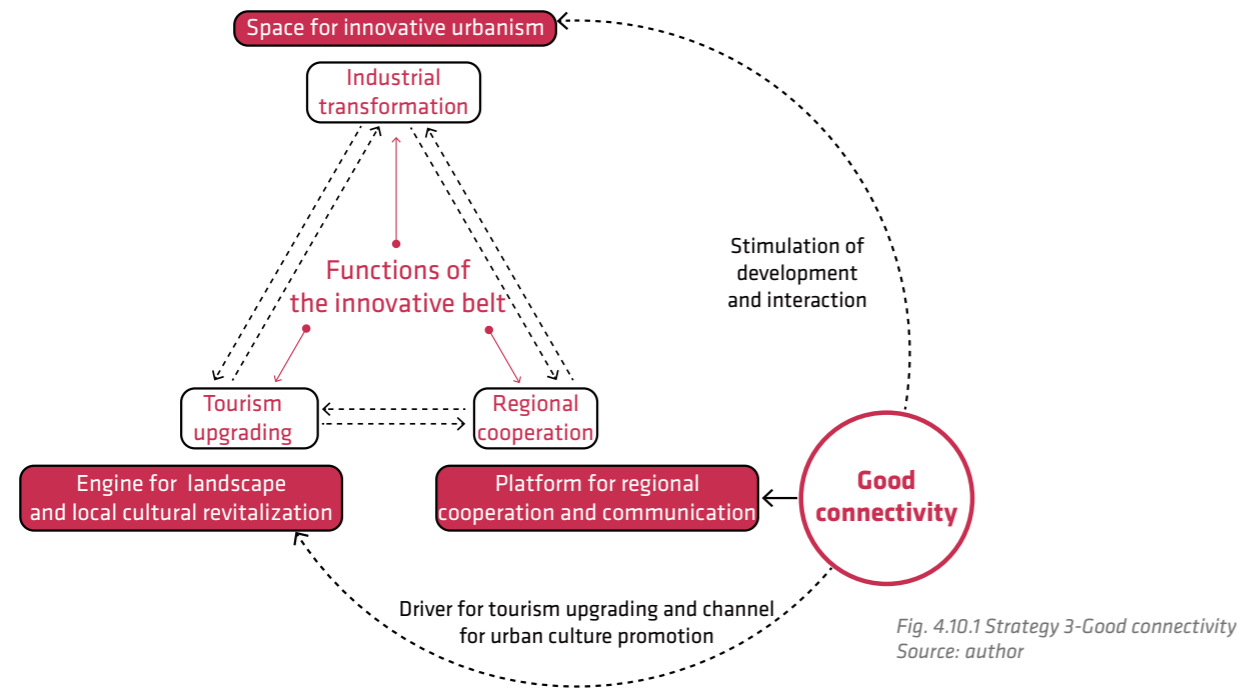
## Master plan of tourism system upgrading

As the main driving force of innovative urbanism, the upgrading of the tourism system makes full use of the landscape and cultural resources of the innovative belt, and based on this, improves the urban environment and enhances the attractiveness of the city. The area along the river is planned as daily tourism, which provides activity space for people in innovative communities. A tourist route is laid around mountains and lakes, connecting important cultural heritage and landscapes.



Fig. 4.9.5 Master plan of tourism system upgrading  
Source: author, based on Geological Bureau of Hebei Province, <https://www.google.com/maps>, <https://www.openstreetmap.org/#map=7/35.804/117.081>, <http://www.resdc.cn/DOI>, <http://www.bjchp.gov.cn/cpqqz/315734/tzgg27/1277896/index.html>, <http://baijiahaobaidu.com/s?id=1665848376923457743e-wfr=spidera-for-pc>

## 4.10 Strategy 3-Good connectivity



The strategy of good connectivity can strengthen the innovative belt and other regions and cities as the basis for regional cooperation and exchanges. At the same time, good connectivity can also stimulate the development of the tourism system, and enhance the interaction between tourist areas and urban areas, so that attractiveness and popularity are increased. In addition, good connectivity can enhance the connection between different innovative communities and provide a solid foundation for industry implantation, talent flow, knowledge and technology exchanges, etc.

### Physical connectivity

In the existing public transportation system of Handan, the centrality of the city center is extremely high. people at any area can only take regional transportation, such as high-speed rail and airplanes, when they reach the city center. Therefore, this strategy introduce the municipal high speed system to strengthen the innovative belt's connection with the city center.

### Informative connectivity

In addition to the planning of physical transportation facilities, information-based transportation facilities are also considered. This is because under the catalysis of informatization, cooperation between regions can not be limited to physical space. A virtual platform based on informatization connectivity is one of the strategies of this project.



152 Fig. 4.10.3 Informative connectivity Source: author

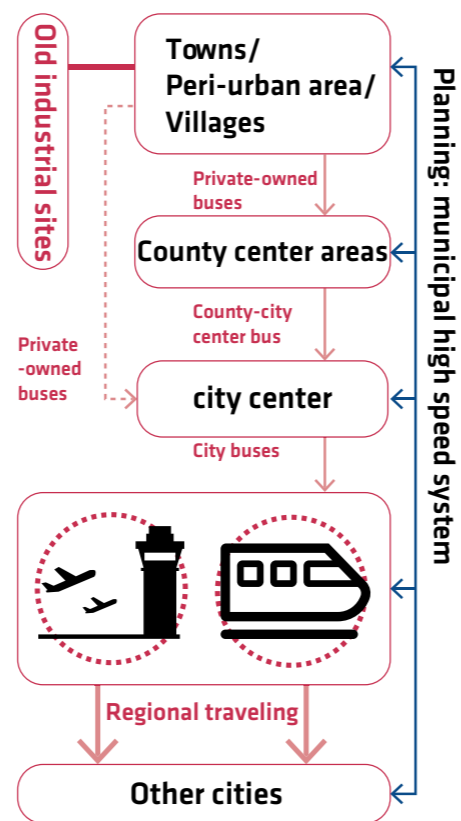


Fig. 4.10.2 Physical connectivity Source: author

## Master plan of spatial planning of the innovative belt

After the superposition of three spatial strategies, the master plan of the innovative belt is shown below. Based on the layout of the innovative community and the implantation of the tourism system, the connectivity strategy connects these spatial elements. On the one hand, physical infrastructure enhances the connection between urban areas and innovative communities, and at the same time enhances the accessibility of the tourism system. On the other hand, information-based infrastructure will provide a virtual platform, providing more possibilities for regional cooperation.

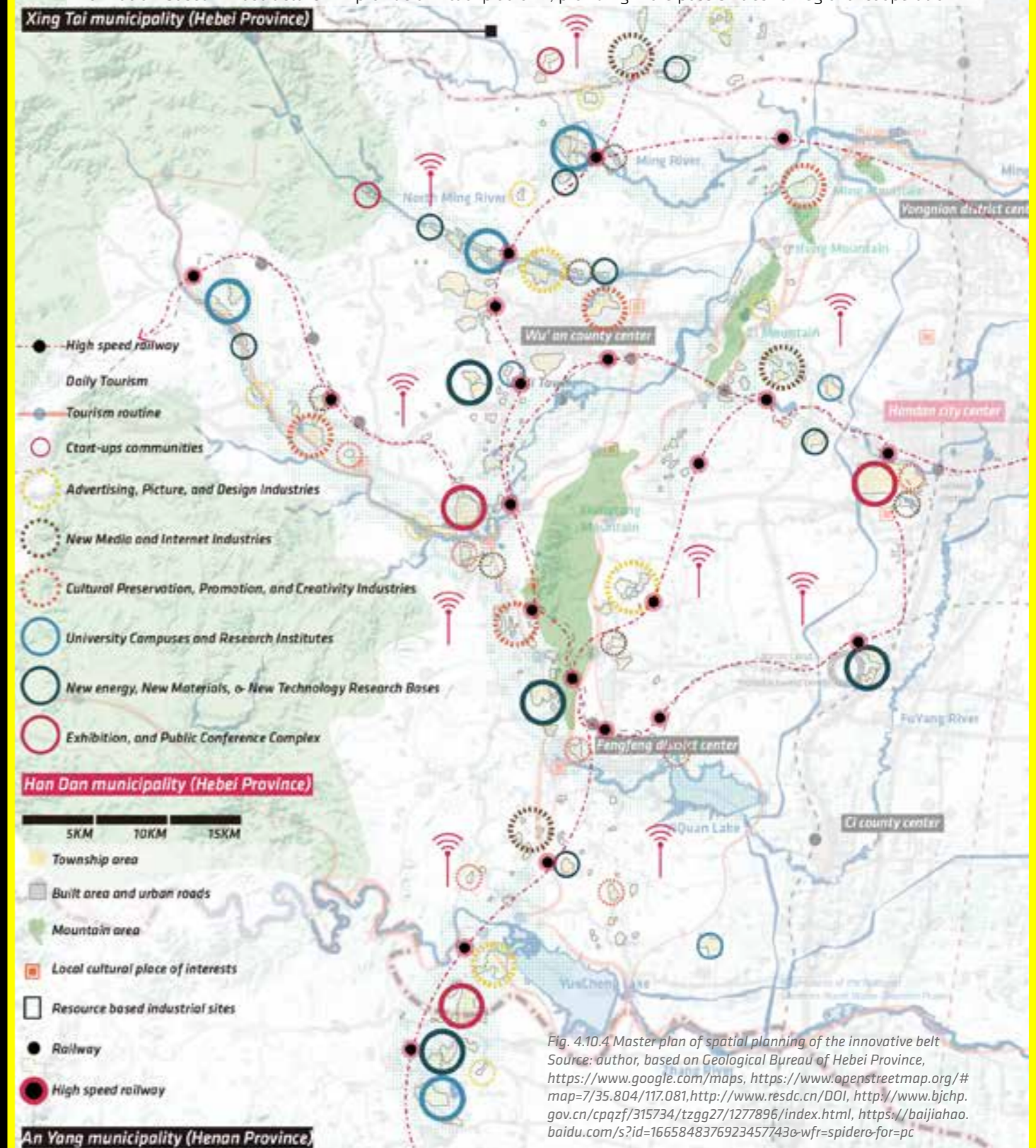


Fig. 4.10.4 Master plan of spatial planning of the innovative belt Source: author, based on Geological Bureau of Hebei Province, https://www.google.com/maps, https://www.openstreetmap.org/#map=7/35.804/117.081, http://www.resdc.cn/DOI, http://www.bjchp.gov.cn/cpqzf/315734/tzgg27/1277896/index.html, https://baijiahaobaidu.com/s?id=1665848376923457743e-wfr=spidero-for-pc



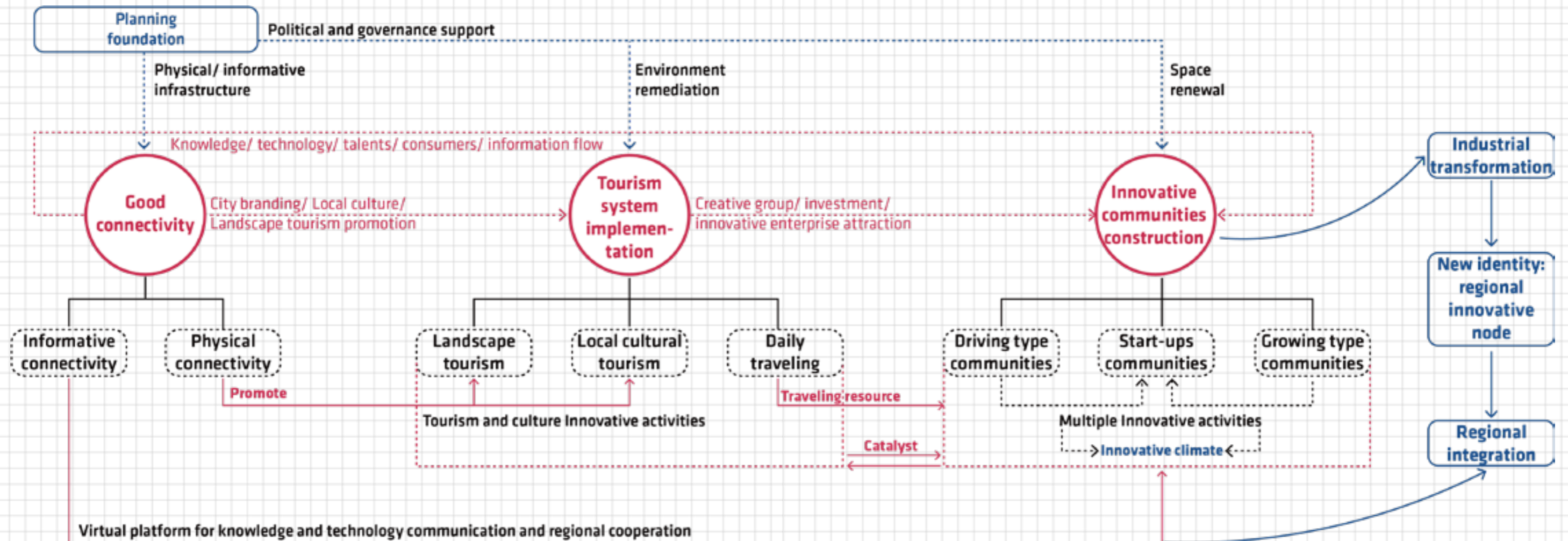
## 5 Implementation

- A Action plan and design principles
- B Design in local scale



## 5.1 Strategic implementation

### Engagement of planning strategies



The good connectivity mainly acts on two aspects, the information infrastructure and the physical infrastructure. Among them, the information infrastructure can drive the establishment of virtual platforms, and regional cooperation and technological exchanges are not limited to physical space, which greatly enhances the flexibility of development. On the other hand, the physical connection directly provides the foundation for the development of tourism and the implantation of innovative industries.

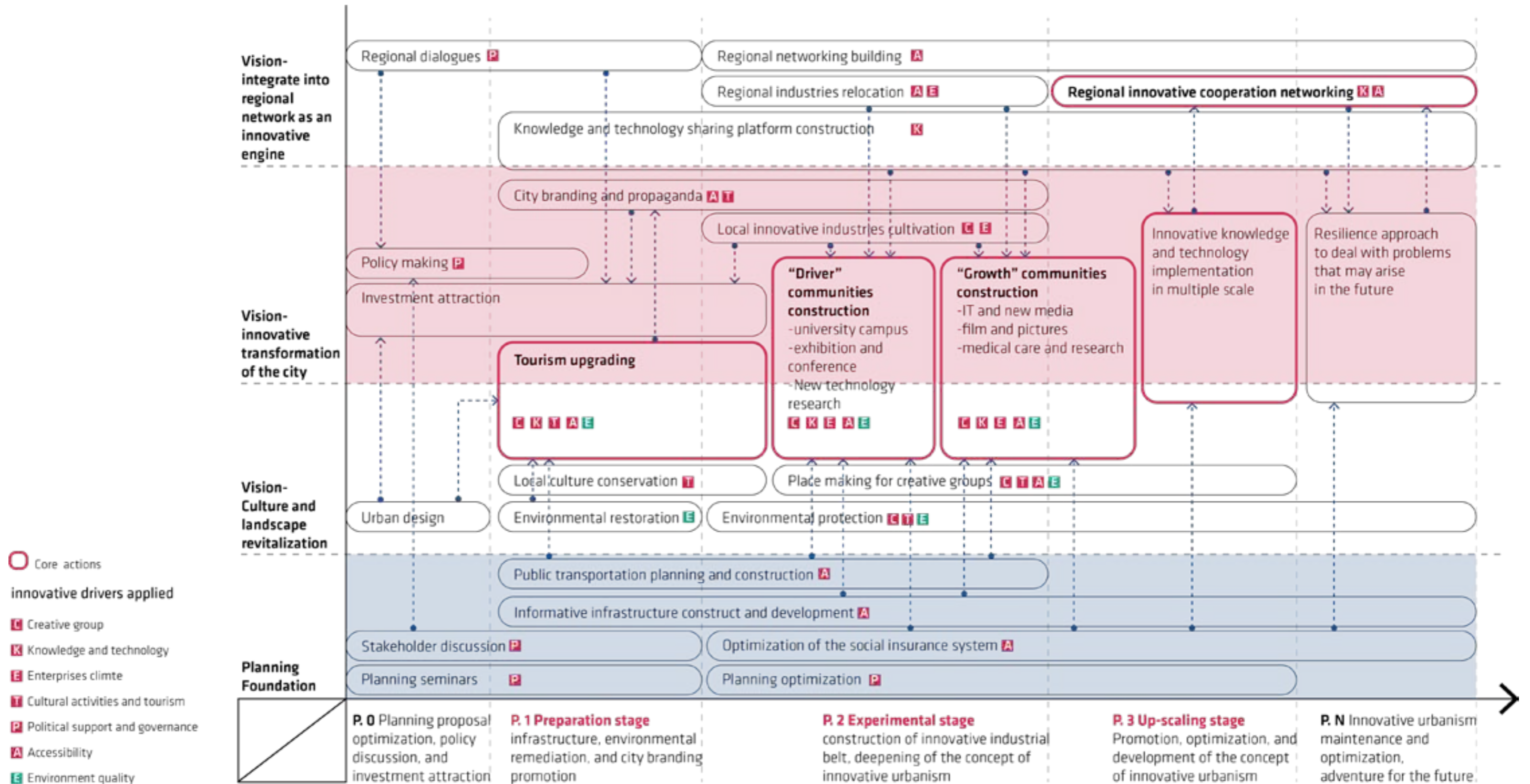
The upgrade of the tourism system is mainly divided into three aspects, landscape tourism, local cultural tourism, and daily tourism. Among them, landscape tourism and local tourism are on a regional scale, and the main purpose is to enhance the attractiveness and popularity of the city. Daily tourism mainly serves the daily leisure and entertainment of people in the community, and its purpose is to create a good atmosphere and environment for innovation.

The construction of innovative communities is mainly divided into three levels, driving type, growing type, and start ups. Among them, driving type communities will be implanted first to drive the development and transformation of innovation belts and provide a foundation for the growing type of innovative atmosphere. The construction of innovative communities promotes the transformation of urban industries, and makes Handan a regional innovation node and integrates into the regional development system.



## 5.2 Action plan

### Plan for timing and specific actions



## 5.3 Stakeholder analysis

### 5.3.2 Stakeholders overview

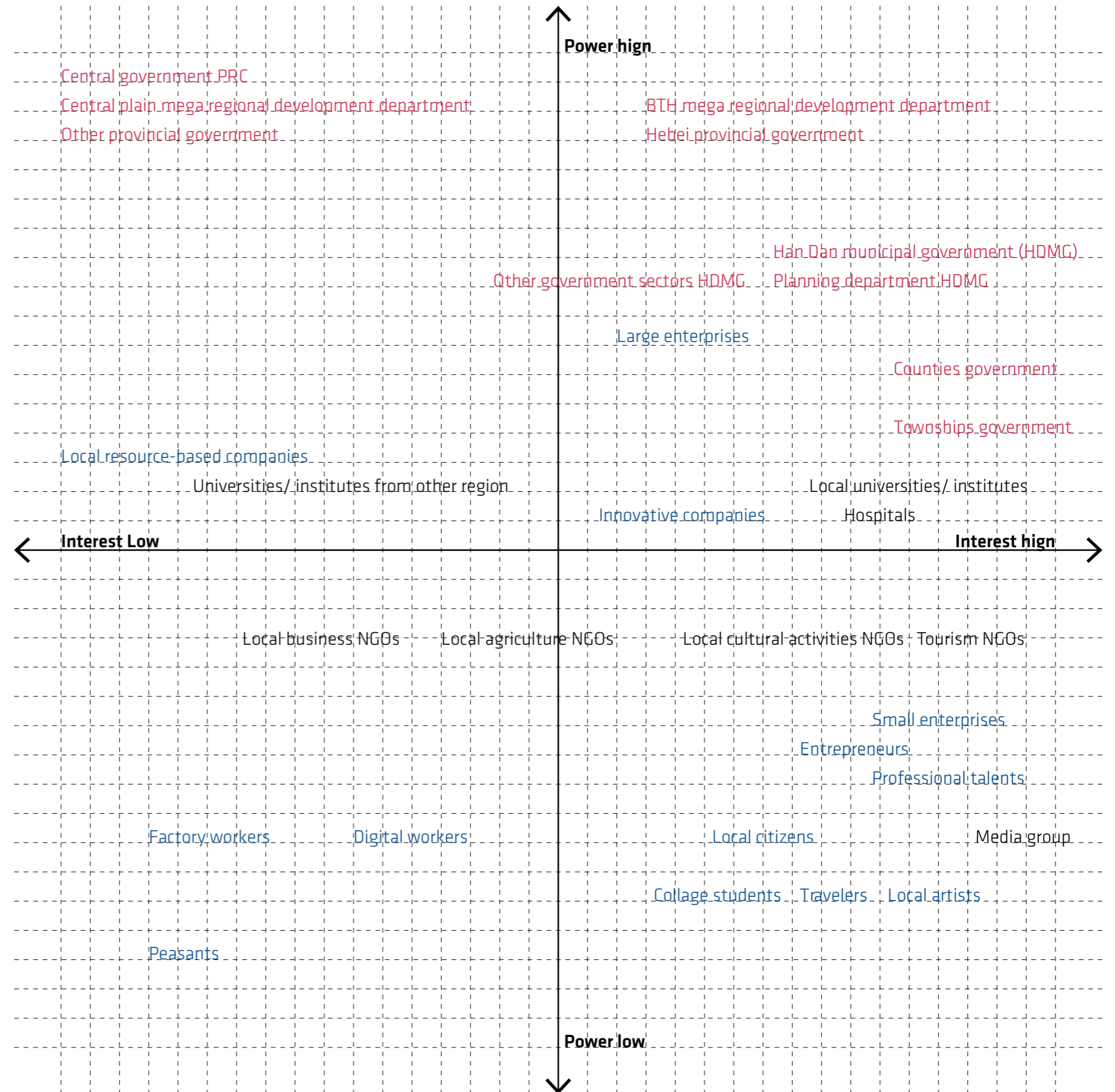
Public ○	Private ○	Civil society ○
Central government PRC	Local resource-based companies	Local universities/ institutes
Hebei provincial government	Innovative companies	Universities/ institutes from other region
Other provincial government	Large enterprises	Media group
Han Dan municipal government (HDMG)	Small enterprises	Tourism NGOs
Planning department HDMG	Factory workers	Local cultural activities NGOs
Other government sectors HDMG	Local citizens	Local business NGOs
BTH mega regional development department	Travelers	Local agriculture NGOs
Central plain mega regional development department	Peasants	Hospitals
Counties government	Local artists	
Townships government	Professional talents	
	Collage students	
	Entrepreneurs	
	Digital workers	

As a cross-regional regional planning proposal, the composition of public stakeholders of this project is more complicated. On the one hand, it spans two national mega regions, so the high-level governments involved include the national central government, the provincial government of Hebei Province, and the provincial government of Henan Province. In addition, there are also some government organizations. Such as the National Development and Reform Commission, the Beijing-Tianjin-Hebei regional development department, and the Central Plains mega region development department. In the sub-level government, the municipal government of Handan City plays a major role. In addition, there are urban planning departments, county-level governments, town governments and other public organizations.

In the private sector, there are mainly companies and enterprises (including local resource-based industries, innovative industries), labor (including employees, entrepreneurs, innovators, digital labor, and professionals), and individuals (including citizens, tourists, students, Farmers, artists, etc.).

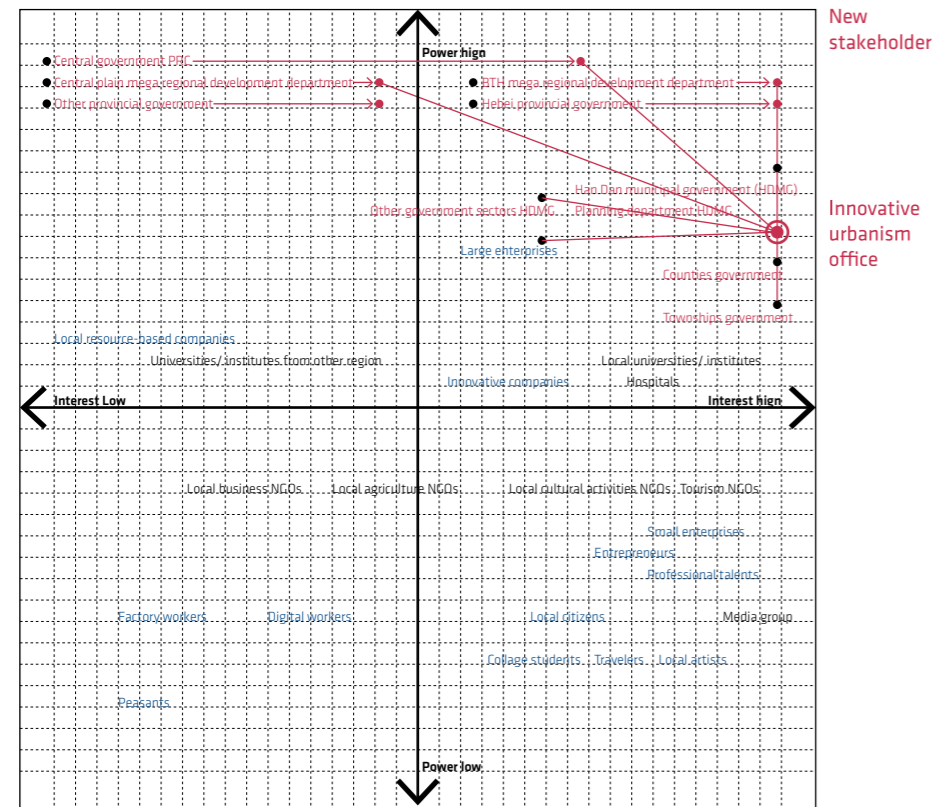
In the civil society sector, scientific research institutions and non-governmental organizations dominate, including local universities, universities and institutions in other regions, tourism, cultural, commercial, and agricultural non-governmental organizations, media organizations, and hospitals.

These stakeholders are located in the table on the right to analyze their power and interest relationships.



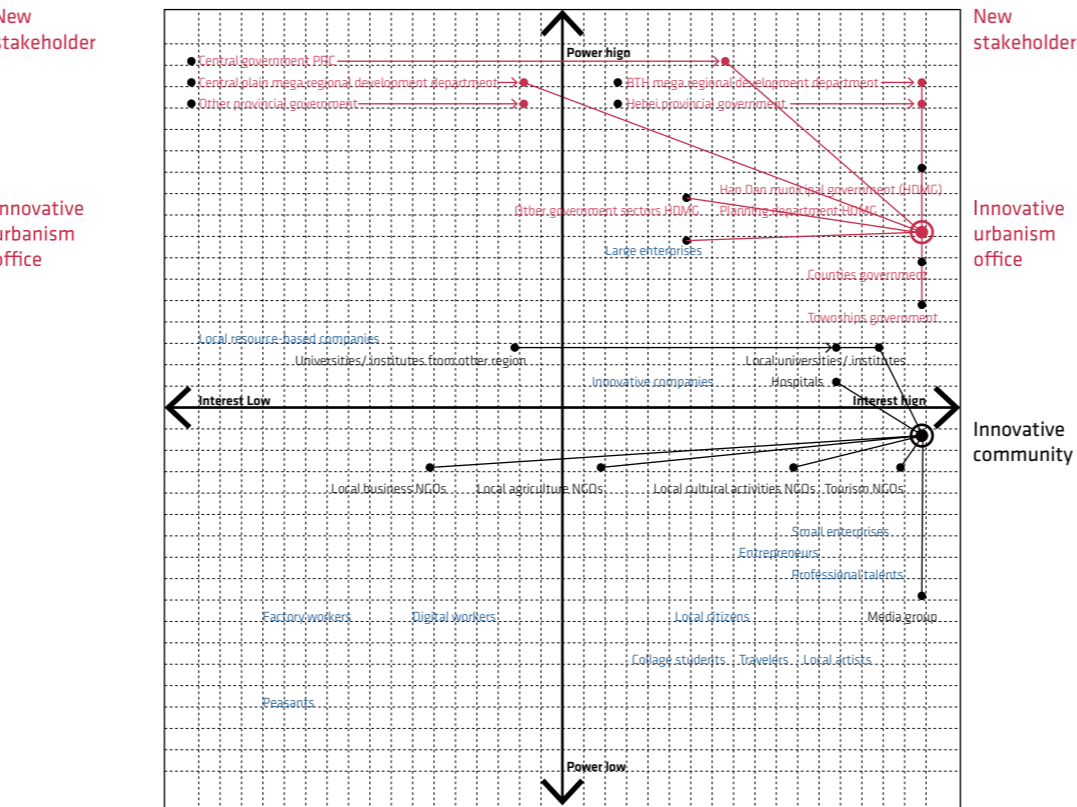
## 5.3 Stakeholder analysis

### 5.3.3 Stakeholder engagement



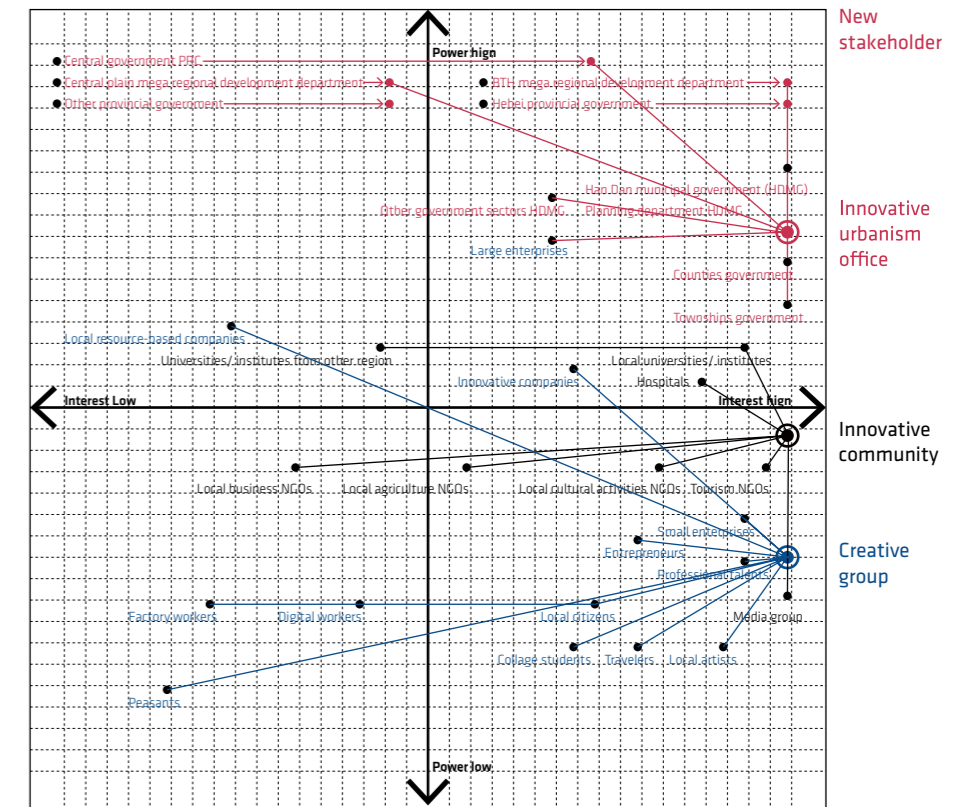
#### Public sector - Innovative urbanism office

In the public sector, due to the complex relationship between different regions and different levels of government, this proposal introduces a new stakeholder, the innovative urbanism office, to coordinate the relationship between public stakeholders. In addition, this project should increase the interest of high-level government departments by increasing the visibility and attractiveness of the project to obtain more political support.



#### Civil society sector - Innovative community

Since the construction of the innovative community is one of the very important strategies of this proposal, the innovative community will appear in this system as a stakeholder of a new civil society sector. The innovative community will act as the coordinator of different types of non-governmental organizations, allowing these stakeholders to play their own advantages and establish a communication platform. It is also worth mentioning that local scientific research institutes, universities, hospitals and other stakeholders are also considered as pioneers in the construction and use of innovative communities and attract other industries to settle in.



#### Private sector - Creative group

As the main body of innovative activities, creative group will appear in this system as a new private stakeholder. In fact, many existing stakeholders will join the creative group, such as local cultural artists, university students, farmers, entrepreneurs, etc. On this basis, the newly introduced large and small innovative industries will provide a platform for the creative group to create an atmosphere of innovation. In addition, the remaining local resource-based enterprises will also seek opportunities for transformation and cultivate or introduce creative groups to integrate into this innovative system.

## 5.4 Design principles

### 5.4.1 Innovative drivers and design principles

In order to implement the three strategies defined in the previous chapter into the design, this project proposes detailed design principles. These design principles are essentially derived from innovative drivers, to ensure that the proposed design principles can fundamentally promote innovative urbanism. On this basis, the six design principles also promote the implementation of planning strategies in different dimensions to achieve the desired planning results. It is worth noting that, in addition to the 6 design principles mentioned above based on innovative drivers, this project also proposes a seventh principle: possibilities for the future adventure, which is to make the entire planning project have a certain degree of flexibility. In order to deal with the unknowable situation in advance.

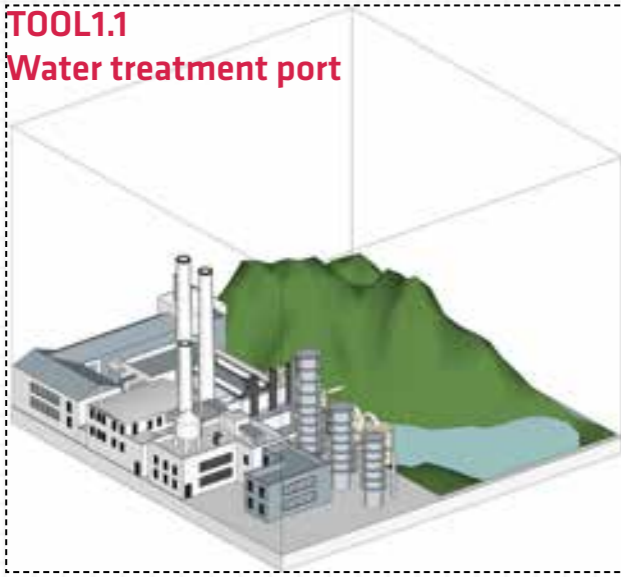
	Innovative drivers	Evaluation indicators	Design principles	Tools					
Core	Creative group	The third places for social interaction	Diversity of the third places	Social activity center	Commercial center	Exhibition hall	Virtual space	R&D hub	Knowledge hub
		Flexibility in Place making							
		Social networking							
		Diversity of people							
Promoter	Knowledge and technology	Technology upgrading	Reserved space for start ups and free to use	Labor training center	SOHO	Workshops	Sharing office		
		Knowledge flow							
		Space for start ups							
	Enterprises climate	Investment attractiveness							
		cooperation and communication							
		Open marketism							
		Tourism system							
Cultural activities and tourism	Local culture conservation	Plug-ins for cultural activities and tourism	Agri-park	Cultural park	Digital tourism	Open stage	Tourism business	Riding path	
	City branding and promotion								
Foundation	Political support and governance	Policy performance	Decentralized living facilities	Kindergarten	Daily commerce	Public gym	Social housing	Canteen	Recreation park
		Livign facility support							
		Social insurance							
	Accessibility	Informative network	Good physical/ digital accessibility	Inter-district railway	Informative network	Community bus	Shared bike station		
		Public transportation							
		Full cover of infrastructure							
	Environment quality	Air quality	Environmental restoration	Water treatment port	Air-clean park	New energy hub	Landscape remediation station		
		Bule& green structure							
		Energy-clean							
			Possibilities for the future adventure	"X"					

## 5.4.2 Designing tools

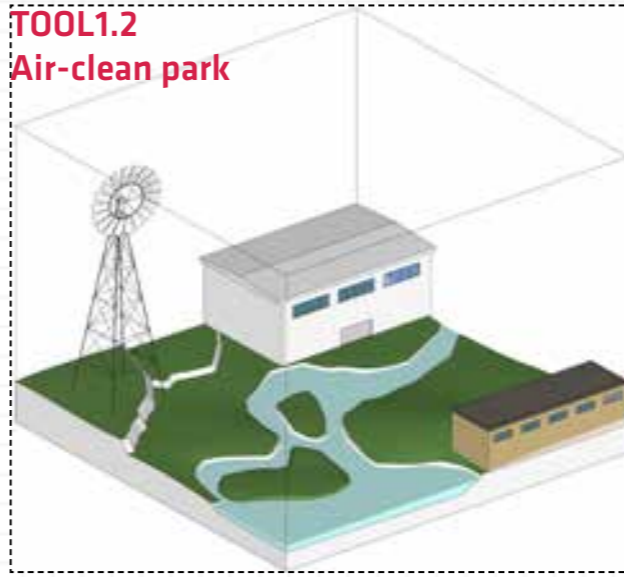
### Principle1-Environmental restoration

Due to the long and disorderly development of heavy industry, the geographical landscape of the region has been severely damaged. The contaminated soil and rivers have not yet been treated, and the air quality is very low due to the development of heavy industry. In response to these problems, four tools are proposed in the principle of environmental restoration, which correspond to water management and purification, air purification, soil and landscape remediation, and the development of new energy technologies, such as wind energy and solar energy.

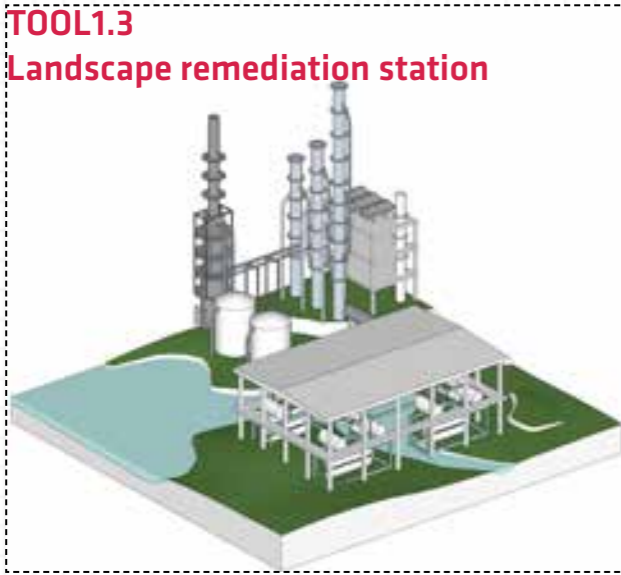
**TOOL1.1**  
Water treatment port



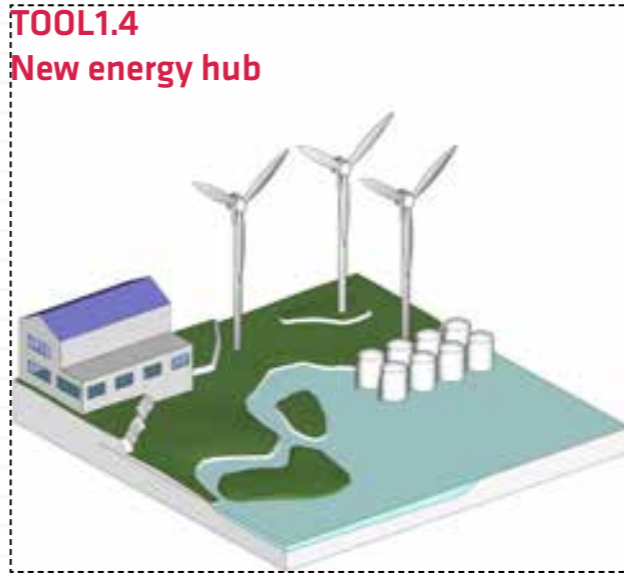
**TOOL1.2**  
Air-clean park



**TOOL1.3**  
Landscape remediation station



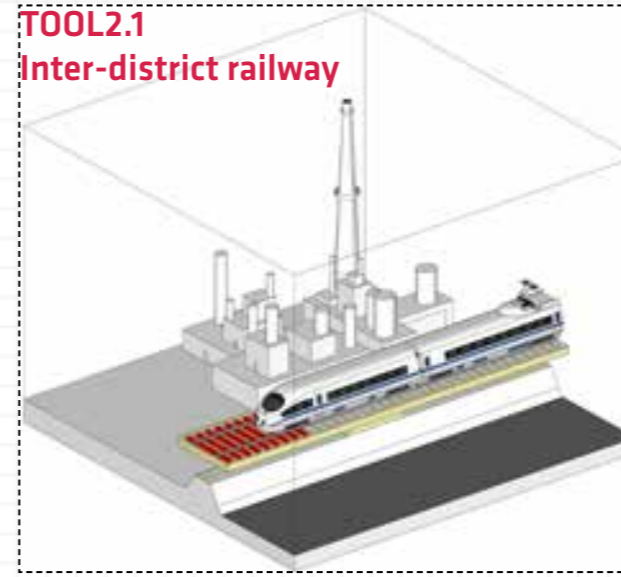
**TOOL1.4**  
New energy hub



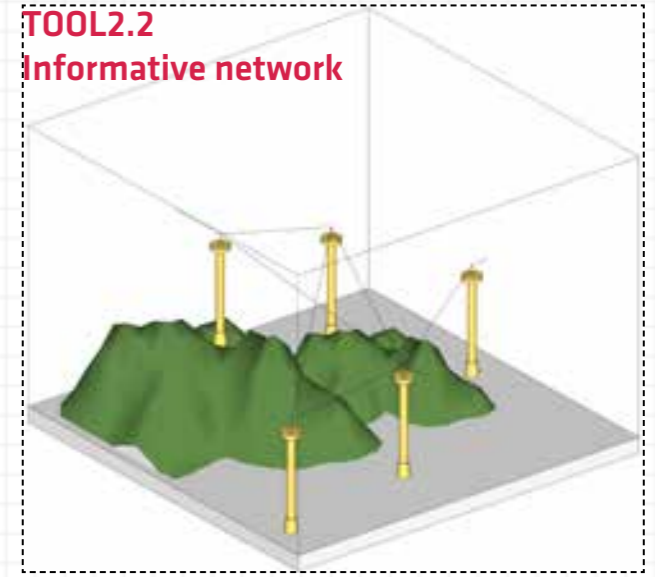
### Principle2-Good physical/ digital accessibility

Although this area has good urban road links with the city center and various county centers, due to the abandoned factory area and lack of public transportation system, only slow trains connect some towns in this area with the railway station in the city center. The transportation is underdeveloped. Therefore, the most important tool is the laying of high-speed rail transit. Accessibility at the Internet level is also an important tool, which can integrate this region into a virtual platform for regional cooperation. In addition to regional-scale connectivity tools, this project also sets local-scale public transportation tools, community buses and shared bicycles.

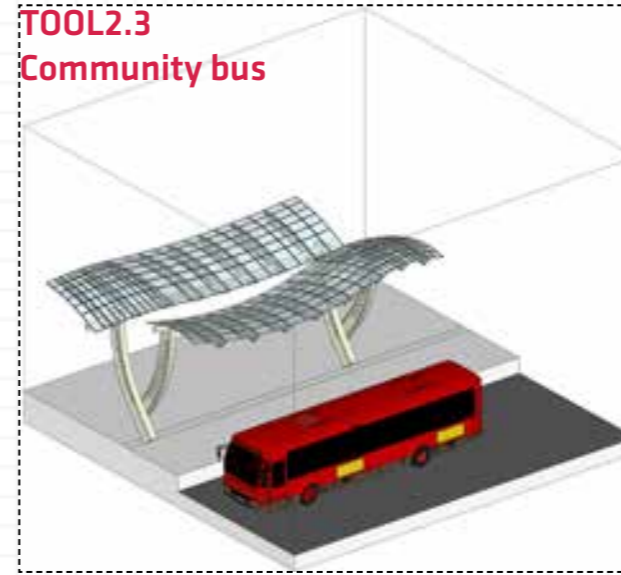
**TOOL2.1**  
Inter-district railway



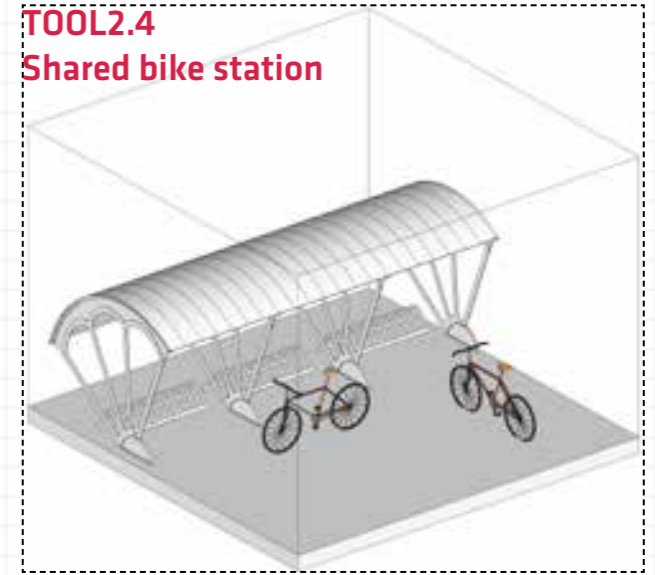
**TOOL2.2**  
Informative network



**TOOL2.3**  
Community bus

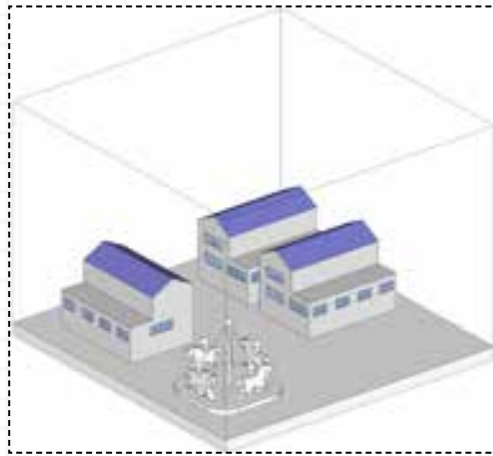


**TOOL2.4**  
Shared bike station

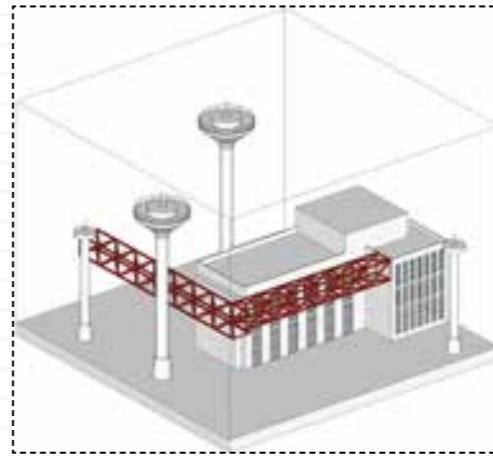


### Principle3-Decentralized living facilities

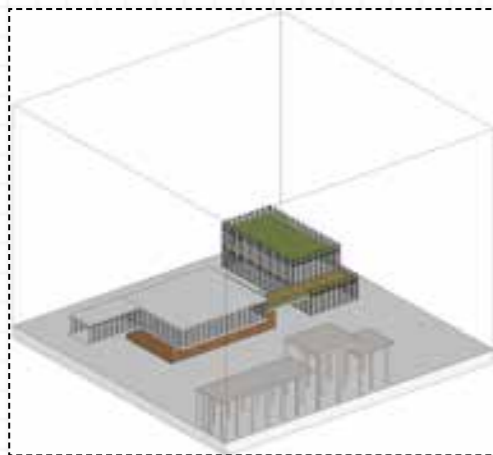
The improvement of life service facilities is the basic guarantee for the smooth operation of the innovative industry, and is of great help to the work, travel, and life of the creative group. This project also considers the decentralization of life-based service facilities to achieve balance, save traffic consumption, make community life more convenient and increase attractiveness. The main basic service facilities involved are kindergartens, daily commerce, gymnasiums, affordable housing, restaurants, and leisure and entertainment open spaces.



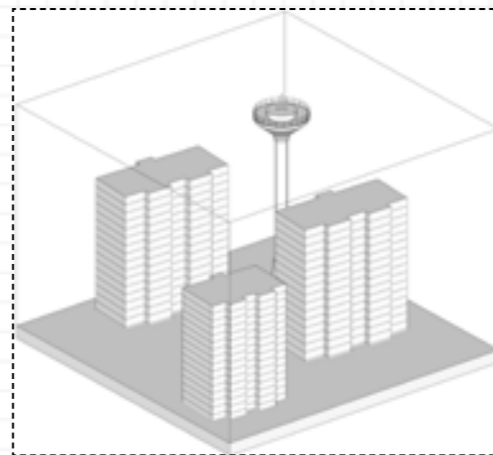
**TOOL3.1**  
Kindergarten



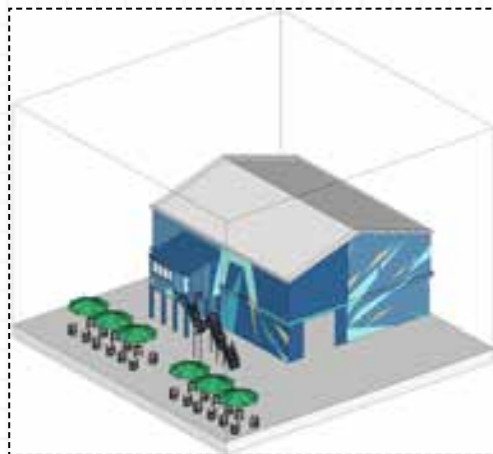
**TOOL3.2**  
Daily commerce



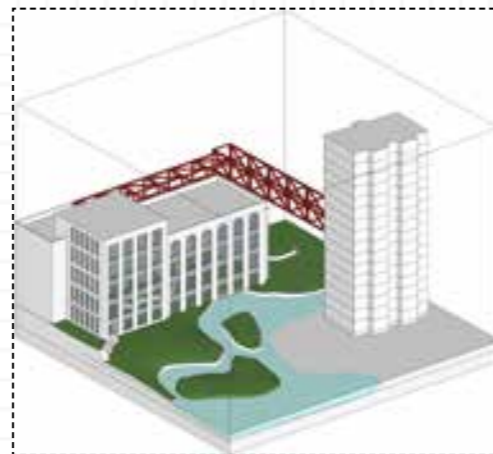
**TOOL3.3**  
Public gym



**TOOL3.4**  
Social housing



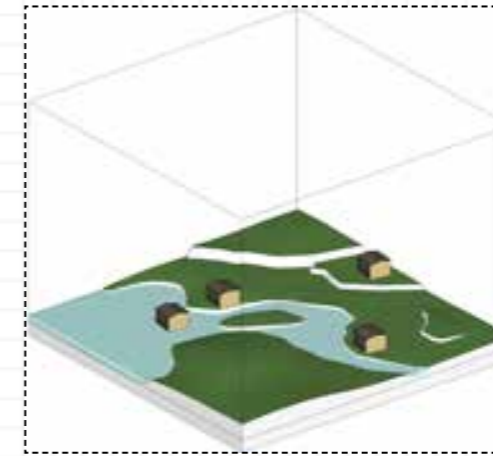
**TOOL3.5**  
Canteen



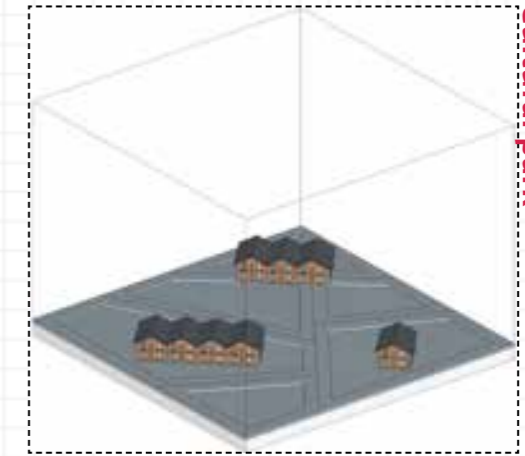
**TOOL3.6**  
Recreation park

### Principle4-Plug-ins for cultural activities and tourism

The principle of this project for local culture and tourism is mainly reflected in the planning, considering plug-ins for related activities, in order to activate the city's cultural vitality and the interestingness of the tourism system. It mainly includes agricultural parks to promote the transformation from traditional agriculture to service-oriented industries, provide recreational places for citizens, and also allow farmers to obtain higher profits; cultural parks to promote local culture, keep city identity; digital tourism, make use of information technology Products, such as new media, TV and movies; open the stage; tourism business, encourage tourism to drive entrepreneurship, and also activate the cultural industry; riding path, make use of landscape resources.



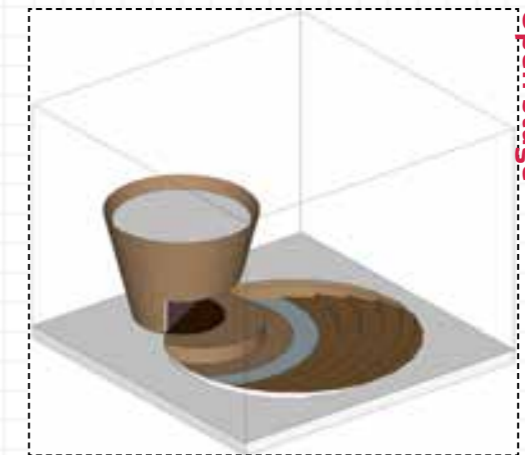
**TOOL4.1**  
Agri-park



**TOOL4.2**  
Cultural park



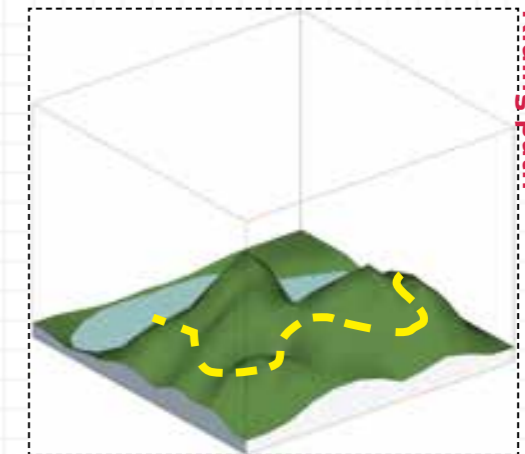
**TOOL4.3**  
Digital tourism



**TOOL4.4**  
Open stage



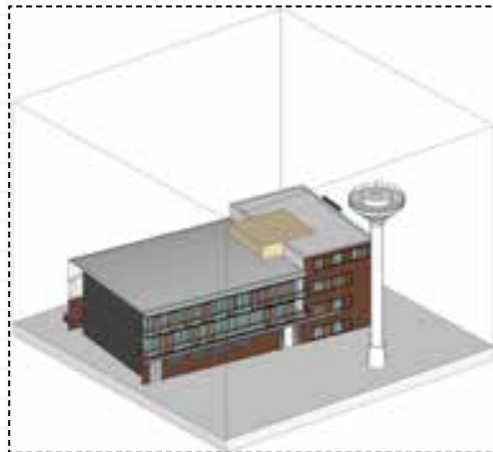
**TOOL4.5**  
Tourism business



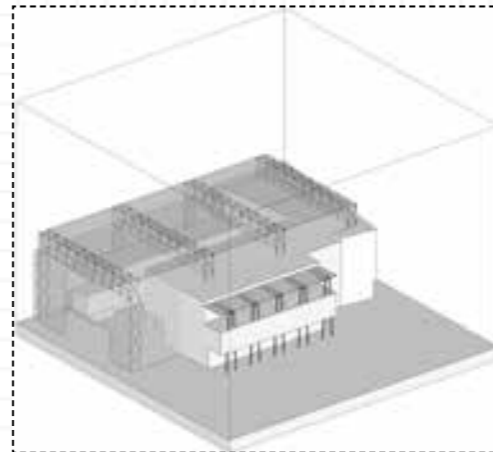
**TOOL4.6**  
Riding path

## Principle5-Diversity of the third places

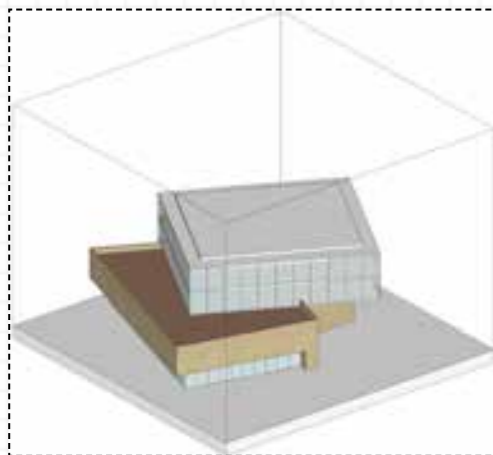
The third places refers to spaces that can promote social interaction, creation and communication in addition to living and working, which play a great role in stimulating the creative group's innovation. In response to this principle, the diversified third places are implanted as tools, in order to ensure that different groups are provided with opportunities for communication and to enhance social vitality. The third place mainly includes social activity centers, commercial centers, exhibition halls, R&D hub and other physical spaces, as well as virtual social communication and knowledge exchange spaces.



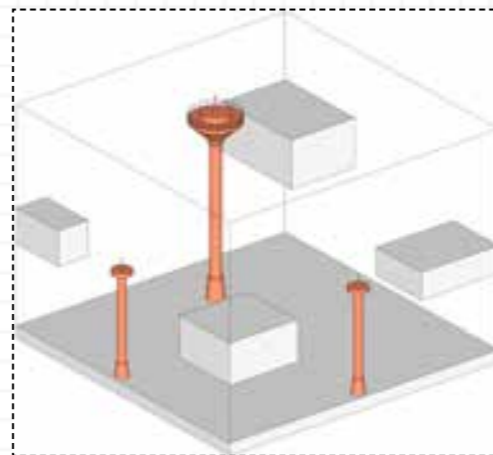
**TOOL5.1**  
Social activity center



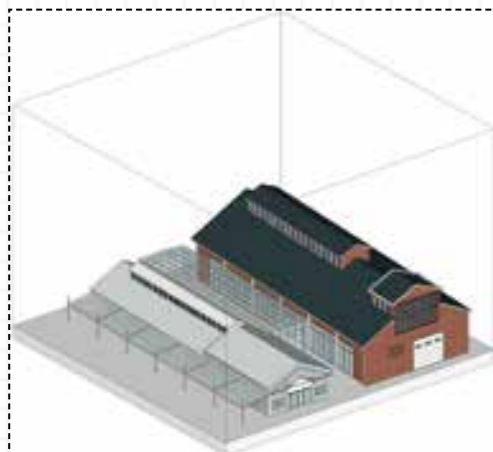
**TOOL5.2**  
Commercial center



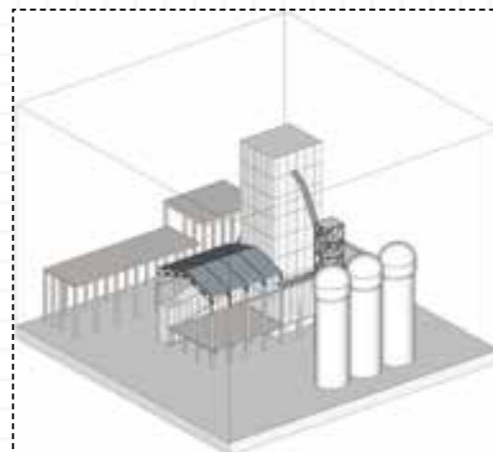
**TOOL5.3**  
Exhibition hall



**TOOL5.4**  
Virtual space



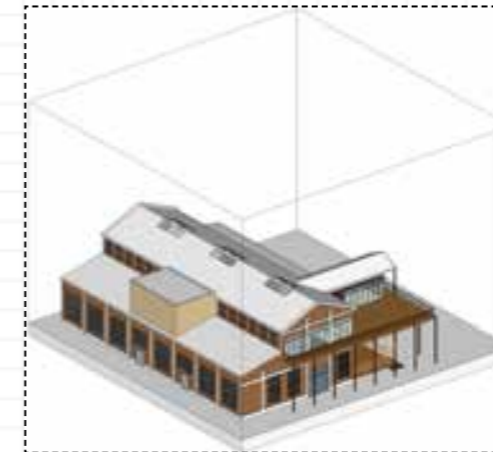
**TOOL5.5**  
R&D hub



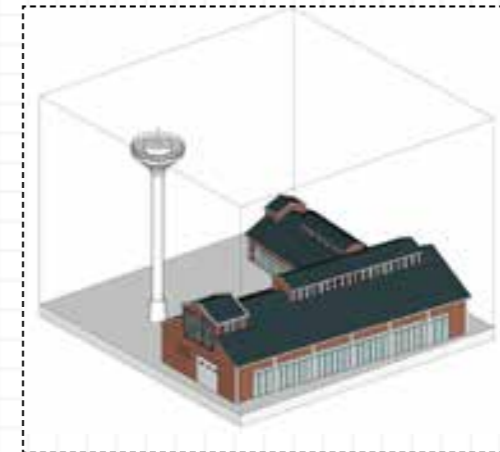
**TOOL5.6**  
Knowledge hub

## Principle6-Reserved space for start ups and free to use

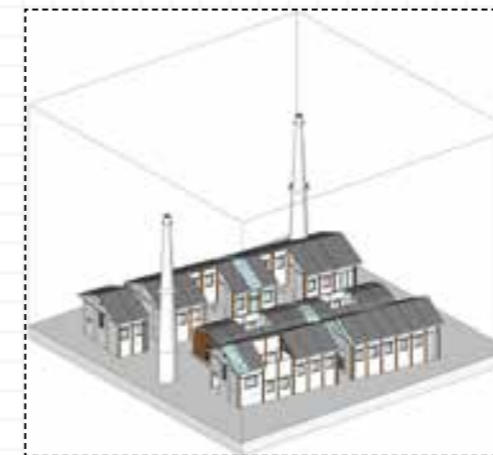
As mentioned above, start ups have a great role in promoting the creation of the division of urban innovation and entrepreneurship. People can use it freely, which provides the creative group with space for entrepreneurship and innovation. In this project, in addition to the traditional start ups space such as the sharing office, there is also a space for labor education, talent training, SOHO (small office and home office space) integrating living and working, and innovative activities for different groups, workshops.



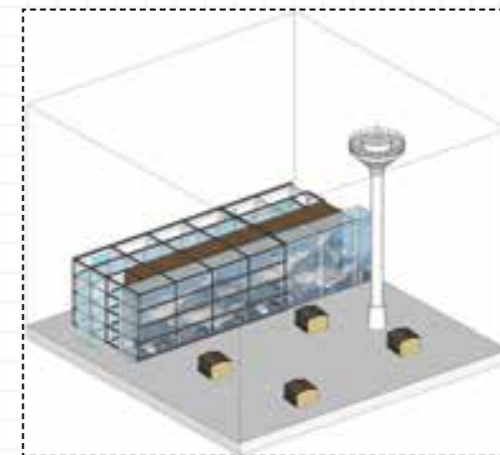
**TOOL6.1**  
Labor training center



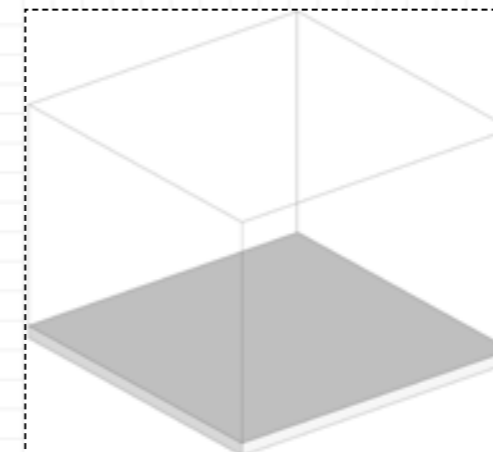
**TOOL6.2**  
SOHO



**TOOL6.3**  
Workshops



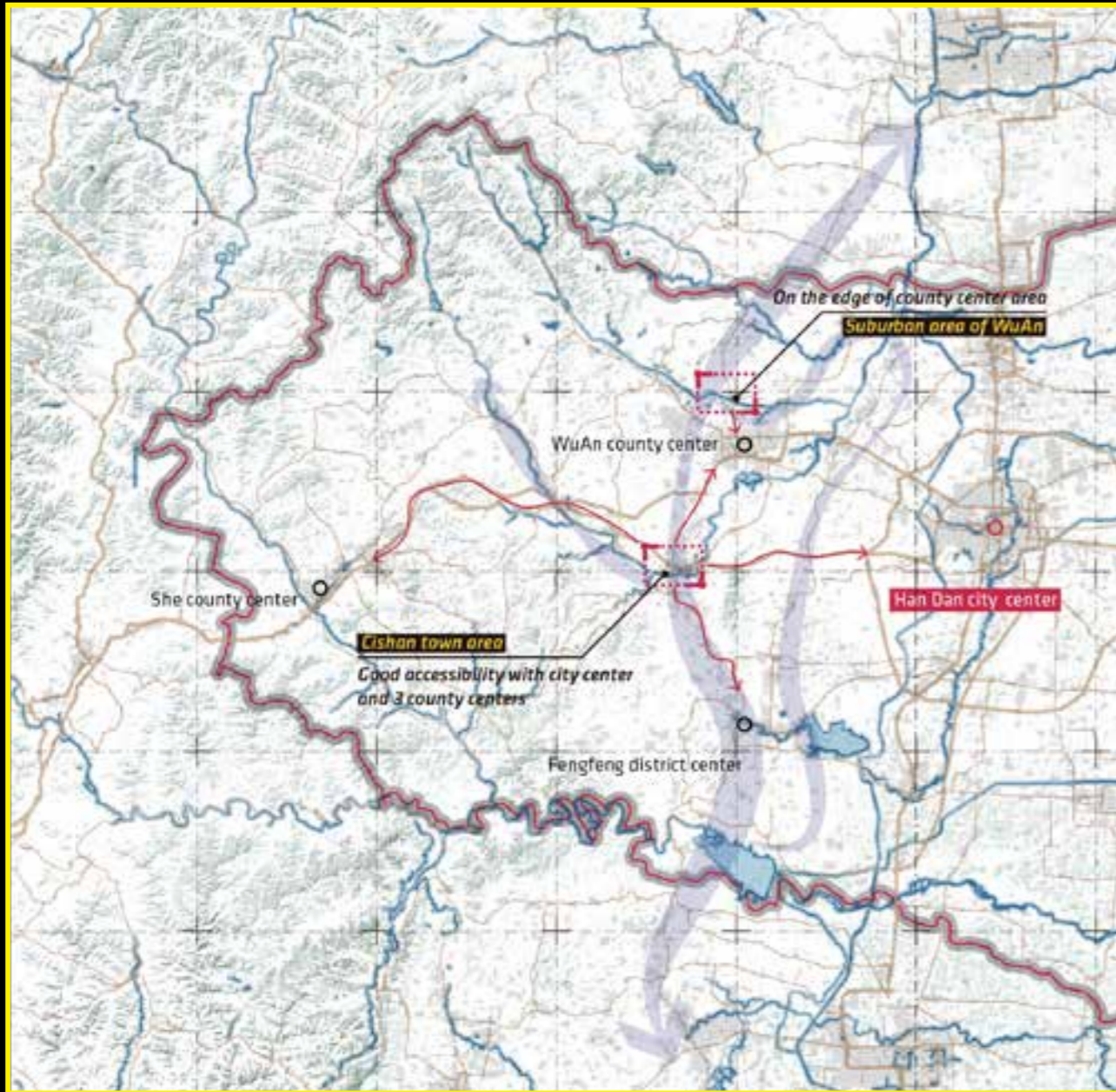
**TOOL6.4**  
Sharing office



**TOOL7.1 "X"**

## Principle7- possibilities for the future adventure

In addition to the spatial regeneration principle mentioned above, the project also hopes to retain a certain degree of flexibility and resilience, on the one hand to resist future unknowable risks, on the other hand, to provide development space for innovative activities and innovative industries outside the scope of the planned project.



## 5.5 Selection of sites for local design

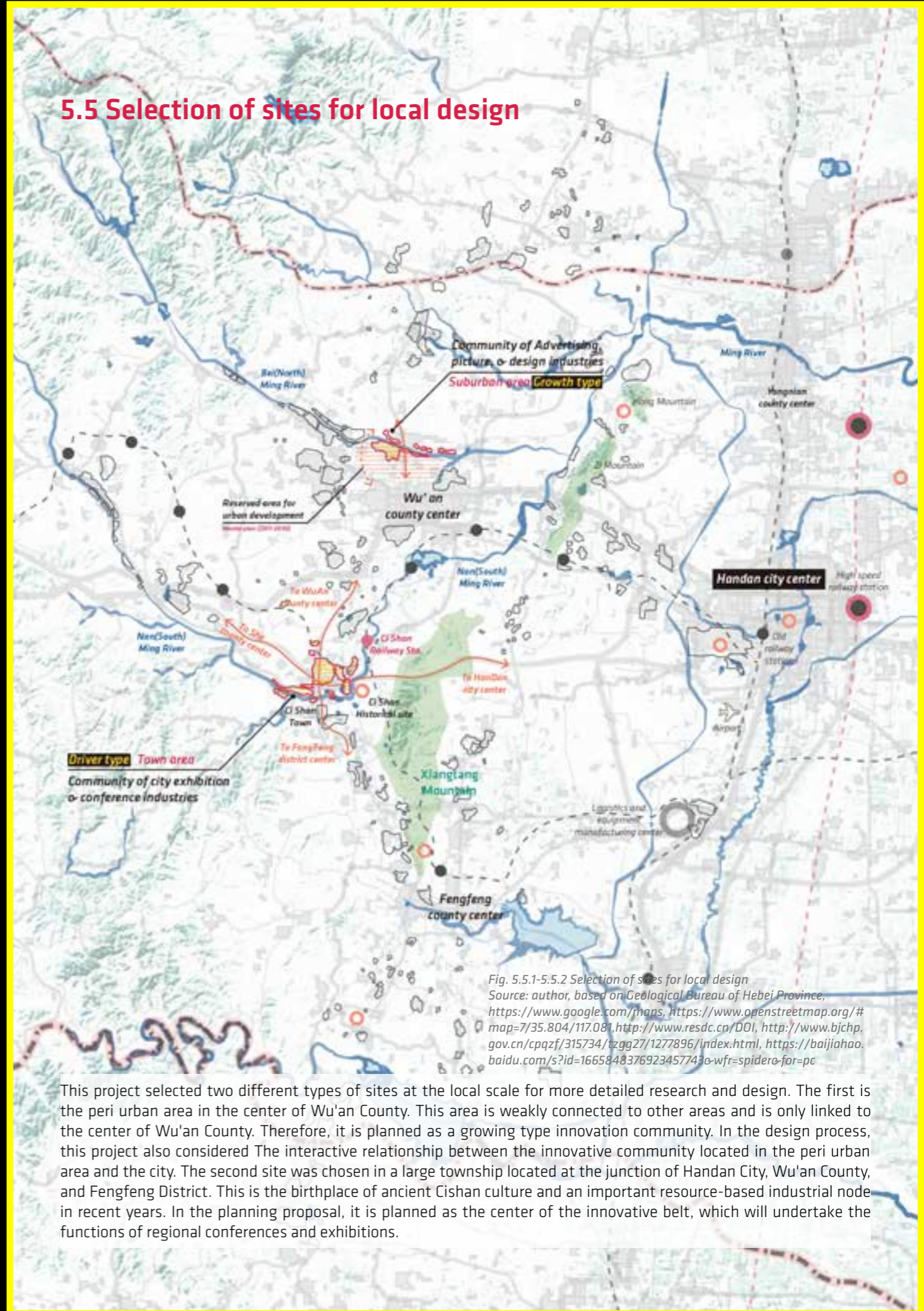


Fig. 5.5.1-5.5.2 Selection of sites for local design  
 Source: author, based on Geological Bureau of Hebei Province,  
<https://www.google.com/maps>, <https://www.openstreetmap.org/#map=7/35.804/117.081>, <http://www.resdc.cn/DOI>, <http://www.bjchp.gov.cn/cqzqf/315734/tzgg27/1277896/index.html>, <https://baijiahao.baidu.com/s?id=1665848376923457743e-wfr=spidero-for=pc>

This project selected two different types of sites at the local scale for more detailed research and design. The first is the peri urban area in the center of Wu'an County. This area is weakly connected to other areas and is only linked to the center of Wu'an County. Therefore, it is planned as a growing type innovation community. In the design process, this project also considered the interactive relationship between the innovative community located in the peri urban area and the city. The second site was chosen in a large township located at the junction of Handan City, Wu'an County, and Fengfeng District. This is the birthplace of ancient Cishan culture and an important resource-based industrial node in recent years. In the planning proposal, it is planned as the center of the innovative belt, which will undertake the functions of regional conferences and exhibitions.



Design in local scale



### 5.5.1 The overview of the sub-urban site

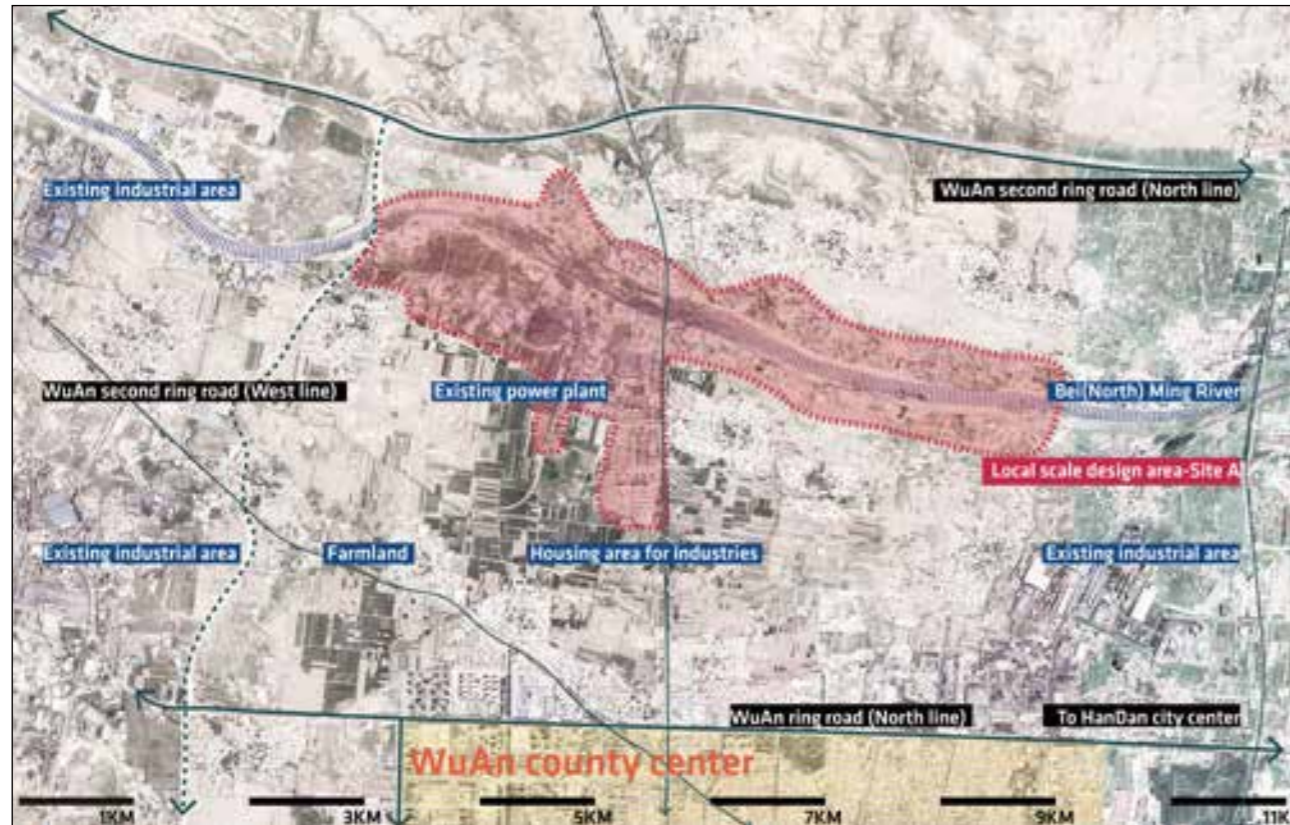
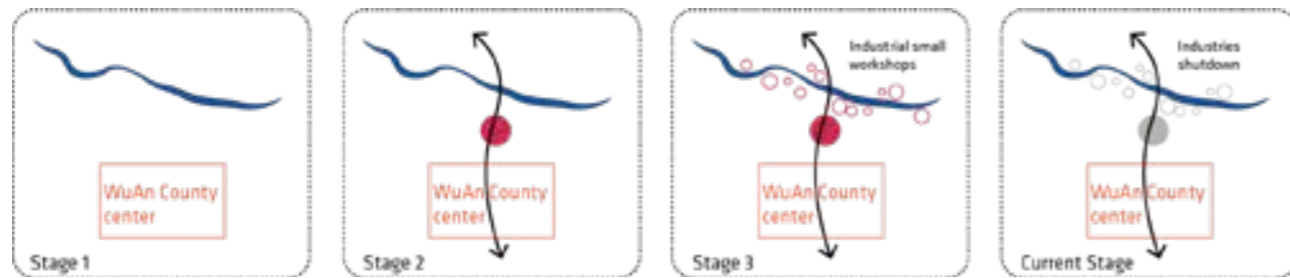
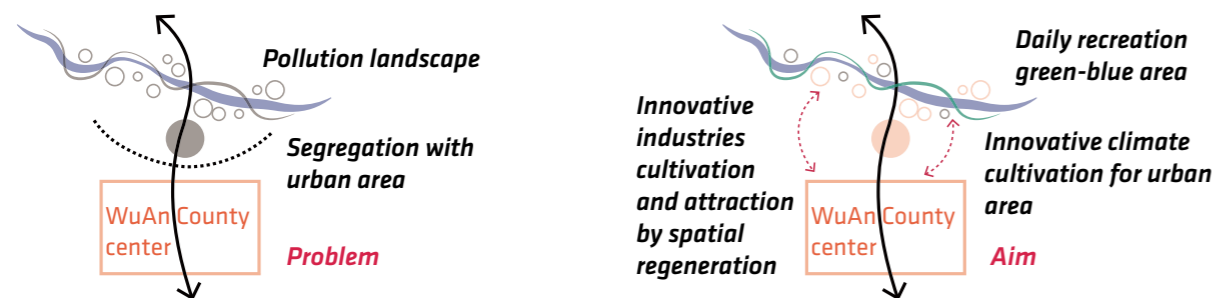


Fig. 5.5.3 The overview of the sub-urban site Source: author, based on <https://www.google.com/maps>



This site is located in the suburban area in the center of Wu'an County. About 90s, a power plant was built in this area. In the following years, some small industrial workshops were built along the river, forming the current landscape pattern. After the shutdown of power plants and small industrial workshops, this area will be abandoned and separated from the urban development system.



The main problems facing this area are environmental pollution and segregation with urban area. In this planning proposal, this area will be regenerate into the advertising and design industrial area, based on this to create an urban innovative atmosphere, and at the same time as an open space for urban leisure and entertainment.

### 5.5.2 The overview of the large town site

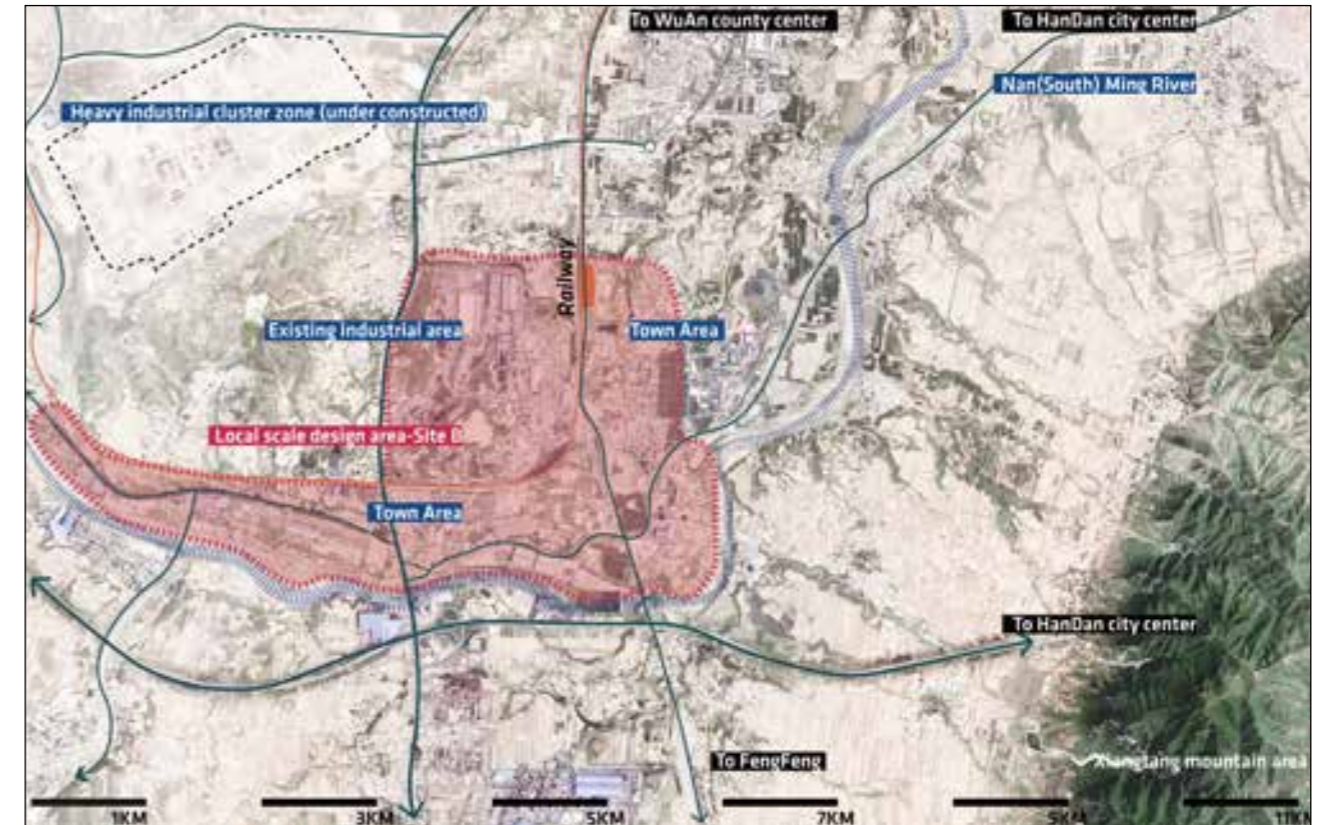
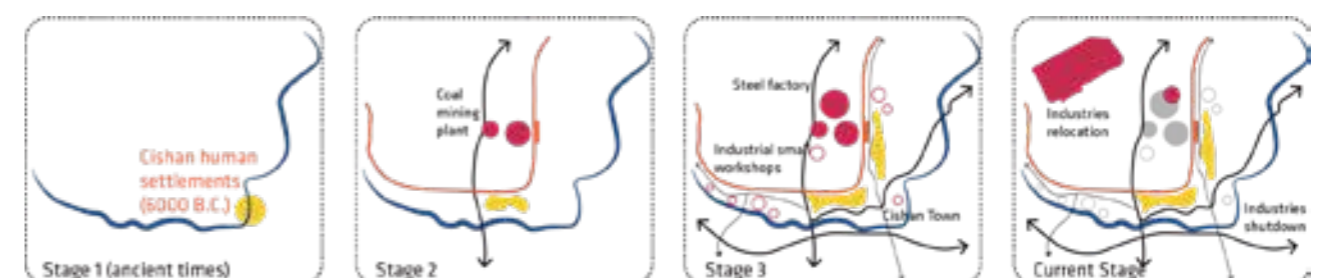
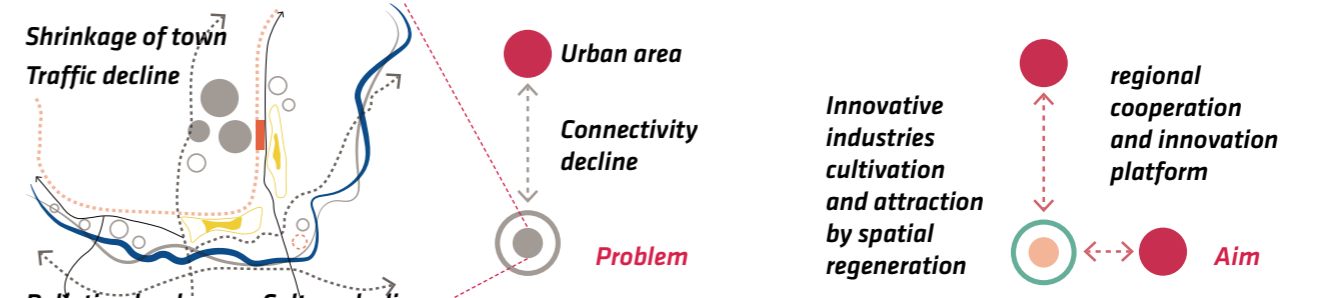


Fig. 5.5.4 The overview of the large town site Source: author, based on <https://www.google.com/maps>



Cishan Town is the birthplace of Cishan Culture, one of the earliest human settlement cultures in China, and has a very high historical and cultural value. However, in recent years of development, cultural values have not been respected, but resource-based industries have been developed. This was a very important industrial node, and the development of industry also promoted the rapid urbanization of the town. However, when the heavy industry was shut down and relocated, the township began to shrink.



The main problem facing Cishan Township is that with the closure and relocation of large-scale industries, the township's development has stagnated and even began to shrink, and its connection with the city center has also weakened. The implantation of innovative industries can enhance the vitality of urban industries and serve as a spatial platform for regional cooperation to help cities integrate into the regional development system.

## 5.6 Designing sub-urban site

### 5.6.1 Mapping of current situation

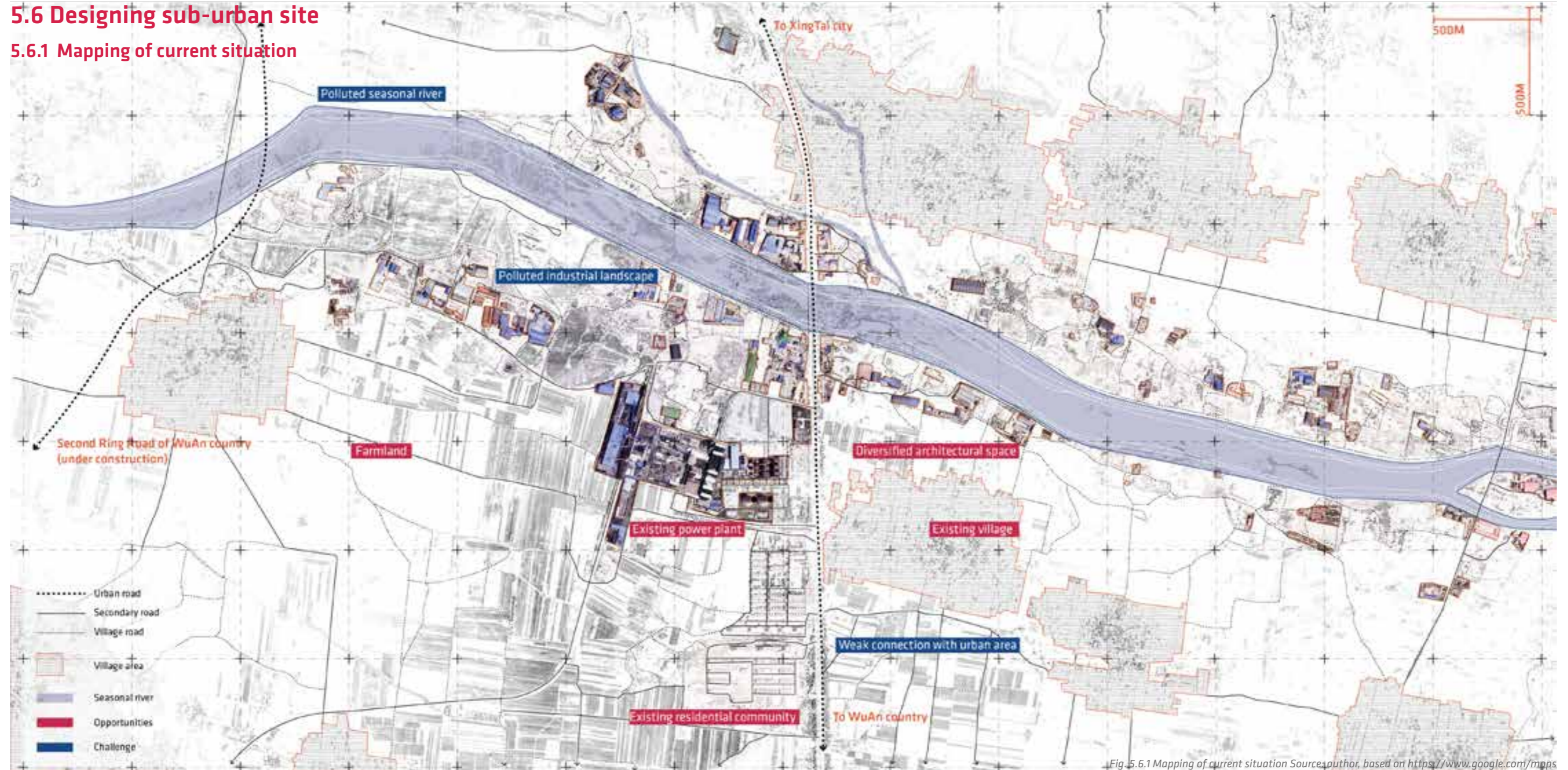
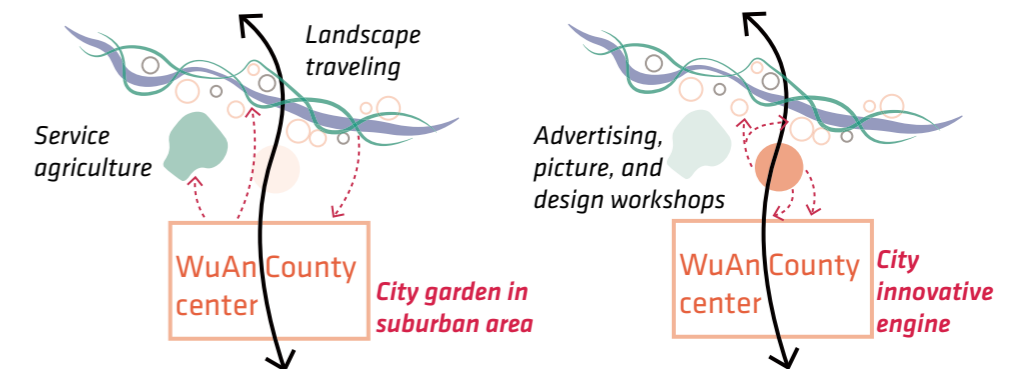
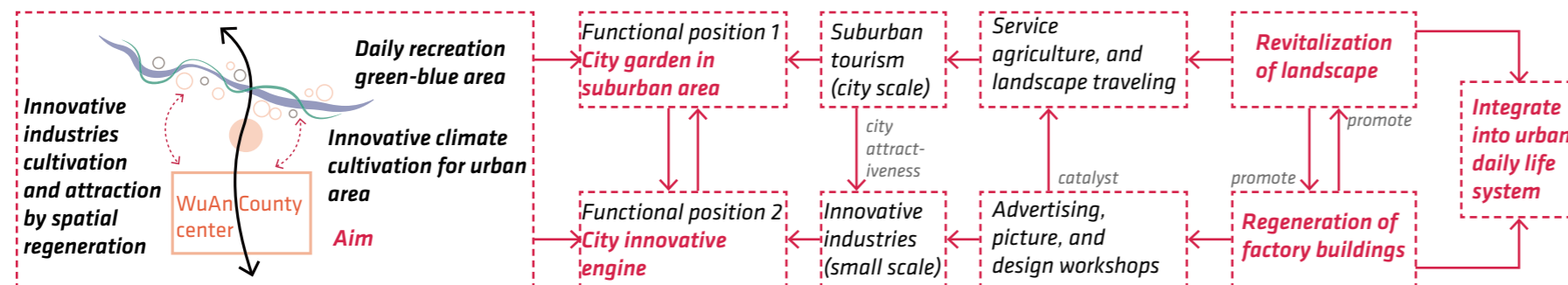


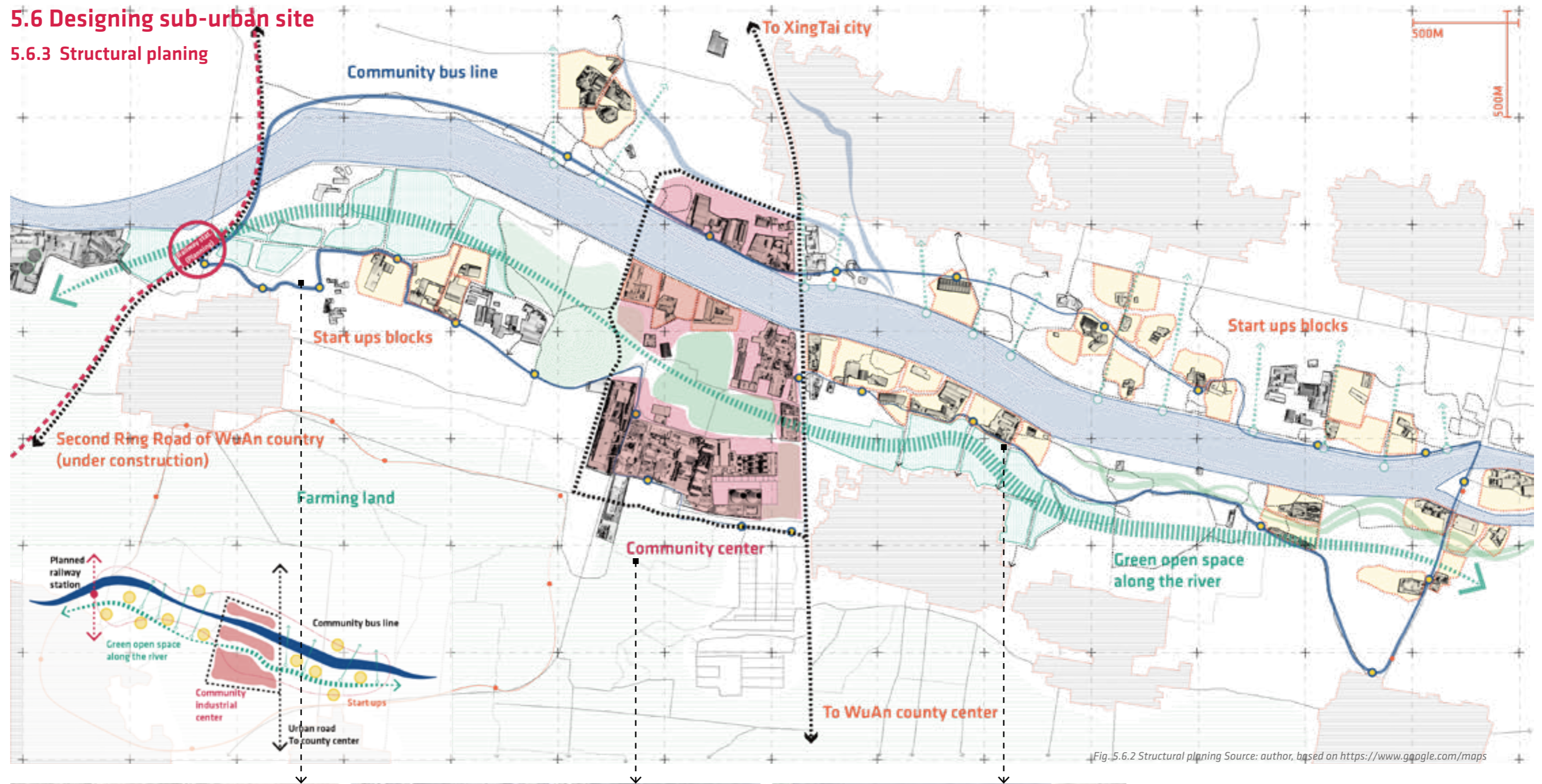
Fig. 5.6.1 Mapping of current situation Source: author, based on <https://www.google.com/maps>

### 5.6.2 Design concept



## 5.6 Designing sub-urban site

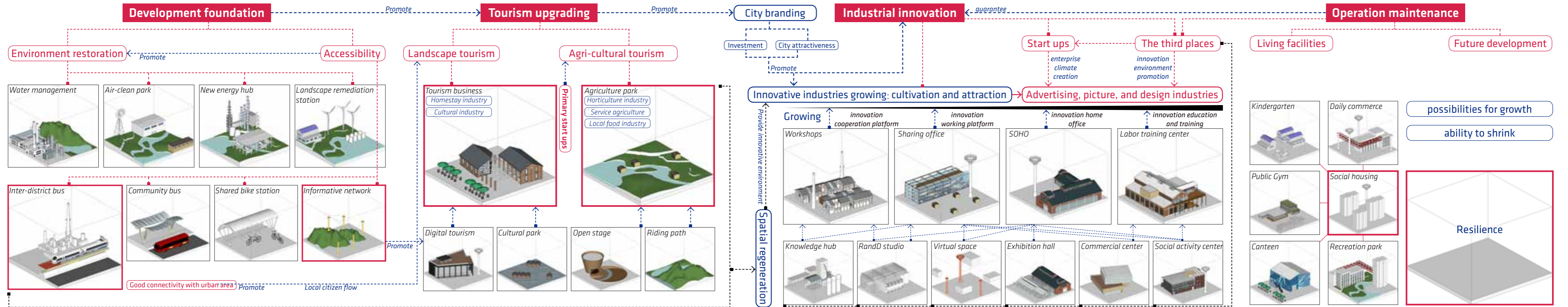
### 5.6.3 Structural planing



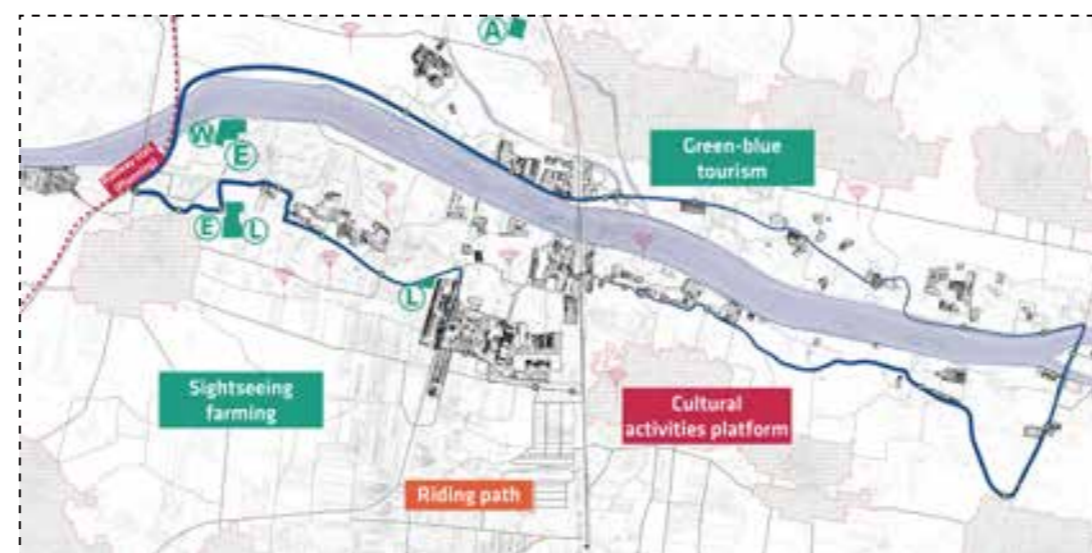
The open space along the river is re-used to form a green belt that runs through the entire plot, connecting the start ups and the core industrial space to form an area that can be used for leisure activities in the suburbs and promote urban industrial transformation and innovation.

## 5.6 Designing sub-urban site

### 5.6.4 Principles and tools application



Step1



Step2



Step3



Step4

## 5.6 Designing sub-urban site

### 5.6.5 Master plan

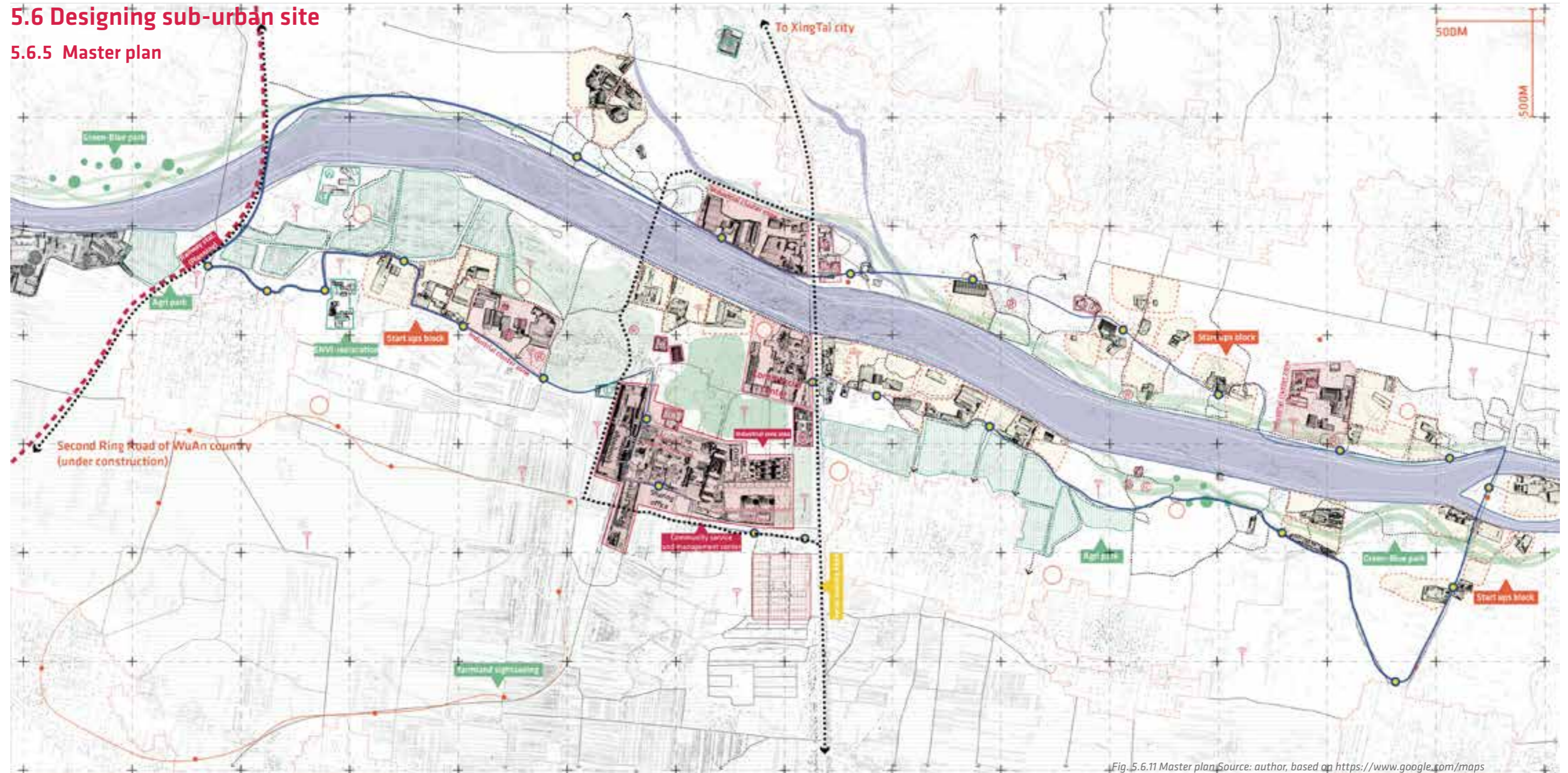


Fig. 5.6.11 Master plan Source: author, based on <https://www.google.com/maps>

### 5.6.6 Design introduction

The sub urban area site, as a venue for urban residents' activities in the suburbs, is the main engine of cultivating innovative spirit. There are two main design concepts: the industrial core area and the green belt along the river. The industrial core area reuses the original power plant, and the open space around the river is planned as a recreational green space. At the same time, small buildings along the river are planned as the base for start ups.

#### Legend

Sightseeing farming	Riding path & bike station	Recreation park	Water treatment port	Urban road
Agri-park	Community bus	Public gym	New energy hub	Secondary road
Open green land	Informative infrastructure	Canteen	LA remediation park	Village road
Start up blocks	Open stage	Kindergarten	Air-clean station	Village area
Social housing	Railways & station	Daily commerce	Blue-green space	Seasonal river

## 5.6 Designing sub-urban site

### 5.6.7 Design visualization - before



<https://colatours.blogspot.com/2019/01/China-canola-flowers.html>  
<https://www.vzoo.com/news/4470.html?pid=question/6514872113805918471/>  
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<https://www.shrm.org/resourcesandtools/hr-topics/employee-relations/pages/us-factories-closing-due-to-coronavirus-concerns-but-some-must-keep-producing.aspx>  
<https://modernfarmer.com/2020/08/the-countrys-most-productive-farmland-is-now-one-of-its-worst-covid-19-hotspots/>  
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[https://www.woodstockvt.com/sites/default/files/styles/max\\_2600x2600/public/media-images/farmersmarketnew1920.jpg?itok=gIKhE9yw](https://www.woodstockvt.com/sites/default/files/styles/max_2600x2600/public/media-images/farmersmarketnew1920.jpg?itok=gIKhE9yw)

## 5.6 Designing sub-urban site

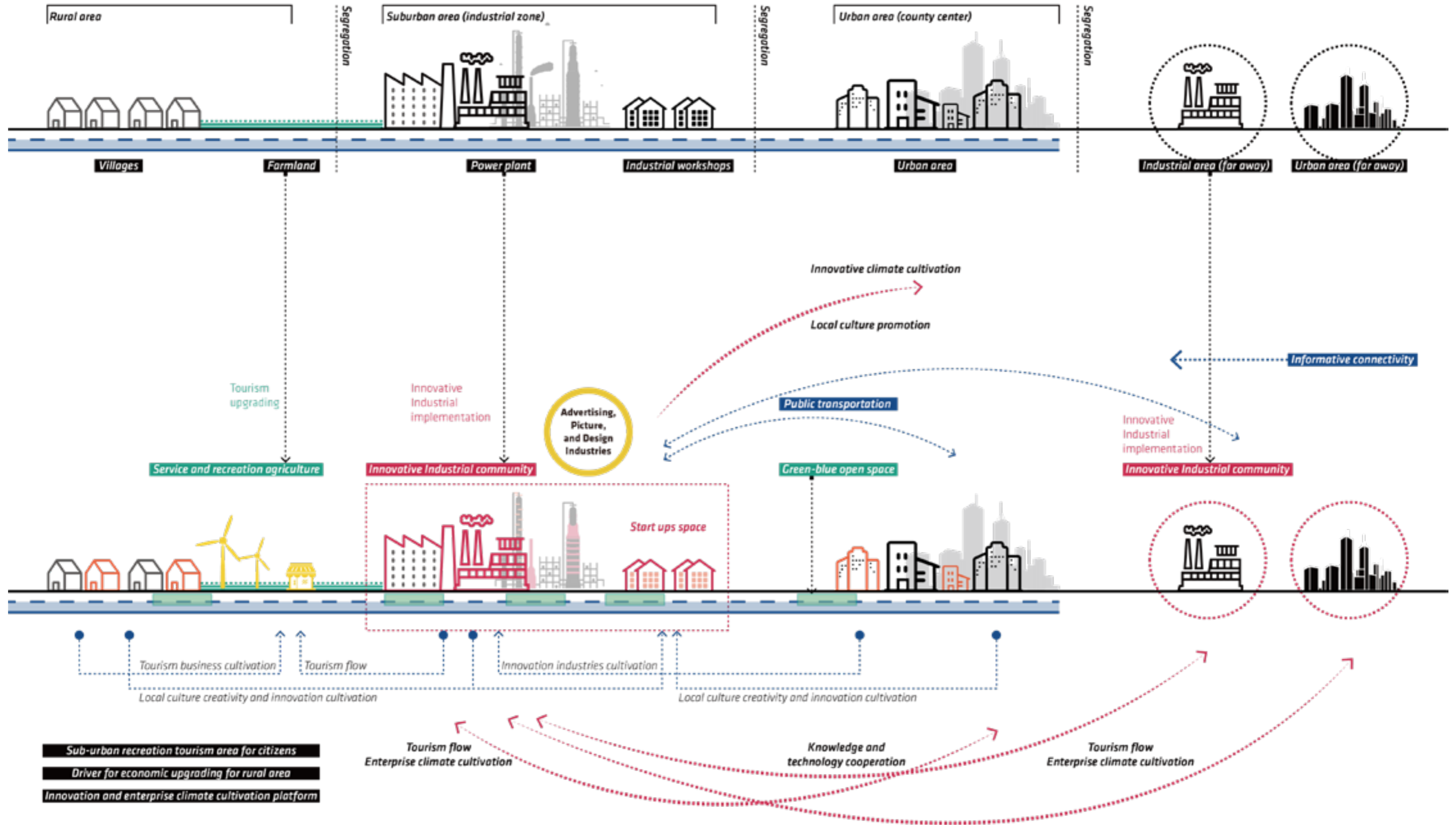
### 5.6.7 Design visualization - after



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<https://www.shrm.org/resourcesandtools/hr-topics/employee-relations/pages/us-factories-closing-due-to-coronavirus-concerns-but-some-must-keep-producing.aspx>  
<https://modernfarmer.com/2020/08/the-countrys-most-productive-farmland-is-now-one-of-its-worst-covid-19-hotspots/>  
<https://smartcity.eletsonline.com/wp-content/uploads/2017/03/Norway-Wind-Energy-Farm.jpg>  
<https://www.gabriellacollier.com/wp-content/uploads/2020/01/60x60-True-Sky.jpg?gid=1>  
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## 5.6 Designing sub-urban site

### 5.6.9 Section-relationship between innovative community and other area





## 5.7 Designing large-town site

### 5.7.1 Mapping of current situation

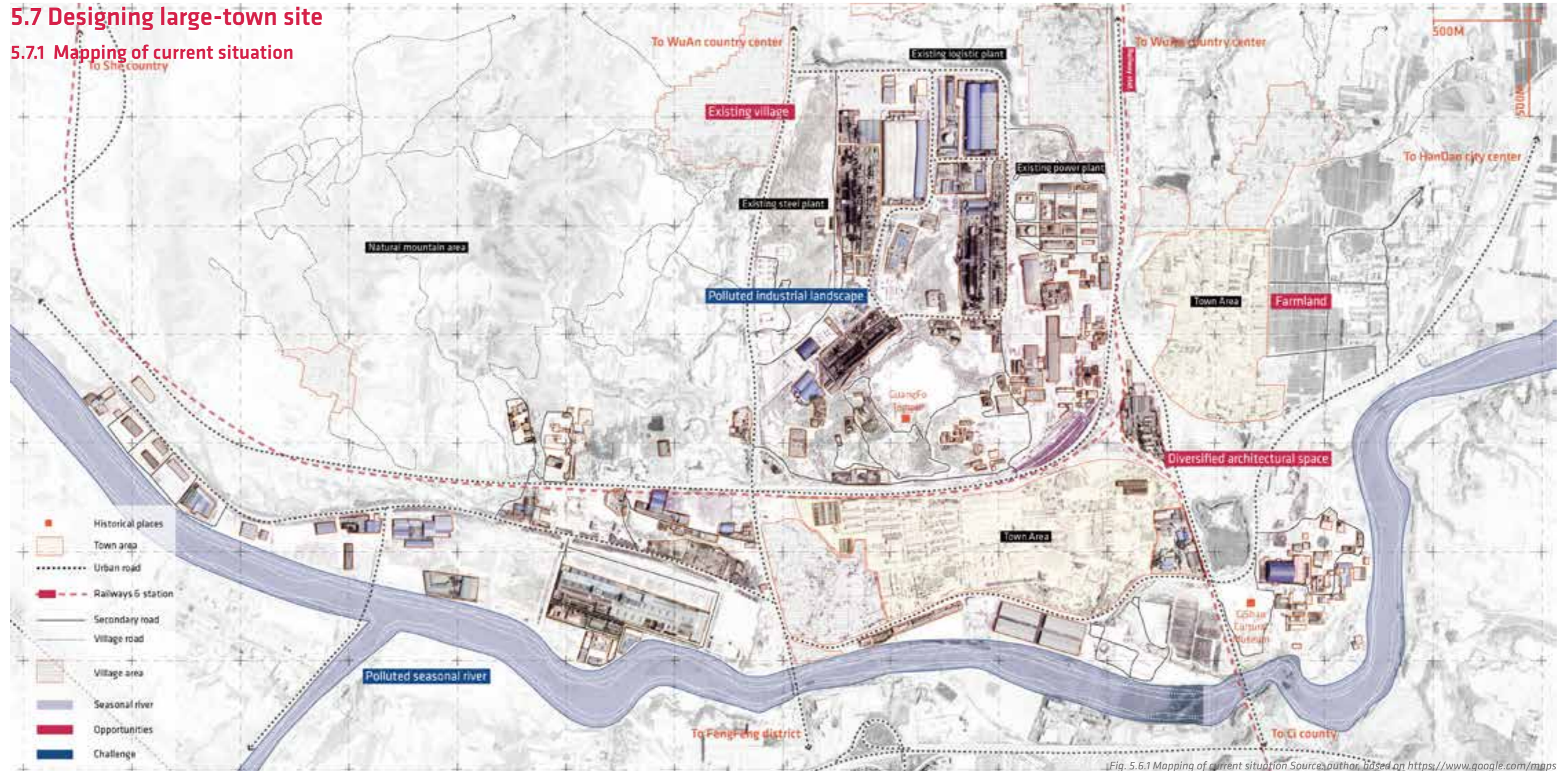
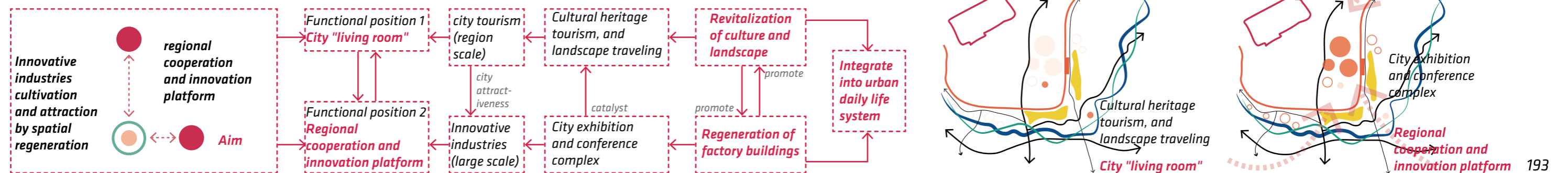


Fig. 5.6.1 Mapping of current situation Source: author, based on <https://www.google.com/maps>

### 5.7.2 Design concept



## 5.7 Designing large-town site

### 5.7.3 Structural planing

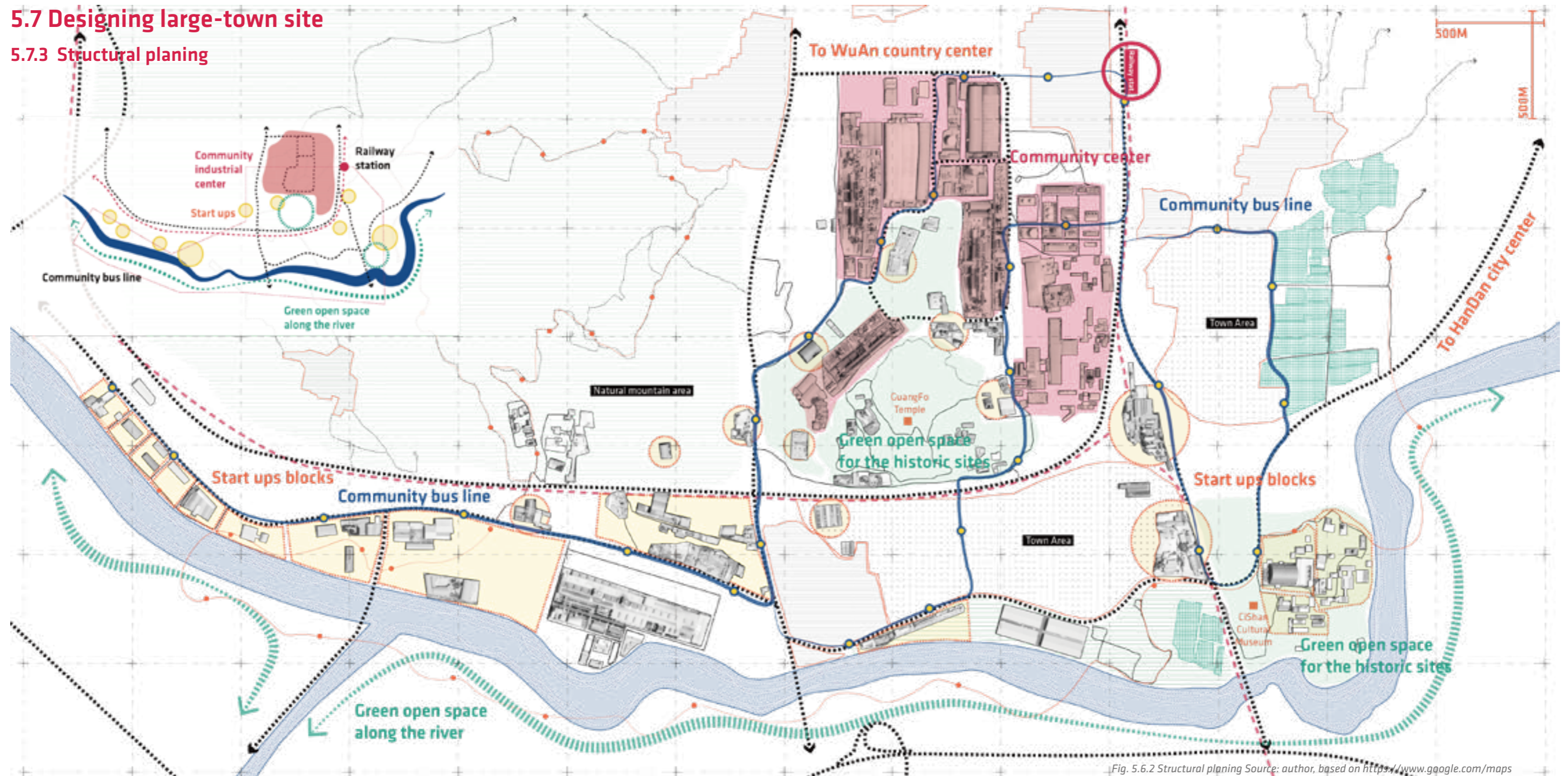


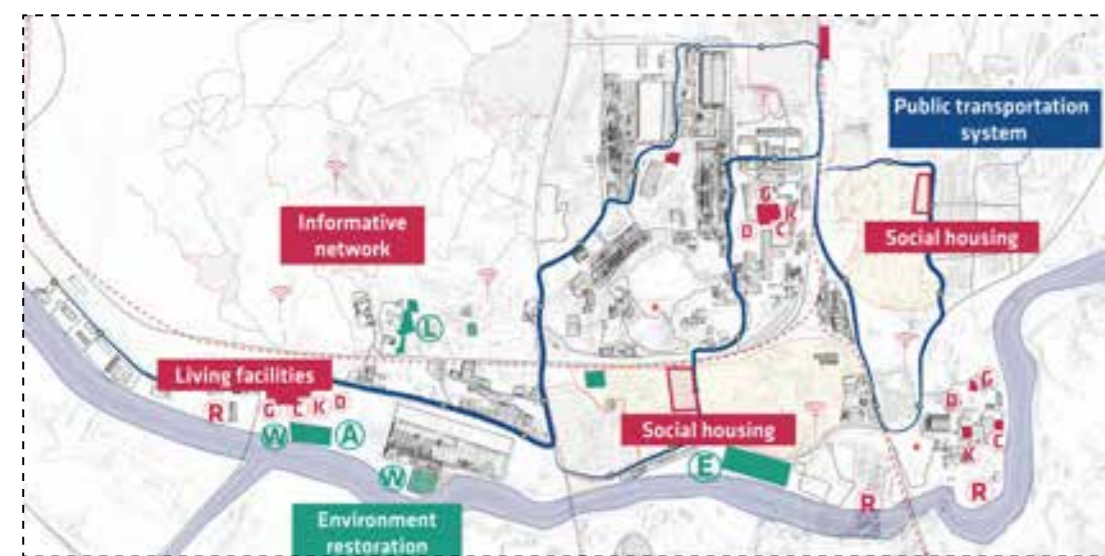
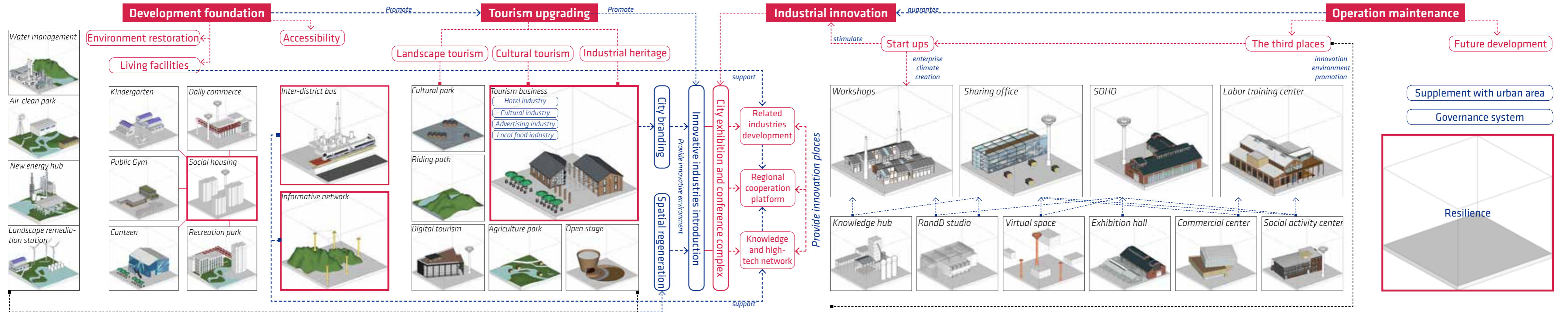
Fig. 5.6.2 Structural planing Source: author, based on <https://www.google.com/maps>



The structure of the design is roughly a belt and a core. The core area is the original factory area, which will be planned as an area where industries gather, the landscape along the river will be reused, and the building will be planned as a start ups base to promote entrepreneurship and urban innovation.

## 5.7 Designing large-town site

### 5.7.4 Principles and tools application



Step1



Step2



Step3



Step4

## 5.7 Designing large-town site

### 5.7.5 Master plan

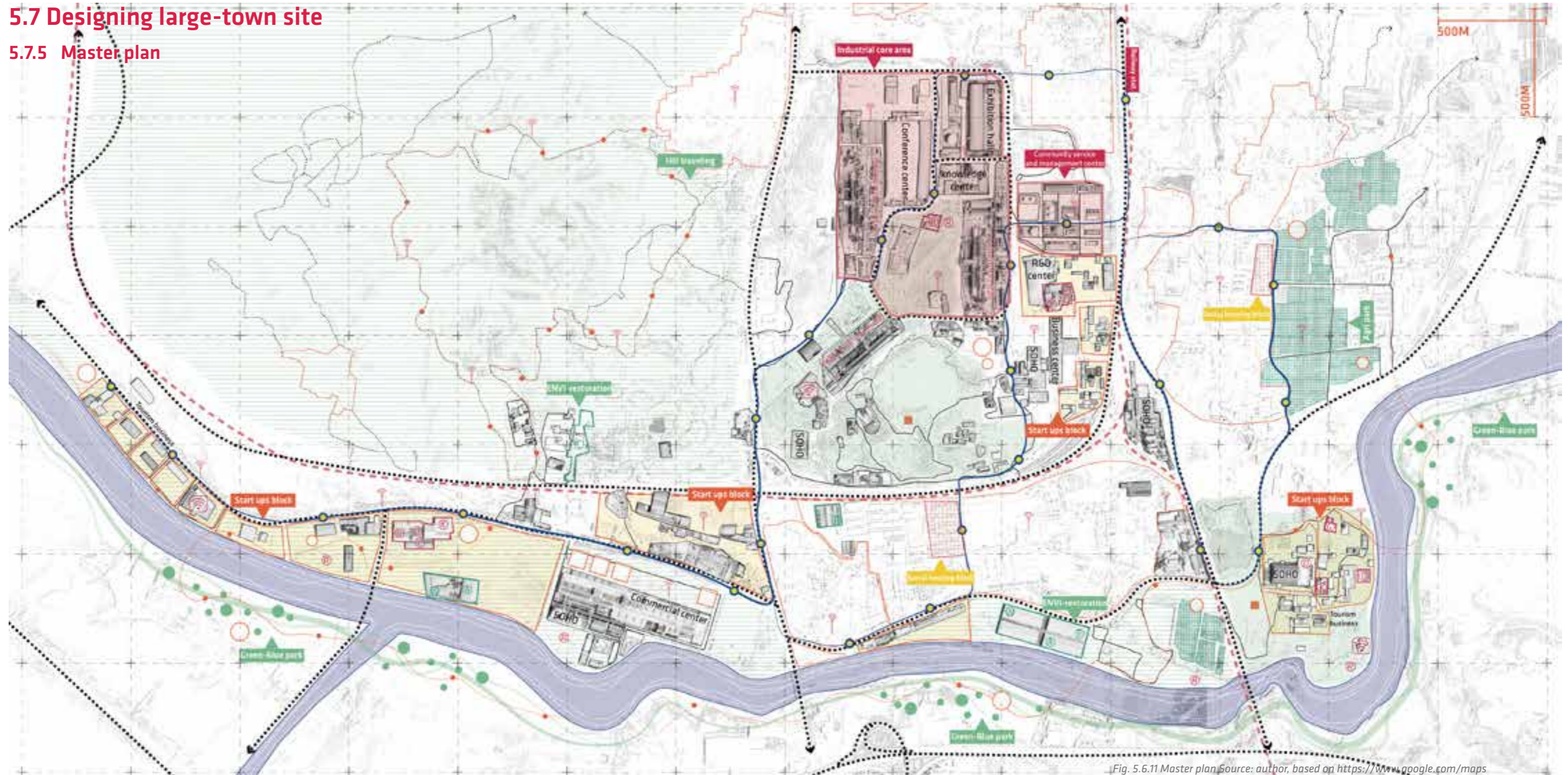


Fig. 5.6.11 Master plan Source: author, based on <https://www.google.com/maps>

### 5.7.6 Design introduction

In the regenerative design for large towns, the existing complete infrastructure is retained as the basis for planning and design. Large-scale factory buildings are used as core industrial areas, and related industries such as regional conferences and exhibitions are considered to be implanted, and corresponding social service facilities are provided for them. The mountainous area on the west side of the town will be developed into a tourist area, which will cooperate with the original cultural heritage sites of the town to enhance the attractiveness of the city. The landscape along the river is re-used, and the buildings along the river are planned as start ups to stimulate the enterprise climate and promote innovative urbanism.

#### Legend

Sightseeing farming	Riding path & bike station	Recreation park	Water treatment port	Urban road
Agri-park	Community bus	Public gym	New energy hub	Secondary road
Open green land	Informative infrastructure	Canteen	LA remediation park	Village road
Start up blocks	Open stage	Kindergarten	Air-clean station	Village area
Social housing	Railways & station	Daily commerce	Blue-green space	Seasonal river

## 5.7 Designing large-town site

### 5.7.7 Design visualization - before



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## 5.7 Designing large-town site

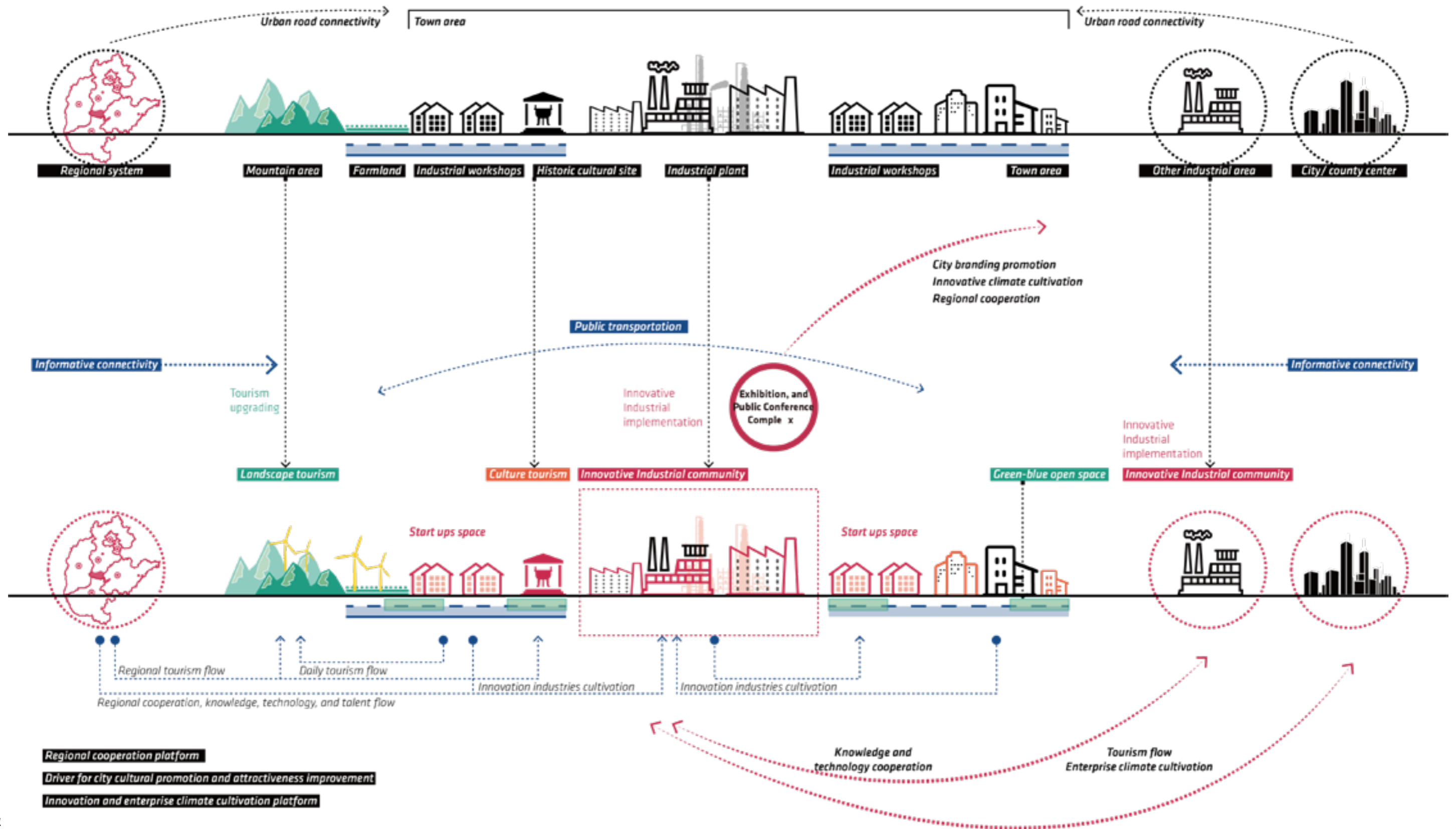
### 5.7.7 Design visualization - after



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## 5.7 Designing sub-urban site

### 5.7.9 Section-relationship between innovative community and other area





## 6 Conclusion and reflection

6.1 Conclusion

6.2 Evaluation

6.3 Research reflection

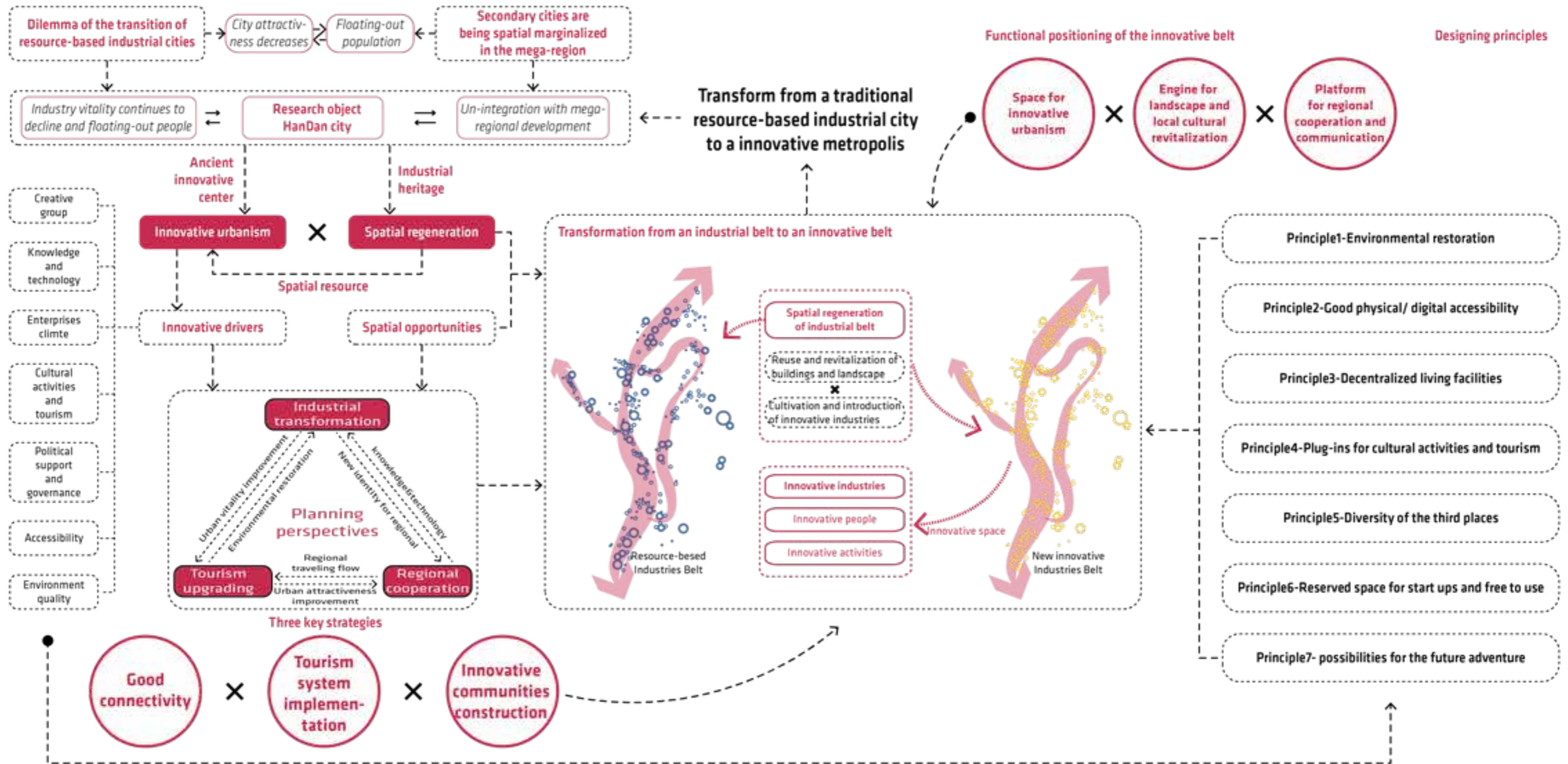
6.4 Limitations and Future research

6.5 The future of China



# 6.1 Conclusion

## 6.1.1 Research conclusion



## 6.1 Conclusion

### 6.1.2 Answering the research question

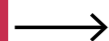
#### Research question on HanDan city:

Facing the double dilemma of regional spatial marginalization and difficulties in the industrial transition,

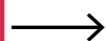
how can **spatial regeneration of post-industrial sites** help Handan

**transform from a traditional resource-based industrial city to an innovative metropolis?**

Spatial regeneration of post industrial sites



Innovative urbanism in HanDan city



Transformation and integration

The response to the research question is mainly divided into three steps. First of all, this is a plan based on the regeneration design of abandoned industrial sites. Spatial elements are considered to be an important potential for realizing the planning vision. On the basis of space regeneration, innovative urbanism is considered to be the key driving force for the transformation of Handan. Through this process, Handan will transform from a traditional resource-based industrial city to an innovative metropolis. This will give Handan a new identity, and this new identity will enable the city to find its own position in the mega regional development system and integrate into it.

### Spatial regeneration of post industrial sites

#### Industrial buildings, structures, and other construction space



Fig. 6.1.1 Industrial buildings, structures, and other construction space Source: author

In the process of space regeneration, the most important spatial elements are leftover industrial buildings, industrial structures, and other construction spaces. These places are highly iconic and have great potential to be reused. Due to the different characteristics of industrial production, industrial buildings also have extremely high diversification, scale, form, color, etc. This gives these buildings the potential which can be implanted with diversified functions.



Fig. 6.1.2-6.1.3 collage drawing before and after

Source: author  
[https://cdn.shopify.com/s/files/1/1591/4511/products/thumb1\\_28387254-b163-4745-82d4-dbd182c618ce.jpg?v=1521196547](https://cdn.shopify.com/s/files/1/1591/4511/products/thumb1_28387254-b163-4745-82d4-dbd182c618ce.jpg?v=1521196547)  
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<https://purepng.com/public/uploads/large/purepng.com-walkingwomenpeoplepersonsfemalebackchildchildrenfamilykidsmotherphotoshoprenderwalking-12615263969831616pd.png>  
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<http://clipart-library.com/>  
[https://s1.cdn.autoevolution.com/images/news/gallery/setra-brings-four-vintage-buses-to-the-2014-retro-classic-show\\_2.jpg](https://s1.cdn.autoevolution.com/images/news/gallery/setra-brings-four-vintage-buses-to-the-2014-retro-classic-show_2.jpg)

## Industrial infrastructure



Fig. 6.1.4-6.1.5 Industrial infrastructure Source: author, <http://cumbrianrailways.zenfolio.com/img/s/v-3/p205663520-4.jpg>

During the industrialization, a railway system for the transportation of goods and the movement of workers was established. These railways, scrap trains are also considered to be important spatial elements. In this scenario, some of the train tracks are regenerated as an element of entertainment to enhance the interesting places.



Fig. 6.1.7-6.1.8 Industrial infrastructure Source: [https://i2.wp.com/www.theurbanist.org/wp-content/uploads/2019/03/1200px-CR400AF-2001@BJN\\_20170626110730.jpg?fit=1200%2C800&ssl=1](https://i2.wp.com/www.theurbanist.org/wp-content/uploads/2019/03/1200px-CR400AF-2001@BJN_20170626110730.jpg?fit=1200%2C800&ssl=1) [https://pic4.zhimg.com/v2-4bc347645444bcc313a1285c7422a90f\\_r.jpg](https://pic4.zhimg.com/v2-4bc347645444bcc313a1285c7422a90f_r.jpg)

Industrial railways also connect urban areas, large towns, and important factories in series. Therefore, these disused facilities are also considered to be updated into a new high-speed railway system to enhance the connectivity of the entire area.

## Industrialized landscape



Fig. 6.1.9-6.1.12 Industrialized landscape Source: author <https://hillpost.in/wp-content/uploads/2018/12/Sirsa-pollution.jpg>



Fig. 6.1.13 collage drawing Source: author [https://cdn.shopify.com/s/files/1/1591/4511/products/thumb1\\_28387254-b163-4745-82d4-dbd182c618ce.jpg?v=1521196547](https://cdn.shopify.com/s/files/1/1591/4511/products/thumb1_28387254-b163-4745-82d4-dbd182c618ce.jpg?v=1521196547) [https://pngimg.com/uploads/tree/tree\\_PNG92699.png](https://pngimg.com/uploads/tree/tree_PNG92699.png)

Due to the high pollution and high energy consumption of resource-based industries, the ecological environment in this area has been severely damaged. Including natural landscapes such as mines and rivers. In this project, restoration of these landscape are considered to be an important foundation of innovative urbanism.

## Industrial culture



Fig. 6.1.13-6.1.14 Industrial culture Source: author <https://hillpost.in/wp-content/uploads/2018/12/Sirsa-pollution.jpg>

In addition to spatial elements, industrial culture is also considered to be regenerated. In the past, the composition of industrial enterprises was actually industrial communities of different sizes, including production areas and living areas, and thus created a good atmosphere of daily life.



Fig. 6.1.2-6.1.3 collage drawing before and after  
 Source: author  
[https://cdn.shopify.com/s/files/1/1591/4511/products/thumb1\\_28387254-b163-4745-82d4-dbd182c618ce.jpg?v=1521196547](https://cdn.shopify.com/s/files/1/1591/4511/products/thumb1_28387254-b163-4745-82d4-dbd182c618ce.jpg?v=1521196547)  
[https://pngimg.com/uploads/tree/tree\\_PNG92699.png](https://pngimg.com/uploads/tree/tree_PNG92699.png)  
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<https://pluspng.com/img-png/png-people-working-office-the-consultants-are-preparing-their-final-presentation-people-pngarchitecture-1600.png>  
[http://www.newdesignfile.com/postpic/2015/10/photoshop-entourage-people-standing\\_98675.png](http://www.newdesignfile.com/postpic/2015/10/photoshop-entourage-people-standing_98675.png)  
<http://clipart-library.com/>  
[https://s1.cdn.autoevolution.com/images/news/gallery/setra-brings-four-vintage-buses-to-the-2014-retro-classic-show\\_2.jpg](https://s1.cdn.autoevolution.com/images/news/gallery/setra-brings-four-vintage-buses-to-the-2014-retro-classic-show_2.jpg)

These community courtyards were also abandoned as the factory closed. In the design of the local scale, these courtyard spaces are considered as the spatial basis for creating innovative communities, which can be transformed into workshops, entertainment areas and other functions.

## 6.1 Conclusion

### 6.1.2 Answering the research question -innovative urbanism in HanDan city

The results and benefits to veruous components of creative group

	Components	People	Benefits
<b>Innovative core - the creative group</b>	<b>Creative class</b>	Designers, local cultural creators, inheritors of traditional handicrafts, artists, painters, writers, picture producers, etc.	<ul style="list-style-type: none"> <li>• Creation platform</li> <li>• Communication opportunities</li> <li>• Social networks</li> <li>• Promotion support</li> <li>• Workplaces</li> </ul>
	<b>Professional experts</b>	Senior researchers and scholars, experts in climate/environment/culture/economics/management/social/medical science/art, etc.	<ul style="list-style-type: none"> <li>• Knowledge network</li> <li>• Academic communication</li> <li>• Research support</li> <li>• Experiment platform</li> <li>• Knowledge-Technology-Industry Integration Opportunities</li> </ul>
	<b>College student</b>	Junior researchers and scholars, university students, graduates, etc.	<ul style="list-style-type: none"> <li>• Innovative education</li> <li>• Entrepreneurship support</li> <li>• Social network</li> <li>• Knowledge network</li> <li>• Practice platform</li> </ul>
	<b>Government group</b>	Government officials, politicians, policy planners, civil servants, etc.	
	<b>Enterprise and firm</b>	Entrepreneurs (both junior and senior), employees, managers, technicians, engineers, etc.	<ul style="list-style-type: none"> <li>• Industrial Cooperation Network</li> <li>• Technical and knowledge support</li> <li>• Guidance for Junior Entrepreneurs</li> <li>• Job opportunity</li> </ul>
	<b>Rural residents</b>	Farmers, rural artists, etc.	<ul style="list-style-type: none"> <li>• Promotion support</li> <li>• Service Agriculture Upgrade</li> <li>• Entrepreneurship support</li> </ul>
	<b>The elderly group</b>		<ul style="list-style-type: none"> <li>• Nursing place</li> <li>• Medical treatment</li> <li>• Innovation place</li> <li>• Social interaction</li> </ul>
	<b>The younger generation</b>	Kids under age 16	<ul style="list-style-type: none"> <li>• Daycare</li> <li>• Innovative education</li> <li>• Practice platform</li> </ul>

Innovative urbanism promote the urban sustainability

#### **Innovative urbanism- economic aspect**

- Industrial upgrading
- Knowledge and innovation as drivers for economic growth
- Small enterprise support

#### **Innovative urbanism- social aspect**

- Local cultural conservation and revitalizion
- More opportunities for social innovation, and interaction
- Diversity of social groups

#### **Innovative urbanism- environmental aspect**

- Environment restoration and repair as basis for urban innovation
- Integration of environment and human life
- Environment-friendly industries transition

#### **Innovative urbanism- cooperation/ partnership aspect**

- Regional cooperation platform establishment
- Knowledge and technology communication network
- Innovative community construction

In this project, the core of innovative urbanism is the creative group. Different from the creative class, the creative group has a broader definition in this project. In addition to creative classes such as designers, painters, and cultural creators, it also includes professional experts, university students, government organizations, enterprises, rural residents, the elderly group, and the younger generation. In fact, everyone can be involved in this group and jointly participate in innovative industries and innovative activities.

In terms of economic development, the upgrading and transformation of industries, the use of knowledge and innovation to drive economic growth, and the support of small businesses will all contribute to a healthier development of the urban economy. At the social level, local culture is considered to be an important factor in promoting innovative urbanism, so it is protected and promoted, and social group interactions and cooperation are also considered in local scale design. In terms of the environment, the purification and restoration of the natural environment is considered the basis of innovative urbanism. In addition to the traditional three aspects of sustainable development, partnership is also considered a part of sustainable development. This project is discussed based on the development of regional cooperation. Therefore, in the planning and design, the construction of regional cooperation platform, knowledge innovation network, and innovation community are mainly considered to promote multi-dimensional cooperation.

## 6.2 Evaluation

### 6.2.1 Sustainable development goals and urban resilience



Fig. 6.2.1 Sustainable development goals and urban resilience Source: <https://sdgs.un.org/goals>

The United Nations established the Sustainable Development Goals (SDGs), also known as the Global Goals, in 2015 as a global call to action to eradicate poverty, preserve the environment, and guarantee that by 2030, everyone lives in peace and prosperity. The 17 SDGs are interconnected, recognizing that actions in one area have an impact on outcomes in others and that development must strike a balance between social, economic, and environmental sustainability. Countries have agreed to emphasize improvement for those who are the most disadvantaged. The Sustainable Development Goals (SDGs) aim to eradicate poverty, hunger, AIDS, and discrimination against women and girls. To fulfill the SDGs in every setting, all of society's creativity, know-how, technology, and financial resources are required.

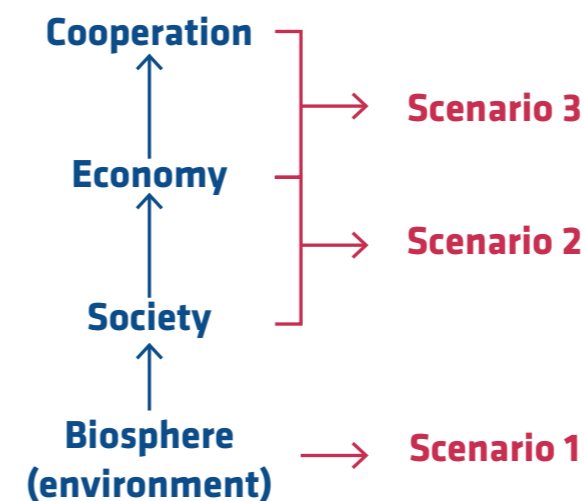
## SUSTAINABLE DEVELOPMENT GOALS

### Contributions to Agenda 2030 - Azote Images for Stockholm Resilience Centre



Fig. 6.2.2 Azote Images for Stockholm Resilience Centre

Source: <https://www.stockholmresilience.org/research/research-news/2017-02-28-contributions-to-agenda-2030.html>

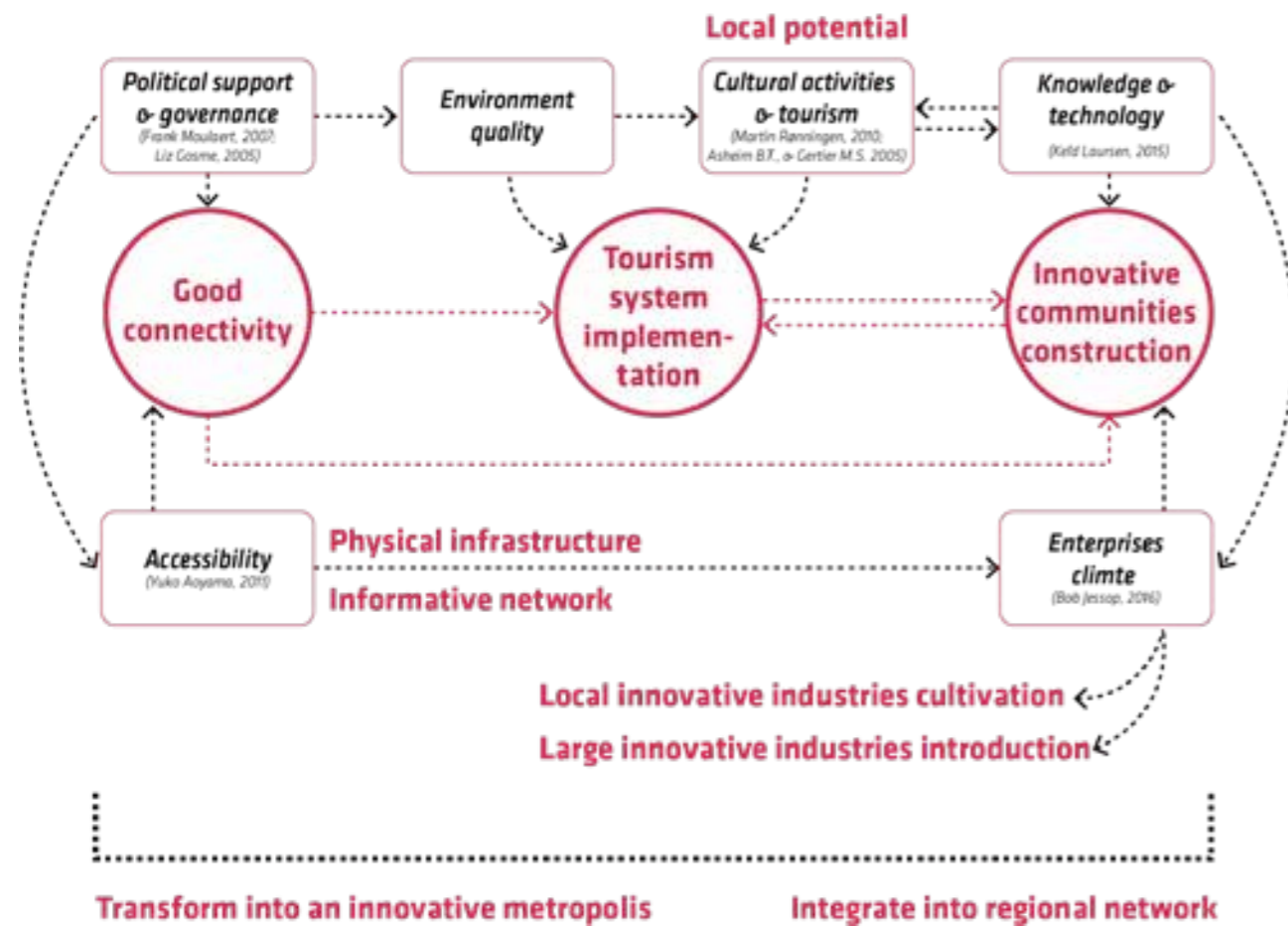


Scholars from Stockholm University combined urban resilience with sustainable development goals, and at the same time revealed that the realization of sustainable development goals should be divided into different stages. At the bottom of the pyramid is the consideration of the environment, which is the primary goal pursued for sustainability. On this basis, social-related sustainability goals, such as the sustainability of urban communities, are developed, which in turn stimulates the realization of economic sustainability goals. At the top of the pyramid is partnership and sustainability, which are considered to be the key factors for maintaining the good functioning of the sustainable system. In the project evaluation chapter, different scenarios are established to test the results of each stage of the planning and design.

" The SDGs need to embrace the concept of social-ecological systems, seeing people and the biosphere as integrated parts of a whole;  
**The SDG process needs to address and navigate the trade-offs between being ambitious and achievable;**  
 Formulating the goals should be guided by existing knowledge about social change processes on all scales, from global to individual"

Citation: Norström, A. V., A. Dannenberg, G. McCarney, M. Milkoreit, F. Diekert, G. Engström, R. Fishman, J. Cars, E. Kyriakopoulou, V. Manoussi, K. Meng, M. Metian, M. Sanctuary, M. Schlüter, M. Schoon, L. Schultz, and M. Sjöstedt. 2014. Three necessary conditions for establishing effective Sustainable Development Goals in the Anthropocene. *Ecology and Society* 19(3): 8. <http://dx.doi.org/10.5751/ES-06602-190308>

### Strategies to achieve the goals



The goal of sustainable development should be set between ambitious and feasible. This can stimulate development and progress, while taking into account reality to a certain extent, so as to ensure the realization of sustainable development goals. In fact, the development goals set in this project also follow this theory. The three main planning strategies all contain the concept of sustainable development, and they will also be implemented in stages. This also ensures a certain degree of planning flexibility. Although the highest goals may be difficult to achieve, the realization of some secondary goals can also improve the development of Handan City.

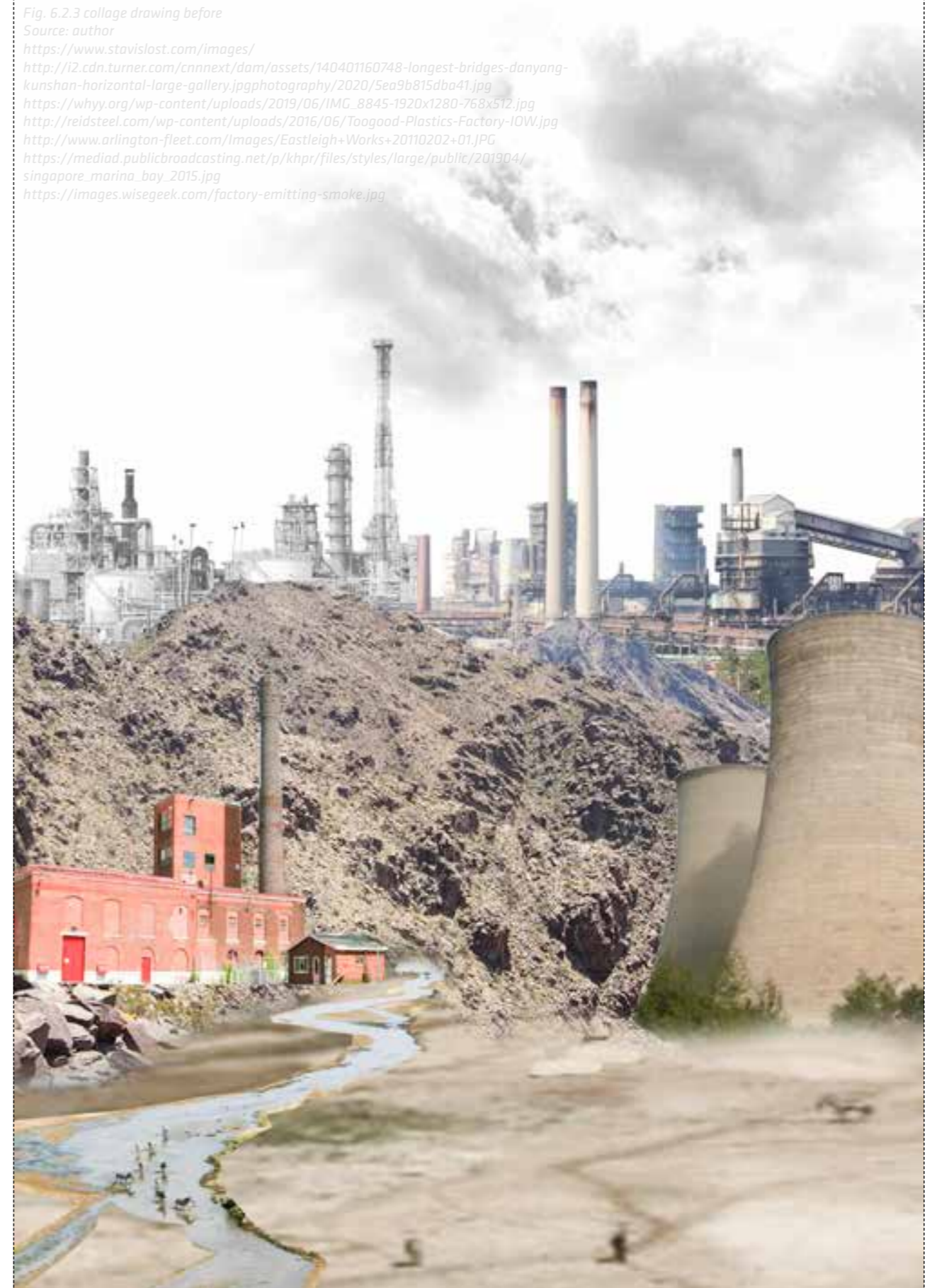
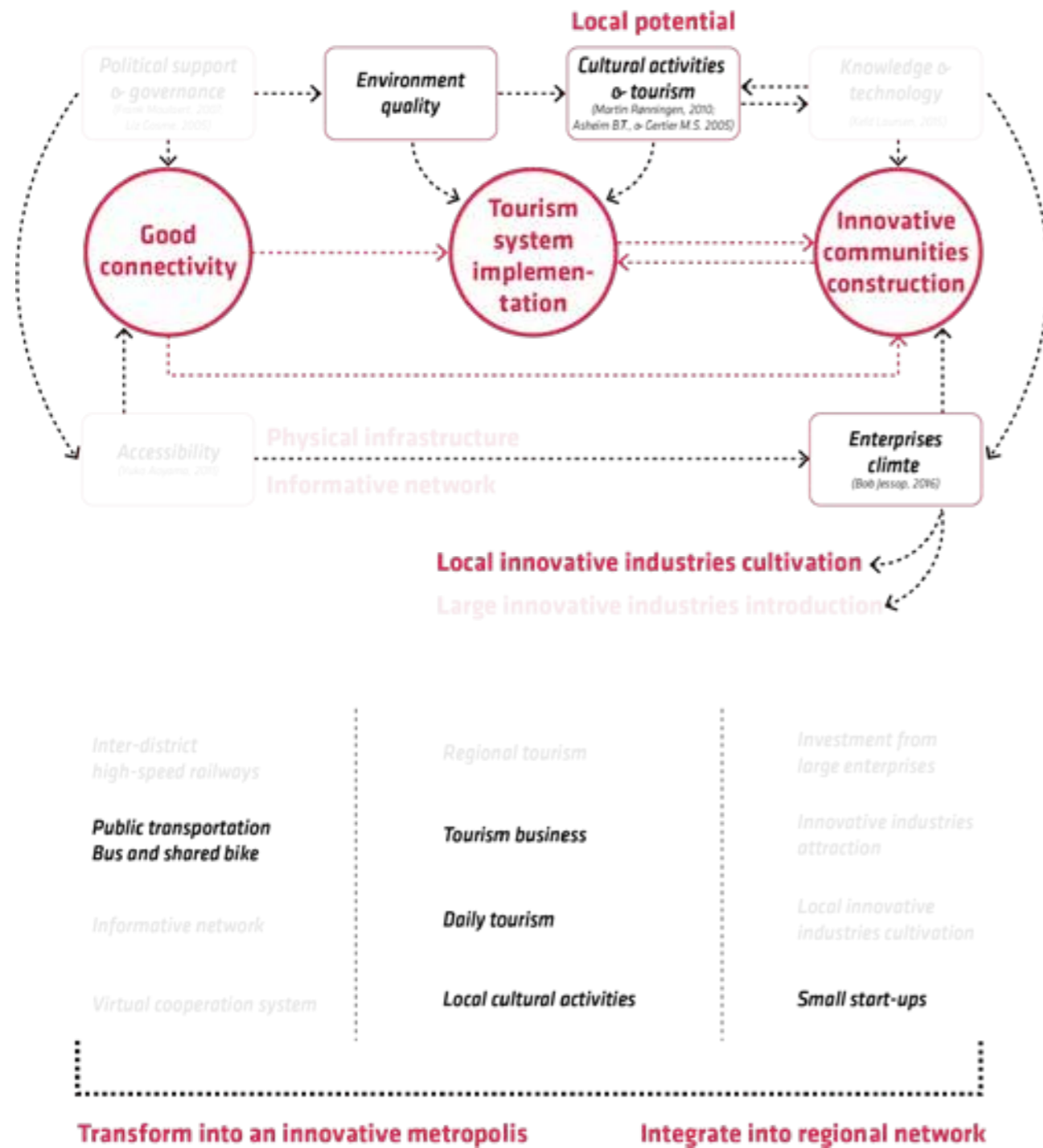
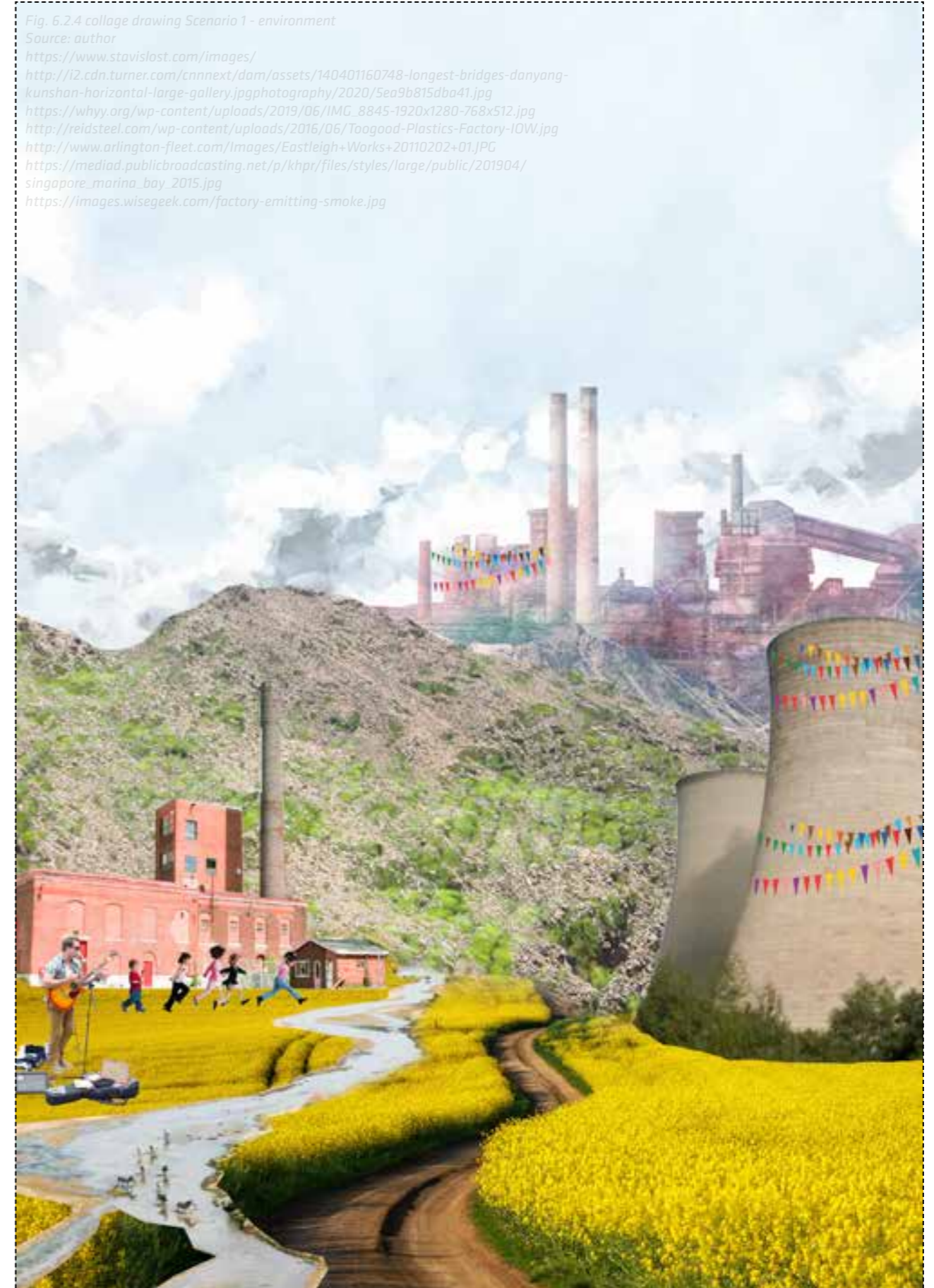


Fig. 6.2.3 collage drawing before  
 Source: author  
<https://www.stavislost.com/images/>  
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## 6.2.2 Scenario 1 - environment

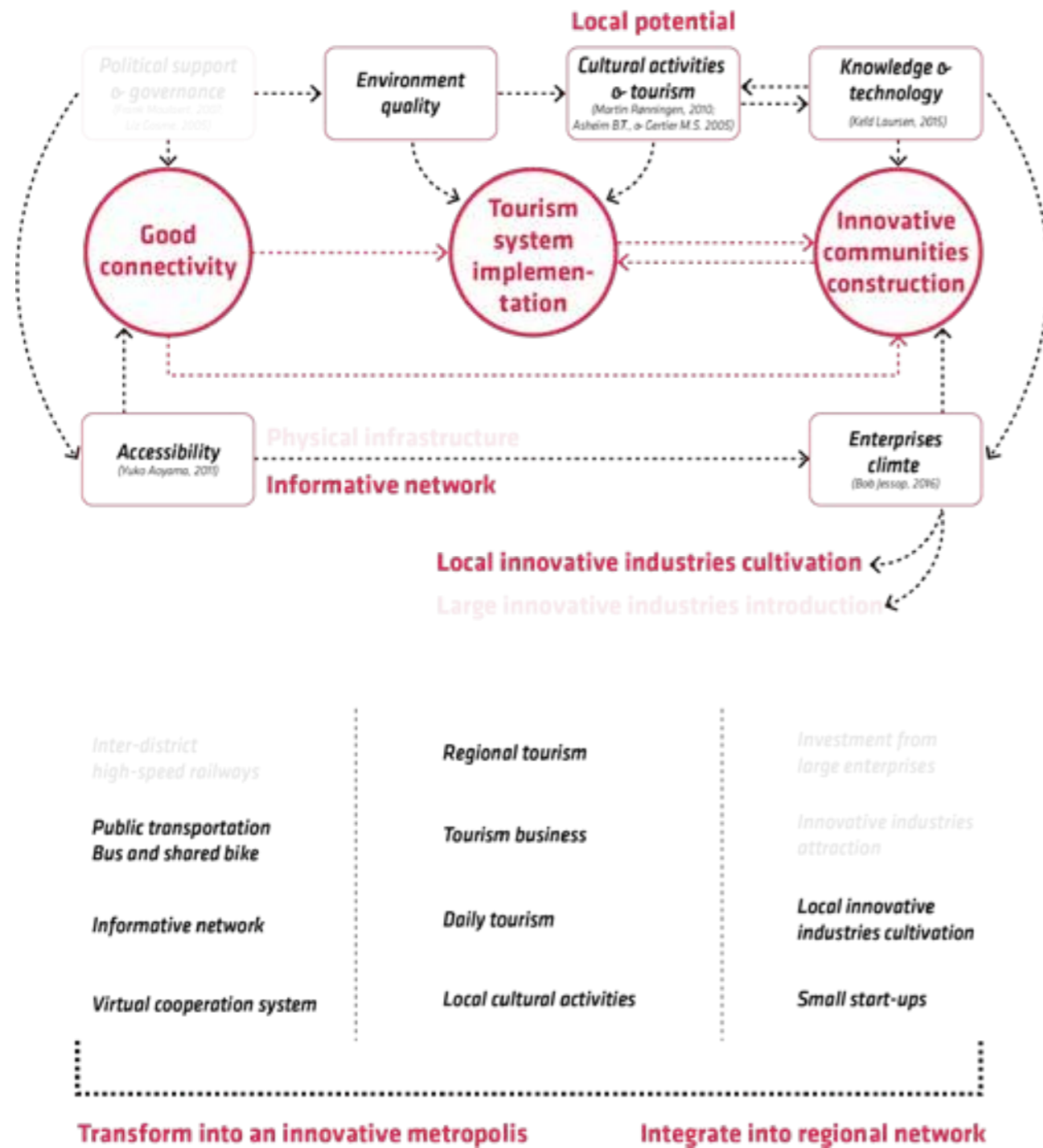


In the first scenario, environmental issues are discussed. By improving the quality of the environment and restoring the polluted landscape, the tourism system will have the opportunity to realize its huge potential. In this process, small tourism businesses, urban entrepreneurial spaces, and public transportation systems will be emphatically considered. In this way, the value of post-industrial legacy buildings will be brought into play, and local culture and mountain water resources will be fully protected and utilized.





### 6.2.3 Scenario 2 - social



In the second scenario, socioeconomic issues are discussed. On the basis that the environment is fully protected, local innovative industries are cultivated and act as the engine to promote urban innovation. In this process, the city's entrepreneurial climate is activated, and new technologies, knowledge, etc. begin to flow, which in turn stimulates industrial transformation. In addition, the network of social communication also plays an important role in the multi-dimensional use of post-industrial sites. At this stage, large-scale high-speed infrastructure has not yet been established. Therefore, information-based infrastructure will be fully utilized to pursue regional cooperation.

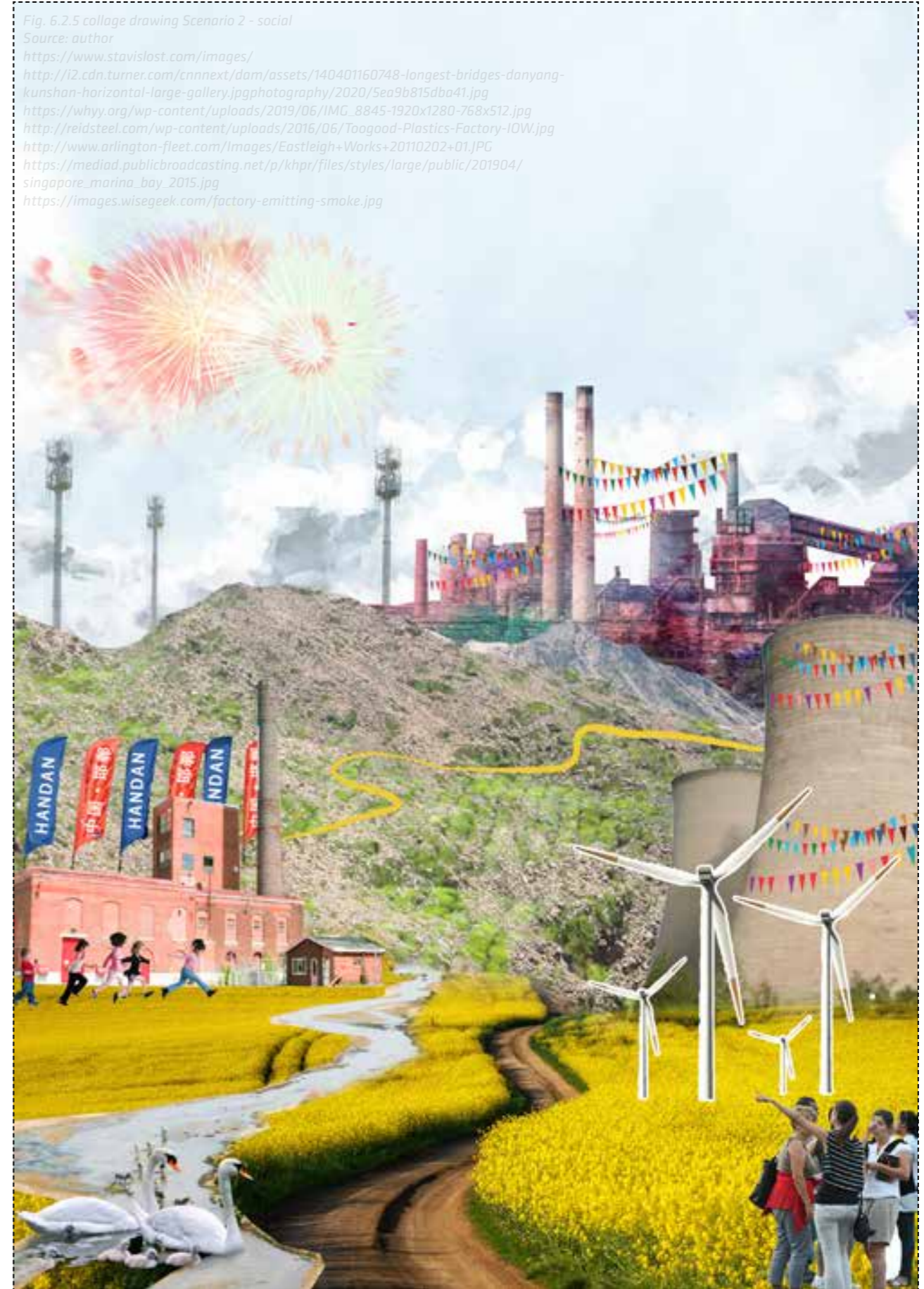
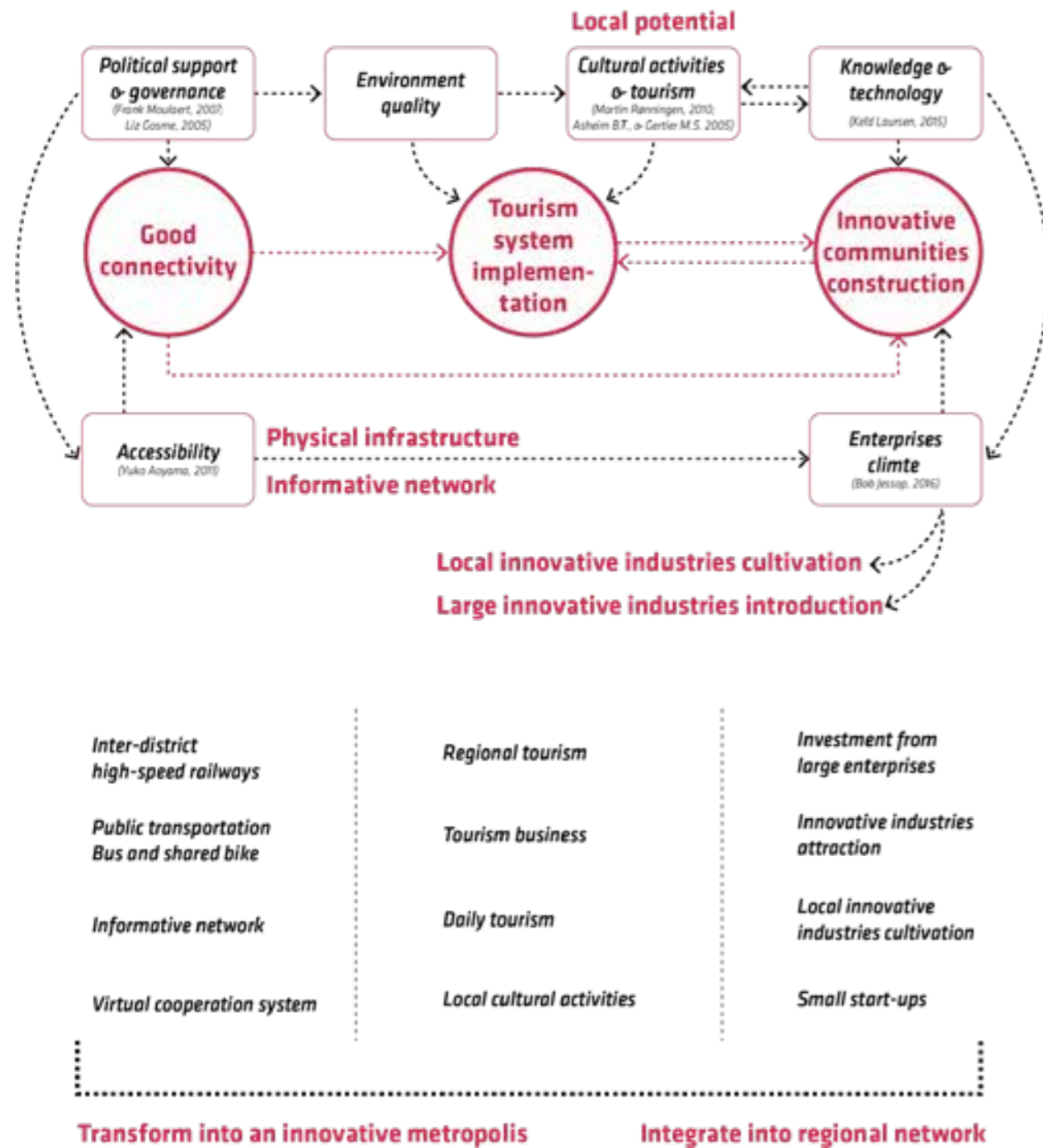


Fig. 6.2.5 collage drawing Scenario 2 - social  
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<http://reidsteel.com/wp-content/uploads/2016/06/Toogood-Plastics-Factory-IOW.jpg>  
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<https://images.wisegeek.com/factory-emitting-smoke.jpg>

## 6.2.4 Scenario 3 - economy



In the final scenario, the city will receive policy support, large enterprises will begin to invest, and a high-speed rail transit system will be established. In this process, the goals of industrial transformation and regional cooperation will be achieved. On the one hand, good connectivity provides an opportunity for cities to improve their attractiveness, and is also the basis for the introduction of new and innovative industries. On the other hand, the tourism system will also enhance the popularity of the city and give this area a good living and working environment. These two factors work together to build an innovative community and pursue innovative development.

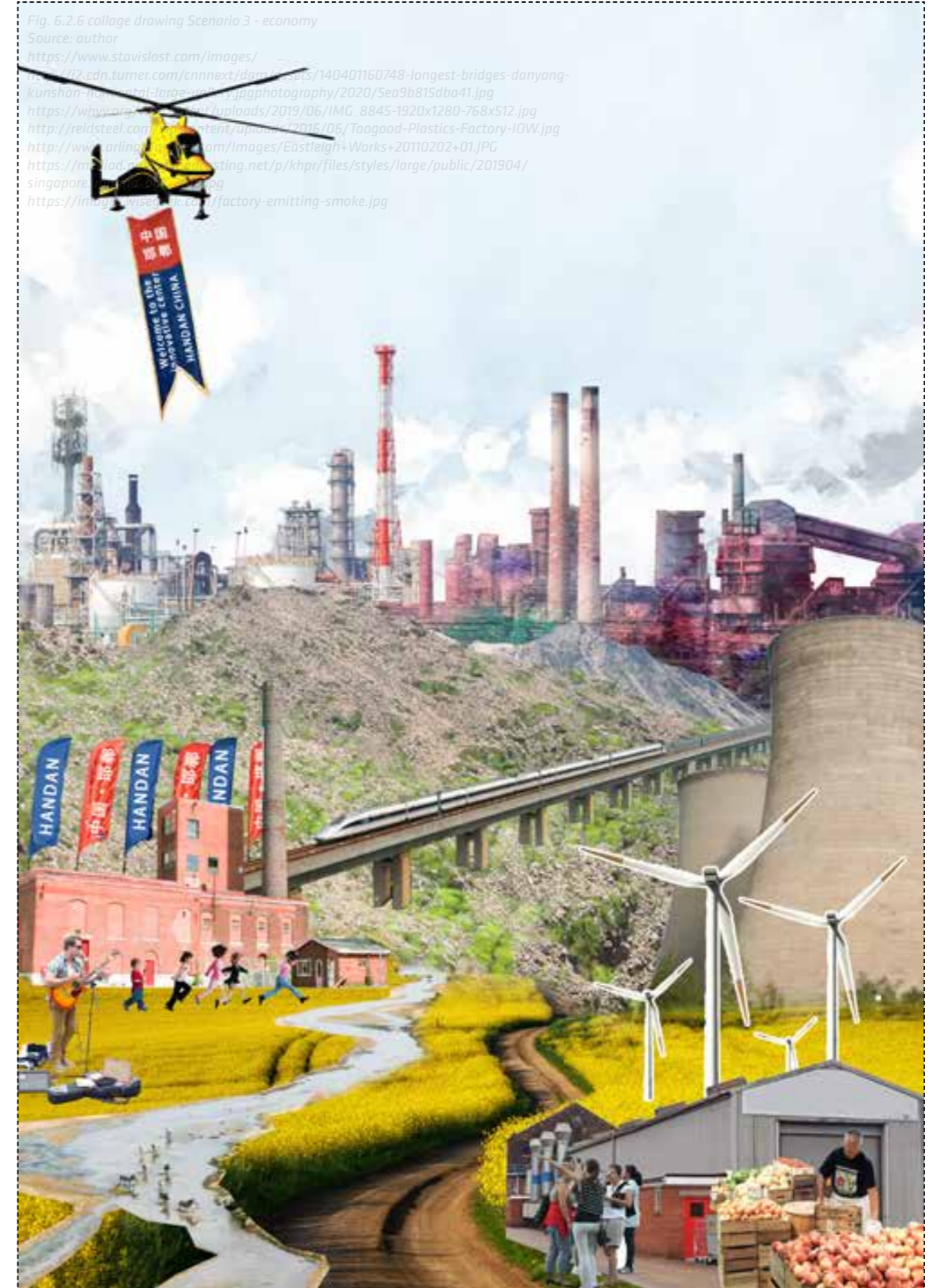


Fig. 6.2.6 collage drawing Scenario 3 - economy

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## 6.3 Research reflection

### 6.3.1 On the project

#### ***Relation between this graduation project topic, the studio topic, urbanism master track, and master program of MSc AUBS***

In my opinion, the essence of Urbanism is a science that studies how to make the development of cities, the environment, and people more sustainable. As a powerful approach, spatial planning and strategies promote the realization of the vision of sustainable development. My master's program is based on the two current development dilemmas of China's secondary-resource-based industrial cities: on the one hand, the transformation of resource-based industrial cities faces many difficulties. On the other hand, in the context of rapid regionalization, secondary cities in China are being spatially marginalized in the regional system. These two dilemmas have formed a vicious circle in the secondary resource-based industrial cities, which plagued the development and transformation of these cities. Faced with such problems, studio Planning Complex Cities provided me with an excellent research platform. I use spatial regeneration as an approach to realize the vision of sustainable development, and combine the relevant theories of innovative urbanism to propose planning and design proposals.

#### ***Advantages and limitations of the methodology***

Phenomenon research is the starting point of this project. In fact, the two dilemmas faced by the secondary resource-based industrial cities mentioned above are both vividly reflected in the current social life and economic development. The causes and consequences of these phenomena are studied first. For example, the mechanism of the spatial marginalization of regional secondary cities, which factors aggravate this phenomenon, and which measures can alleviate this problem, are studied in the beginning stage. These contextual and theoretical research have become an important basis for the design of proposals and strategy. In the stage of defining problems, proposing proposals, and strategic design, predictive research and related methods are adopted. The urban system is constantly evolving and changing, so in this project, future development is taken into account in the exploration of spatial strategy and implementation.

When selecting specific methods, field research has always been one of the most important research approaches. Due to the epidemic, I worked on my master's program in China, and I was fortunate to have the opportunity to conduct fieldworks. However, this work did not contribute well to my research project. Because, when analyzing problems and formulating planning proposals, I did not think deeply about the "building" scale, but only stayed at the level of regional systems and conceptual strategies. I don't think that a master's program should cover all aspects, but it is a pity that the planning project fails to integrate well with the site research.

### 6.3.2 On the significance and Innovativeness

#### ***Societal relevance***

In China, where the trend of regionalization is spreading rapidly, the core power of big cities is becoming stronger and stronger under the catalysis of marketization and social entrepreneurship. This polarization effect exacerbates the phenomenon of regional inequality. Under such circumstances, industrial cities in a secondary position in a region are facing more severe challenges. Labor, especially talents, are attracted by big cities, the long-term dependence on the development of resource-based industries makes it impossible to quickly adapt to the requirements of sustainable transformation, the vitality of cities has declined, and economic development has been slow. The resulting social problems have seriously hindered the development of cities and the happiness of citizens. These cities have become inhabitable, unworkable, and untravellable. This project selected Handan City, a typical regional secondary-resource-based industrial city, as the specific research object to explore how strategic planning can help this type of city out of its predicament.

#### ***Scientific Relevance***

Industrialization has contributed a lot to urban civilization. However, in the process of transformation, resource-based industries have been shut down, factories and buildings have been abandoned and become urban waste. But it is undeniable that these buildings have important cultural, economic, and spatial values. How to reuse these precious resources is a topic that many scholars have been exploring. As far as current research is concerned, the attitude of Chinese scholars towards "industrial heritage" is more to protect and re-use an individual building site. Few people consider the potential of the industrial landscape pattern. A geological belt rich in coal and steel resources runs through the central and western part of Handan City. Such an industrial landscape is unique. This project is not limited to the re-design of individual buildings but pays more attention to the cluster benefits and driving effect brought by the regeneration of the "industrial belt", and how it will promote the transformation of urban industries. This will enrich the research portfolio of the reuse of urban industrial heritage and fill the knowledge gap of spatial regeneration. In addition, how sub-cities can integrate into the regional system and benefit from regionalization has also been widely discussed. This research provides a new idea, which is to use the approach of spatial regeneration to promote the transformation of the city's positioning in the region, and introduce the concept of "innovative urbanism" to promote the city with a new functional identity and participate into regional development.

#### ***Transferability***

This project has great potential in Transferability. In fact, the research object of Handan is not set at the beginning but is based on the general phenomenon and problems: regional marginalization and the transformation dilemma of resource-based industrial cities. Since these two issues are vividly reflected in Handan City, it is chosen as the research object. When formulating planning strategies based on problems, "generality" is also considered one of the underlying principles. For example, in the implementation phase, the vision of environment, culture, industry, and government can be summarized as a new paradigm and applied to other cities in China that face the same problems.

### 6.3.3 On the ethical considerations

#### ***Am I developing this project as a planner, from a social justice position?***

- Problem: unavoidable bias

The most important limitation of this project is the evaluation of the design, and whether the strategic plan can really promote the realization of the planning vision. In many cases, the strategy and implementation of this project are often too idealistic. Although I try my best to speculate about the difficulties this plan will face, both in the preparation process and implementation process, and formulate corresponding countermeasures to these potential problems, I cannot guarantee that things will be what I hope in this complex system. Therefore, I still cannot be sure whether my work will contribute to the development and transformation of this city.

- Solution: Conduct interviews with different groups of people, especially government workers and the Vulnerable Groups

- planner: Integrate multiple interests of different stakeholders

The city needs economic development

Nature needs to be restored

Citizens need a good living environment

Young people need job opportunities

Culture needs to be respected and promoted

The region needs healthy, healthy partnerships

#### ***Am I creating a new "regional center" that will exacerbate regional imbalances caused by excessive competition?***

The rationale for the project:

Regional cooperation- the purpose of metropolitanization, and mega-regionalization in China.

The great potential of sub-cities in mitigating the over-concentration of regional centers and creating a healthy and balanced regional system.

Guided by these theories, I would not like to see Handan overcome the difficulties of regional spatial marginalization by "enhancing centrality", but rather to transform Handan in a way that strengthens regional cooperation.

This vision is realized through "positioning". In ancient times, Handan was the center of regional economy, culture, politics and innovation, but after the founding of New China, Handan began to serve as a resource-based industrial city in order to support national industrialization, which is the root cause of Handan's current development difficulties. In this project, Handan has been given a new positioning: a regional innovation center. This means that Handan will use its potential to provide a platform for regional innovation activities, industrial development, and cooperation in order to be integrated into the system of regional development.

Thus, Handan will not be strongly central in all respects, in order to avoid vicious competition with existing regional centers and to try to alleviate the over-centrality of existing regional centers.

#### ***Will the plan promote the urbanization of this semi-urbanized area to cause further urban sprawl, and the encroachment of the natural environment? while creating a competitive relationship with the existing urban area?***

The introduction of innovative industries, the creation of innovative communities, and the attraction of innovative people will inevitably stimulate again the urbanization of this peri urban area. However, in order to prevent urban sprawl and competition with existing urban areas, "industry" is considered to be the core element of the belt, so that the innovative belt does not become a new independent urban area, but rather a complement to existing urban areas. It provides space for leisure, entertainment and entrepreneurship for the urban residents and space resources for new industries to be implanted. Compared to the current model of "new town construction" (planning a new town on undeveloped or underdeveloped land. This is a common model of urban development in China), this "reuse" is inherently more sustainable.

#### ***In this regeneration project, do I respect the existing industrialized cultural lineage?***

Like other traditional cultures, the rapid and aggressive industrialization of China in the 1950s and 1980s is considered a type of (modern) Chinese culture. Although this industrialization meant that the air was polluted and resources were wasted, it also contributed greatly to China's economic development.

I believe that the process of spatial regeneration should not completely overshadow this culture. Therefore, in addition to making the best possible use of the industrialized spatial elements, the "big courtyard culture" is used to develop one of the core concepts of this project - the innovative community. This means that people with similar values and lifestyles will work and live together, creating an atmosphere of urban innovation.

## 6.4 Limitations and Future research

In summary, this research starts from the two problems Handan faces in the development process, regional spatial marginalization, and industrial transformation dilemma, and proposes three main planning strategies, the good connectivity, tourism upgrading, and innovative community construction, to promote the development of Handan's innovative urbanism. And based on this the strategies are developed to support the transformation of Handan from a traditional resource-based industrial city to an innovative metropolis, and integrate into the regional development system with this new identity to promote the balanced development of the region.

Although I try my best to ensure the integrity, scientificity, and logic of the project, there are still some limitations in the project, and these limitations also guide future research on related projects. First of all, this project has a hypothesis, that is, once Handan transforms into a regional innovation node, it can integrate into the regional development system with this new identity. This hypothesis has not been demonstrated. Therefore, in the future, it is necessary to explore the metropolitan system and the relationship between it on the mega-regional scale. Second, when formulating planning strategies, local culture is considered to be an important factor in promoting innovative urbanism. However, due to the complexity of the cultural system, this project did not give specific interventions for specific cultural content, but formulated a general strategy. Therefore, in the future, it is very valuable to explore the protection and promotion of specific cultures in depth. Finally, this research plans the future development strategy of Handan City. Therefore, how to ensure that this system continues to function in the long run should also be discussed. Some future research questions are as follows:

### **In terms of regional cooperation:**

**How can innovative urbanism reshape the relationship of regional competition and cooperation, and promote Handan's integration into the regional development system?**

**In the new regional metropolitan system, how will Handan cooperate with other cities to play its role as a "regional innovation center"?**

### **In terms of socio-cultural aspects:**

**What role can specific local cultures, both tangible (ceramics, ancient cities, historical sites, etc.) and intangible (taiji, idioms, opera, etc.), play in the process of innovative urbanism to encourage and promote urban innovation?**

**What spatial strategies, interventions, and design principles should be developed?**

### **In terms of urban development:**

**This study explores the potential and spatial strategies of regeneration of former industrial sites to promote innovative urbanism.**

**How to evaluate the possibilities of this system from a practical perspective?**

**What governance mechanisms should be developed to enhance the chances of success of the project and to sustain its good functioning in the long term future?**

## 6.5 The future of China - reflection on the national scale

The development of China has always been a controversial topic. In 1949, the Nationalist regime (Republic of China) was relocated from the mainland to the island of Taiwan as a result of the defeat of the civil war, and with this process a great deal of wealth, technology, and scientists were taken away, leaving the Communist regime (People's Republic of China) facing enormous poverty and technological backwardness. Recent developments have led more and more people to believe that China will challenge the United States in the near future and become the world's largest economy. But there is no denying that China is still a developing country, with a huge gap between rich and poor, a worrying environmental quality, and uneven social resources that limit the country's progress toward a better future. In fact, the Chinese government is making efforts. For example, by 2020, poverty eradication have been completed nationwide. Local officials are going door to door to help the poor find employment, education for school-age children, access to safe food and water, and medical and social insurance.

In addition, China's central government is promoting a policy of "ecological civilization," which means that economic development needs to give way to environmental protection and ecological restoration. This study is based on the problems caused by this policy, as many resource-based enterprises with high pollution and energy consumption have been shut down, and the development of resource-based cities has been affected. Therefore, I believe that in China's future development, "resilience" should be a key word to guide all aspects of construction. This "resilience" should not only be reflected in environmental aspects, but also in economic and social aspects. For example, in this study, the development strategy for secondary post-industrial cities has a degree of flexibility, which helps to promote a healthier urban transition with as few new problems as possible.

Second, China's economic and social development is still uneven. Because of its large population, it is difficult to achieve a fair distribution of social resources. I am glad to see that some policies are starting to improve this situation, from social and human daily life level, housing security, basic education, entrepreneurship support, etc. are gradually being implemented. In terms of regional development, supporting the development of small and medium-sized cities and balancing the regional urban system has been advocated for more than 10 years. However, it is undeniable that this imbalance is also difficult to solve through policy restrictions or support. Educational resources, job opportunities, financial support, and other elements are limited, and people can only compete to obtain benefits, which has resulted in the current situation of excessive and vicious competition in China, and the well-being of young people is particularly affected. And at the regional level, big cities continue to spread, and only a limited number of secondary cities can enjoy the benefits of regionalization; most of the secondary cities are facing decline, as the latest census can illustrate. Therefore, I think that a balanced system of cities and societies that are cooperative, with healthy competition, is a problem to be solved in the future.

Because of ideological differences and cultural barriers, China is often discussed, criticized, and questioned by some western countries such as the United States, especially when it comes to the topic of democracy and geopolitics. In fact, the Chinese Communist Party and the central government are leading the development and progress of this country and its people, they have set a goal for China's development: to be a rejuvenated, rich and powerful country by 2035. I am confident that this goal will be reached, and that environmental issues, diplomatic issues, economic issues, etc. will be addressed, but I think resilience and balance are two additional points to focus on in this process.



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*To my beloved homeland*  
致 我深爱的故土



## ***Transformation and Revival***

–Research on Urban Development Strategic Planning for HanDan under the Dual Dilemma of Resource-based Industry Transition and Regional Spatial Marginalization

***Master thesis***

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