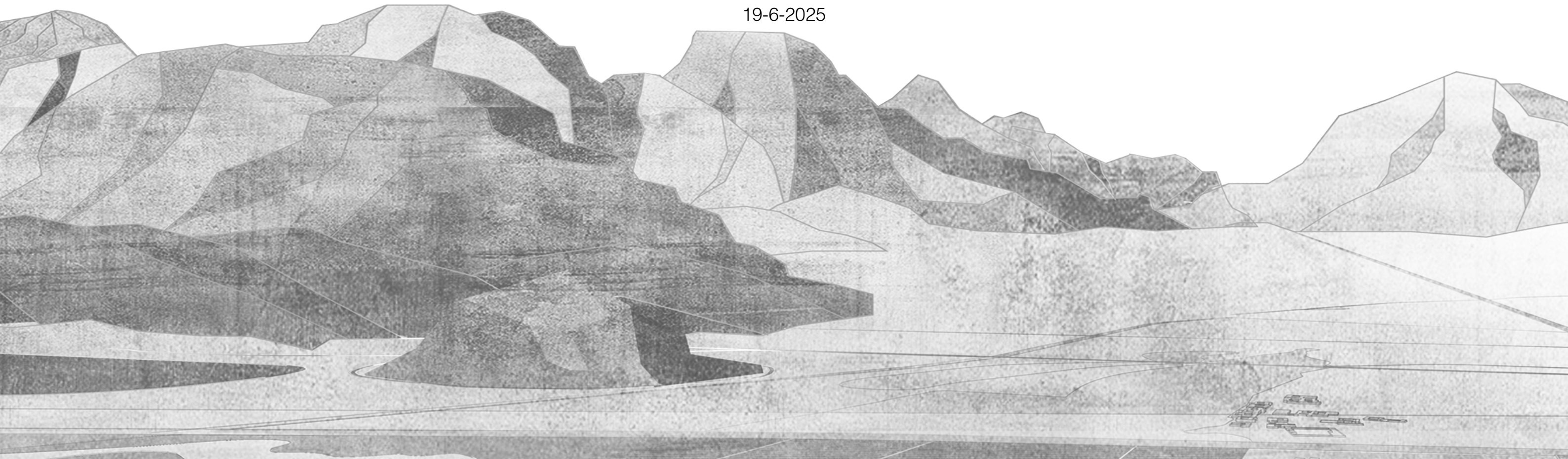


"Those Who Leave and Those Who Stay": Re-imagining a Sustainable Future for Jinchang, a Resource-Based City in China

P5 presentation

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Delft University of Technology

19-6-2025



1

The Problem

2

Methodology

3

Exposing the
Challenges

4

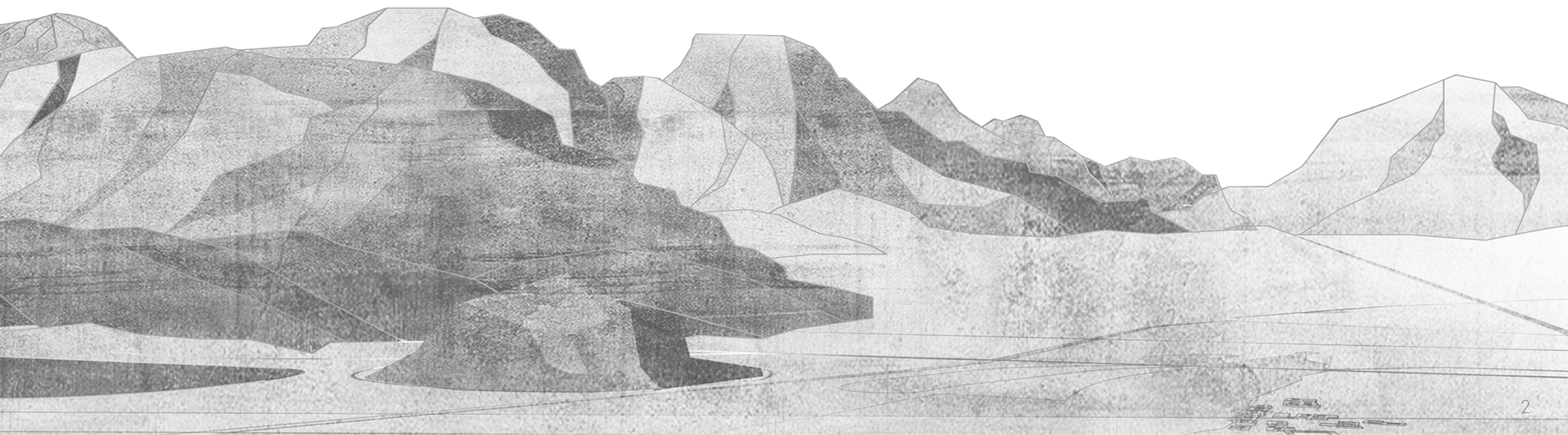
Scenario
Planning

5

Design
Implementation

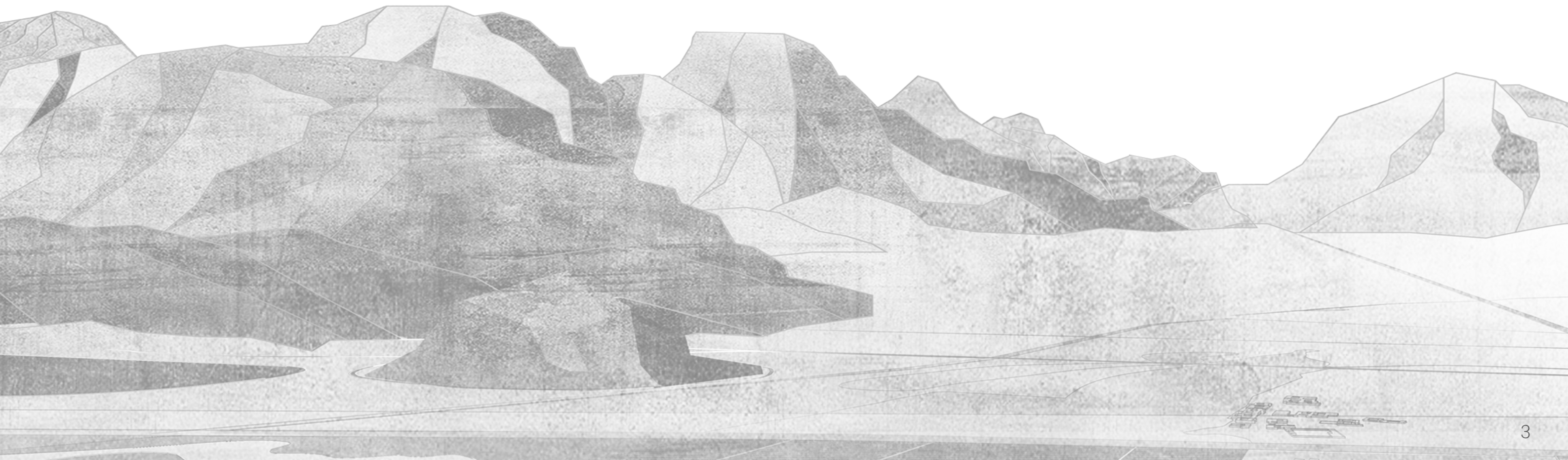
6

Conclusion and
Reflection



1 The Problem

- 1.1 Framing the Research: Based on Personal Observation
- 1.2 The Living Environment in Desert City
- 1.3 The Development and Transformation of Industrial Cities
- 1.4 The Hardship of Reviving a City After Industrial Decline
- 1.5 Territorial Spatial Planning Reform
- 1.6 Problem Statement
- 1.7 Research Question



WHY JINCHANG?

Peripheral city in Northwestern China

"5th tier city"

"The Capital of Nickel"

"Home to the company ranked 300th
in The Fortune Global 500"

Jinchang city



1.1 Framing the Research: Based on Personal Observation

The living environment in Desert city

The development and transformation of industrial cities

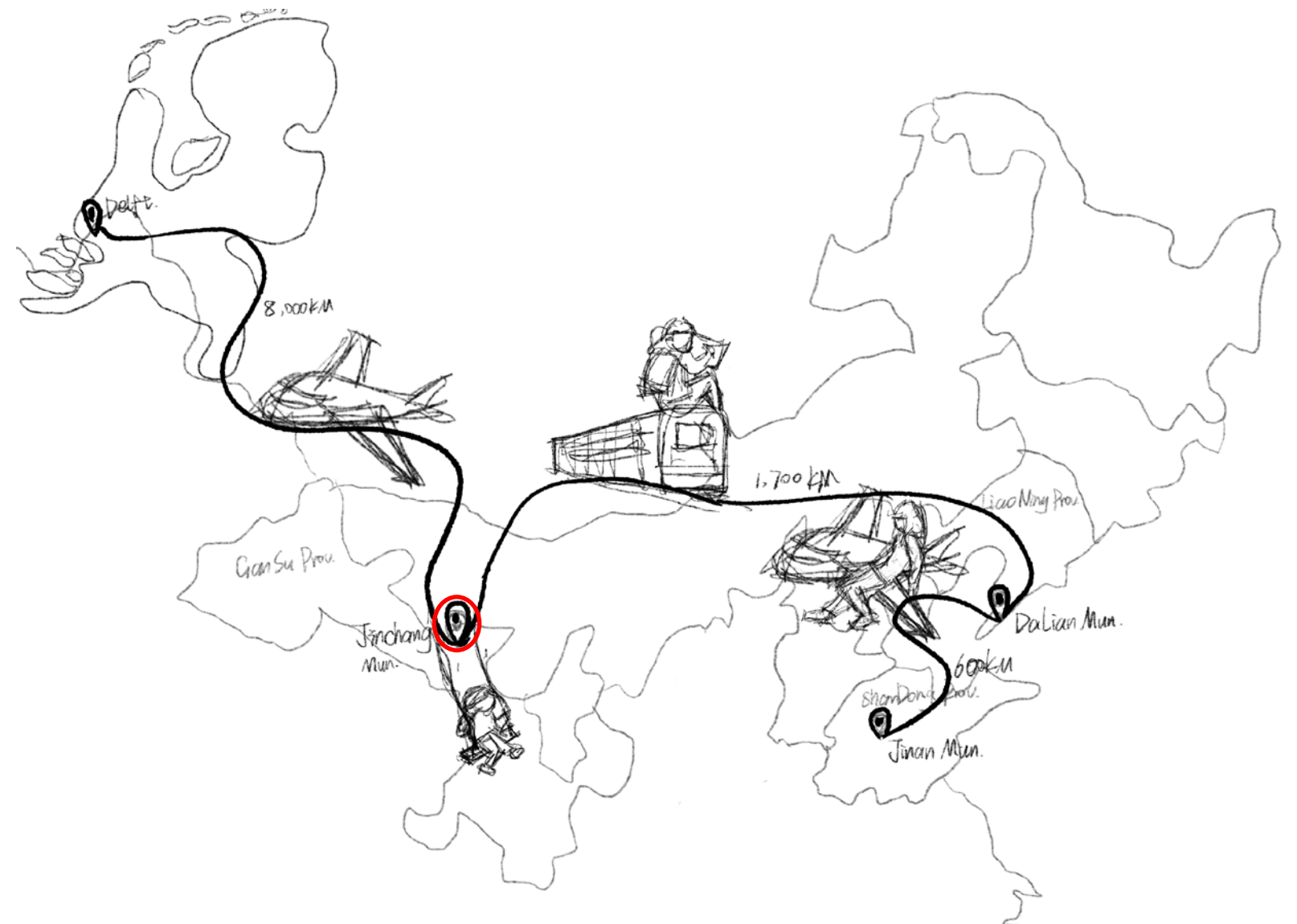


Figure. Personal Journey
(Source: Drawn by the author)

1.2 The living environment in Desert city

Jinchang: Desert-edge city



Figure. Geographical Location of Jinchang City
(Source: Drawn by the author)

1.2 The living environment in Desert city

Shiyang River basin ecological degradation

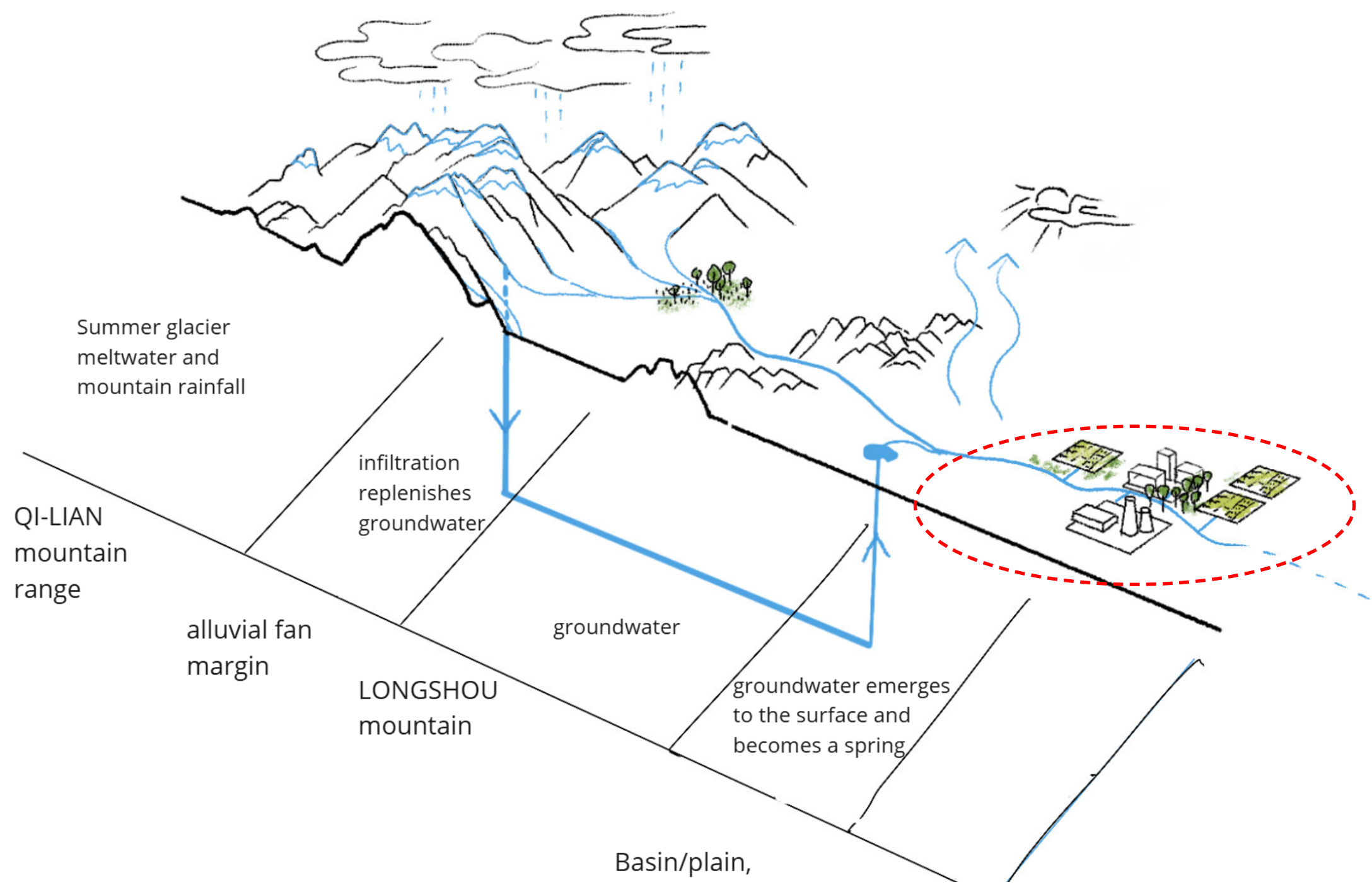


Figure: Natural water cycle of the Shiyang river basin
(Source: Drawn by the author)

Framing the Research: Based on Personal Observation

The living environment in Desert city

The development and transformation of industrial cities



Figure. Personal Journey
(Source: Drawn by the author)

1.3 The development and transformation of industrial cities

Rapid Urban Expansion Driven by Mining Operations

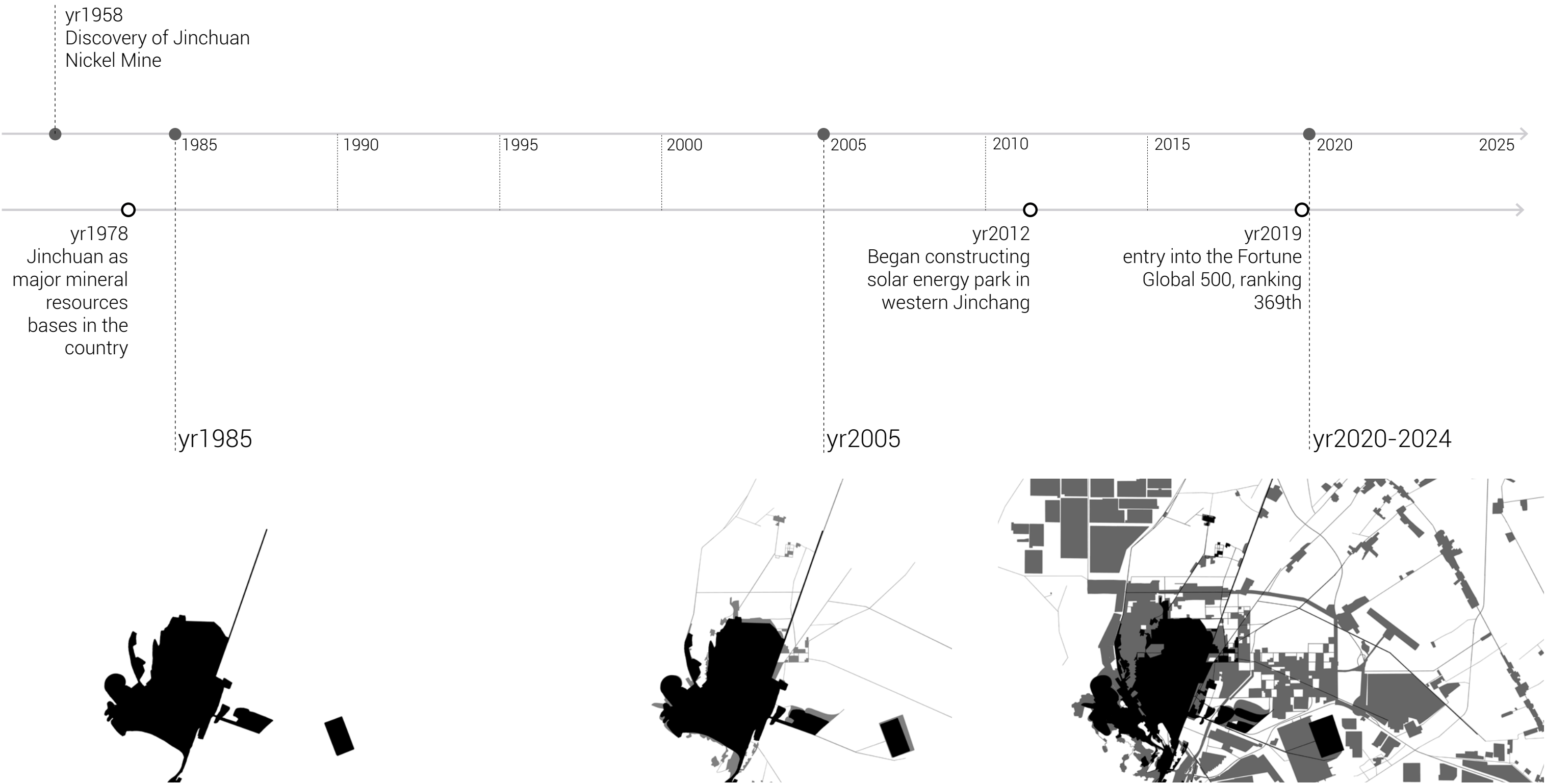


Figure. Historical development of Jinchang City and Jinchuan Group Company
(Source: Drawn by the author)

1.3 The development and transformation of industrial cities

Industrial Encirclement and Spatial Segregation

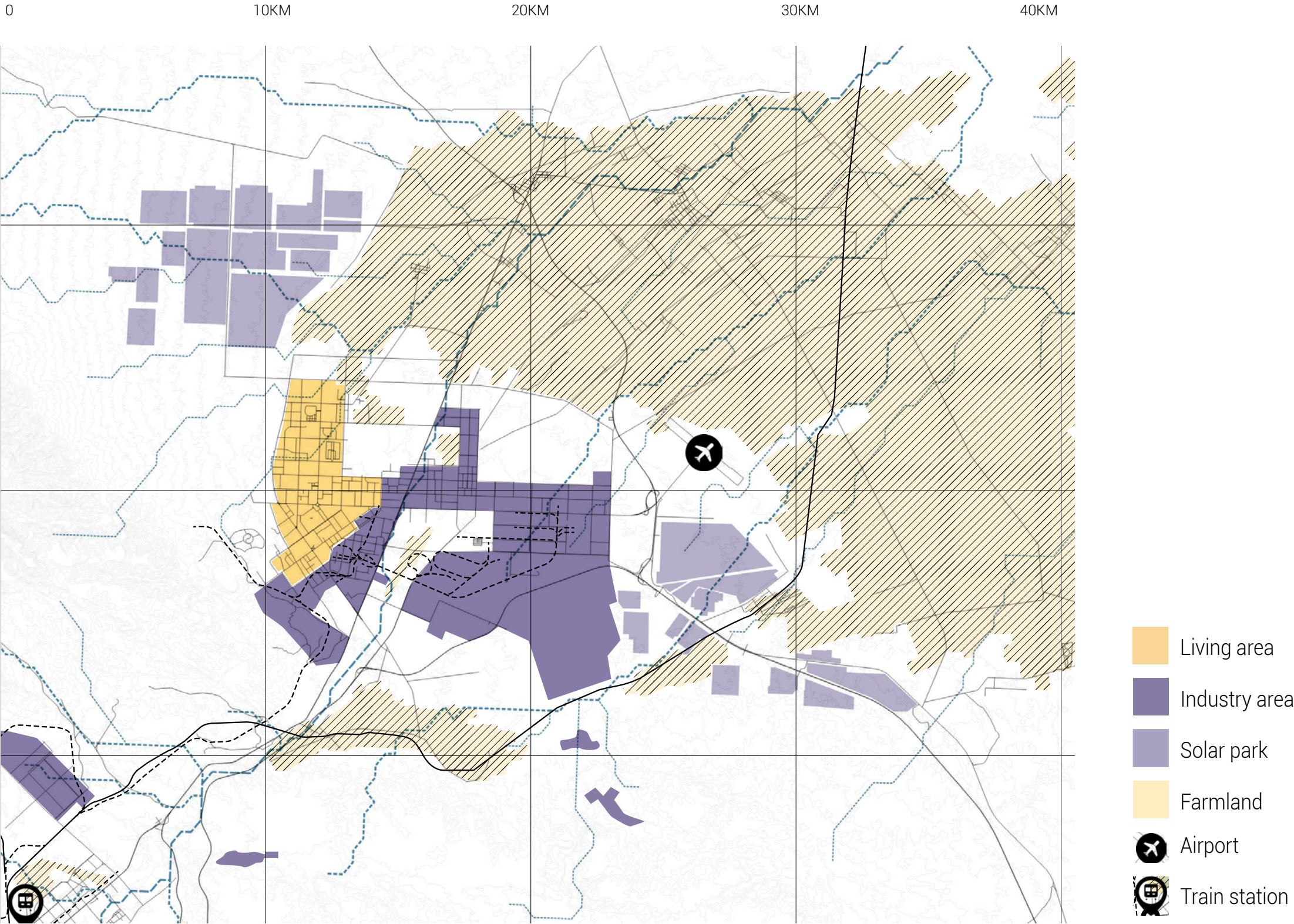


Figure. Industrial Encirclement and Spatial Segregation map
(Source: Drawn by the author)

1.3 The development and transformation of industrial cities

Mineral Resource-Based Economy, Dominance of Leading enterprise

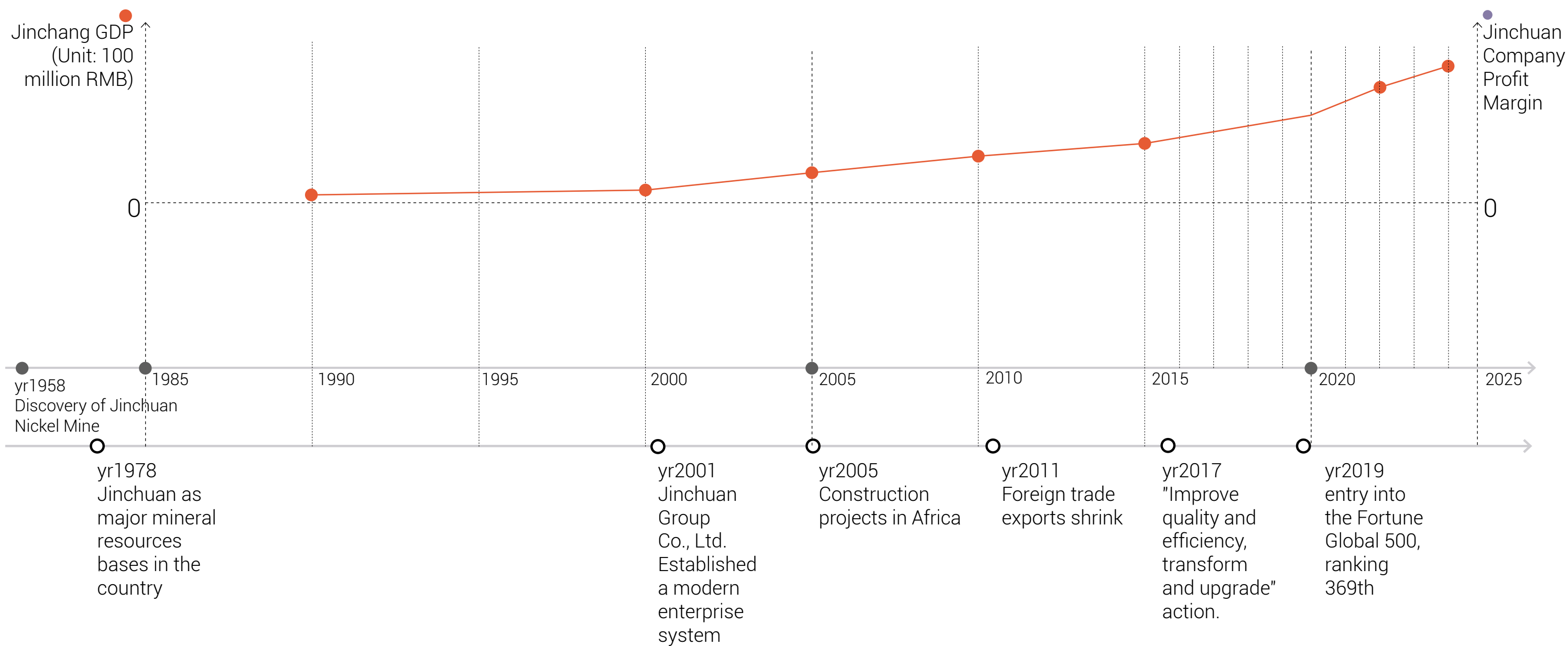
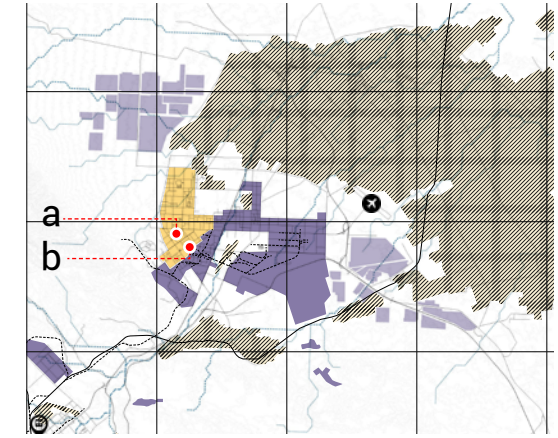


Figure. Historical development of Jinchang City and Jinchuan Group Company
(Source: Drawn by the author)

1.3 The development and transformation of industrial cities

Social-spatial segregation: Living environment difference



a. Old residential areas built by Leading enterprise



b. Peripheral communities next to industrial zones

Figure: Jinchang City Village and Factory Photography
(Sources: picture on the left, by author.
picture on the right, Reprinted from https://k.sina.cn/article_1650111241_625ab30902700tdch.html)

1.3 The development and transformation of industrial cities

Mineral Resource-Based Economy, Dominance of Leading enterprise

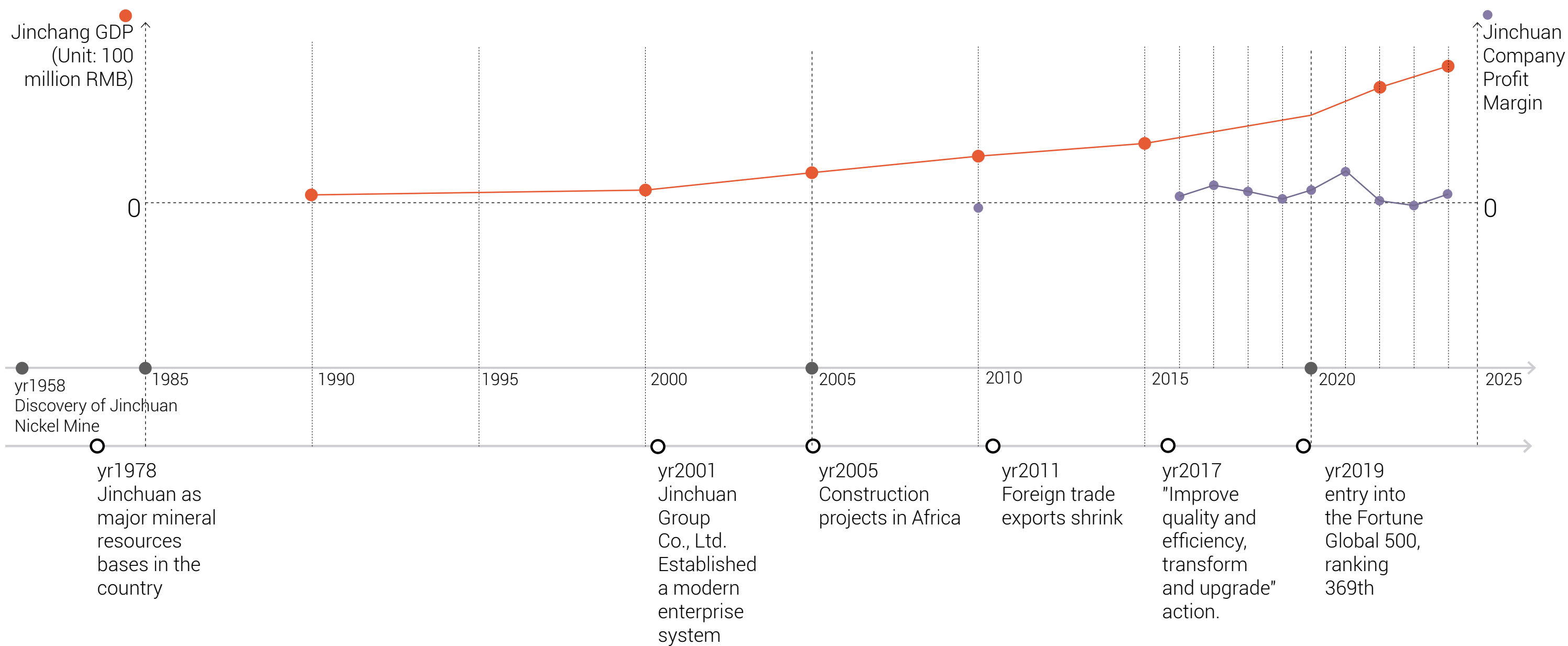


Figure. Historical development of Jinchang City and Jinchuan Group Company
(Source: Drawn by the author)

1.3 The development and transformation of industrial cities

Population outflow

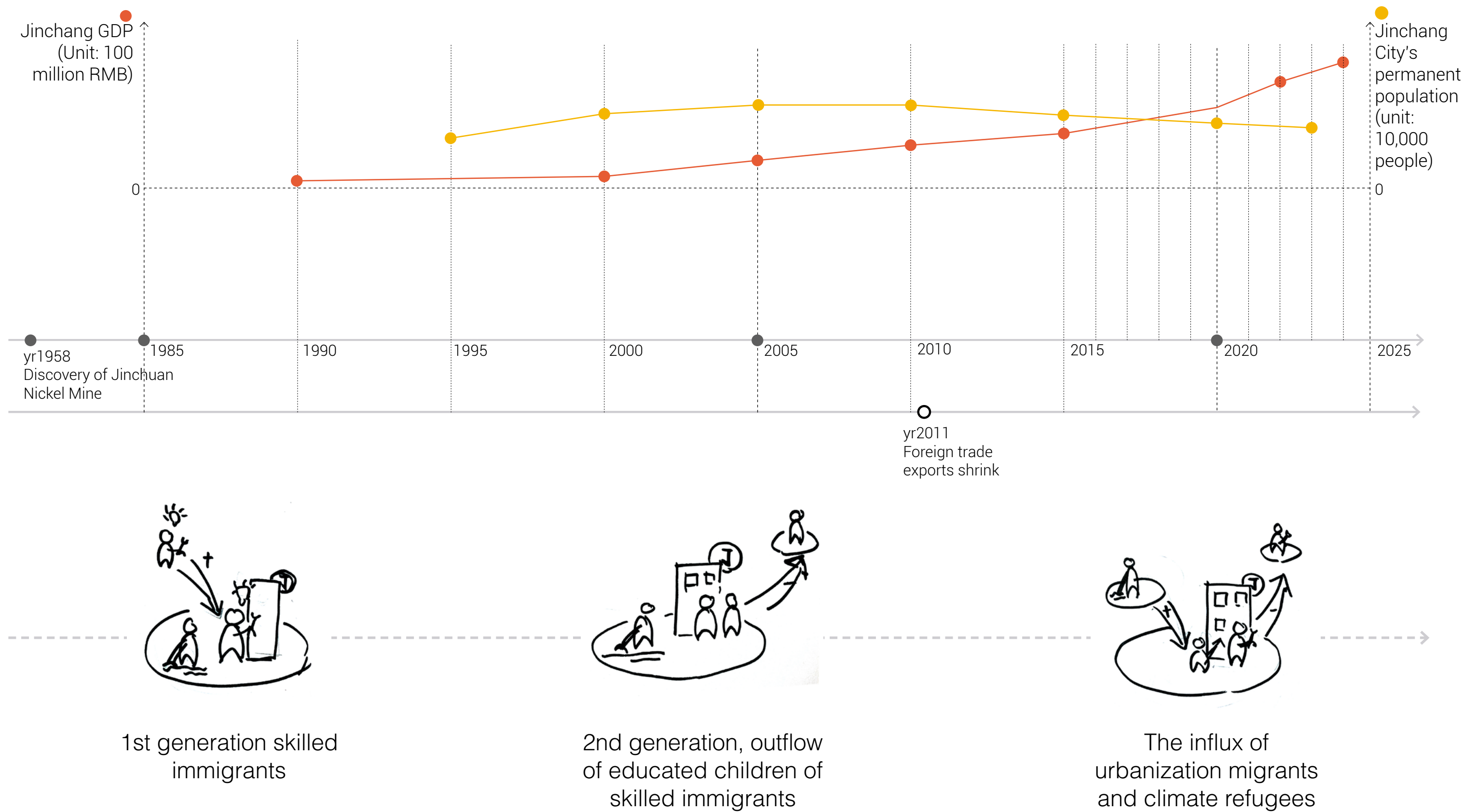


Figure. Historical development of Jinchang City and Jinchuan Group Company
(Source: Drawn by the author)

Framing the Research: Based on Personal Observation

The living environment in Desert city

The development and transformation of industrial cities

The Hardship of Reviving a City After Industrial Decline

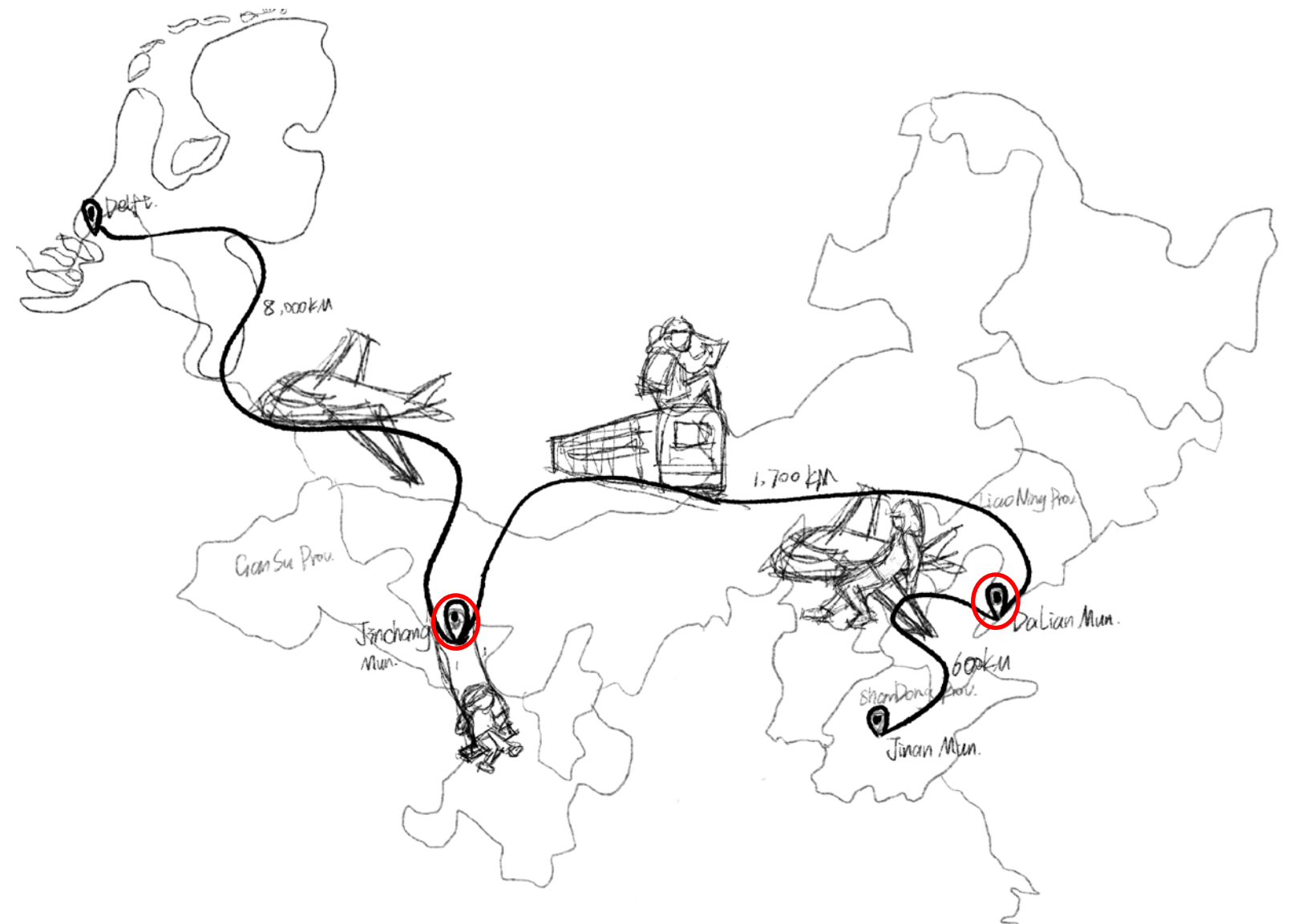


Figure. Personal Journey
(Source: Drawn by the author)

1.4 The Hardship of Reviving a City After Industrial Decline

Beyond Jinchang: A Shared Dilemma of Resource-Based Cities

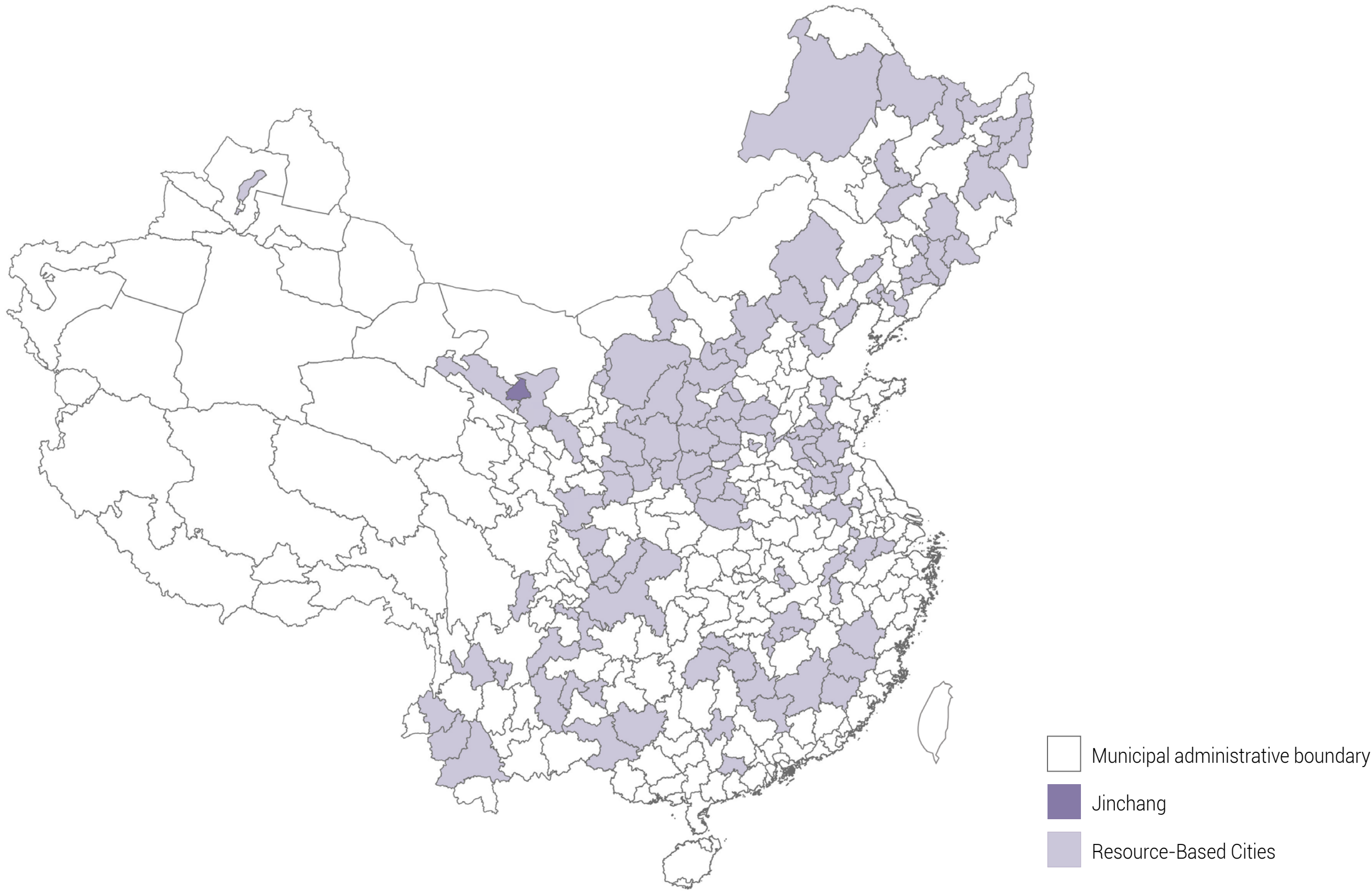


Figure: Distribution of 117 resource-based cities in China
(Source: Adapted from China's Resource-Based Cities and Sustainable Development Planning (2013–2020))

1.4 The Hardship of Reviving a City After Industrial Decline

A Warning for Jinchang



What if we don't change?



Any alternative local-based pathway?

1.4 The Hardship of Reviving a City After Industrial Decline

Transformation Pathways for Resource-Dependent Cities

Transition Mode	Industrial Substitution Pathway	Industrial Chain Extension and Hybrid Transition Pathway	Smart Shrinkage Pathway
Resource Development Stage	decline phase	mature phase/ from maturity to decline stage	decline stage
Main Actor	government-led	market-led / government-business collaboration	socially driven
How?	complete detachment from resource dependency and development of new leading industries	alternative industries and local resource-based value chains	focusing on proactive urban downsizing and enhancing urban space quality and public service facilities.
Example	Kitakyushu, Japan	Ruhr Area, Germany	Leipzig, Germany
	Coal Mining Industry → Circular Economy Industrial Zone	After Coal Mine Closure → Steel Industry Chain Extension, Industrial Site Redevelopment	urban planning response to population decline and historical district restoration

Figure. Transformation pathways diagram
(Source: Drawn by the author)

1.4 The Hardship of Reviving a City After Industrial Decline

Transformation Pathways for Resource-Dependent Cities

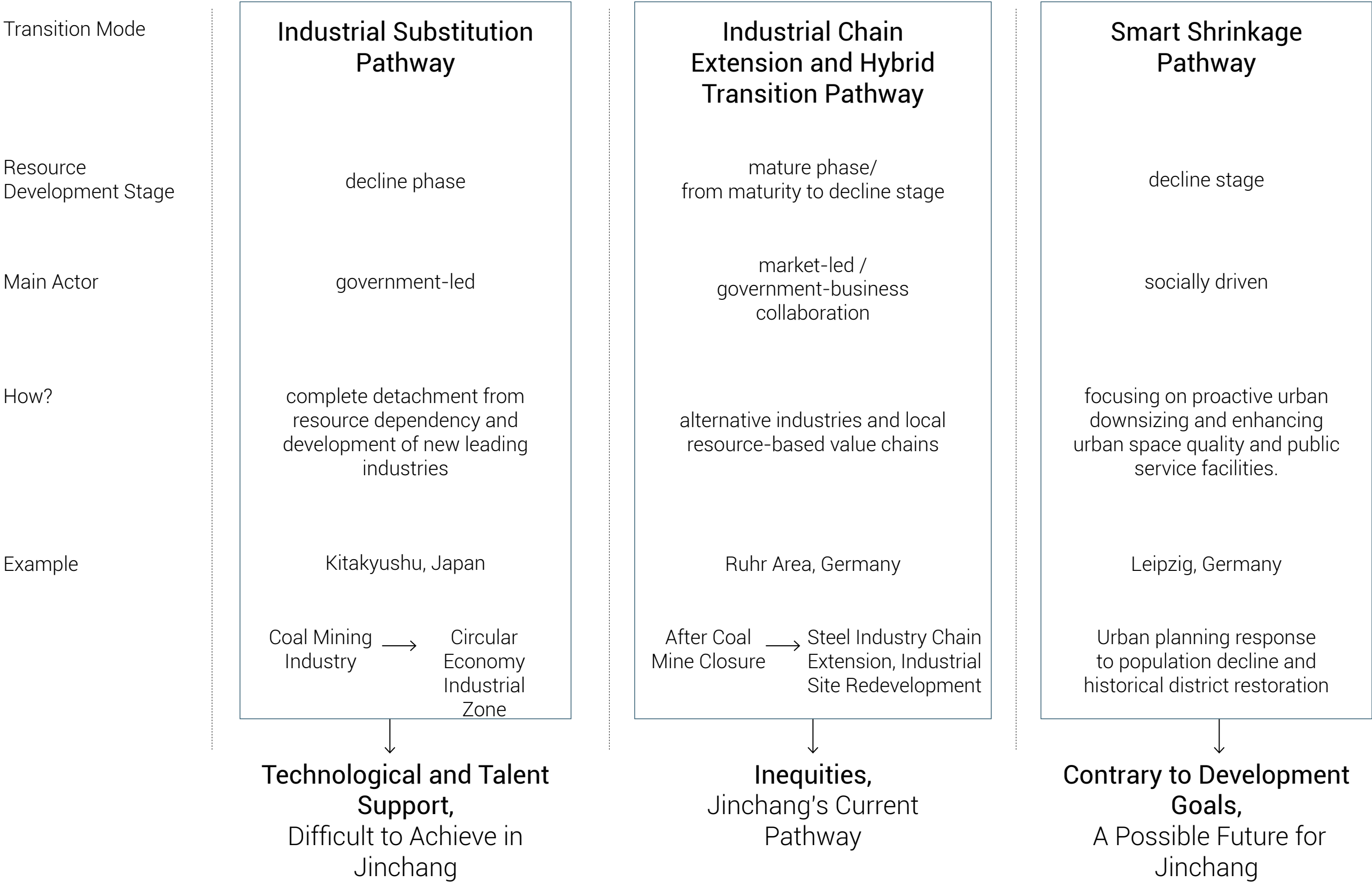


Figure. Transformation pathways diagram (Source: Drawn by the author)

Framing the Research: Based on Personal Observation

The living environment in Desert city

The development and transformation of industrial cities

The Hardship of Reviving a City After Industrial Decline

Territorial Spatial Planning Reform

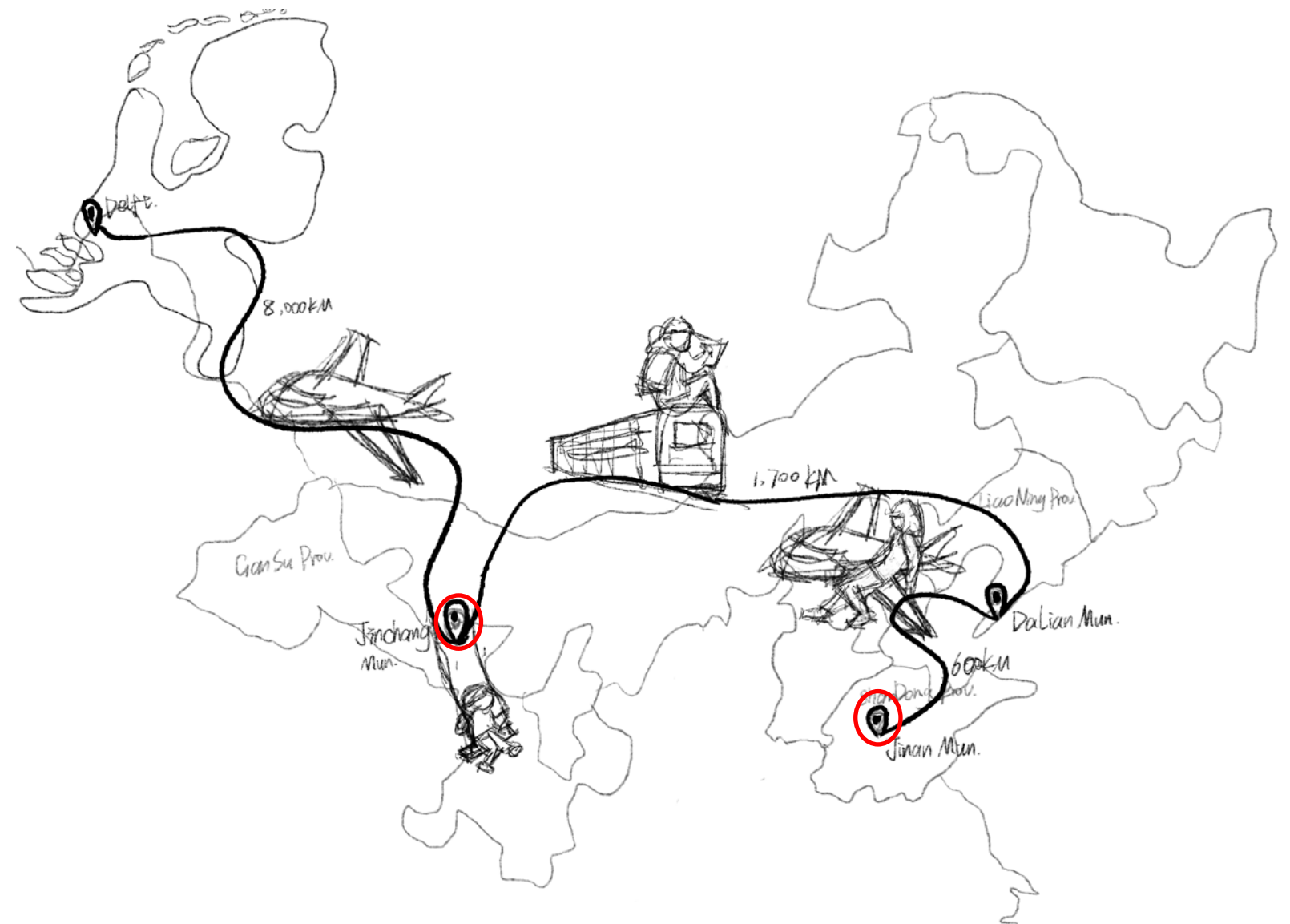
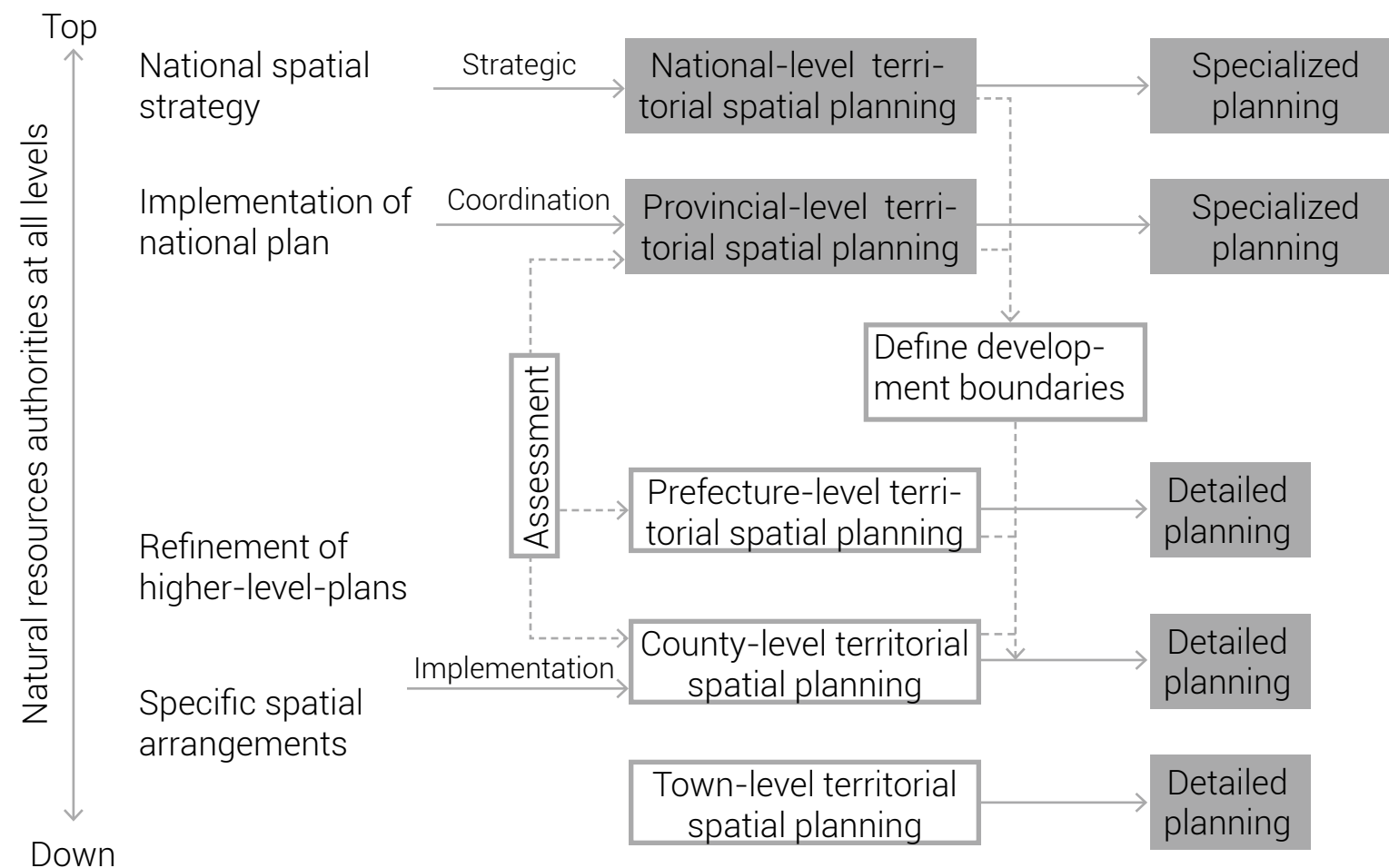


Figure. Personal Journey
(Source: Drawn by the author)

1.5 Territorial Spatial Planning Reform



Core principles:

- Integration of multiple plans
- Green and high-quality development
- Human–land coordination

1.5 Territorial Spatial Planning Reform

Territorial Spatial Planning Reform — The Gap Between Vision and local Practice



1.5 Territorial Spatial Planning Reform

Policy constraints and power balance

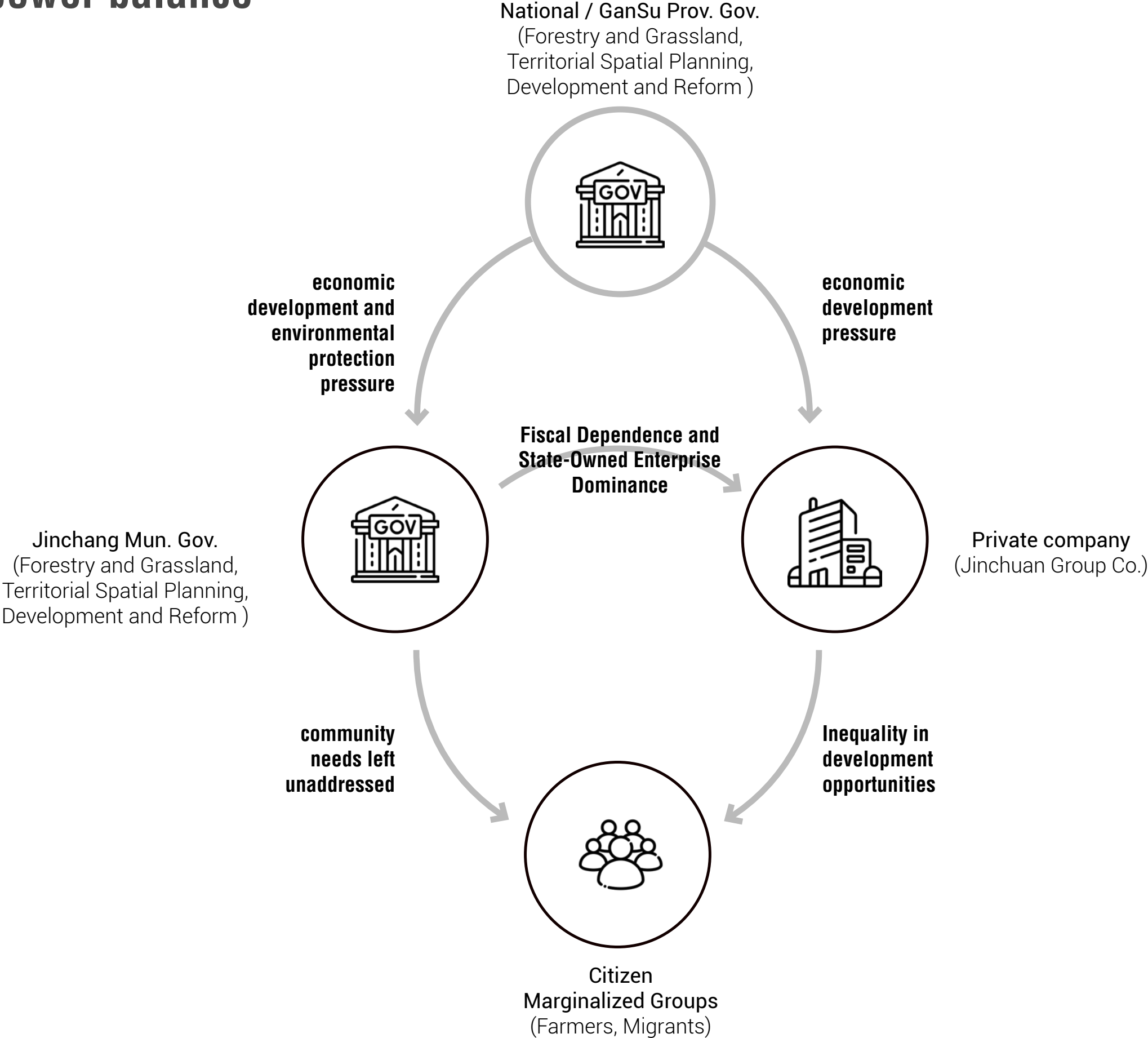


Figure. Governance dilemmas diagram
(Source: Drawn by the author)

1.6 Problem statement

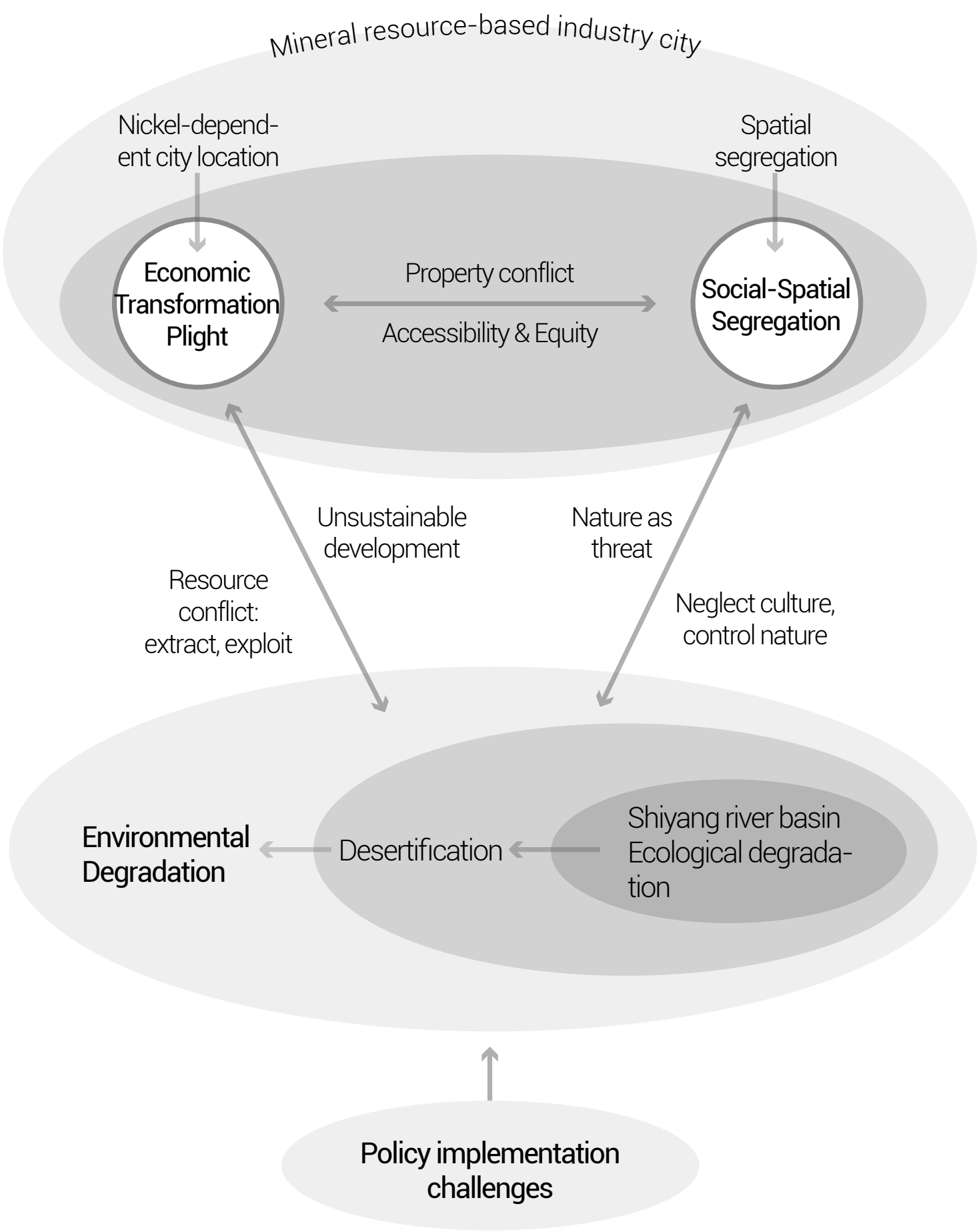


Figure. Problem statement diagram (Source: Drawn by the author)

1.7 Research Question

Main research question

How can Jinchang City achieve a **sustainable and equitable transformation** within **environmental and policy constraints** while **preserving its landscape** and **safeguarding residents' well-being**?

1.7 Research Question

Main research question + Sub-Questions

How can Jinchang City achieve a **sustainable and equitable transformation** within **environmental and policy constraints** while **preserving its landscape** and **safeguarding residents' well-being**?

Ecological

Q1: What environmental constraints limit the city's transformation, and which landscapes are essential to protect for both the city and its residents, considering the historical, cultural, and ecological relationships?

Economic

Q2: What challenges does Jinchang's current economic structure face in transitioning from a resource-dependent economy, and what potential exists for developing alternative economic sectors—both traditional and emerging?

Social

Q3: How do economic transformation and environmental degradation affect residents' livelihoods and lifestyles, and contribute to the emergence of social discontent that leads to out-migration?

Spatial

Q4: What transformation pathways and spatial strategies can enable Jinchang to achieve a more sustainable and equitable future?

Governance

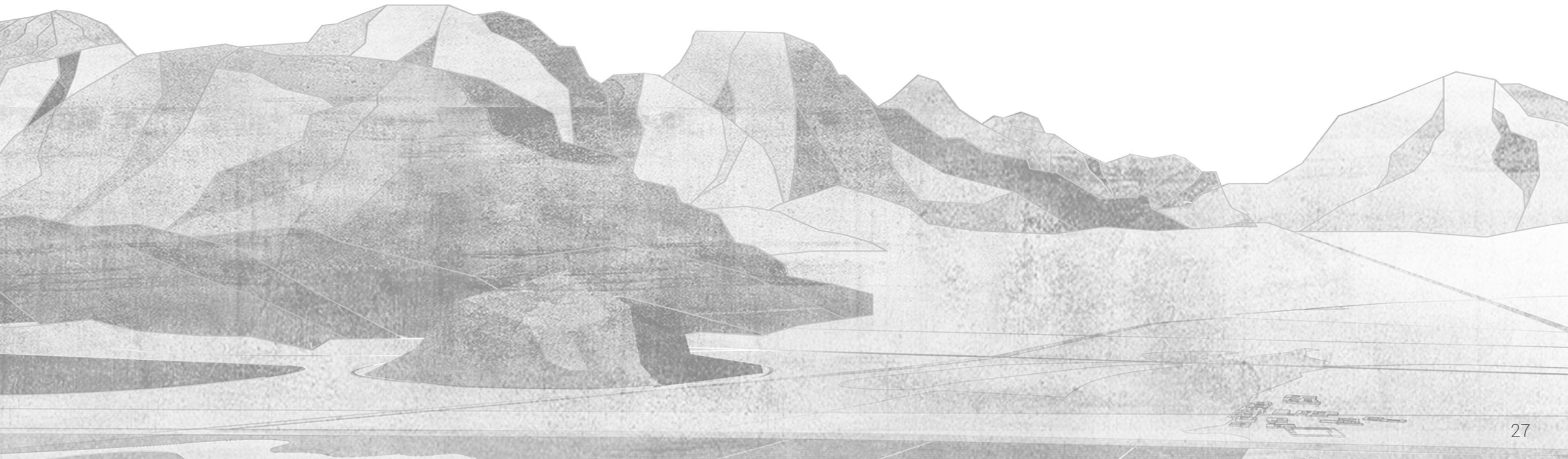
Q5: How can planning institutions evolve to support a locally adapted and inclusive transition, addressing existing institutional and governance constraints?

2 Methodology

2.1 Methodology framework

2.2 Conceptual framework:

The Emergent Gears of Sustainability Transition Framework



2.1 Methodology framework

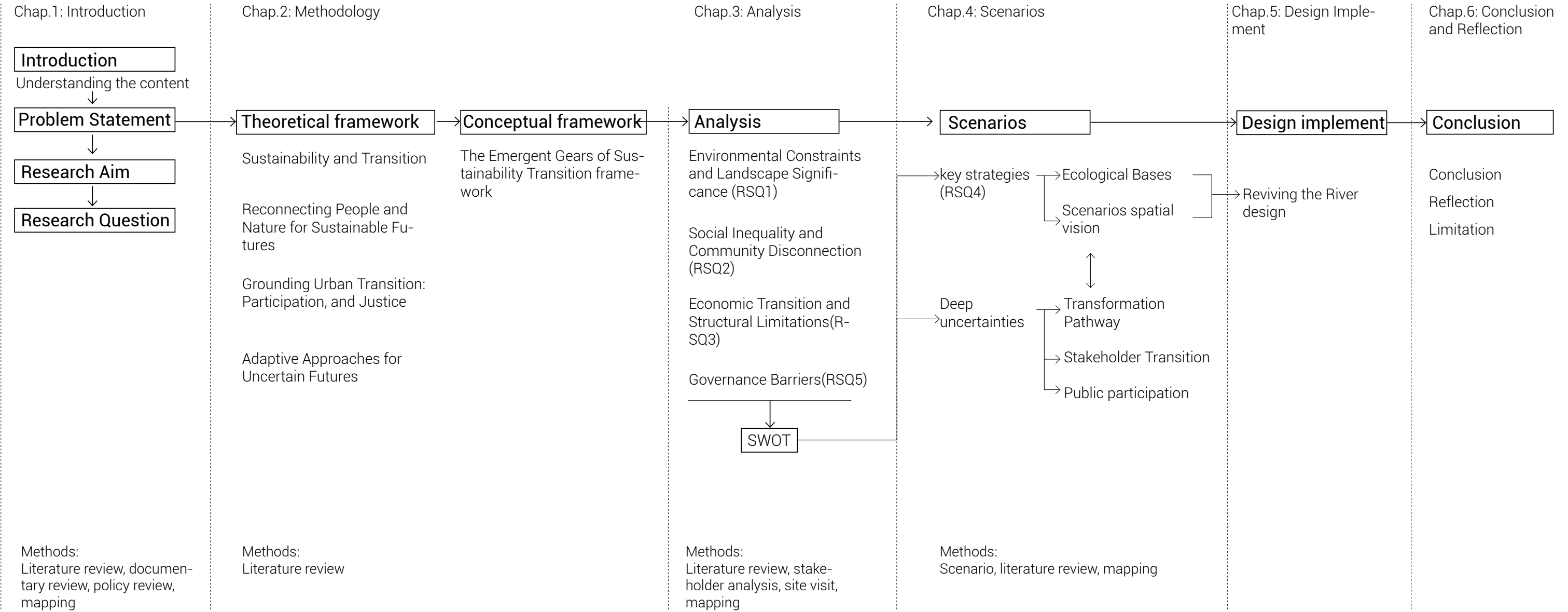


Figure: Methodology framework (Source: Drawn by the author)

2.2 Conceptual framework

The Emergent Gears of Sustainability Transition Framework

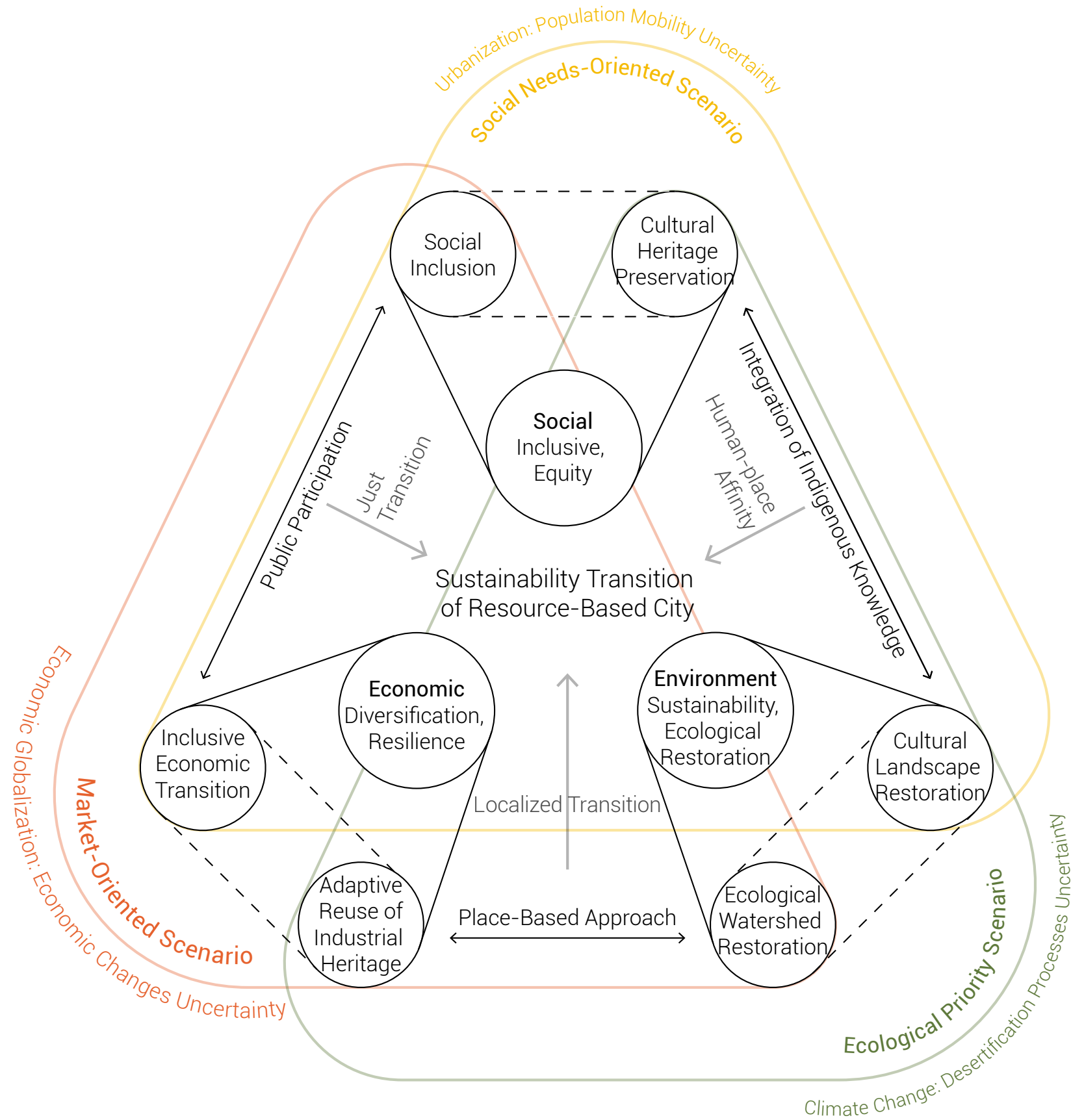


Figure: The Emergent Gears of Sustainability Transition Framework (Source: Drawn by the author)

2.2 Conceptual framework

Goals for sustainability transition



Figure: The Emergent Gears of Sustainability Transition Framework-Goals for sustainability transition (Source: Drawn by the author)

2.2 Conceptual framework

Strategic Approach

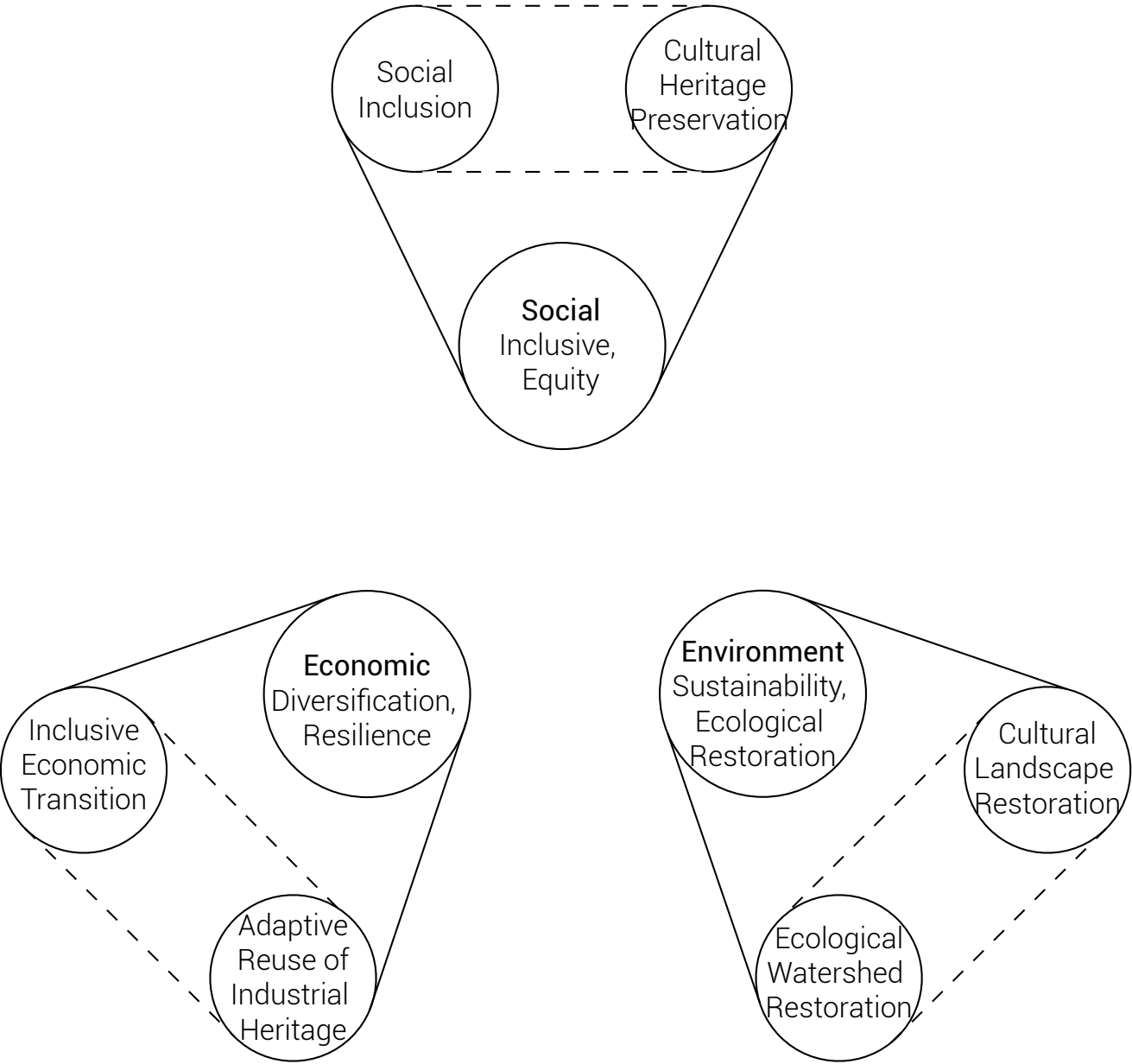


Figure: The Emergent Gears of Sustainability Transition Framework-Strategic Approach (Source: Drawn by the author)

2.2 Conceptual framework

Gear Synergy

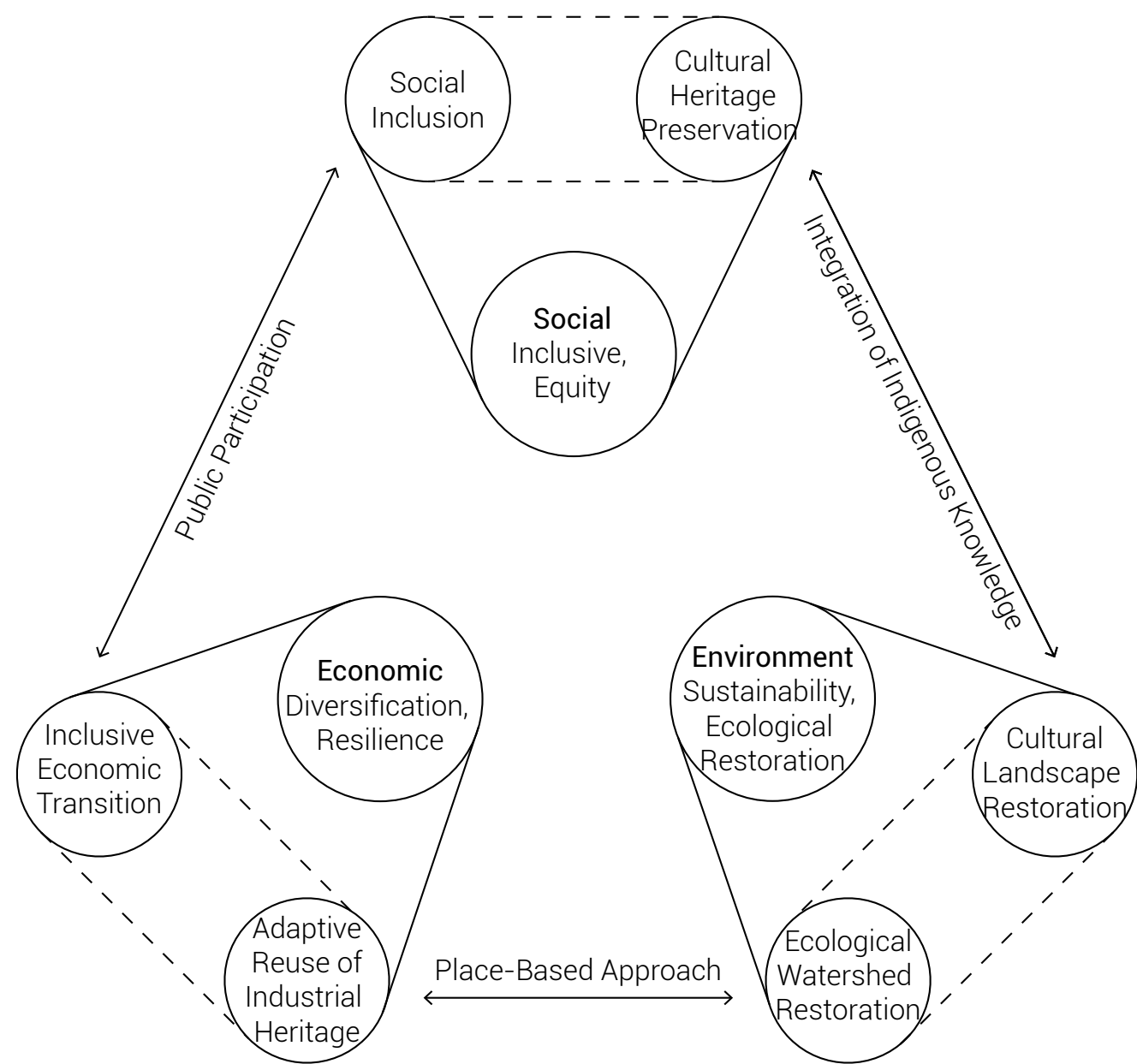


Figure: The Emergent Gears of Sustainability Transition Framework-Gear Synergy (Source: Drawn by the author)

2.2 Conceptual framework

Gear Synergy

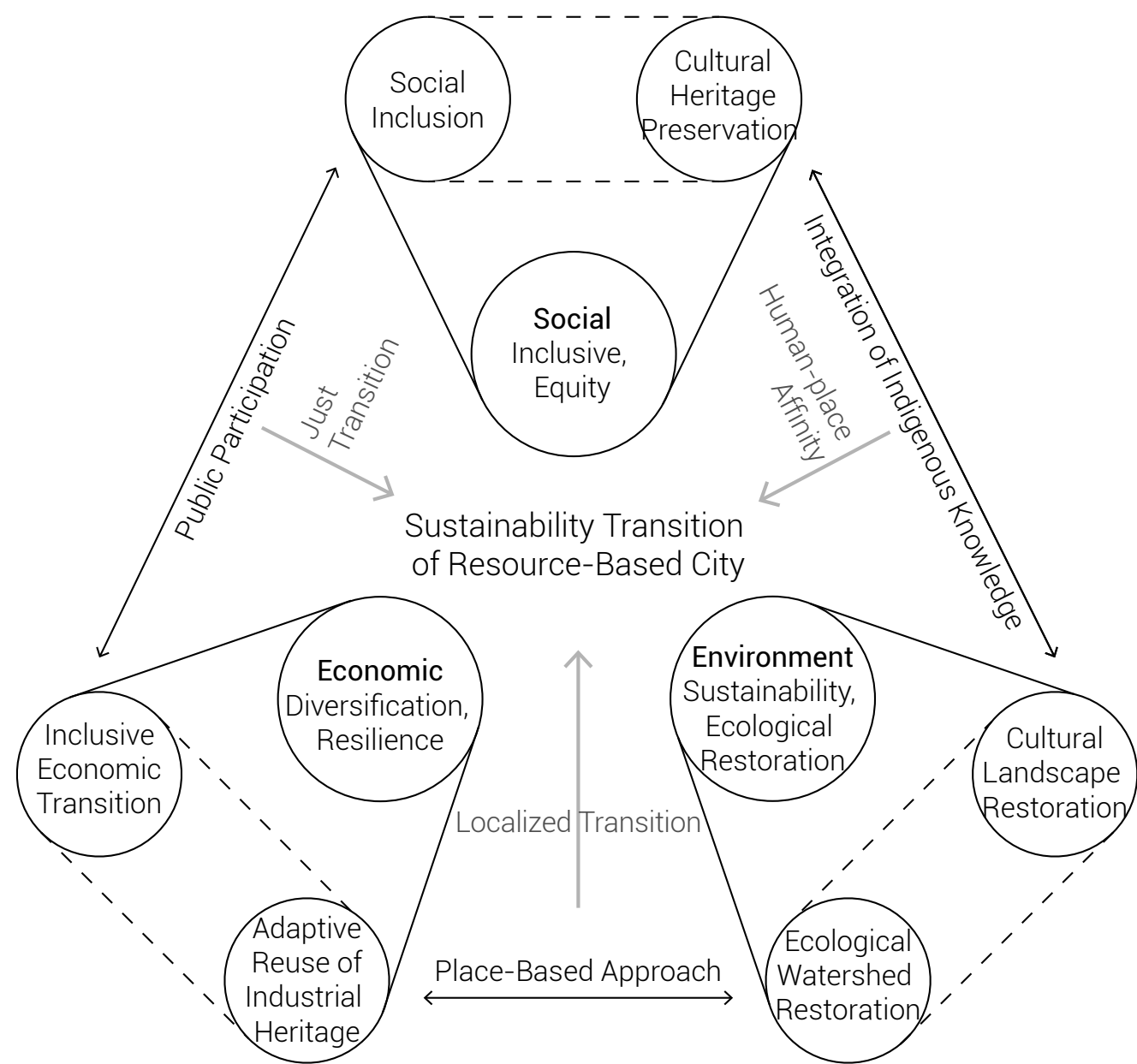


Figure: The Emergent Gears of Sustainability Transition Framework-Gear Synergy (Source: Drawn by the author)

2.2 Conceptual framework

Addressing Uncertainty: The three scenarios explore possible future pathways

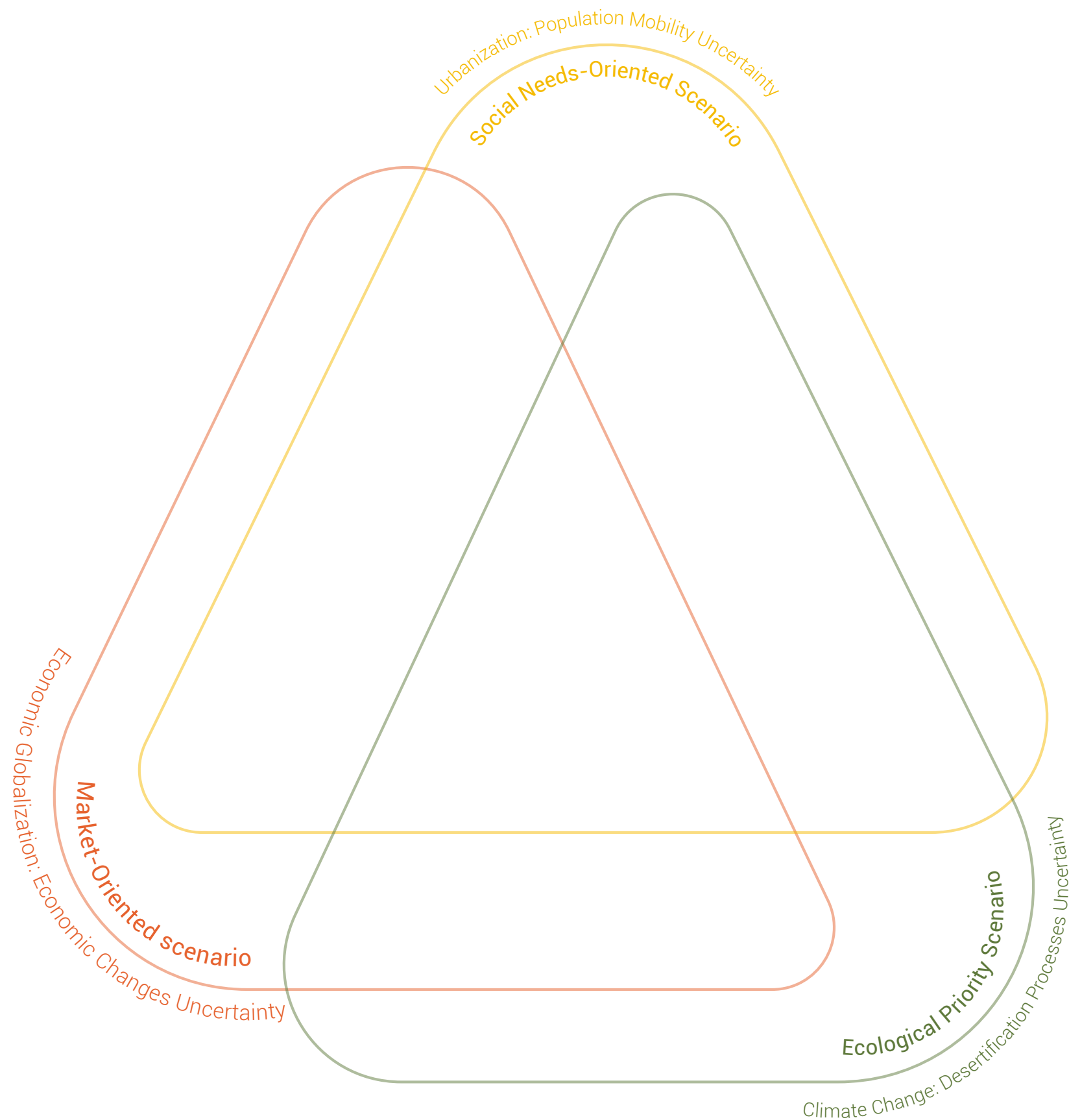


Figure: The Emergent Gears of Sustainability Transition Framework-The three scenarios (Source: Drawn by the author)

2.2 Conceptual framework

The Emergent Gears of Sustainability Transition Framework

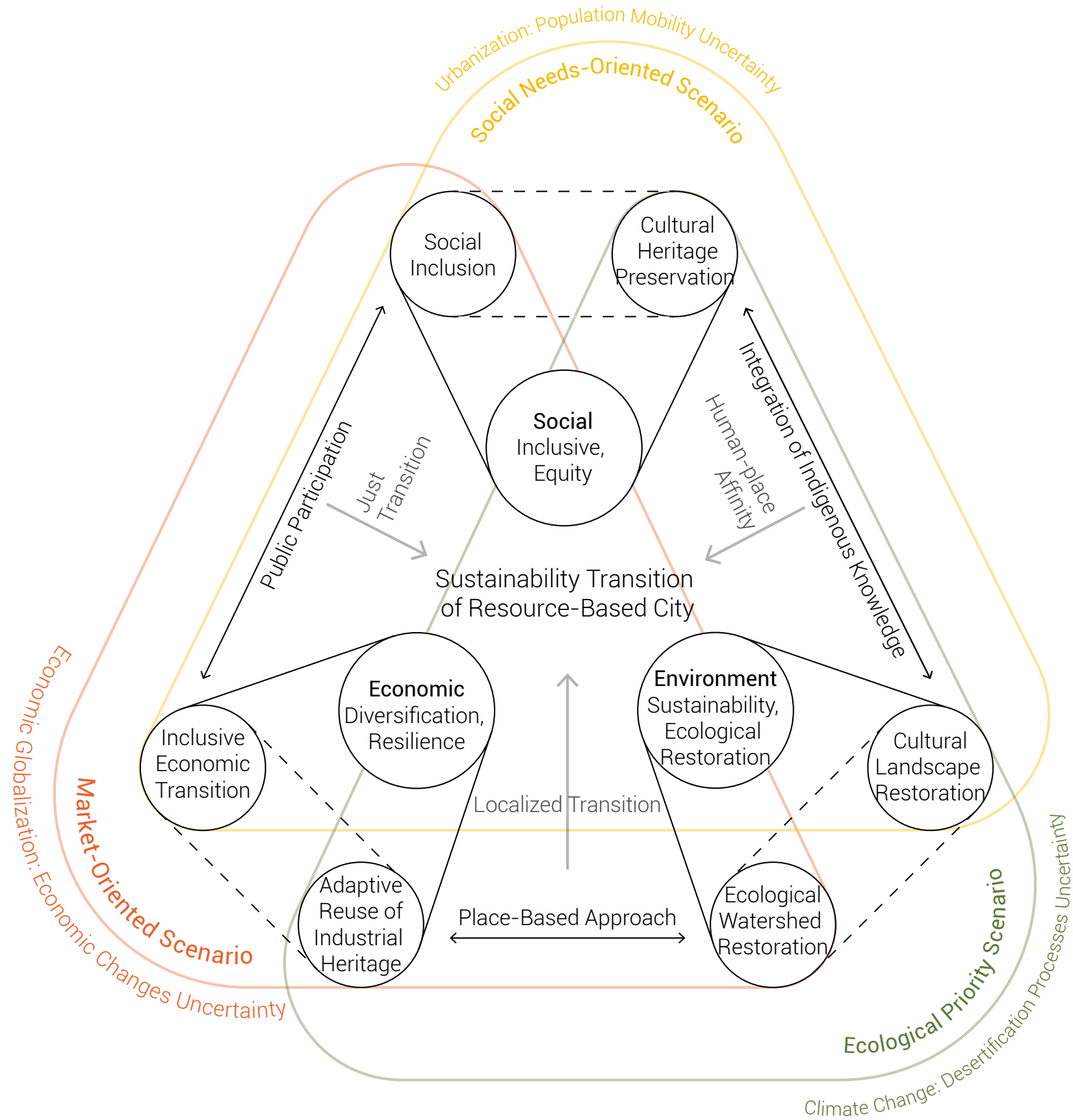


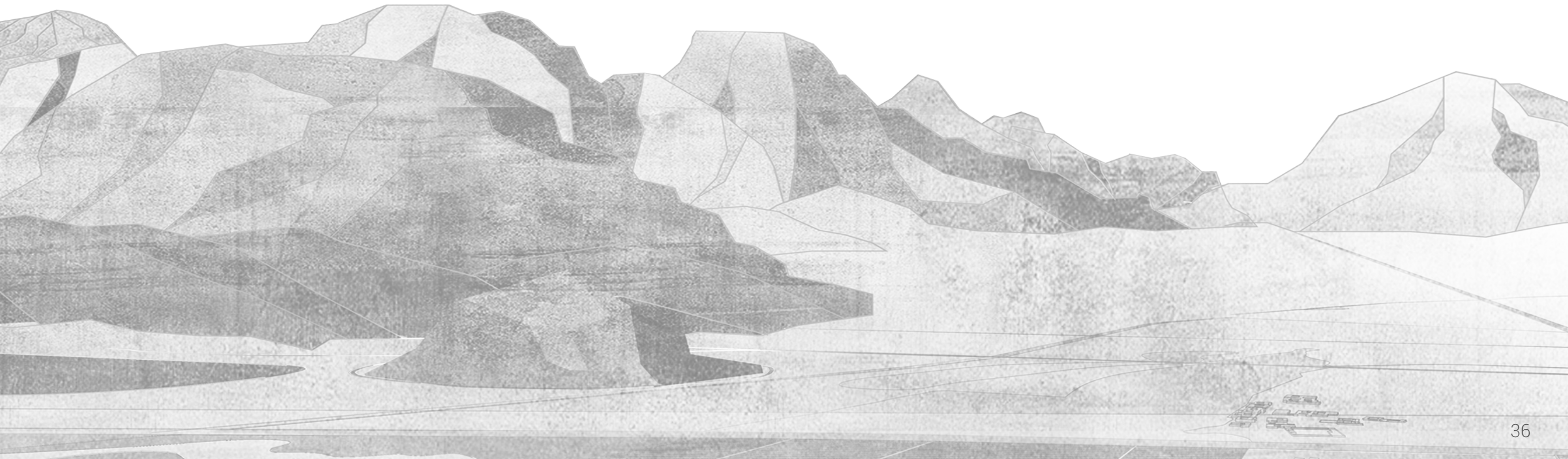
Figure: The Emergent Gears of Sustainability Transition Framework (Source: Drawn by the author)

3 Exposing the Challenges

3.1 Analytical Framework

3.2 SWOT Analysis

3.3 Stakeholder analysis



3.1 Analytical Framework

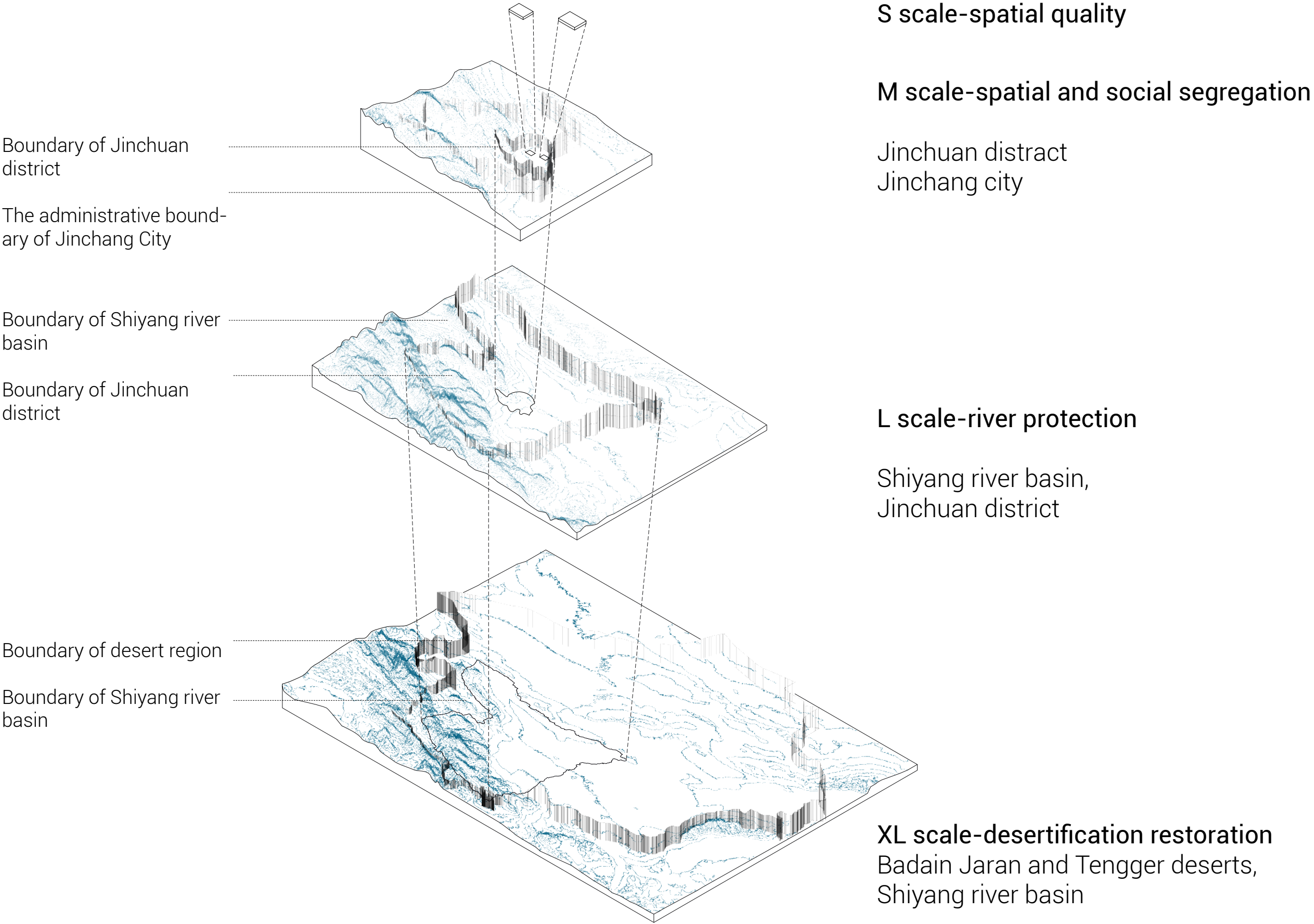
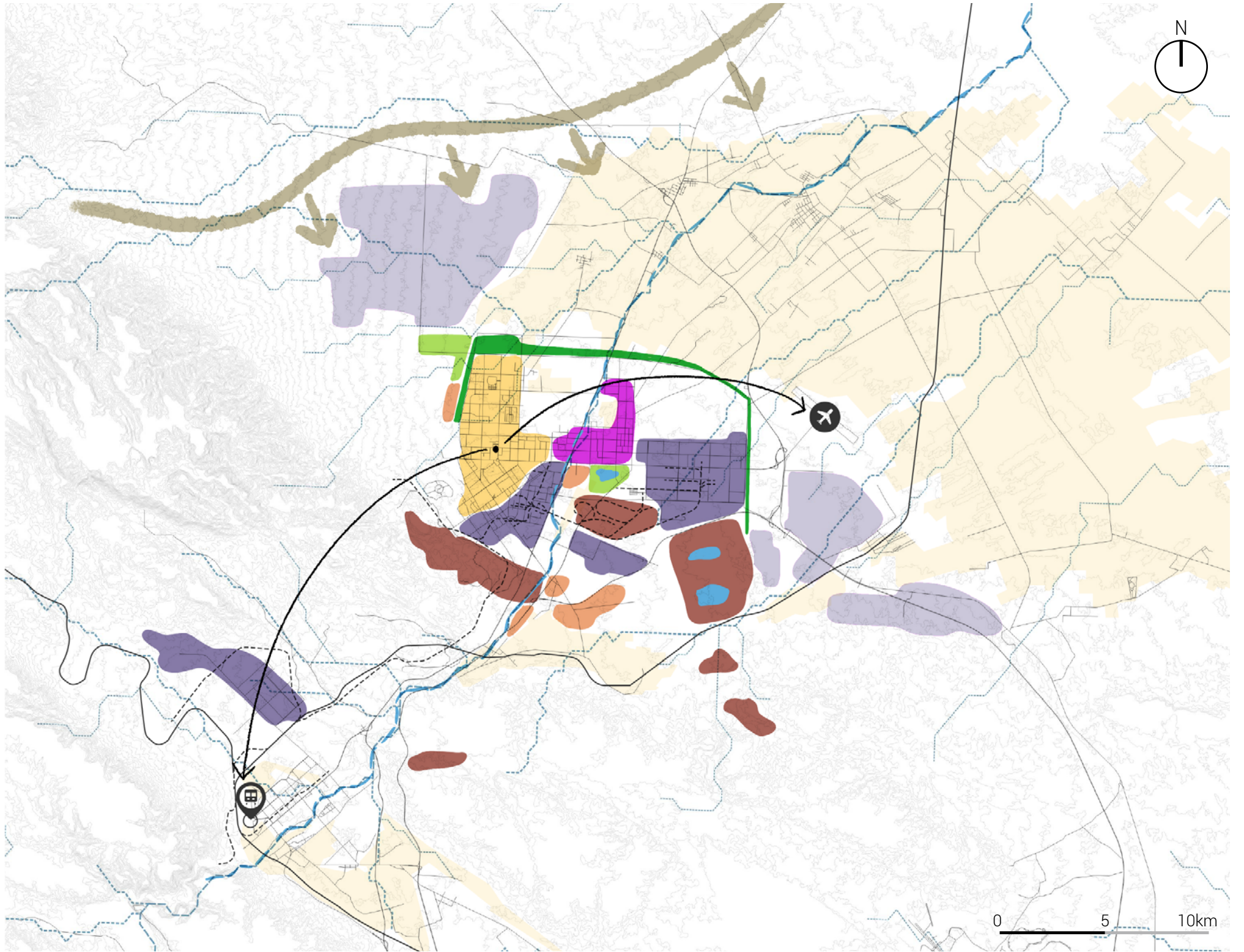


Figure: Analytical framework (Source: Drawn by the author)

3.2 SWOT Analysis

Weaknesses and Threats

- Economic:**
- Single-industry economic structure
 - Resource depletion expected within decades
 - Emerging industries highly dependent on policy incentives
- Ecological:**
- The arid climate, frequent sandstorms
 - Vanished rivers
- Outdated Spatial planning:**
- Clear zoning
 - Industrial and shelterbelt encirclement
 - Neglected peripheral communities
- Transport Infrastructure:**
- Lack of efficient transport links

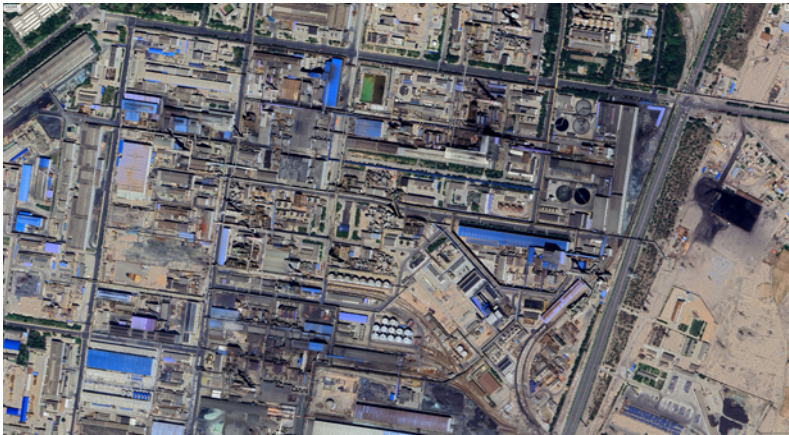


Farmland	Urban living area	Solar park	Water surface	Seasonal river-way
Mineral-related industry	Peripheral communities	Airport, Train station	Sandstorm shelter-belt	Freight railway
Open-pit mining area	Logistics industry	Landscape projects	Sandstorm direction	Passenger railway

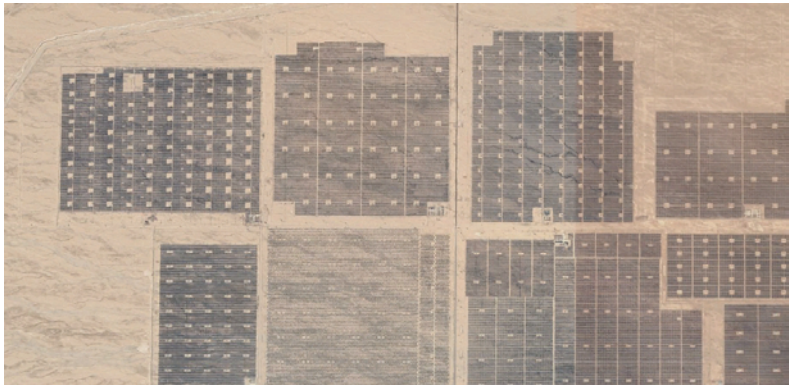
3.2 SWOT Analysis

Opportunities and Strengths

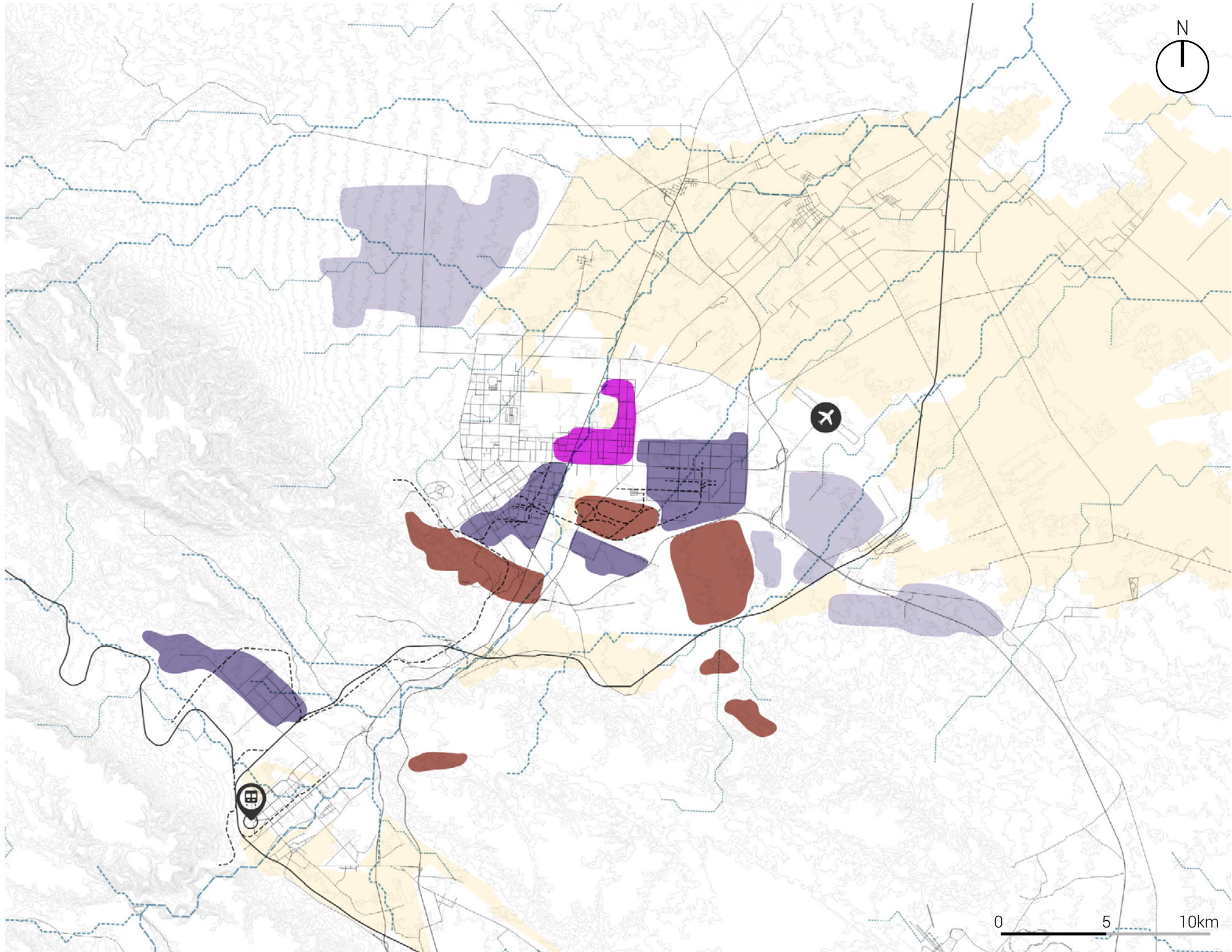
Industrial foundation:
· Industrial legacy and future reuse potential



Mineral-related industry



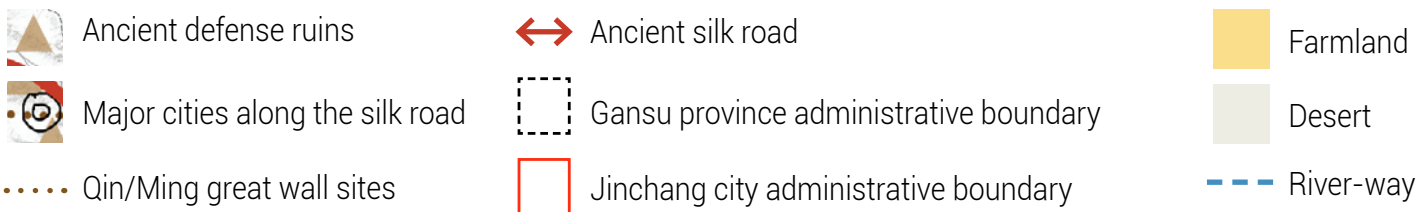
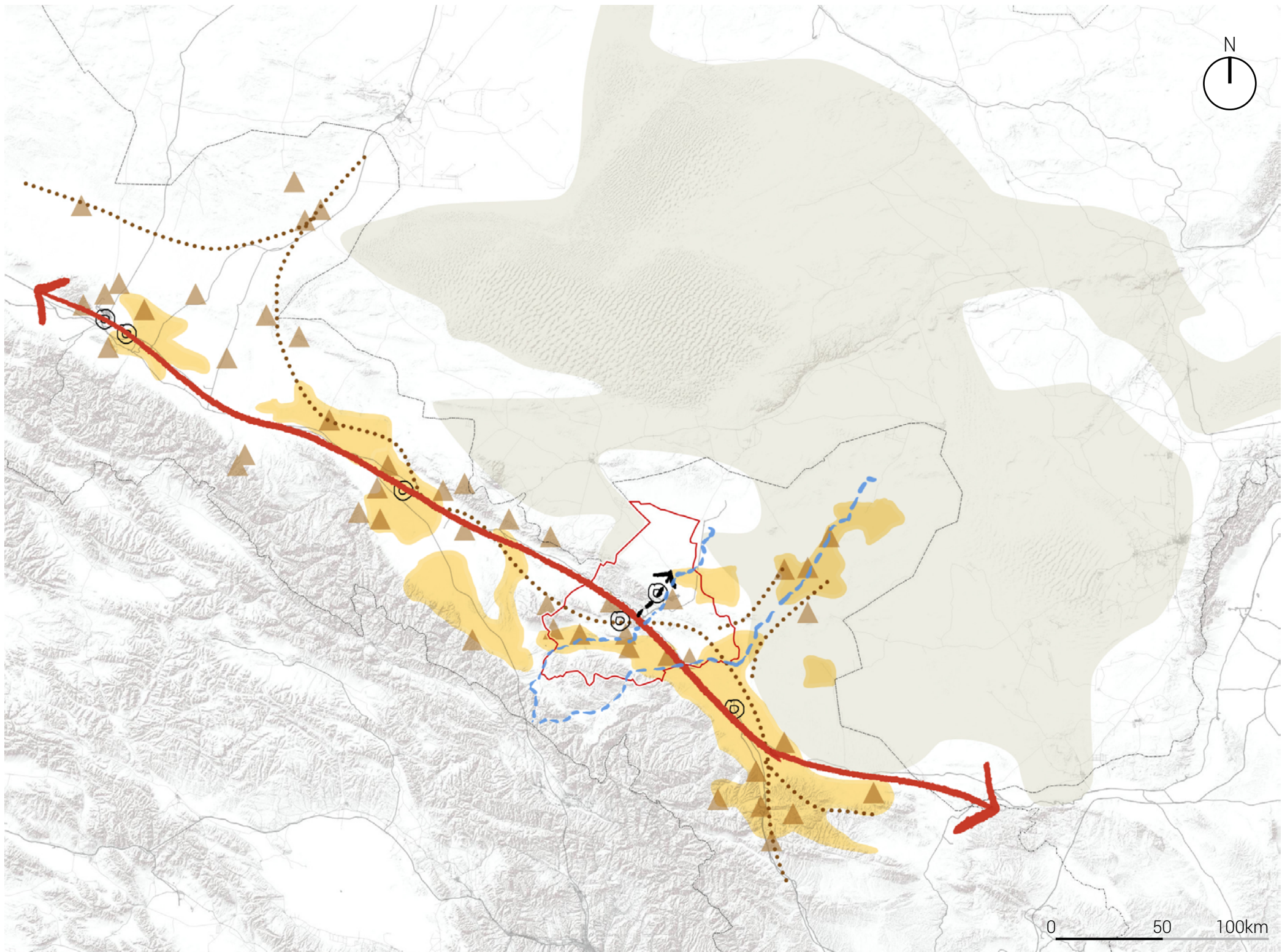
Solar park



3.2 SWOT Analysis

Opportunities and Strengths

- Industrial foundation:**
- Industrial legacy and future reuse potential
- Geography:**
- Unique natural landscapes, including deserts, mountains, and rivers
- Regional Collaboration:**
- Cultural tourism in the Hexi Corridor
 - agricultural foundation
- Population Inflow:**
- Urbanization and Climate Refugees



3.3 Stakeholder analysis

Key Stakeholders

- PUBLIC
- European Union
 - National / Gansu Provincial / Jinchang Municipal Government
 - National / Gansu Provincial / Jinchang Municipal Forestry and Grassland Administration
 - County and Township Governments in Surrounding Region
 - National /Gansu Provincial / Jinchang Municipal Territorial Spatial Planning Department
 - National / Jinchang Municipal Development and Reform Commission
 - Jinchang Economic and Technological Development Zone Administrative Committee
 - Regional Industrial Park Management Organizations
 - Public Service Agencies (Education, Transportation, Water Supply)
- PUBLIC/PRIVATE
- Jinchuan group Co.
- PRIVATE
- New Energy and High-Tech Enterprises
 - Agricultural SMEs (Small and Medium-sized Enterprises)
 - Service Industry SMEs
 - External Investment Enterprises
 - Banks, Investment, and Financing Platforms
 - Public Tree-Planting Platforms (e.g., Ant Financial)
 - Eco-Tech Enterprises
- CIVIC
- Community Residents Committee
 - Village Collective
 - Urban Residents
 - Farmers
 - Migrants from Surrounding Townships
 - Industry Associations and Chambers of Commerce
 - Volunteers and Social Welfare Organizations
 - Universities and Research Institutes (e.g., Lanzhou University, Gansu Academy of Agricultural Sciences)
 - Vocational Schools (Local Vocational Schools in Jinchang)
 - Media and Cultural Centers

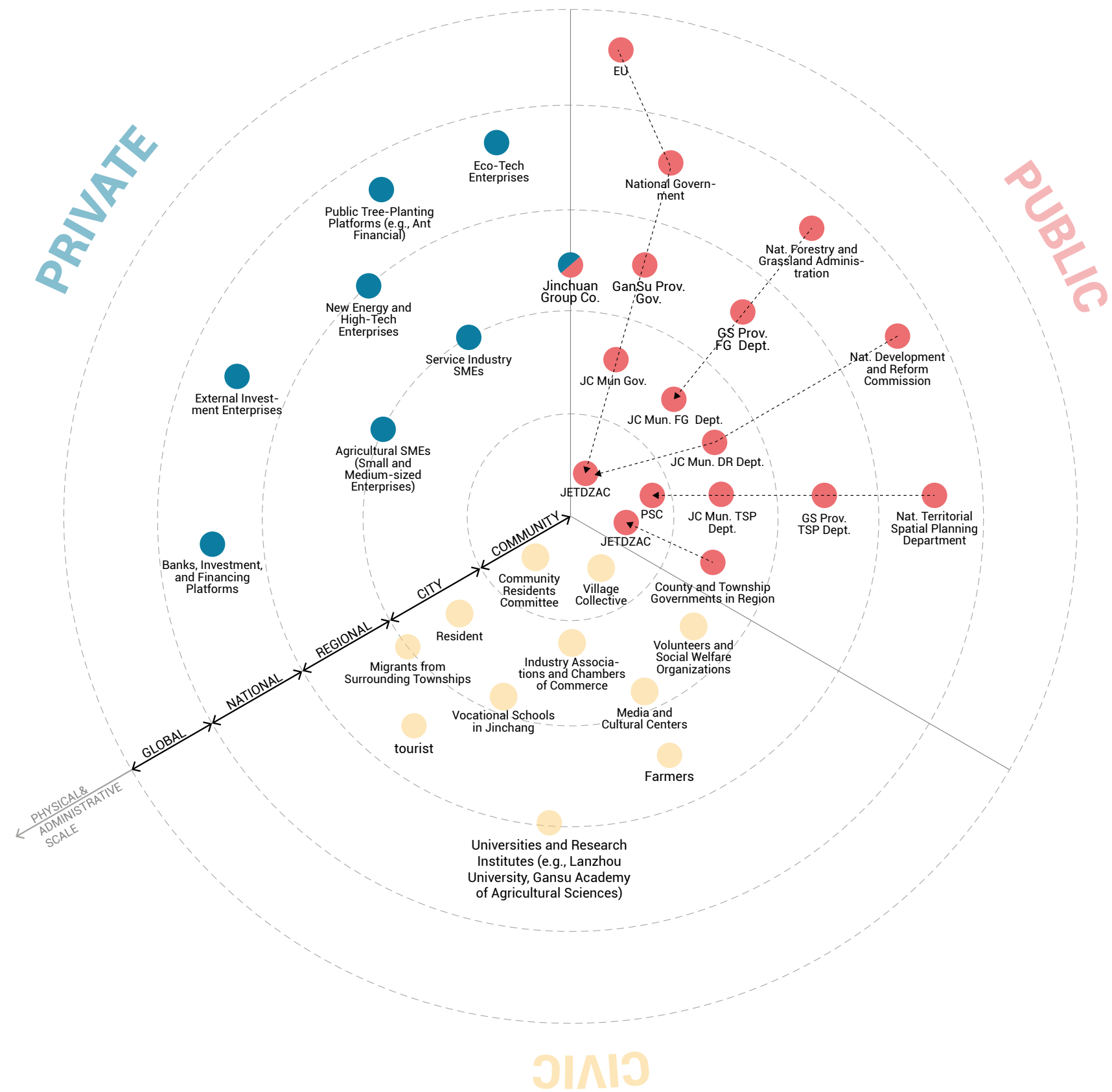


Figure: Stakeholder analysis, (Source: Drawn by the author)

3.3 Stakeholder analysis

Stakeholder Power-interest analysis

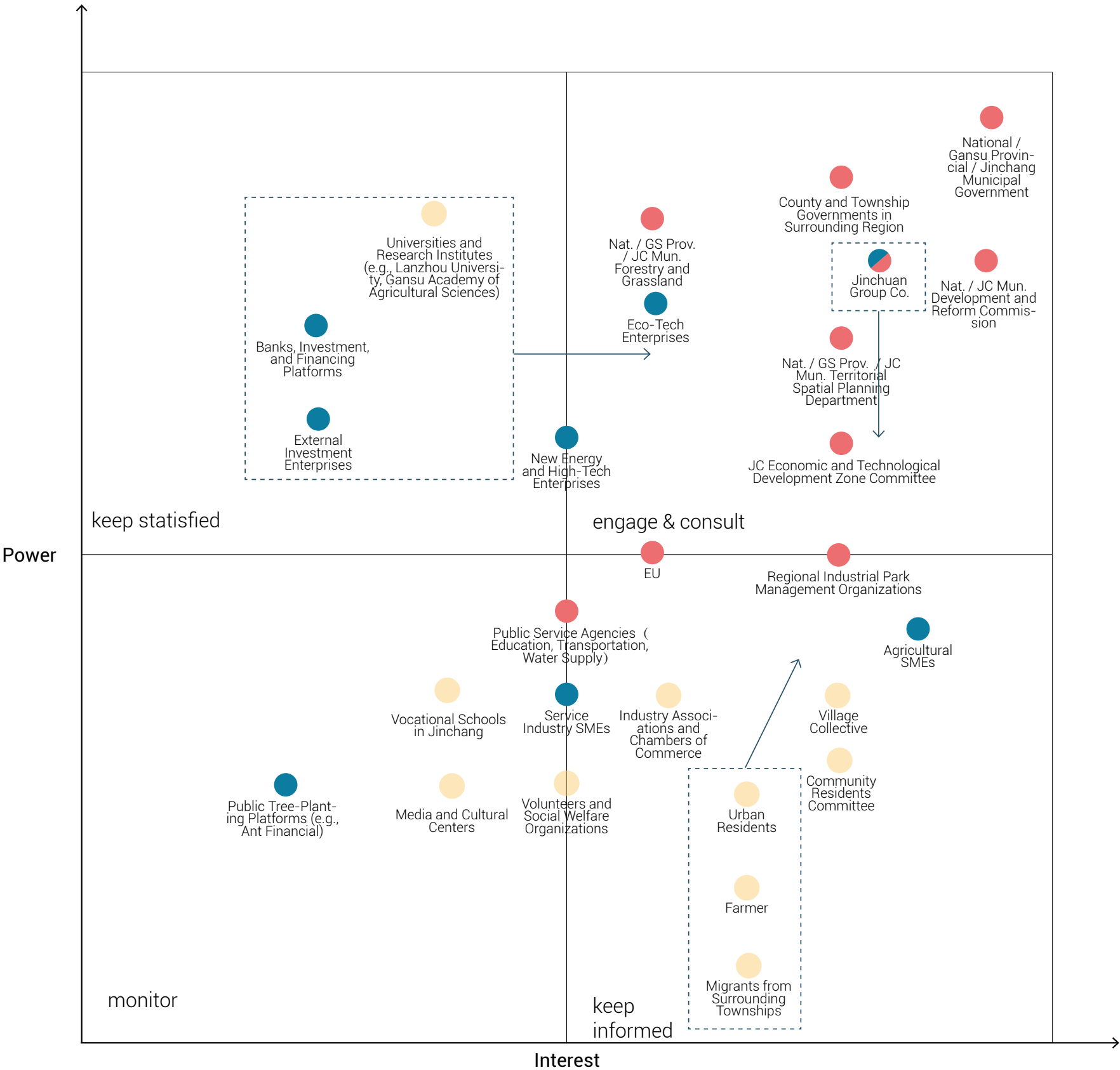


Figure: Stakeholder Power-interest diagram, (Source: Drawn by the author)

3.3 Stakeholder analysis

Stakeholder conflicts and Policy opportunities

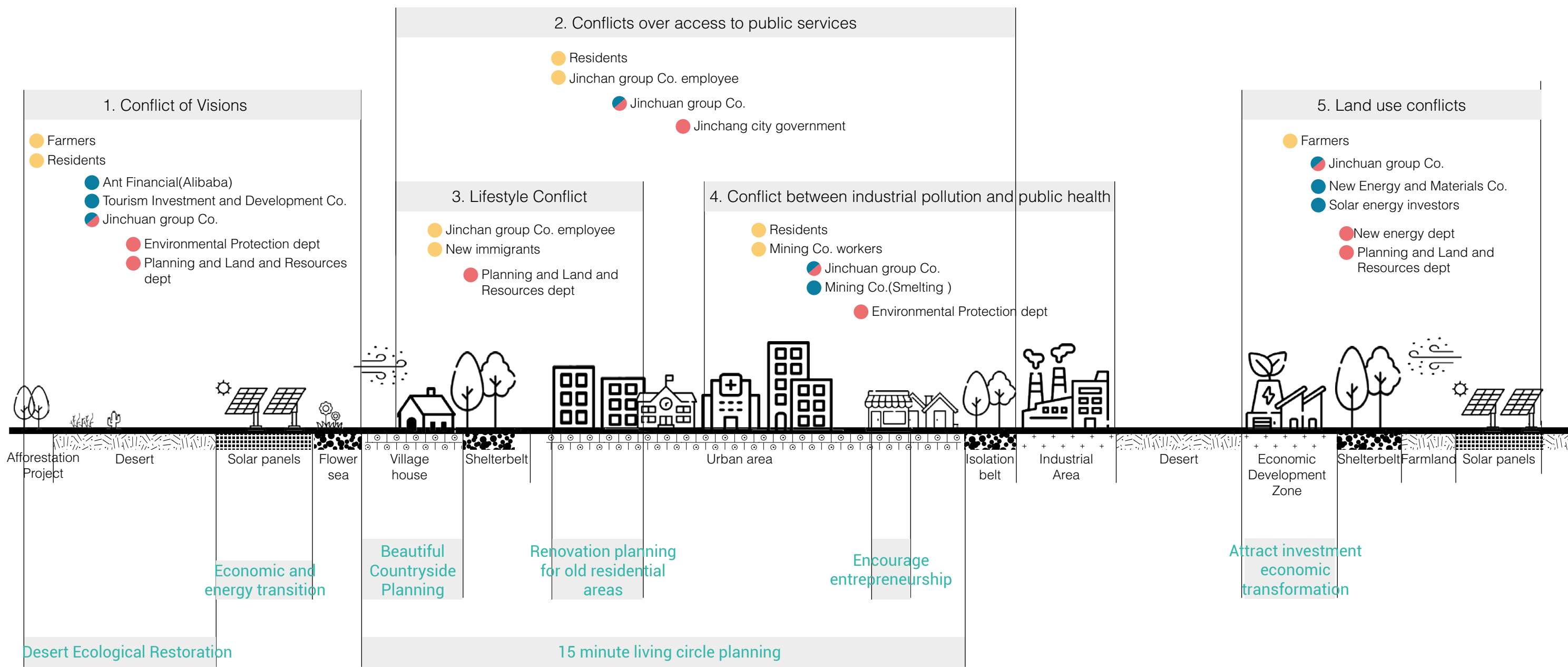
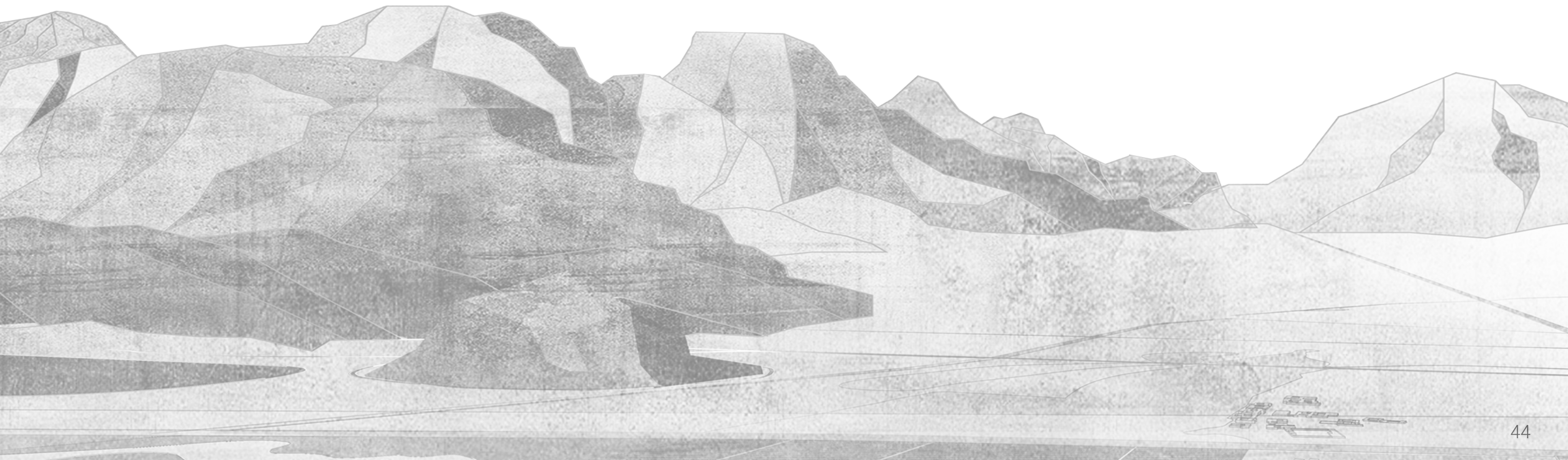


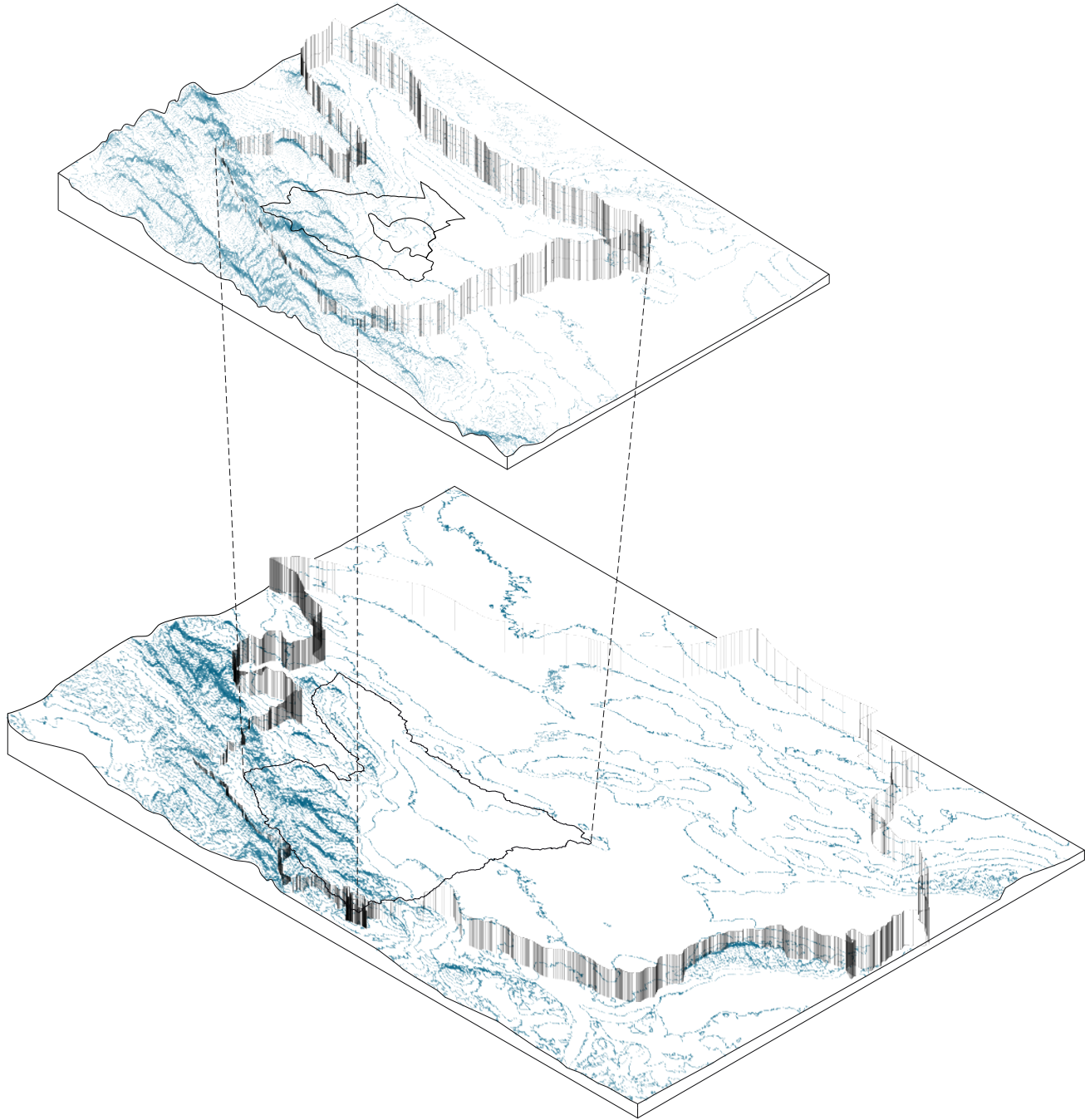
Figure: policy opportunities and key actors (Source: Drawn by the author)

4 Scenario Planning

- 4.1 Scenario scales
- 4.2 Ecological Base for the Three Scenarios
- 4.3 The Three Scenarios
- 4.4 Managed Shrinkage Scenario
- 4.5 Industrial Revival Scenario
- 4.6 Desert Oasis Scenario



4.1 Scenario scales



L scale
Spatial visions for three scenarios

XL scale
Ecological bases for scenarios

Figure: Scale map of scenario planning (Source: Drawn by the author)

4.2 Ecological Base for the Three Scenarios

Boundary Definition

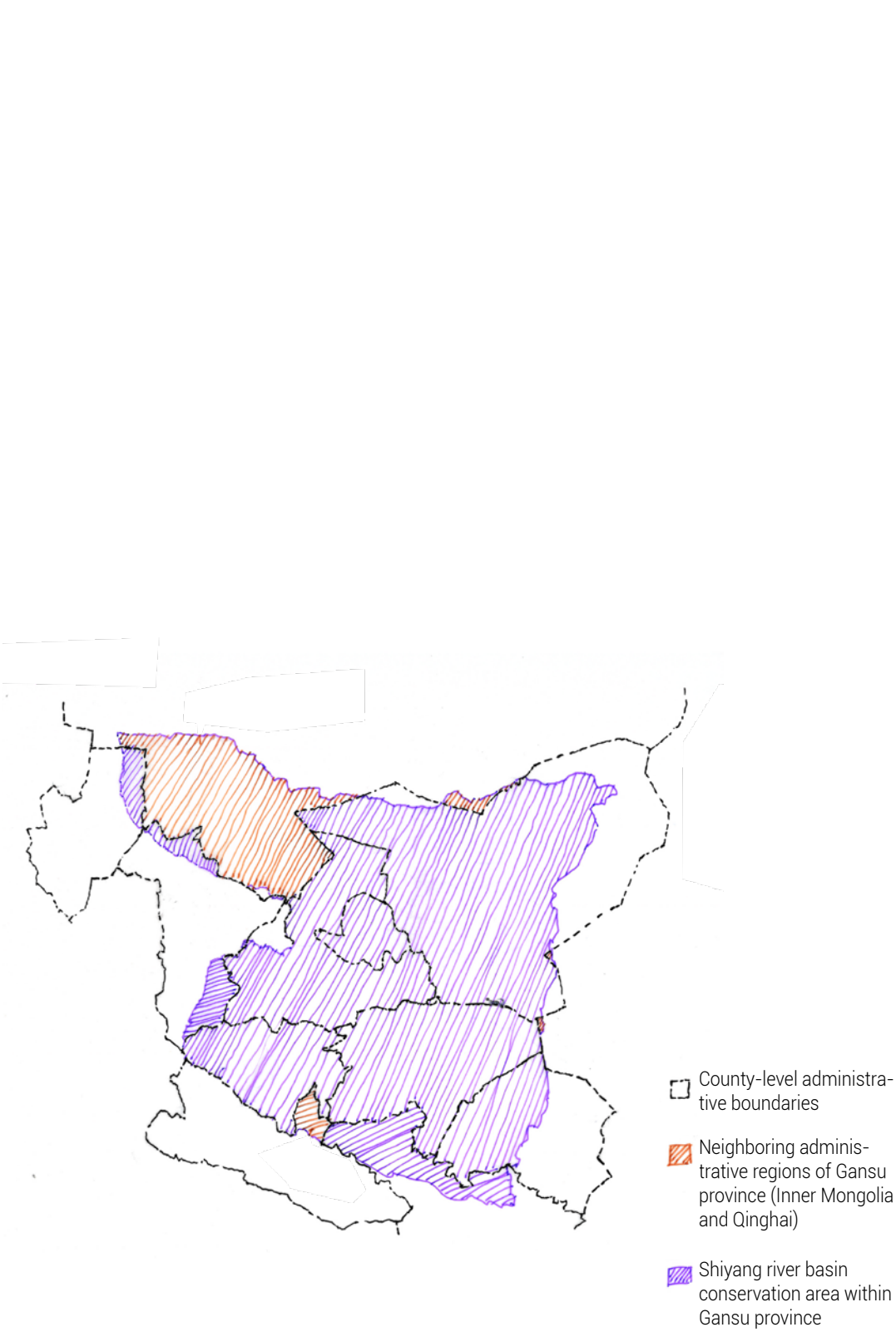


Figure: Overlay map of watershed and administrative boundaries (Source: Drawn by the author)

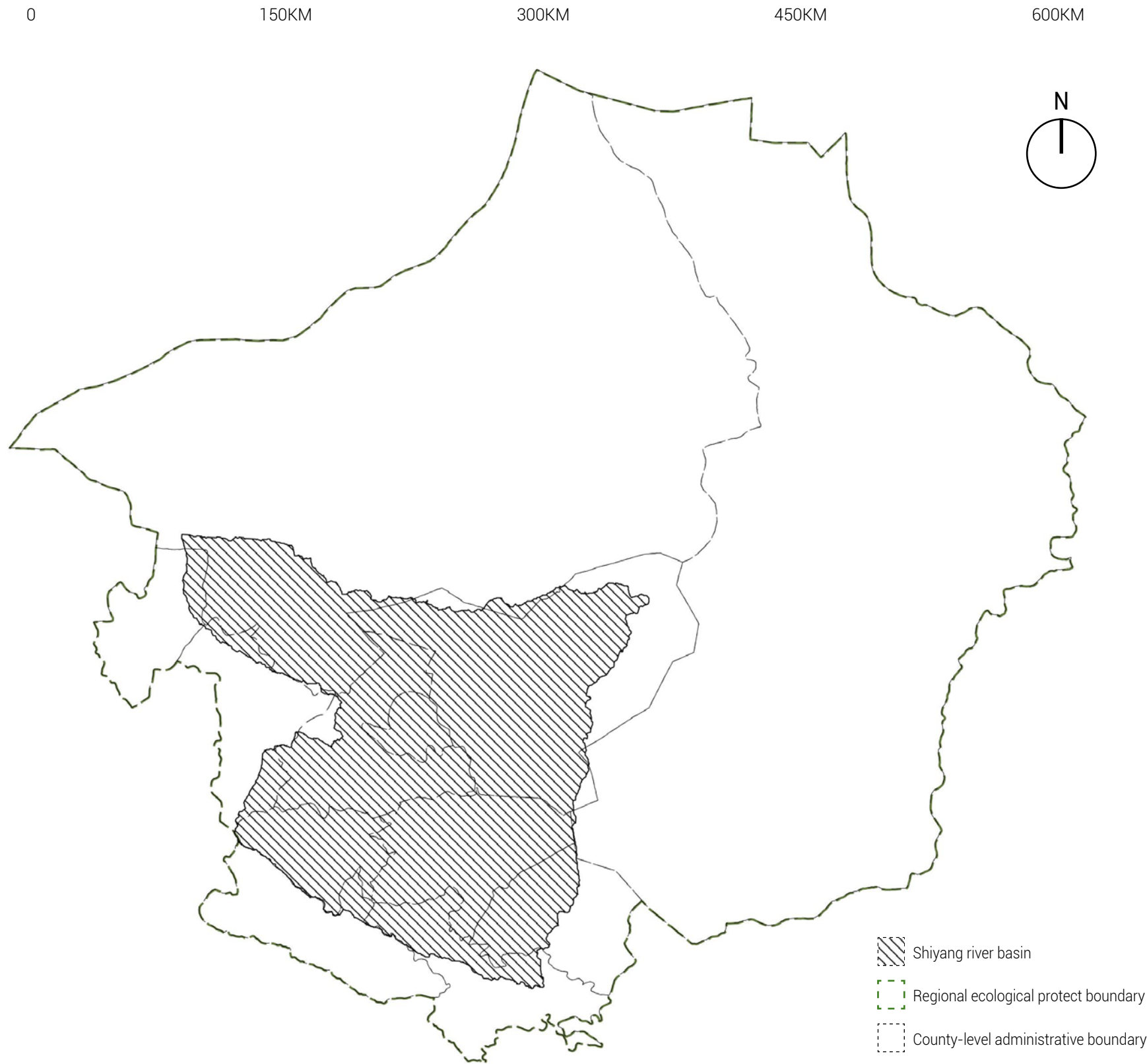


Figure: Regional land-use map (Source: Drawn by the author)

4.2 Ecological Base for the Three Scenarios

Current landuse

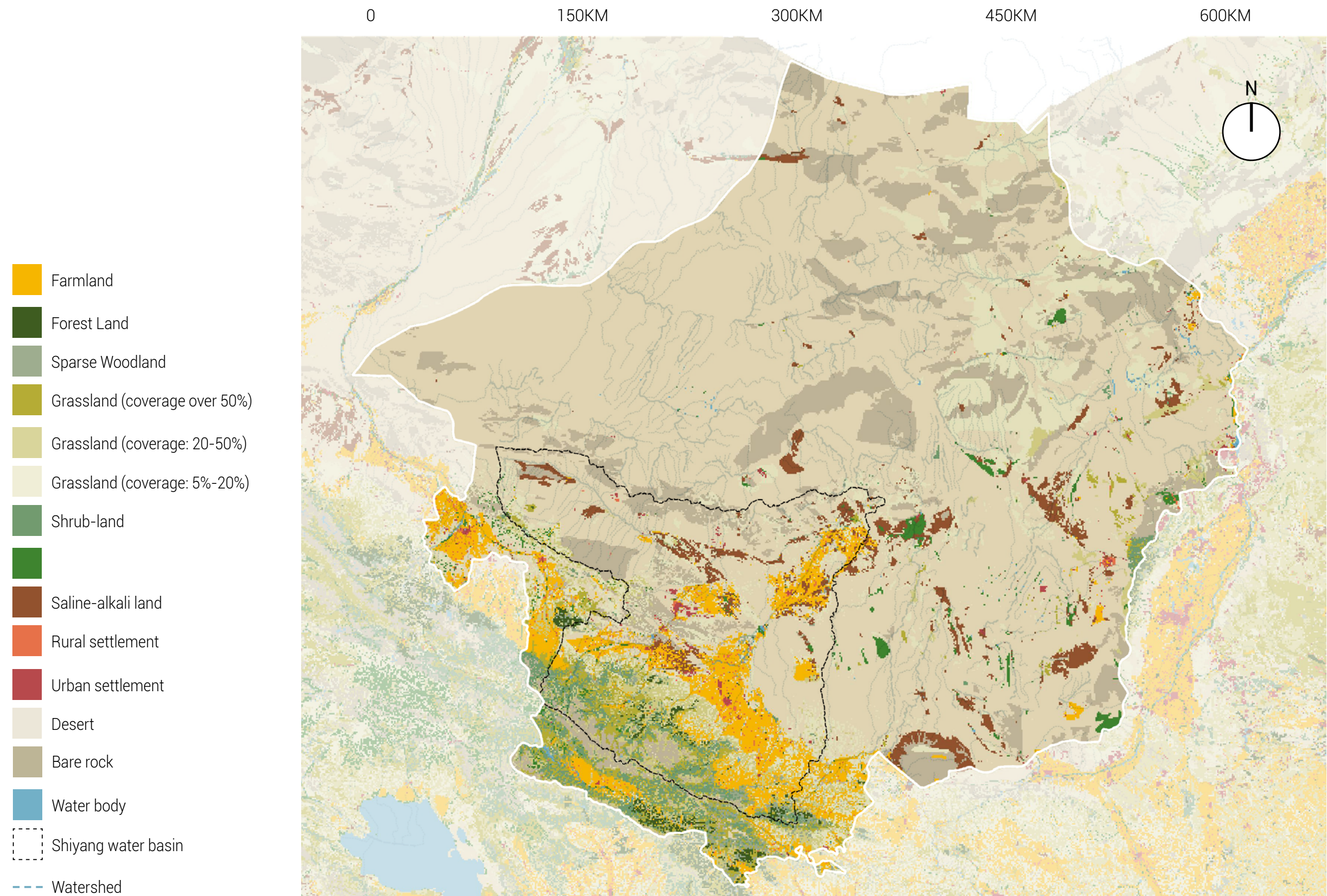


Figure: Regional land-use map (Source: Drawn by the author)

4.2 Ecological Base for the Three Scenarios

Current landuse abstract

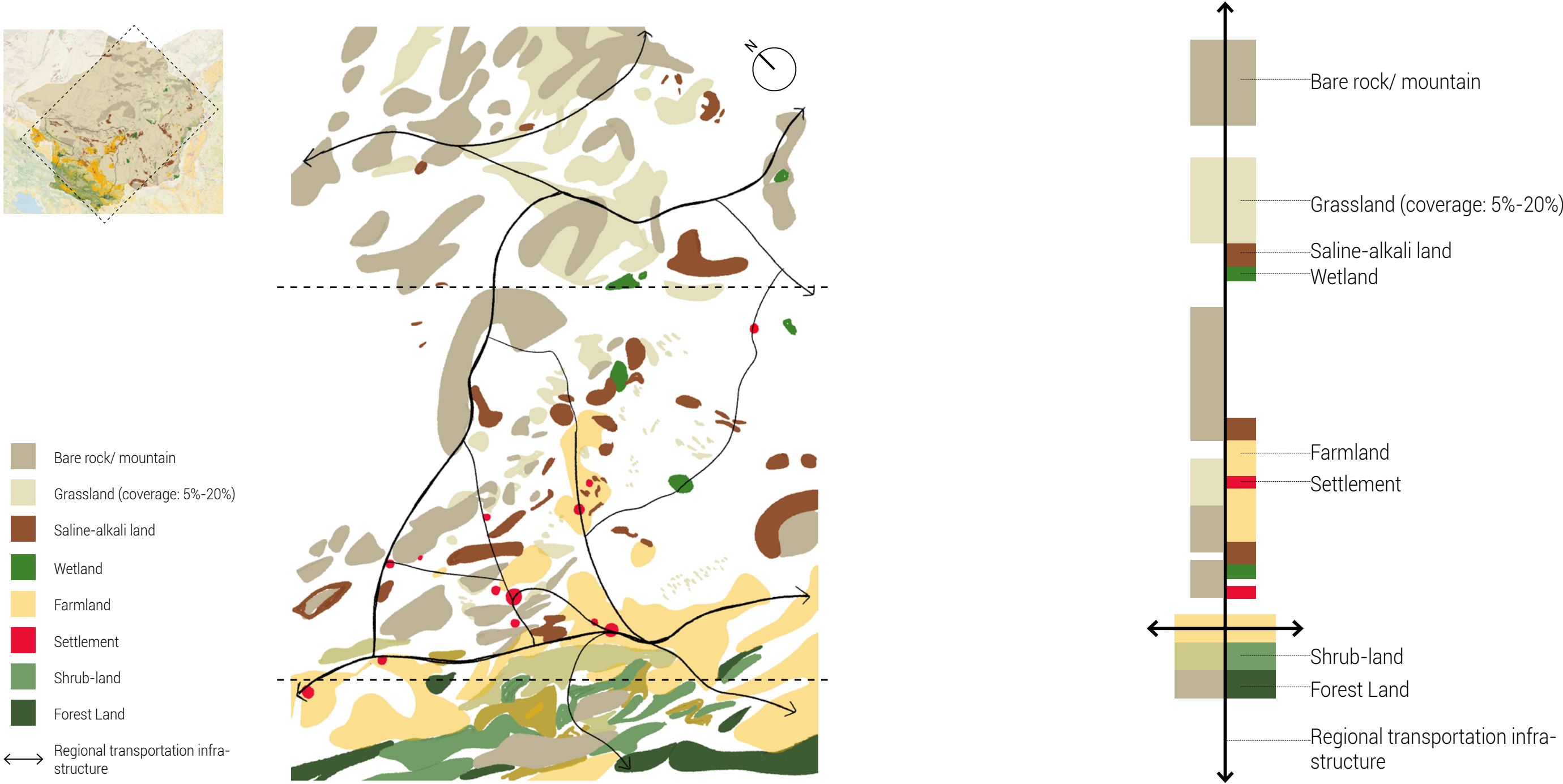


Figure: Current land-use abstract map (Source: Drawn by the author)

4.2 Ecological Base for the Three Scenarios

Desertification expansion and desert movement

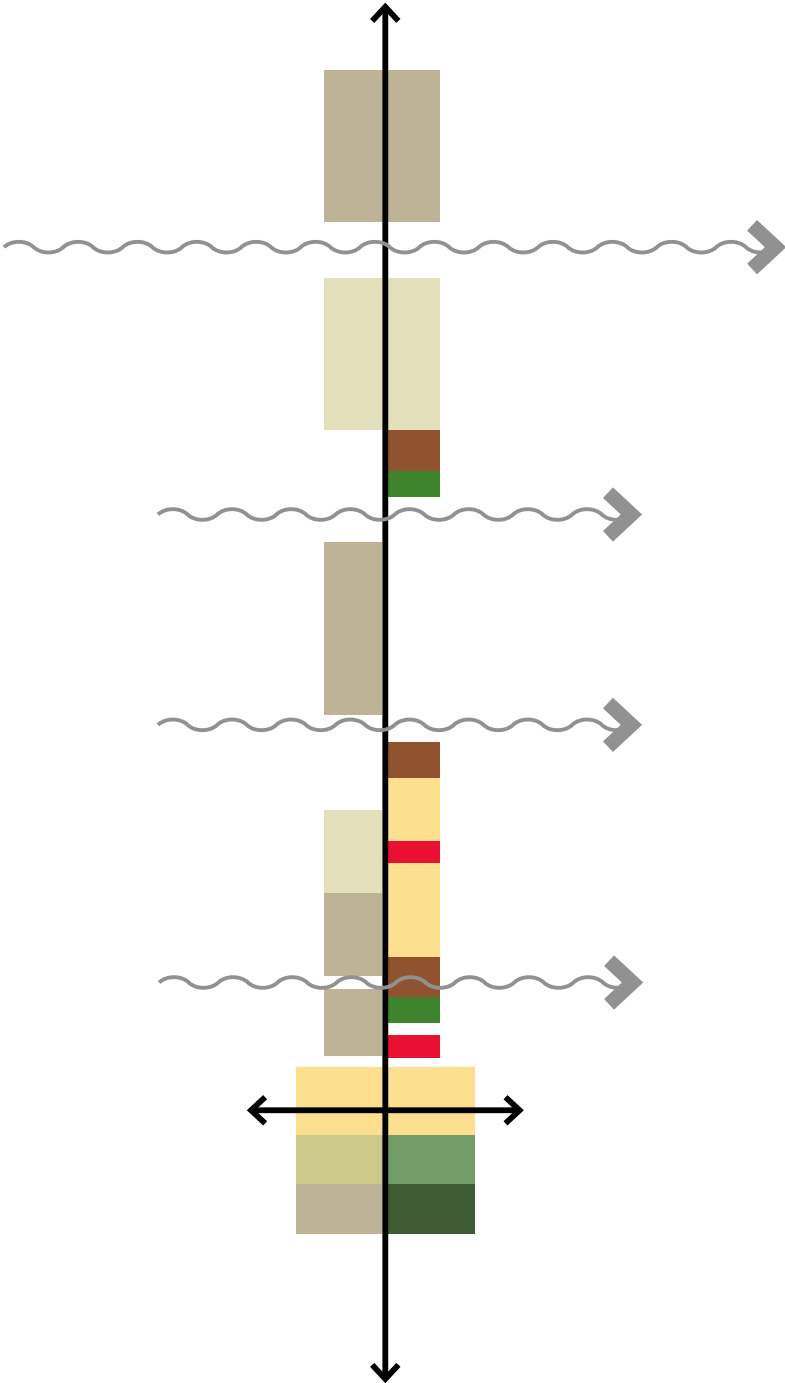
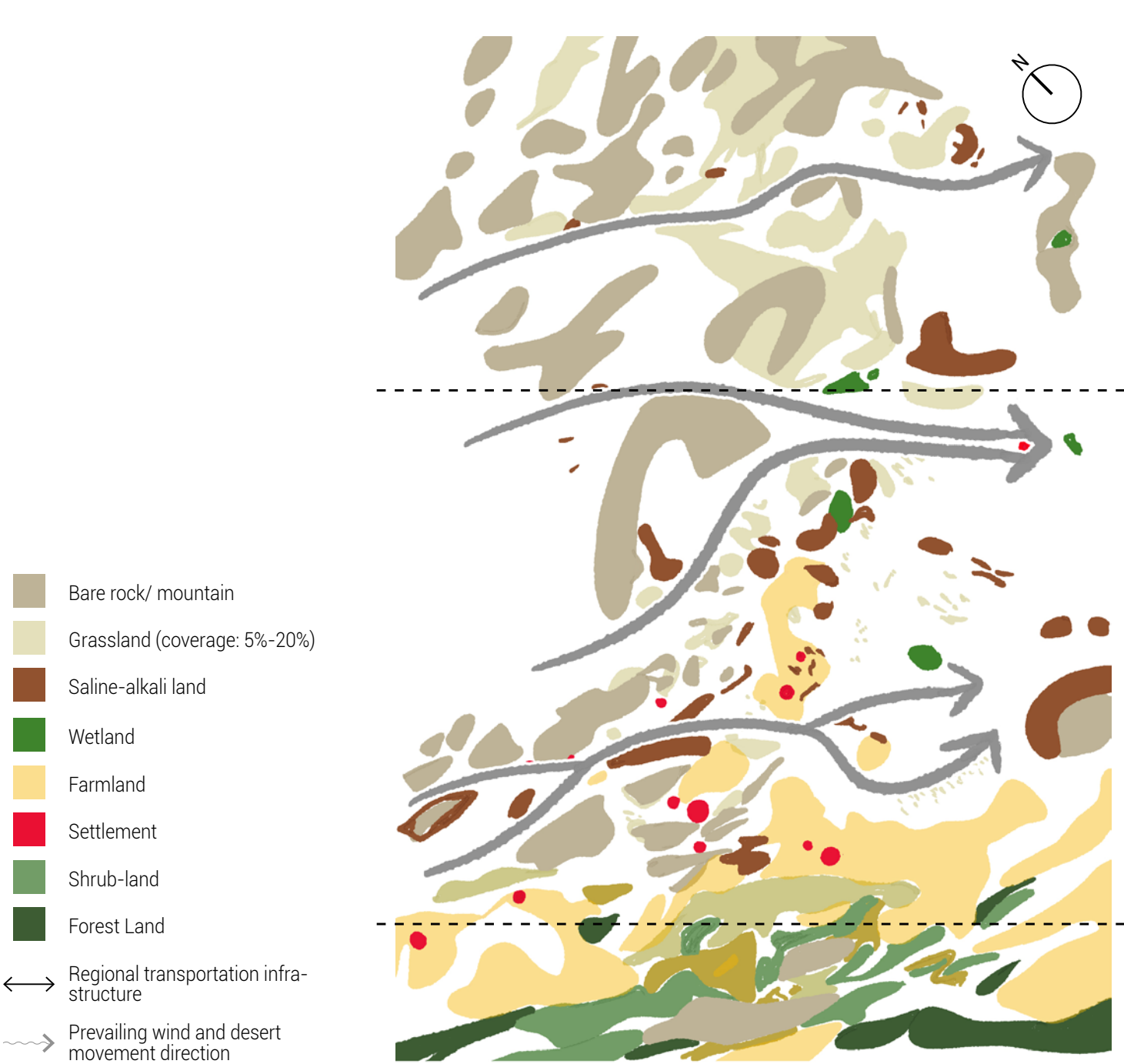
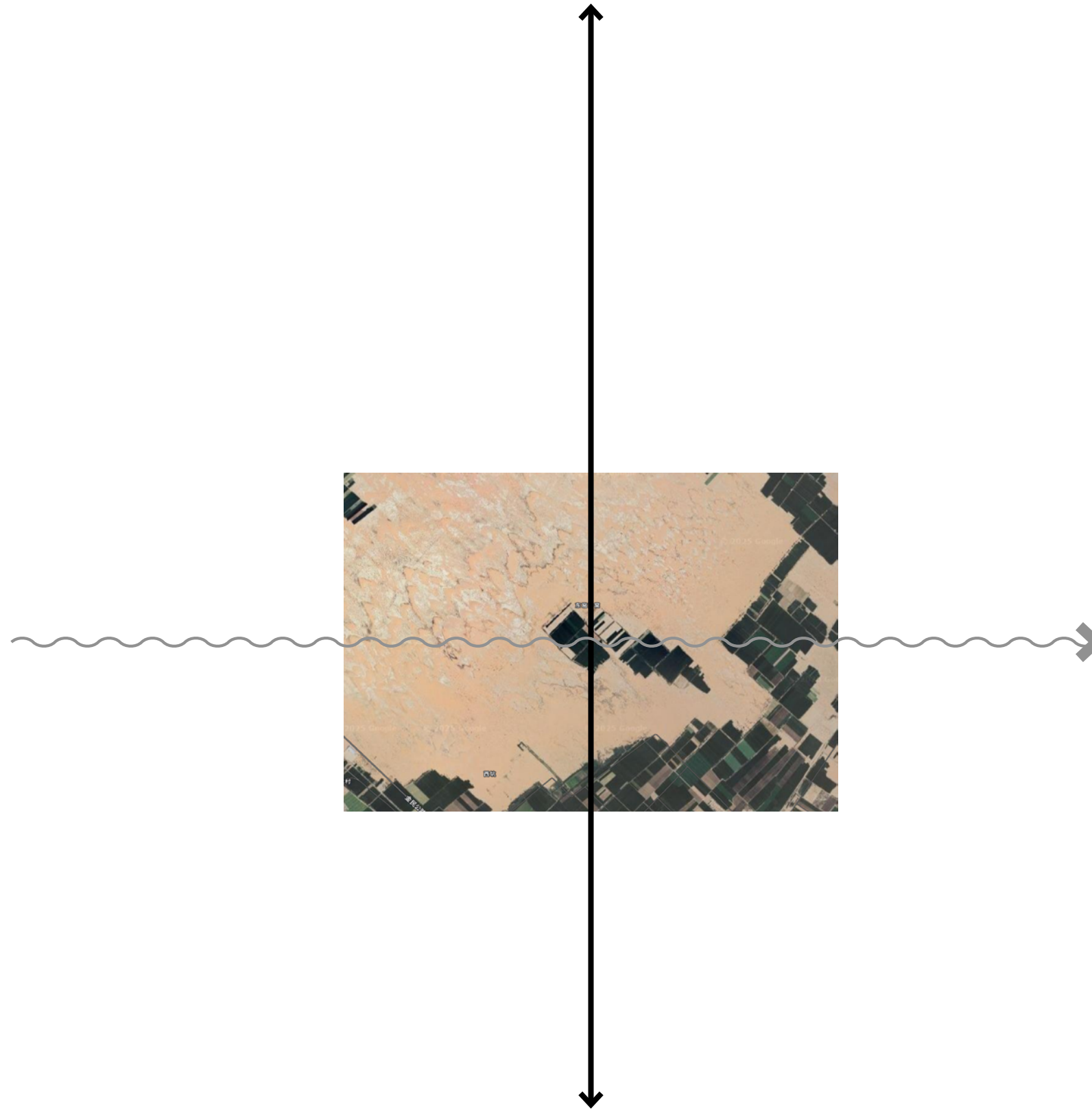


Figure: Diagram of desert migration mechanism (Source: Drawn by the author)

4.2 Ecological Base for the Three Scenarios

Desertification expansion and desert movement



4.2 Ecological Base for the Three Scenarios

Vision to stop desert expansion

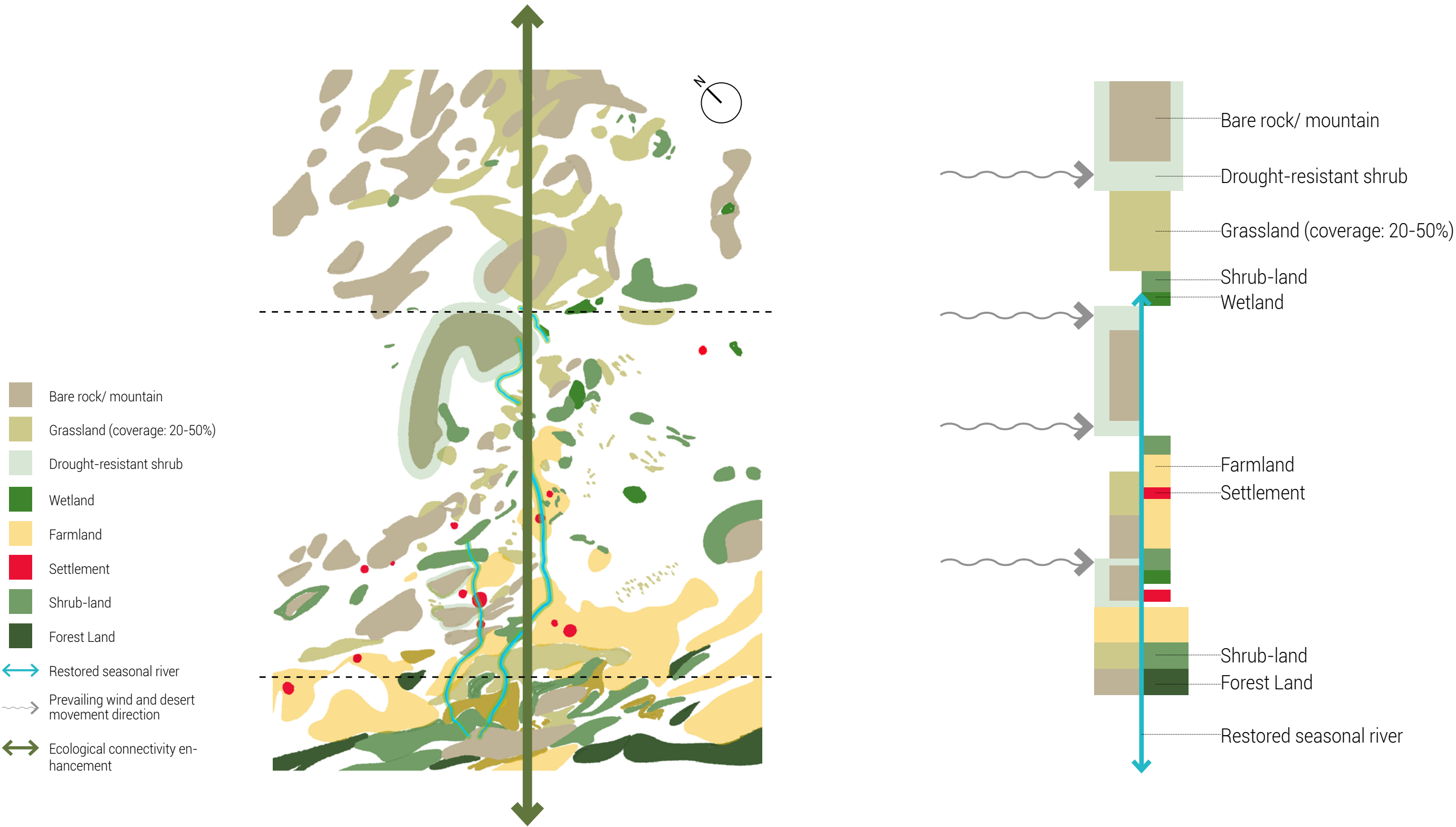


Figure: Concept vision diagram (Source: Drawn by the author)

4.2 Ecological Base for the Three Scenarios

Ecological Watershed Restoration Strategies: restore pitches

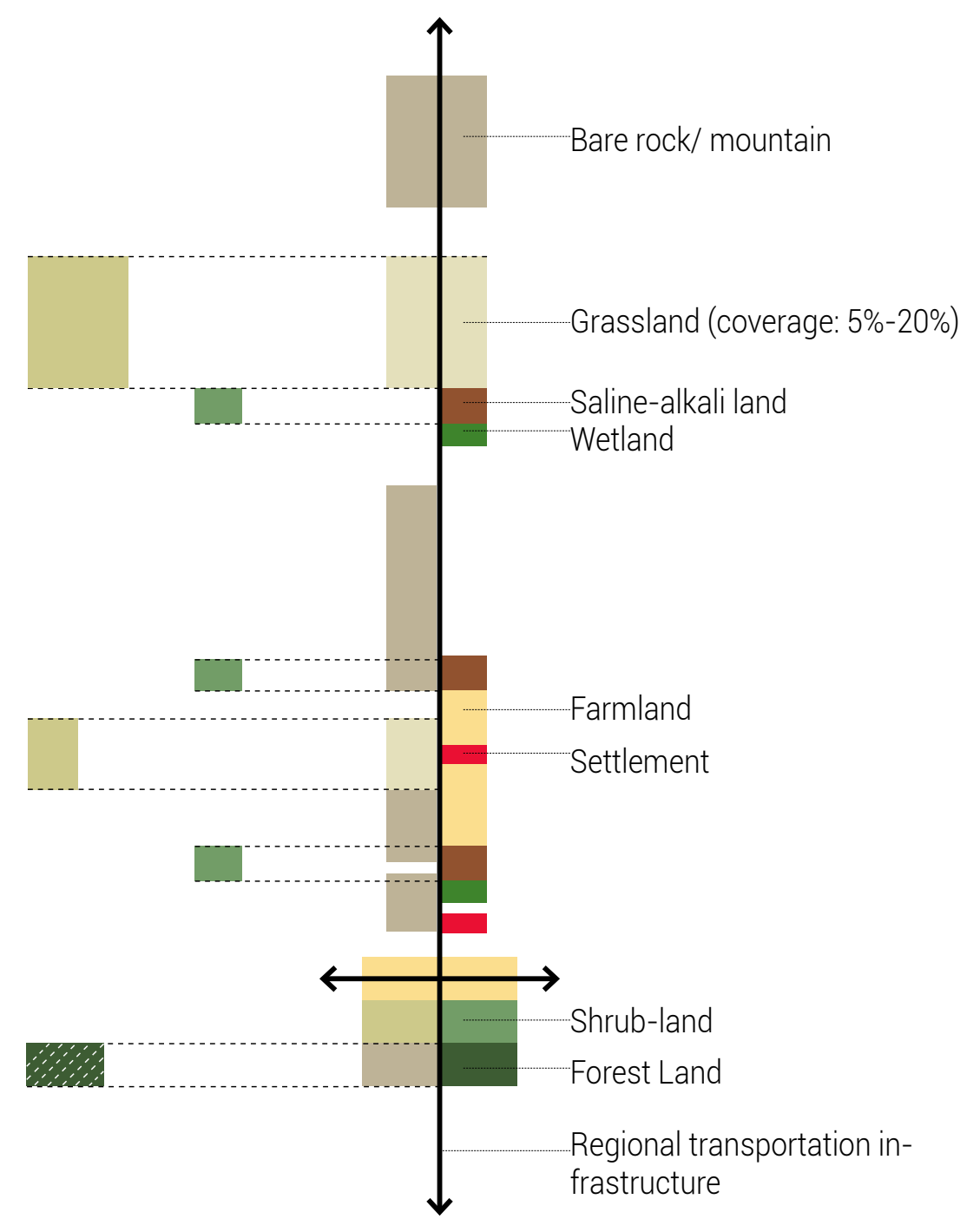
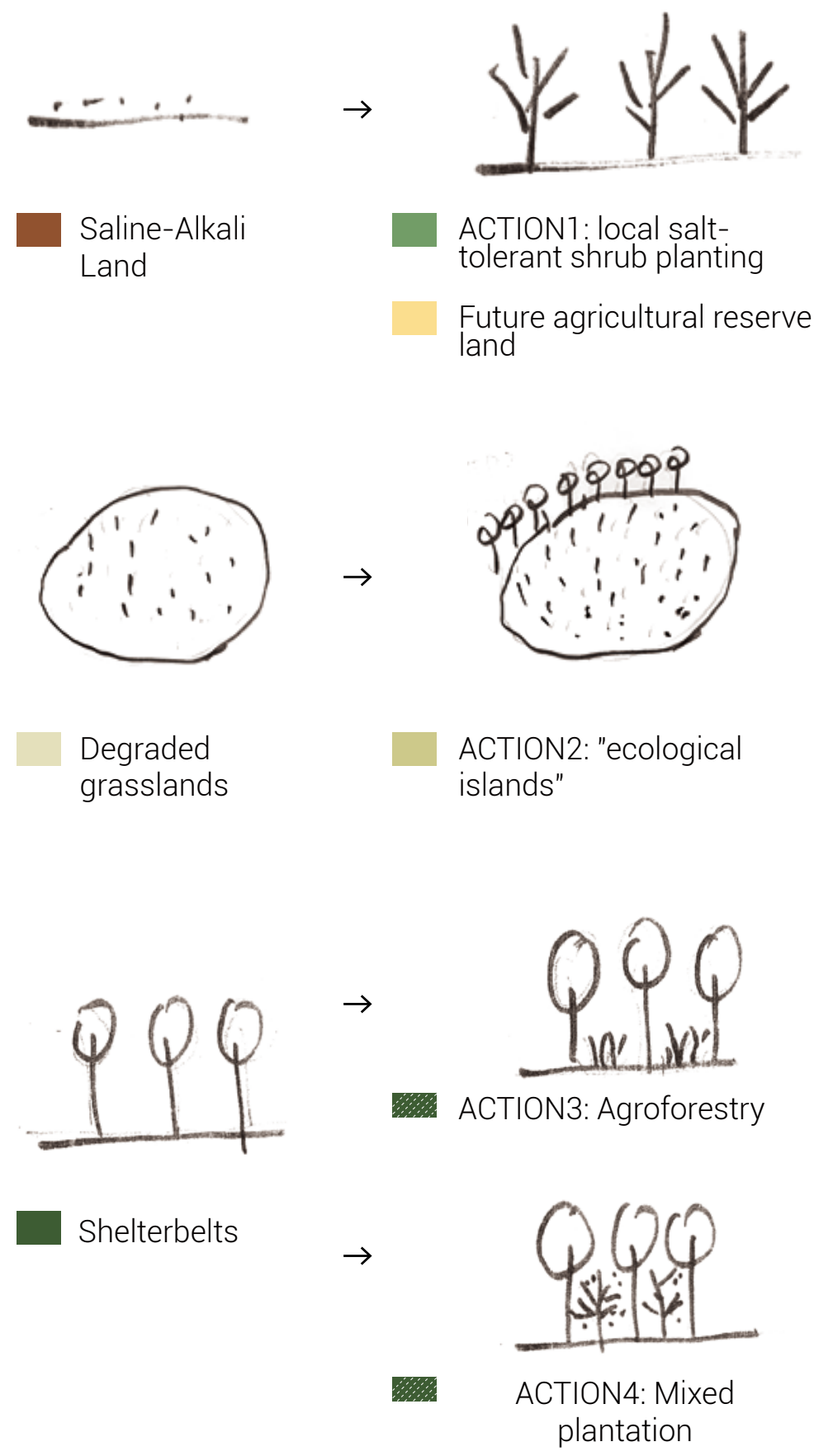


Figure: Methods Diagrams (Source: Drawn by the author)

4.2 Ecological Base for the Three Scenarios

Ecological Watershed Restoration Strategies: block and connect

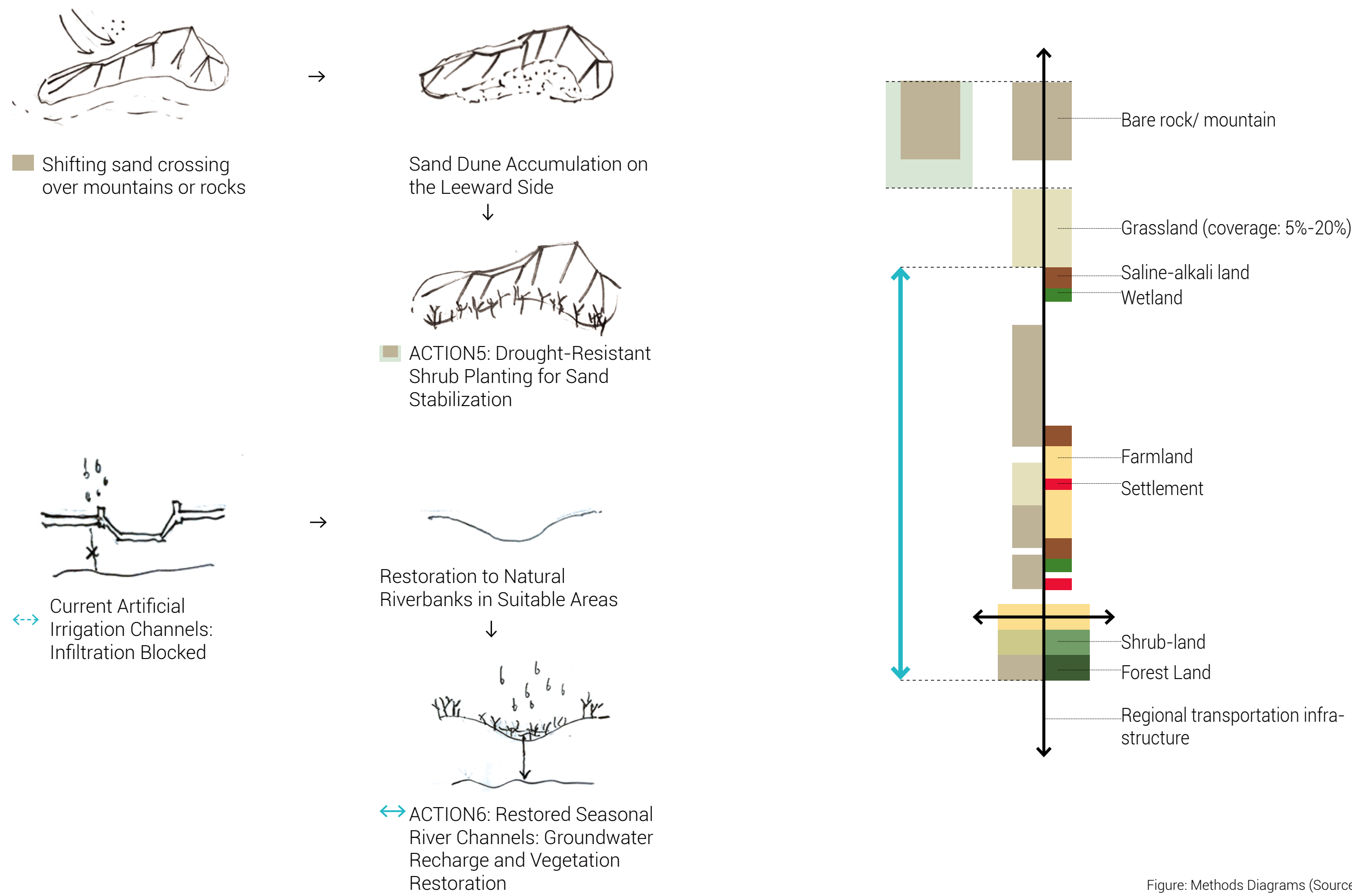


Figure: Methods Diagrams (Source: Drawn by the author)

4.2 Ecological Base for the Three Scenarios

Desertification Restoration Action Plan in Northwest China

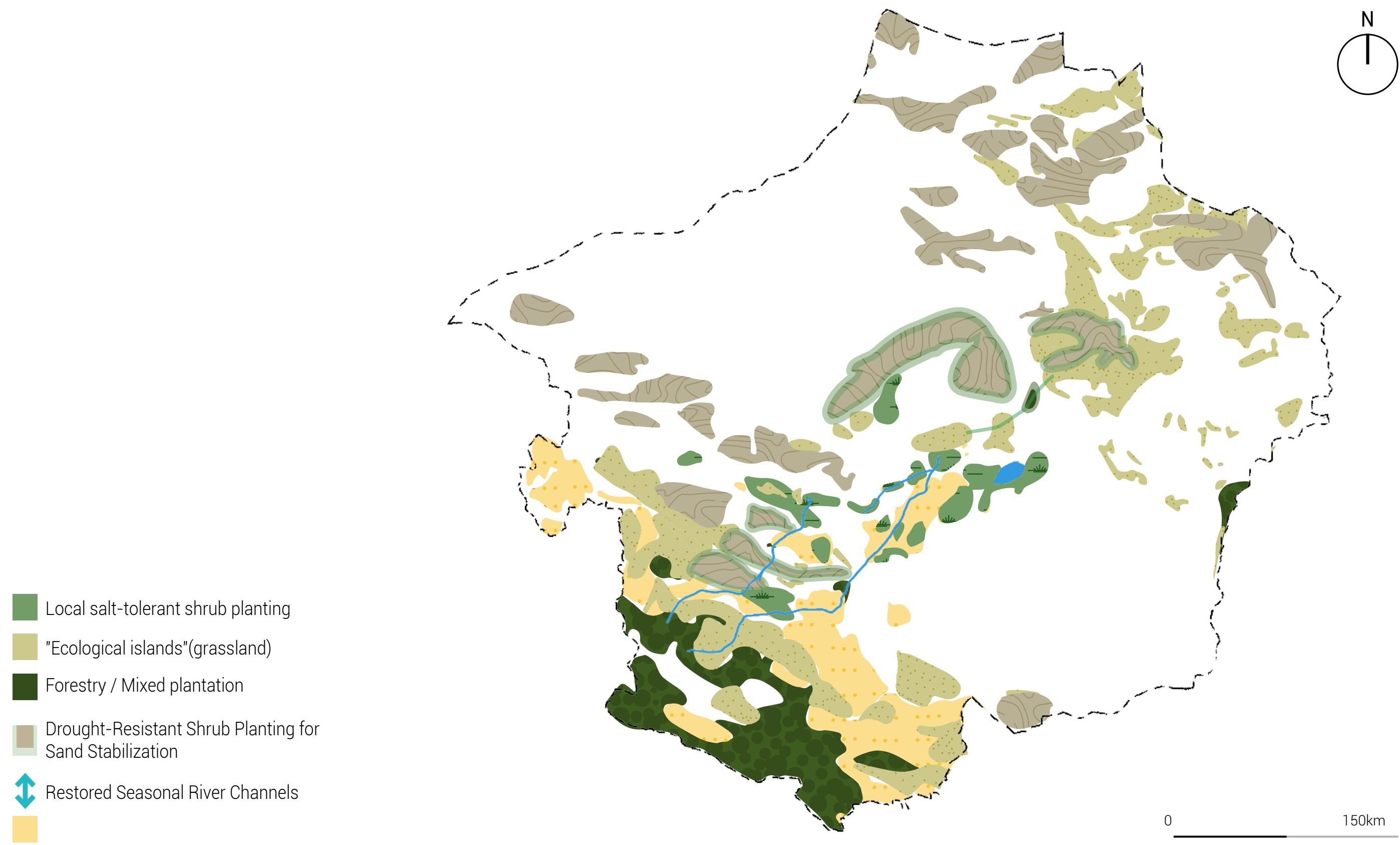


Figure: Action plan map for desertification restoration in Northwest China (Source: Drawn by the author)

4.2 Ecological Base for the Three Scenarios

Current landscape conditions



Figure: The current Landscape (Source: Drawn by the author)



Figure: Current desert landscape collage (Source: Drawn by the author)

4.2 Ecological Base for the Three Scenarios

Landscape transformation after ecological restoration

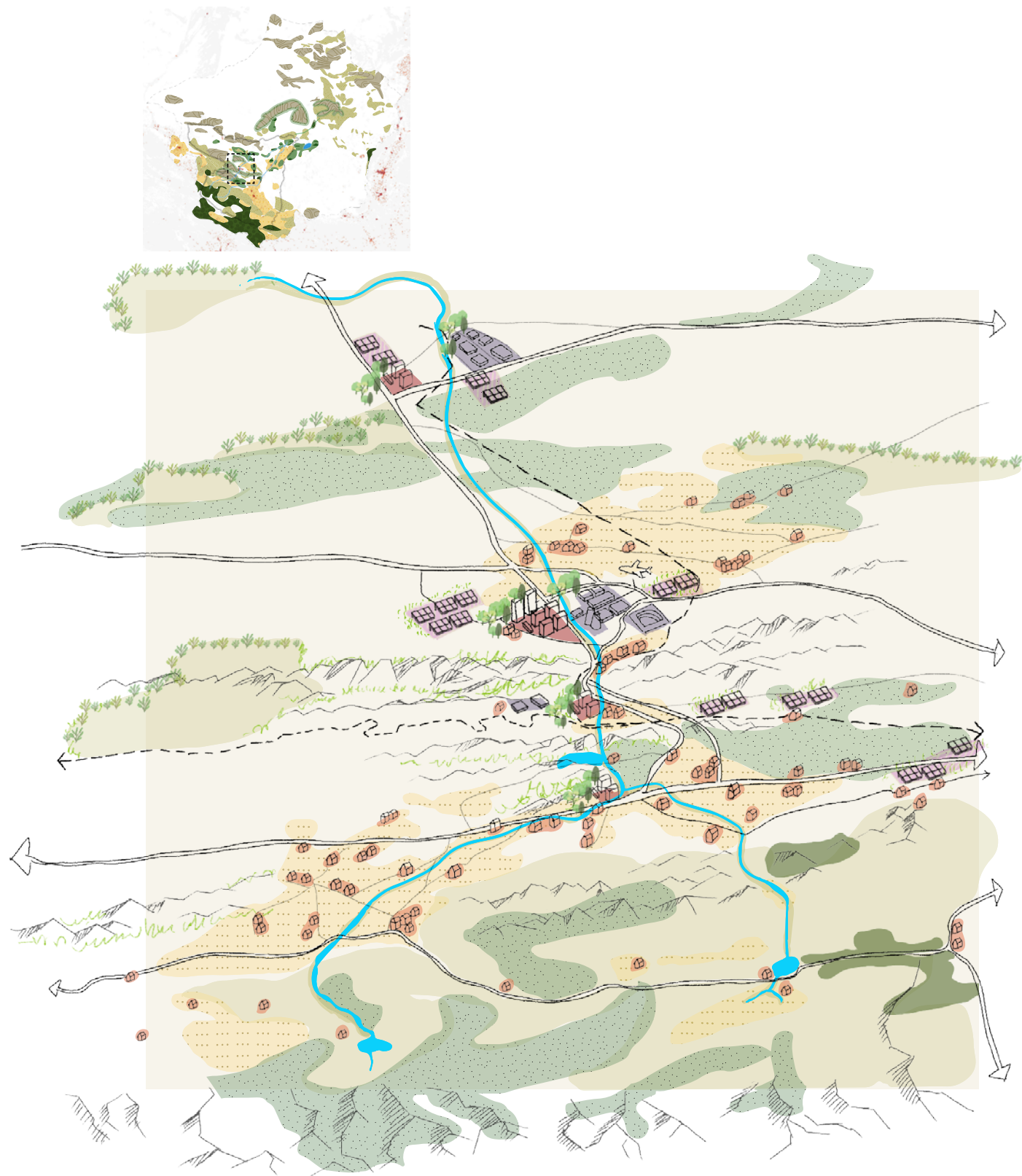


Figure: The landscape transformation after ecological restoration (Source: Drawn by the author)



Figure: Landscape transformation collage (Source: Drawn by the author)

4.3 The Three Scenarios

Scenario logic

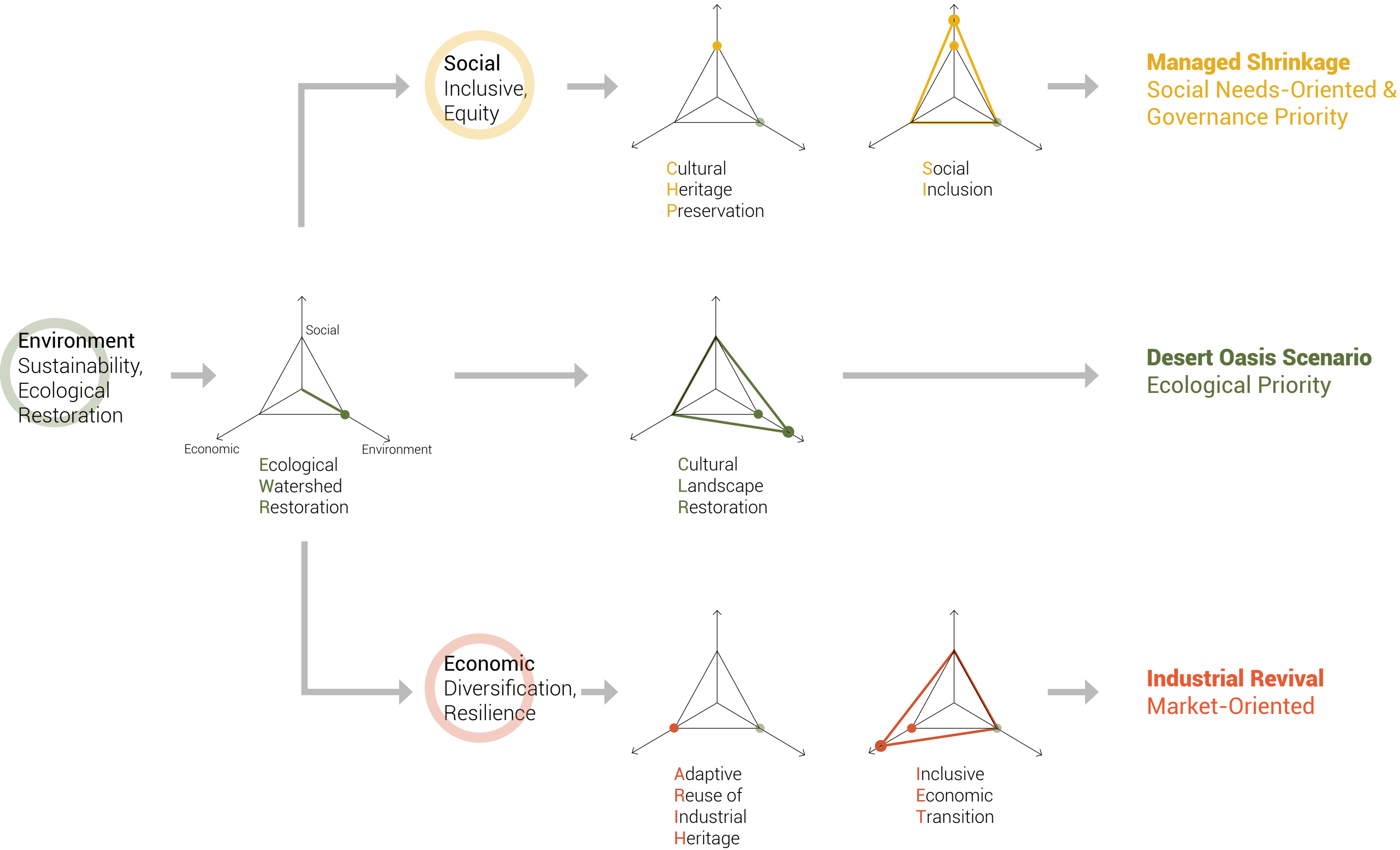


Figure: Scenario logic diagram (Source: Drawn by the author)

4.3 The Three Scenarios

Scope: focus on Densely Populated River Basins

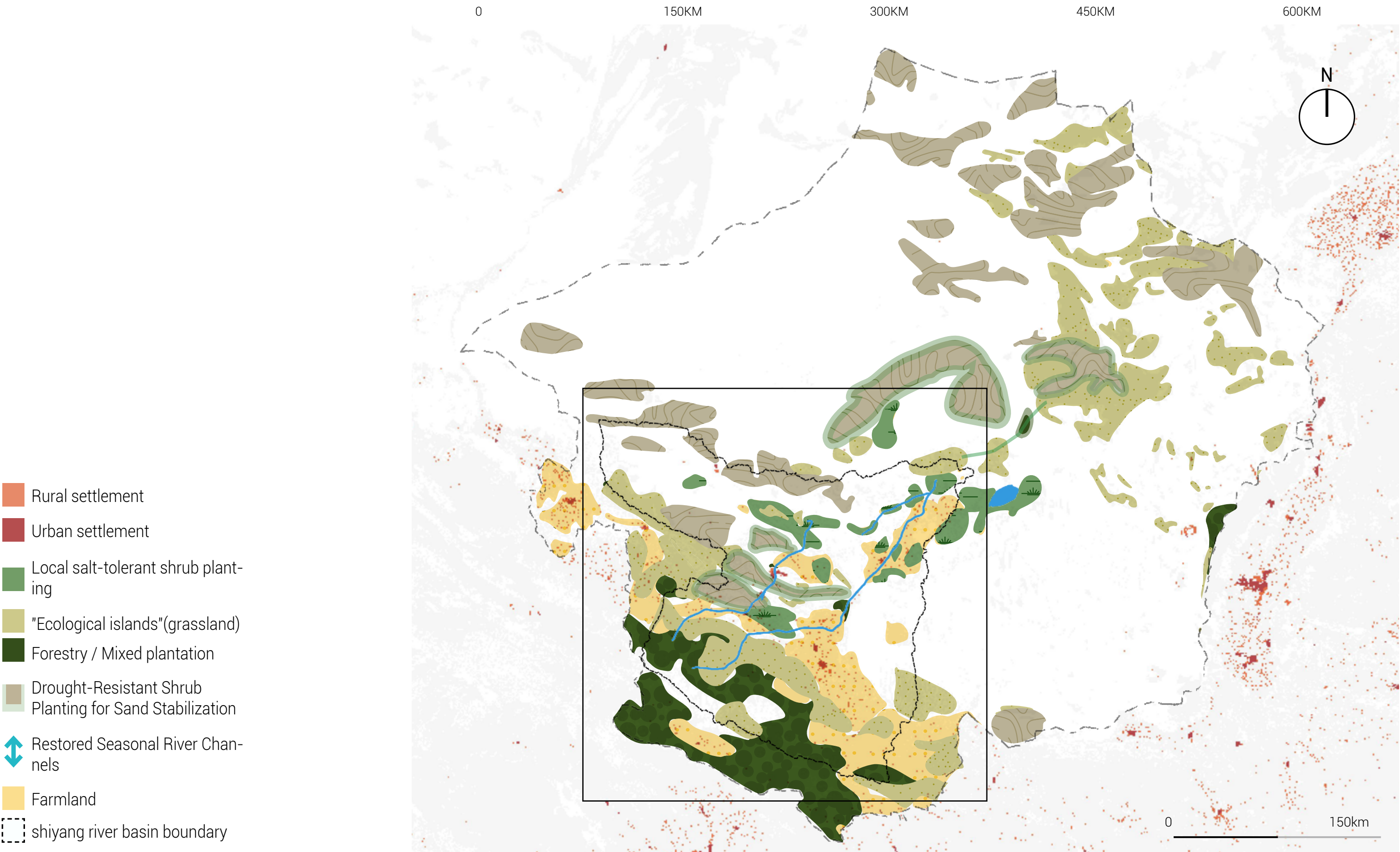
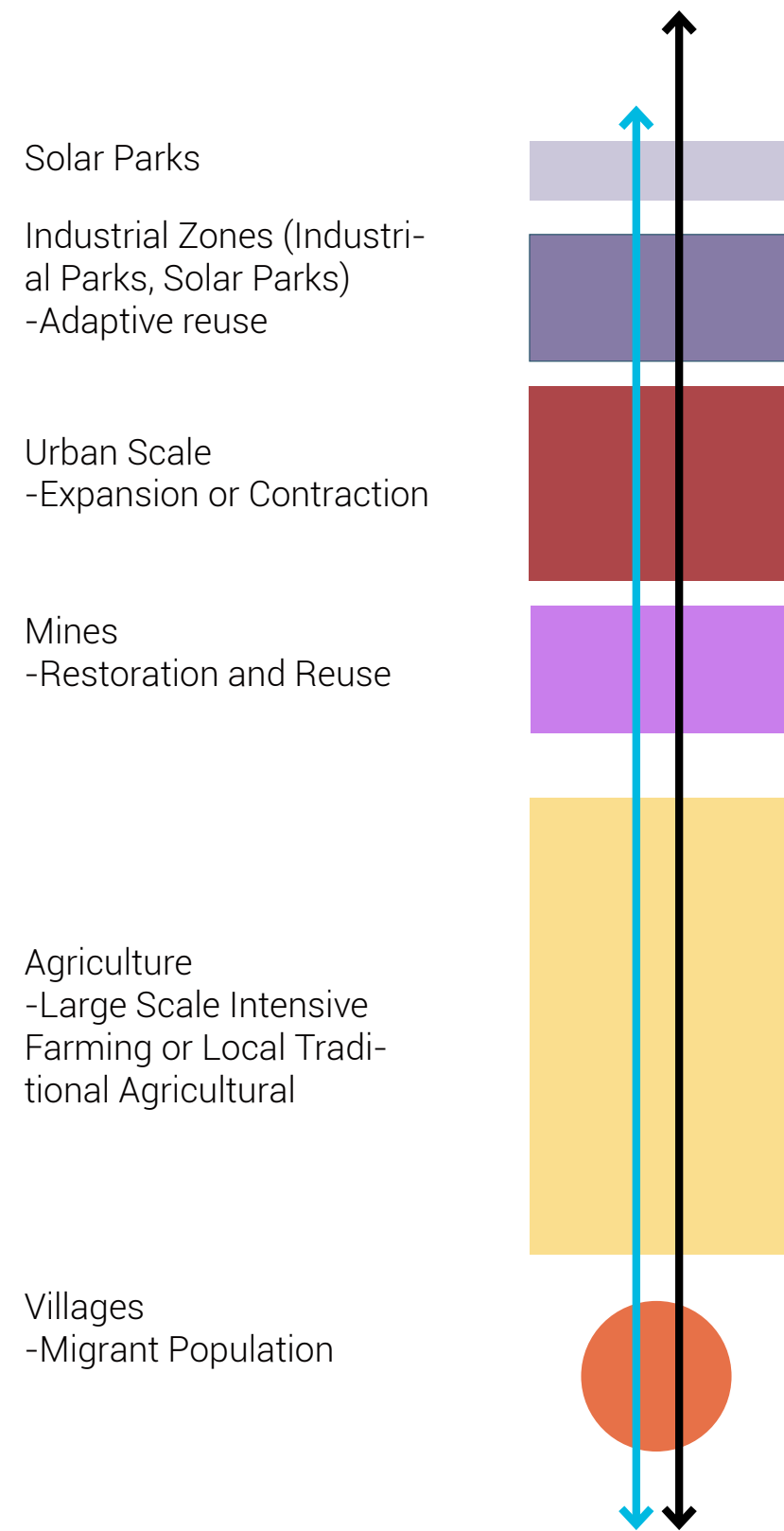


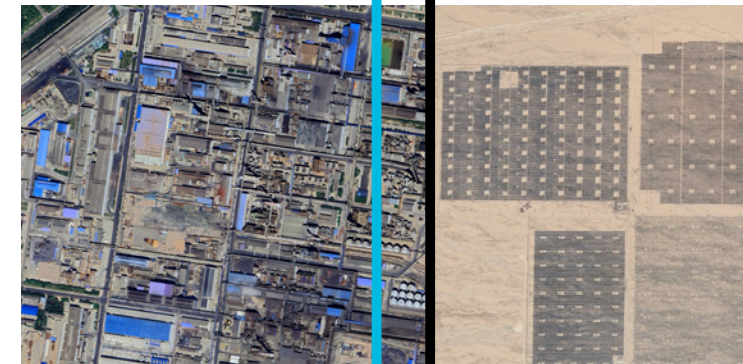
Figure: Action plan map for desertification restoration in Northwest China (Source: Drawn by the author)

4.3 The Three Scenarios

Implementation Space for Measures



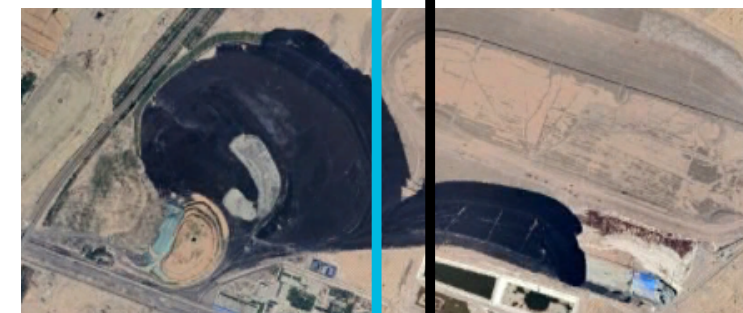
Industrial Zones



Urban



Mines



Agriculture and village



4.3 The Three Scenarios

Current landuse

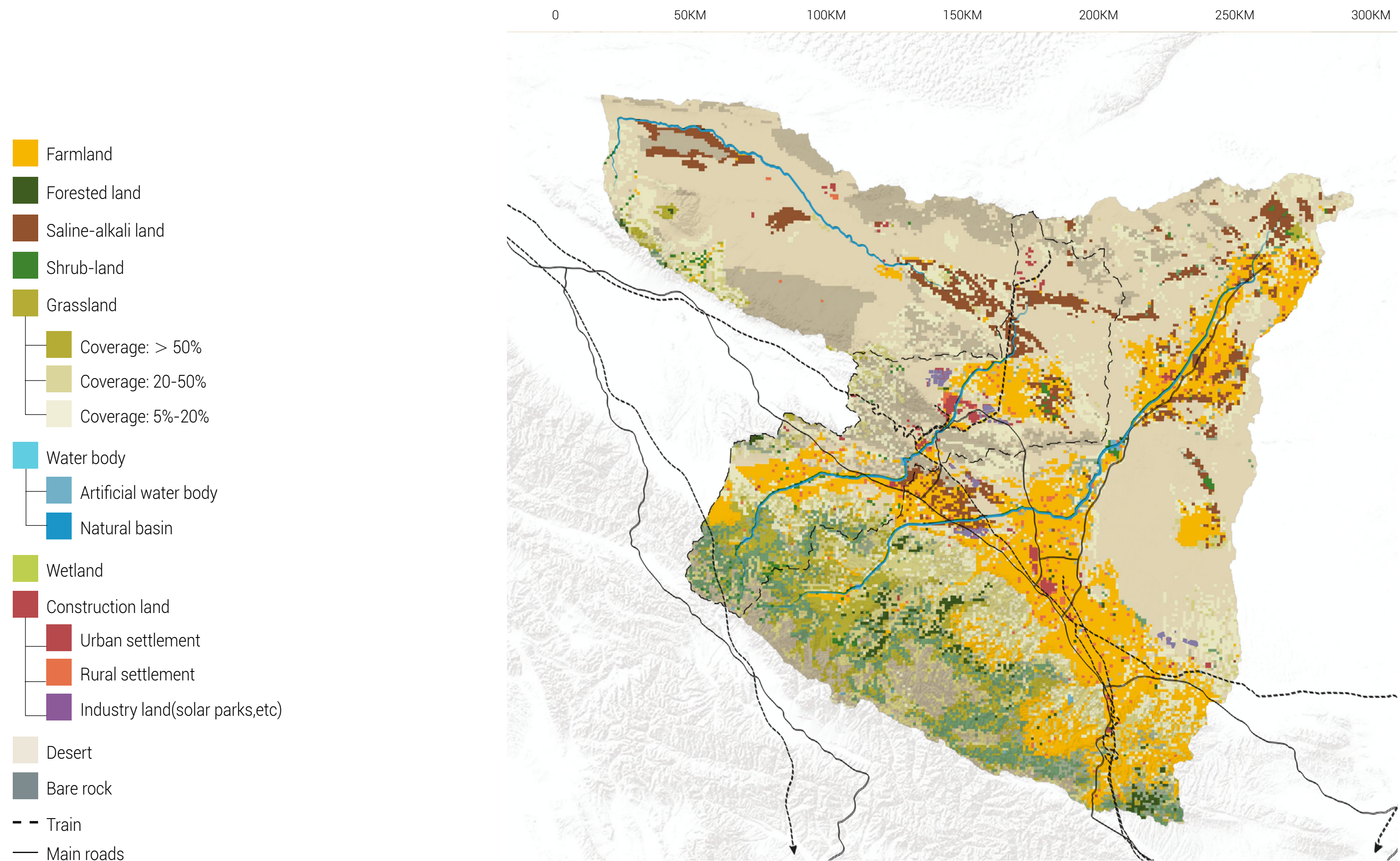


Figure: Scenario base-map (Source: Drawn by the author)

4.4 Managed Shrinkage Scenario

Scenario logic

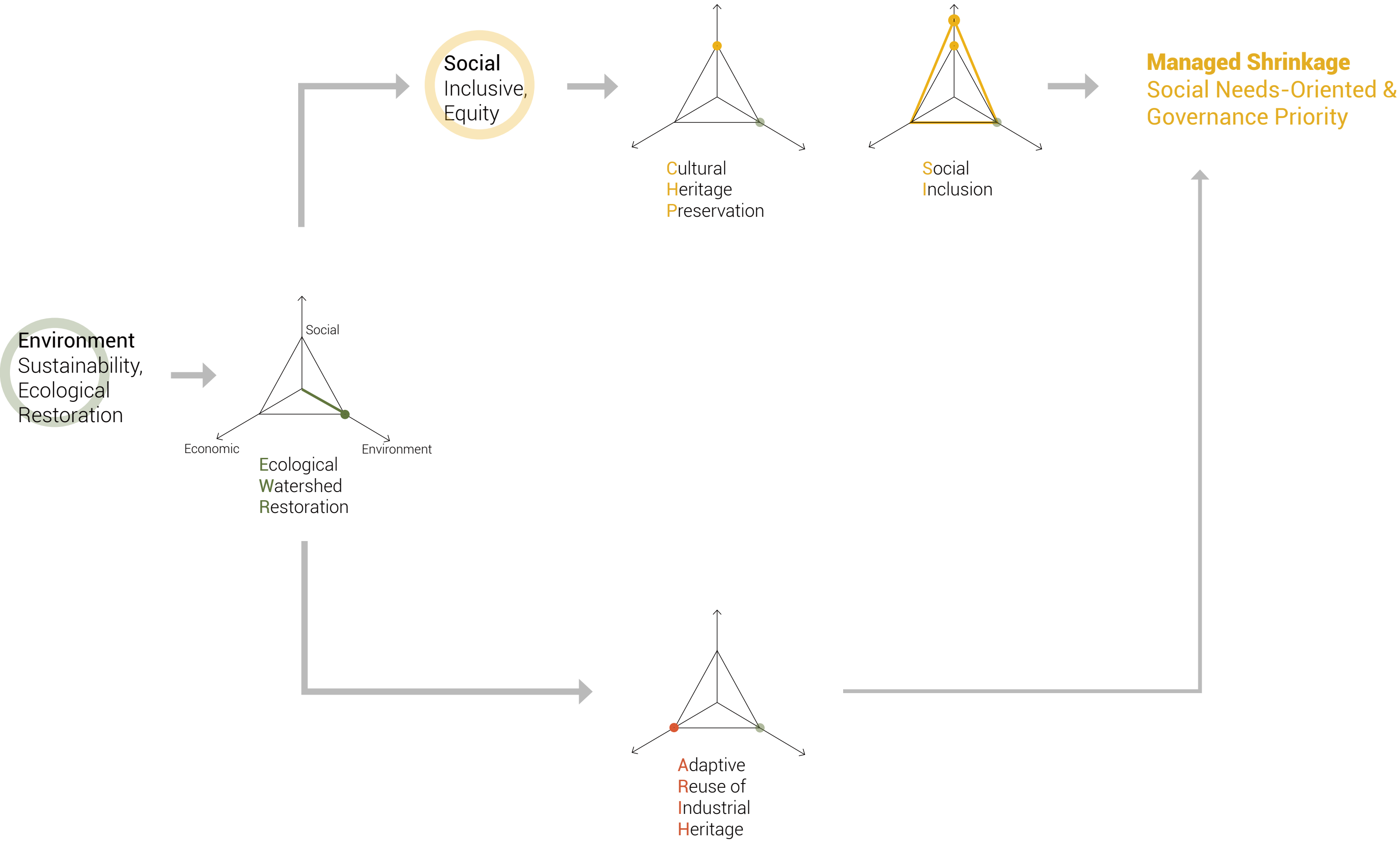


Figure: Scenario logic diagram of managed shrinkage scenario (Source: Drawn by the author)

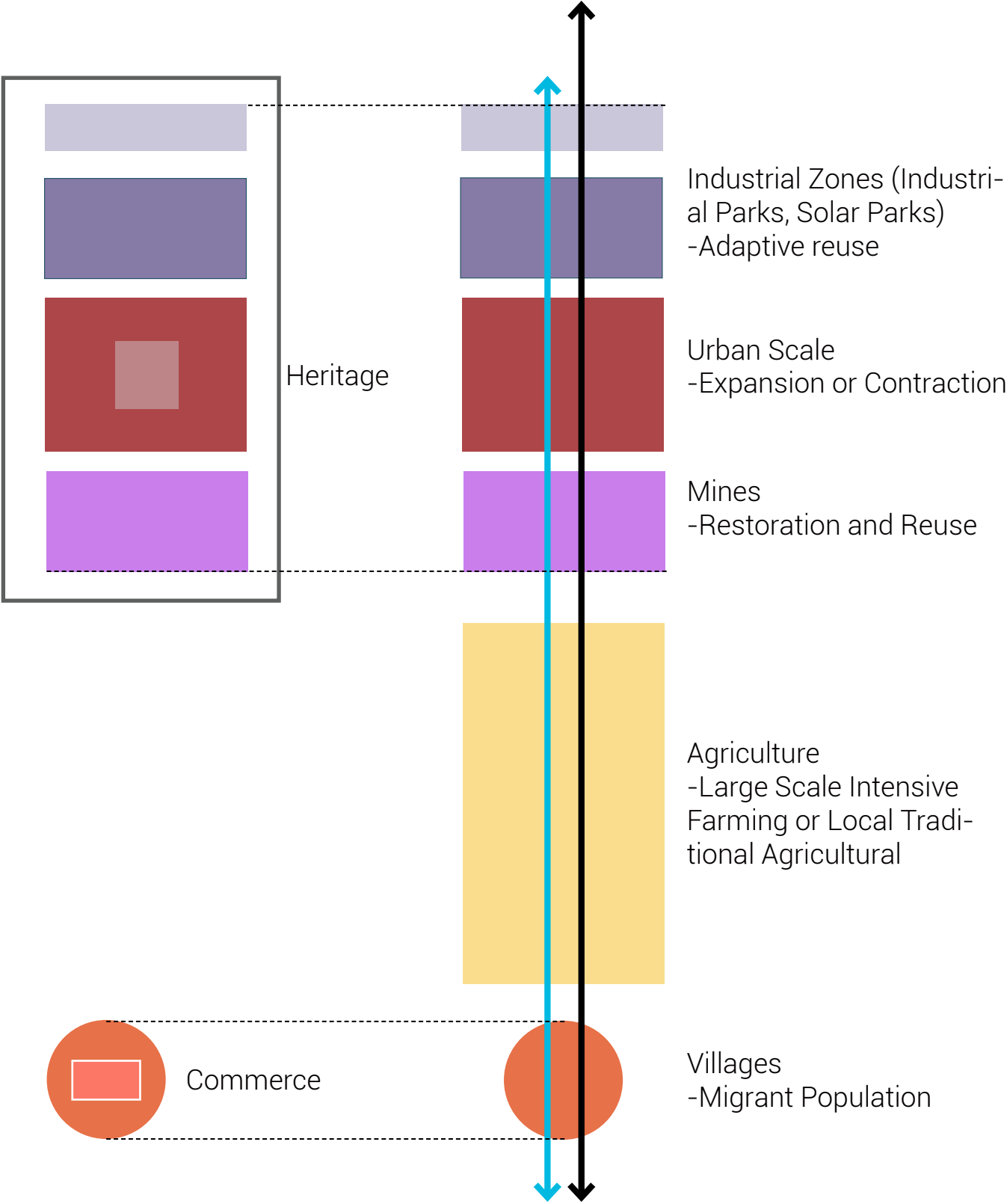
4.4 Managed Shrinkage Scenario

Strategies and Actions

- Social Inclusion strategy

Urban boundary control
- Historical heritage protection
- Cultural Heritage Preservation

Provide Tourism Facilities:
Transform Vacant Rural
Housing into Guesthouses



4.4 Managed Shrinkage Scenario

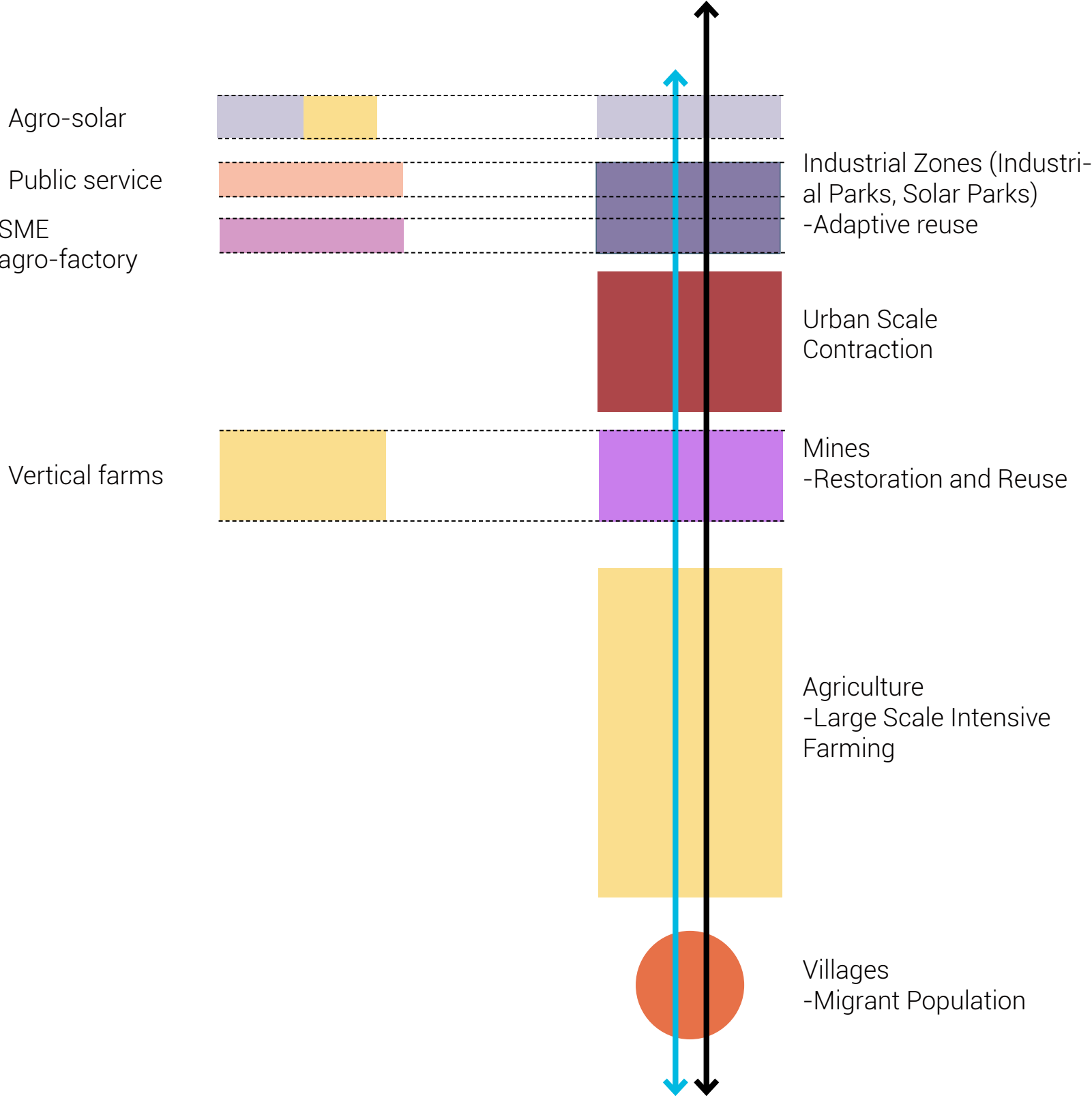
Strategies and Actions

Adaptive Reuse of Industrial Heritage
agro-solar Integration



Re-purposing industrial parks:
 · For SME agro-factory development
 · For public service functions (libraries, community service centers)

Mine pit Restoration and Reuse
 · Transformation into tiered vertical farms



4.4 Managed Shrinkage Scenario

Regional cooperation

Mainly focused on acceptance of industrial decline and urban scale reduction, Regional development of agriculture, utilization of industrial spaces for agricultural production and service facilities, Preservation of historical sites, and integration into the Silk Road tourism.

- Grassland
- Shrub land
- Forest
- Mountain
- Sand fixation zone
- Urban settlement
- Rural settlement
- Agro-Solar Integration
- SME Agro-Factories
- Mine rehabilitation and adaptive reuse
- Eco-efficient agriculture
- Rotational razing agricultural reserve Land
- Ancient settlement preservation
- Cultural tour route

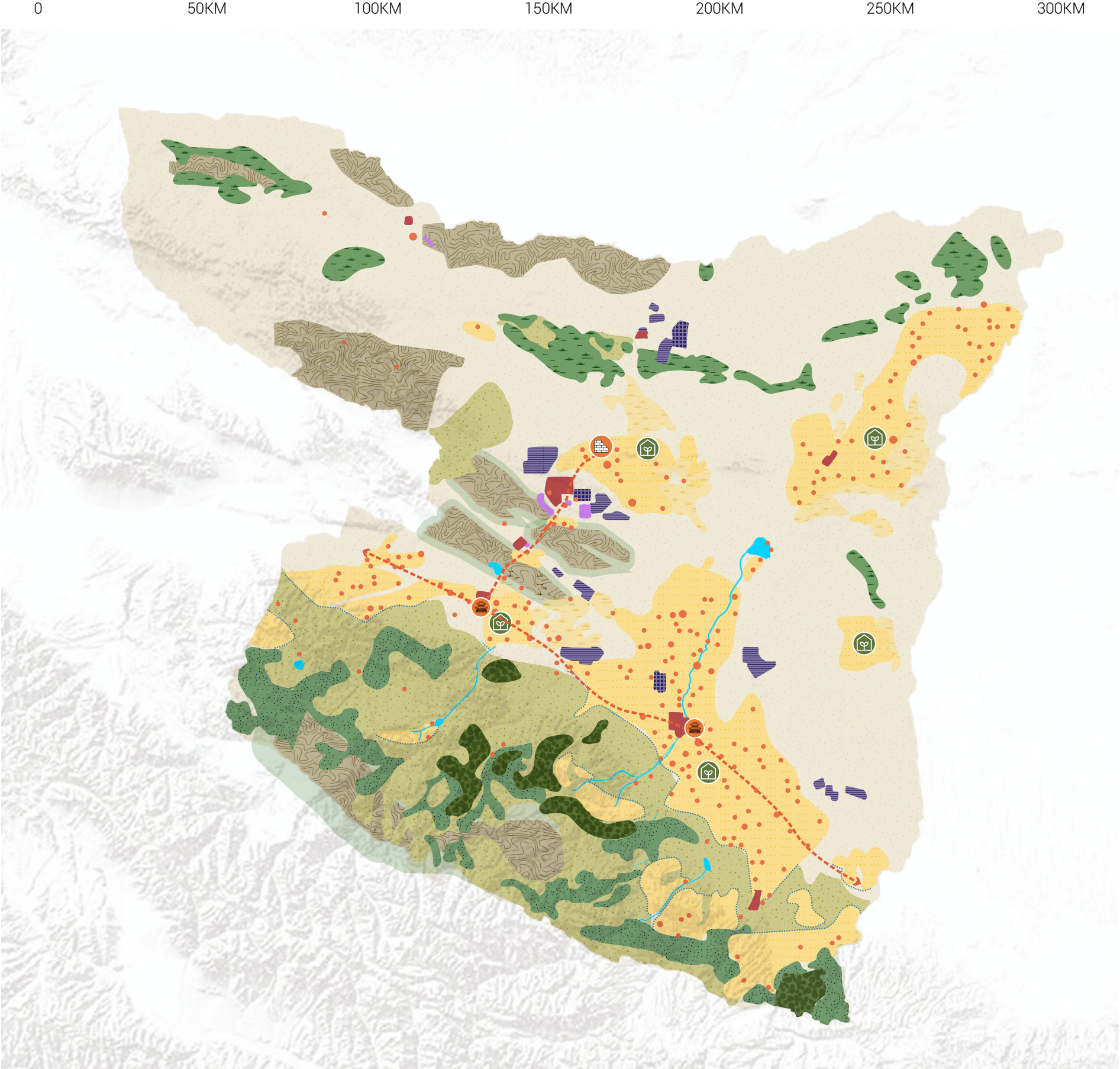


Figure: Managed Shrinkage Scenario vision map (Source: Drawn by the author)

4.5 Industrial Revival Scenario

Scenario logic

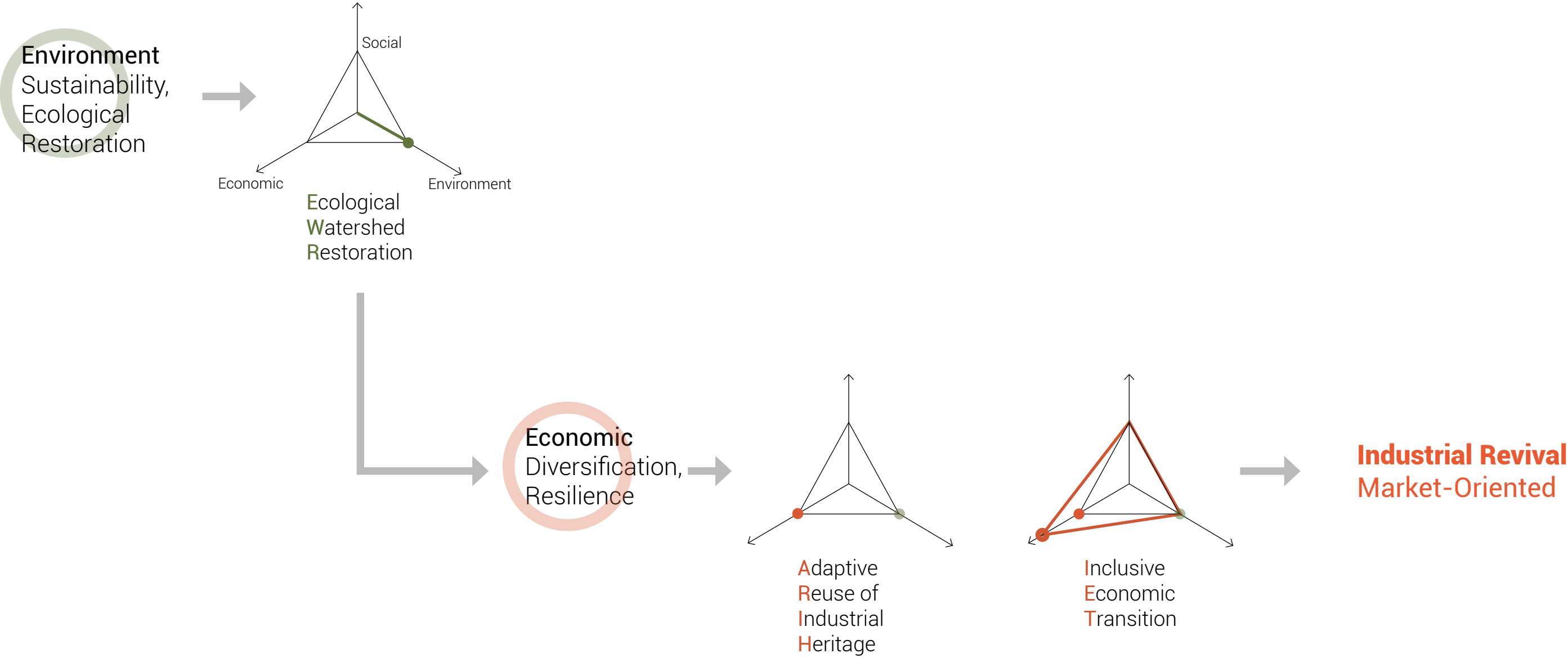


Figure: Scenario logic diagram of industrial revival scenario (Source: Drawn by the author)

4.5 Industrial Revival Scenario

Strategies and Actions

- Inclusive Economic Transition

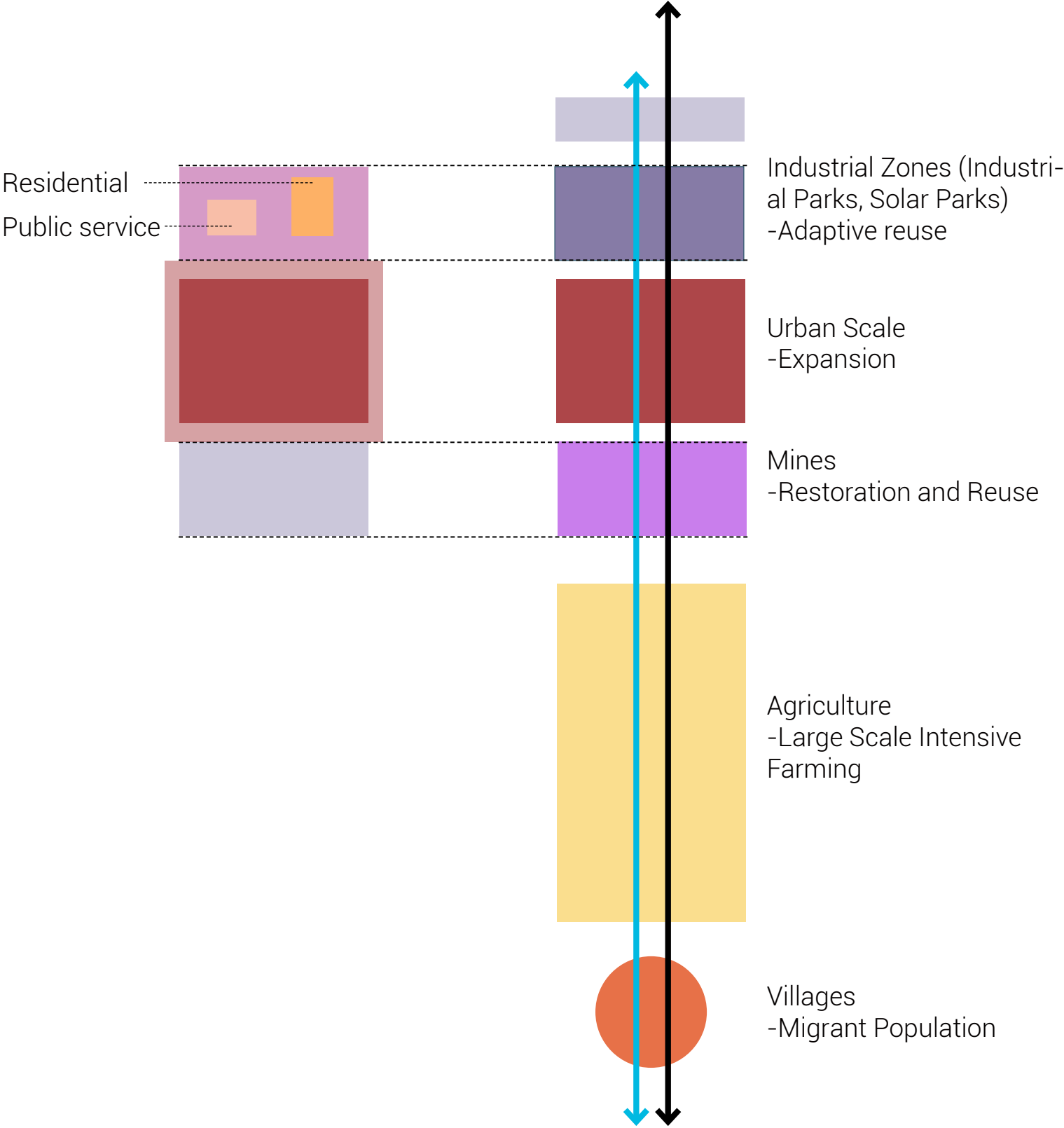
Improving Regional Transport Connectivity:
 - Connect with the regional road network
 - Increase traffic frequency
 - Improving power Transmission Networks
- Improvement of Industrial Parks:

Enhance supporting facilities (residential, service facilities)
- Adaptive Reuse of Industrial Heritage

Re-purposing mining industry zone for new industry(battery, solar panel manufacturing)
- Mine pit Restoration and Reuse

· Transformation into solar park

Urban expansion



4.5 Industrial Revival Scenario

Regional cooperation

Aiming at economic revival and industrial upgrading, promote industrial development through technological innovation and market mechanisms to enhance urban economic vitality.

- Farmland
- Grassland
- Shrub land
- Forest
- Mountain
- Sand fixation zone
- Urban settlement
- Rural settlement
- Mine rehabilitation and adaptive reuse
- Industry park
- Solar Energy Park
- Airport
- Train station
- Main traffic connection
- New traffic connection
- Regional Power Grid

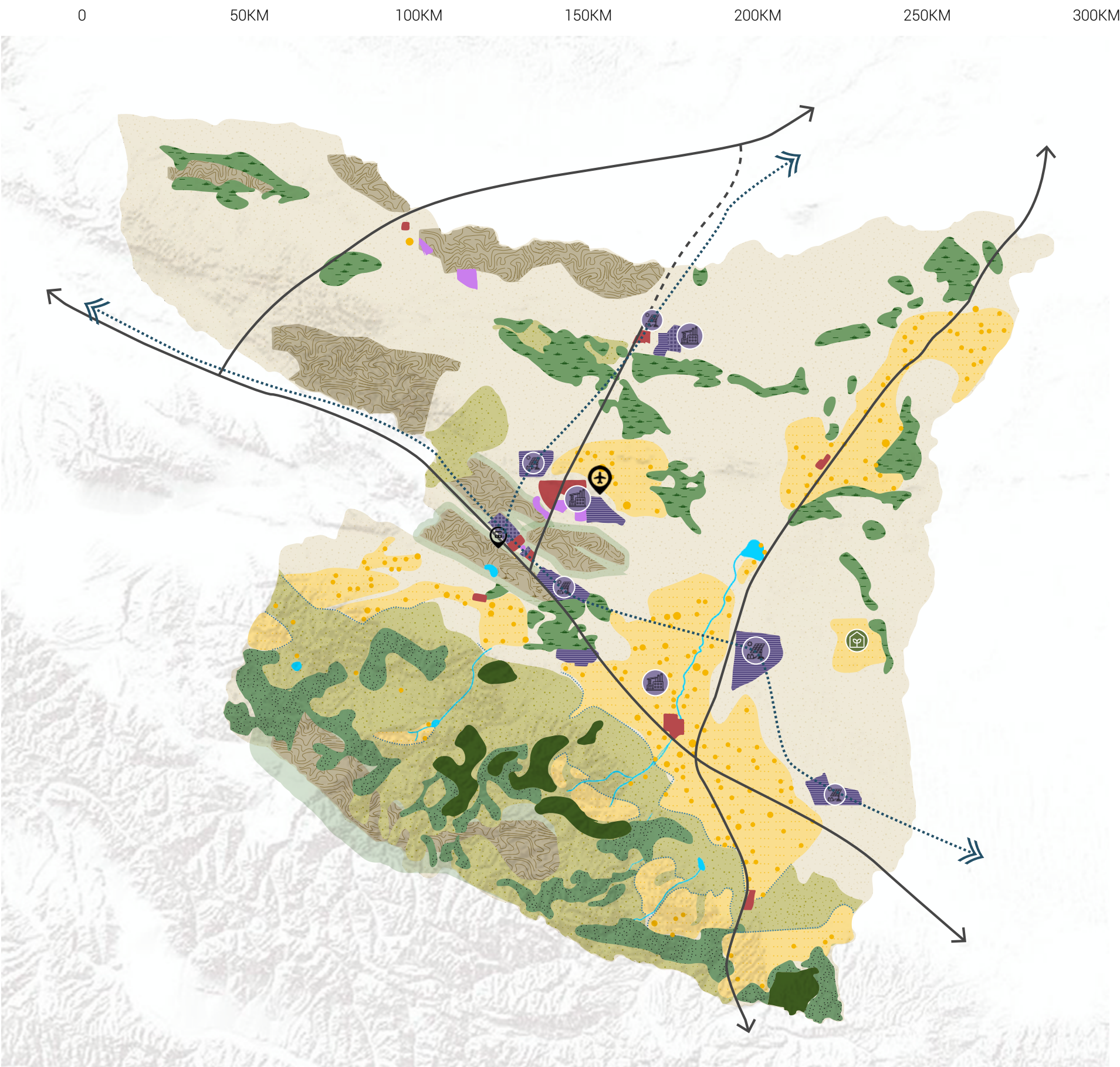


Figure: Industrial Revival Scenario vision map (Source: Drawn by the author)

4.6 Desert Oasis Scenario

Scenario logic



Figure: Scenario logic diagram of desert oasis scenario (Source: Drawn by the author)

4.6 Desert Oasis Scenario

Strategies and Actions

- Adaptive Reuse of Industrial Heritage

Mine pit Restoration and Reuse

· Transformation into Industrial Heritage tourism spot
- Cultural Landscape Restoration

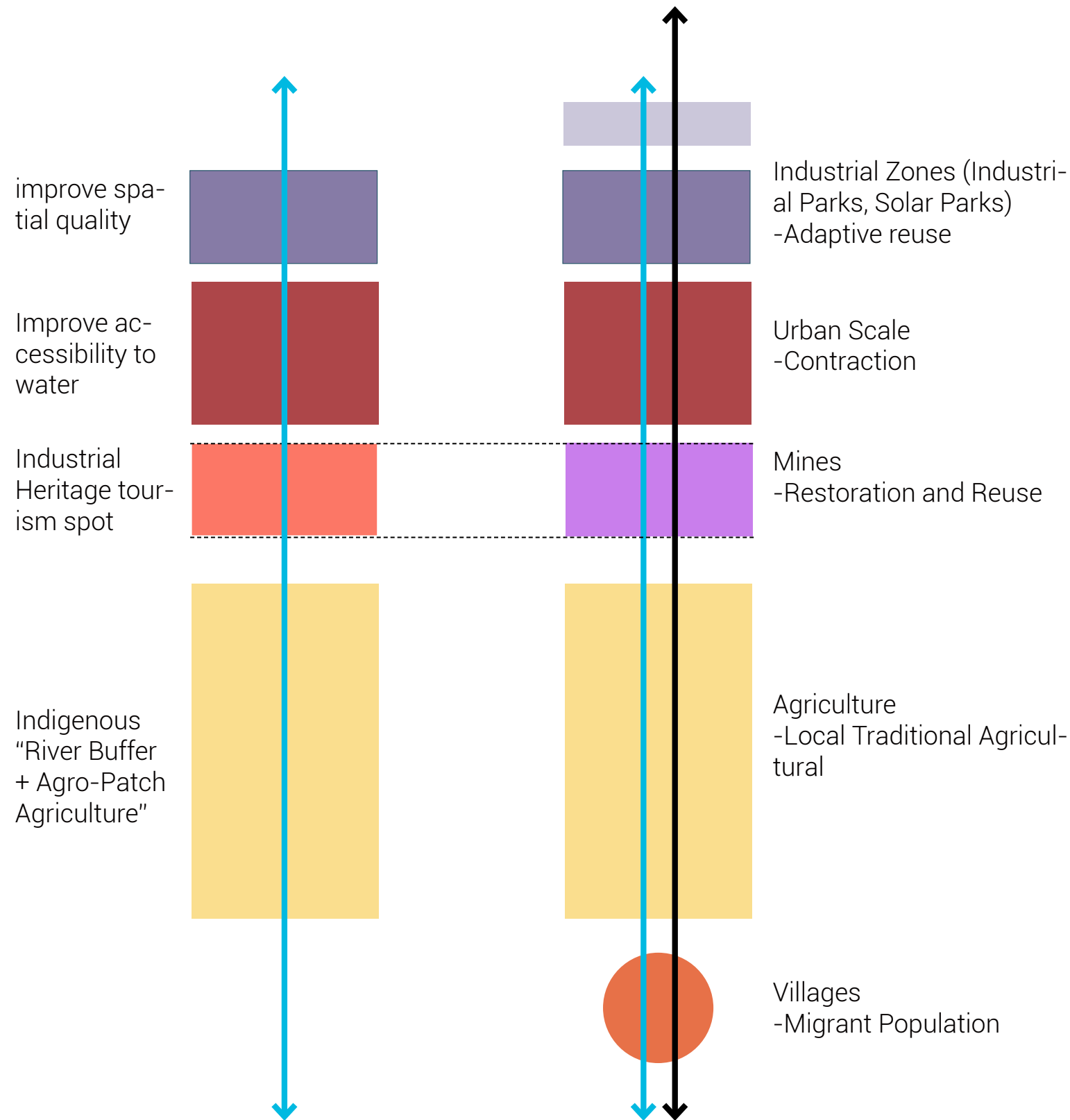
Restore the connection with the mountains and desert
- Cultural Landscape Restoration

Restore the connection with the river:

Rural Areas: Indigenous "River Buffer + Agro-Patch Agriculture"

Urban area: Enhance Water access in urban park, Better Industrial Park Environment

Shelter-belts: Re-wilding Artificial Channels



4.6 Desert Oasis Scenario

Regional cooperation

Based on an ecological restoration and nature-first pathway, it emphasizes the reconstruction of human-environment relationships, even at the cost of short-term economic growth to achieve long-term ecological recovery.

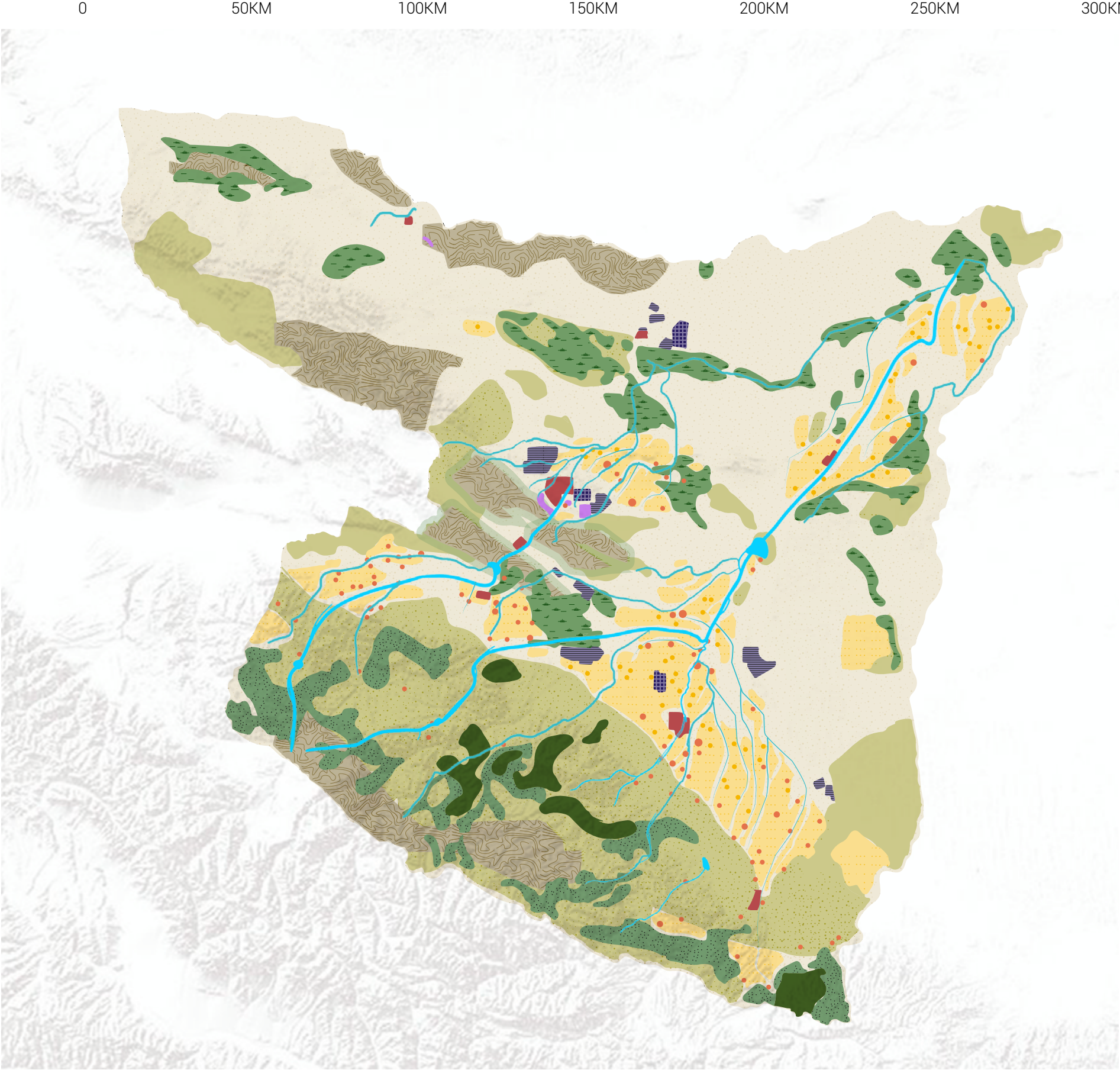


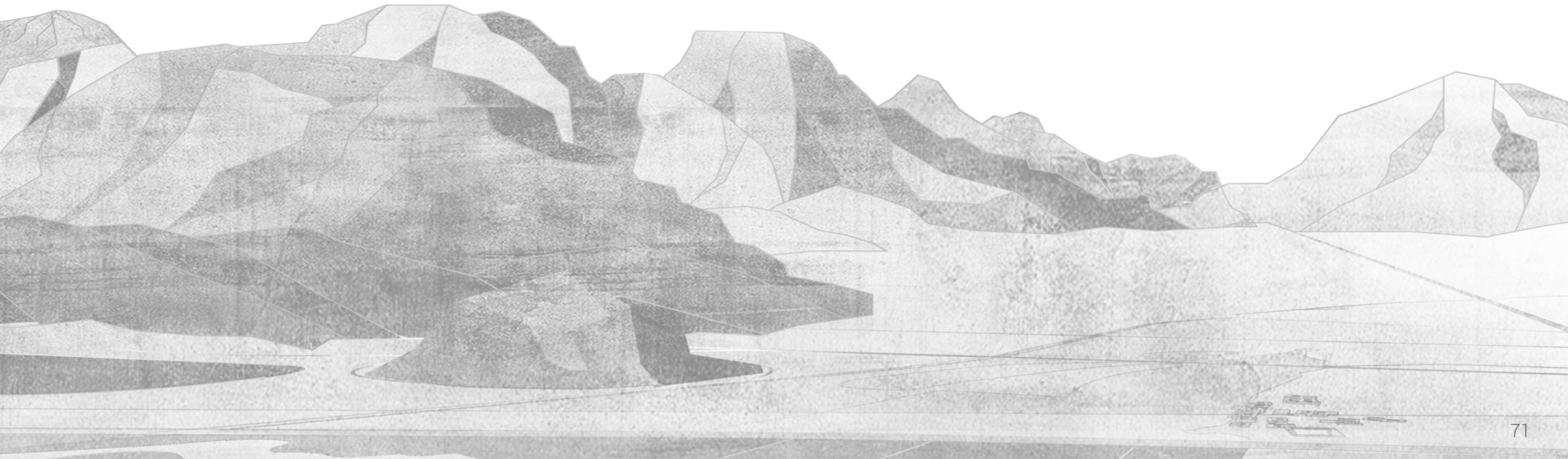
Figure: Desert Oasis Scenario vision map (Source: Drawn by the author)

5 Design Implement of Desert Oasis Scenario

4.1 Scenario scales

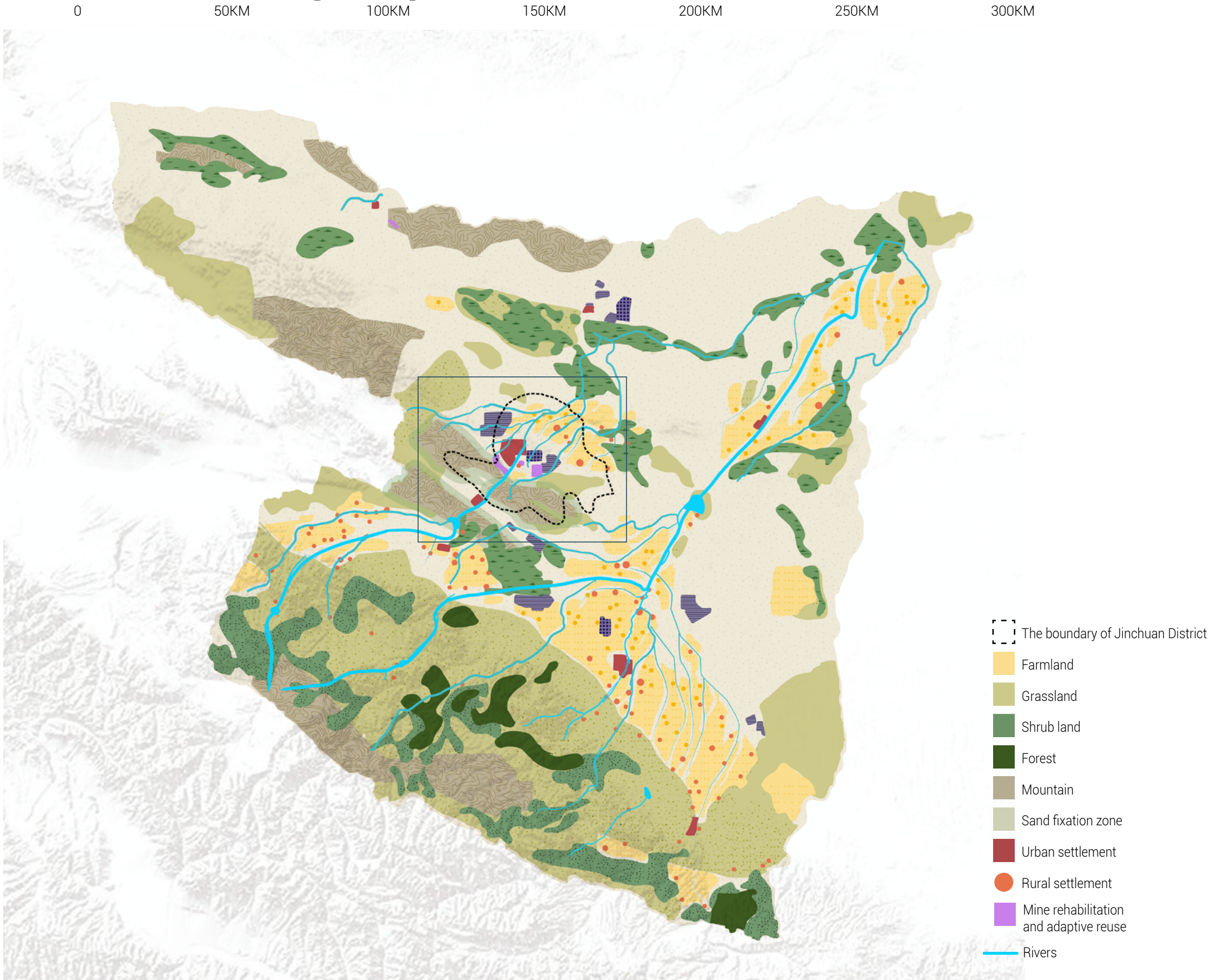
4.2 Ecological Base for the Three Scenarios

4.3 The Three Scenarios



5.1 Location

Focus on Jinchuan district for Design Implementation



5.2 Current condition

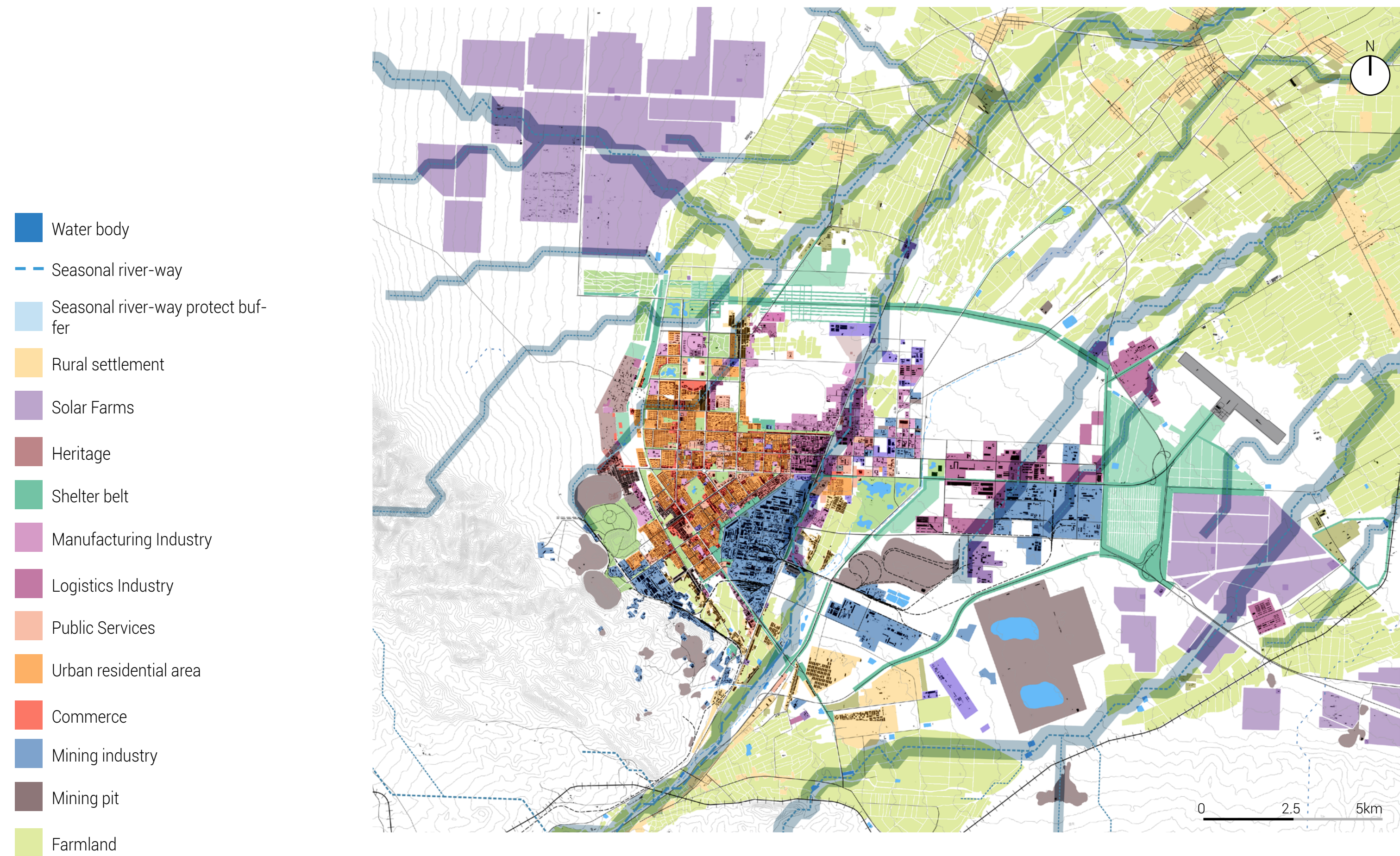
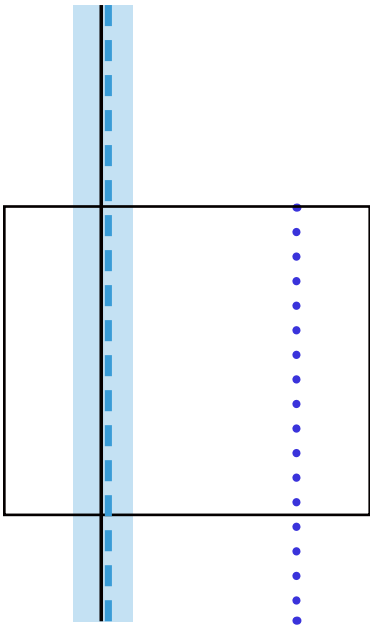
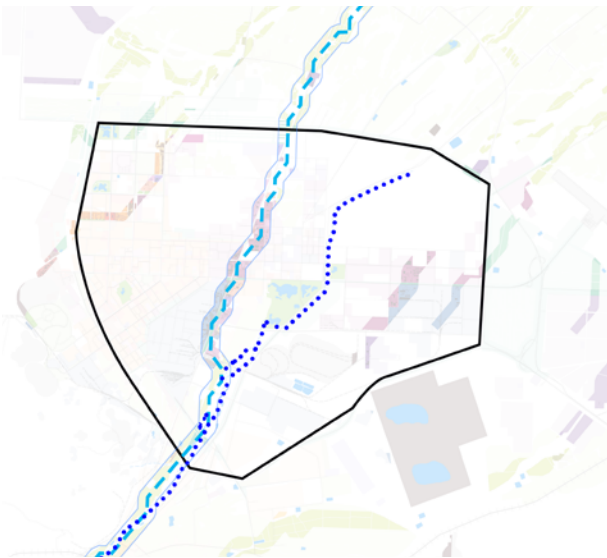
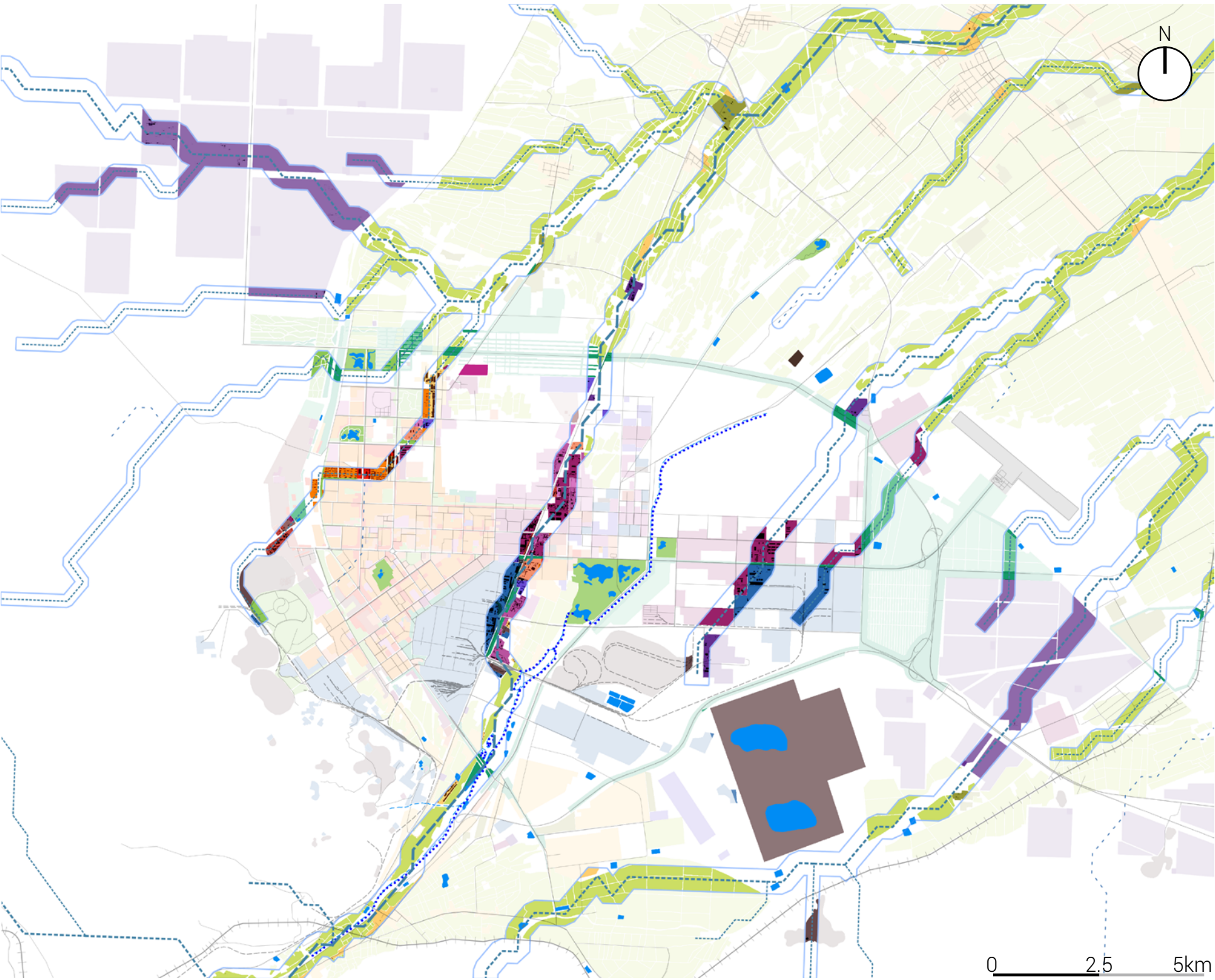


Figure: Design implement location-Jinchuan district (Source: Drawn by the author)

5.2 Current condition

River–Land Use Interactions Abstract



5.2 Current condition

River–Land Use Interactions Abstract

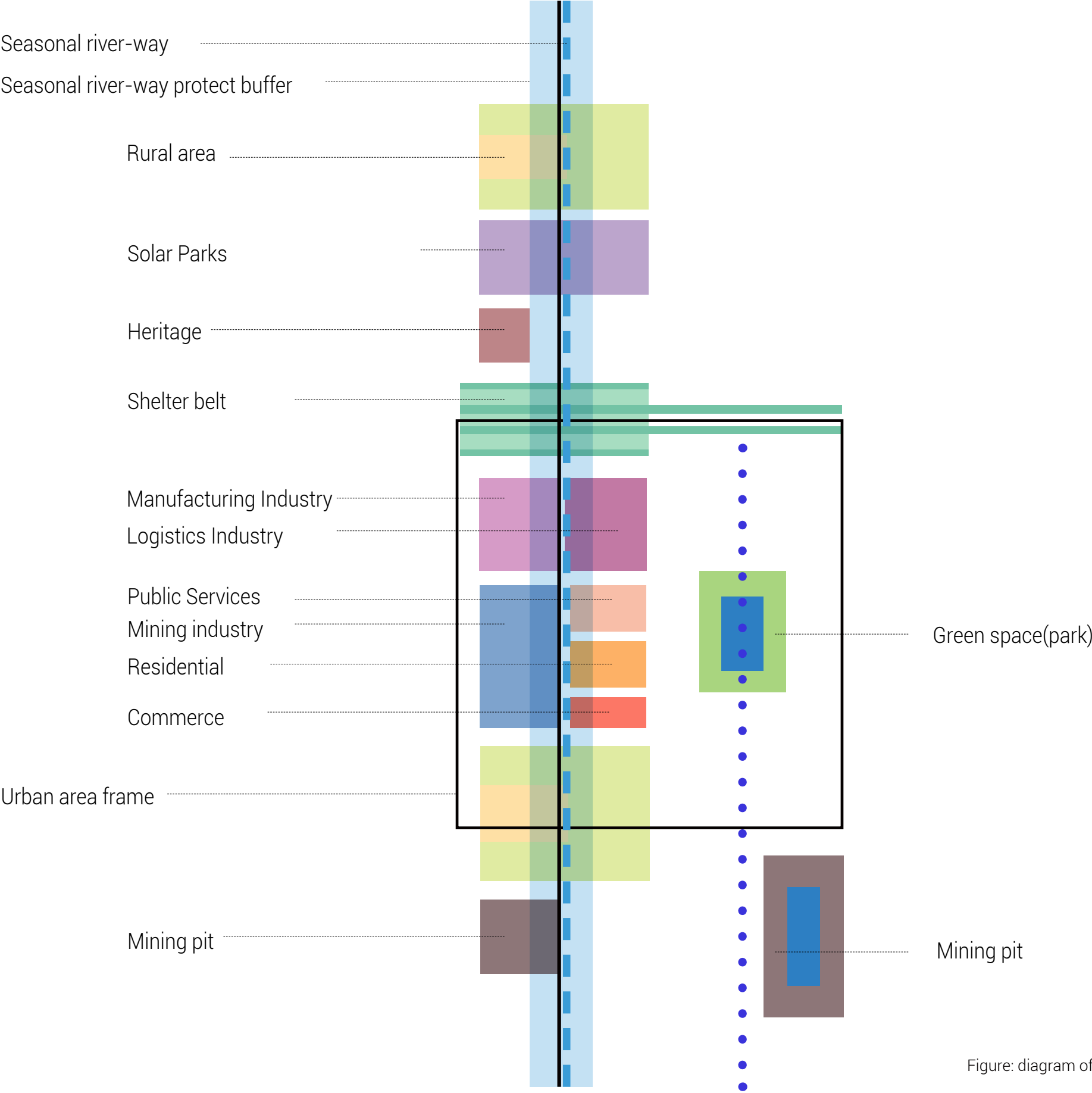
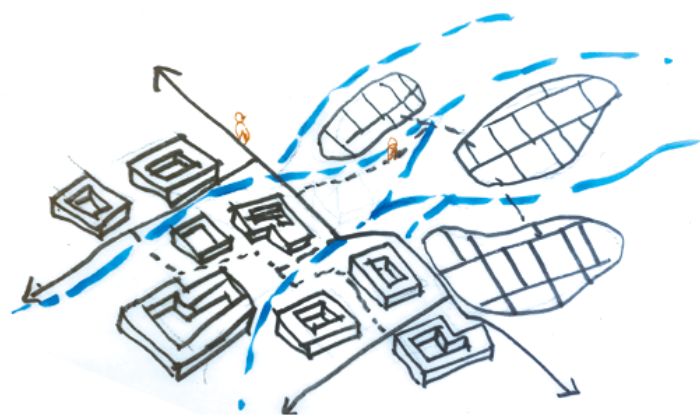


Figure: diagram of overlaps between river-way and land-use functions
(Source: Drawn by the author)

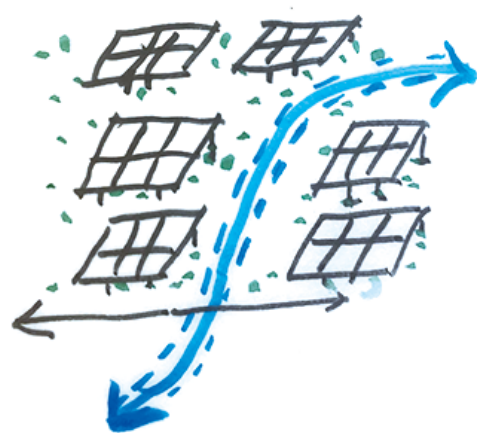
5.3 Design approach

Design principles

Rural area transform to Indigenous "River Buffer + Agro-Patch Agriculture"



Solar Farms, space for river, ecological solar park



Shelter belt: Agro-forestry and river restoration



Seasonal river-way

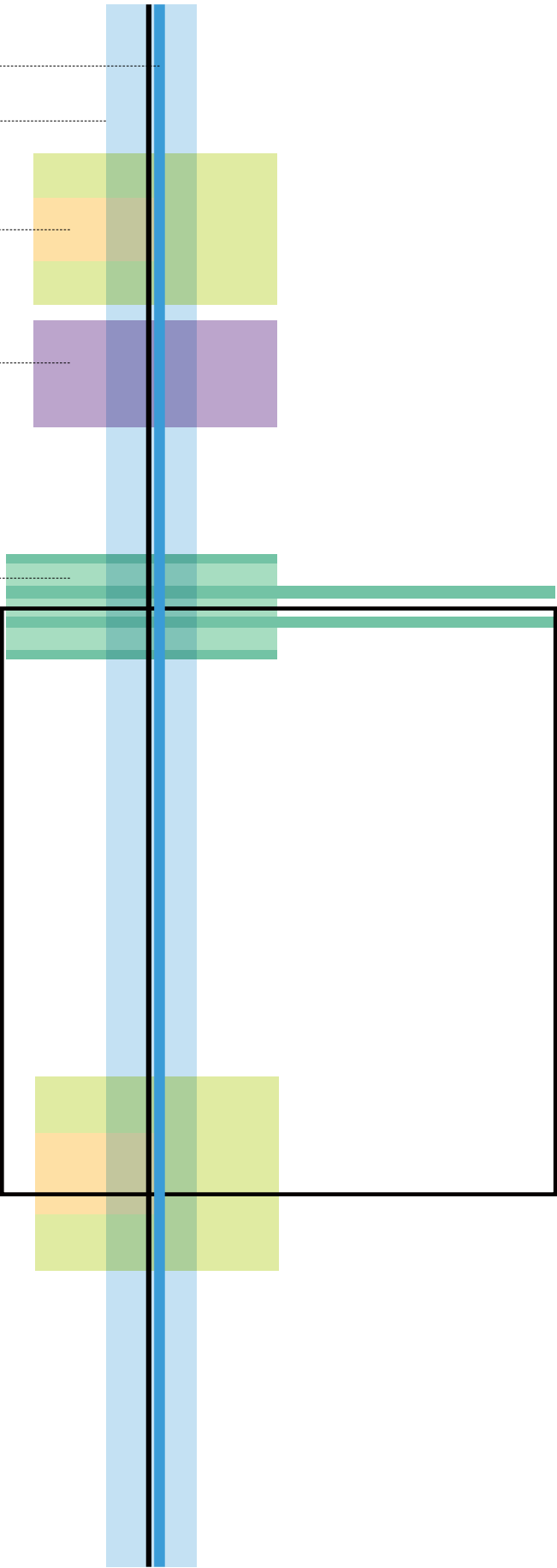
Seasonal river-way protect buffer

Rural area

Solar Parks

Shelter belt

Urban area frame

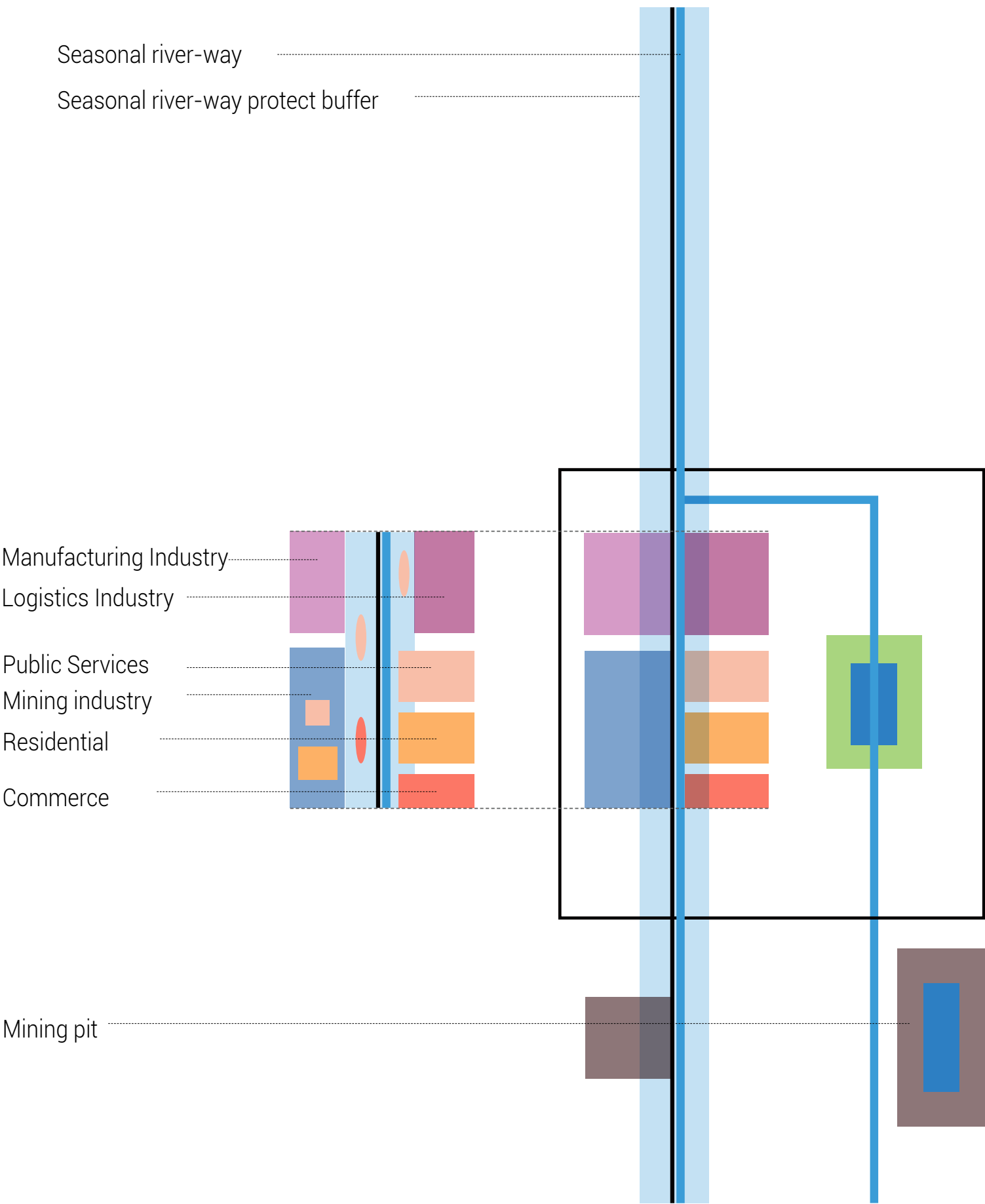


5.3 Design approach

Design principles

- Industries:
- Withdrawal of polluting industries from river buffer
 - Controlled low-density development
 - Industry heritage re-purposed for public services
 - Enhance supporting facilities of Industrial Parks (residential, service facilities)

- Mining pit:
- Preservation of original landscape and pollution remediation



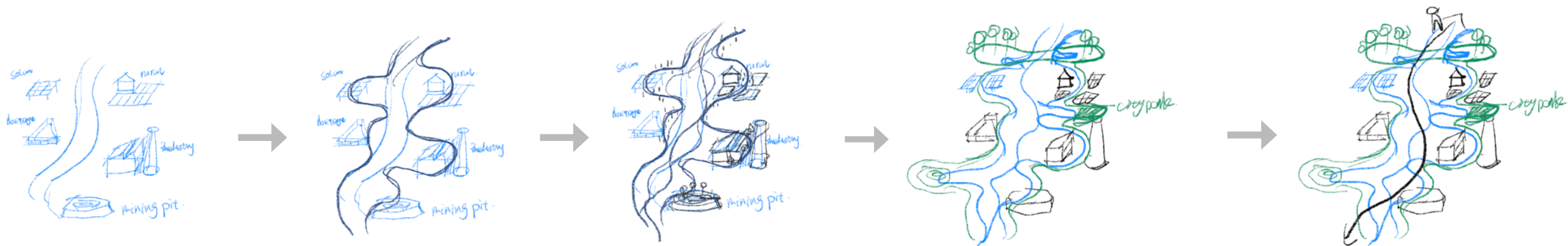
5.3 Design approach

Reviving the River

River System
Integration
and Spatial
Optimization



Spatial
Enhancement of
River-Adjacent
Functional Areas



Green
Infrastructure
Integration

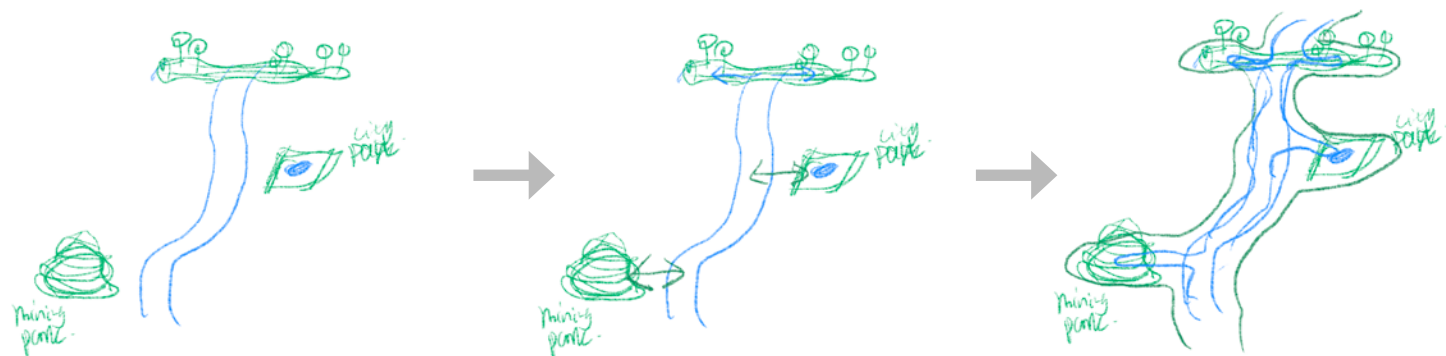


Figure: Design Concept Diagram(Source: Drawn by the author)

5.3 Design approach

Hydrological and Transportation Networks

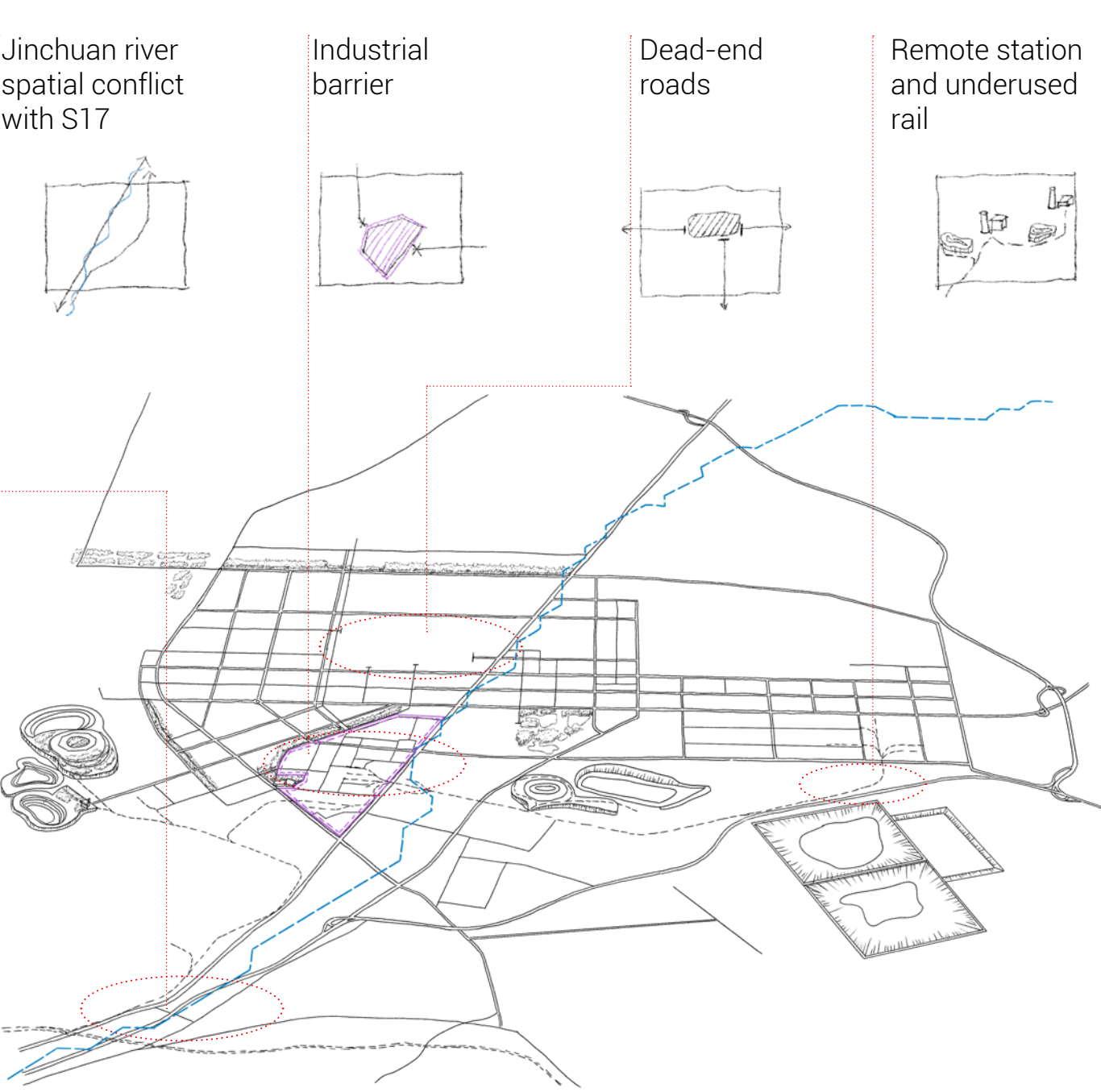


Figure: Sketch of the current status of Jinchuan District's transportation system and seasonal rivers
(Source: Drawn by the author)

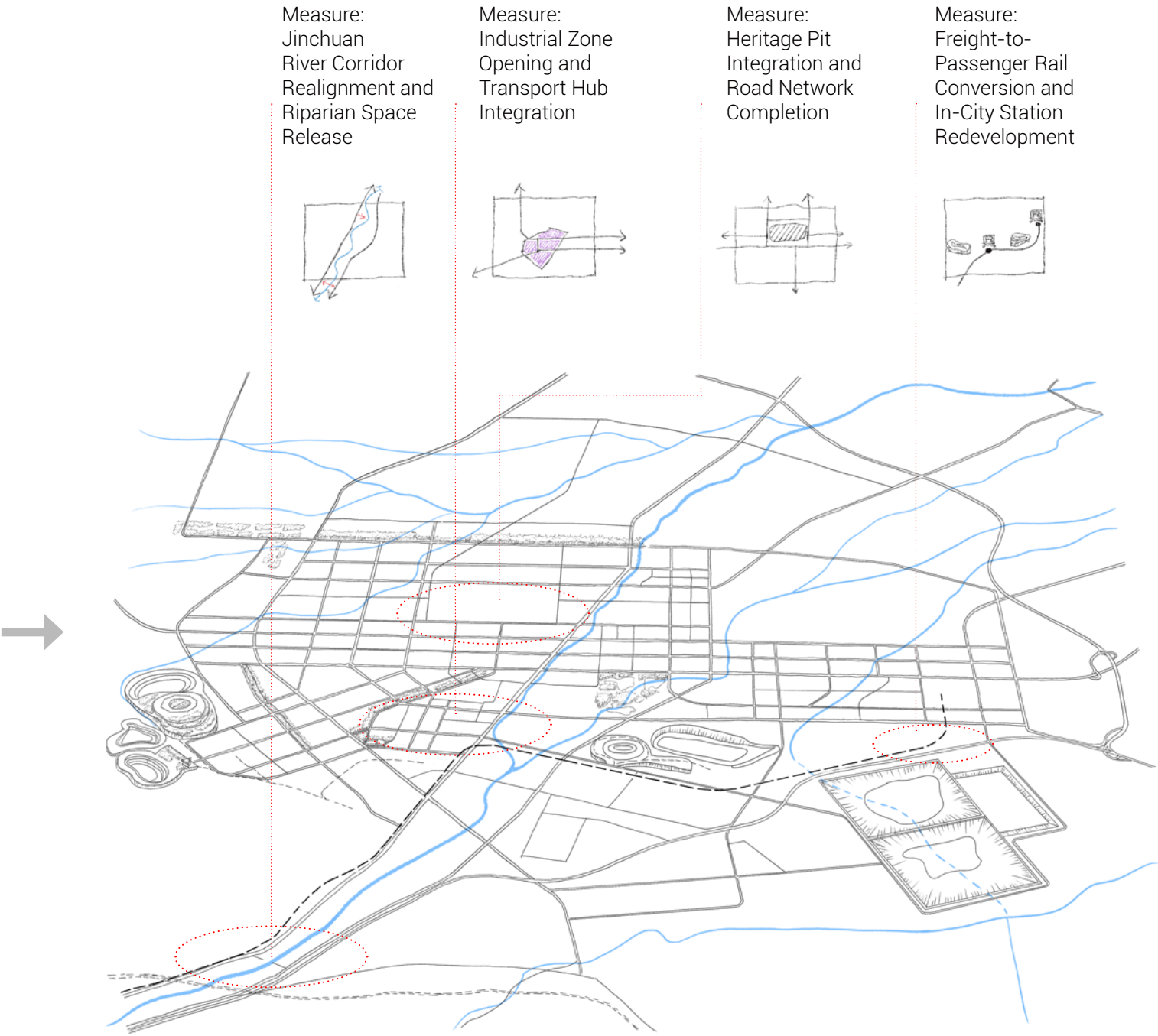


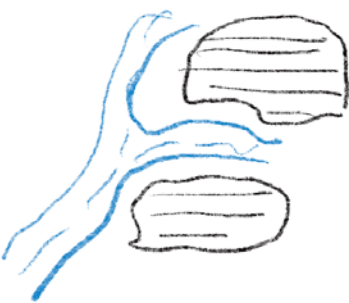
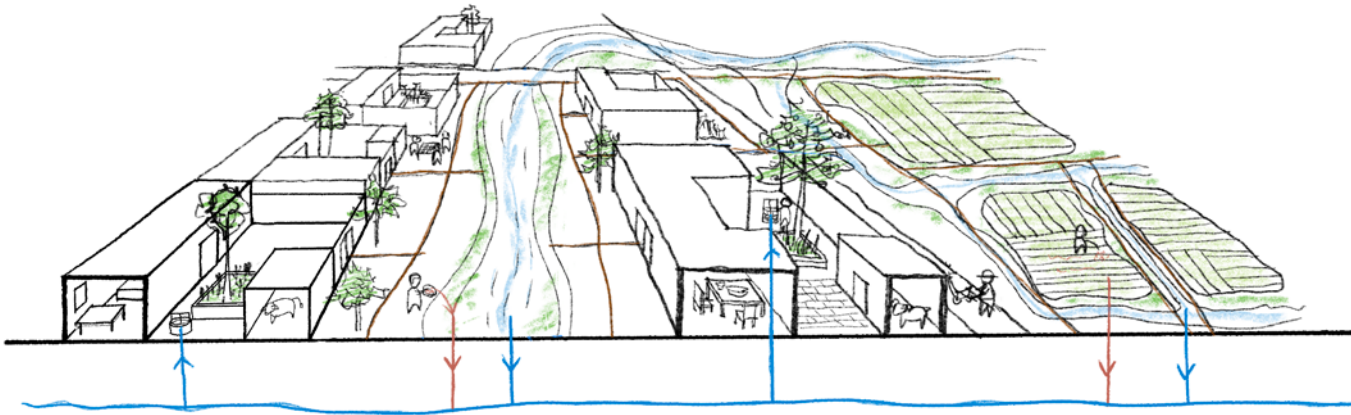
Figure: Jinchuan District transportation system optimization and river design sketch
(Source: Drawn by the author)

5.3 Design approach

Indigenous “River Buffer + Agro-Patch Agriculture”



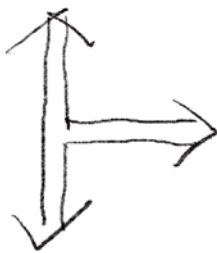
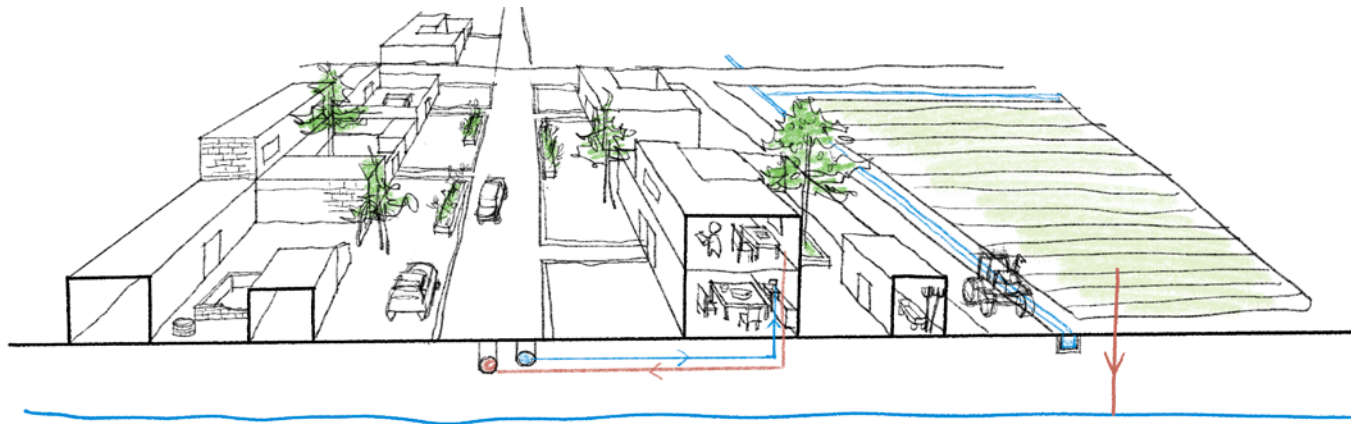
year 2000



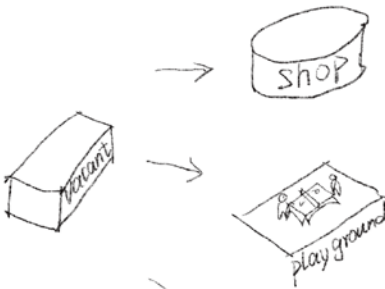
River and patchwork farmland restoration



year 2024



Retention of basic infrastructure



Reuse of vacant houses

Figure: Indigenous “River Buffer + Agro-Patch Agriculture” measure diagram (Source: Drawn by the author)

5.3 Design approach

Indigenous “River Buffer + Agro-Patch Agriculture”

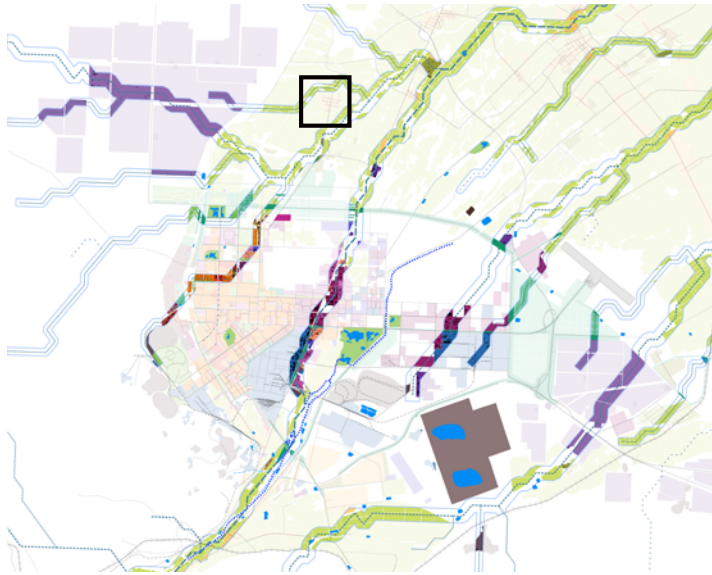


Figure: Location of Jiagou village (Source: Drawn by the author)

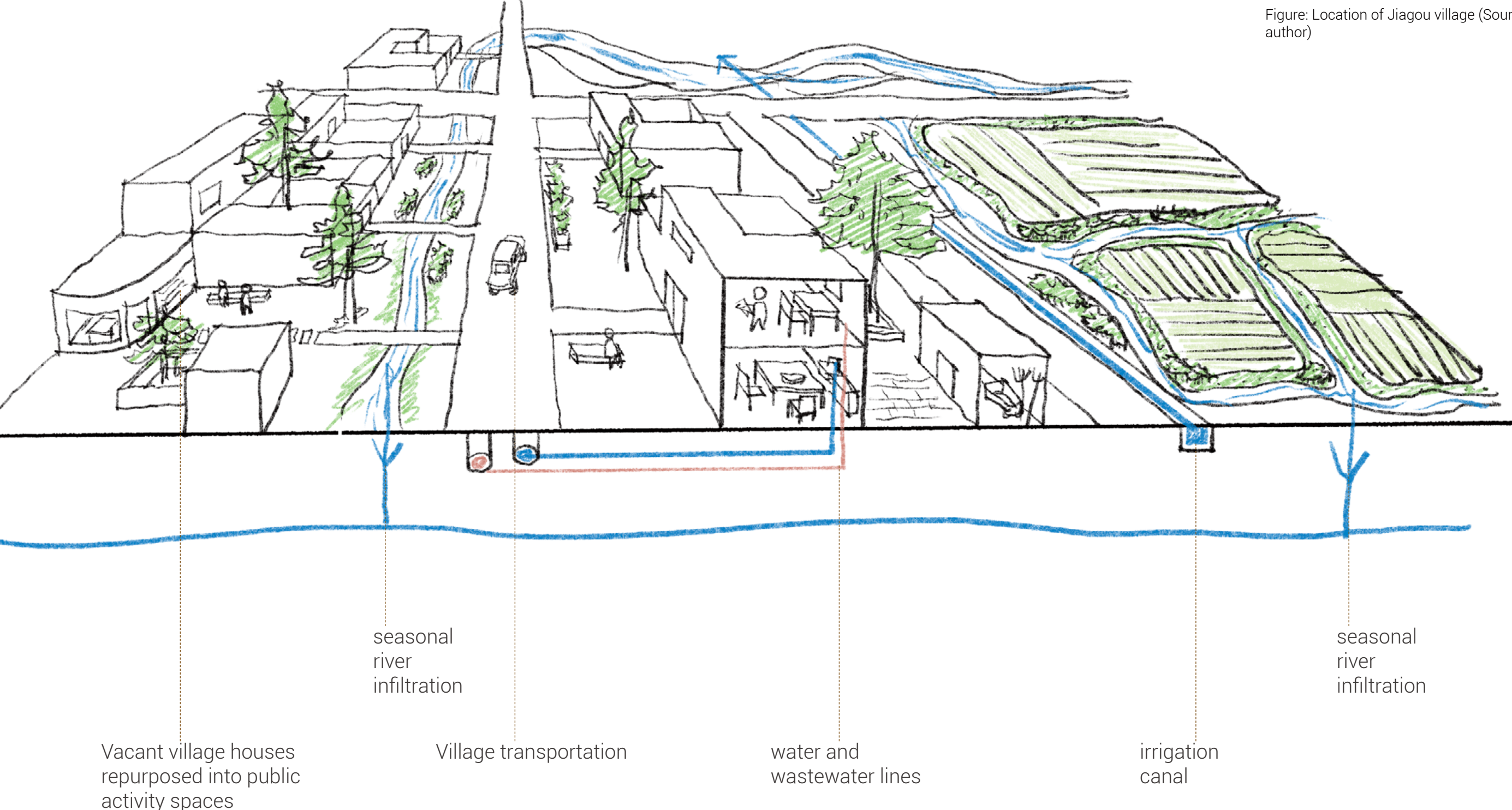


Figure: Indigenous “River Buffer + Agro-Patch Agriculture” design section (Source: Drawn by the author)

5.3 Design approach

Shelterbelt tranform to Mixed plantation

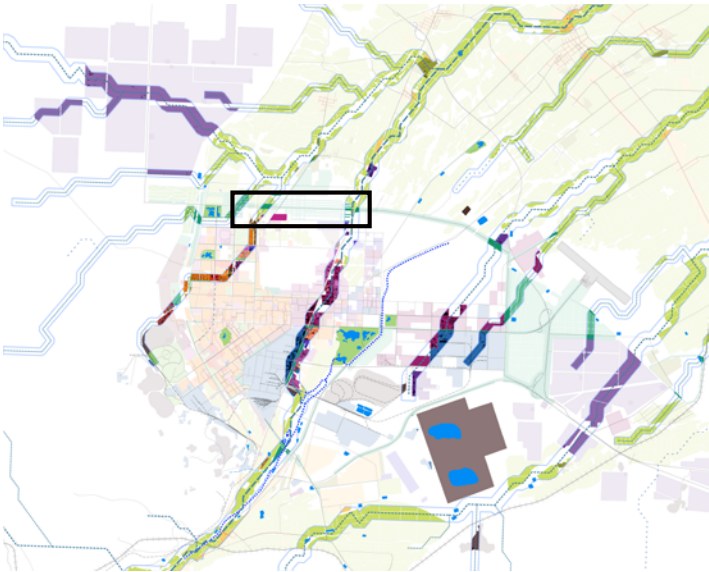
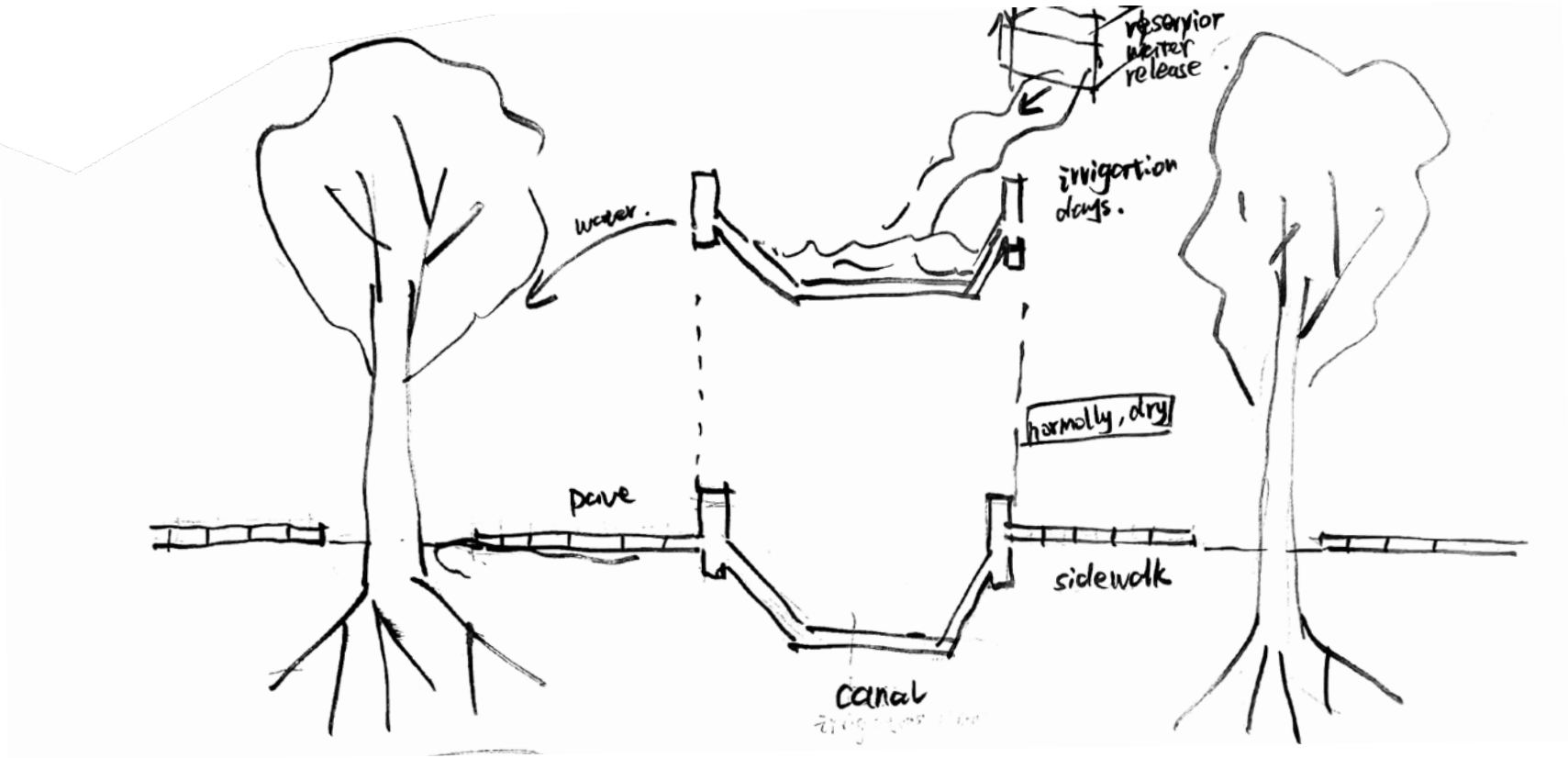


Figure: Location of Jiagou village (Source: Drawn by the author)

Current condition



Mixed plantation

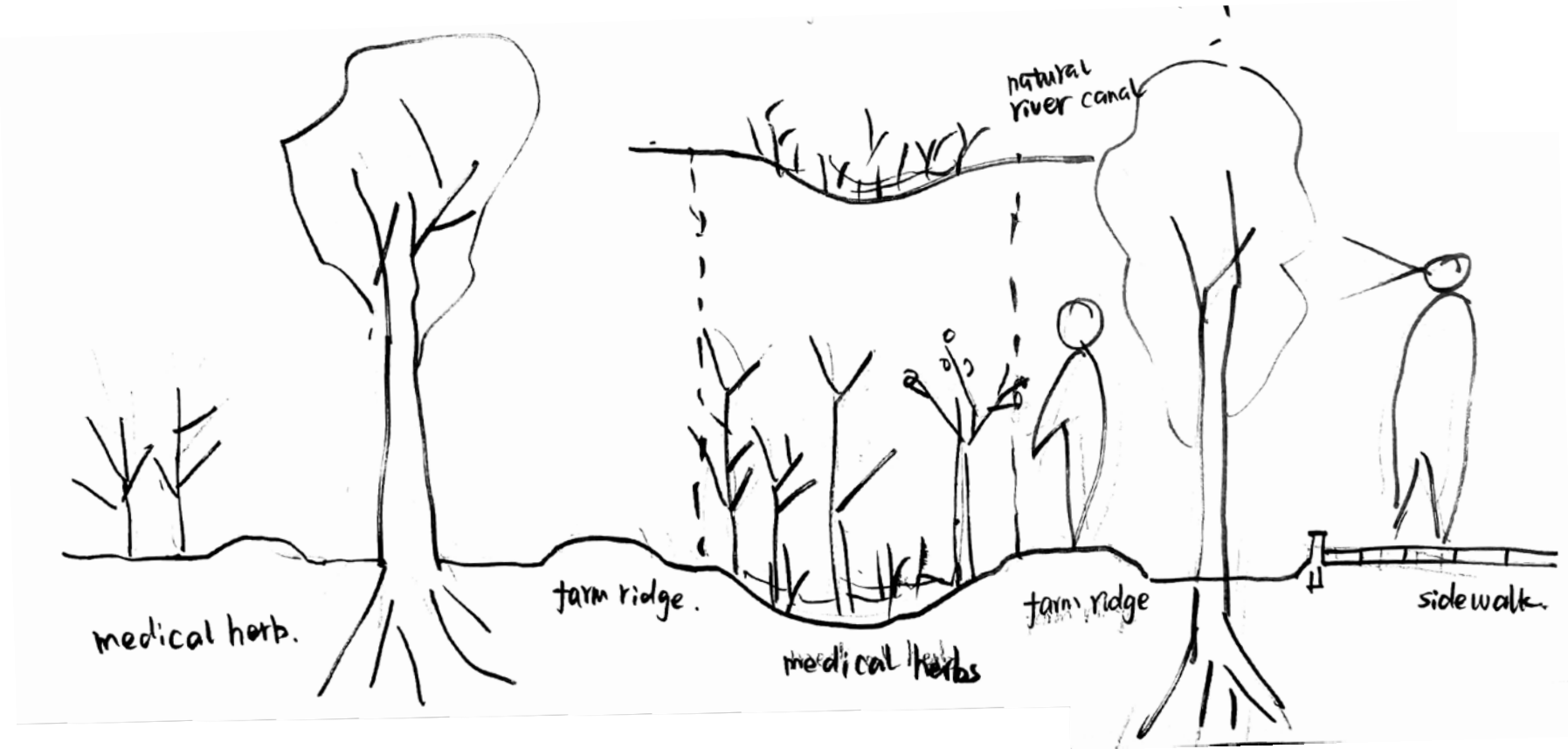
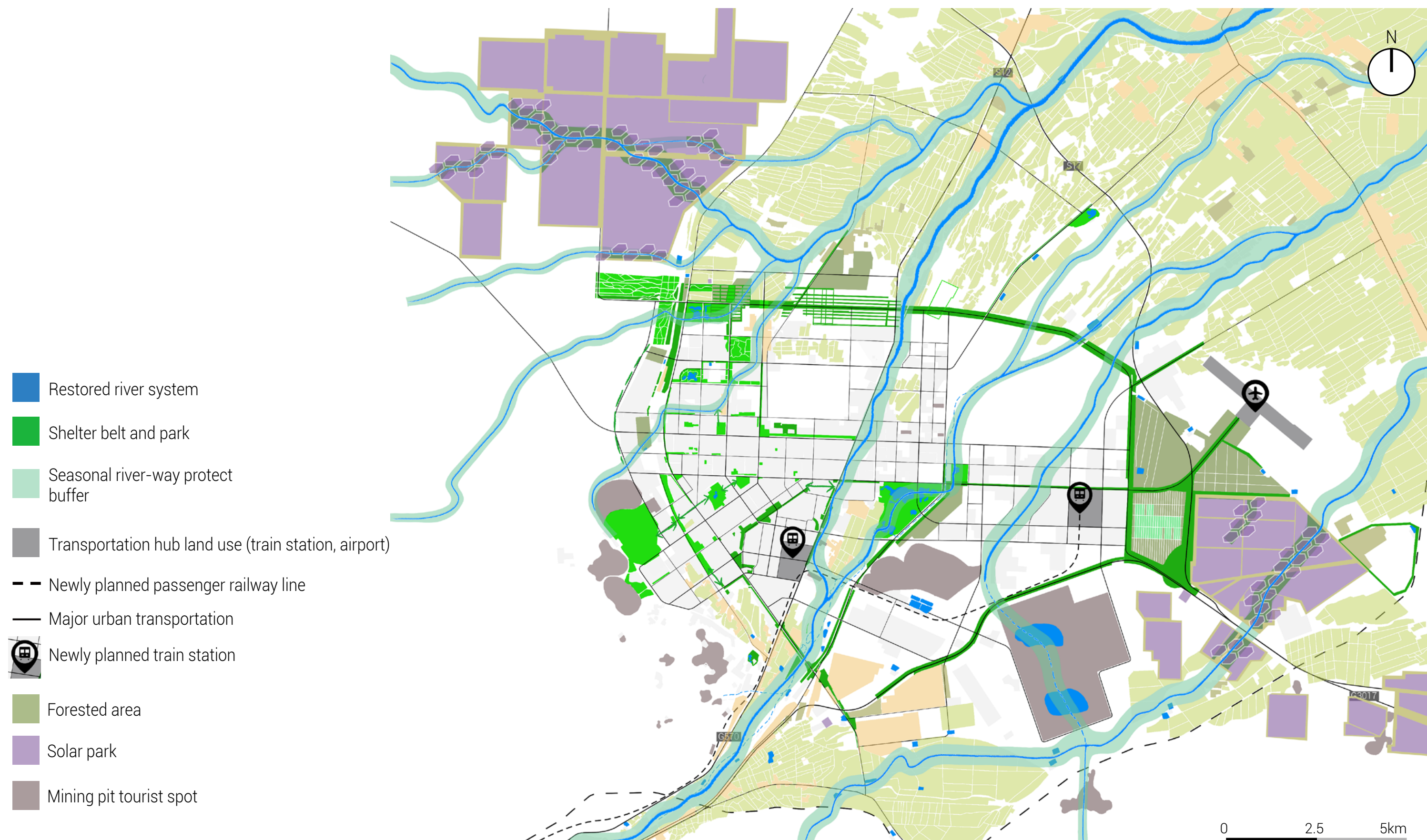


Figure: detailed section of shelter belt (Source: Drawn by the author)

Future vision: Reviving the River



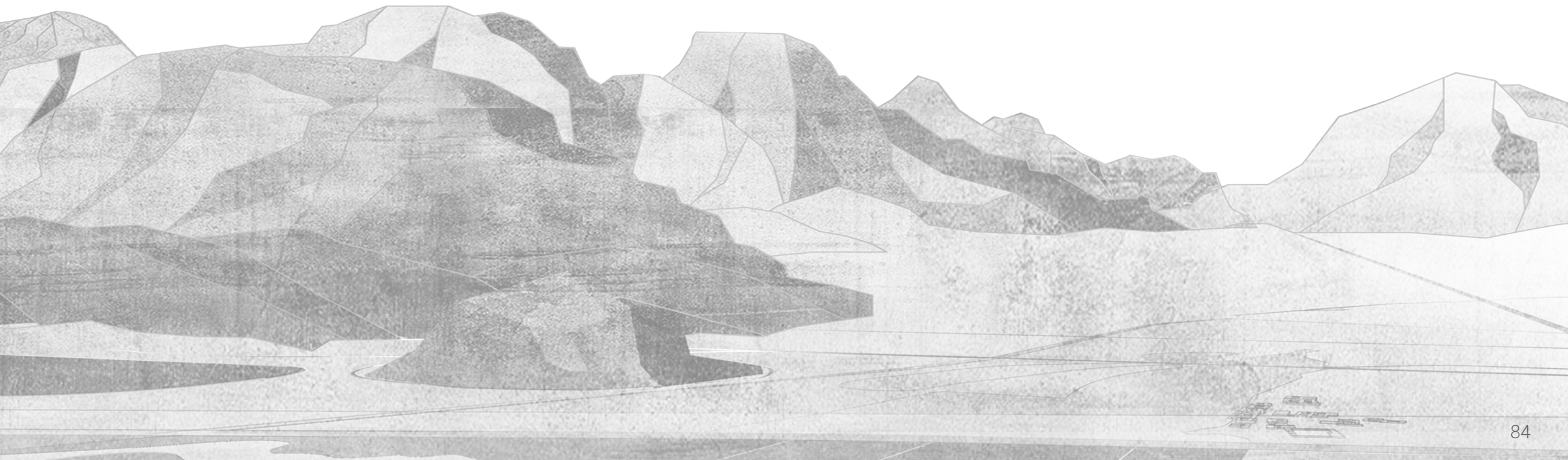
6 Conclusion and Reflection

6.1 Conclusion

6.2 Scientific and Social Relevance

6.3 Planning recommendation

6.4 Reflection



6.1 Conclusion

Answering the resaerch question

How can Jinchang City achieve a **sustainable and equitable transformation** within **environmental and policy constraints** while **preserving its landscape** and **safeguarding residents' well-being**?

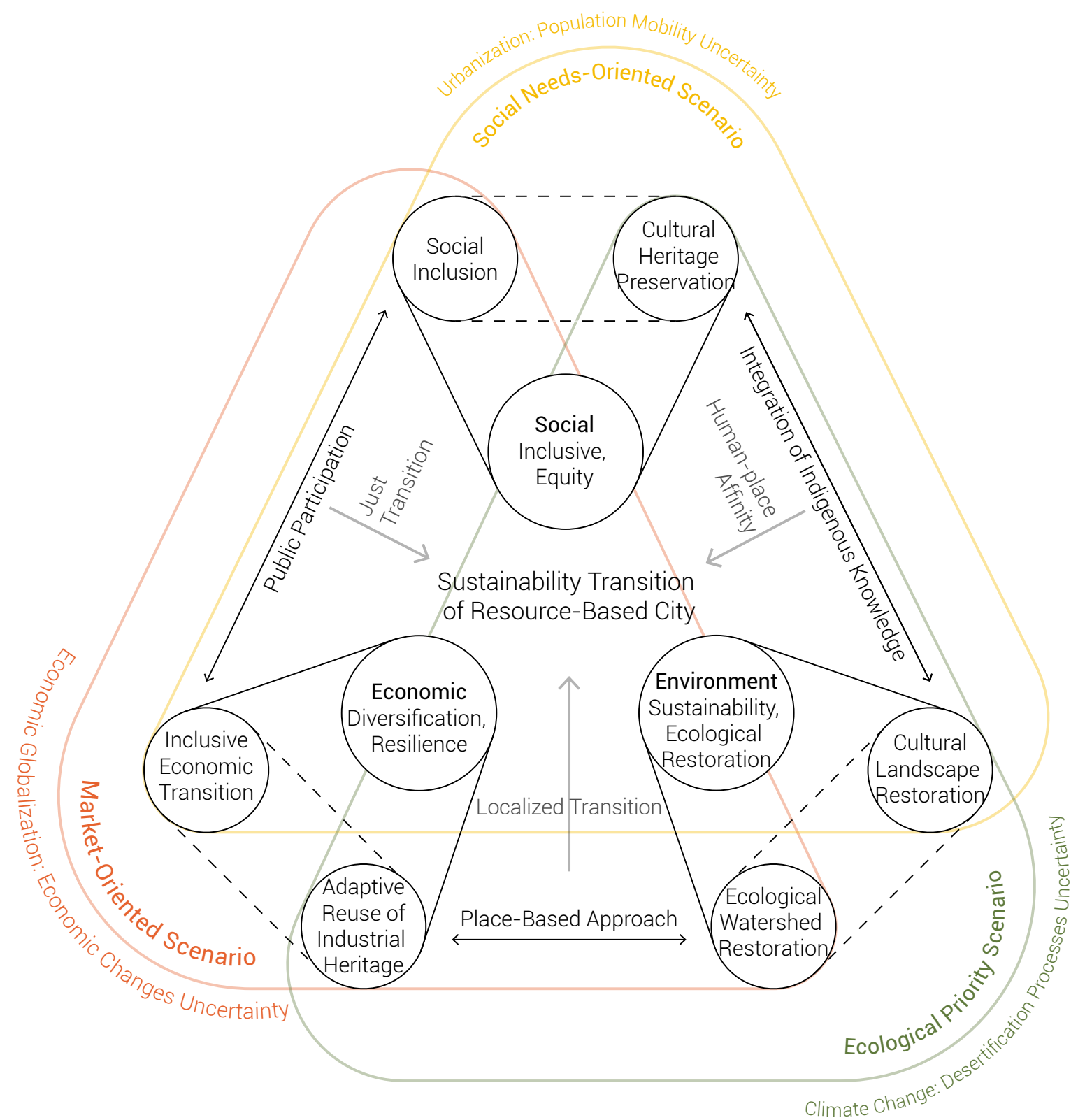
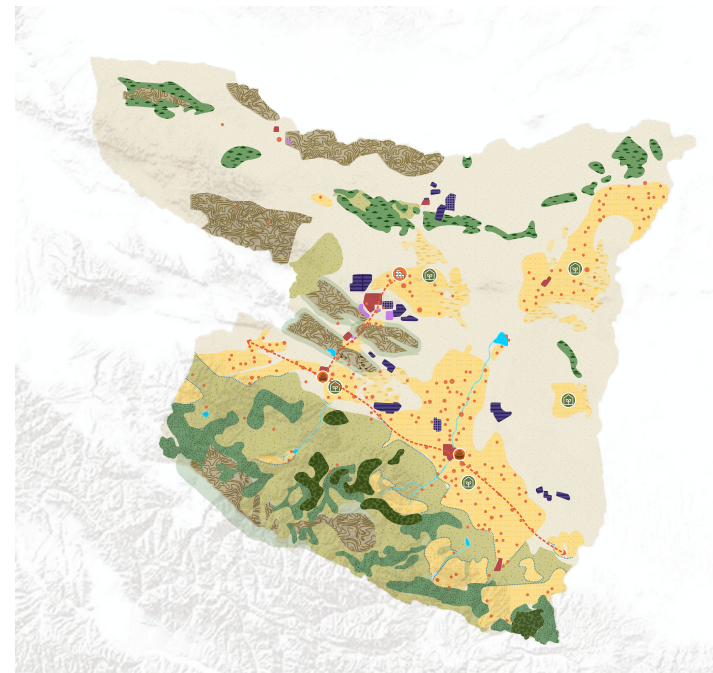


Figure: The Emergent Gears of Sustainability Transition Framework (Source: Drawn by the author)

6.1 Conclusion

Answering the resaerch question

Q4: **What transformation pathways** and spatial strategies can enable Jinchang to achieve a more **sustainable and equitable future**?



Managed Shrinkage Scenarios

- Agriculture and tourism as alternative economic pillars
- Risk of public service decline
- Potential large-scale outmigration, risk of "ghost city"
- Mechanized farming risks further land degradation

Sustainability and feasibility remain uncertain

Industrial Revival Scenarios

- Extends industrial chain, aligned with current city plans
- Dominance of the leading enterprise limits equitable development
- Relies on technical migrant clustering, echoing past resource-driven migration
- Industrial growth risks further ecological pressure

Tension between economic expansion and sustainability goals

Desert oasis Scenarios

- Focus on ecological preservation and desert landscape restoration
- Align with high quality development goal
- Short-term economic slowdown in exchange for long-term resilience
- Requires large-scale investment and long-term commitment

May not align with the priorities of leading enterprises and local authorities

6.1 Conclusion

Answering the resaerch question

Q5: How can **planning institutions** evolve to **support a locally adapted and inclusive transition**, addressing existing institutional and governance constraints?

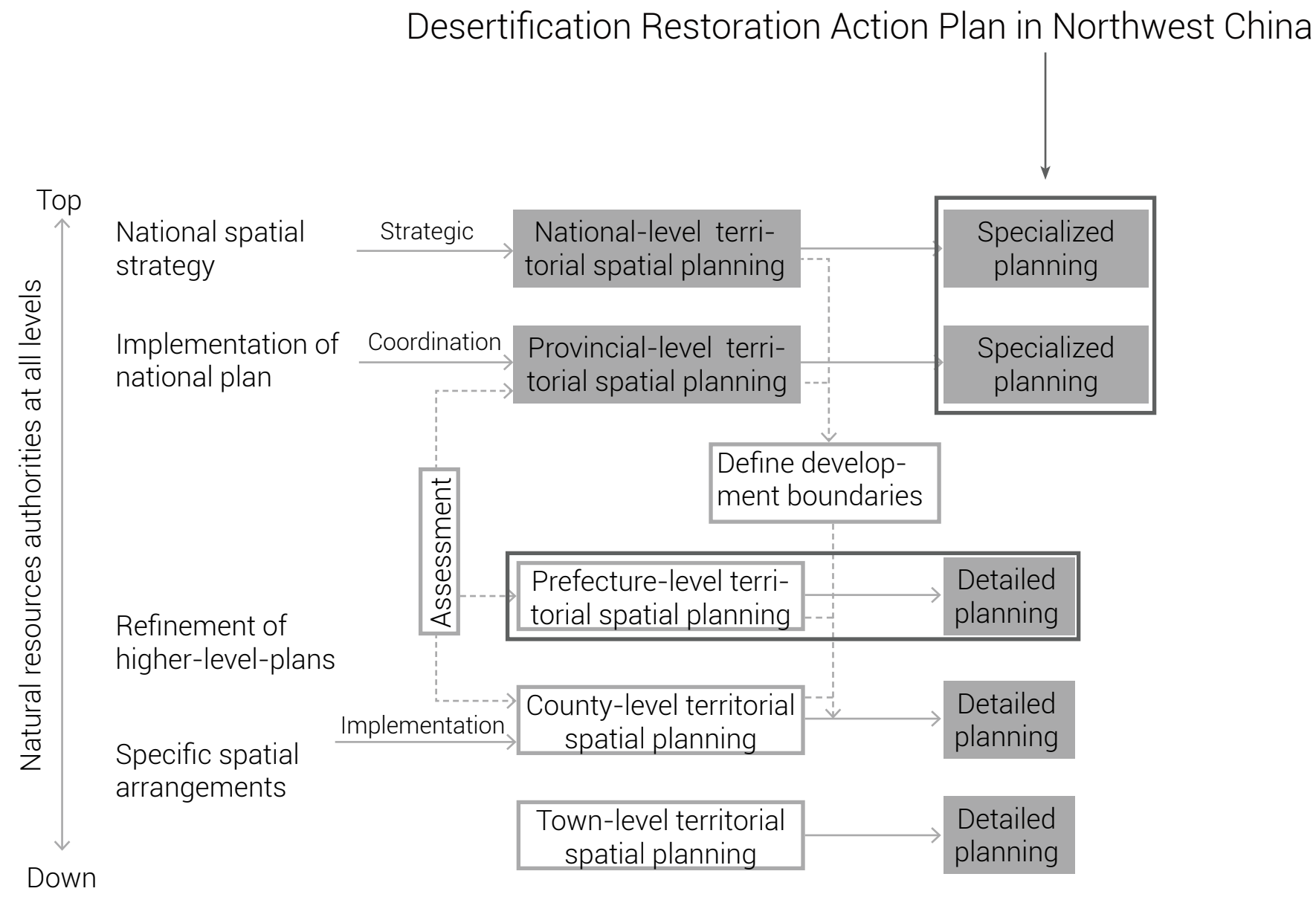


Figure. Diagram of the territorial spatial planning system
(Source: Redrawn based on: Christian Nolf & Yuting Xie (2020), "Positioning Regional Design in Chinese Territorial Spatial Planning," Landscape Architecture Frontiers, Vol. 8(1).)

6.2 Scientific and Social Relevance

Scientific Relevance

1. Resource-based cities development in China:

- Responds to the question: Are transition paths generalizable across different geographies?
- Practicing China's high-quality development and the "Green is Gold" philosophy

2. Sustainability transition theories in Practice:

- From Socio-Technical to Socio-Ecological transition
- A practical application of socio-ecological transition theory, centers ecosystems and people–nature relationships in transformation

3. Integrating Cultural Landscapes and indigenous Knowledge in transition planning:

- emphasizes people–landscape–identity reconnection
- Informed by: Topophilia, cultural landscapes, and indigenous knowledge

6.2 Scientific and Social Relevance

Scientific Relevance

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- emphasizes people–landscape–identity reconnection
- Informed by: Topophilia, cultural landscapes, and indigenous knowledge

Direction for future research :

Explore the applicability of this conceptual framework in other contexts, to assess its potential transferability beyond the case of Jinchang.

6.2 Scientific and Social Relevance

Scientific Relevance

Jinchang, GanSu, China

Desert city,
Solar energy park,
Mineral industry,
Mountain range,
Seasonal river.



Mojave, California, United States

Desert city,
Solar energy zone,
open-pit mining,
Mountains,
Ephemeral stream along
mountain slopes.



6.2 Scientific and Social Relevance

Social Relevance

Social Dilemmas

The Social Dilemmas of Resource-Depleted Cities: Between Those Who Leave and Those Who Stay

- Resource-based cities face economic collapse and out-migration after resource exhaustion
- Intergenerational trauma and social disorientation follow abrupt transitions

Personal Experience and Emotional Attachment:

- Perspective as a second-generation technical migrant
- Harsh environments and uncertain futures coexist with strong emotional ties to place

Possible solutions

Exploring Possibilities for Continuity

- Continuity beyond industry: through diversification, culture, and ecology
- Rebuilding place-based meaning may offer non-economic reasons to stay

Addressing the Experience of Departure:

- Out-migration may persist, but symbolic return (emotional or cultural) is possible
- Improving urban quality can preserve identity for both current and former residents

Ecological Loss and the Possibility of Regeneration:

- Urbanization and agriculture have led to landscape and habitat loss
- Targeted ecological restoration can revive biodiversity and human–nature relationships

6.3 Planning recommendation

Desertification Restoration Action Plan in Northwest China

Afforestation involves multiple actors:

Government agencies (e.g., TNSFP, forestry bureaus)

Private platforms (e.g., Ant Forest by Ant Financial)

State-owned enterprises (e.g., Jinchuan Group's Arbor Day events)

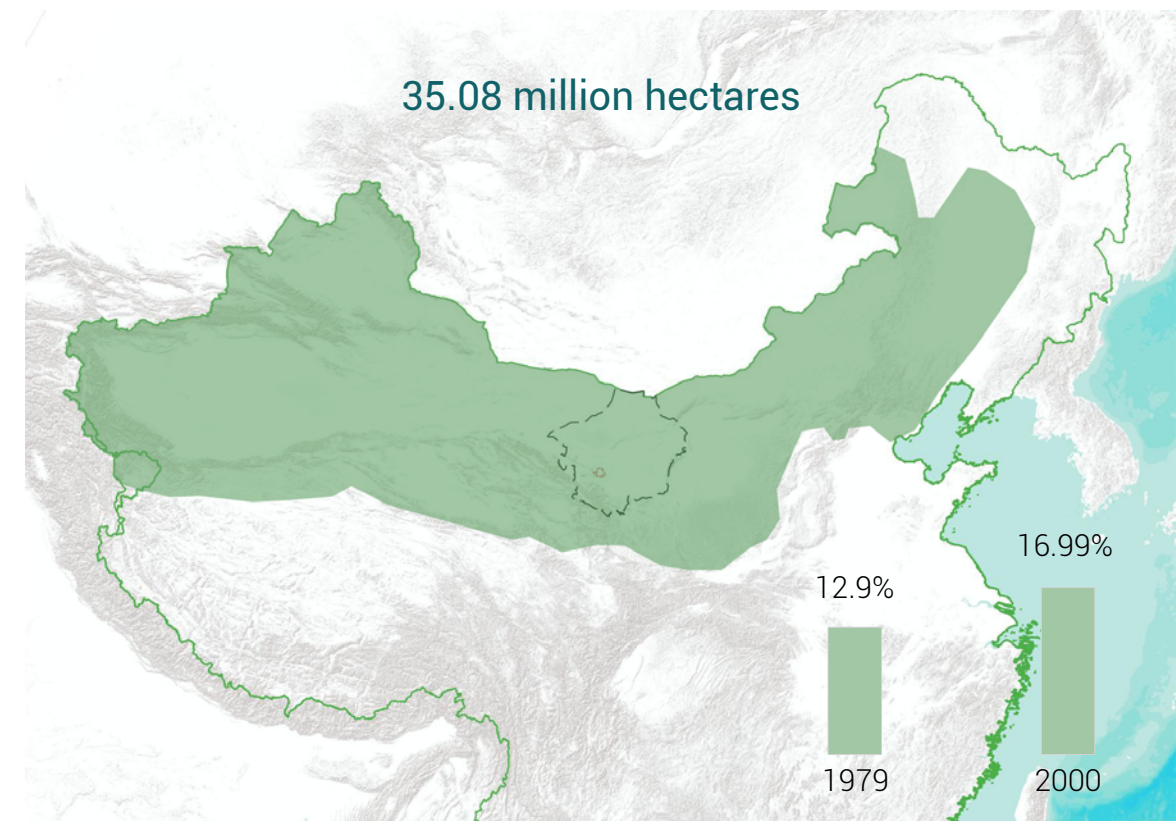
Local communities (e.g., Minqin farmers protecting farmland)

Priority sites:

Edges of major deserts (e.g., Tengger Desert)

Areas along the Three-North Shelterbelt

Farmland severely affected by desertification



Three-North Shelterbelt Forest Program (1978-now)

6.3 Planning recommendation

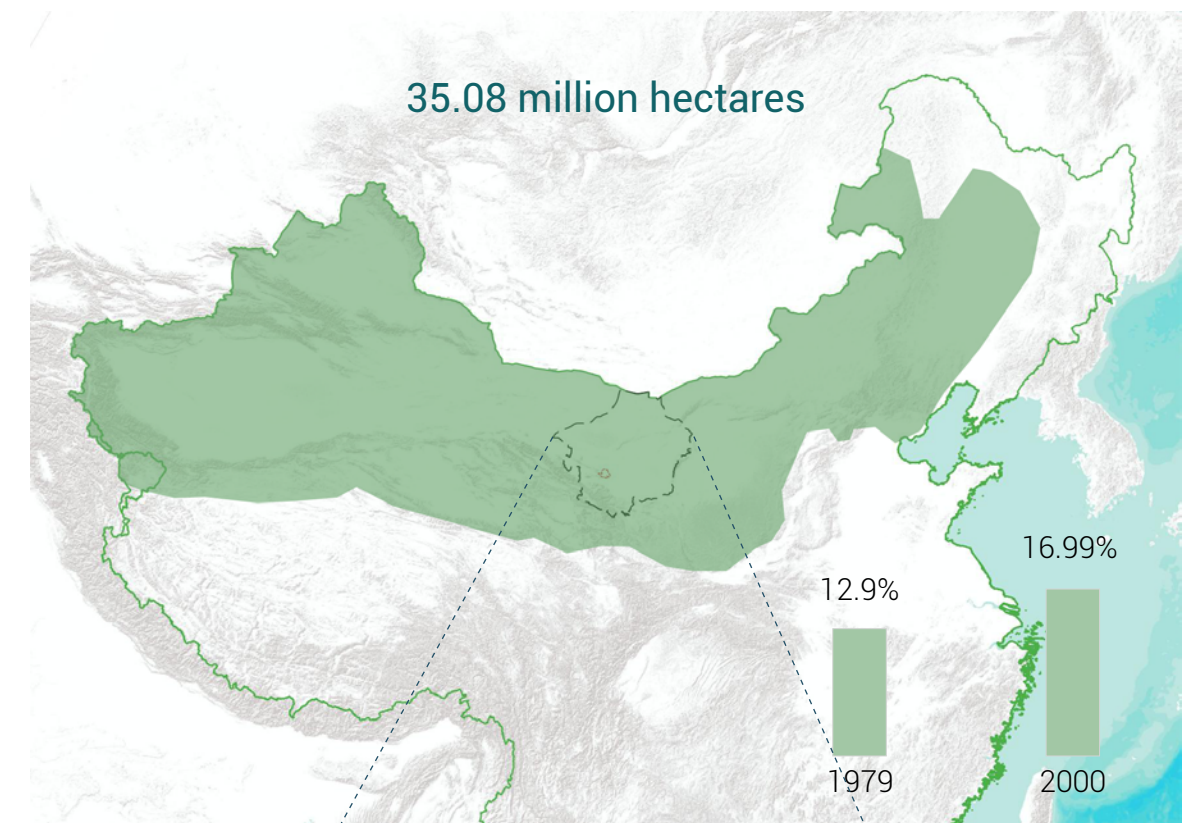
Desertification Restoration Action Plan in Northwest China

Desertification Restoration Action Plan in Northwest China

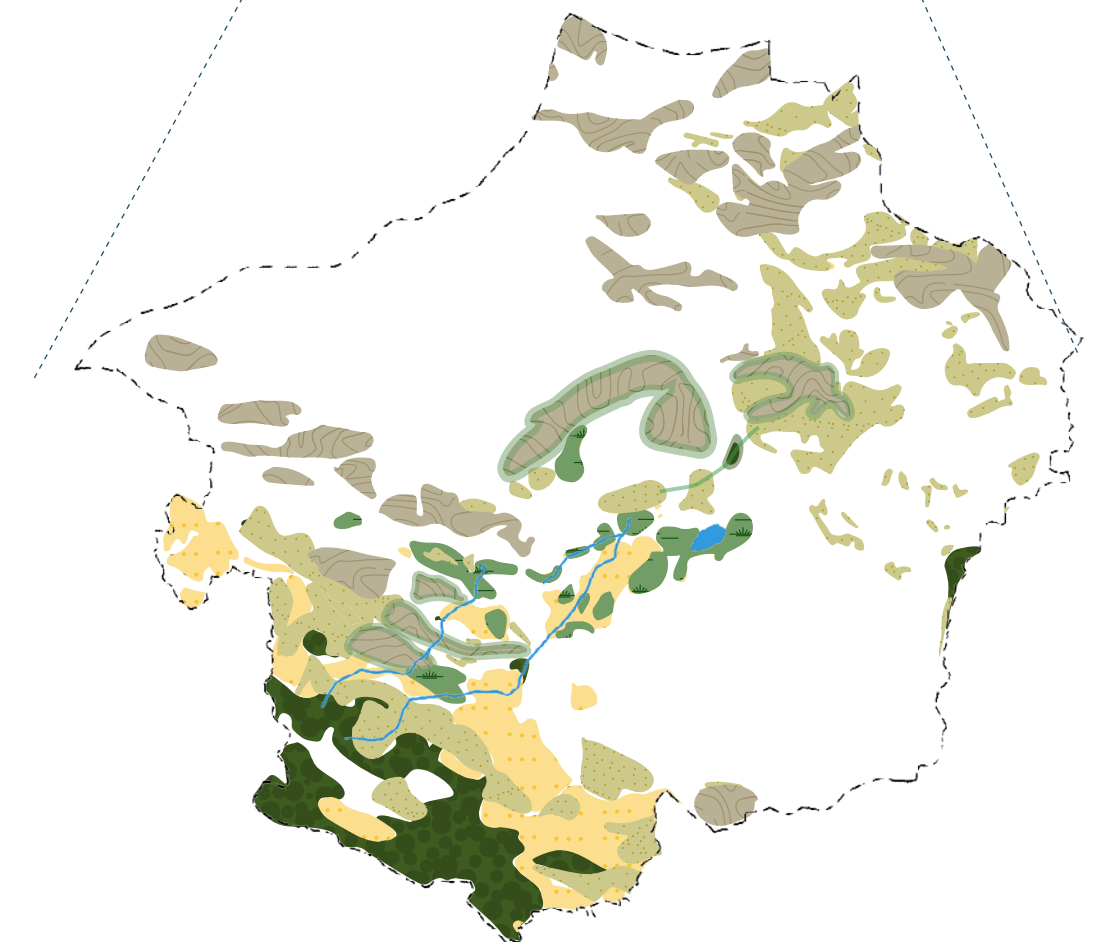
- Prioritize ecologically urgent zones
- Coordinating Multi-Stakeholder Planting
- Provide an operational guide
- Ensure planting aligns with ecological priorities, technical suitability, and strategic locations

Limitations of the Proposed Action Plan

- Smaller scope
- Targets local goals: prevent degradation in the Shiyang River Basin
- Does not address national-scale ecological shielding



Three-North Shelterbelt Forest Program (1978-now)



Desertification Restoration Action Plan in Northwest China

6.4 Reflection

Ethical Considerations

Ethical Considerations of the Project Topic:

The trade-off between immediate profits from resource extraction and the long-term goal of environmental sustainability

Aim: From short-term sacrifice to long-term sustainability
From profit for the few to prosperity for the many

Ethical Considerations of the Project Outcomes:

Ecological restoration measures may alter land use (e.g., agriculture, industry), Community consultations are needed to guide decisions

Cross-regional restoration may shift burdens to specific areas, higher-level (National) planning needed to coordinate investment and responsibility

6.4 Reflection

Limitation on Research Progress

Limited fieldwork:
only mid-term site visit due to time and distance constraints

Scenario feasibility remains at desk research level

Future focus:
public participation and co-planning the city's transformation with residents

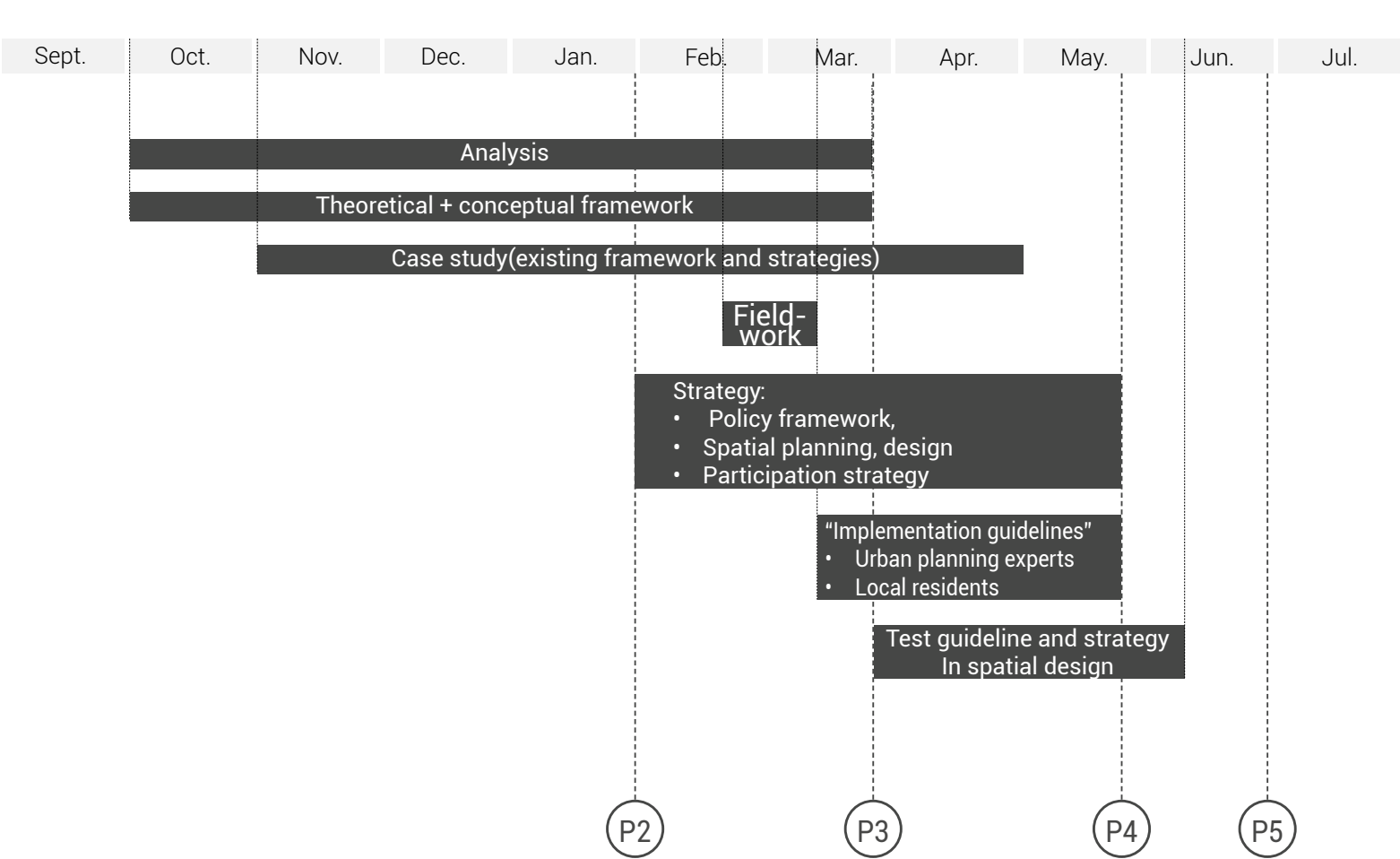
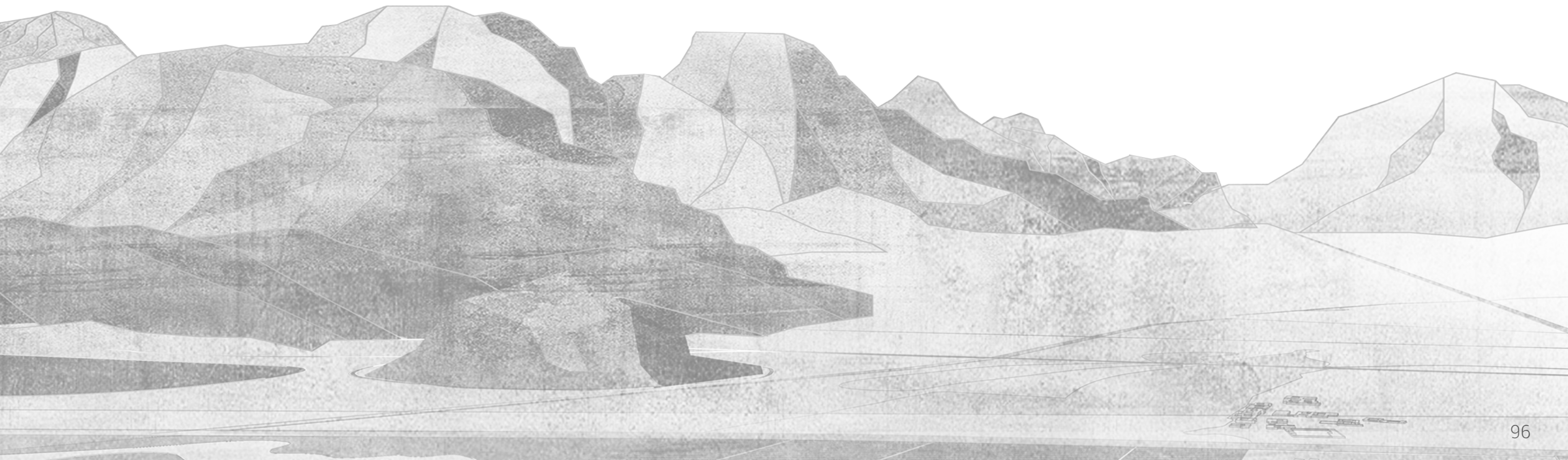


Figure: Project time-line design(mid-term) (Source: Drawn by the author)

Thank you for listening.



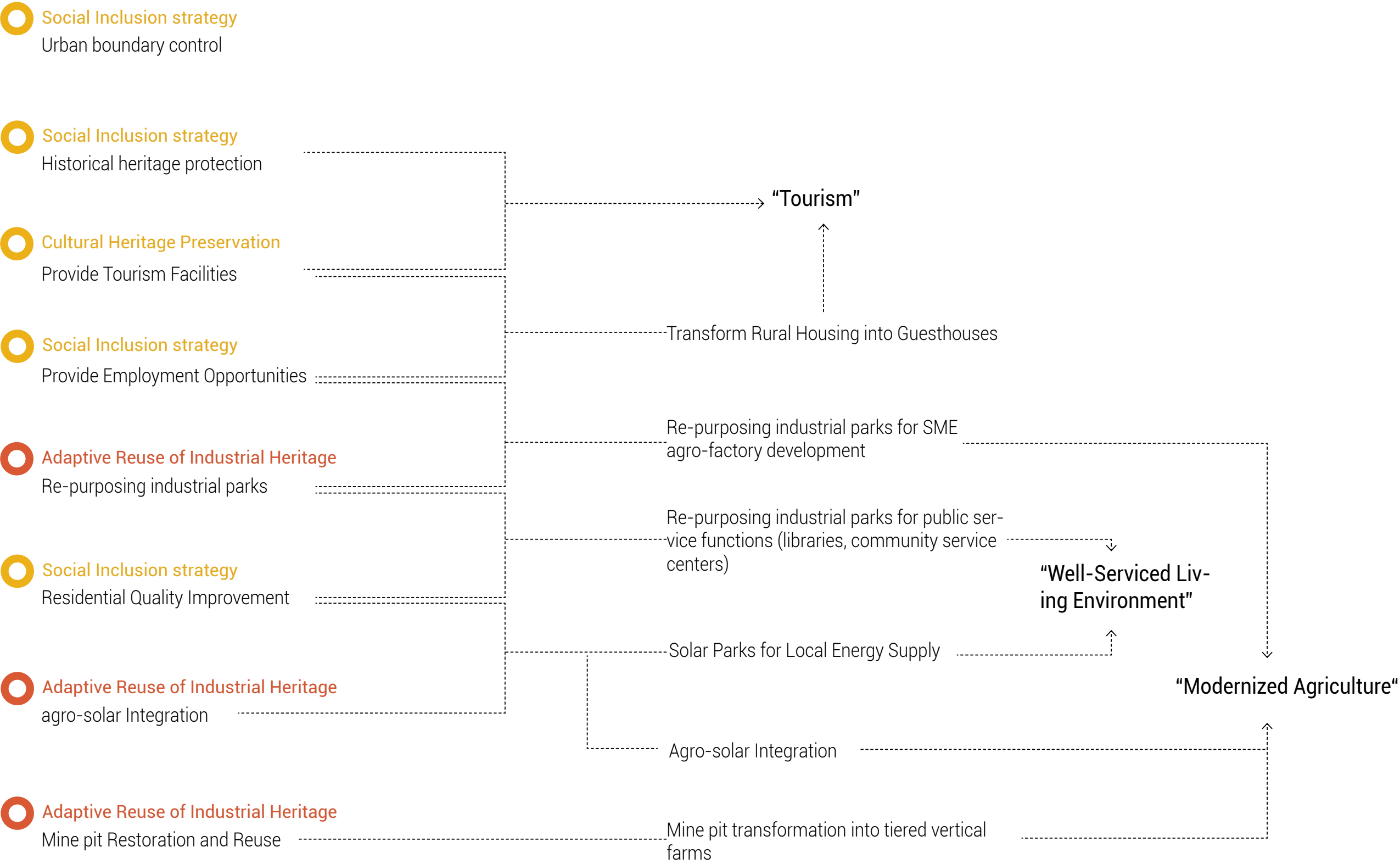
4.4 Managed Shrinkage Scenario

Strategy Implementation Phase



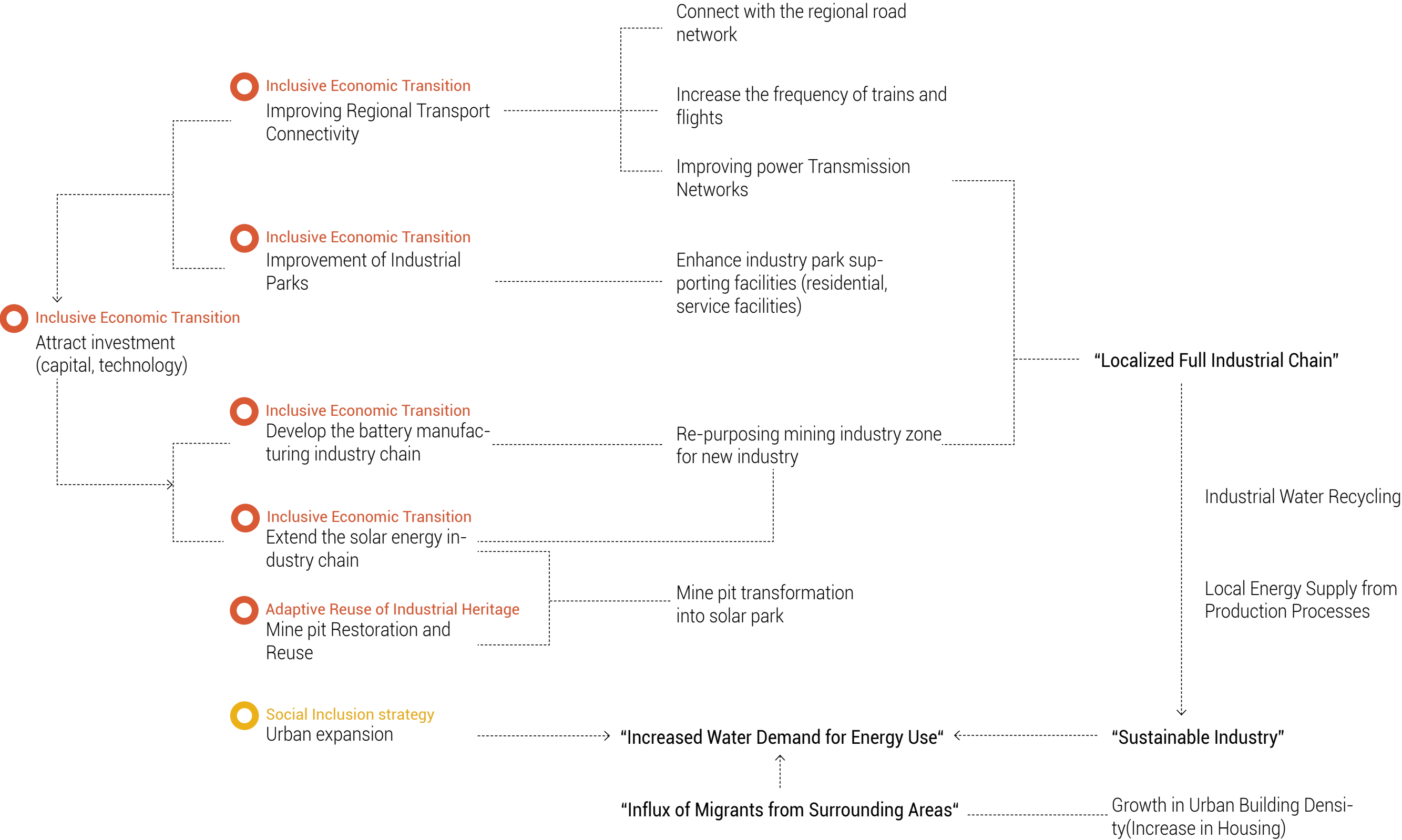
4.4 Managed Shrinkage Scenario

The Transformation Pathway



4.5 Industrial Revival Scenario

The Transformation Pathway



4.6 Desert Oasis Scenario

The Transformation Pathway

