

Transformation and Revival

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

Yizhao Du 5111838 P5 Presentation 24th June 2021
First mentor: Dr. Roberto Rocco
Second Mentor: Dr. Dipl.-Ing. Alex Wandl
Delegate of the Board of Examiner P5: Stefano Milani
Graduation studio planning complex cities
Department of Urbanism, Delft university of technology

Secondary resource-based city in China, Photo by J. Xu, 2021



Content

1 Context and problem

2 Research focus

3 Conceptual vision

4 Strategic planning

5 Planning implementation in local scale

6 Conclusion and reflection

1 Context and problem

Landscape in North China Plain (black dots are human settlements)

Source: <https://www.google.com/maps>





1950s-1980s
Aggressive industrialization
Un-sustainability

Pollution in China's resource-based industrial cities

Source: <https://www.qidaokeji.com/news/252.html>

The factory was demolished

Source: https://m.sohu.com/a/272236995_100193196



Policies to restrict the development of resource-based industries

Dilemmas for transformation – secondary resource-based industrial cities

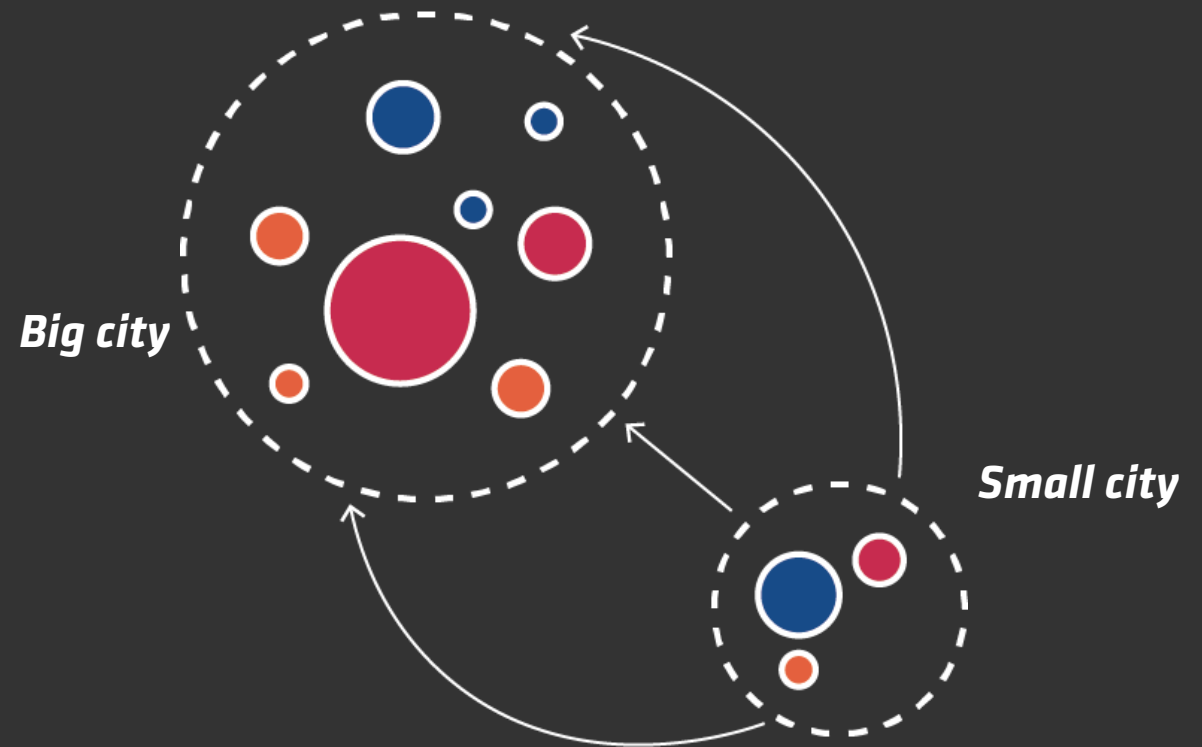
- *The difficulties in industrial transition*
- *The spatial marginalization in the mega-regional development*

Dilemmas for transformation

- *The difficulties in industrial transition*
- *The spatial marginalization in the mega-regional development*

- *Imbalance in the industrial structure due to long-term dependence on one industrial sector*
Tian, F. (2008); Liu, W. (2014)

- *Loss of talent and labor due to the great attractiveness of big cities*
Liu, W. (2014)



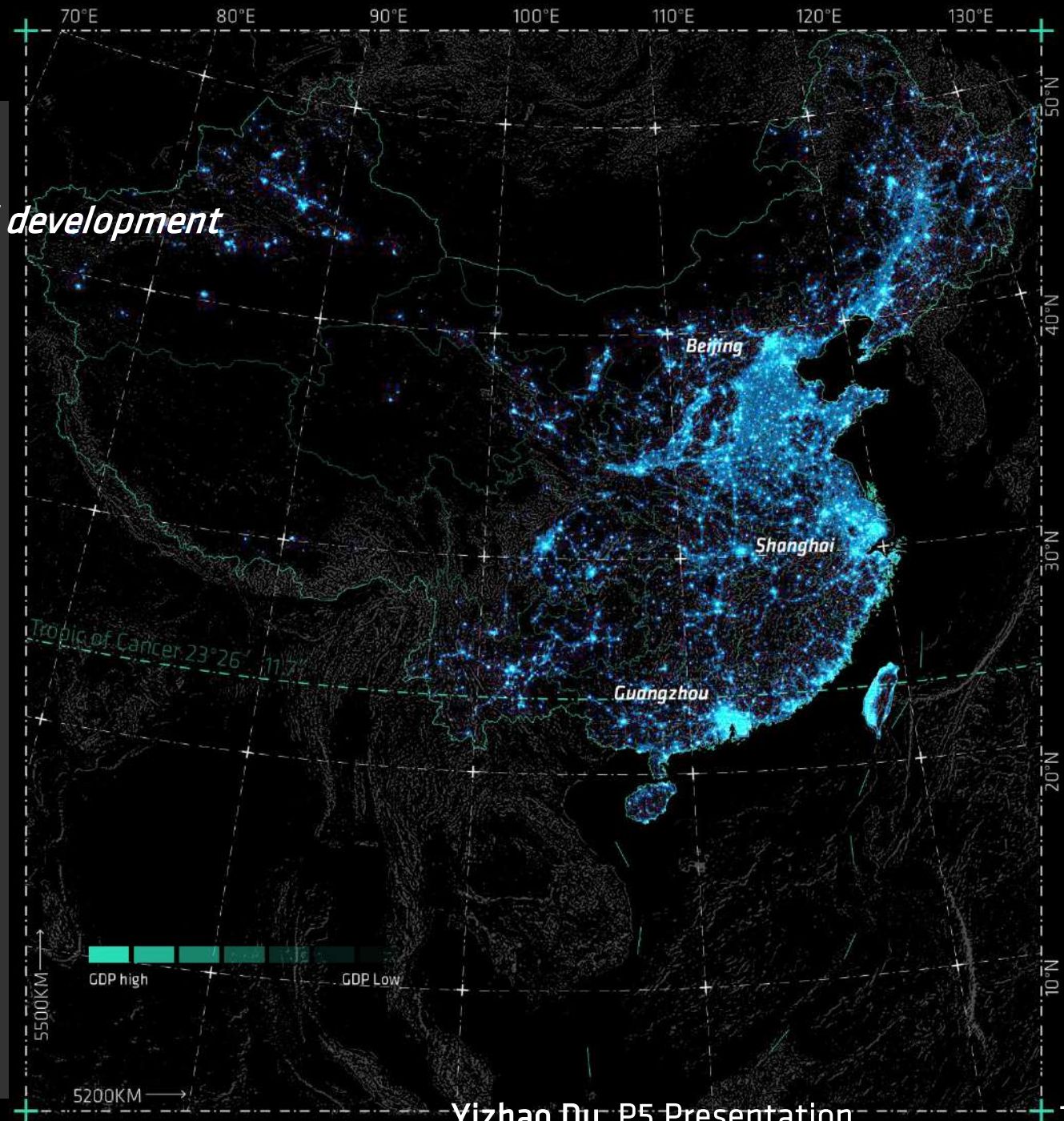
Dilemmas for transformation

- *The difficulties in industrial transition*
- *The spatial marginalization in the mega-regional development*

- *Big cities take the initiative in regional development*
- *Vicious competition among small cities*

Wu, F. (2016); Harrison, J., & Gu, H. (2019)

Spatial marginalization of *secondary cities*



Source: data from <https://www.google.com/maps>; <http://www.resdc.cn/DOI>, edited by author

Dilemma of the transition of
resource-based industrial cities

Low agglomeration capacity
for new emerging industries

The existing vicious circle

City attractiveness
continues to decrease

Secondary cities are
being **spatial marginalized**
in the mega-region

Dilemma of the transition of
resource-based industrial cities

Low agglomeration capacity
for new emerging industries

The existing vicious circle

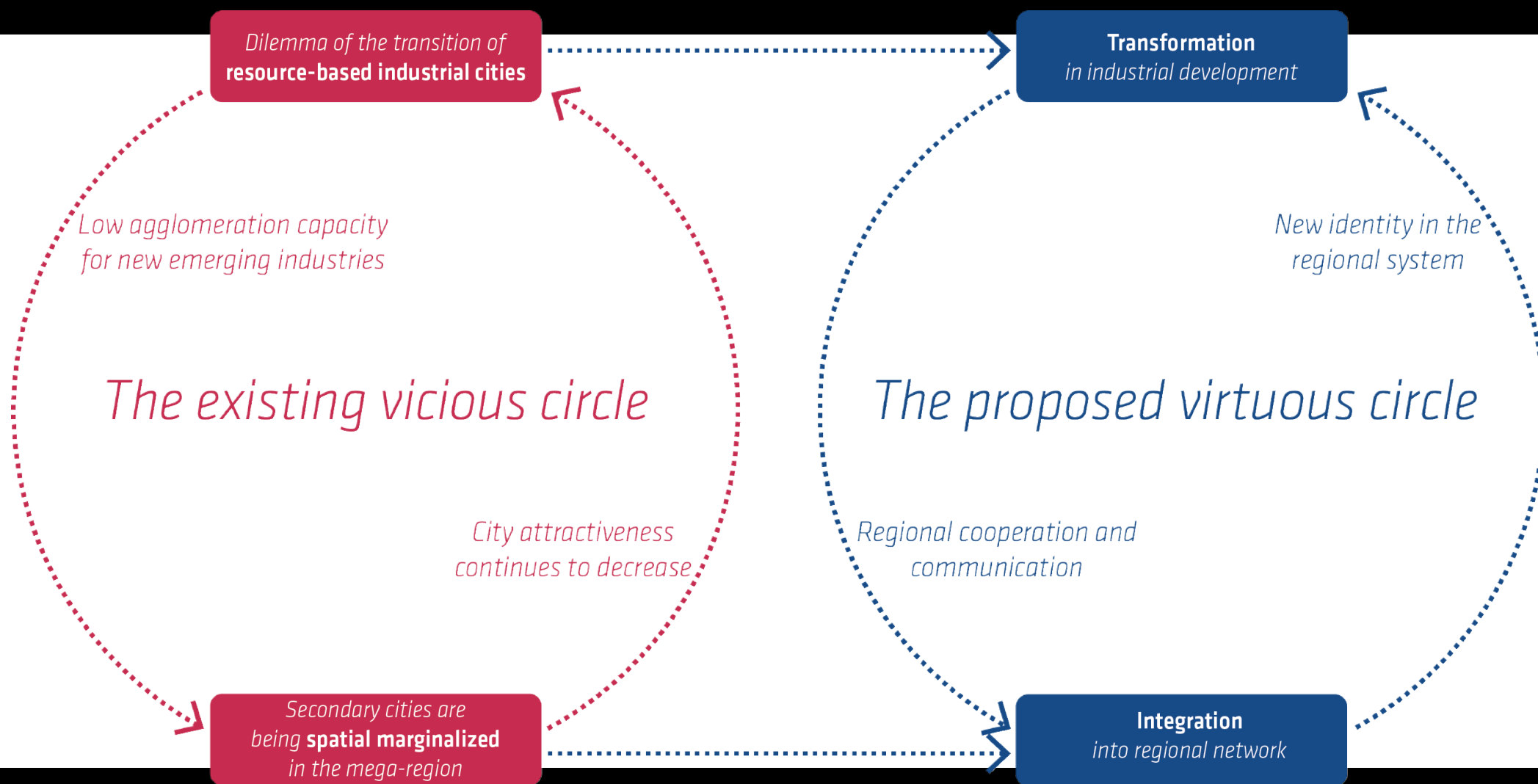
City attractiveness
continues to decrease

Secondary cities are
being **spatial marginalized**
in the mega-region

Theoretical underpinning

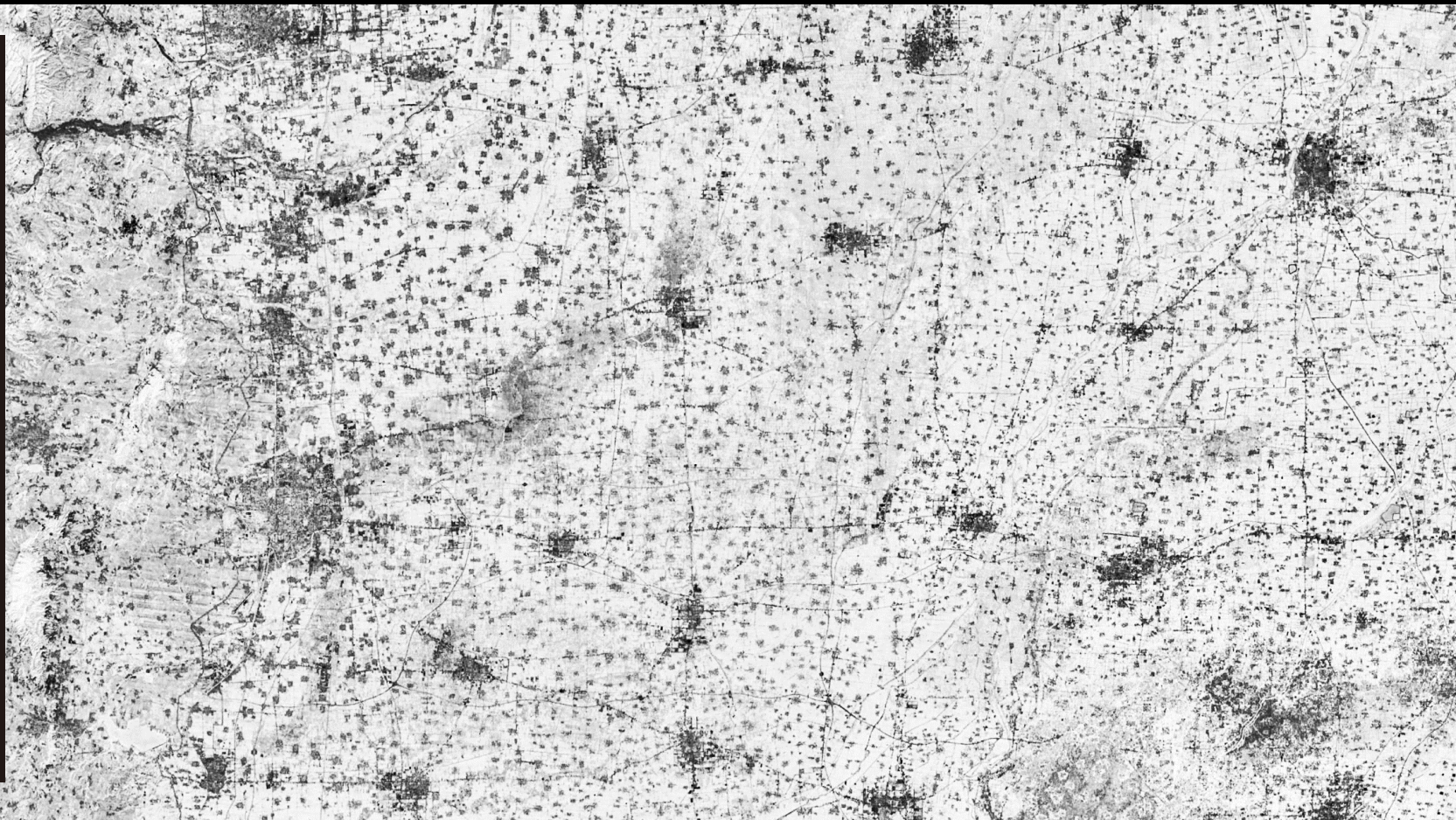
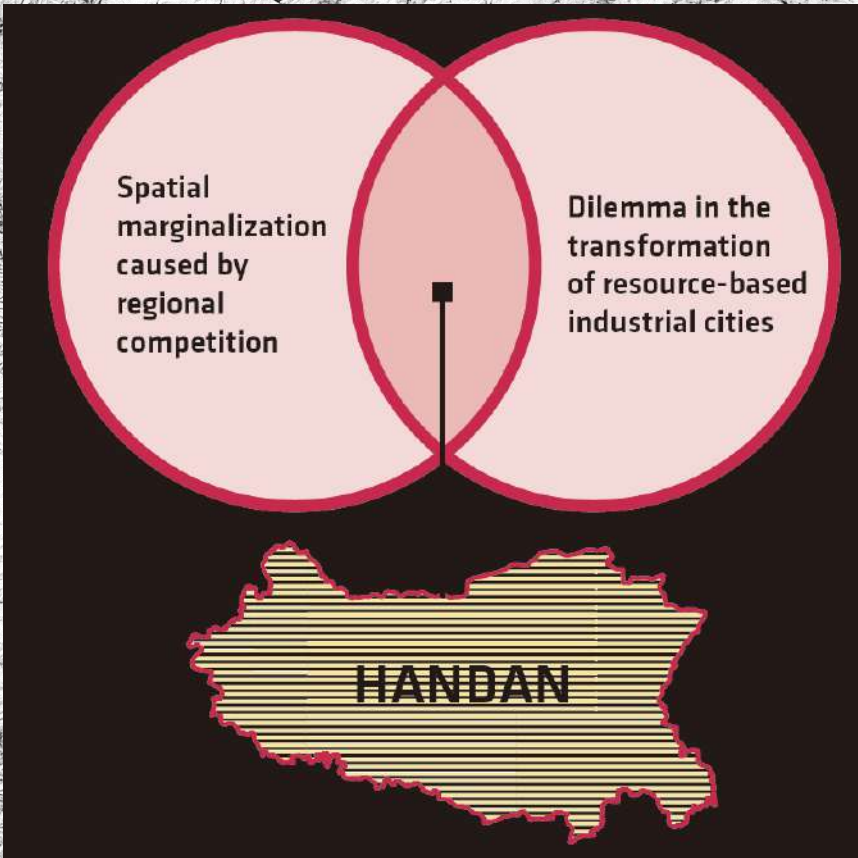
**Great potential for regional secondary cities
towards a more balanced regional system**

Rodrigo Viseu Cardoso and Evert Meijers, 2020



Primary research questions

How can the (secondary) resource-based industrial cities that are being spatially marginalized accomplish industrial upgrading and integrate into the mega-regional network to benefit from it?



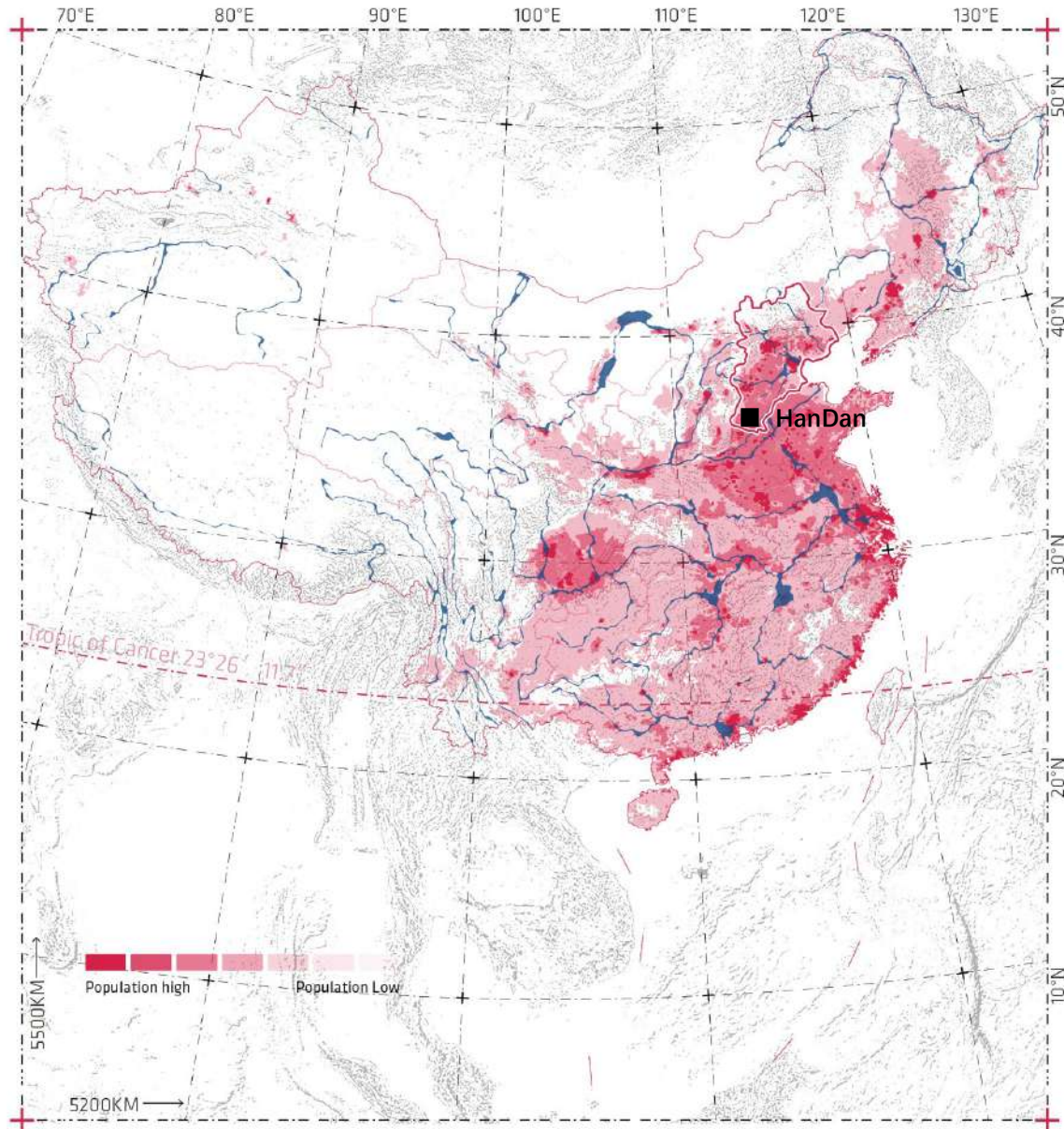
2 Research focus

- Two dilemmas of HanDan*
- Planning concept*



Landscape of Han Dan municipality (black dots are human settlements)
Source: <https://www.google.com/maps>

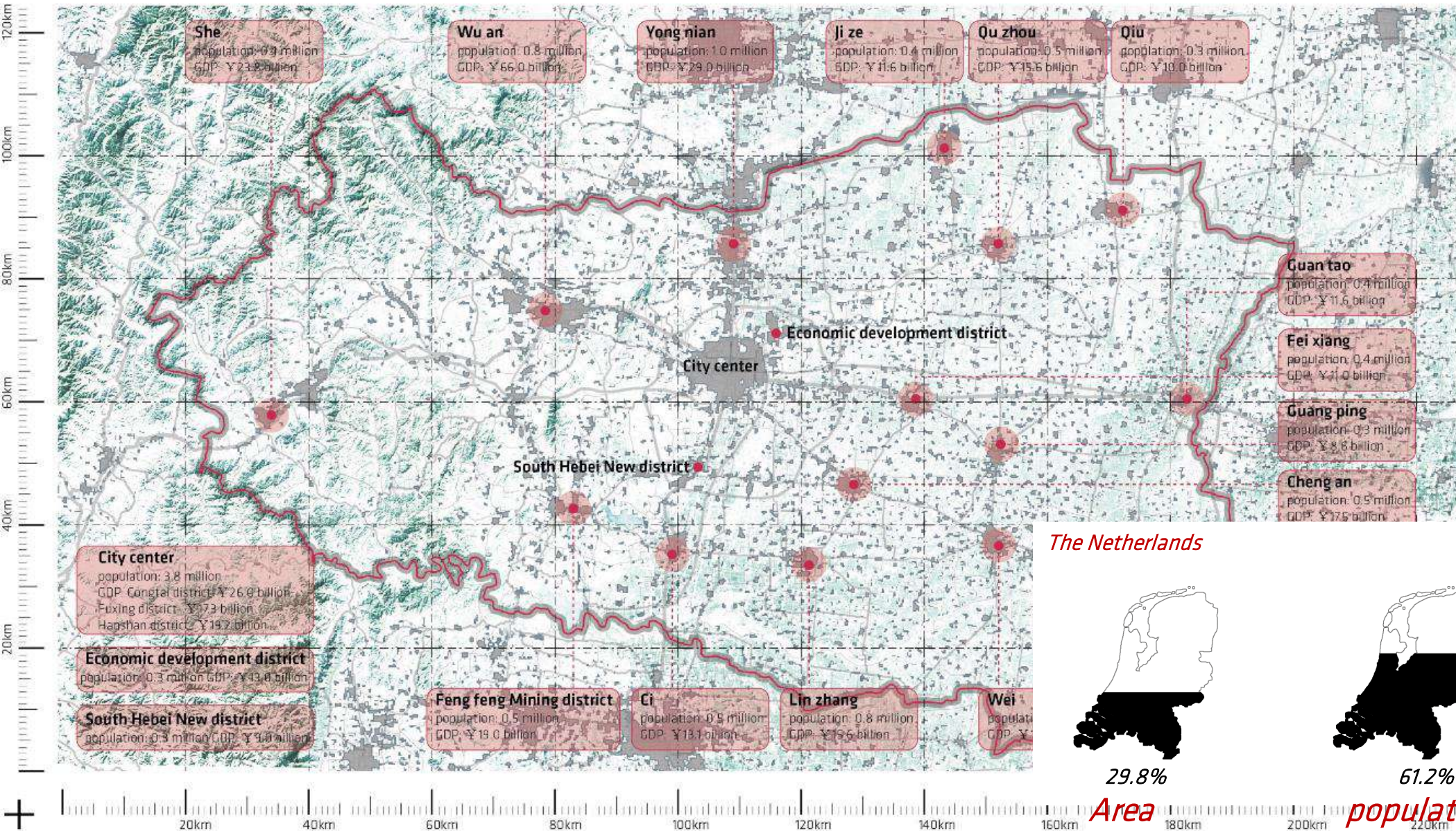
Research object: HanDan city



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/>

Research object: HanDan city



Metropolitan system of Handan

Source: author

The Netherlands



29.8%

Area



61.2%

population

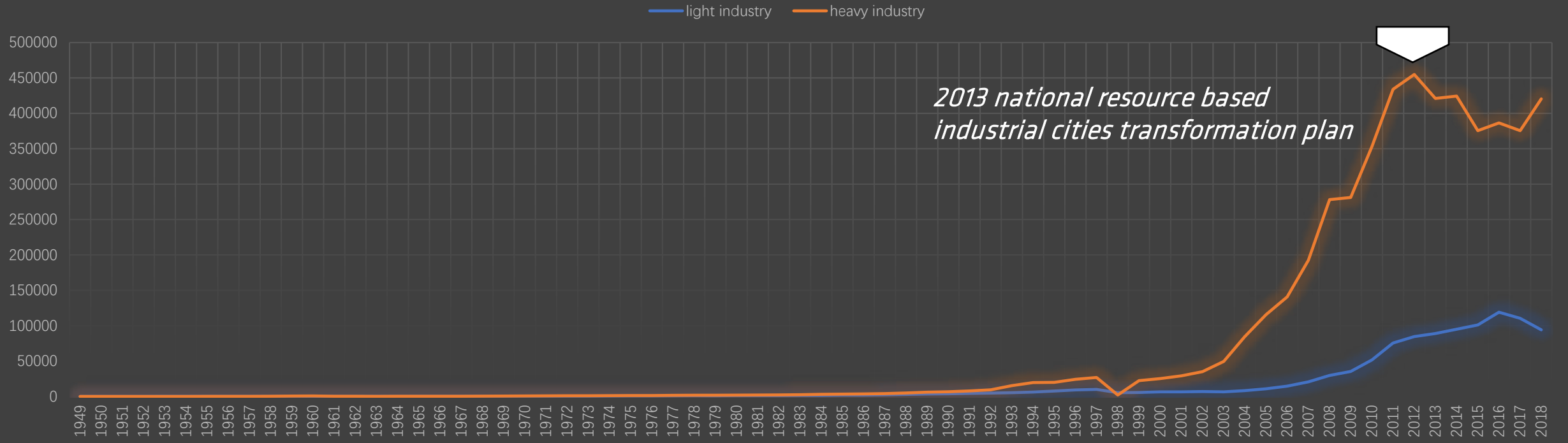


5.6%

GDP

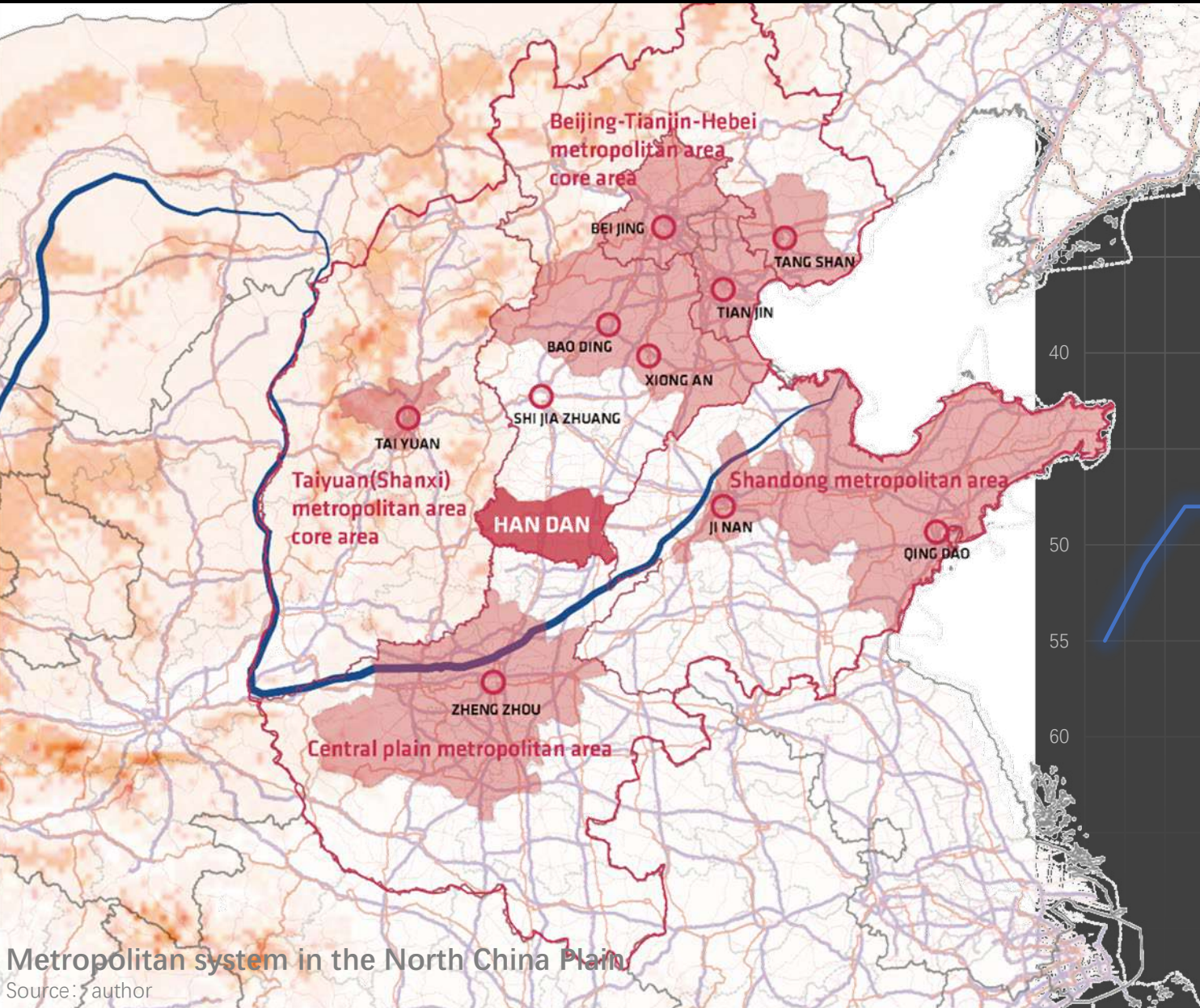
Dilemma 1: A traditional post-industrial city in China

Secondary industries output value of HanDan

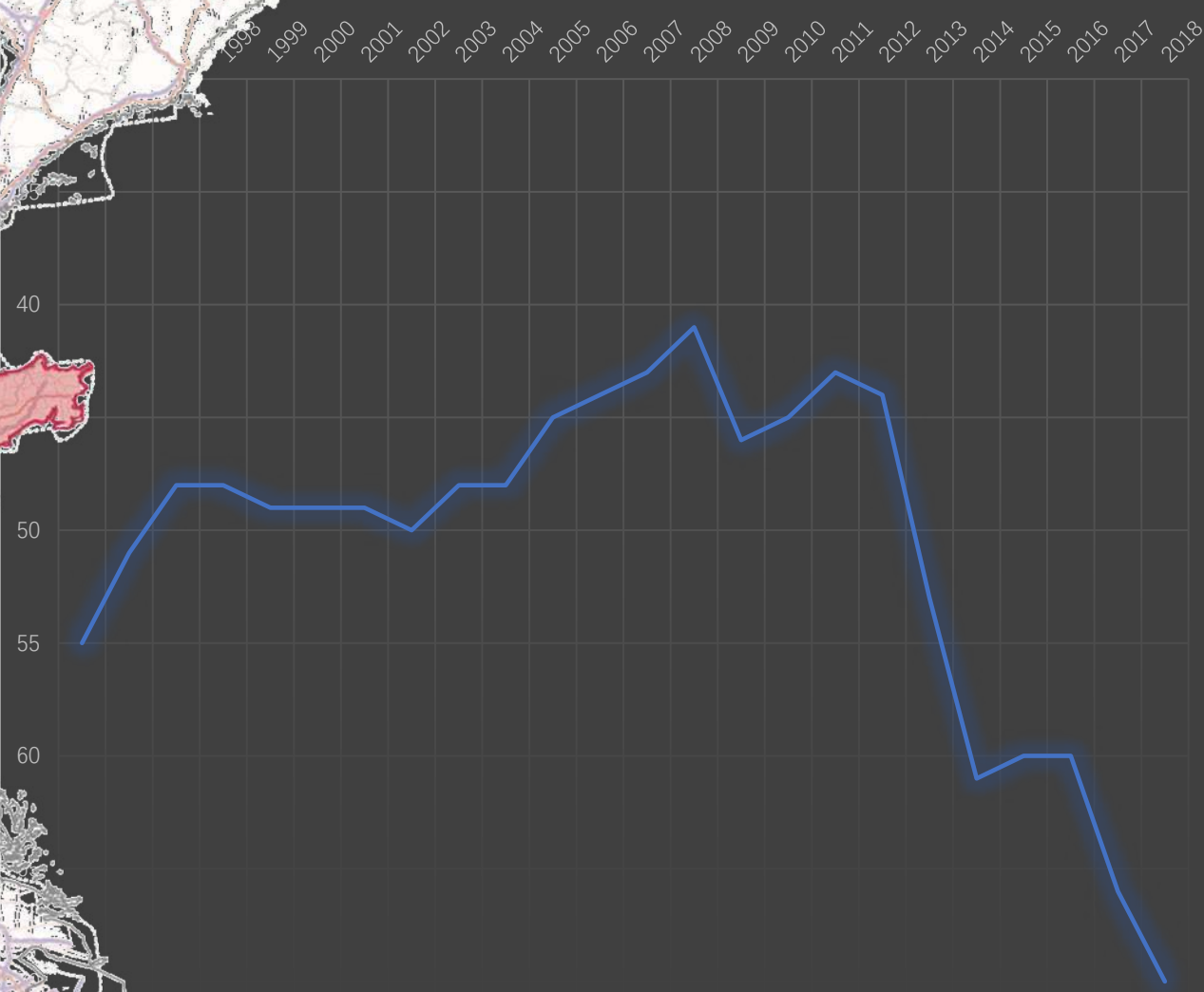


HanDan steel company Source: <http://y0.ifengimg.com/cmpp/2013/10/05/07/50c73d01-9167-47b3-8d00-e436f4de5760.jpg>

Dilemma 2: HanDan is in-between 4 mega regions



National ranking of urban economics of HanDan



Metropolitan system in the North China Plain
Source: author



Aim:

***Accomplish industrial upgrading and transformation
Integrate into the mega-regional network to benefit from it***

How?

Drivers for economic transformation

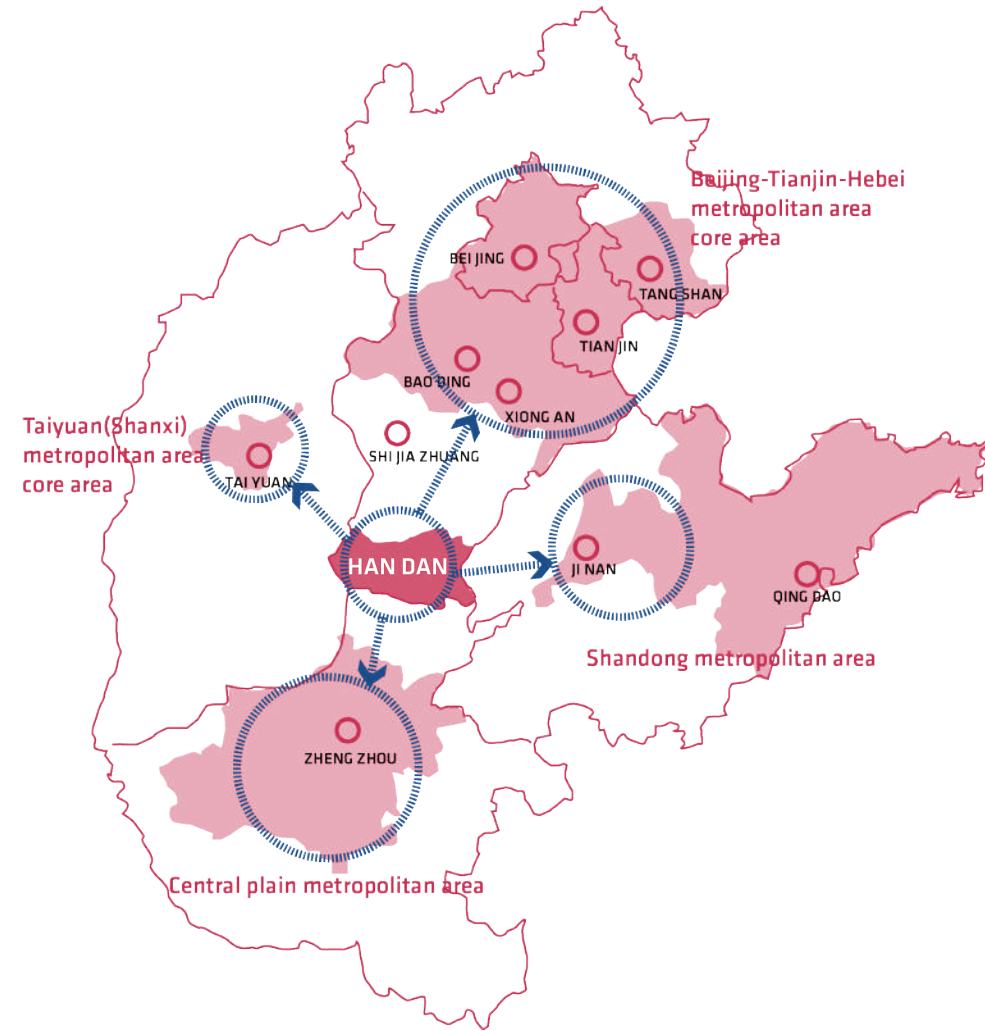
Innovation/ Accessibility/ Enterprise

*Theory from KEY CONCEPTS IN ECONOMIC GEOGRAPHY
By YUKO AOYAMA JAMES T. MURPHY SUSAN HANSON*

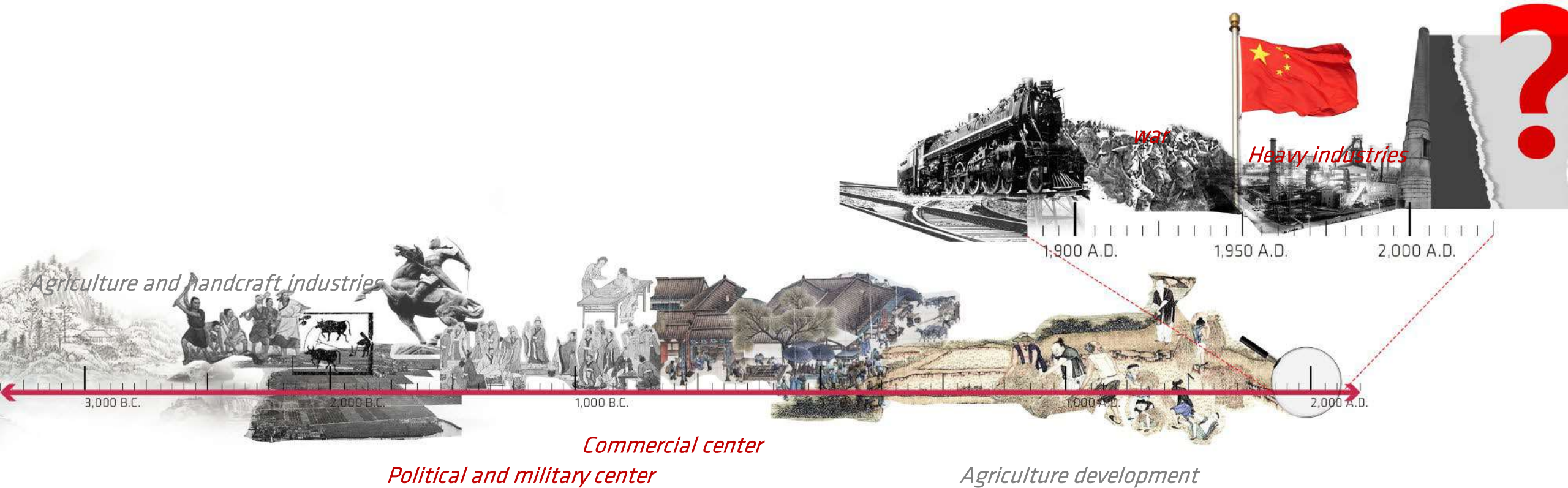
Potentials for Innovative transformation – 01 Mega-regional planning



Handan: An innovative metropolis in south HeBei province
Territorial planning for Hebei province (2021-2035)



Potentials for Innovative transformation – 02 Regional innovative center in ancient China



Potentials for Innovative transformation – 03 Spatial consequence of industrialization





Innovative urbanism

X

Spatial regeneration

Transformation and integration

Famous historical site: Handan Congtai

Source: https://www.poco.cn/works/detail_id2532175



Research question:

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

Elements of Innovative urbanism



Implantation of Smart Infrastructure (San Francisco)

Source: <https://www.bizjournals.com/sanfrancisco/news/paid-content/uniquely-oakland/2019/innovative-urbanism.html>

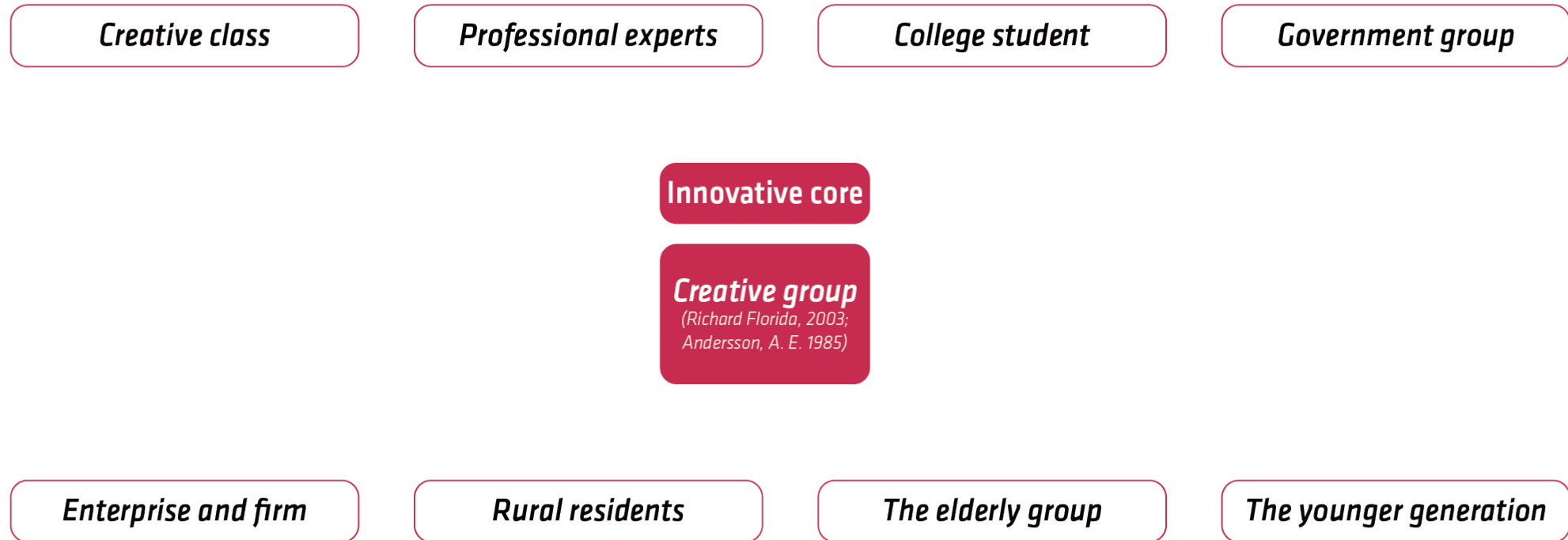
Theoretical underpinning - Drivers for Innovative urbanism

Innovative core

Creative group

*(Richard Florida, 2003;
Andersson, A. E. 1985)*

Theoretical underpinning - Drivers for Innovative urbanism



Theoretical underpinning - Drivers for Innovative urbanism

Innovative promoter

Knowledge & technology

(Keld Laursen, 2015)

Enterprises & climate

(Bob Jessop, 2016)

Cultural activities & tourism

(Martin Rønningen, 2010; Asheim B.T., & Gertier M.S. 2005)

Innovative core

Creative group

(Richard Florida, 2003; Andersson, A. E. 1985)

Innovative foundation

Political support & governance

(Frank Moulaert, 2007; Liz Gosme, 2005)

Accessibility

(Yuko Aoyama, 2011)

Environment quality



3 Conceptual vision

- Planning concept development***
- Spatial potentials***
- Vision***



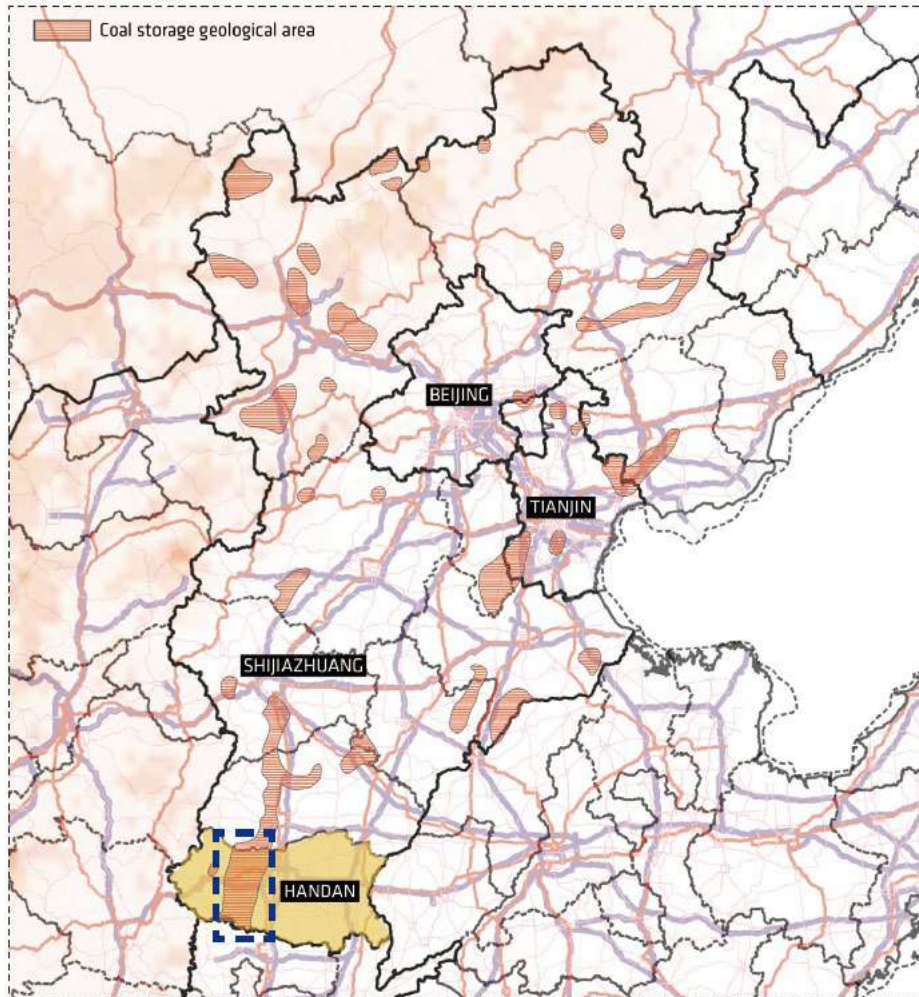
Landscape of resource-based industrial cluster in Han Dan

Source: <https://www.google.com/maps>

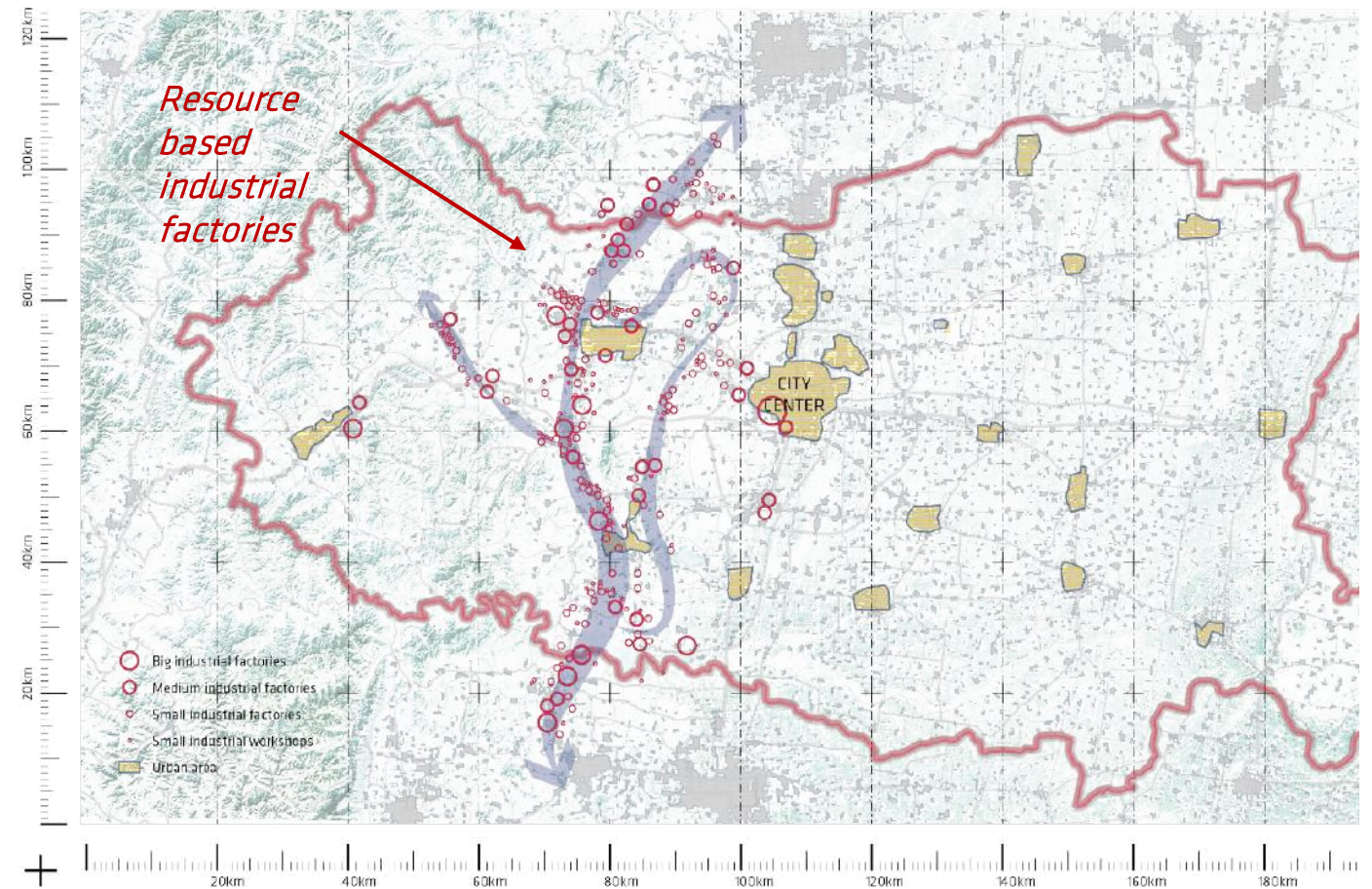
Spatial consequence of industrialization

Distribution of resource-based industries

Geological distribution of natural resources (Coal)



A belt-shape post-industrial area



Lift: Geological distribution of natural resources in Hebei province

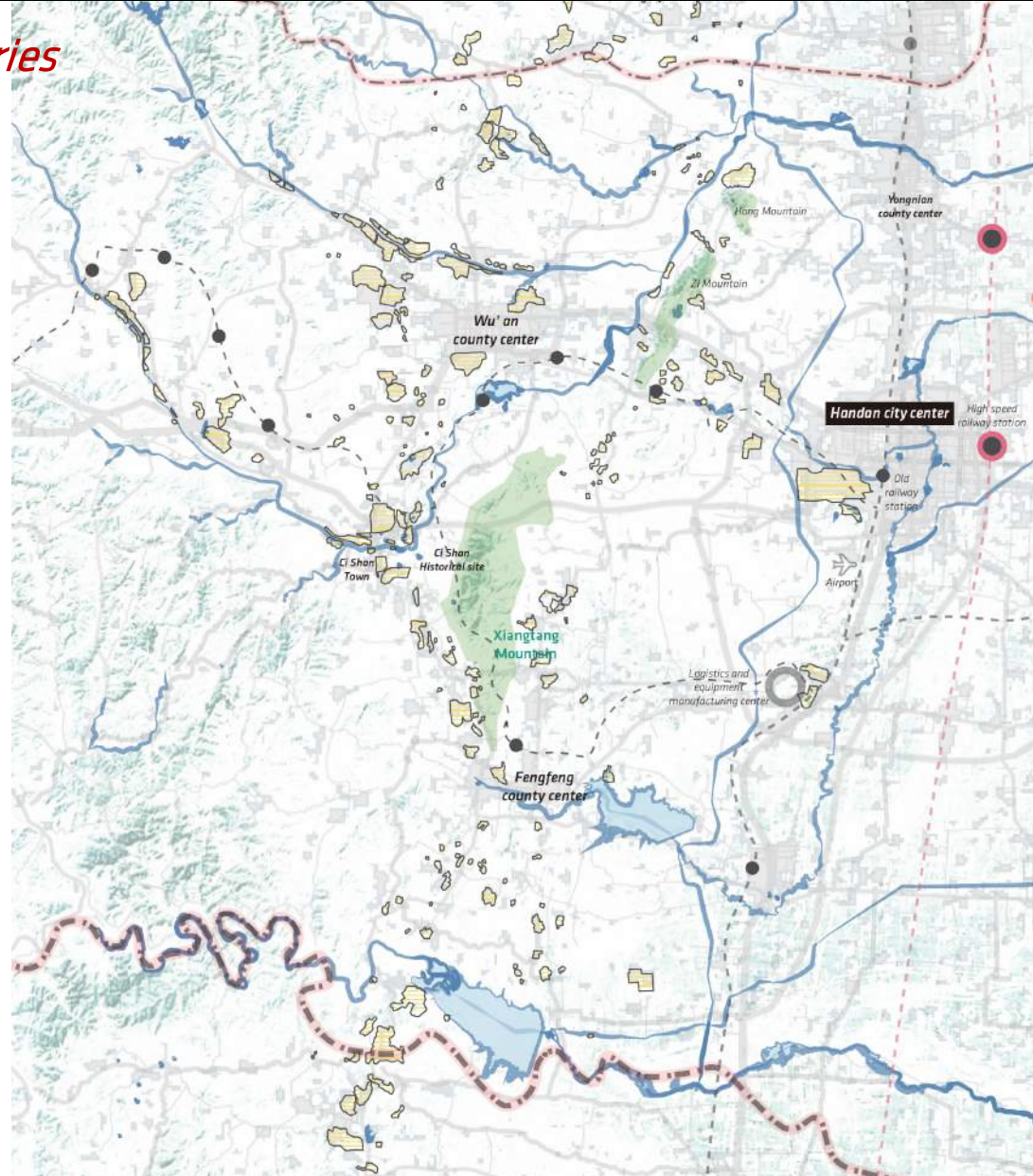
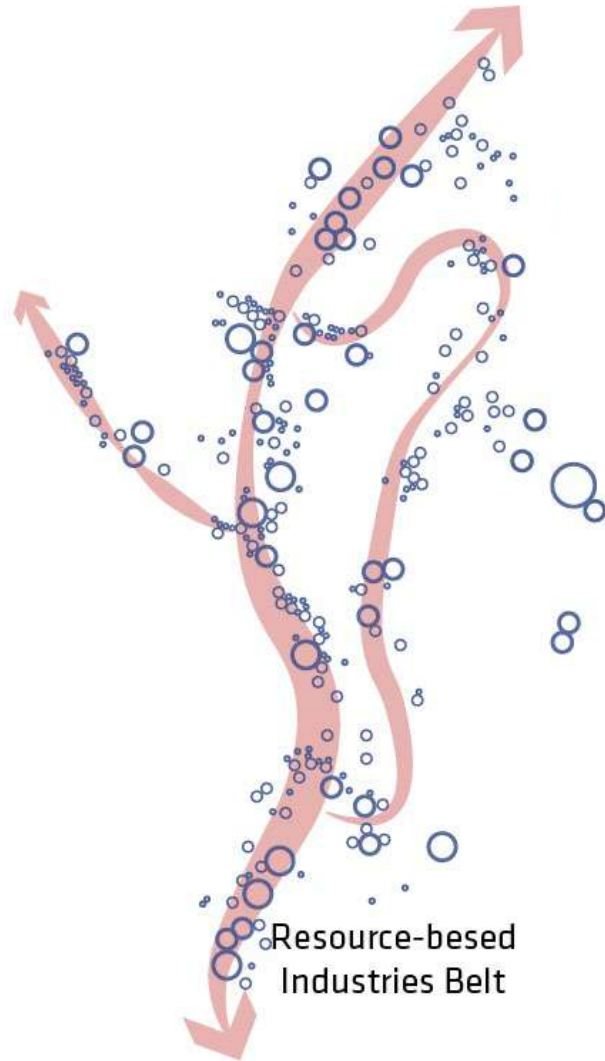
Source: Geological Bureau of Hebei Province

Right: resource-based industries distribution in Han Dan

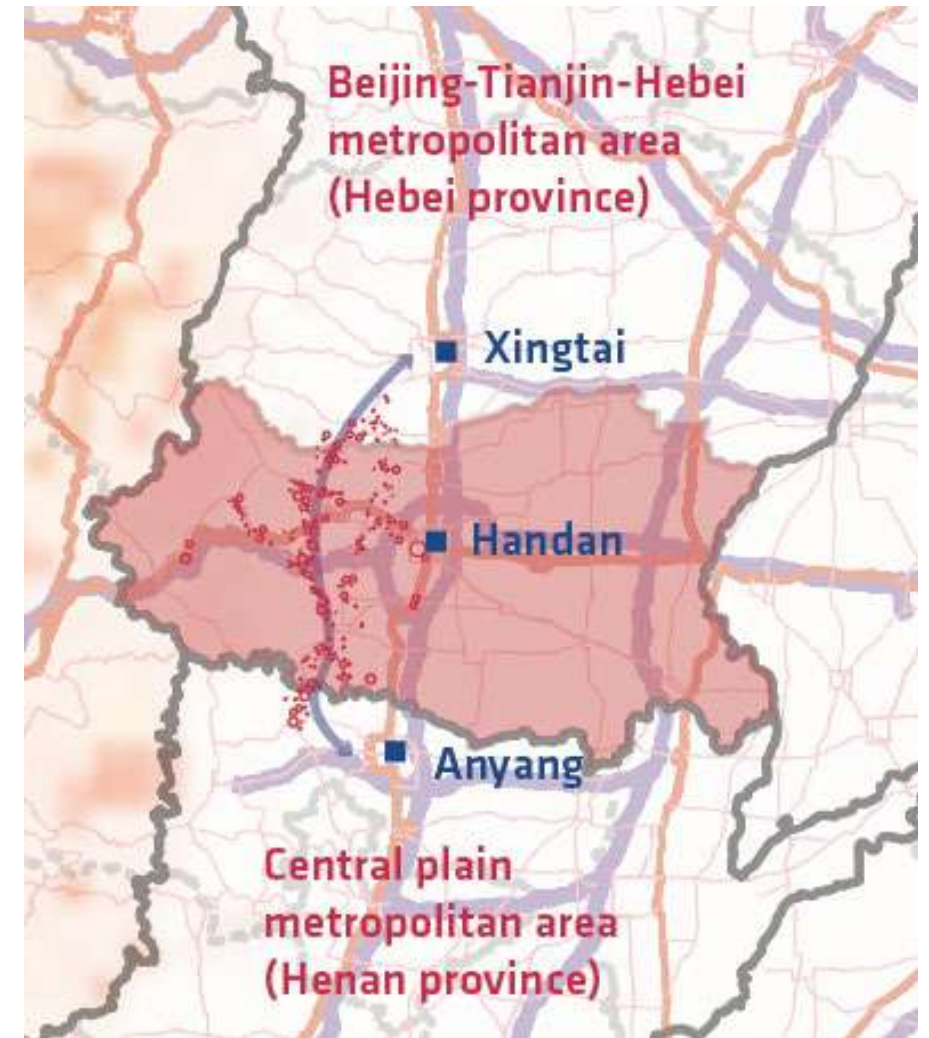
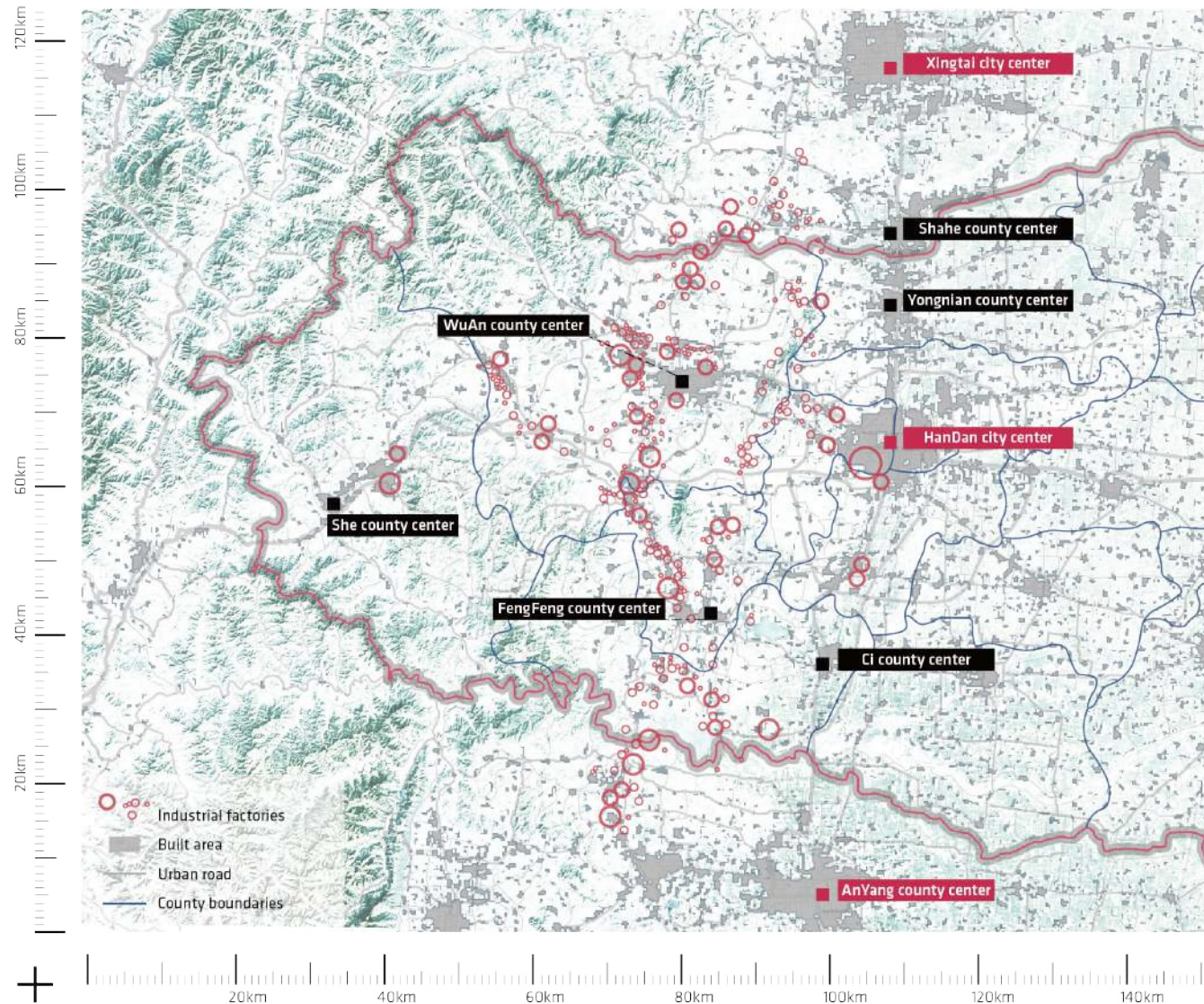
Source: author

Spatial consequence of industrialization

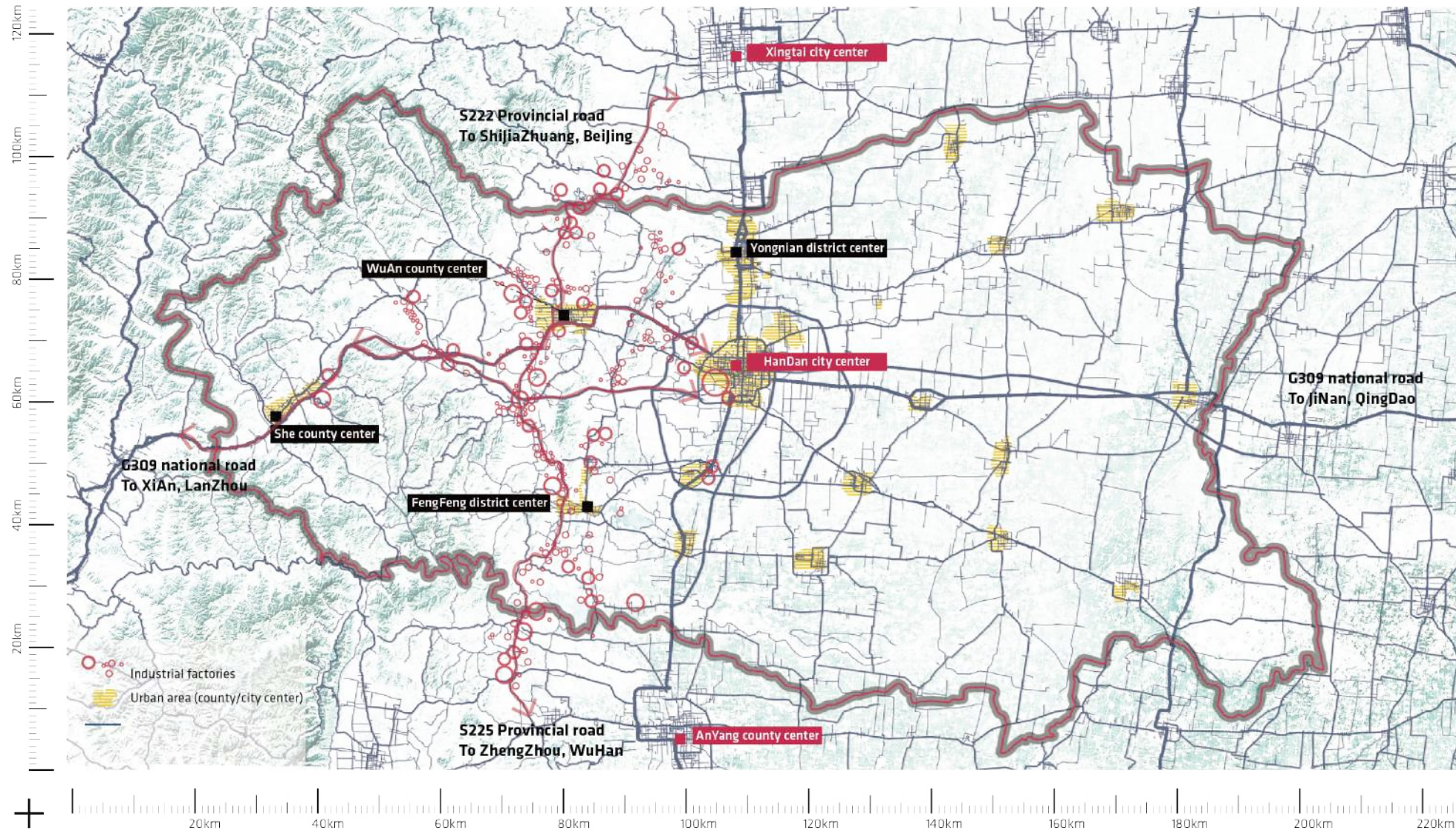
Distribution of resource-based industries



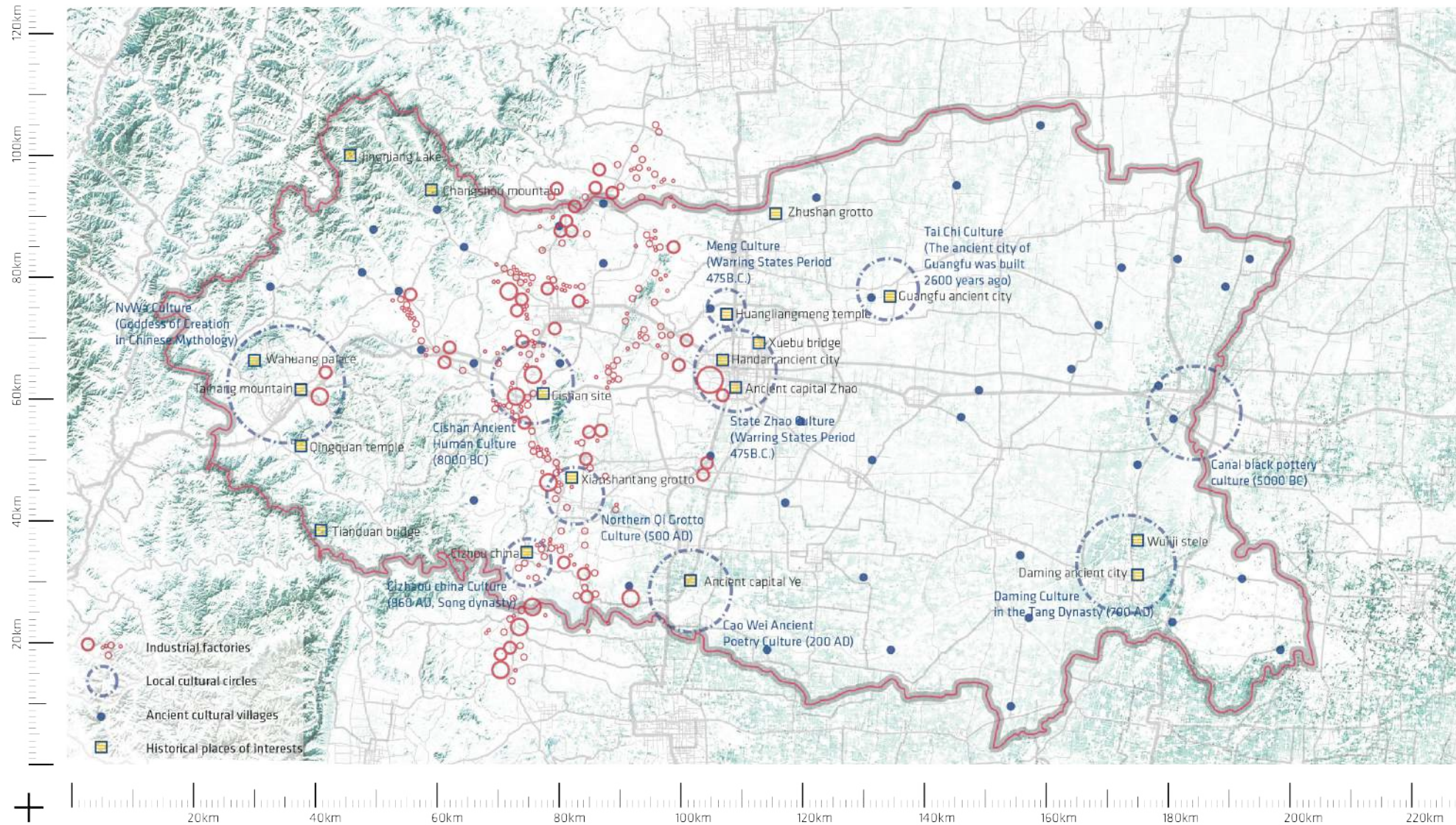
A belt-shape post-industrial area – a cross-boundary belt



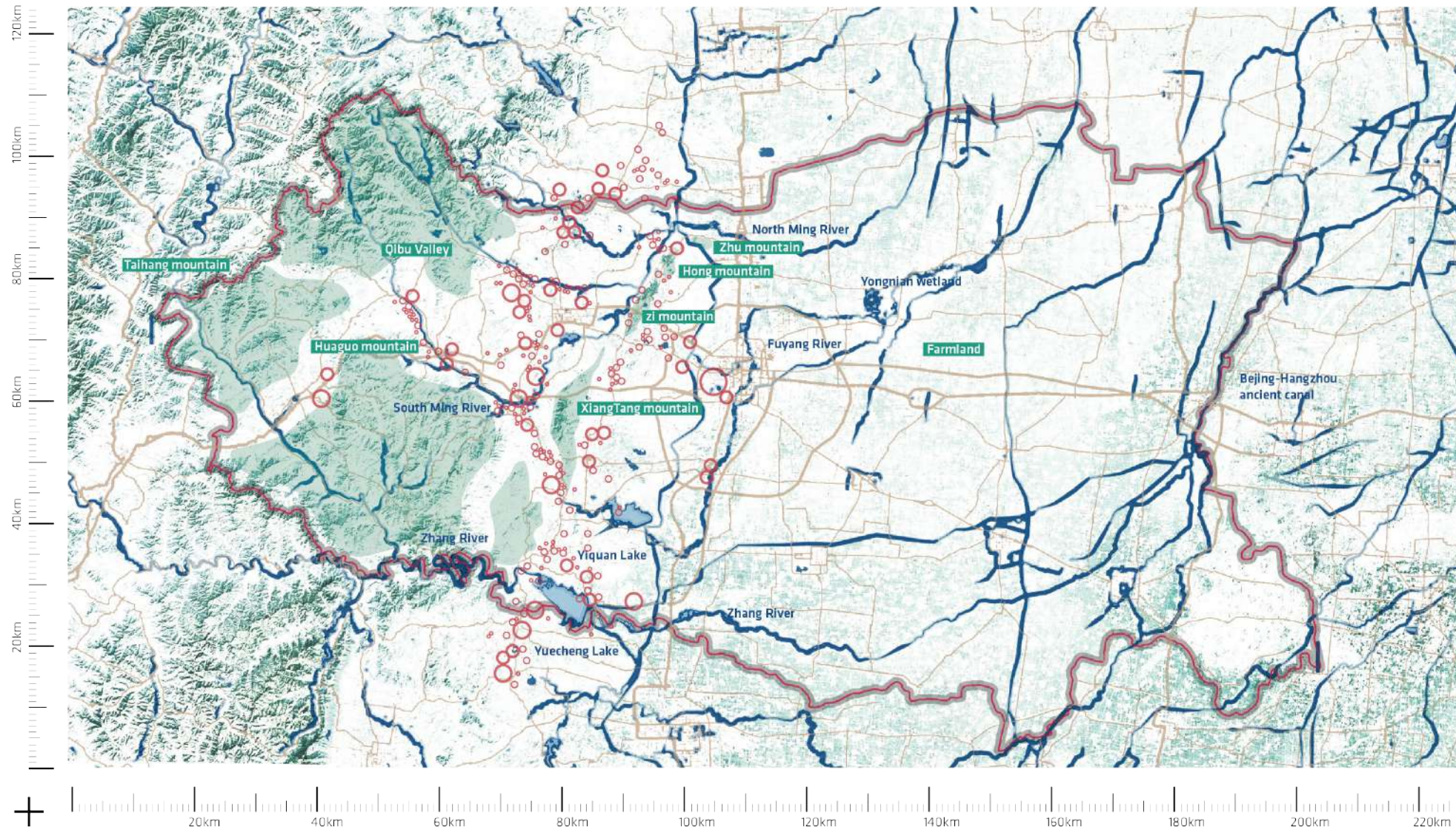
A belt-shape post-industrial area – infrastructure system



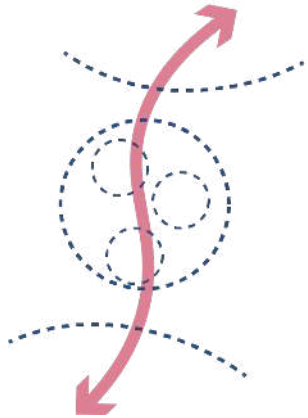
A belt-shape post-industrial area – linkage of local cultural circles



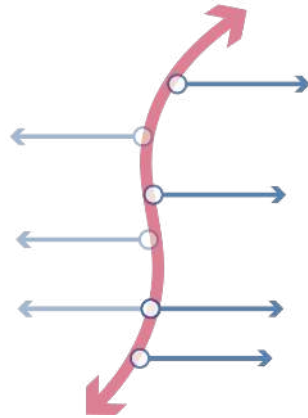
A belt-shape post-industrial area – “inlay” in the landscape



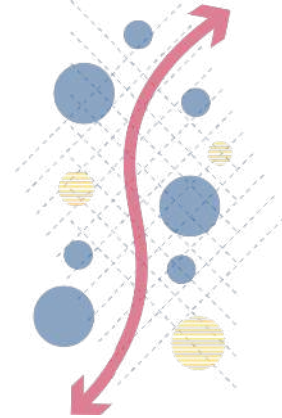
Spatial potentials for the industrial belt transformation



Cross-regional borders
- Promote inter-regional cooperation



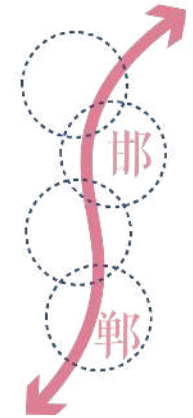
Convenient transportation system
- Promote the implantation of innovative industries



Close relationship With built-up area
- Promote urban transformation

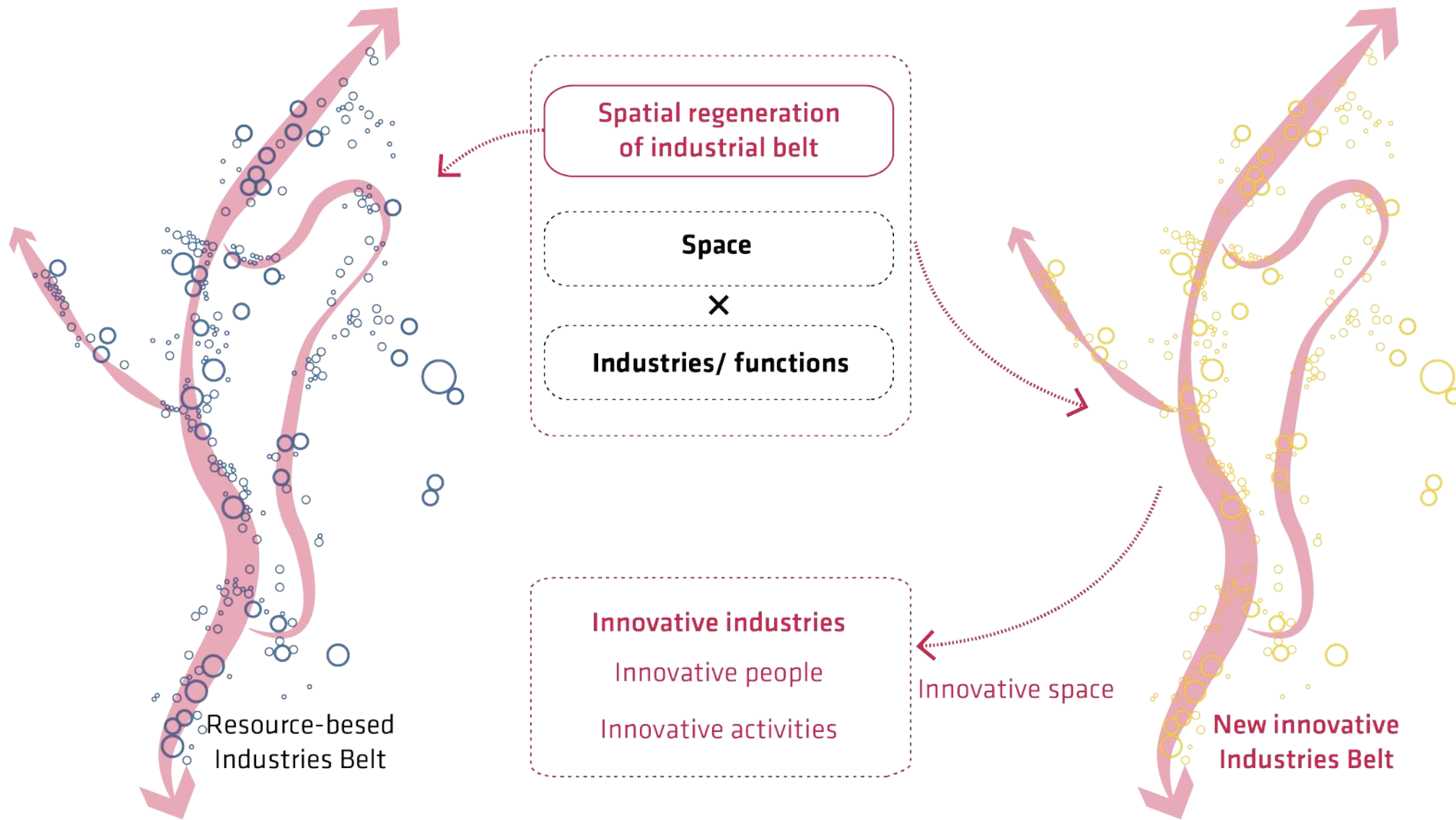


Rich landscape environment
-Promote the construction of environmentally friendly areas



Connecting different cultural circles
- Promote the revitalization of local culture

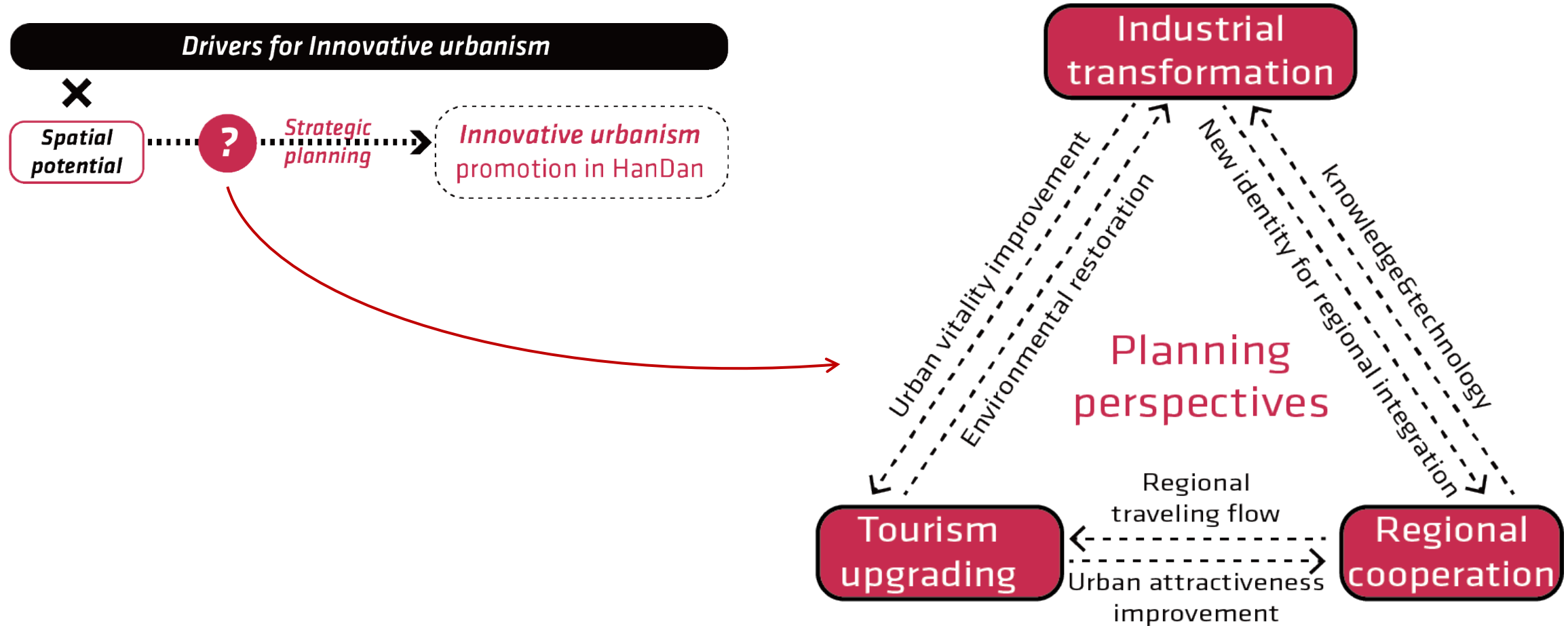
Spatial regeneration concept



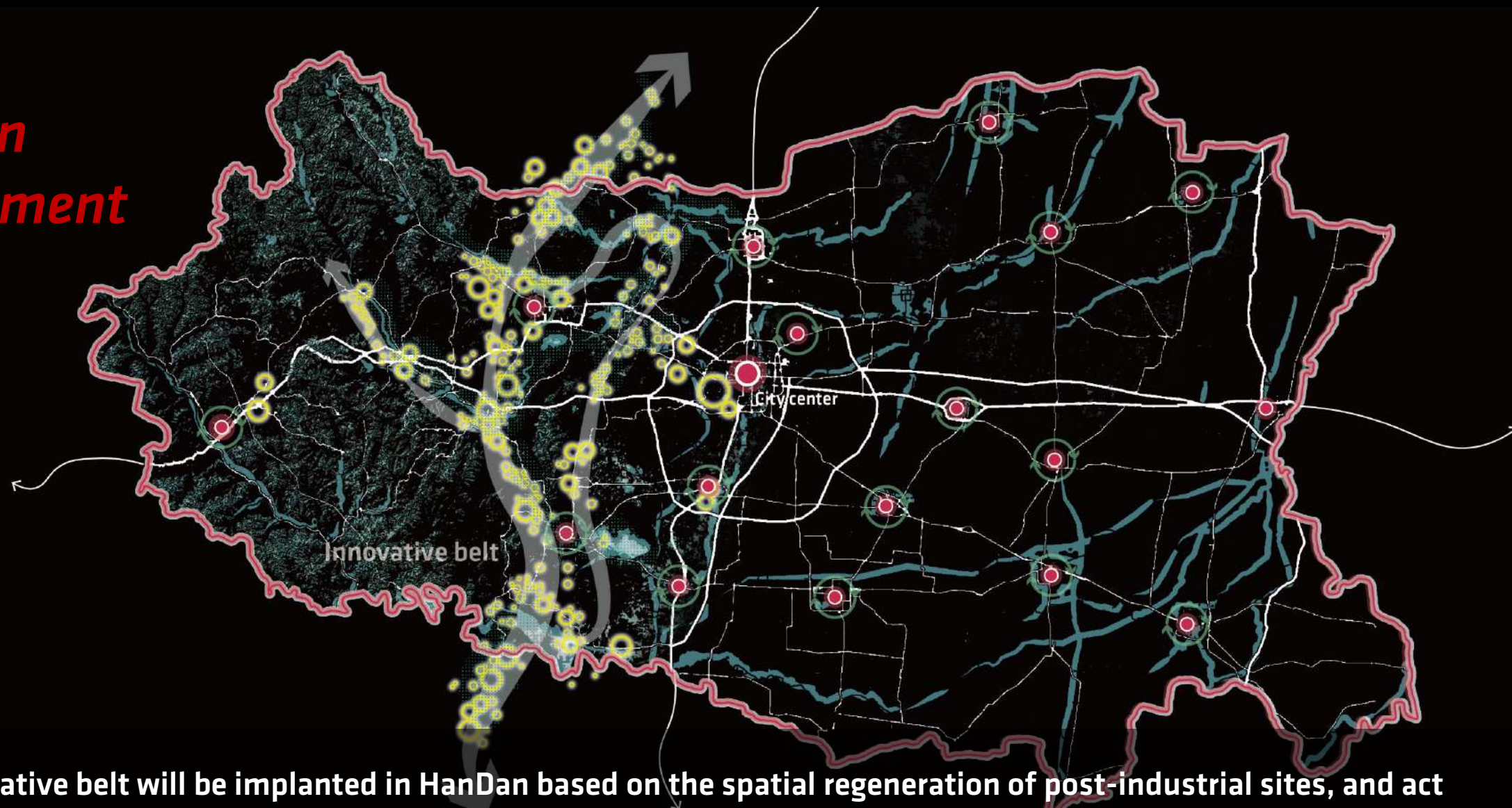
Planning perspectives



Planning perspectives

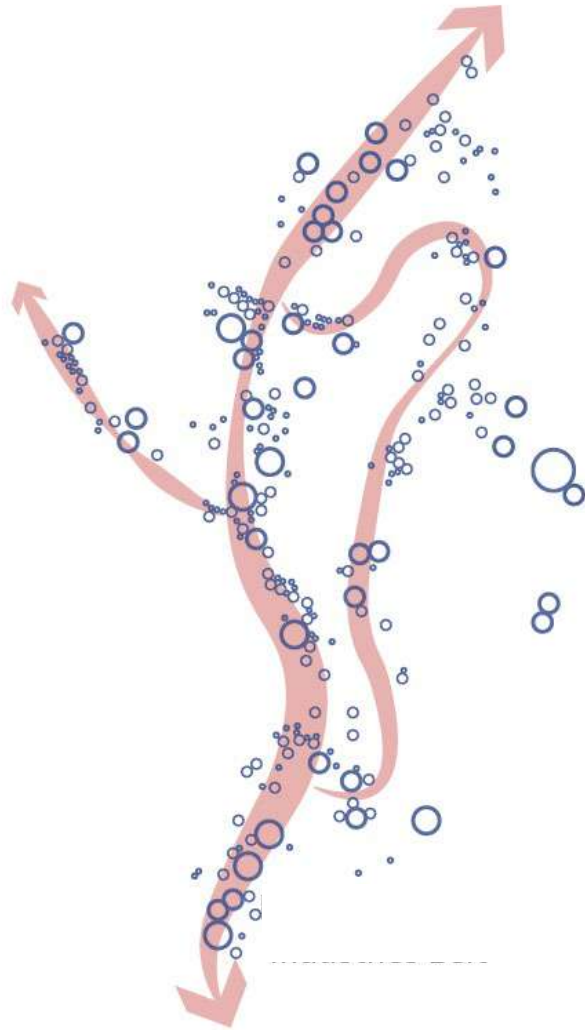


Vision statement



An innovative belt will be implanted 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.

Functional positioning for “innovative belt”



Space for innovative urbanism



Innovative industries



Innovative talents



Innovative activities

Engine for landscape and local cultural revitalization



Landscape traveling



local cultural revitalization

Platform for regional cooperation and communication



Regional dialogues



Research cooperation



Technical communication



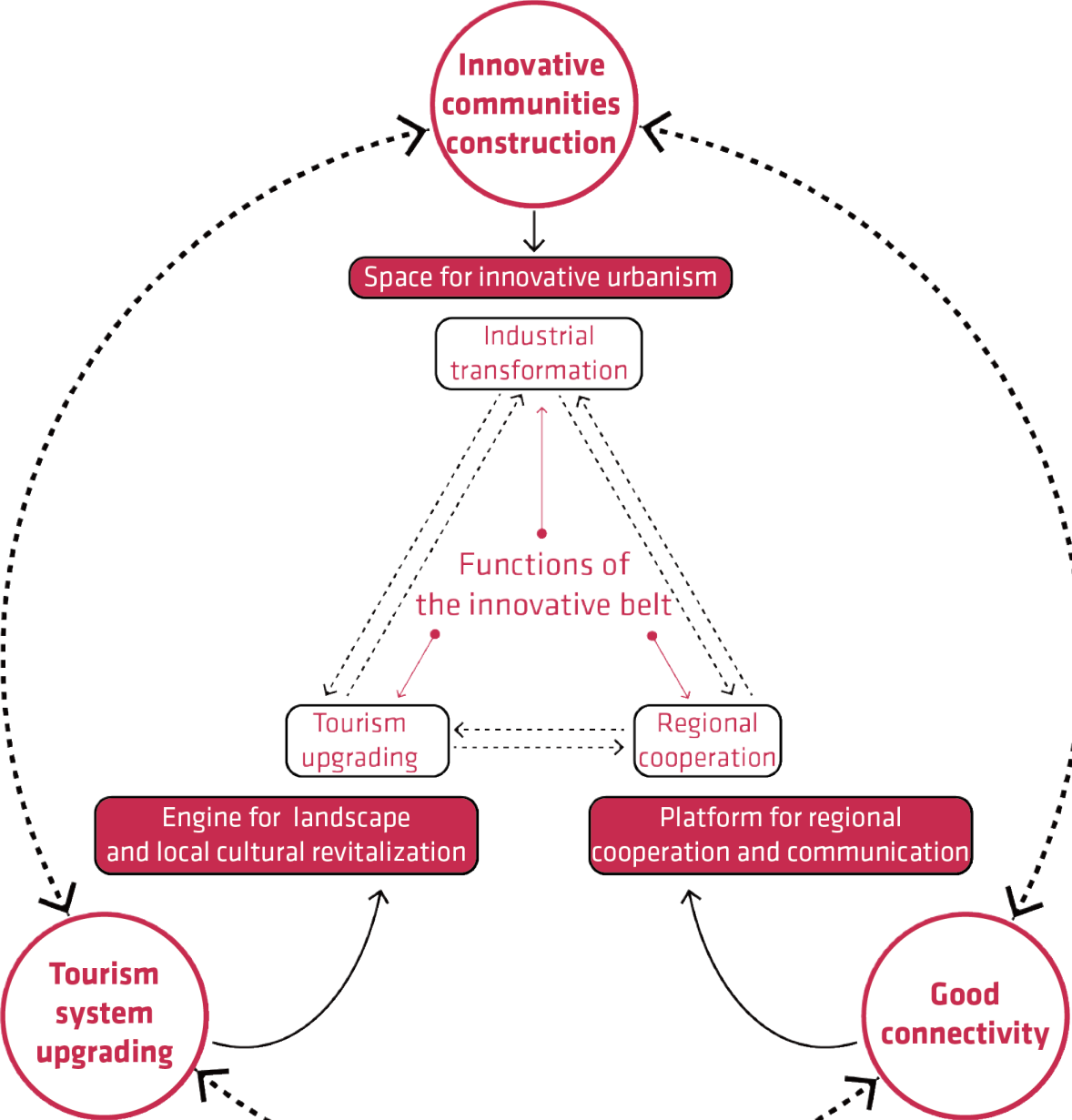
4 Strategic planning

Landscape of industrial sites in peri urban area of Han Dan

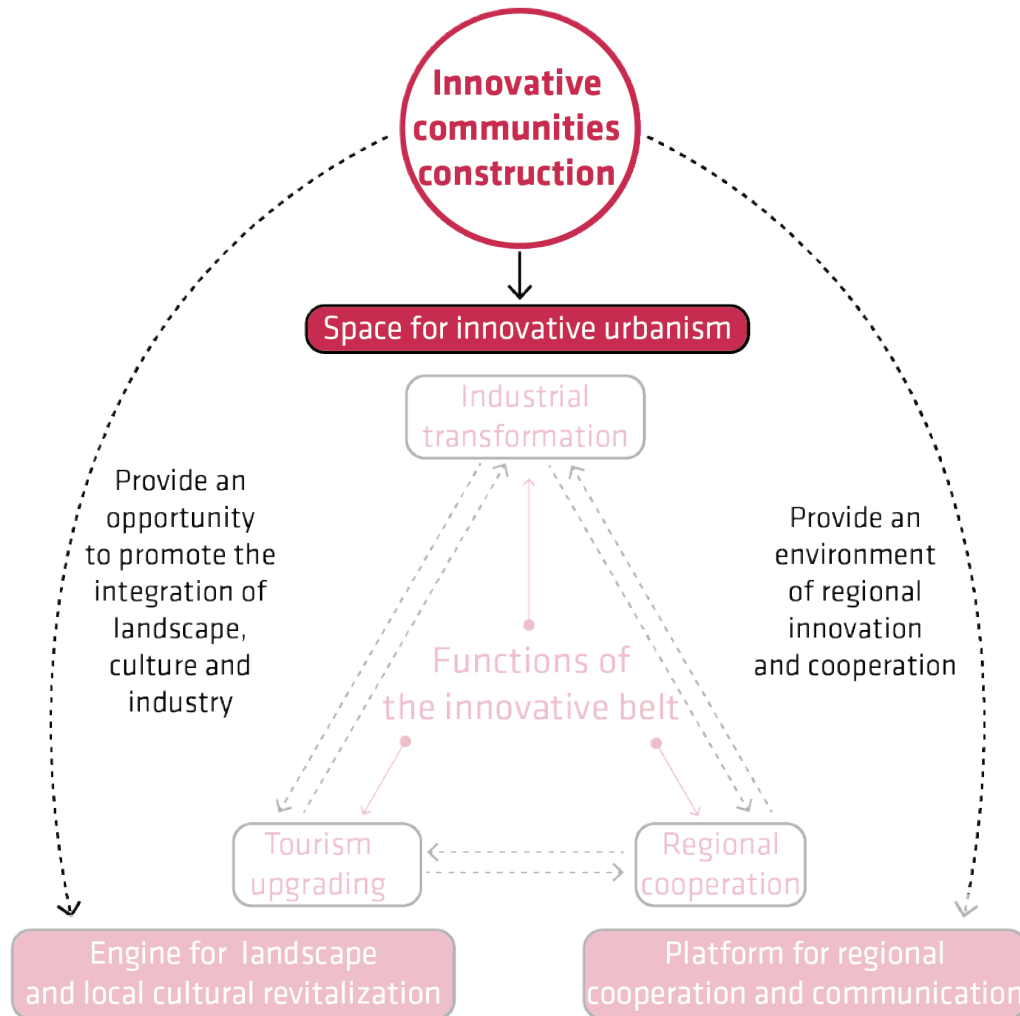
Source: <https://www.google.com/maps>



Key strategies for innovative belt planning



Key strategies- Innovative communities' construction/ Tourism upgrading/ Good connectivity

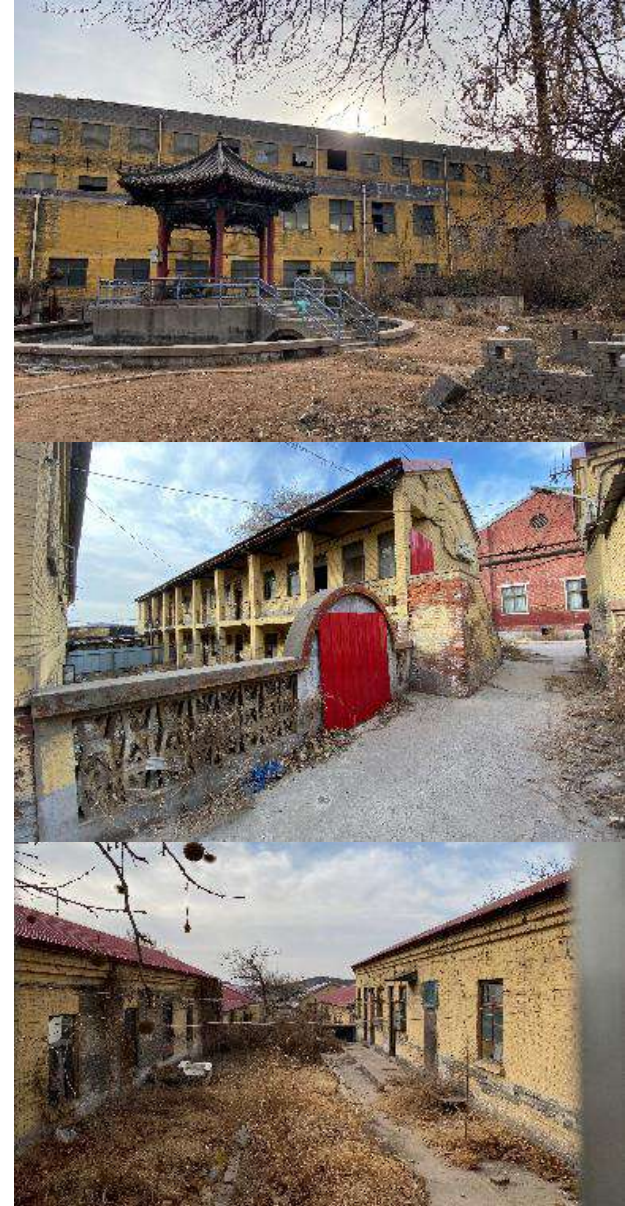
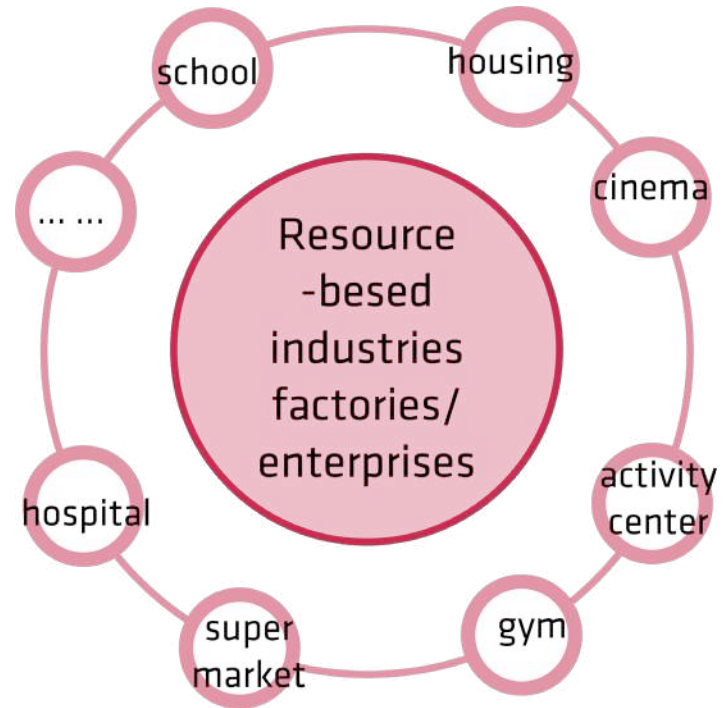
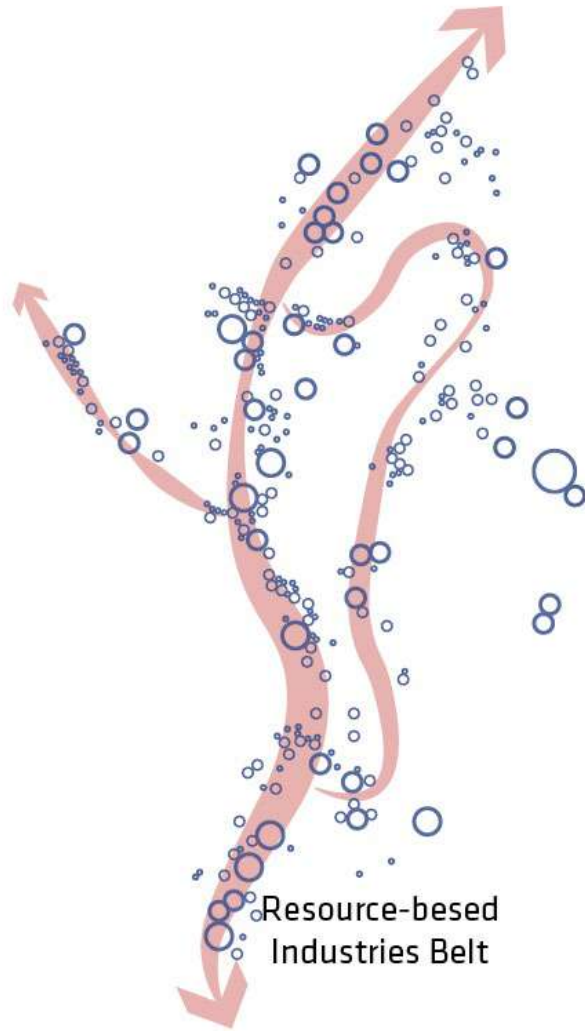


Community as a set of shared values, practices, and ways-of-being-in-the-world.

KEY CONCEPTS IN URBAN GEOGRAPHY
By ALAN LATHAM, DEREK MCCORMACK,
KIM MCNAMARA, DONALD MCNEILL

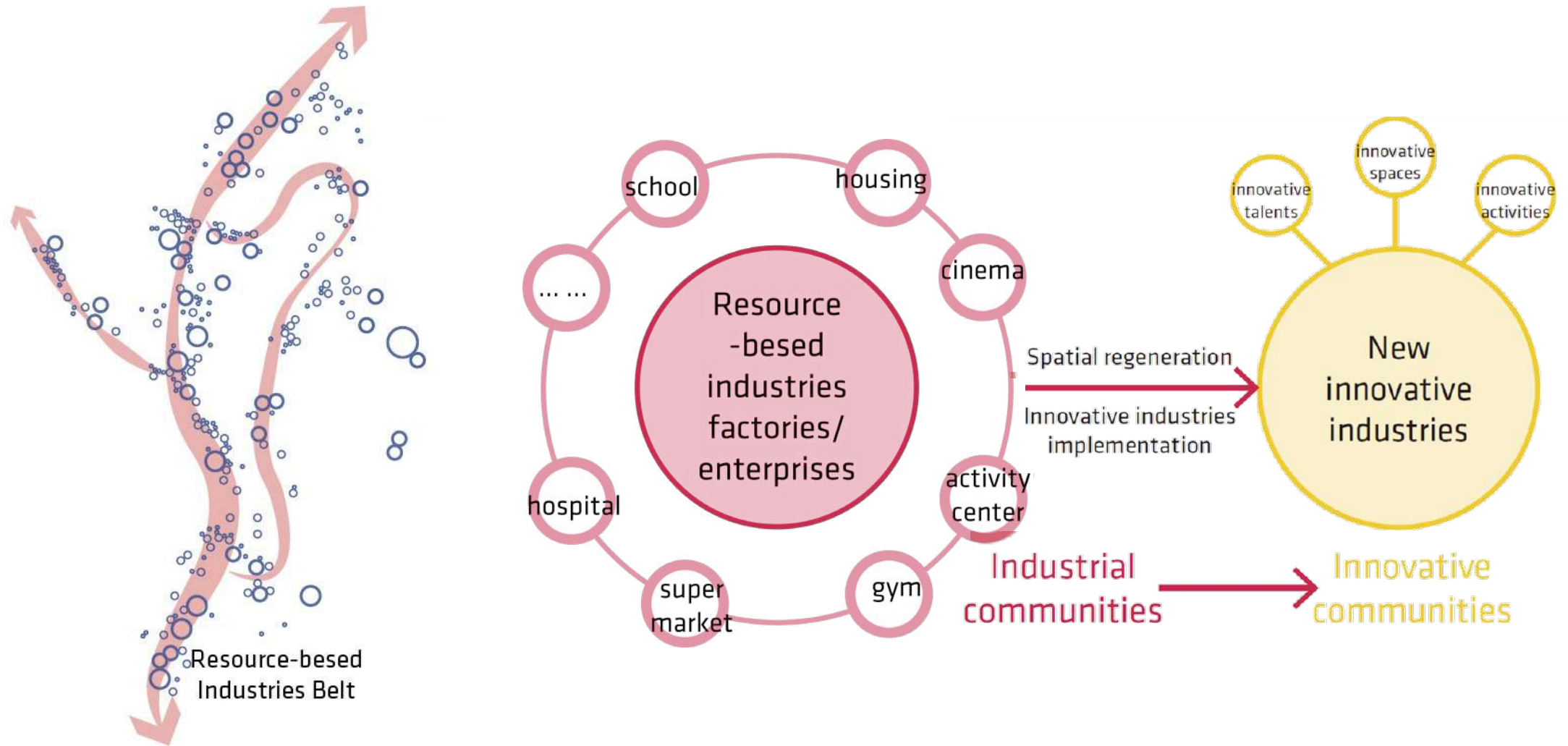
Key strategies- Innovative communities' construction/ Tourism upgrading/ Good connectivity

From industrial community to innovative community



Key strategies- Innovative communities' construction/ Tourism upgrading/ Good connectivity

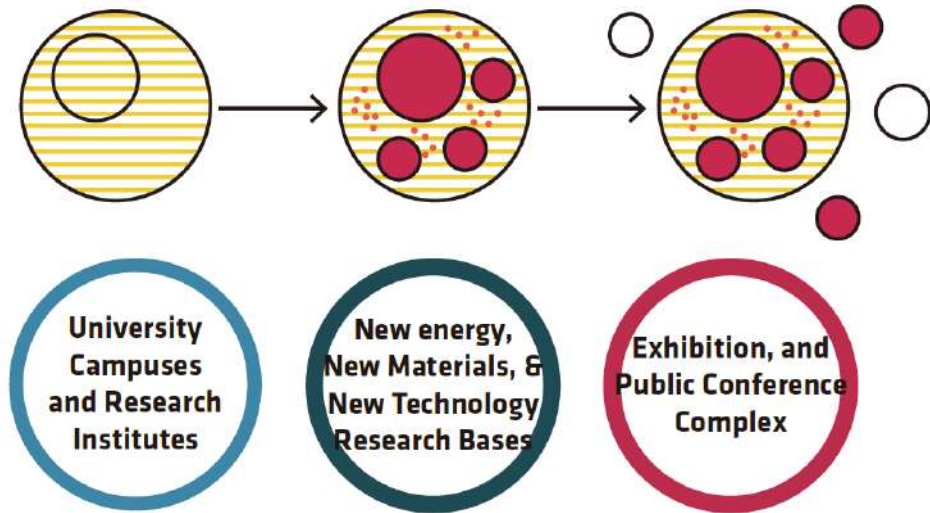
From industrial community to innovative community



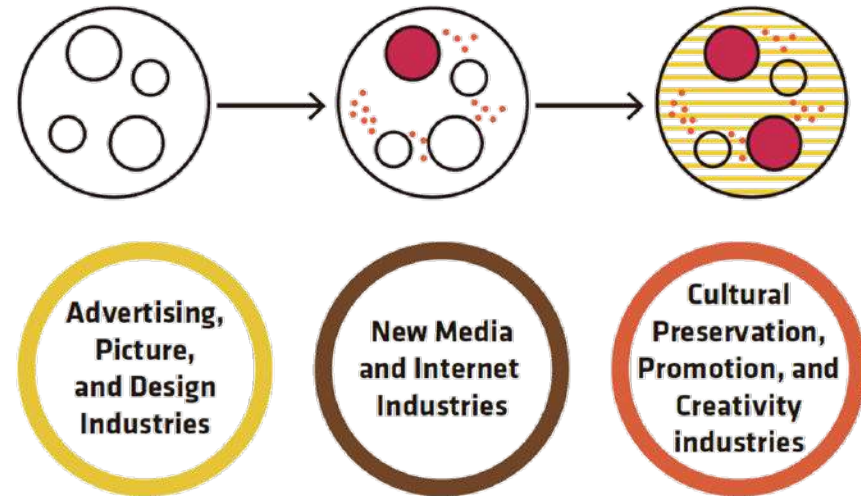
Key strategies- Innovative communities' construction/ Tourism upgrading/ Good connectivity

Typology of innovative communities

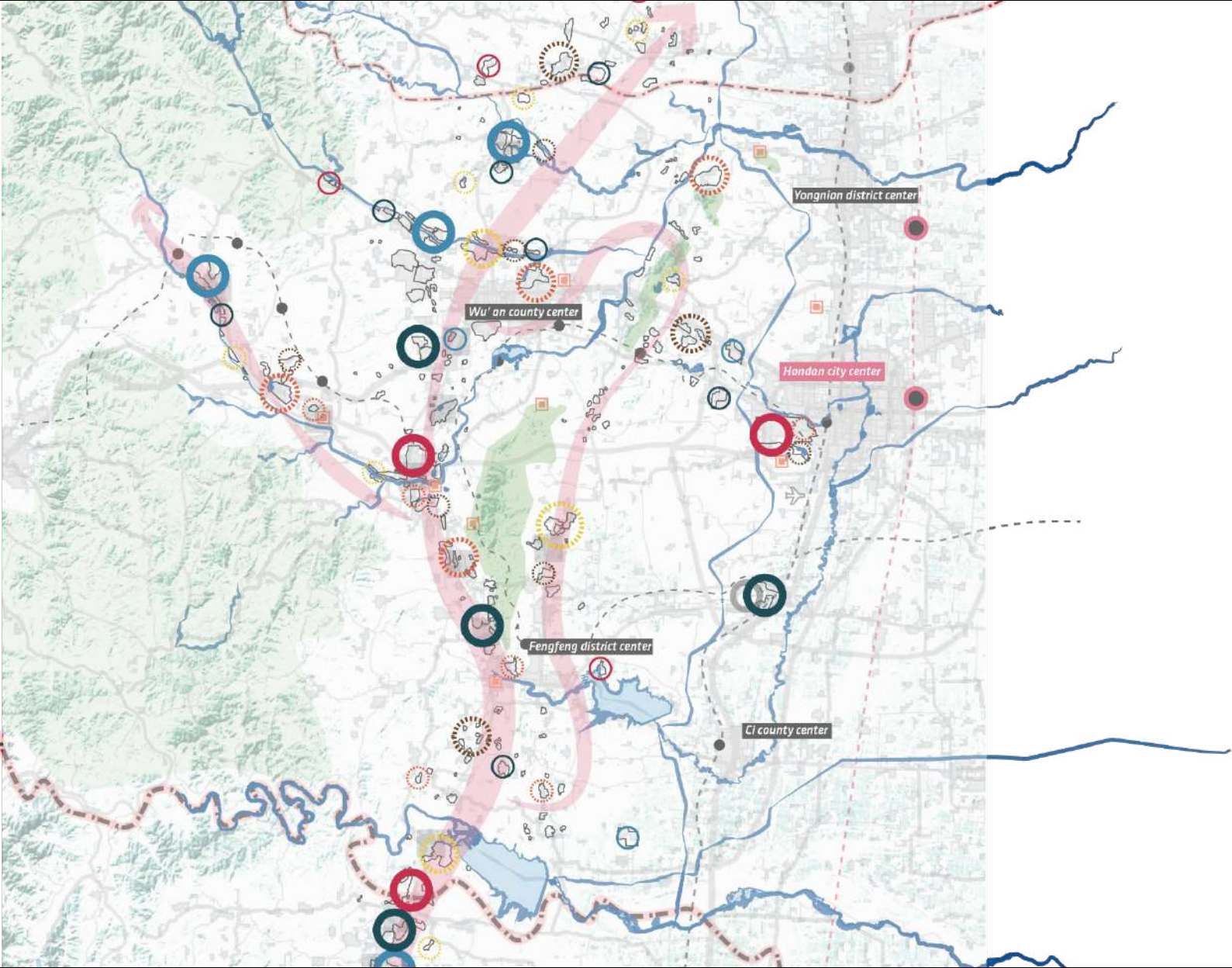
Driving type communities



Growing type communities

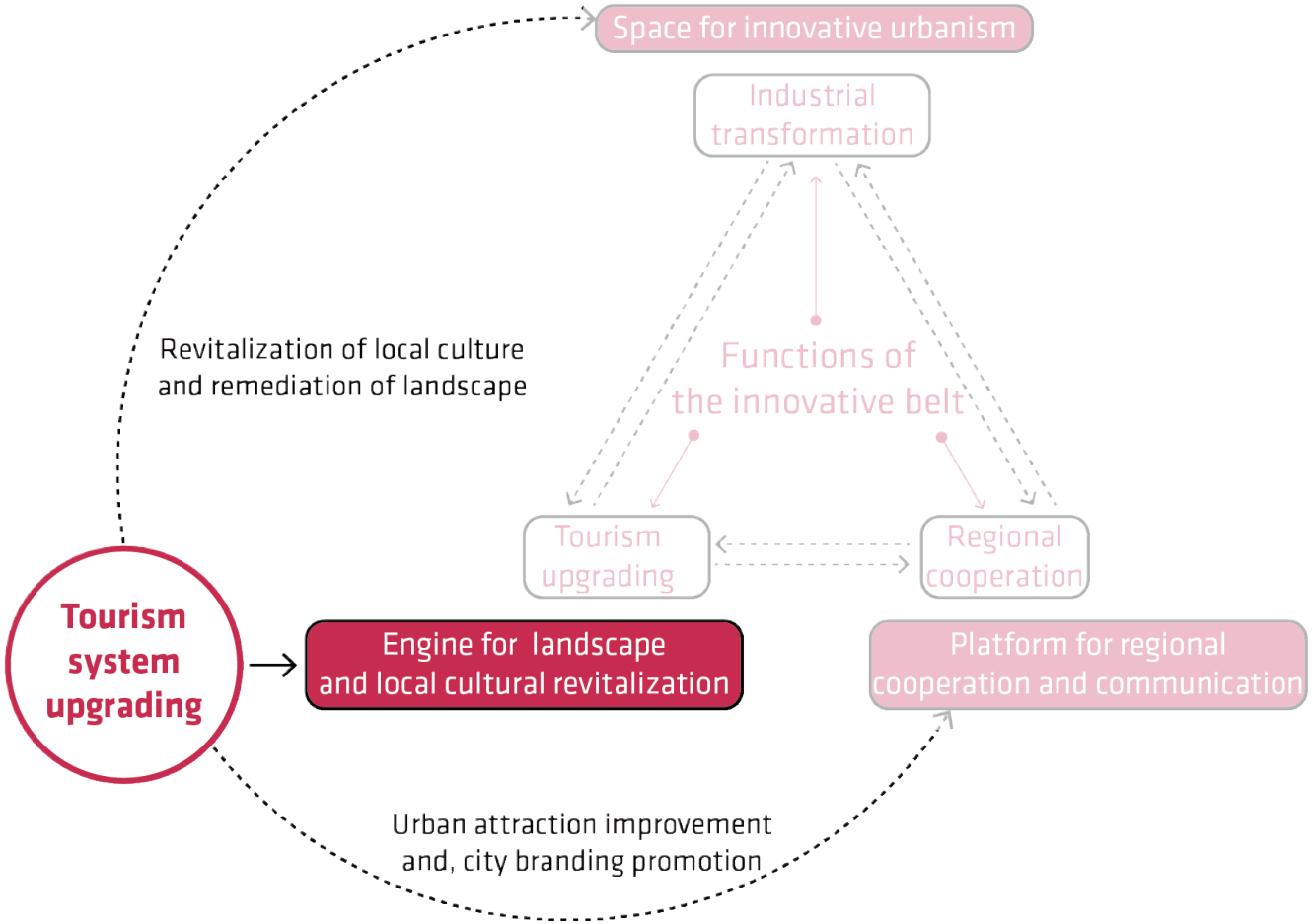


Key strategies- Innovative communities' construction/ Tourism upgrading/ Good connectivity

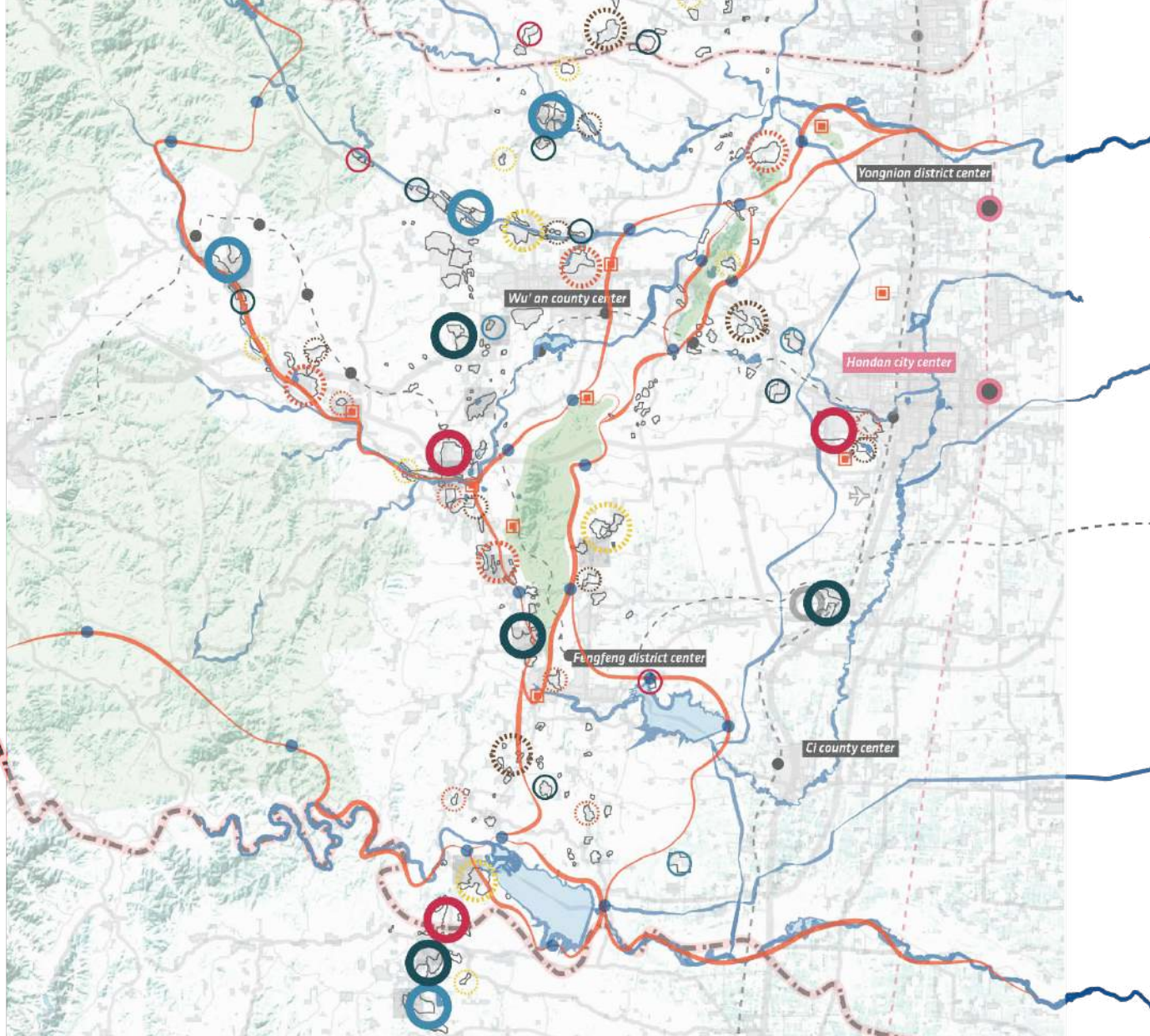


Regional planning- Distributing innovative communities

Key strategies- Innovative communities' construction/ Tourism upgrading/ Good connectivity



Key strategies- Innovative communities' construction/ Tourism upgrading/ Good connectivity

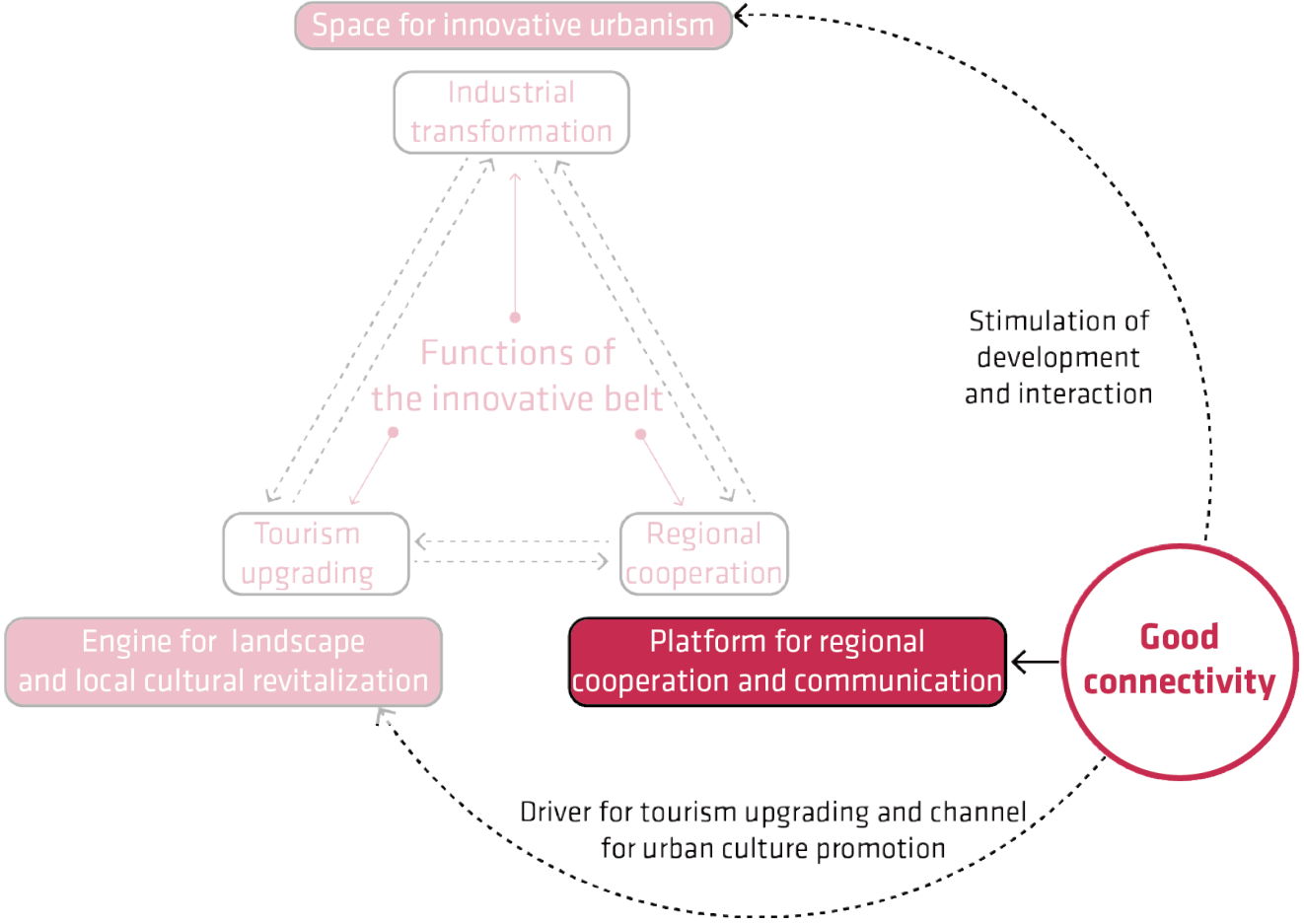


Regional planning- Tourism system implementation

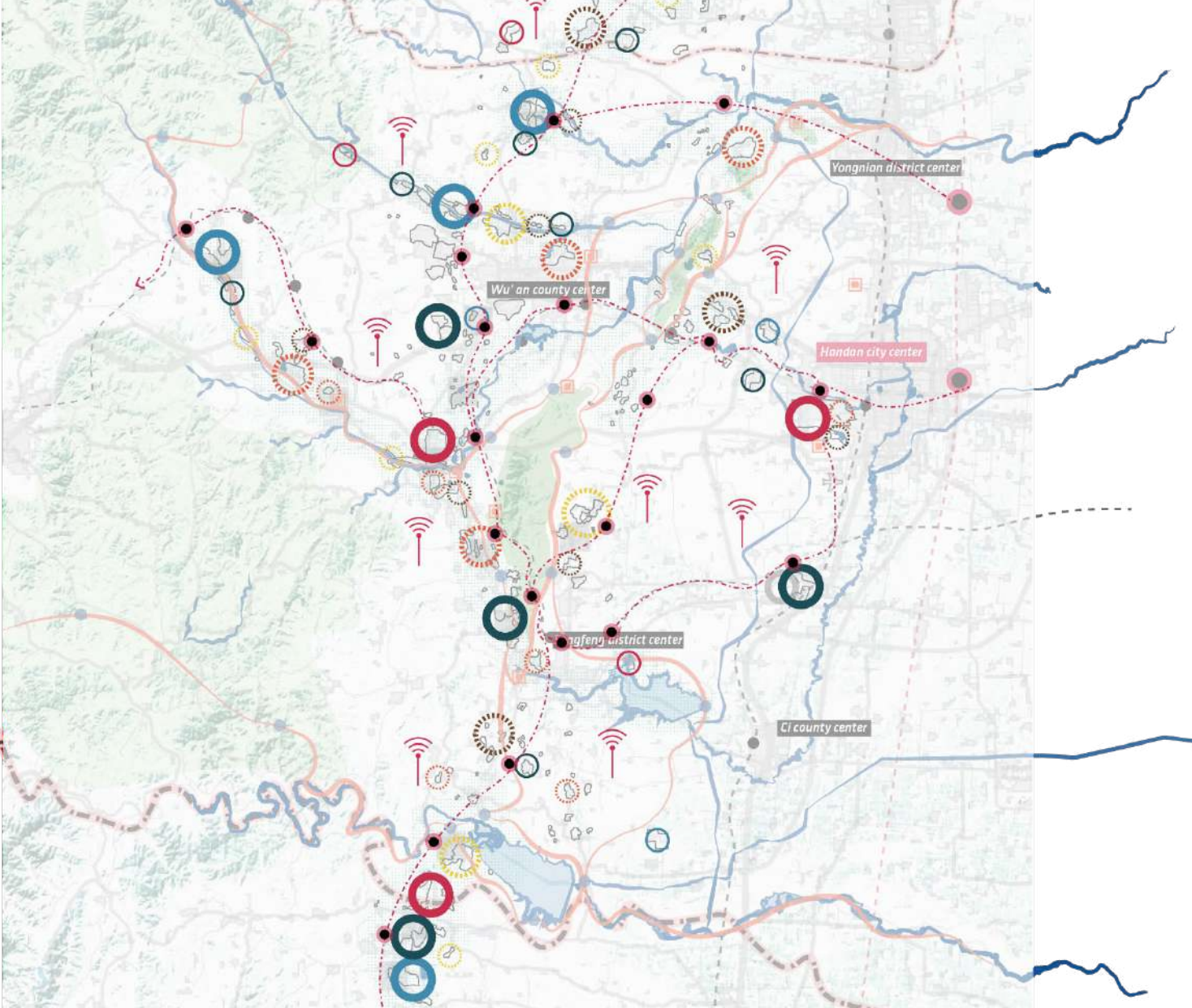
Daily traveling



Key strategies- Innovative communities' construction/ Tourism upgrading/ Good connectivity



Key strategies- Innovative communities' construction/ Tourism upgrading/ Good connectivity



**Regional planning
- Master Plan**



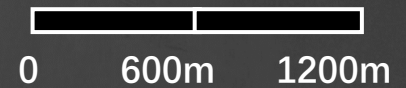
<http://www.afr.com/content/dam/images/g/r/h/o/9/n/image.related.afrArticleLead.620x350.grhmv4.png/1473989734193.jpg>



5 Planning implementation in local scale

- Principles for re-using post-industrial sites*
- Designing local scale*

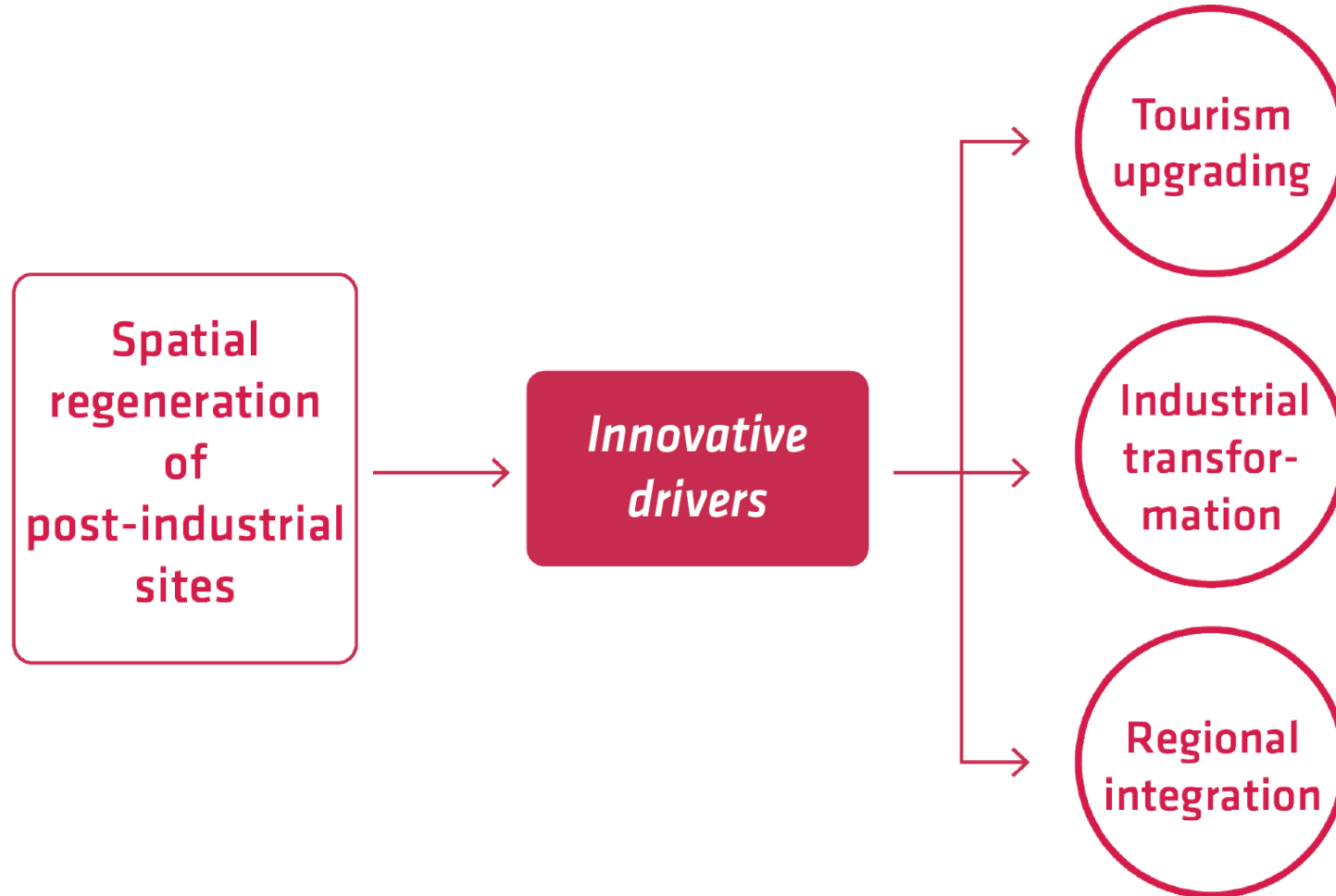
Yiquan lake



Landscape of Fengfeng district in Han Dan

Source: <https://www.google.com/maps>

Principles for re-using post-industrial sites



Principles for re-using post-industrial sites

Innovative core

Creative group

(Richard Florida, 2003;
Andersson, A. E. 1985)

Innovative promoter

Knowledge & technology

(Keld Laursen, 2015)

Enterprises & climate

(Bob Jessop, 2016)

Cultural activities & tourism

(Martin Rønningen, 2010;
Asheim B.T., & Gertier M.S. 2005)

Innovative foundation

Political support & governance

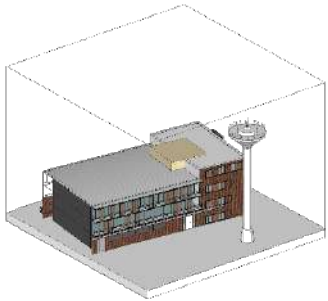
(Frank Moulaert, 2007;
Liz Gosme, 2005)

Accessibility

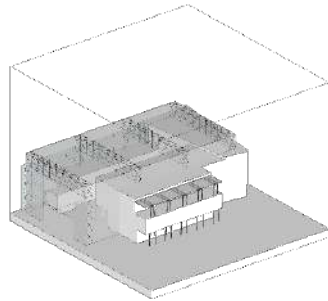
(Yuko Aoyama, 2011)

Environment & quality

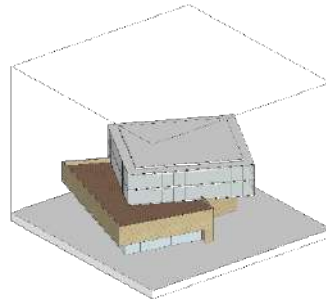
Principle 1 Diversity of the third places



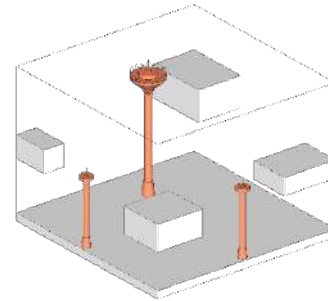
TOOL1.1 Social activity center



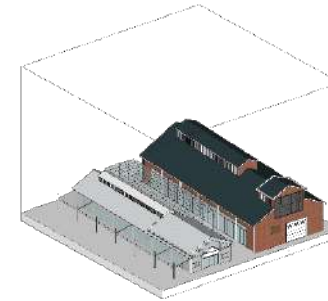
TOOL1.2 R and D studio



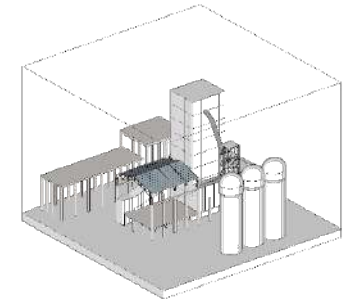
TOOL1.3 Commercial center



TOOL1.4 Virtual space



TOOL1.5 Exhibition hall



TOOL1.6 Knowledge hub center

Principles for re-using post-industrial sites

Innovative core

Creative group
*(Richard Florida, 2003;
Andersson, A. E. 1985)*

Innovative promoter

Knowledge & technology
(Keld Laursen, 2015)

**Enterprises
climate**
(Bob Jessop, 2016)

**Cultural activities
& tourism**
*(Martin Rønningen, 2010;
Asheim B.T., & Gertier M.S. 2005)*

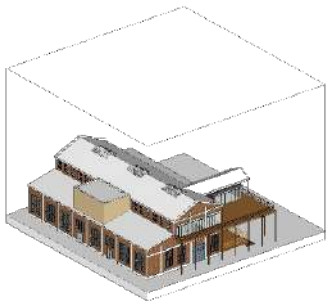
Innovative foundation

**Political support
& governance**
*(Frank Moulaert, 2007;
Liz Gosme, 2005)*

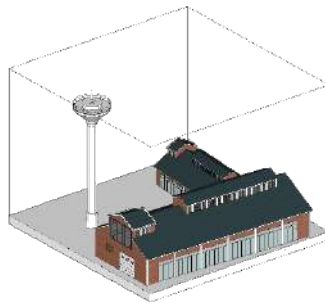
Accessibility
(Yuko Aoyama, 2011)

**Environment
quality**

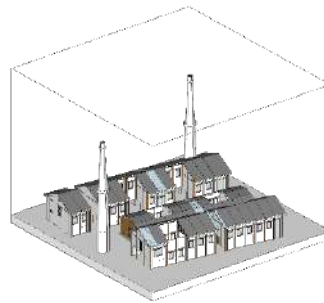
Principle 2 Reserved space for start ups and free to use



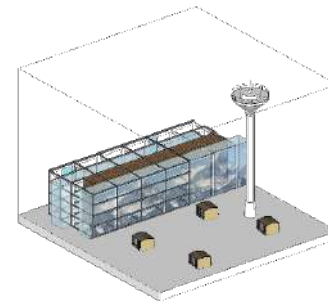
TOOL2.1 Labor training center



TOOL2.2 SOHO



TOOL2.3 Workshops



TOOL2.4 Sharing office

Principles for re-using post-industrial sites

Innovative core

Creative group
(Richard Florida, 2003;
Andersson, A. E. 1985)

Innovative promoter

Knowledge & technology
(Keld Laursen, 2015)

**Enterprises
& climate**
(Bob Jessop, 2016)

**Cultural activities
& tourism**
(Martin Rønningen, 2010;
Asheim B.T., & Gertier M.S. 2005)

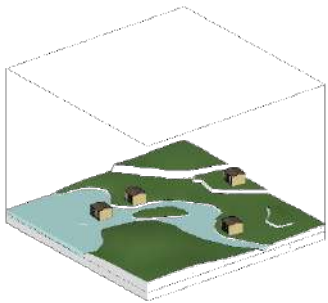
Innovative foundation

**Political support
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(Frank Moulaert, 2007;
Liz Gosme, 2005)

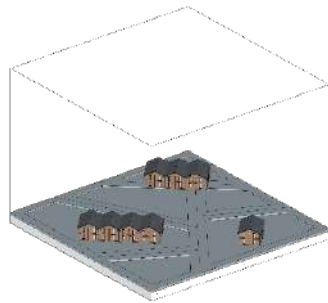
Accessibility
(Yuko Aoyama, 2011)

**Environment
& quality**

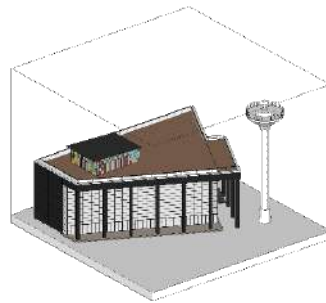
Principle 3 Plug-ins for cultural activities and tourism



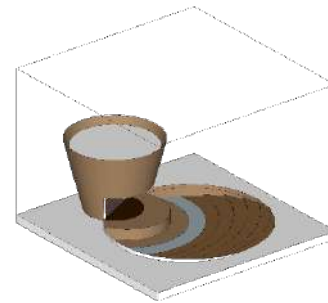
TOOL3.1 Agriculture park



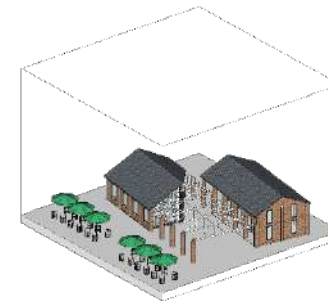
TOOL3.2 Cultural park



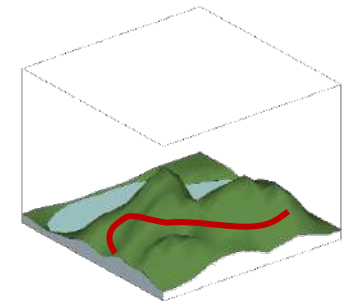
TOOL3.3 Digital tourism



TOOL3.4 Open stage



TOOL3.5 Tourism
business



TOOL3.6 Riding path

Principles for re-using post-industrial sites

Innovative core

Creative group
(Richard Florida, 2003;
Andersson, A. E. 1985)

Innovative promoter

Knowledge & technology
(Keld Laursen, 2015)

**Enterprises
& climate**
(Bob Jessop, 2016)

**Cultural activities
& tourism**
(Martin Rønningen, 2010;
Asheim B.T. & Gertier M.S. 2005)

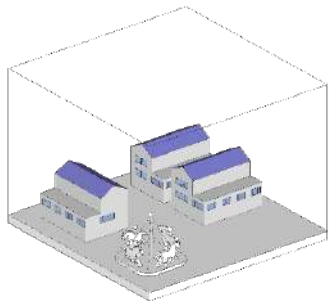
Innovative foundation

**Political support
& governance**
(Frank Moulaert, 2007;
Liz Gosme, 2005)

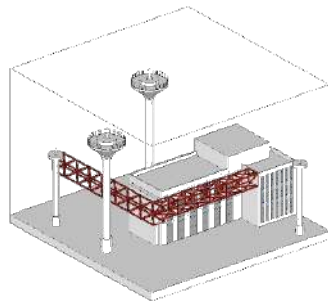
Accessibility
(Yuko Aoyama, 2011)

**Environment
& quality**

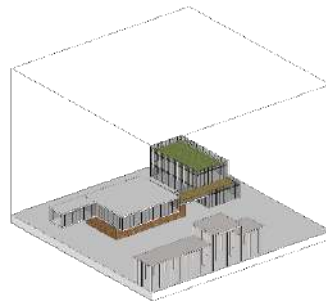
Principle 4 Decentralized living facilities



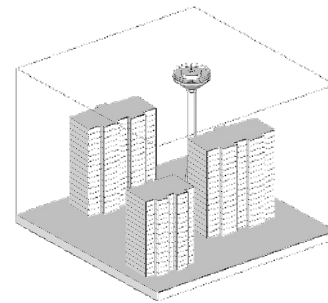
TOOL4.1 Kindergarten



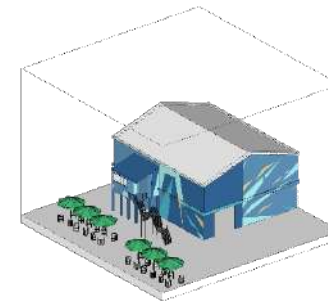
TOOL4.2 Daily commerce



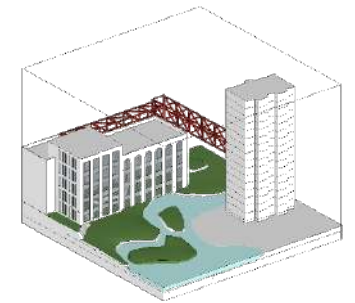
TOOL4.3 Public gym



TOOL4.4 Social housing



TOOL4.5 Canteen



TOOL4.6 Recreation park

Principles for re-using post-industrial sites

Innovative core

Creative group
(Richard Florida, 2003;
Andersson, A. E. 1985)

Innovative promoter

Knowledge & technology
(Keld Laursen, 2015)

**Enterprises
& climate**
(Bob Jessop, 2016)

**Cultural activities
& tourism**
(Martin Rønningen, 2010;
Asheim B.T. & Gertier M.S. 2005)

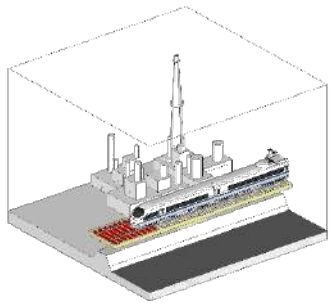
Innovative foundation

**Political support
& governance**
(Frank Moulaert, 2007;
Liz Gosme, 2005)

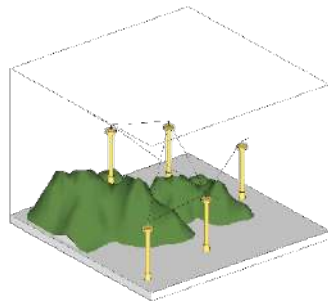
Accessibility
(Yuko Aoyama, 2011)

**Environment
& quality**

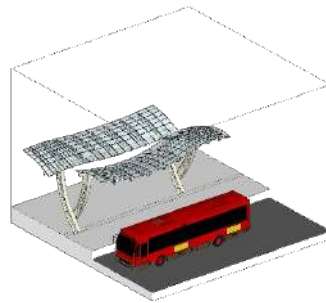
Principle 5 Good physical/ digital accessibility



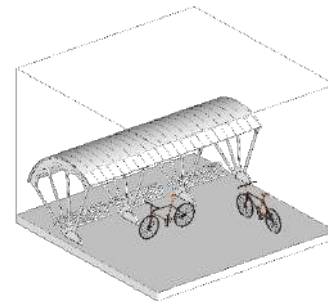
TOOL5.1 Inter-district railway



TOOL5.2 Informative network



TOOL5.3 Community bus



TOOL5.4 Shared bike station

Principles for re-using post-industrial sites

Innovative core

Creative group
(Richard Florida, 2003;
Andersson, A. E. 1985)

Innovative promoter

Knowledge & technology
(Keld Laursen, 2015)

**Enterprises
climate**
(Bob Jessop, 2016)

**Cultural activities
& tourism**
(Martin Rønningen, 2010;
Asheim B.T. & Gertier M.S. 2005)

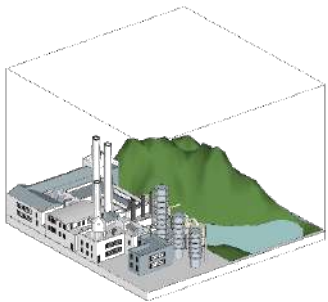
Innovative foundation

**Political support
& governance**
(Frank Moulaert, 2007;
Liz Gosme, 2005)

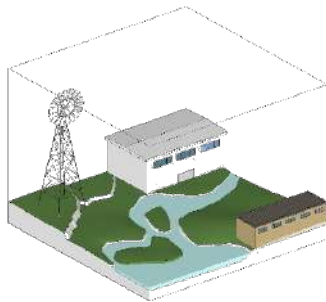
Accessibility
(Yuko Aoyama, 2011)

**Environment
quality**

Principle 6 Environmental restoration



TOOL6.1 Water management



TOOL6.2 Air-clean park



TOOL6.3 New energy hub



TOOL6.4 Landscape remediation station

Principles for re-using post-industrial sites

Innovative core

Creative group

(Richard Florida, 2003;
Andersson, A. E. 1985)

Innovative promoter

Knowledge & technology

(Keld Laursen, 2015)

Enterprises & climate

(Bob Jessop, 2016)

Cultural activities & tourism

(Martin Rønningen, 2010;
Asheim B.T., & Gertier M.S. 2005)

Innovative foundation

Political support & governance

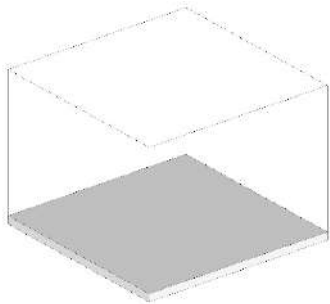
(Frank Moulaert, 2007;
Liz Gosme, 2005)

Accessibility

(Yuko Aoyama, 2011)

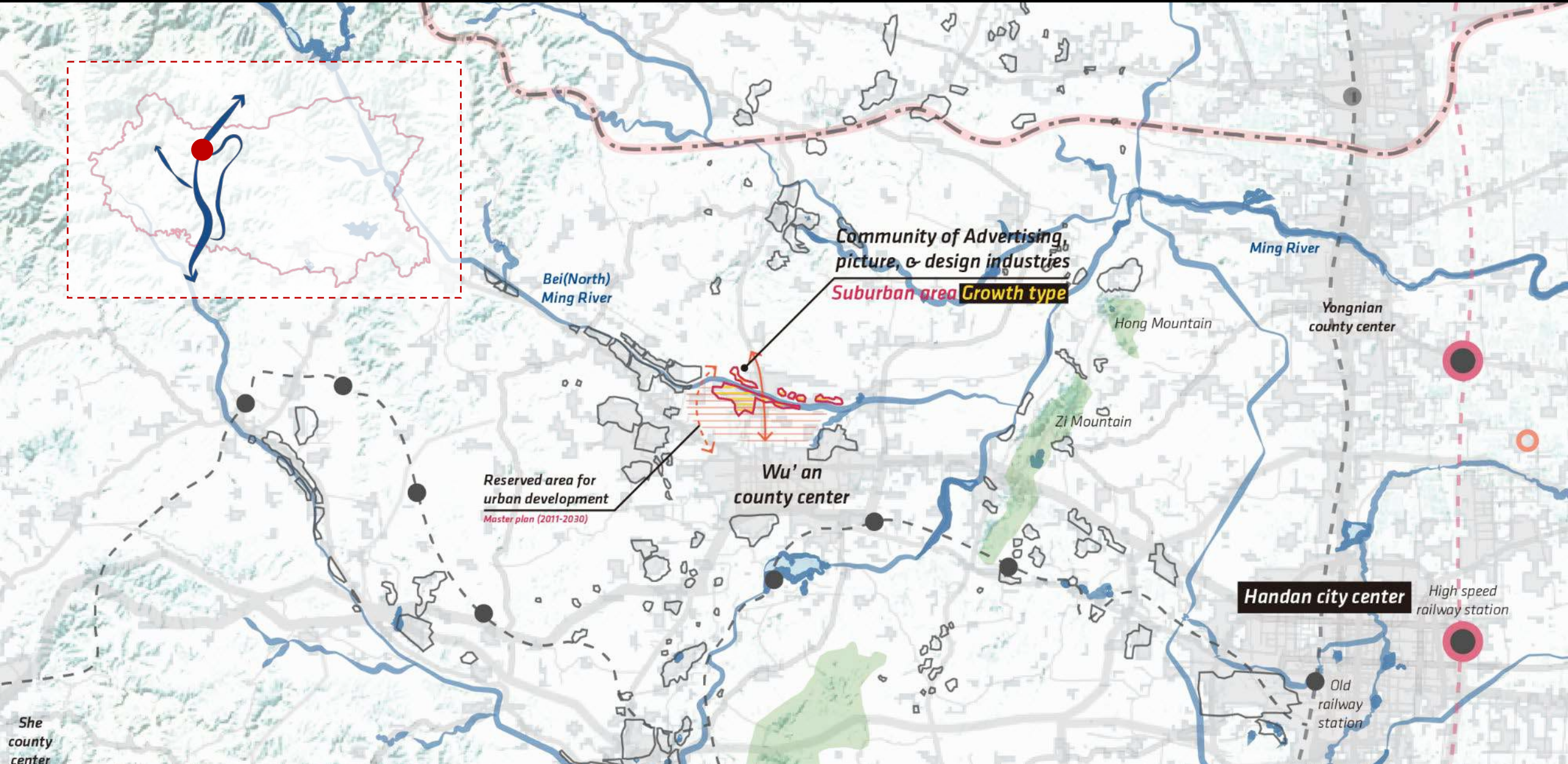
Environment & quality

Principle 7 Possibilities for the future adventure

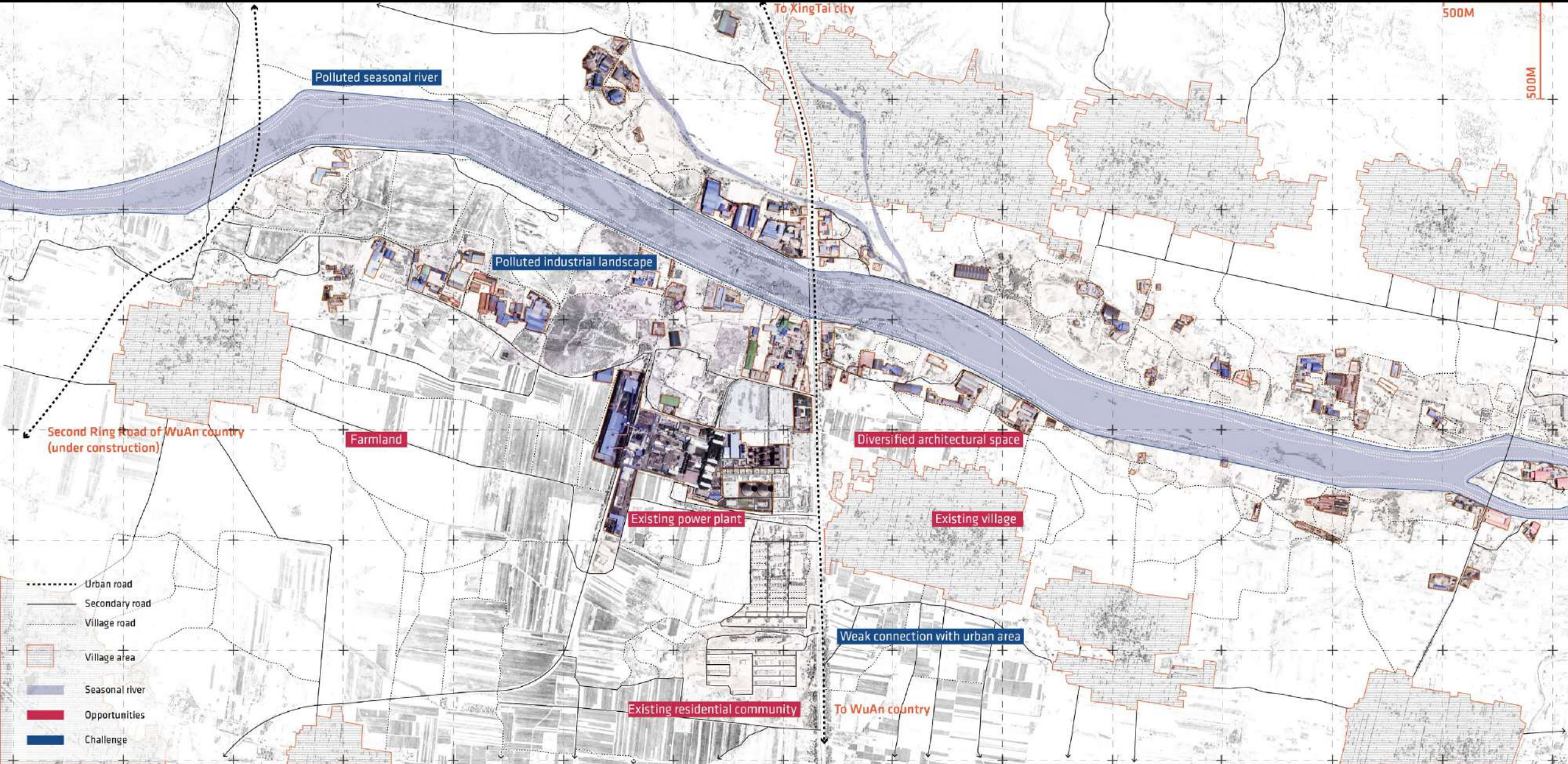


TOOL7.1 "X"

Designing local scale

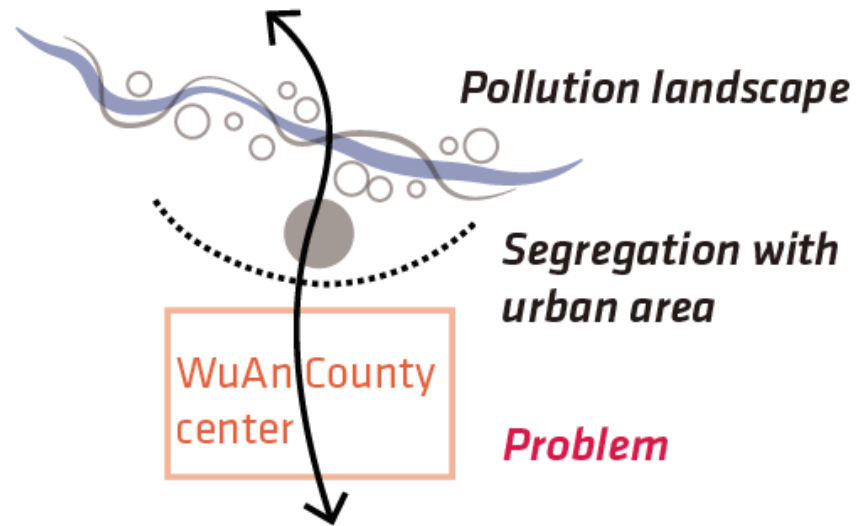


Designing local scale - Current situation



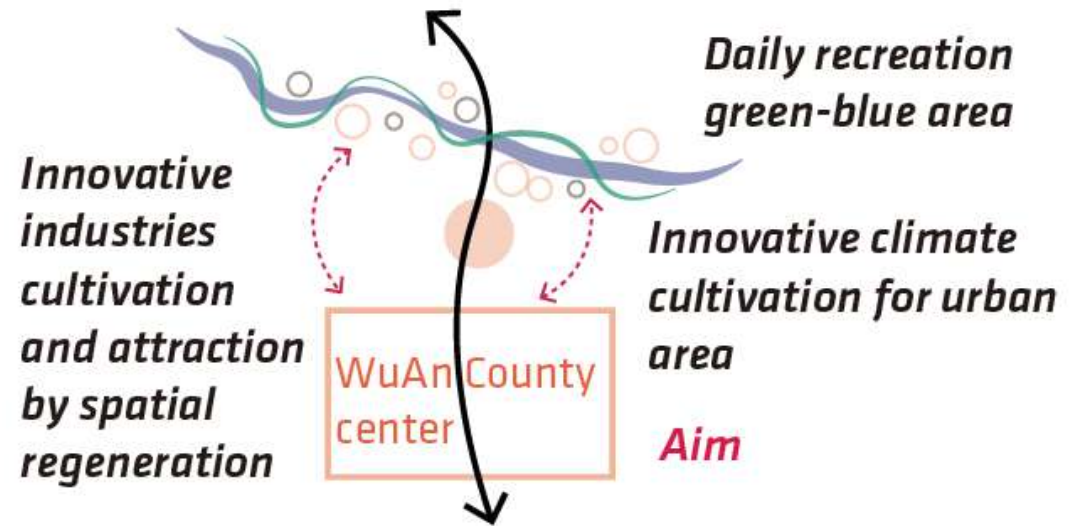
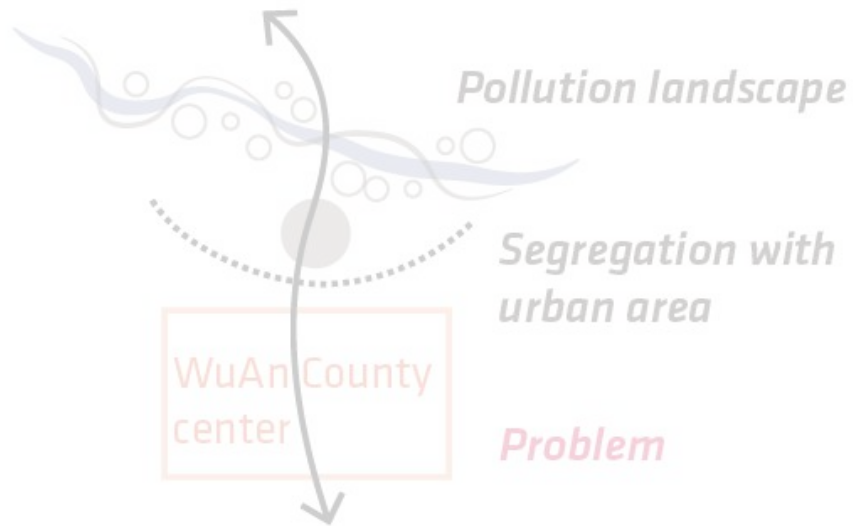
Designing local scale - Current situation

Problem

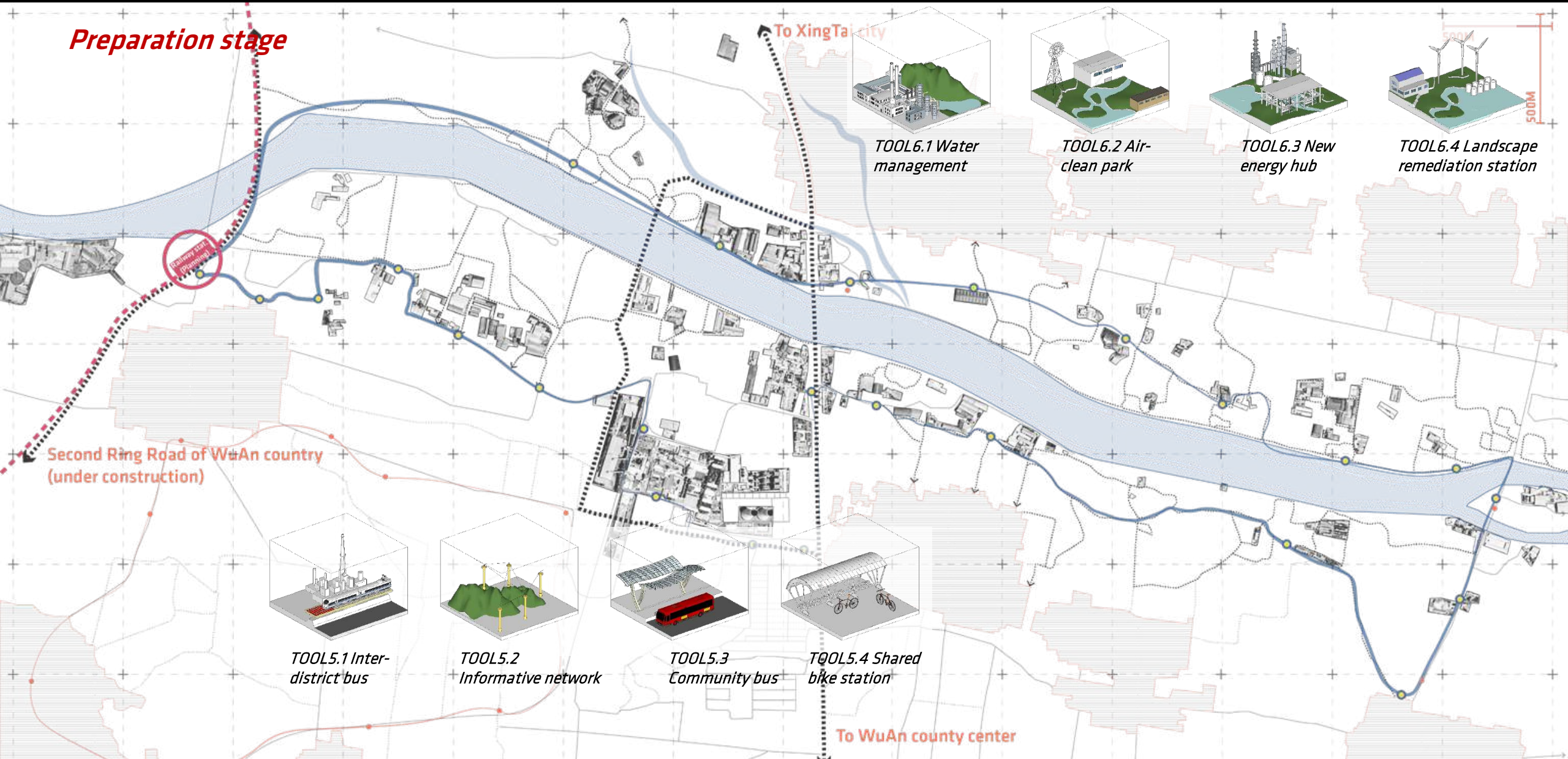


Designing local scale - Current situation

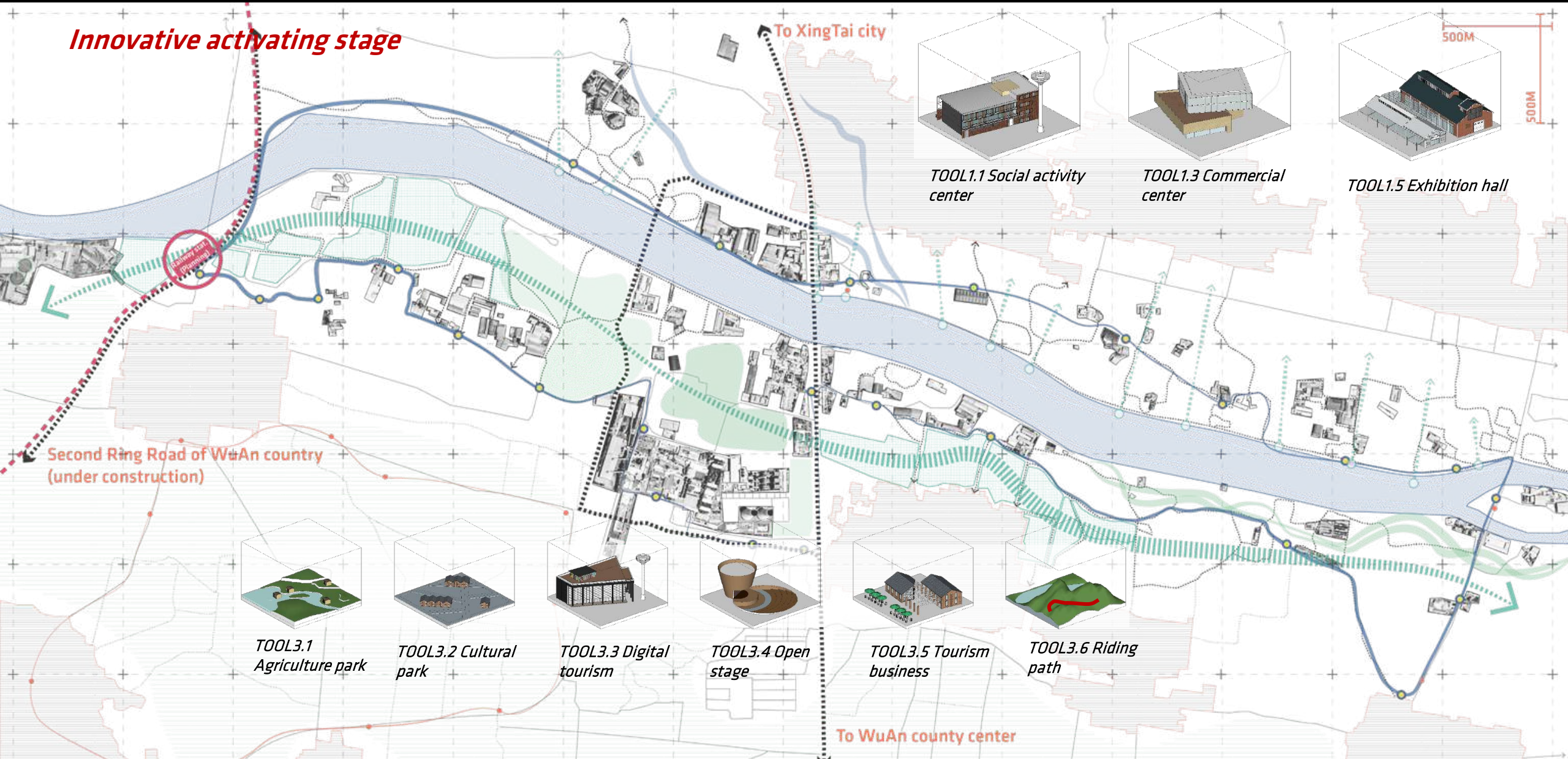
Problem and design aim



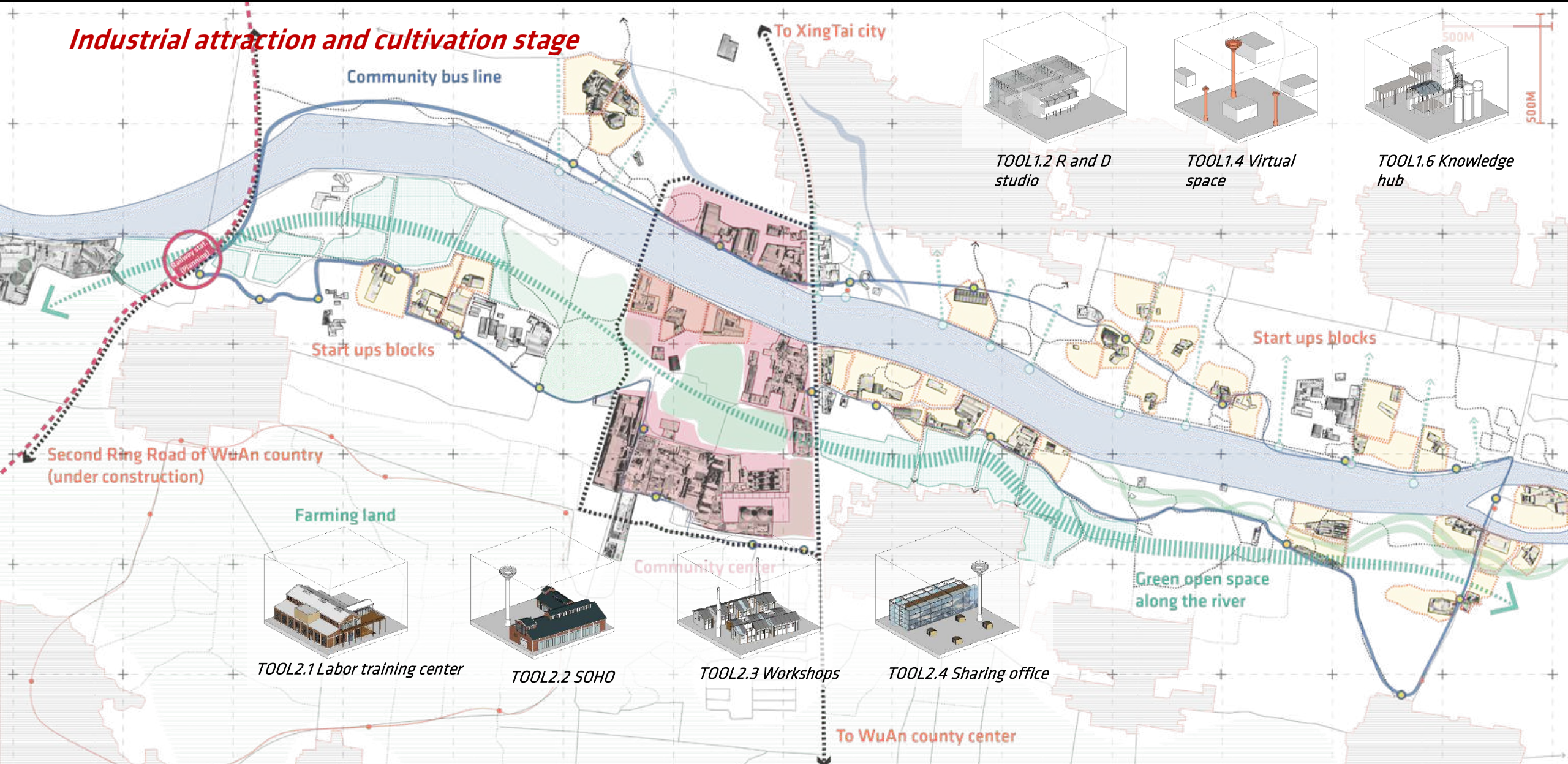
Designing tools implementation – accessibility and environmental restoration



Designing tools implementation – tourism and public space



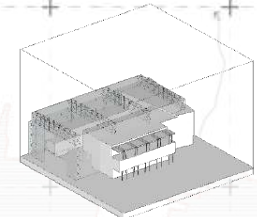
Designing tools implementation – industrial innovative space construction



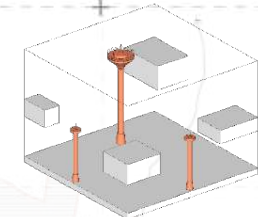
Industrial attraction and cultivation stage

Community bus line

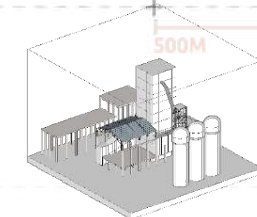
To XingTai city



TOOL1.2 R and D studio



TOOL1.4 Virtual space



TOOL1.6 Knowledge hub



Railway station (planning)

Start ups blocks

Start ups blocks

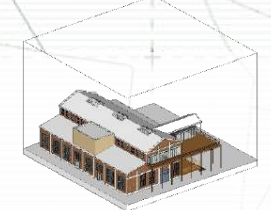
Second Ring Road of WuAn country (under construction)

Farming land

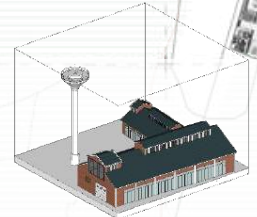
Green open space along the river

Community center

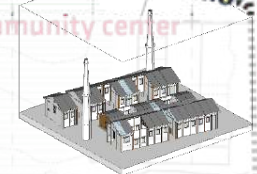
To WuAn county center



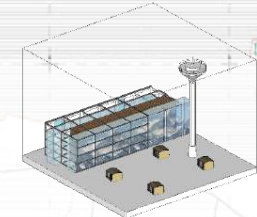
TOOL2.1 Labor training center



TOOL2.2 SOHO

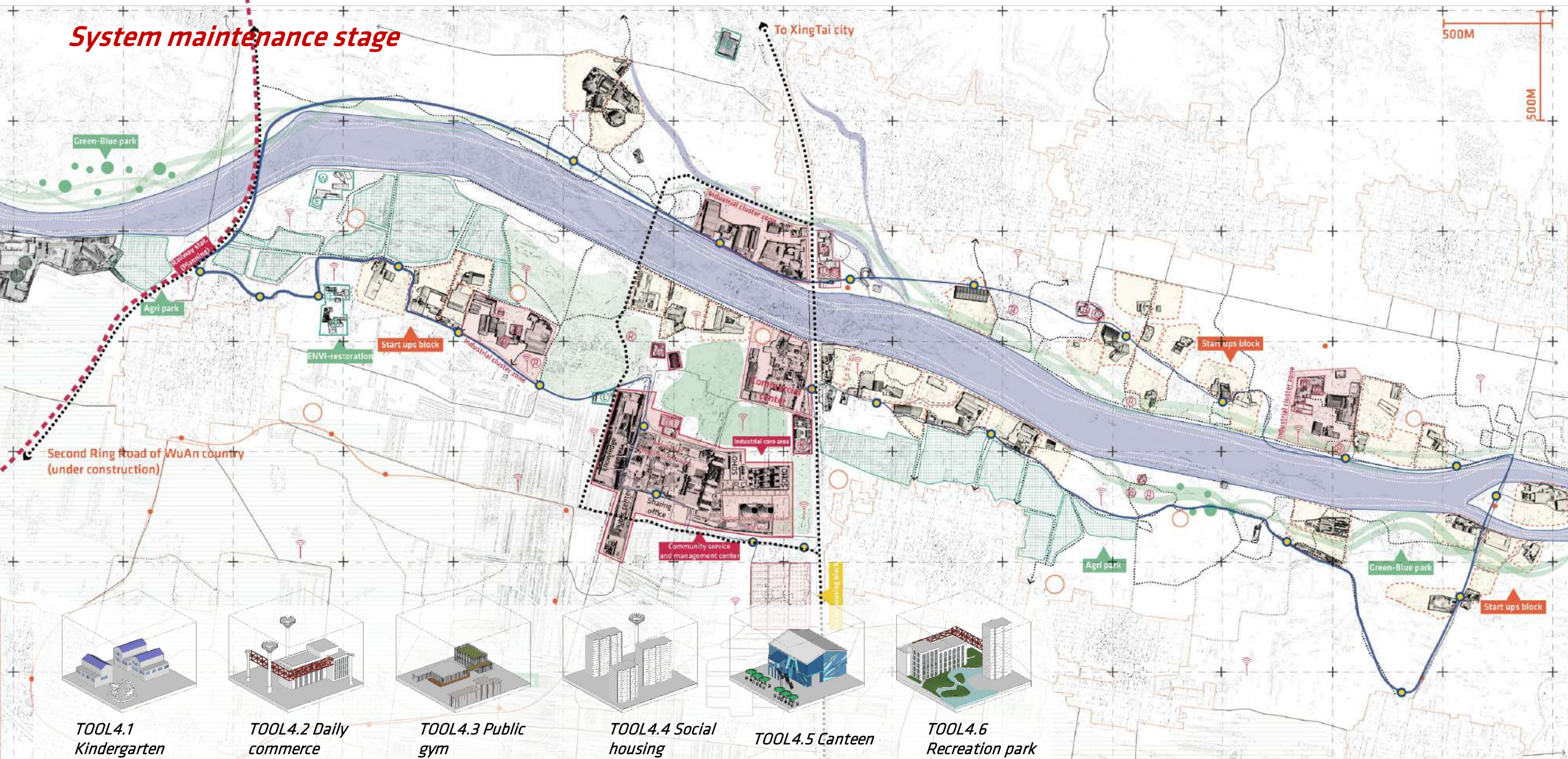


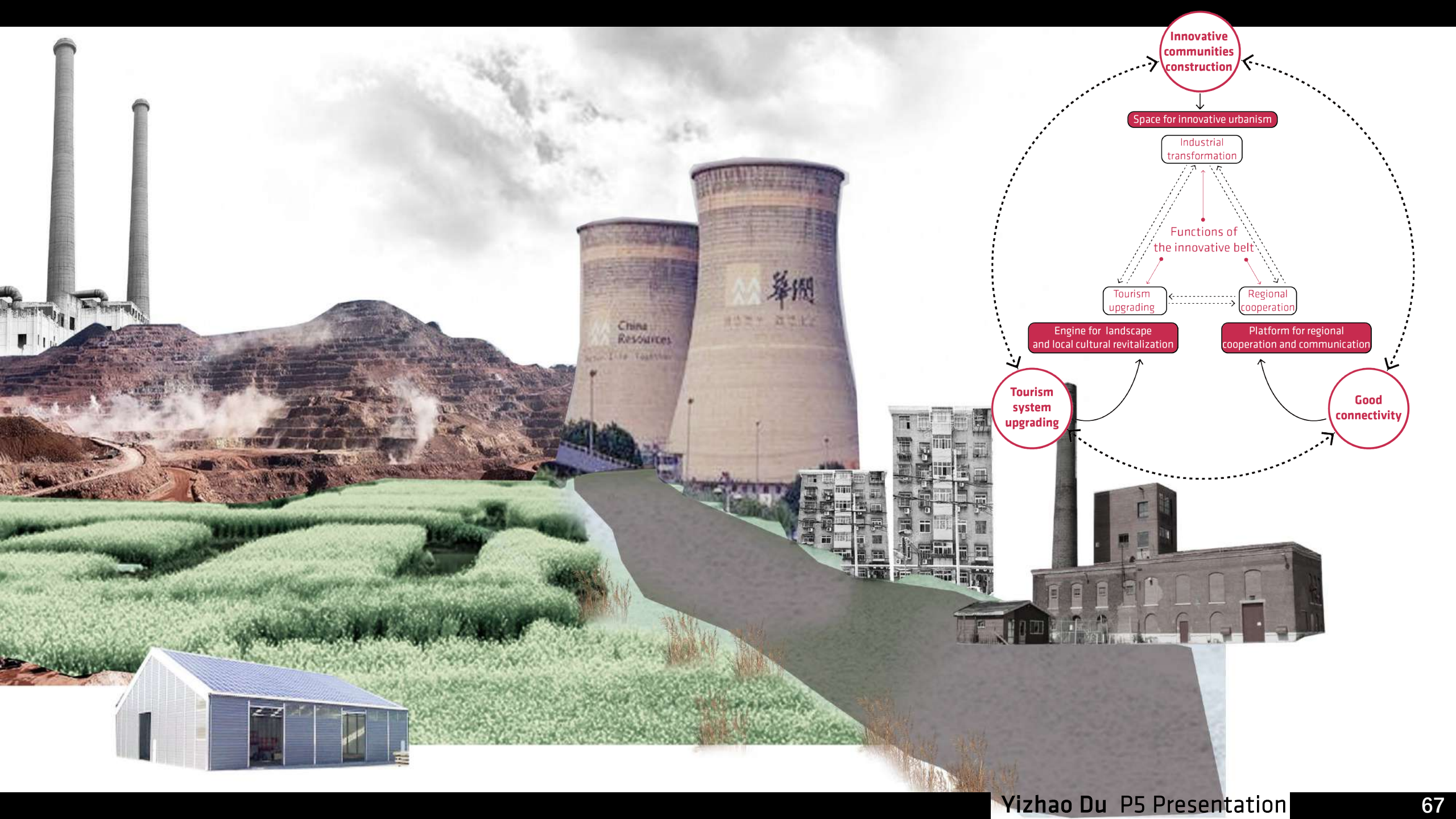
TOOL2.3 Workshops



TOOL2.4 Sharing office

Designing tools implementation – living facilities implementation





Innovative communities construction

Space for innovative urbanism

Industrial transformation

Functions of the innovative belt

Tourism upgrading

Regional cooperation

Engine for landscape and local cultural revitalization

Platform for regional cooperation and communication

Tourism system upgrading

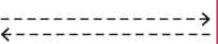
Good connectivity





6 Conclusion and reflection

Dilemma of the transition of resource-based industrial cities



Secondary cities are being spatial marginalized in the mega-region



Secondary resource based industrial cities: HanDan

Spatial regeneration



Innovative urbanism

Dilemma of the transition of resource-based industrial cities

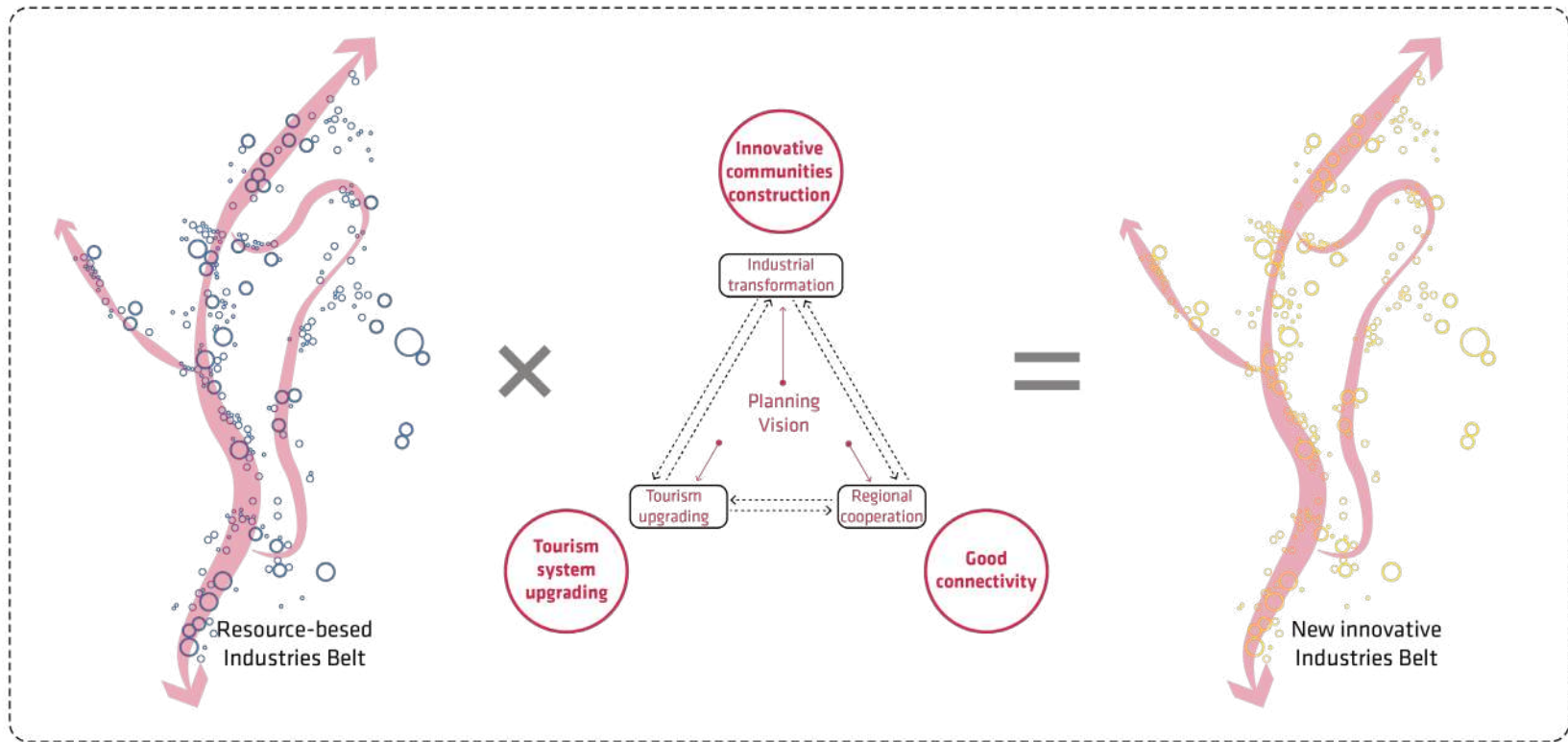
Secondary cities are being spatially marginalized in the mega-region

Secondary resource based industrial cities: HanDan

Spatial regeneration



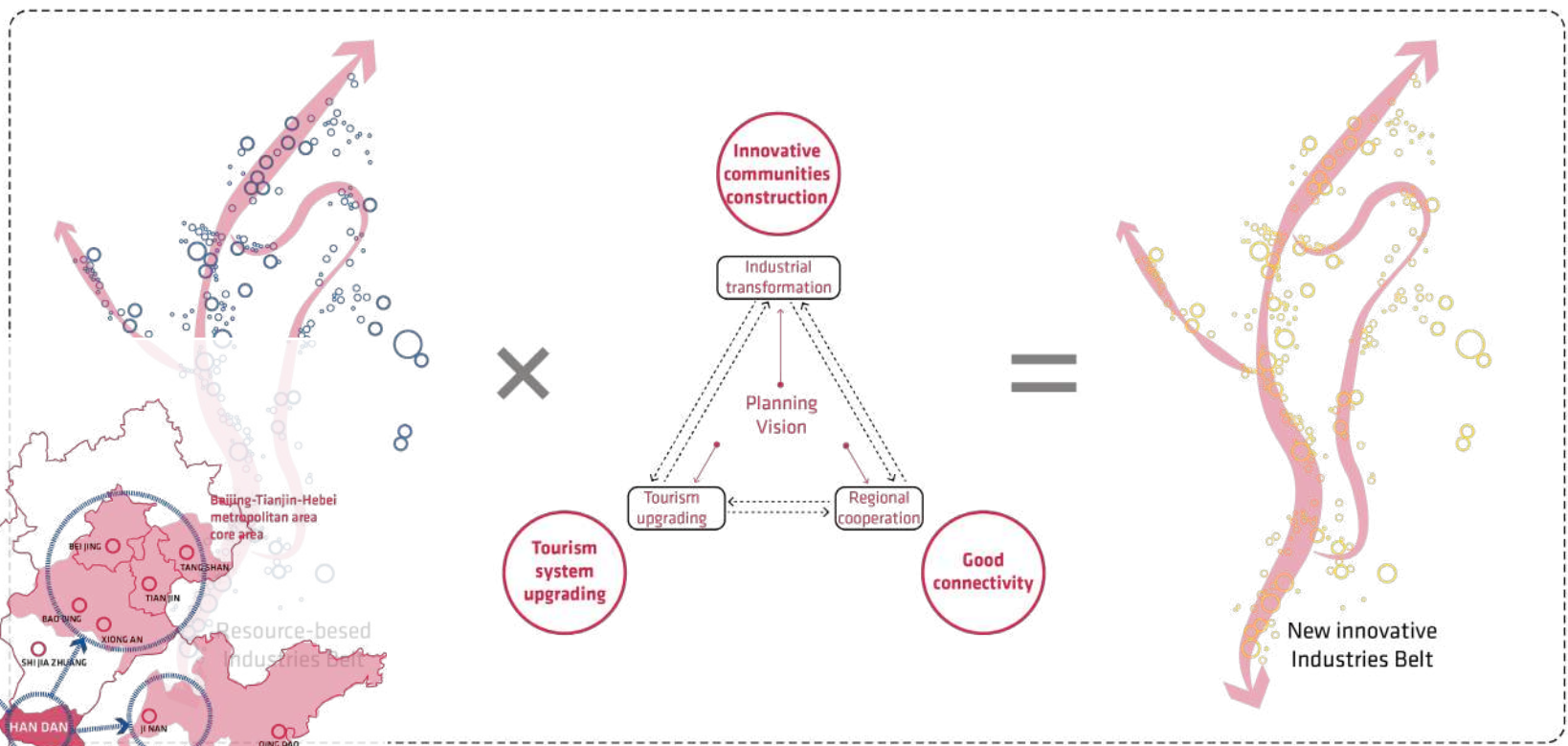
Innovative urbanism



Dilemma of the transition of resource-based industrial cities ↔ Secondary cities are being spatially marginalized in the mega-region

Secondary resource based industrial cities: HanDan

Spatial regeneration × Innovative urbanism

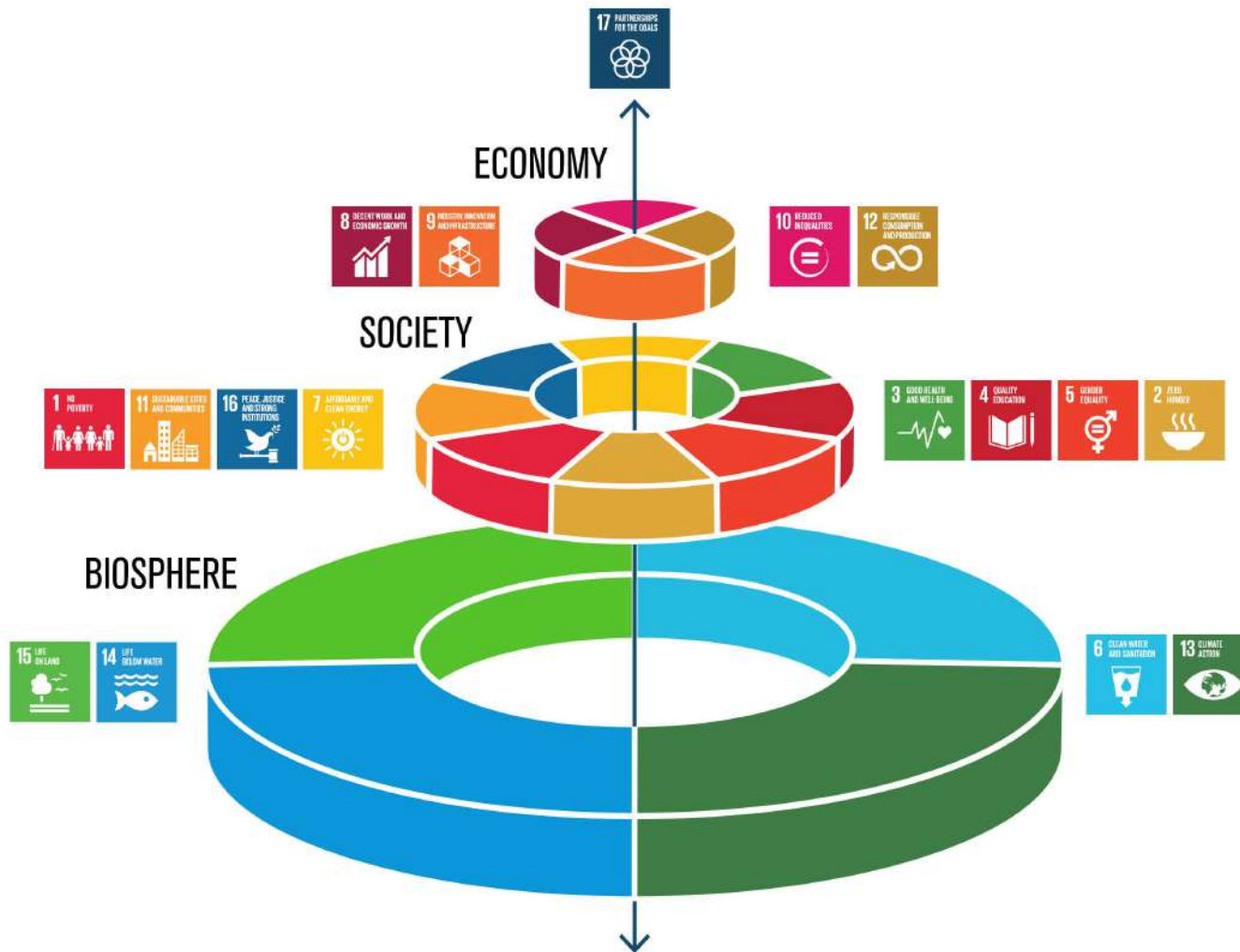


- Space for innovative urbanism
- Platform for regional cooperation and communication
- Engine for landscape and local cultural revitalization

Transformation and integration

SUSTAINABLE DEVELOPMENT GOALS

Contributions to Agenda 2030 - Azote Images for Stockholm Resilience Centre



“The SDG process needs to address and navigate the trade-offs between being ambitious and achievable”

By Norström, A. V., A. Dannenberg, G. McCarney, M. Milkoreit, F. Diekert, G. Engström, R. Fishman, J. Gars, 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>



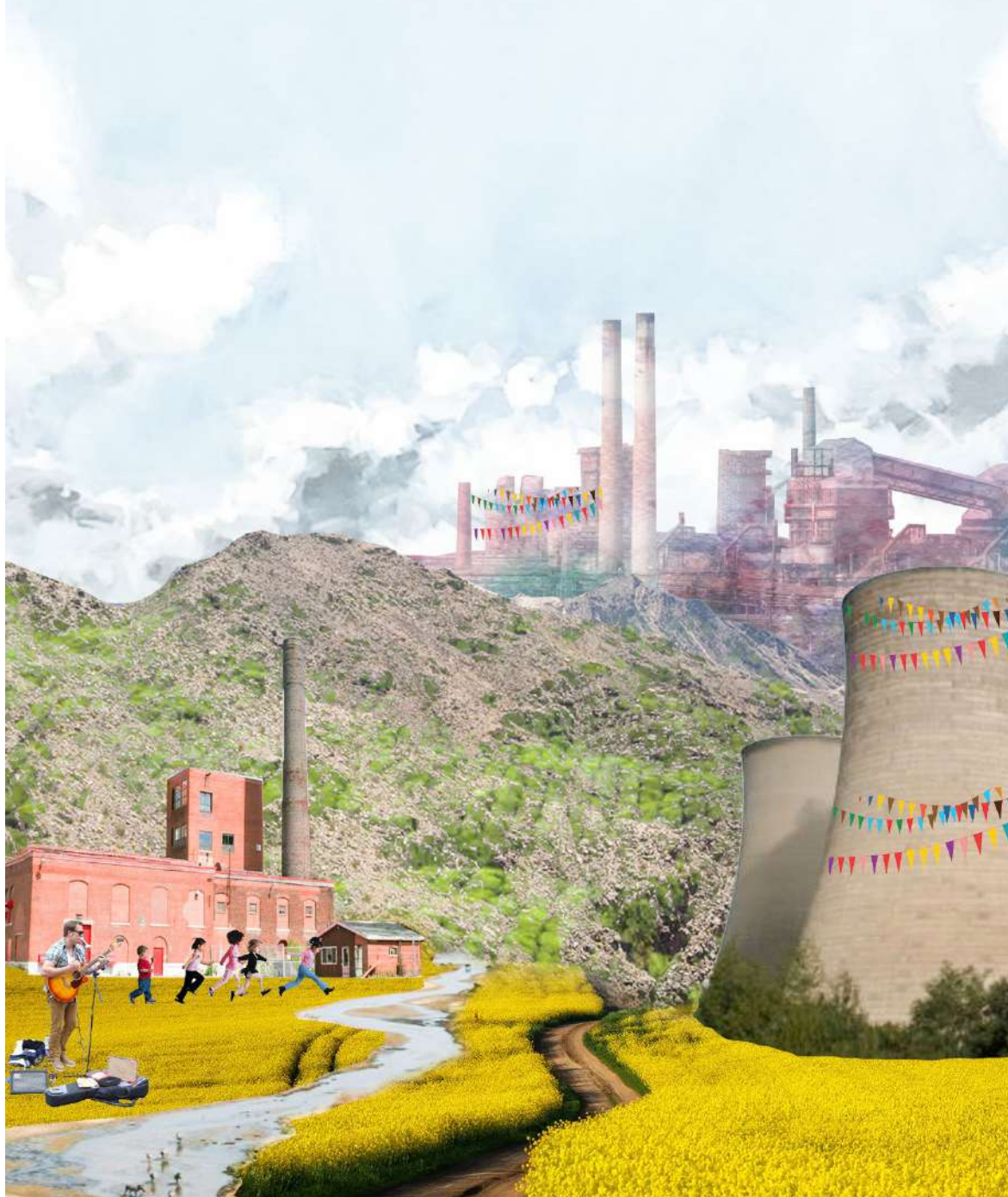
SUSTAINABLE DEVELOPMENT GOALS

Tourism
upgrading

Industrial
transfor-
mation

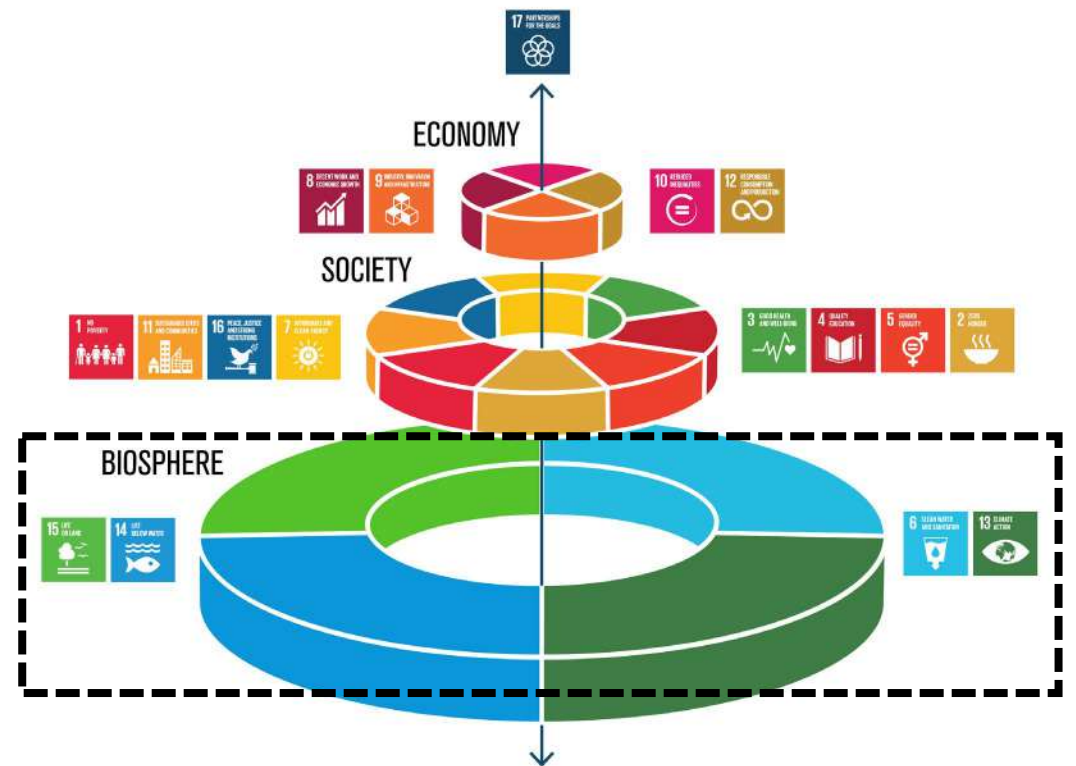
Regional
integration

- **The goal between ambitious and achievable**
- **Able to fail**



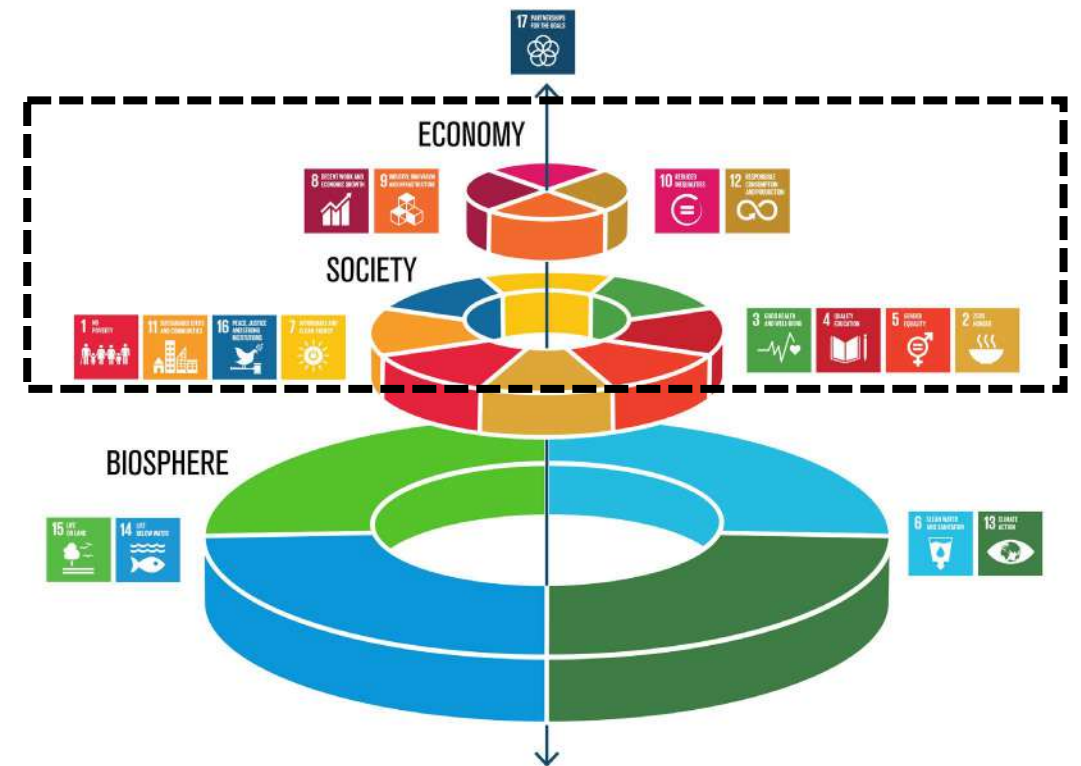
Scenario 1 - environment

Tourism upgrading



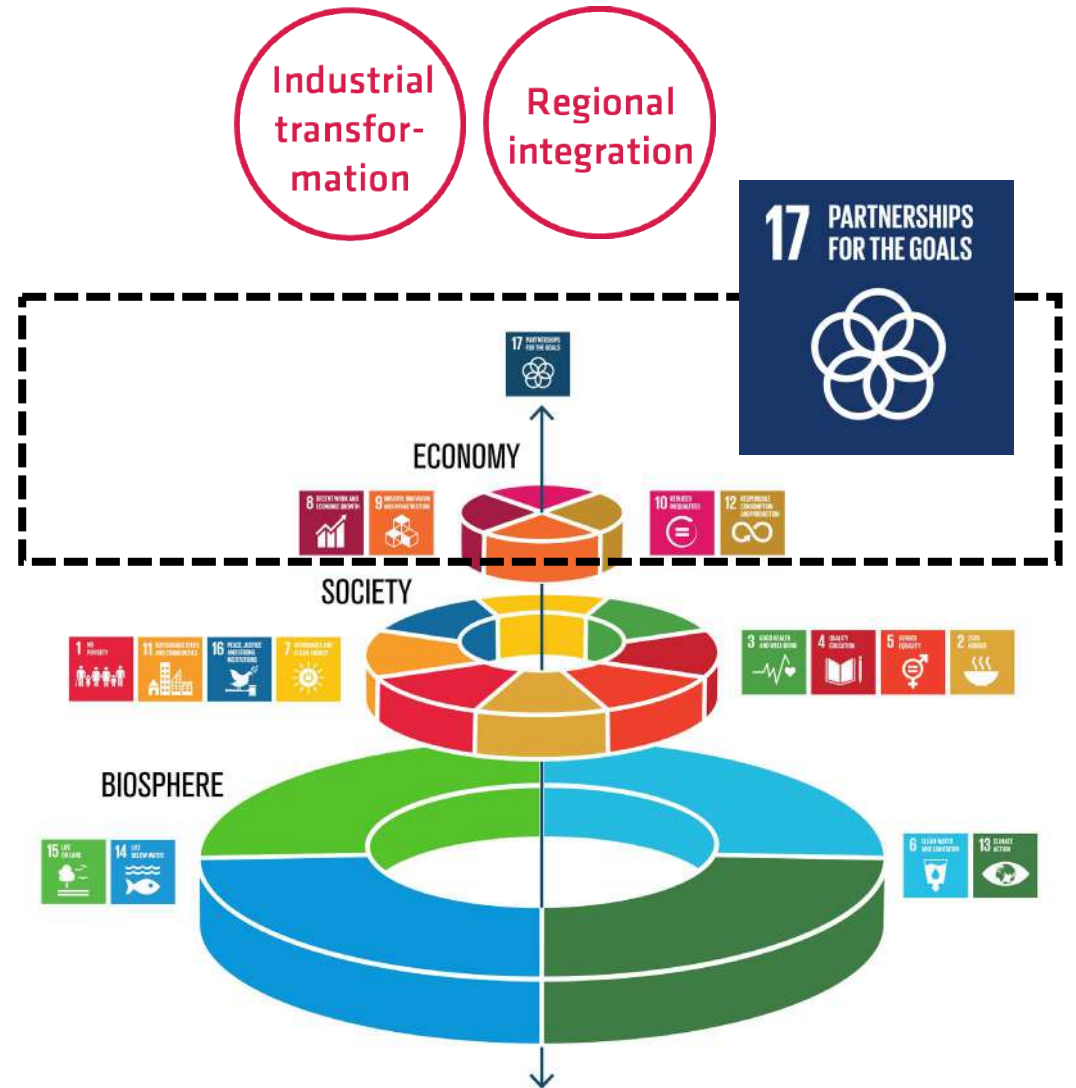


Scenario 2 – social and economy



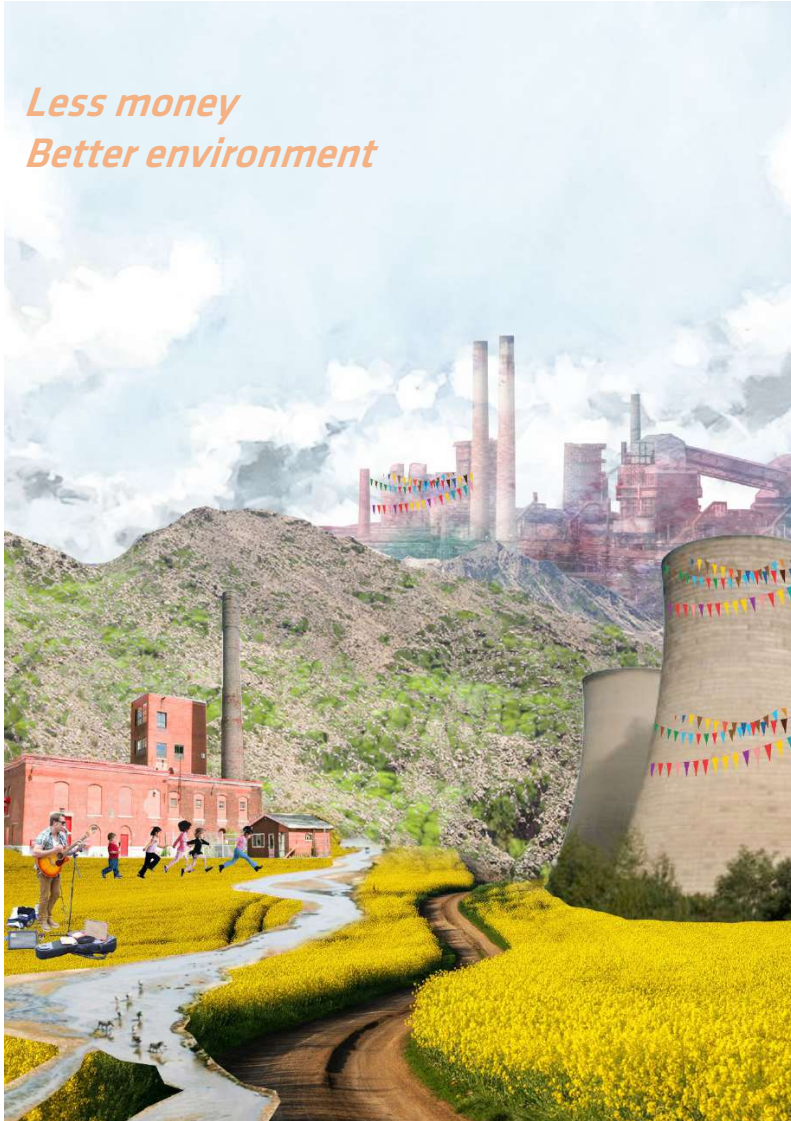


Scenario 3 – economy and cooperation

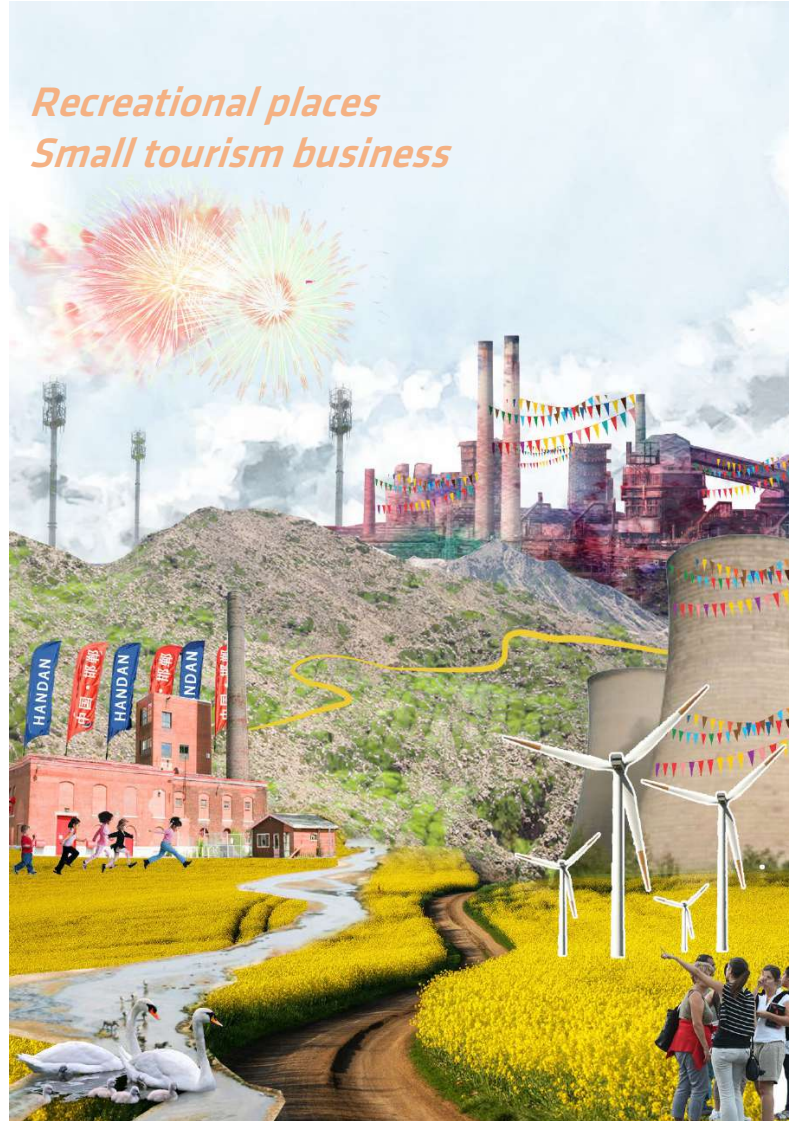


Able to fail? – planning flexibility

*Less money
Better environment*



*Recreational places
Small tourism business*



*Regional center for
Innovative industries*



Thank you

Yizhao Du P5 Presentation 24th June
Supervised by Dr. Roberto Rocco & Dr. Dipl.-Ing. Alex Wandl

Secondary resource-based city in China, Photo by J. Xu, 2021