

POST-INDUSTRIAL AREA IN TRANSITION

RENAISSANCE OF A DERELICT INDUSTRIAL AREA IN BEIJING

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PART I
INTRODUCTION

1.1 GLOBAL TREND OF DE-INDUSTRIALIZATION

European Cities:

- Economy: shift from manufacturing to emerging new industries
- Social Issues: social exclusion, unemployment, etc
- Spatial Condition: obsolete infrastructure, environmental deterioration

"These cities are facing a complex array of economic, social, physical, environmental and fiscal problems. Cities have to compete for investment and economic growth at the same time as dealing with the dereliction left by previous generations."

Couch, C & Fraser, C

1.1 GLOBAL TREND OF DE-INDUSTRIALIZATION

Global Trend:

- Decline of old industrial cities & regions
- Economic decline & urban decay
- Globalization trend: spread of capitalist & change in urbanization process
- Shrinking cities in need of urban regeneration

To seek to a solution, the central focus should be put on the *"environmental enhancement, not only trough brownfield cleanup but also through the application of ecological planning principles to all projects from infrastructure improvements to housing developments to the creation of business and technology parks."* (Fox 2001, P. 9.)

1.1 GLOBAL TREND OF DE-INDUSTRIALIZATION

- de-industrialization in global context vs. industrialization & urban explosion in developing countries

"Cities have been experiencing constantly change since the beginning of civilization. In response to economic and social factors they have grown, declined or undergone major restructuring."

COUCH, 1990

1.2 URBAN REGENERATION IN CHINA

BRIEF HISTORY OF INDUSTRIALIZATION IN BEIJING



Three phases in the strategic planning of Beijing influencing industrialization process:

- 1949 - 1958: designated function of Beijing is defined as the production base & industrial city;
- 1958 - 1980: "Great Leap Forward"(1958 - 1961); "Cultural Revolution" (1966 - 1976);
- 1980 - now: designated function of Beijing modified as the cultural and political center of China.

1.2 URBAN REGENERATION IN CHINA

BRIEF HISTORY OF INDUSTRIALIZATION IN BEIJING

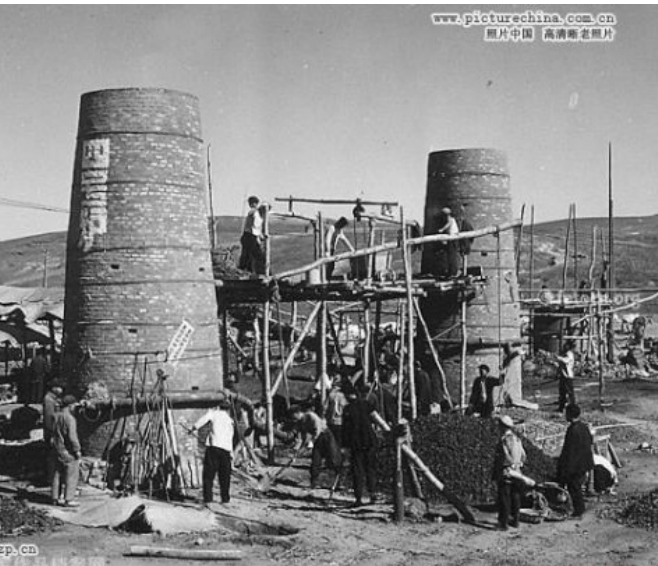


FIRST PHASE: 1949 - 1958

- Chairman Mao solemnly proclaimed the **founding of the People's Republic of China (PRC)**, witnessed by crowds of Beijing people in Tiananmen Square in 1949;
- Land reform: **nationalize the land**
- Mao's first objective was to bring forth **economic improvement**.
- Establishment of **basic industries** necessary for full industrialization process
- Amazing achievements were made during the **First Five-Year Plan** period, from 1953 to 1957;

1.2 URBAN REGENERATION IN CHINA

BRIEF HISTORY OF INDUSTRIALIZATION IN BEIJING



Spontaneous steel production activity
(native style blast furnaces, 1958)



Propaganda poster of 'Great Leap Forward':
People's Commune



Propaganda poster of 'Great Leap Forward':
Proletariat is the Master of China

SECOND PHASE: 1958 - 1980

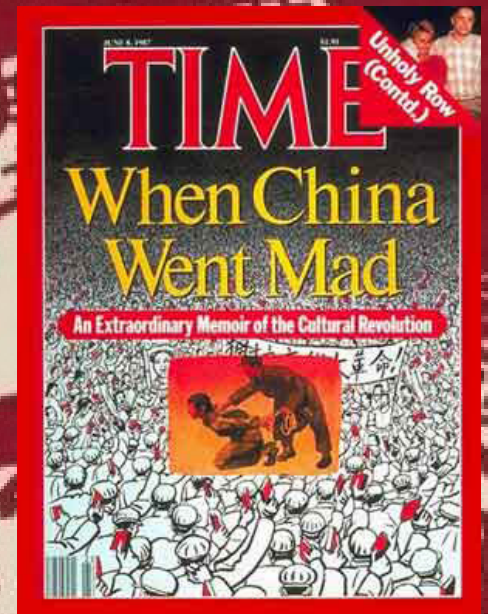
- 10 years from 1957 to 1966 is the period in which China started large-scale socialist construction
- "Great Leap Forward": an Utopian plan from 1958 till 1961
- Spontaneous production activities in national scale
- The position of proletariat is on the top of social & political hierarchy
- Catastrophic failures caused negative effects on the urban development

1.2 URBAN REGENERATION IN CHINA

BRIEF HISTORY OF INDUSTRIALIZATION IN BEIJING

SECOND PHASE: 1958 - 1980

- "Cultural Revolution"(1966-1976): darkest period
- Most serious setbacks and loses
- Isolated in global economy



1.2 URBAN REGENERATION IN CHINA

BRIEF HISTORY OF INDUSTRIALIZATION IN BEIJING

THIRD PHASE: 1980 - NOW

- Designated function of Beijing has been modified: political & cultural centre
- Economic transition: production city to consumption city
- Increasing environmental concern
- Decline and removal of heavy industries
- Rapid urban explosion: increasing immigration & enormous city expansion
- Demolish & rebuild

What has been demolished is not only physical remains but also **CULTURAL IDENTITY** that cannot be repaired or reconstructed.



1.2 URBAN REGENERATION IN CHINA

TYPICAL DEVELOPMENT MODE

There was a typical development mode emerging in Chinese big cities under the name of urban regeneration.

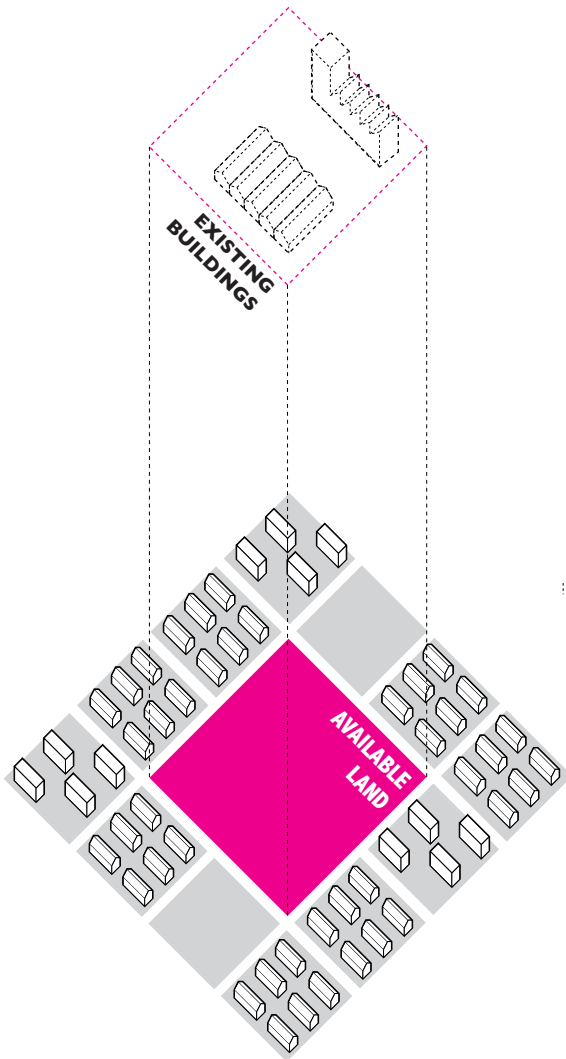
However,

- Profit driven
- Neglect existing value of the site
- "Duplicate construction"

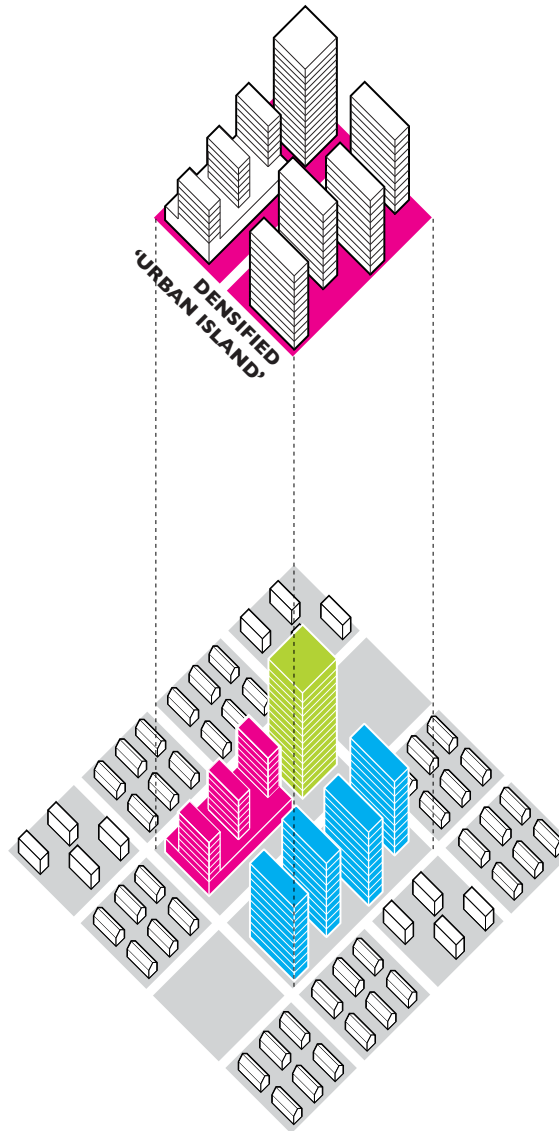


1.2 URBAN REGENERATION IN CHINA

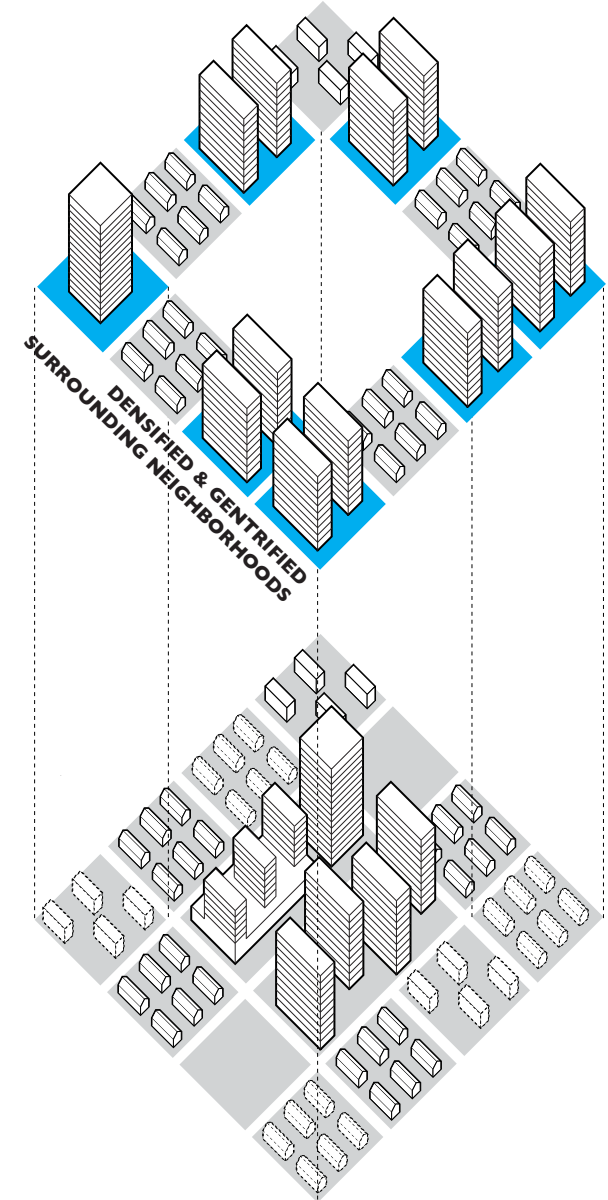
TYPICAL DEVELOPMENT MODE



STEP 1 LARGE-SCALE DEMOLITION



STEP 2 NEW PROGRAMING



STEP 3 GENTRIFICATION & REPLACEMENT

1.2 URBAN REGENERATION IN CHINA

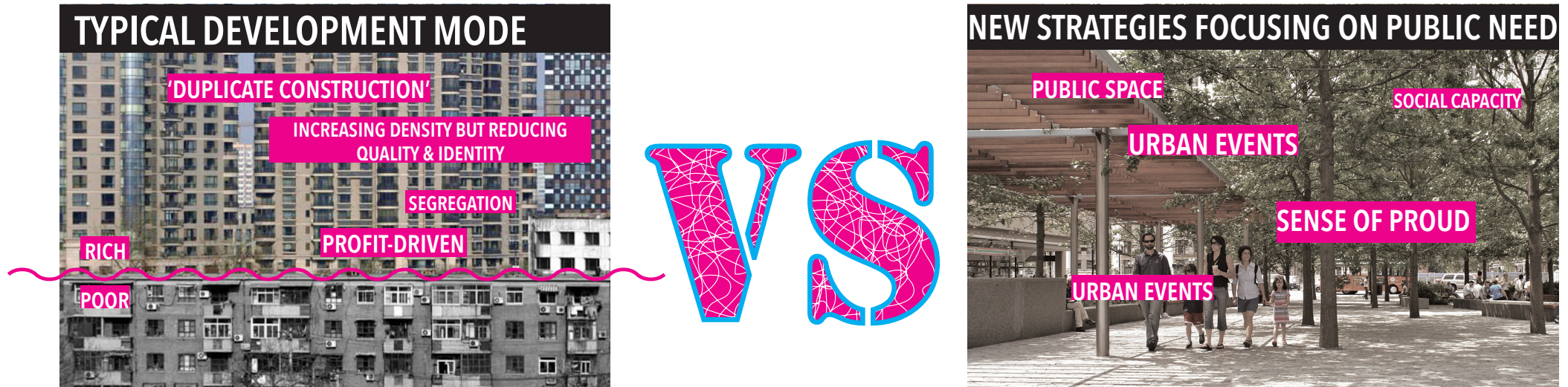
SIDE EFFECTS OF TYPICAL DEVELOPMENT MODE

City imaged improved while populace suffer

- Rising land & housing price
- Physical & social segregation(urban village)
- Losing identities: "duplicate construction"
- Undemocratic planning process



1.3 PROBLEM STATEMENT



The typical development mode for redeveloping dilapidated industrial sites in urban area is unable to facilitate the general public, neglecting the real value and cultural identity of the place.

1.4 RESEARCH QUESTIONS

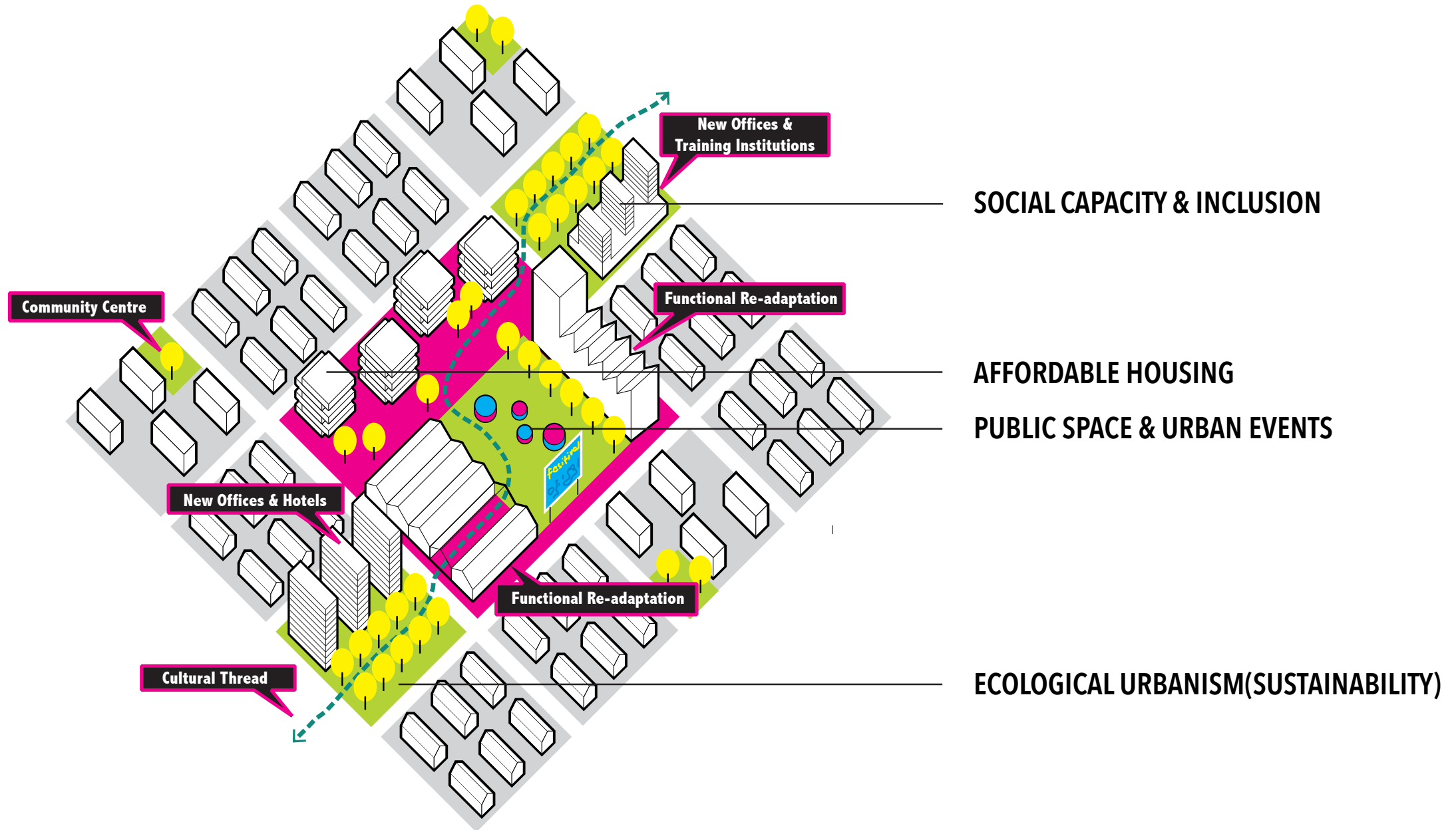
What alternative strategies should be used to redevelop derelict industrial areas in Beijing with value of urban heritage (industrial heritage), balancing the emerging needs from both the city and local residents to tackle with socio-economic decline and to realize spatial and economic transition?

SUB RESEARCH QUESTIONS

1. What is the value of industrial heritage in historical and cultural aspects?
2. What are the emerging needs from the local residents when there is socio-economic decline left by industrial dereliction?
3. What are the emerging needs from the city of Beijing during the period of industrial decline?
4. What kind of transition is needed based on the existing spatial and architectural condition?

1.5 AIM OF RESEARCH

IDEAL MODEL FOR URBAN REGENERATION OF INDUSTRIAL DERELICTION



1.6 PROJECT SITE SELECTION

AERIAL VIEW



Chosen site is the Capital Steel Complex in west part of Beijing, known as the oldest and largest industrial complex in urban area of the capital city.

1.6 PROJECT SITE SELECTION

SIZE COMPARISON



Amsterdam Centre



Capital Steel Complex

Comparison Area: 8 km²

A comparative diagram shows that the area of the project site is approximately equal to Amsterdam Centrum, giving a better impression about this huge-sized industrial dereliction and also architectural scale.

1.6 PROJECT SITE SELECTION

- Founded in 1919
- From the pillar of economy to biggest polluter
- Reduce production since 2004
- Completely halted in 2010
- Moved out with majority of its workers
- Left dilapidated site and large amount of unemployment

How to redevelop the derelict industrial land with such an unique heritage value and significant size has become a hot issue.



Aerial view of former cooling pond(source: Flickr)



Super-sized workshop(source: Flickr)



Electricity plant & cooling pond(source: Flickr)

PART II
CASE STUDY

2.1 EUROPEAN PRECEDENT

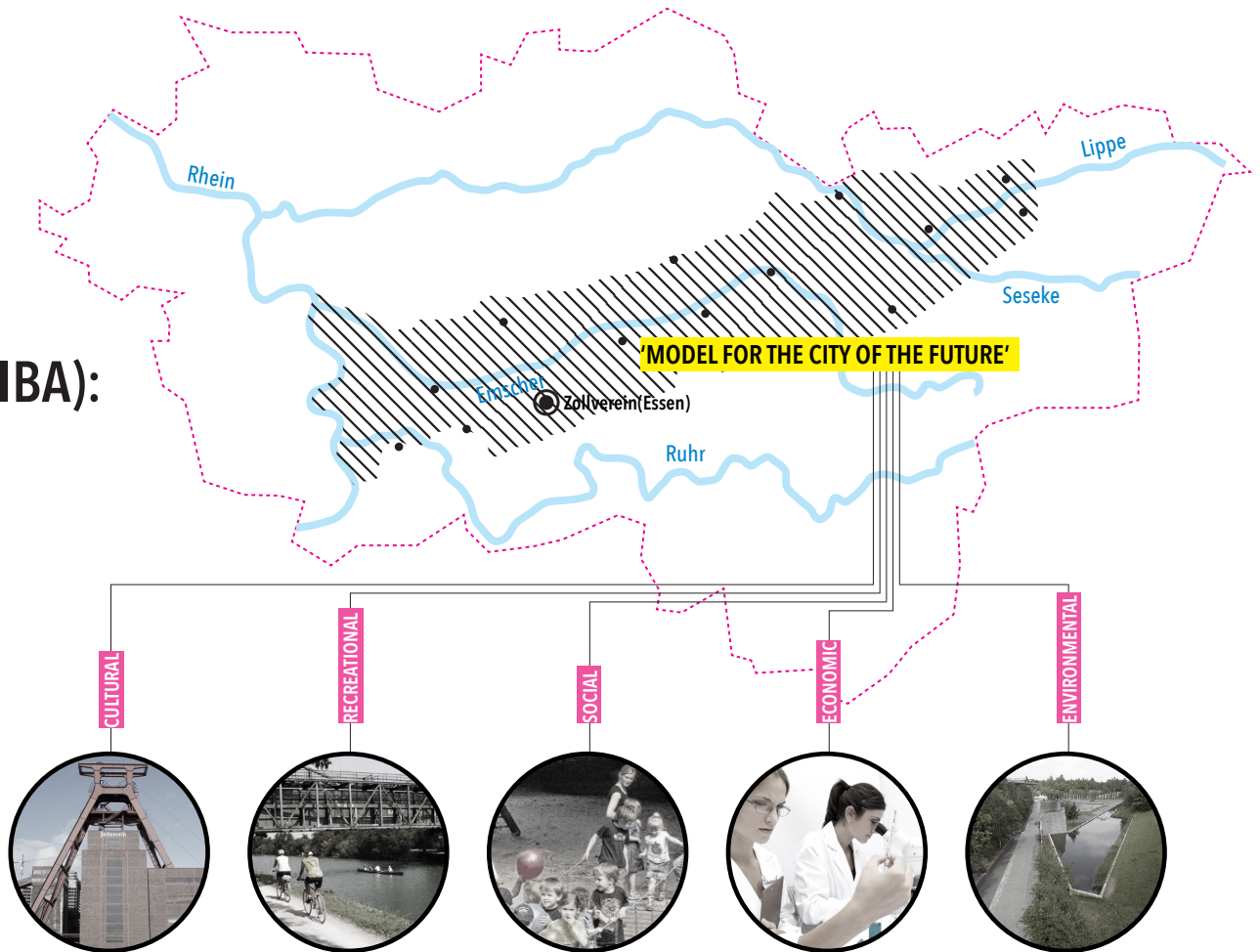
IBA EMSCHER PARK

International Building Exhibition (IBA):

- Planning methodology
- Experimentation driven
- Integral architectural approach

Emscher Regional Park:

- Ten-year regeneration program
- Reverse decline of Ruhr region
- Through culture-led regeneration
- Multi-purposed program
- "Working in the park"
- "Living in the park"



A holistic ten years (1989 to 1999) top-down initiative with a grassroots philosophy to re-image the Ruhr.

2.1 EUROPEAN PRECEDENT

ZOLLVEREIN INDUSTRIAL COMPLEX

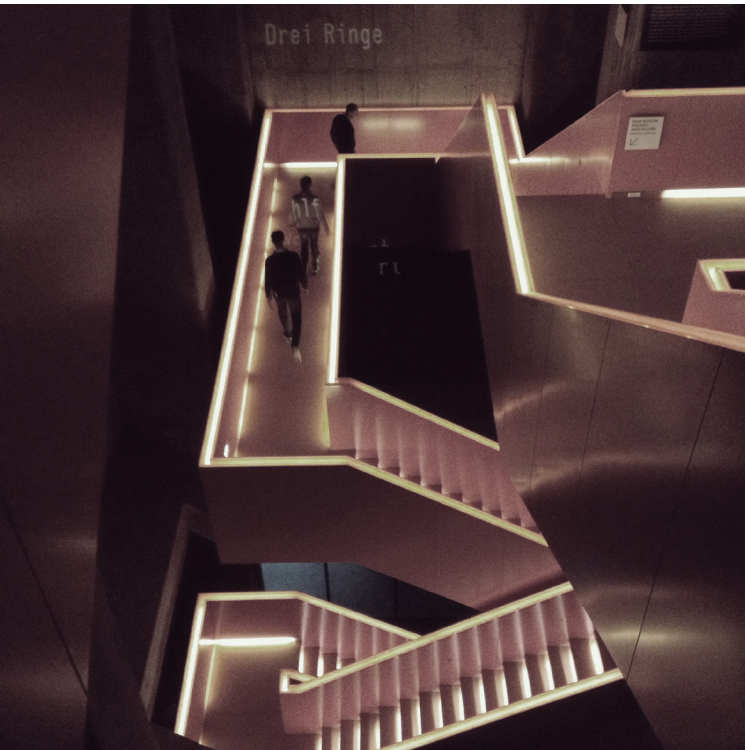
- Complete infrastructure
- "Most beautiful coal mine in the world"
- UNESCO World Heritage Site
- 10 years before government decided to buy the site
- An area of 10 km² incubator site for design and art



Figure 4.3: Zeche Zollverein (photo by author)

2.1 EUROPEAN PRECEDENT

ZOLLVEREIN INDUSTRIAL COMPLEX



Staircase with lighting as the high-profile installation



Facade in Bauhaus style: Red Dot Museum



Innovative and adaptive way of placing exhibits

- Facades were preserved in Bauhaus style
- Interior space was adaptively transformed to accommodate new functions

2.1 EUROPEAN PRECEDENT

ZOLLVEREIN INDUSTRIAL COMPLEX



Swimming pool installed among industrial buildings



Skating place on the canal

- Interventions for outdoor recreational use
- Attractive activities both in different seasons

2.2 CHINESE PRECEDENT

BEIJING 798 ART ZONE

- Cultural landmark in Beijing
- High profile approach: culture as the catalyst
- Aims to develop a new economy
- Globalization trend: cultural infrastructure
- Spontaneous and bottom-up development
- Initiated by artists from CAFA
- Agglomeration of creative industries & avant-garde art
- Highly commercialized

"Cultural is now seen as the magic substitute for all the lost factories and warehouses, as a device that will create a new urban image, making the city more attractive to mobile capital and mobile professional workers."

HALL, P. (2000)



2.2 CHINESE PRECEDENT

BEIJING 798 ART ZONE



Cafe in a former production workshop



Bookshop transformed from former canteen



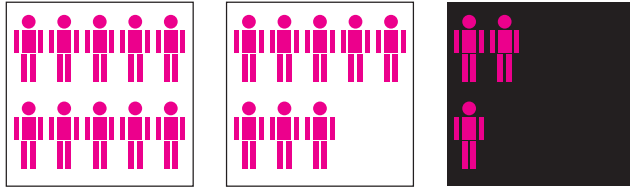
Glass box added as offices

Culture is referred as "a source of prosperity and cosmopolitanism" as well as "a means of defining a rich, shared identity and thus engenders pride of place".

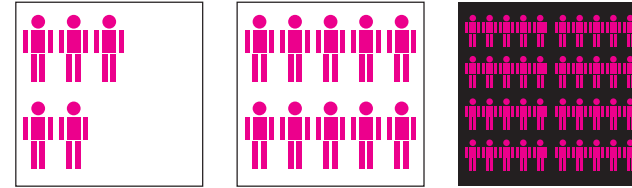
COMEDIA. 2003

2.3 CONCLUSION

DIFFERENT URBAN CONTEXT



VS



Shrinking Cities in Ruhr

Rampant Urban Growth



Ruhr region: shrinking cities with declined economy
- Aim of program: improve attractiveness for mobile capitals and investments

Beijing: urban expansion with diverse economy
- Aim of program: development of cultural and creative industries

2.3 CONCLUSION

LESSON LEARNED FROM IBA

1. Involvement of various stakeholders;
2. Regional-level strategy as the guiding principle;
3. Industrial heritage as a valid focus;
4. The use of the IBA as a political tool;
5. Long-term process;
6. Encouraged temporary uses of land and buildings;
7. The use of marketing and the media;
8. A multi-purposed development.

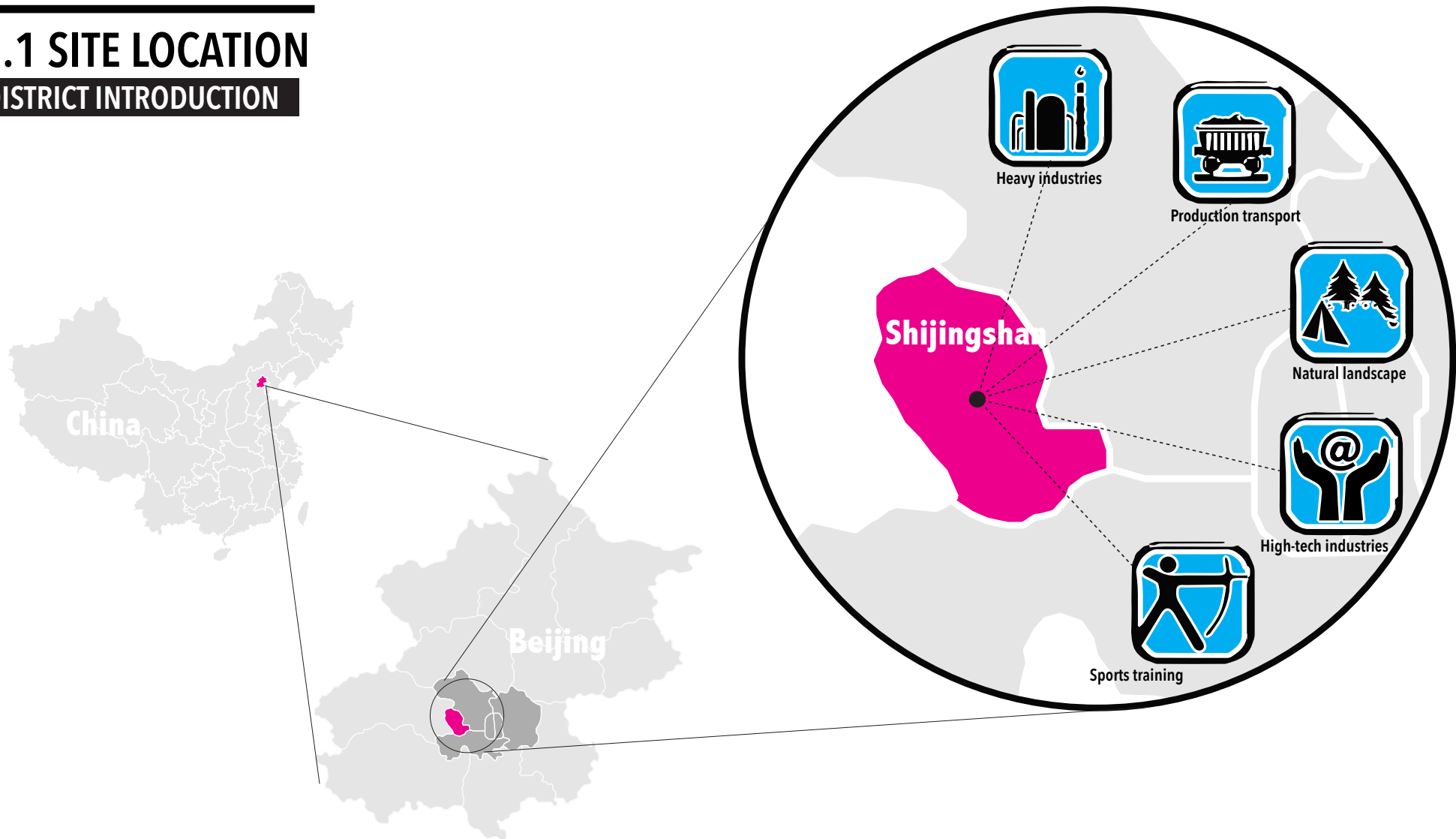
LESSON LEARNED FROM 798

1. Initial bottom-up development;
2. Clustered economy;
3. The use of annual event '798 International Art Festival';
4. Combination of heritage buildings with avant-garde art and creative industry which have enormous attractiveness for both populace and visitors from abroad;
5. Close connection with related education institutions (Chinese Academy of Fine Art)

PART III
SITE ANALYSIS

3.1 SITE LOCATION

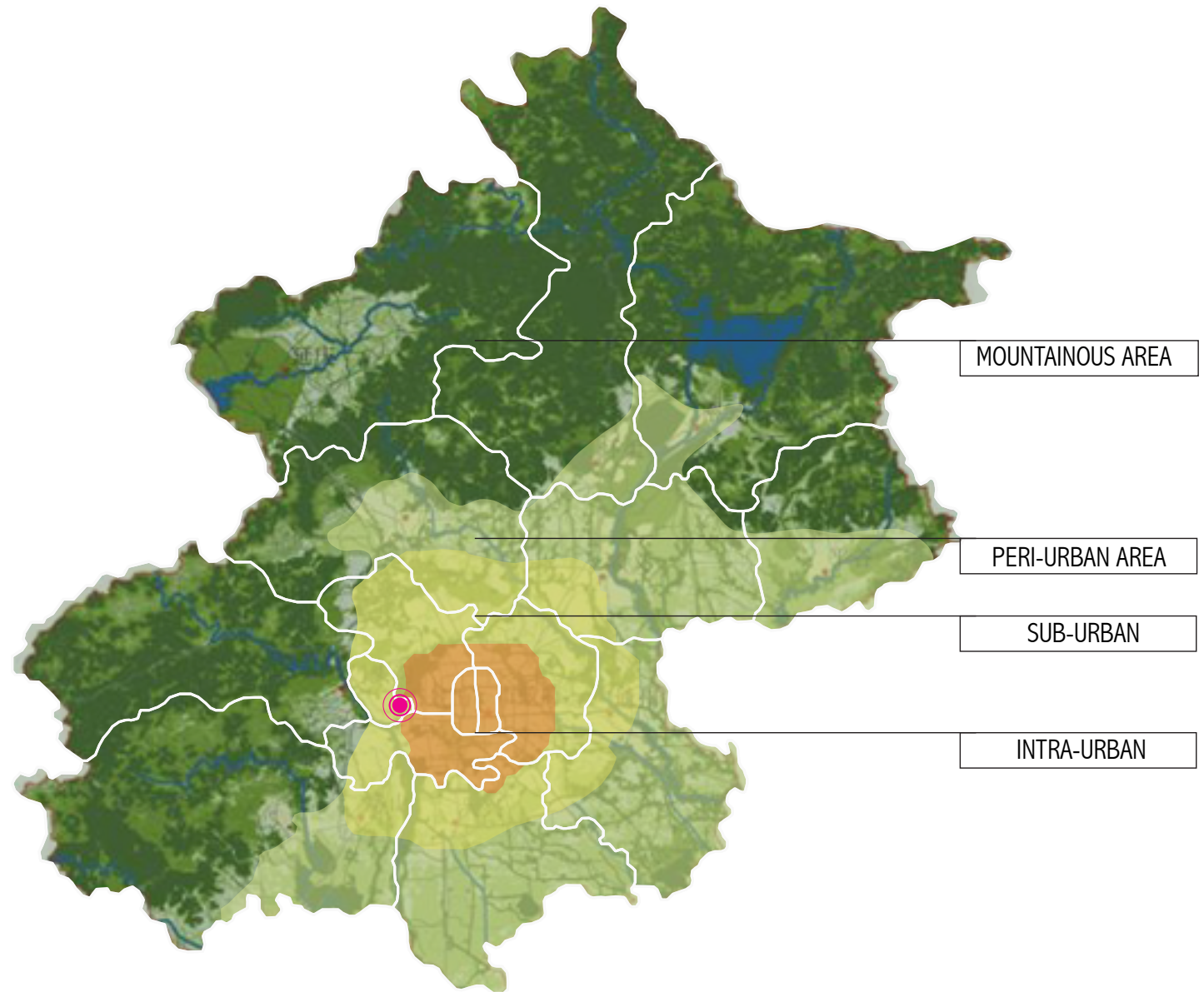
DISTRICT INTRODUCTION



The district where the project site is located is one of the six main urban districts of Beijing, and it has been known as the traditional industrial base with preferable location and excellent accessibility, as well as the base of some technology industries and sports facilities.

3.1 SITE LOCATION

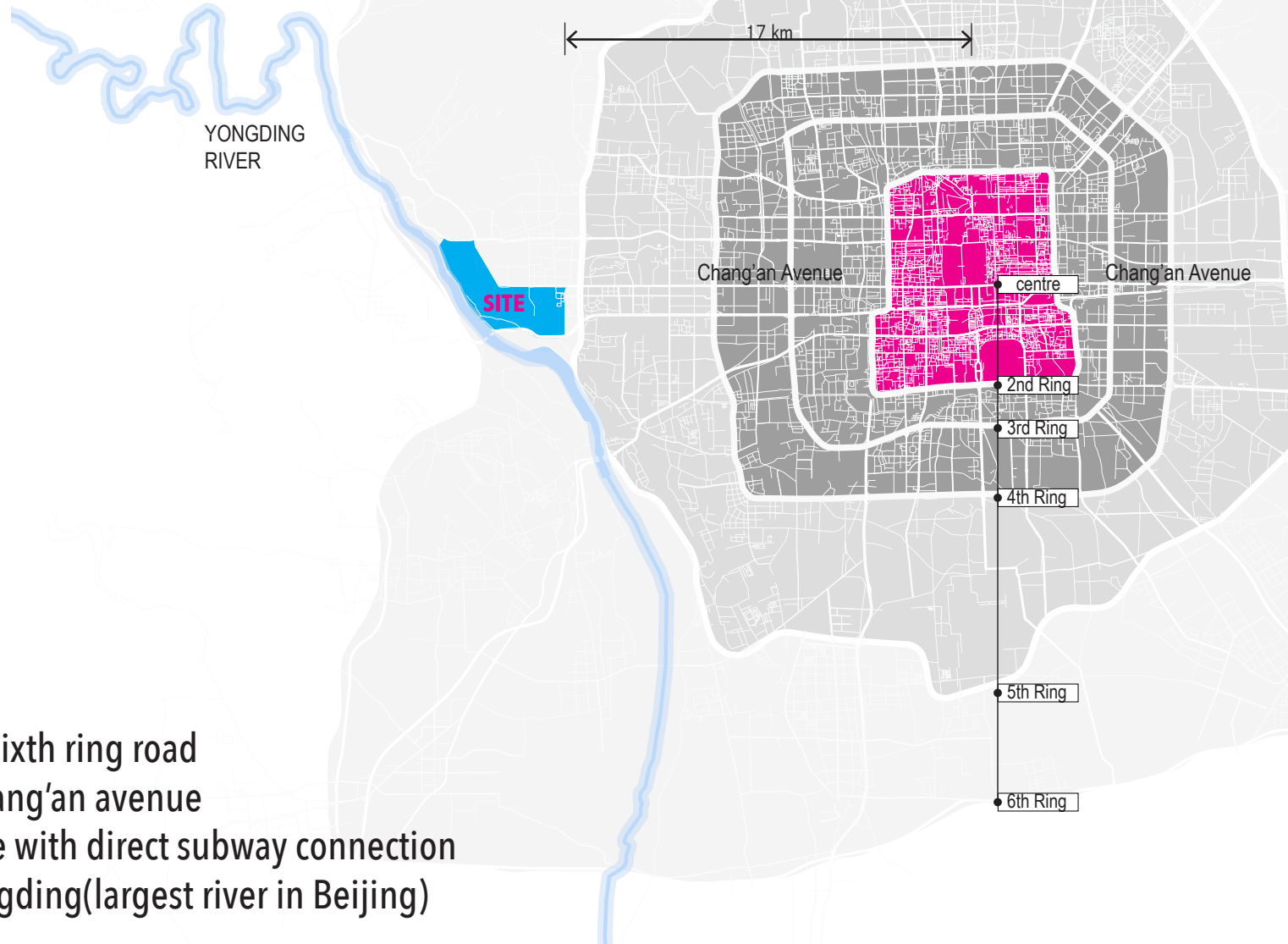
GEOGRAPHIC LOCATION



The project site is on the **border of the intra-urban area**. The west side is huge mountainous area, with natural landscape, forests and some tourist attractions. Located in-between the urban and natural landscape, the site has great potential to make use of both resources to realize a flexible and feasible re-programming.

3.1 SITE LOCATION

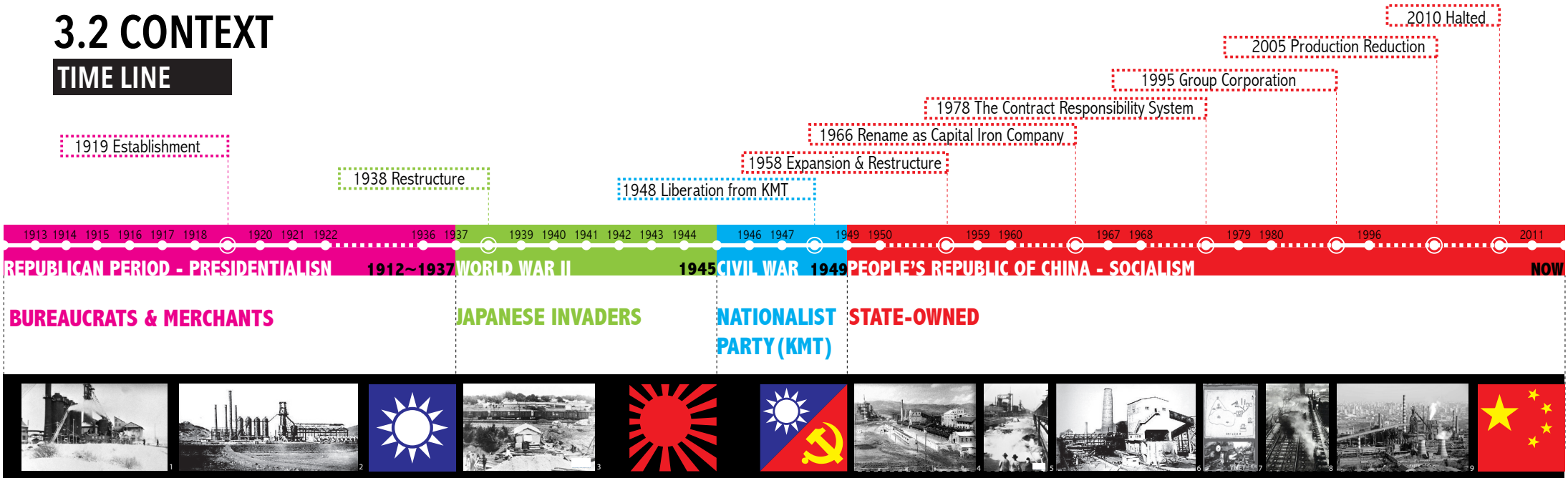
INTRA-URBAN SCALE



- Between fifth and sixth ring road
- West ending of Chang'an avenue
- 17 km to city centre with direct subway connection
- Along the river Yongding(largest river in Beijing)

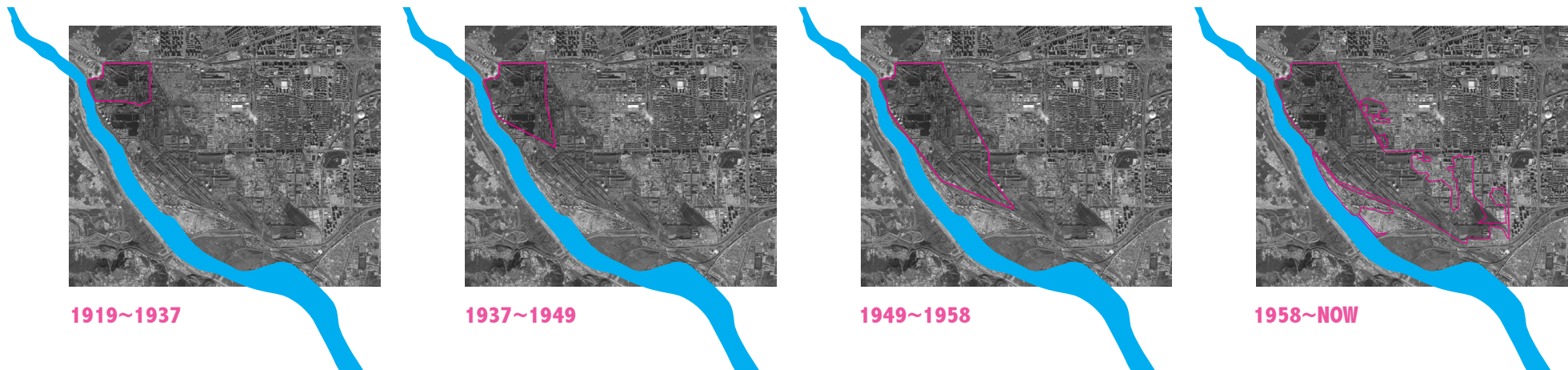
3.2 CONTEXT

TIME LINE



- 1: 1921
- 2: 1928
- 3: 1939
- 4: 1st furnace production
- 5: 1st coke oven
- 6: 2nd coke oven
- 7: site plan rolling steel factory in 1969
- 8: 1970
- 9: 2008

REPRESENTATION OF DIFFERENT ERAS OF POLITICAL UNREST IN CHINA HISTORY



GROWTH OF CAPITAL STEEL INDUSTRIAL COMPLEX

3.3 VALUE OF SITE

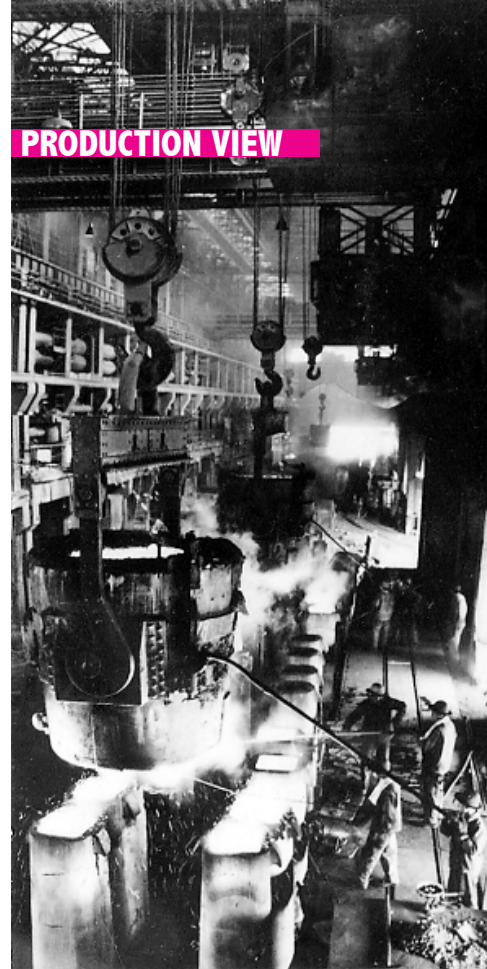
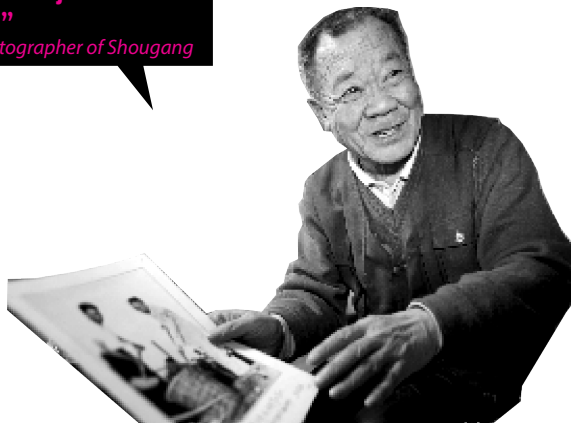
CULTURAL VALUE

- Part of local cultural identity
- People's Memory
- Corporate Culture
- Propagandas: Posters, Slogan, etc.
- Intangible value



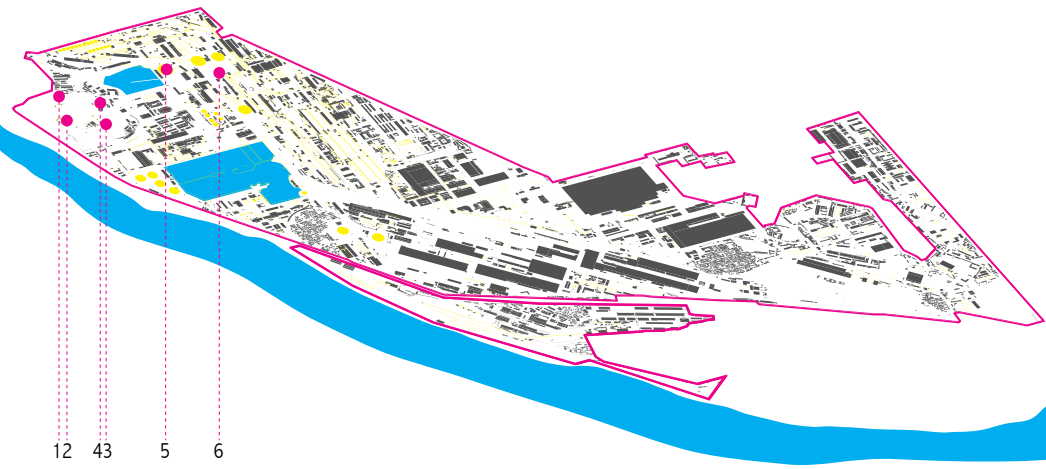
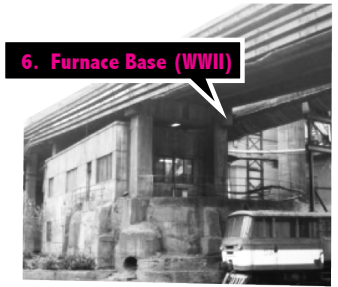
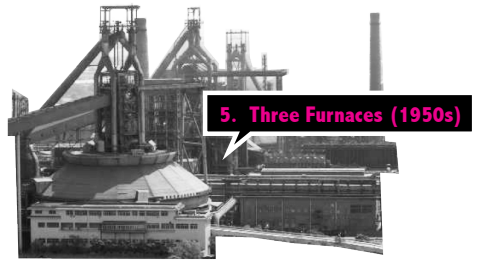
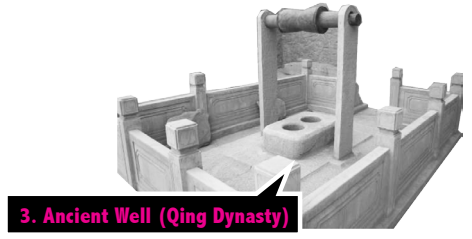
" I have been woking in Shougang for more than 40 years, with 2000 pictures published to record its glorious history. But now it has been retired just like those former workers."

- 1st Photographer of Shougang



3.3 VALUE OF SITE

HISTORICAL BUILDINGS

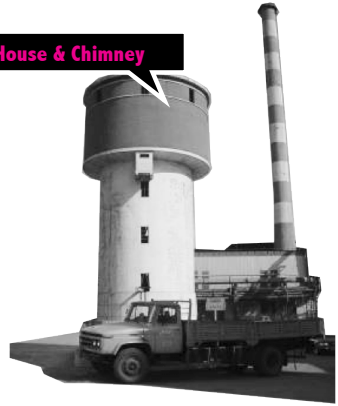


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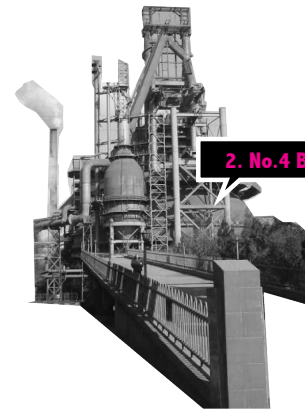
3.3 VALUE OF SITE

LANDMARK BUILDINGS

1. Water House & Chimney



2. No.4 Blast Furnace



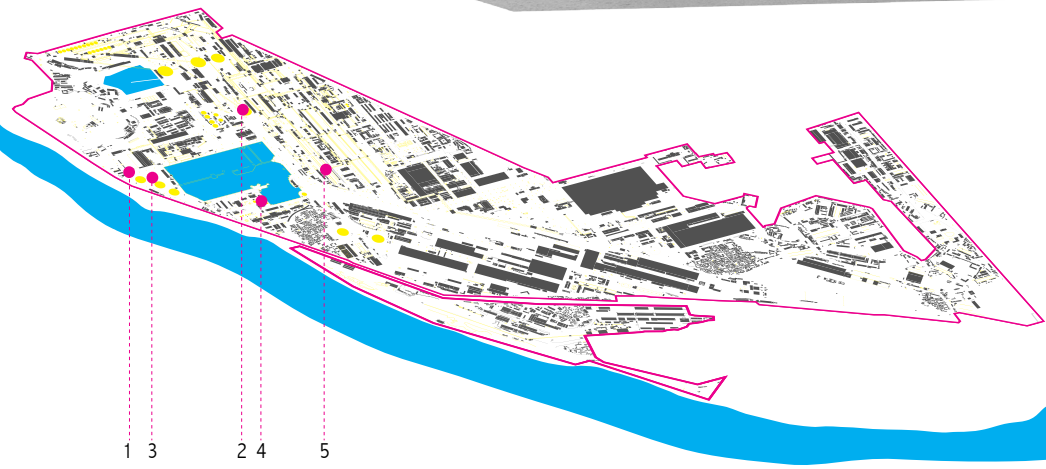
3. Cooling Towers



4. Gas Tanks

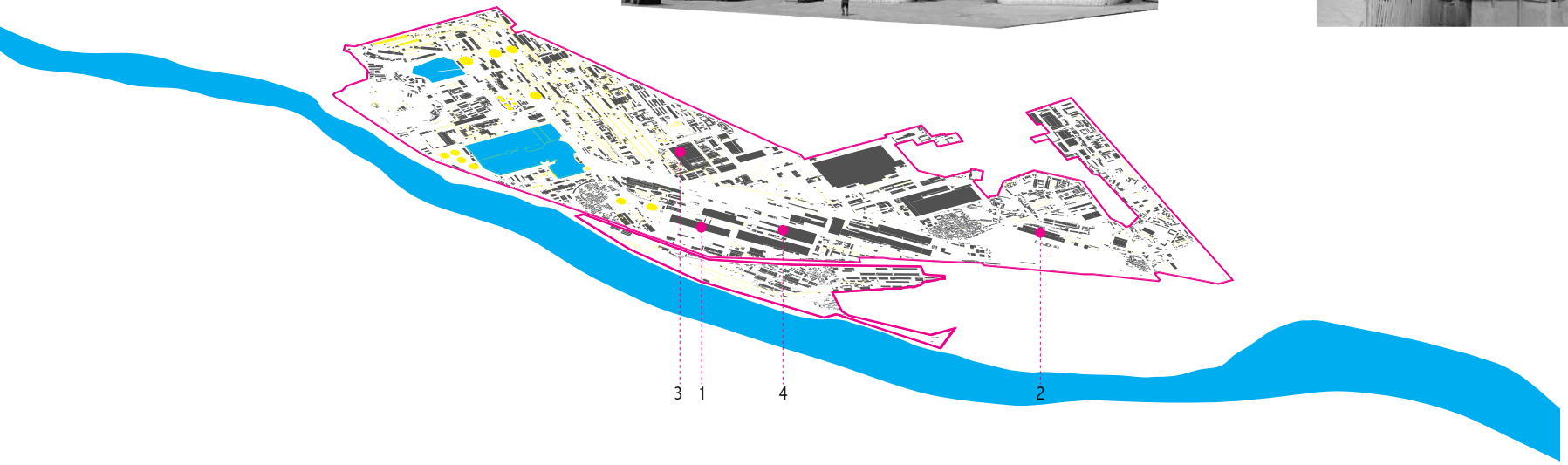
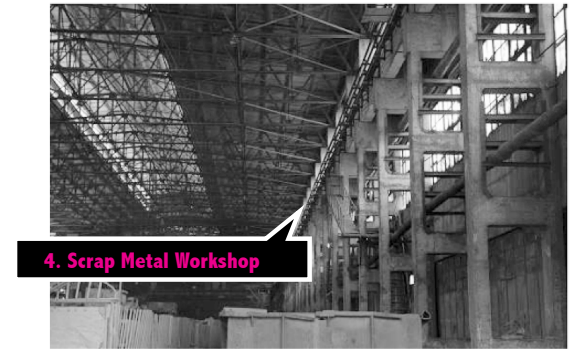
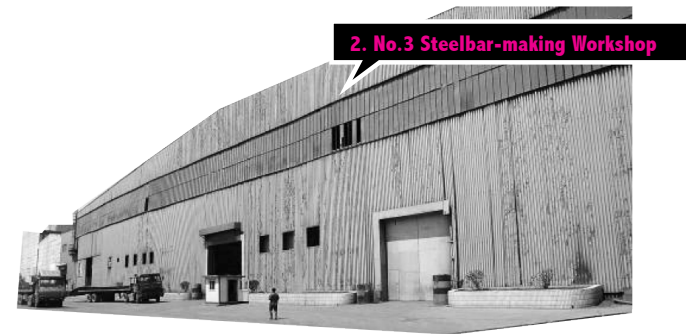
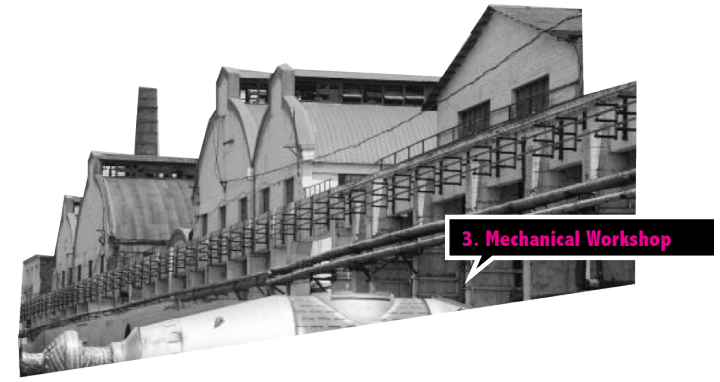


5. Coal Storehouse



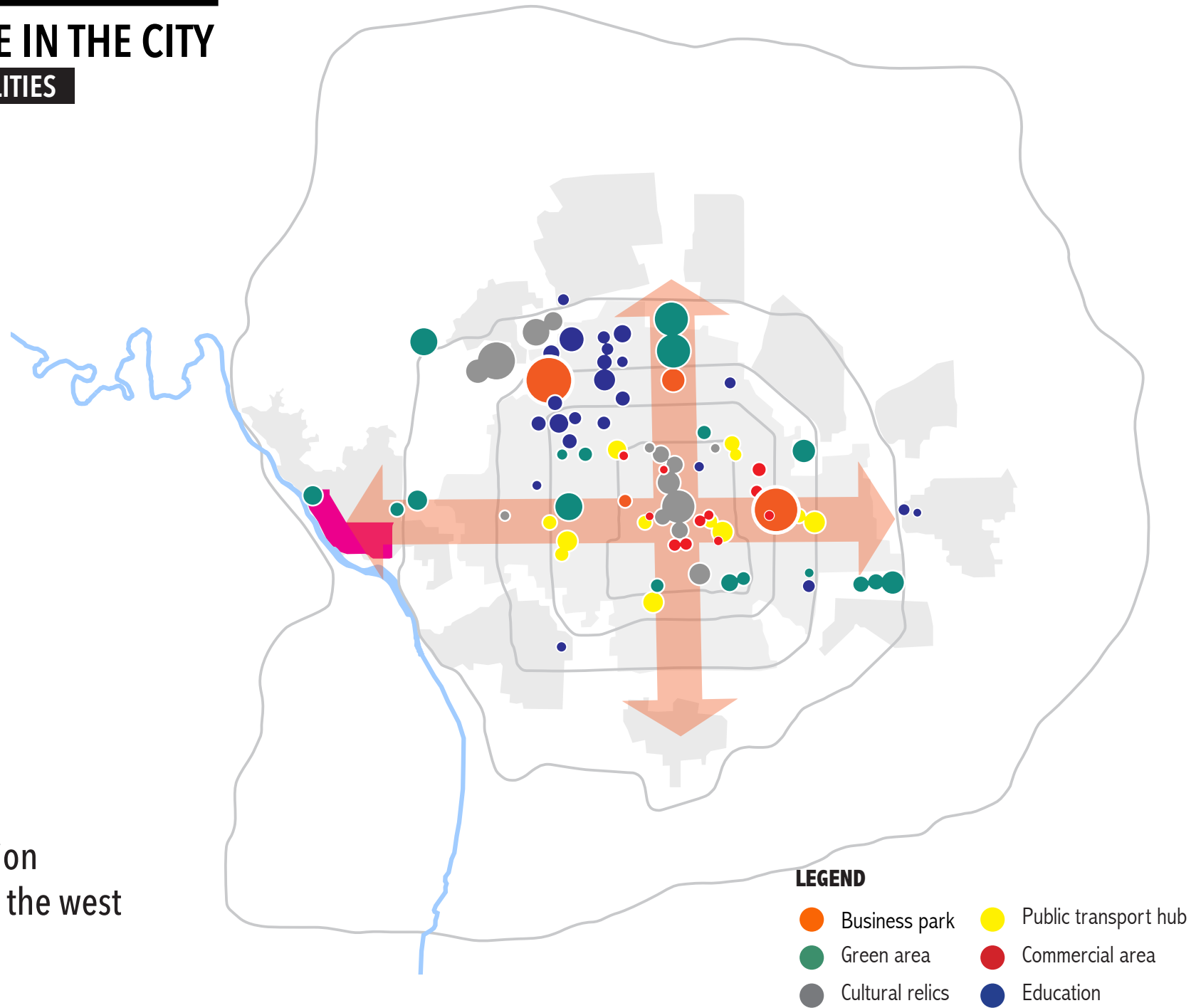
3.3 VALUE OF SITE

REUSABLE BUILDINGS



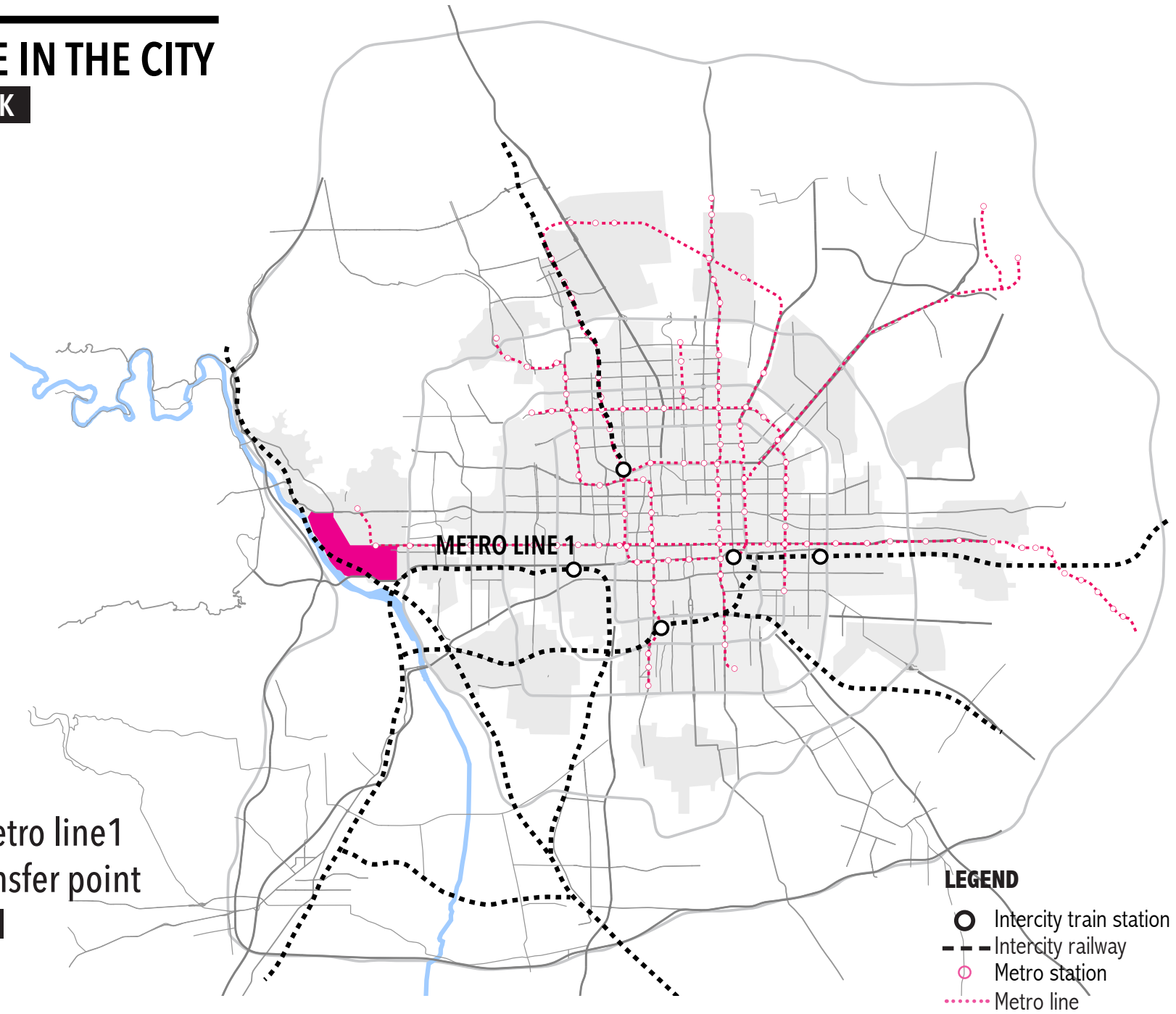
3.4 CURRENT ROLE IN THE CITY

DISTRIBUTION OF CENTRALITIES



- Unbalanced distribution
- Potential to stimulate the west

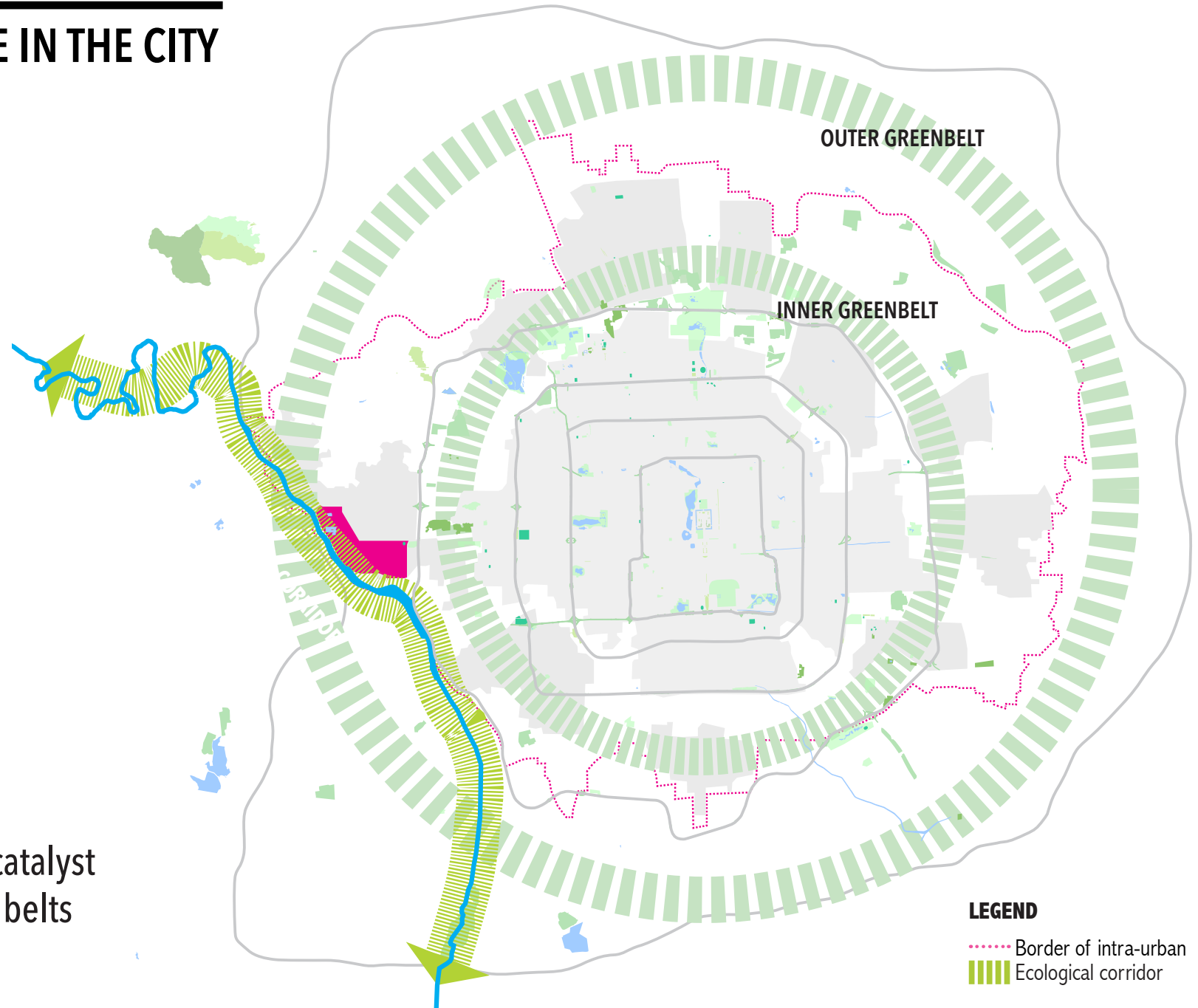
3.4 CURRENT ROLE IN THE CITY INFRASTRUCTURE NETWORK



- West ending of the metro line 1
- Potential to be the transfer point
- No passenger terminal

3.4 CURRENT ROLE IN THE CITY

URBAN GREEN SYSTEM



- Ecological corridor as catalyst
- In-between two green belts

LEGEND

- Border of intra-urban
- ||||| Ecological corridor

3.5 LOCAL CONDITION

ZONING BY SPATIAL CHARACTERISTICS

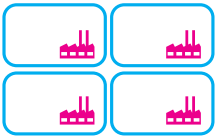
DENSITY



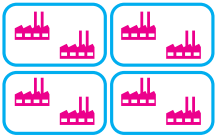
BUILDING TYPE



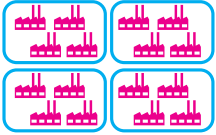
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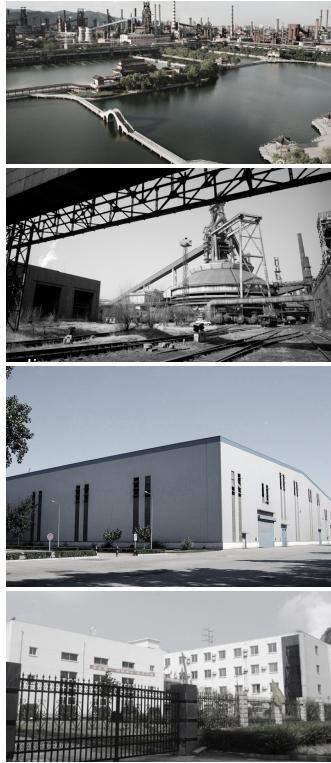
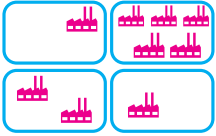
II



III



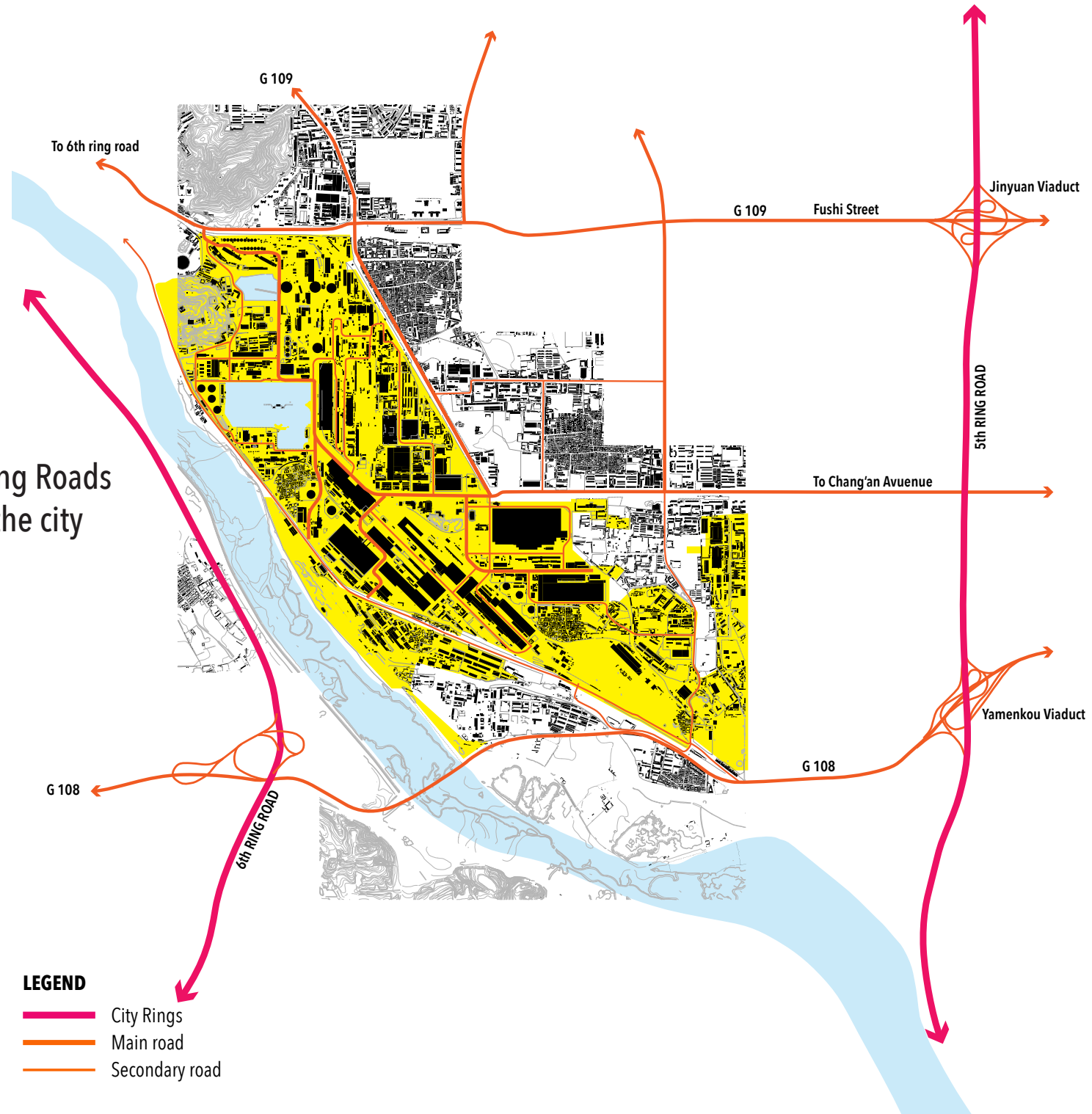
IV



3.5 LOCAL CONDITION

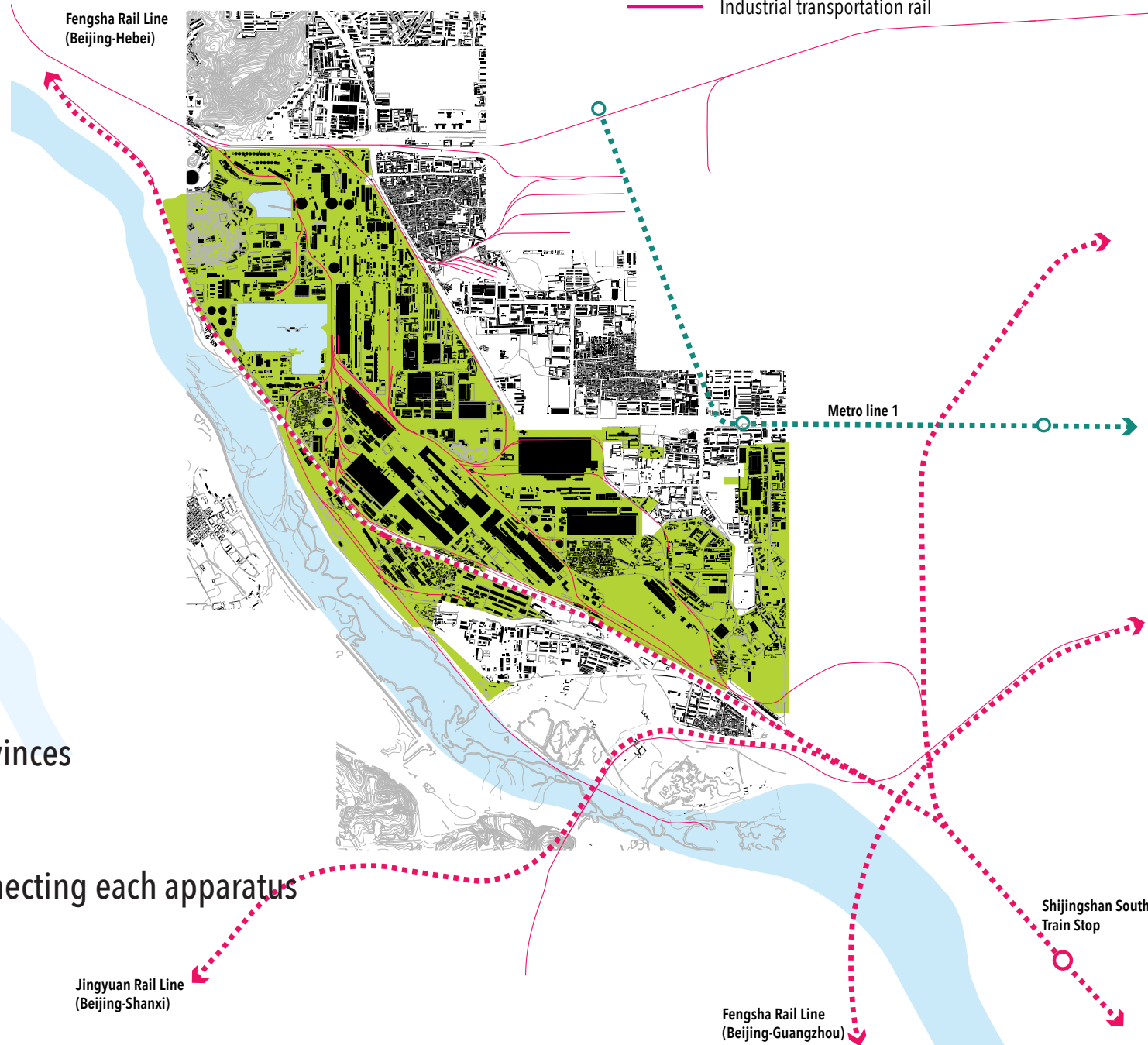
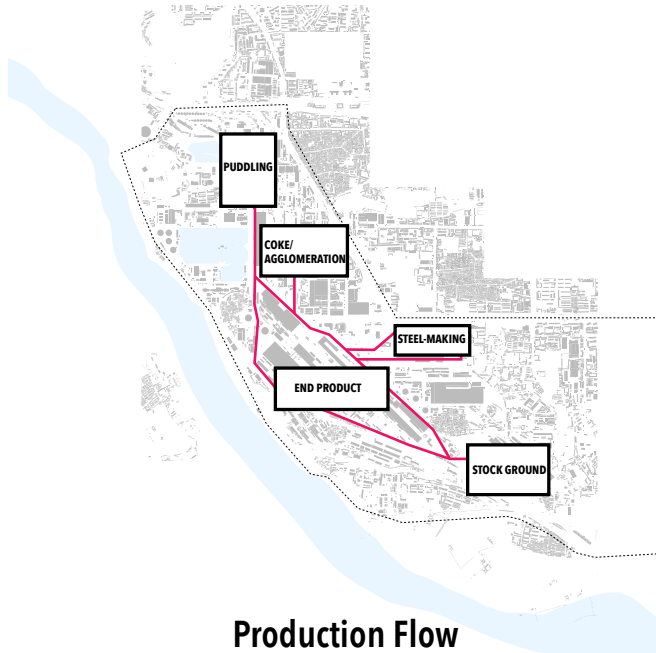
ROAD SYSTEM

- Close to exit ramps of 5th and 6th Ring Roads
- Easily accessible from other parts of the city



3.5 LOCAL CONDITION

RAILWAY & SUBWAY SYSTEM



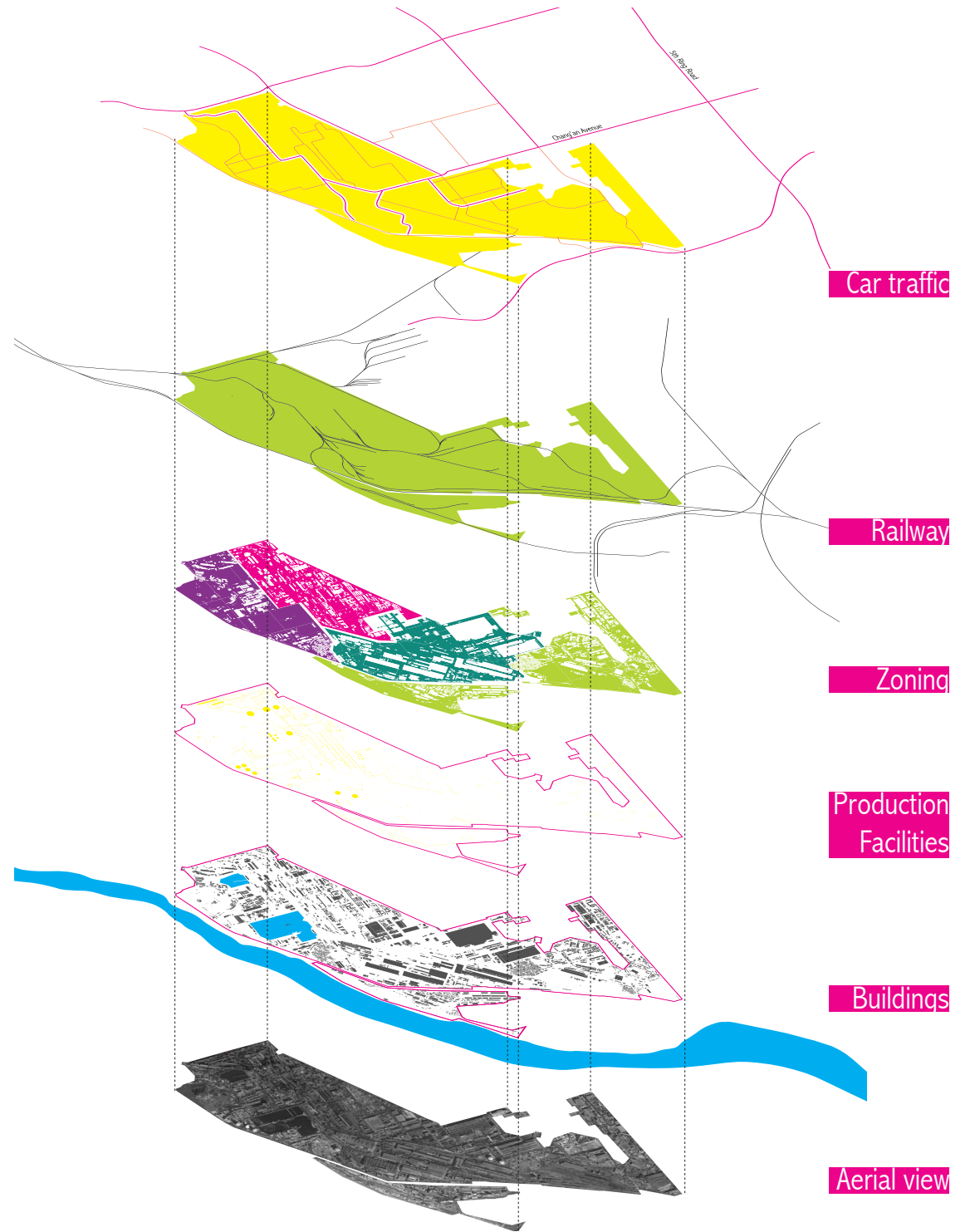
LEGEND

- - - National Railway
- - - Subway
- Industrial transportation rail
- Train stop
- Metro station

- Intercity train connection to other provinces
- Train stop is not so close (southeast)
- Has no link to metro system
- Industrial transportation railways connecting each apparatus

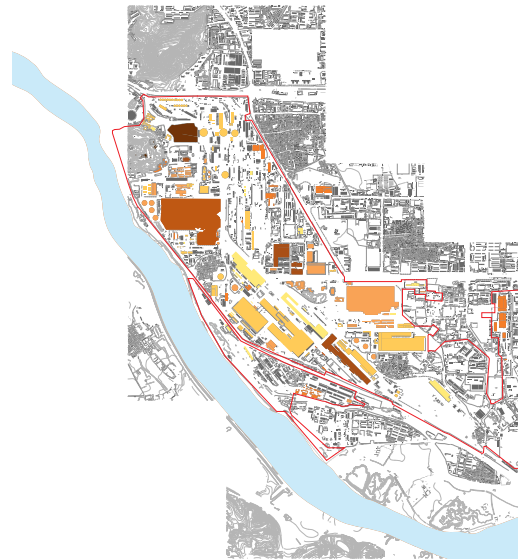
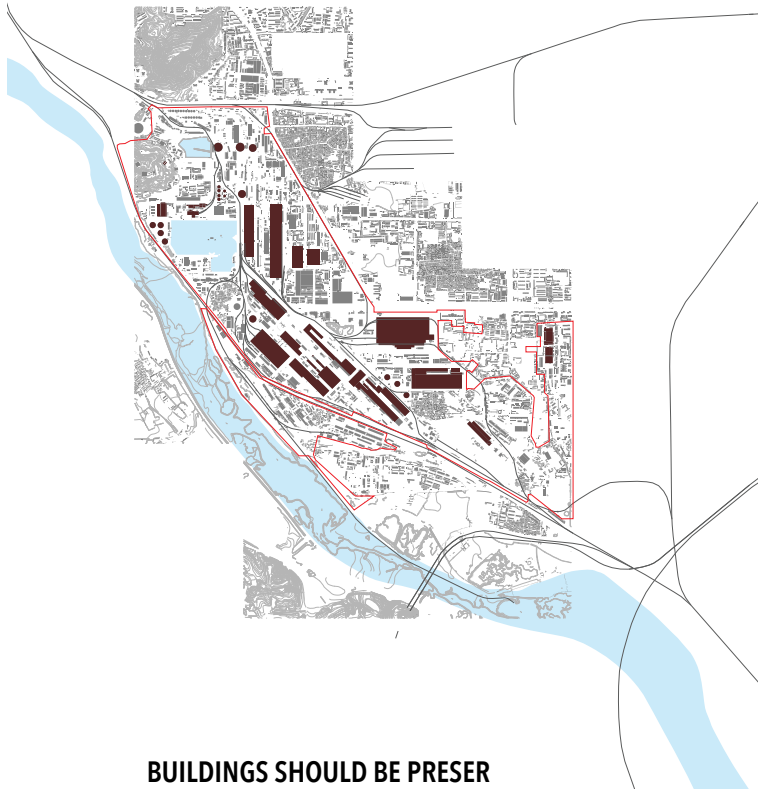
3.5 LOCAL CONDITION

LAYERS OF THE SITE



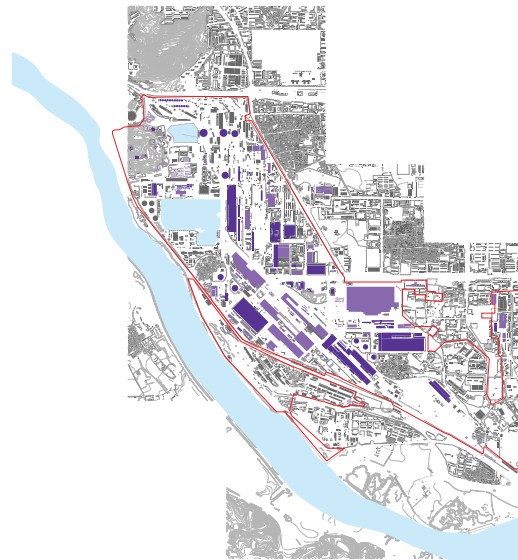
3.5 LOCAL CONDITION

ARCHITECTURAL STUDY



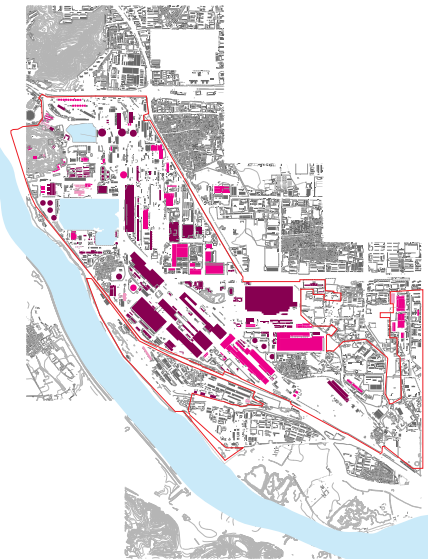
CONSTRUCTION YEAR

- before 1950
- 1950 - 1960
- 1960 - 1970
- 1970 - 1980
- 1980 - 1990
- 1990 - 2000
- after 2000



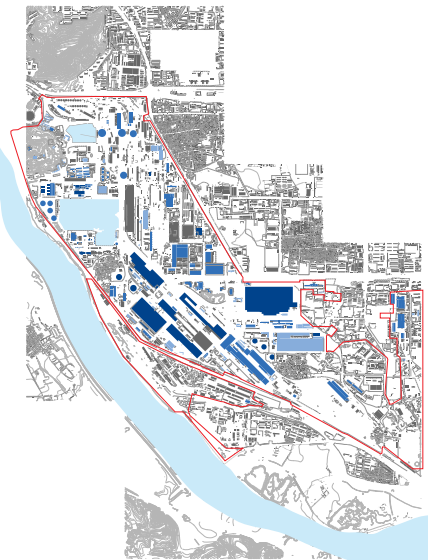
BUILDING STYLE

- building with strong identity
- building with identity
- building without instinct identity



BUILDING QUALITY

- intact and undamaged
- slightly damaged
- severely damaged



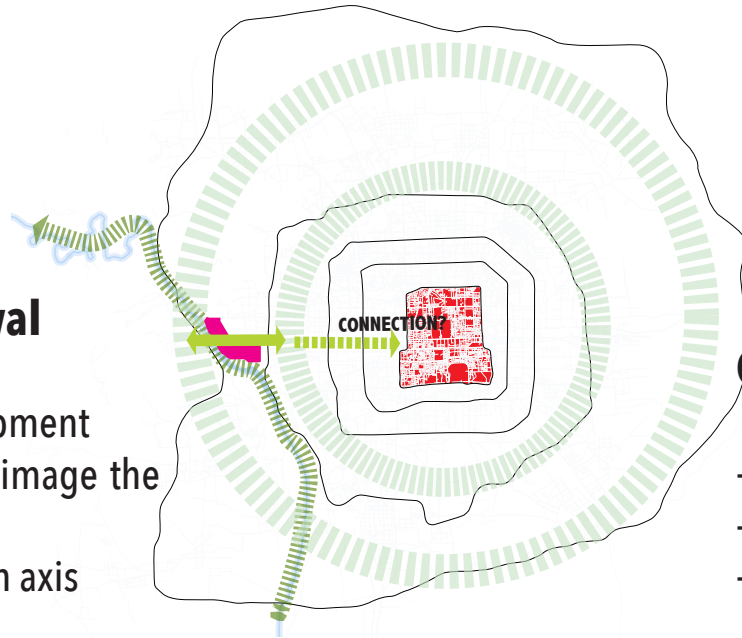
STRUCTURE TYPOLOGY

- steel structure
- reinforced concrete structure
- brick structure (or brick concrete)

3.6 PROJECT OBJECTIVES

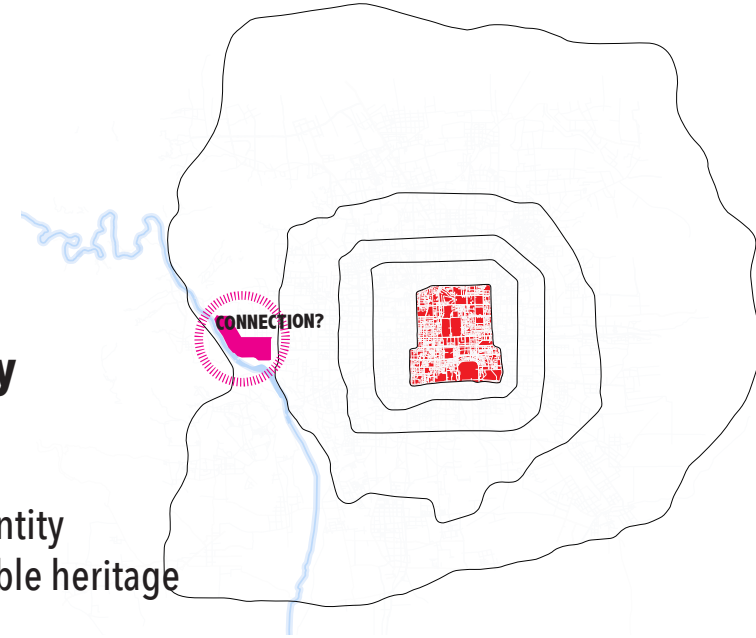
Ecological Renewal

- Riverfront redevelopment
- Green project to re-image the post-industrial area
- Green connection on axis



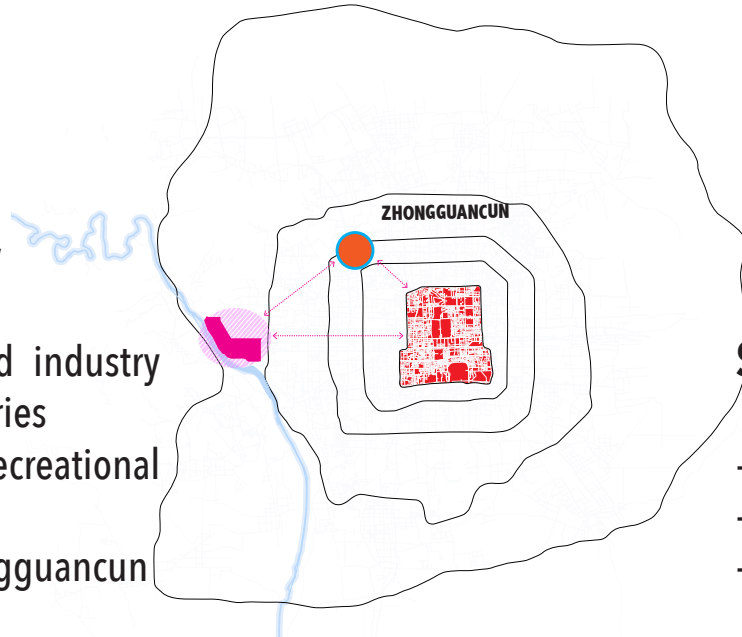
Cultural Identity

- Long history
- Part of cultural identity
- Tangible & intangible heritage



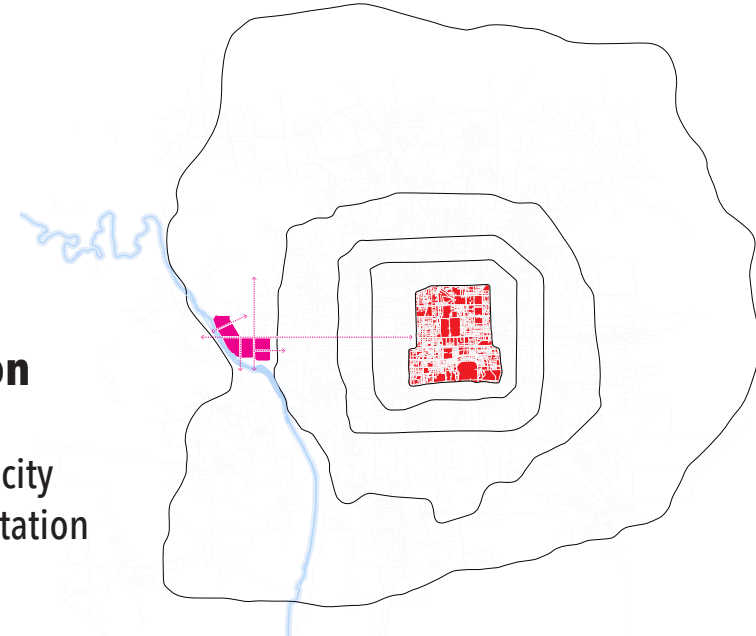
Vibrant Economy

- From contaminated industry towards clean industries
- CRD (the Capital Recreational District)
- Connection to Zhongguancun



Spatial Transition

- Re-integrated into city
- Functional re-adaptation
- Flexible re-use

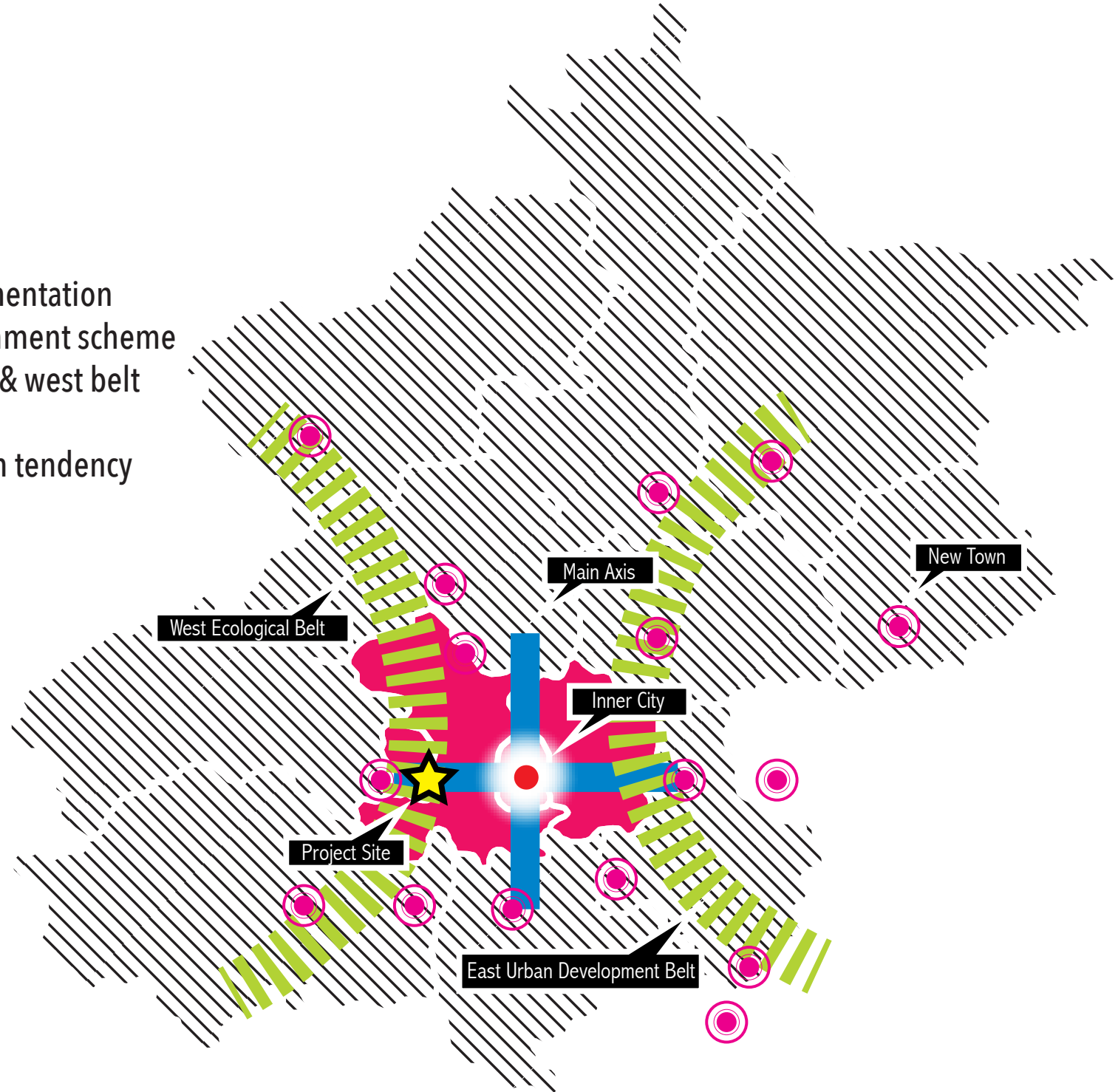


PART IV
STRATEGIC
PLANNING

4.1 CITY STRATEGIES

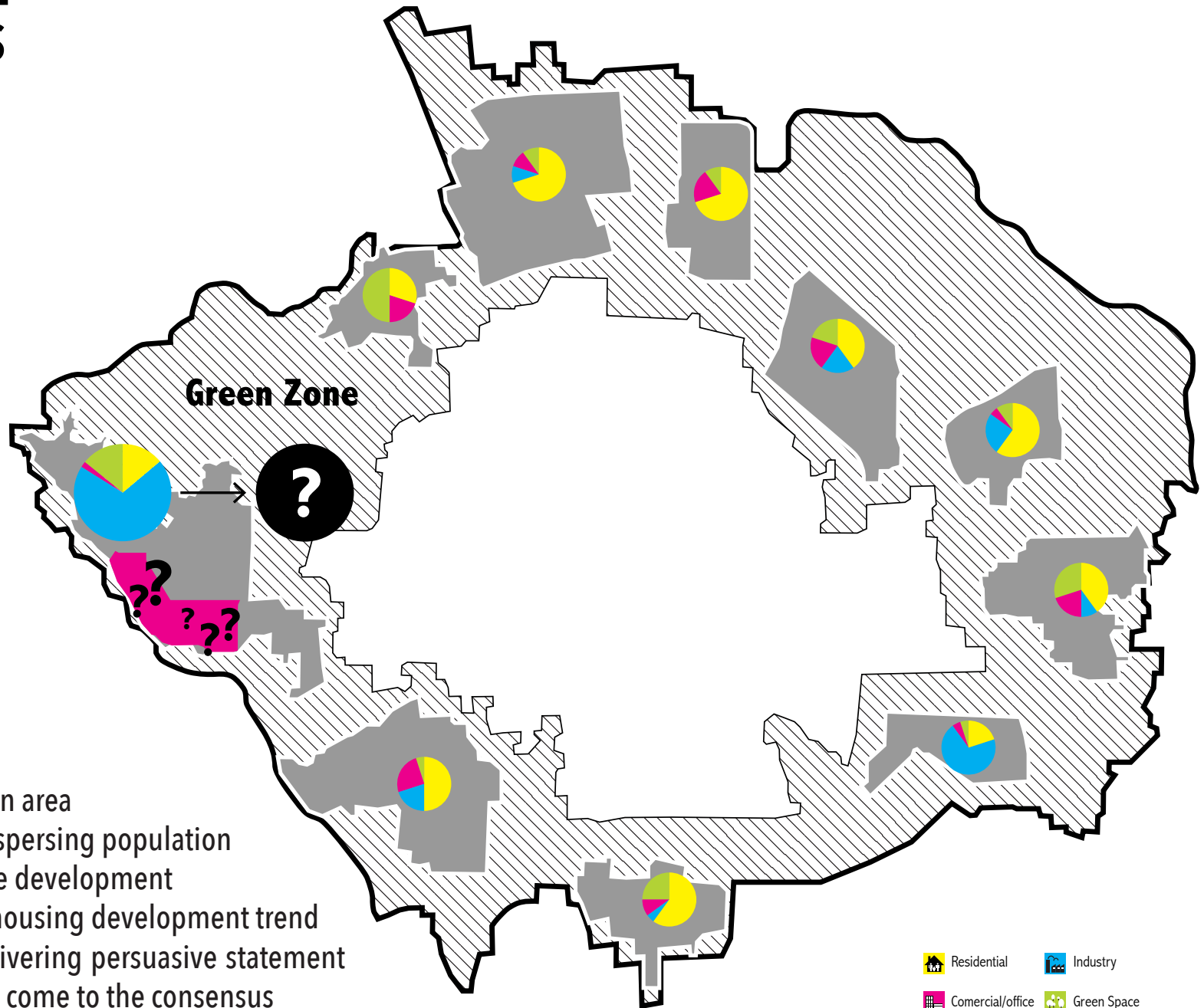
REGIONAL STRUCTURE

- Based on official planning documentation
- Two development belts of government scheme
- Intersection of Chang'an Avenue & west belt
- On the axis of culture & politics
- Ecological concern & urbanization tendency



4.1 CITY STRATEGIES

CITY PERIPHERY

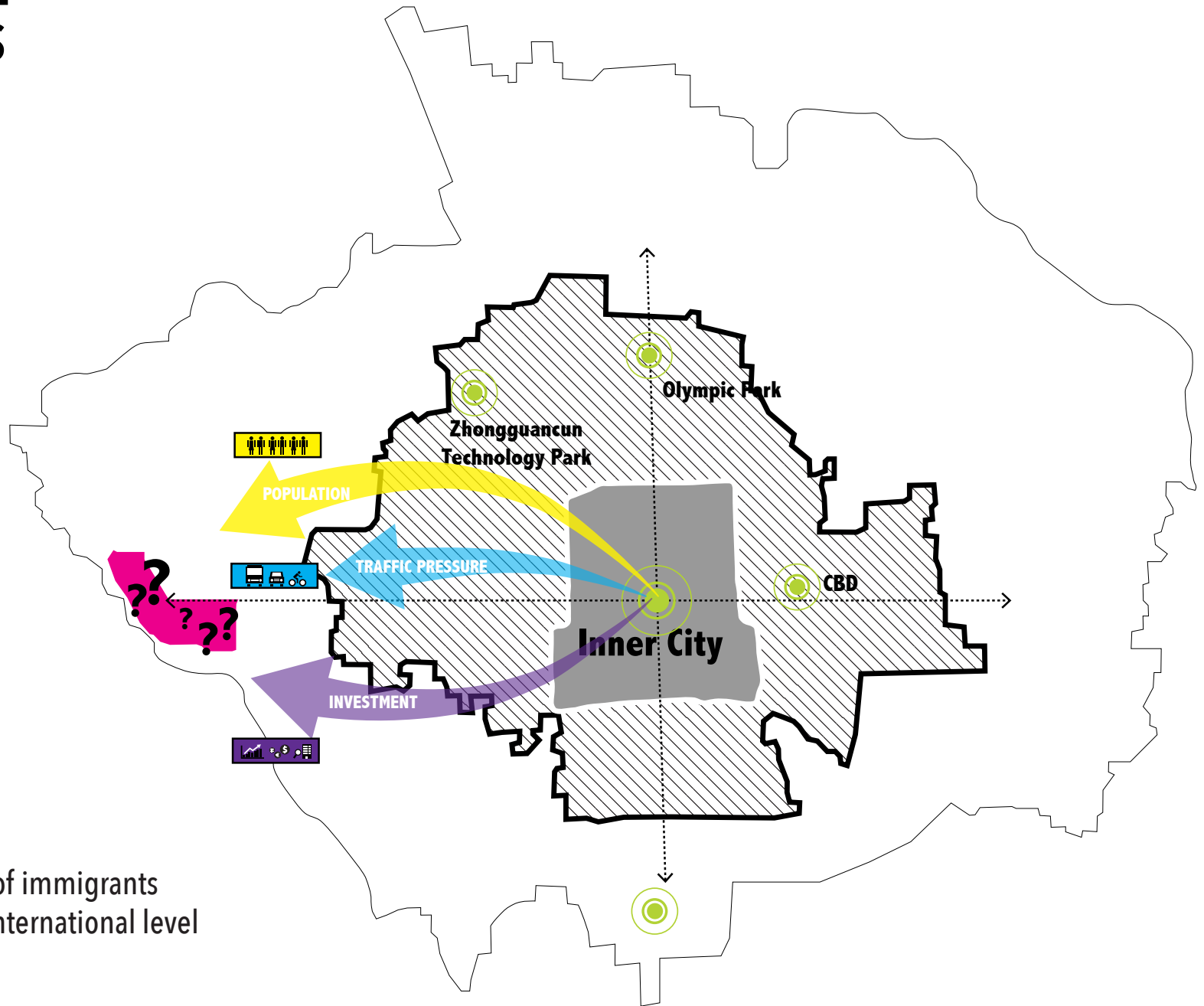


- Controlling scale of intra-urban area
- Satellite clusters as way for dispersing population
- Dominant function: real estate development
- Confronted to pressure from housing development trend
- In need of smart strategy delivering persuasive statement for the politics and populace to come to the consensus



4.1 CITY STRATEGIES

DIVERGENCE



- Diverge pressure from influx of immigrants
- Attract investment at local & international level

4.2 SCENARIO PLANNING

SCENARIO PLANNING METHODOLOGY: is a strategic planning method that some organizations use to make flexible long-term plans. And it is the adequate method to cope with uncertainties related to complexity of possible future development.

VISION

=

CITY STRATEGY

+

CITY SCALE INTERVENTION

+

LOCAL ACTIONS

SCENARIO I

Culture-led urban regeneration with creation of a new agglomeration for creative class and visual art related industries.

Without related industries nearby to rely on, the unique identities of the place will be the key dynamic for the re-programming project, including tangible and intangible aspects. In addition, urban events would be a smart kick-off to attract attention at local even international level, also provide opportunity to ally with other well-developed creative clusters.

- Incentives or subsidy to attract creative class
- Spontaneous development
- Low cost and adaptive reuse
- "Lighthouse" & no-build projects
- Establishment of related education institutions

SCENARIO II

Development of **technology & knowledge-based industries** as the driving force, being dominant in the economic transition of this area

Make use of nearby technology industry clusters, such as the Industrial Design Base and three branch technology parks of Zhongguancun, and create new connection (subway extension) to forge a development belt of knowledge-based industries in the northwest of the city.

- Top-down planning for the business park
- Partly demolition
- Training institutions for unemployed workers from former steel factory

SCENARIO III

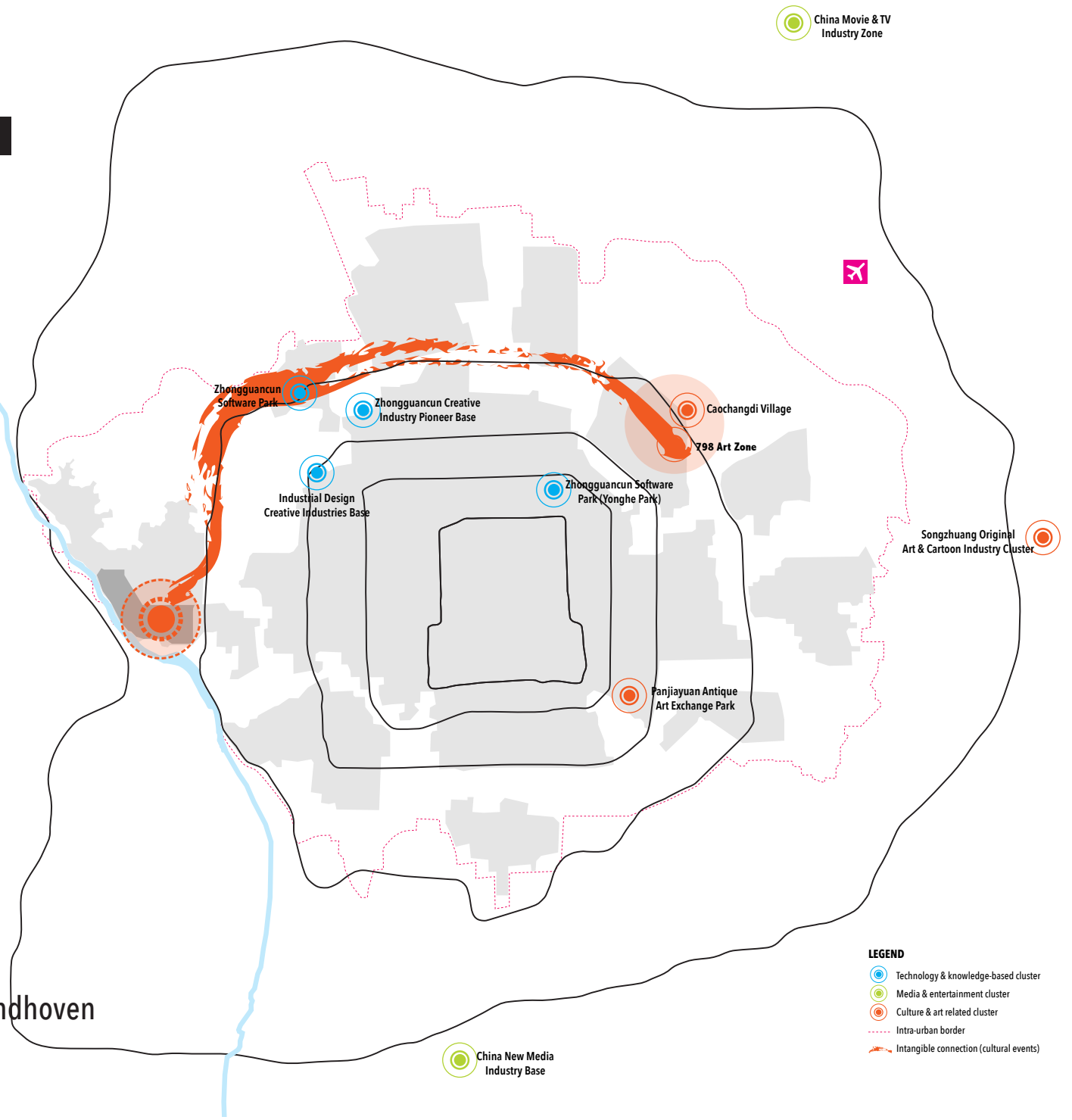
Regional park as entertainment-led regeneration along with ecological concern provides an enormous green space in the dense urban area, transforming the former polluter into a green lung of the city

By planning a huge park on the site, the green connection from the ecological corridor on the city border to the intra-urban area will be created, at the same time linking the two green belts.

- Repair and preserve all heritage buildings to keep the authenticity of the history
- Adding small installations and interventions for leisure and entertainment
- Adding more green
- Bicycle park path

4.2 SCENARIO PLANNING

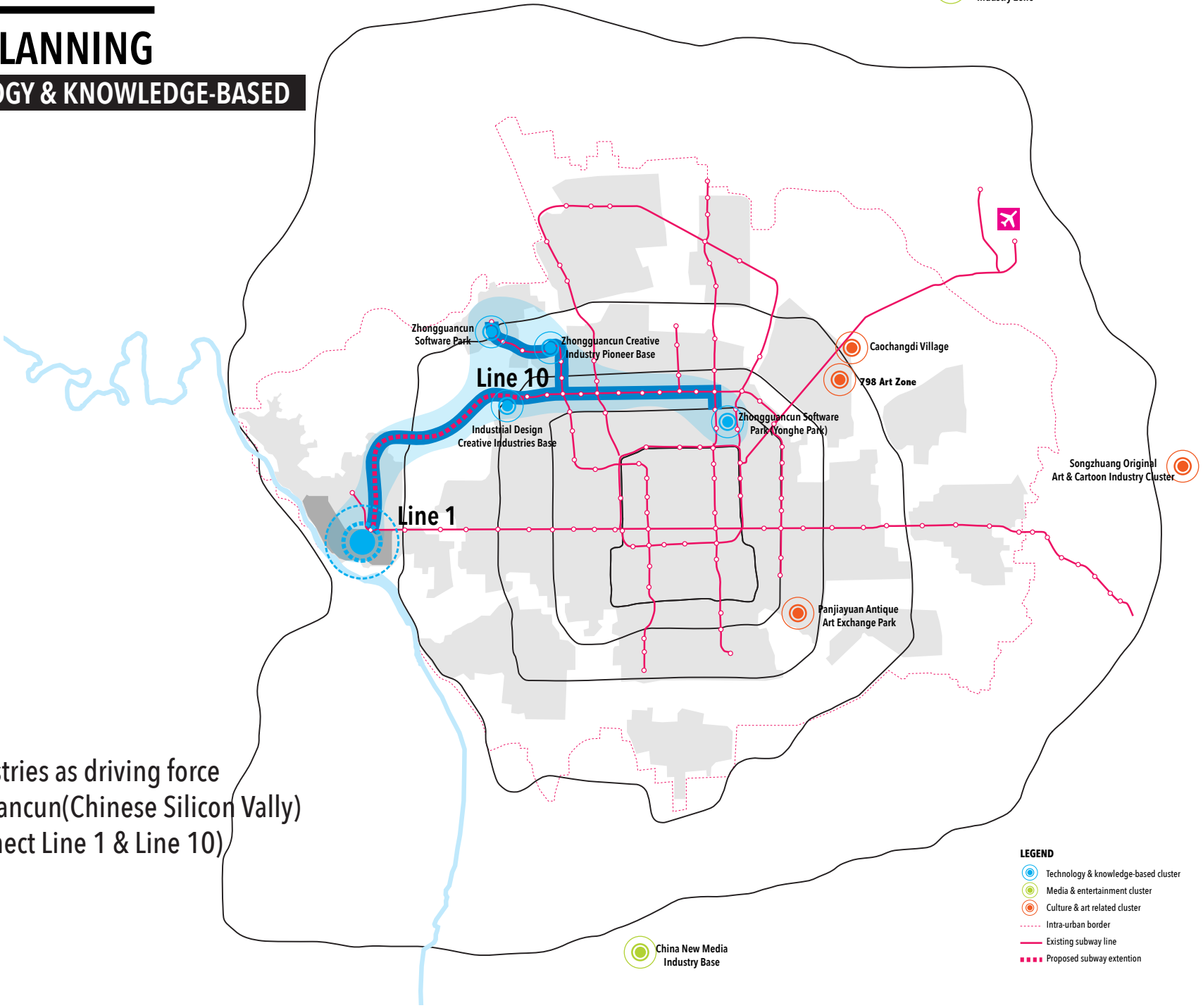
SCENARIO I: CULTURE-LED REGENERATION



- Culture-led regeneration
- New agglomeration of creative cluster
- Isolated and no direct connection to 798
- Urban events
- Smart city strategy: Dutch Design Week, Eindhoven

4.2 SCENARIO PLANNING

SCENARIO II: TECHNOLOGY & KNOWLEDGE-BASED



- Technology-based industries as driving force
- Connection to Zhongguancun(Chinese Silicon Vally)
- Subway extension (connect Line 1 & Line 10)
- Development belt

4.2 SCENARIO PLANNING

SCENARIO III: REGIONAL LANDSCAPE PARK



Yongding River: ecological corridor

- Regional landscape park (industrial heritage park)
- Duisburg-Nord Landscape Park as precedent
- Entertainment-led regeneration
- Enormous green space along the regional ecological corridor
- From polluter to a green lung

To natural landscape

green lung

LEGEND

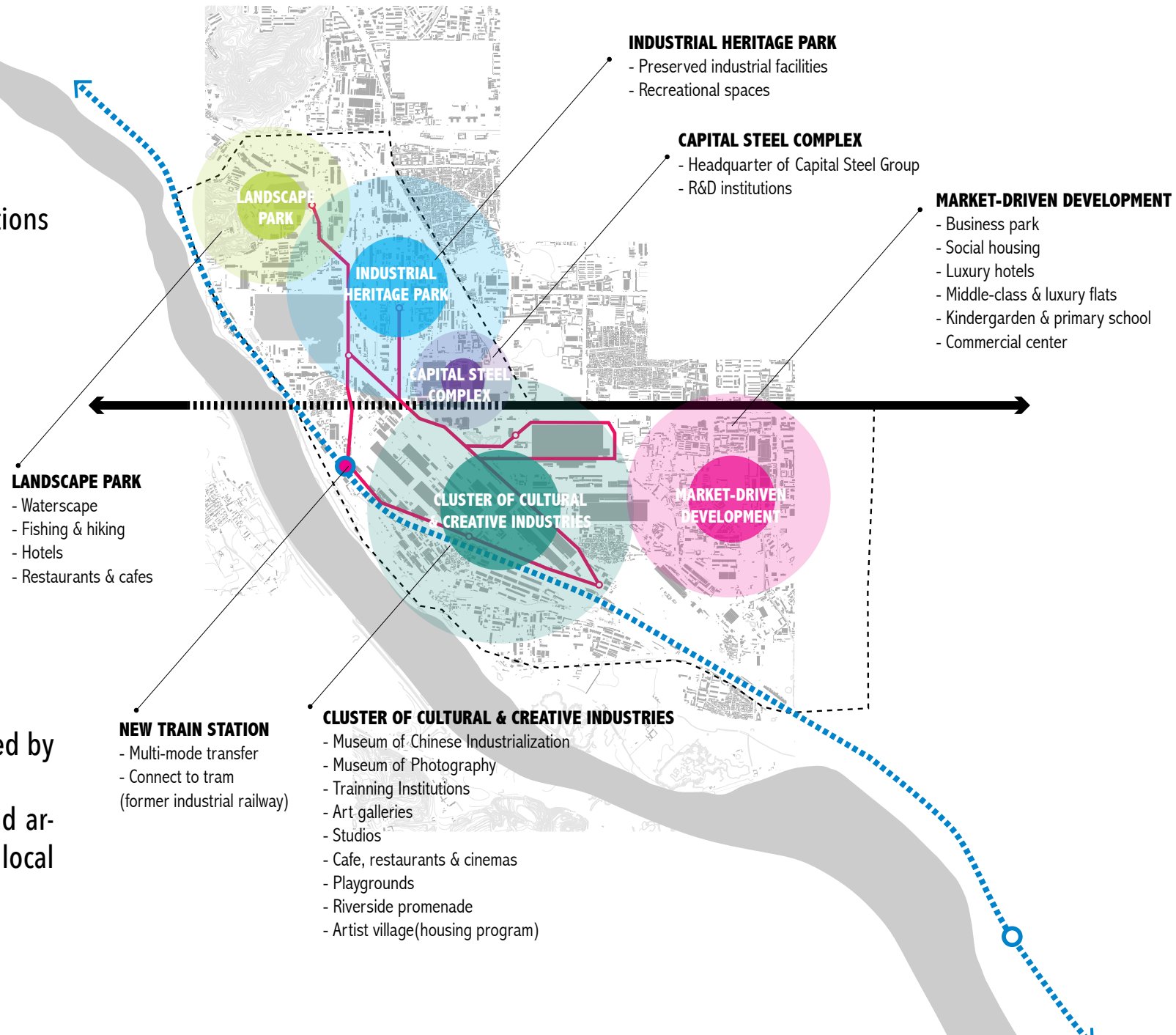
- Park and public green area
- Road greening
- Ecological corridor
- Intra-urban border
- ||| Green connection

4.3 LOCAL VISION

LOCAL VISION OF SCENARIO I

- Giving logic organization of functions
- Axis extension as premise

- Axis extension as the premise
- 5 main functional areas connected by tram (former industrial railway)
- Consideration of city strategy and architectural & spatial quality in the local scale



4.3 LOCAL VISION

PHASE 1 OF SCENARIO I

PHASE I: SPATIAL TRANSITION

2013-2016

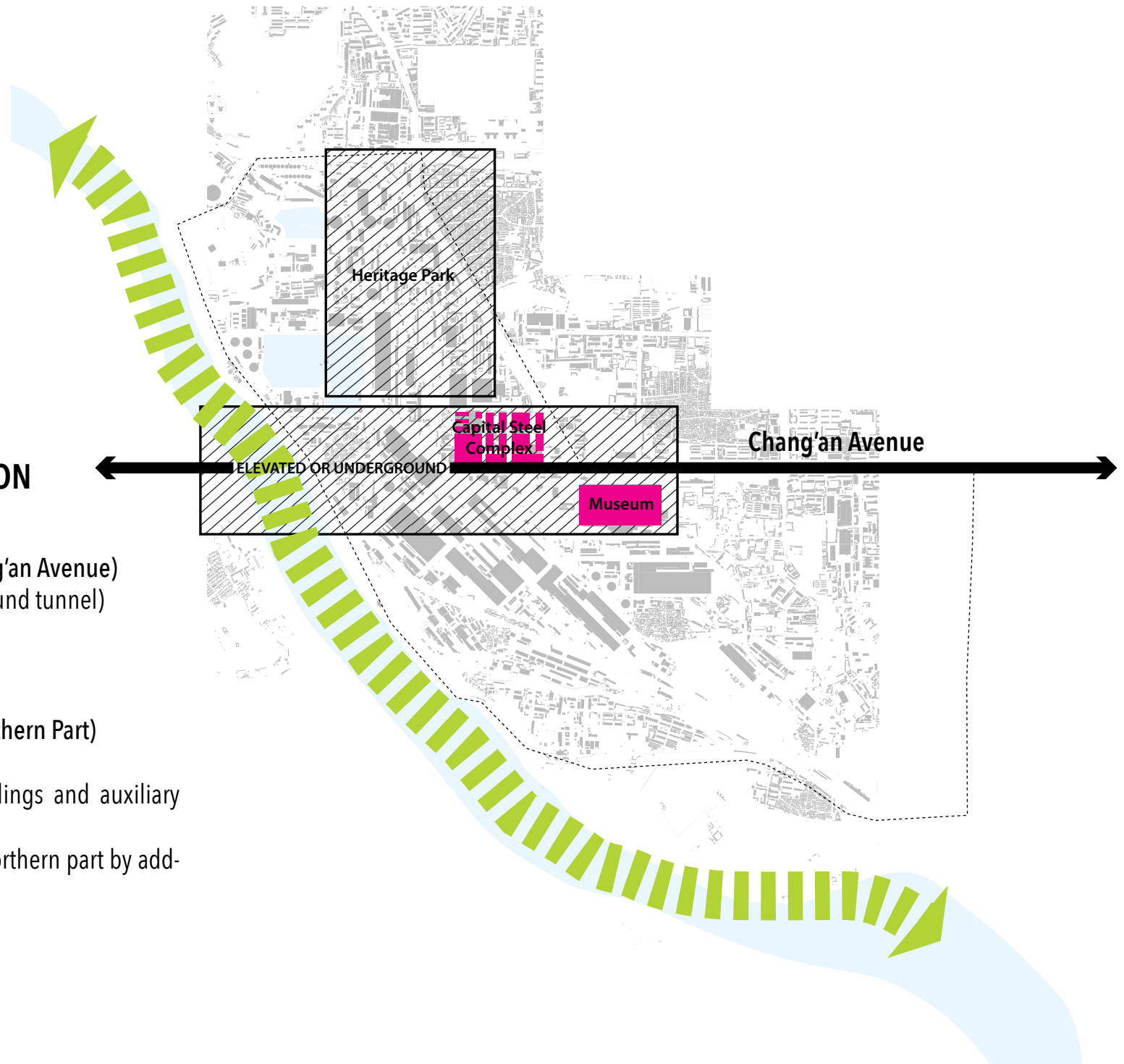
1. AXIS DEVELOPMENT (Along Chang'an Avenue)

- Axis extension (viaduct or underground tunnel)
- Headquarter of Capital Steel
- Museum of Chinese Steel Industry

2. INDUSTRIAL HERITAGE PARK (Northern Part)

- Clean up industrial waste
- Demolish severely damaged buildings and auxiliary buildings without reusable value
- Improve landscape quality in the northern part by adding more greenery

3. RIVERFRONT DEVELOPMENT



4.3 LOCAL VISION

PHASE 2 OF SCENARIO I

PHASE II: ECONOMIC TRANSITION

2016-2020

1. CLUSTER OF CULTURAL & CREATIVE INDUSTRIES (Southern Part)

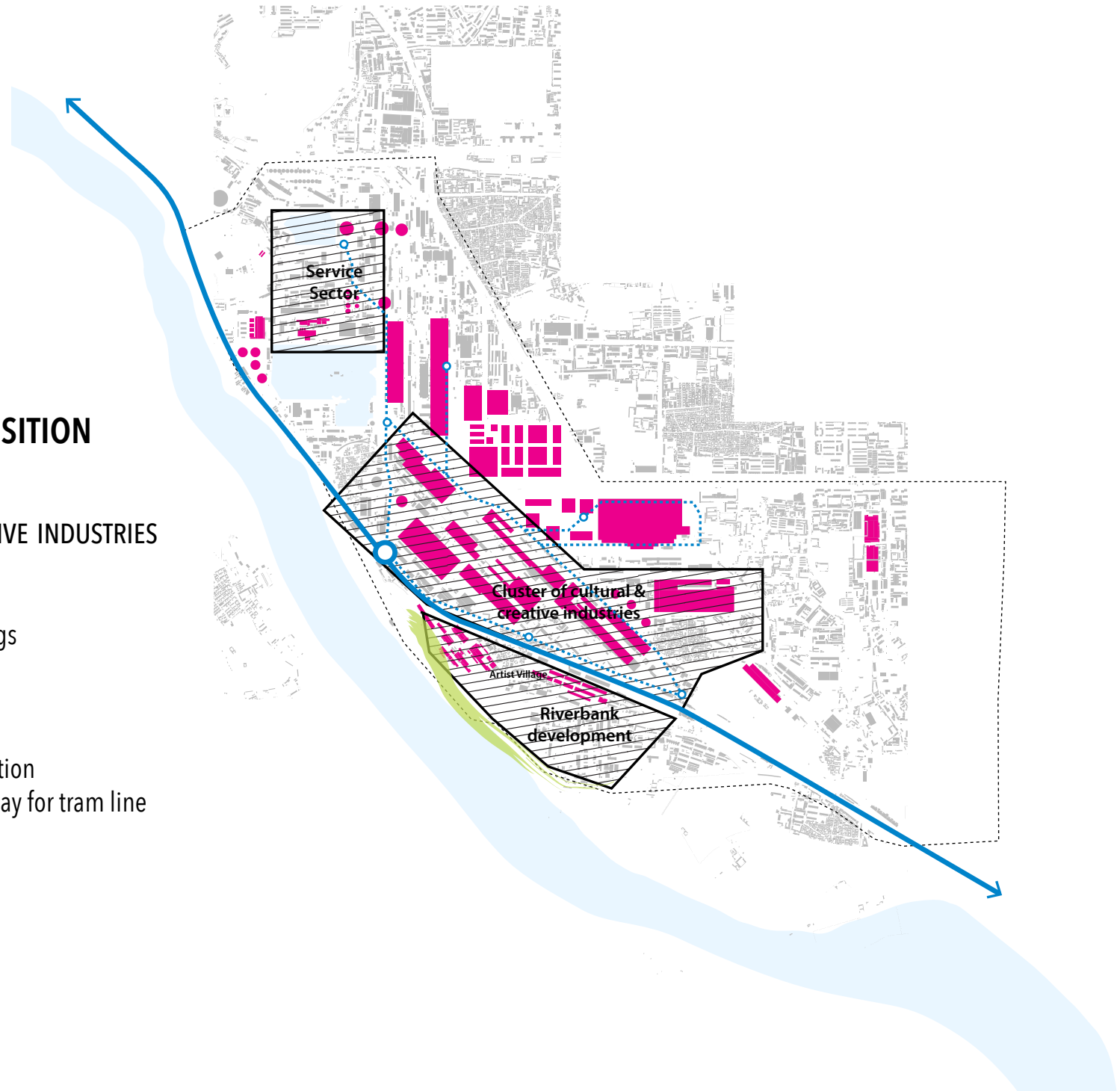
- Improve landscape quality
- Renovate slightly damaged buildings
- Adaptive reuse of buildings

2. CONNECTION & ACCESSIBILITY

- Regional accessibility: new train station
- Inner site connection: reuse of railway for tram line

3. RIVERBANK DEVELOPMENT

- Promenade
- Linear park
- Artist village (new housing)



4.3 LOCAL VISION

PHASE 3 OF SCENARIO I

PHASE III: MARKET-DRIVEN DEVELOPMENT

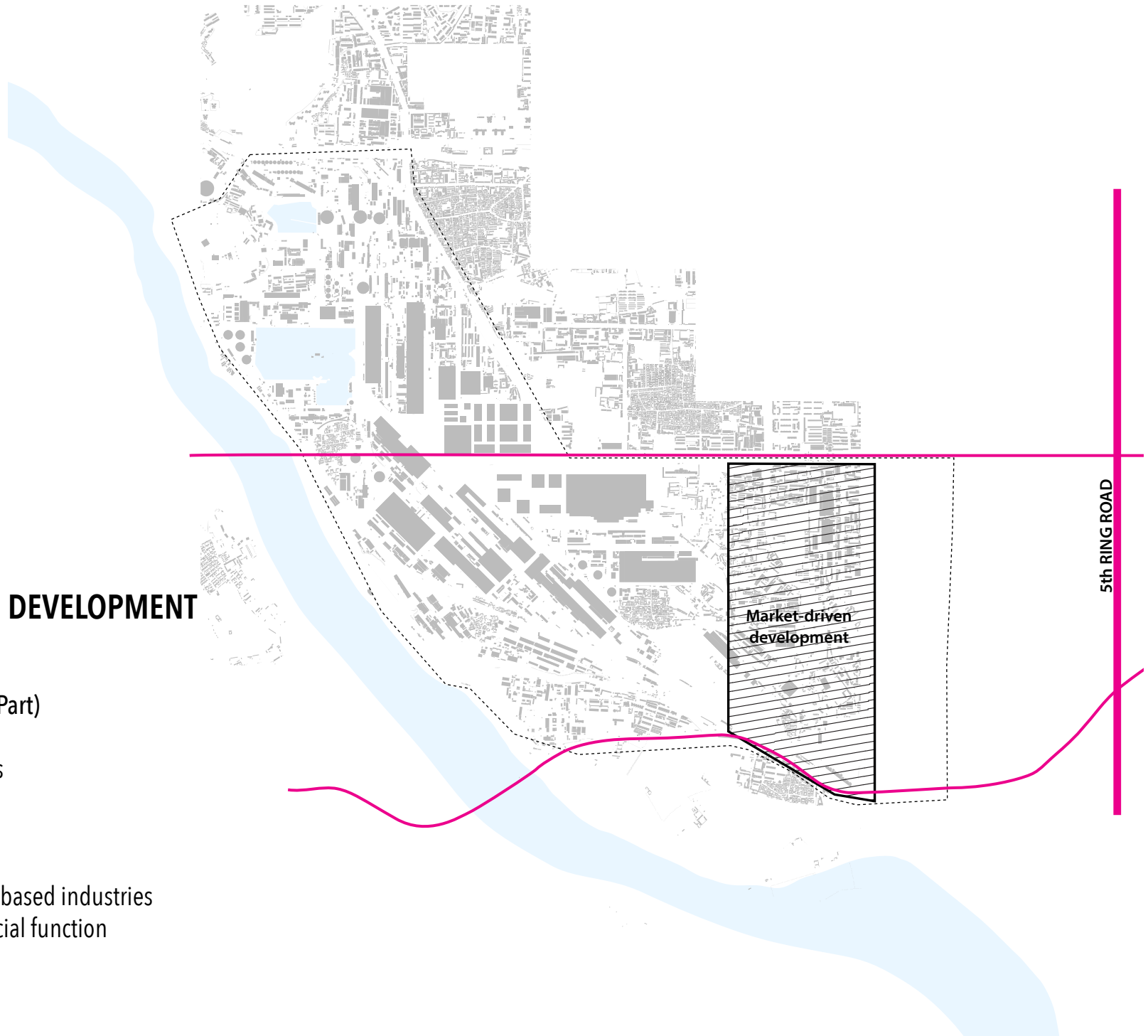
2020-2025

1. NEW HOUSING PROGRAMS (East Part)

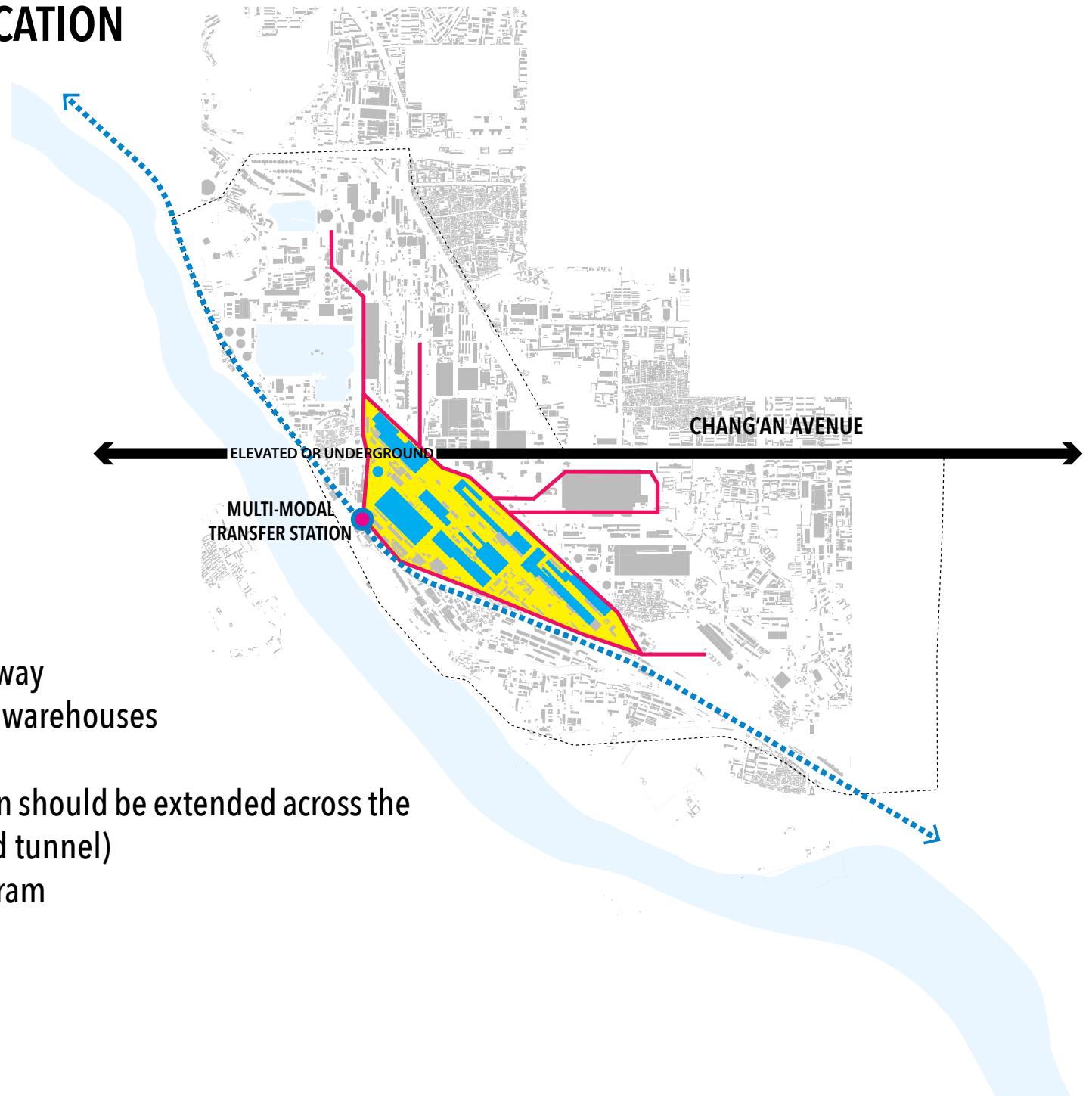
- Social housing
- Luxury hotels & apartment buildings
- Middle-class housing

2. BUSINESS PARK (East Part)

- New office buildings for technology-based industries
- Mix-used district including commercial function



4.4 STRATEGIC PROJECT LOCATION



- Surrounded by former industrial railway
- Super-sized industrial buildings and warehouses
- Adaptive re-use
- Involvement of the way how Chang'an should be extended across the area (elevated viaduct or underground tunnel)
- New transfer point between train & tram



PLAN FOR NEXT PHASE OF RESEARCH & DESIGN

1. Further research on Scenario Planning methodology.
2. Make local vision for each scenario.
3. Evaluate and compare the feasibility of each scenario.
4. Research on the stakeholders
5. Detail design of strategic project.

THANK YOU!