

INTEGRATING LAND USE CONFLICTS

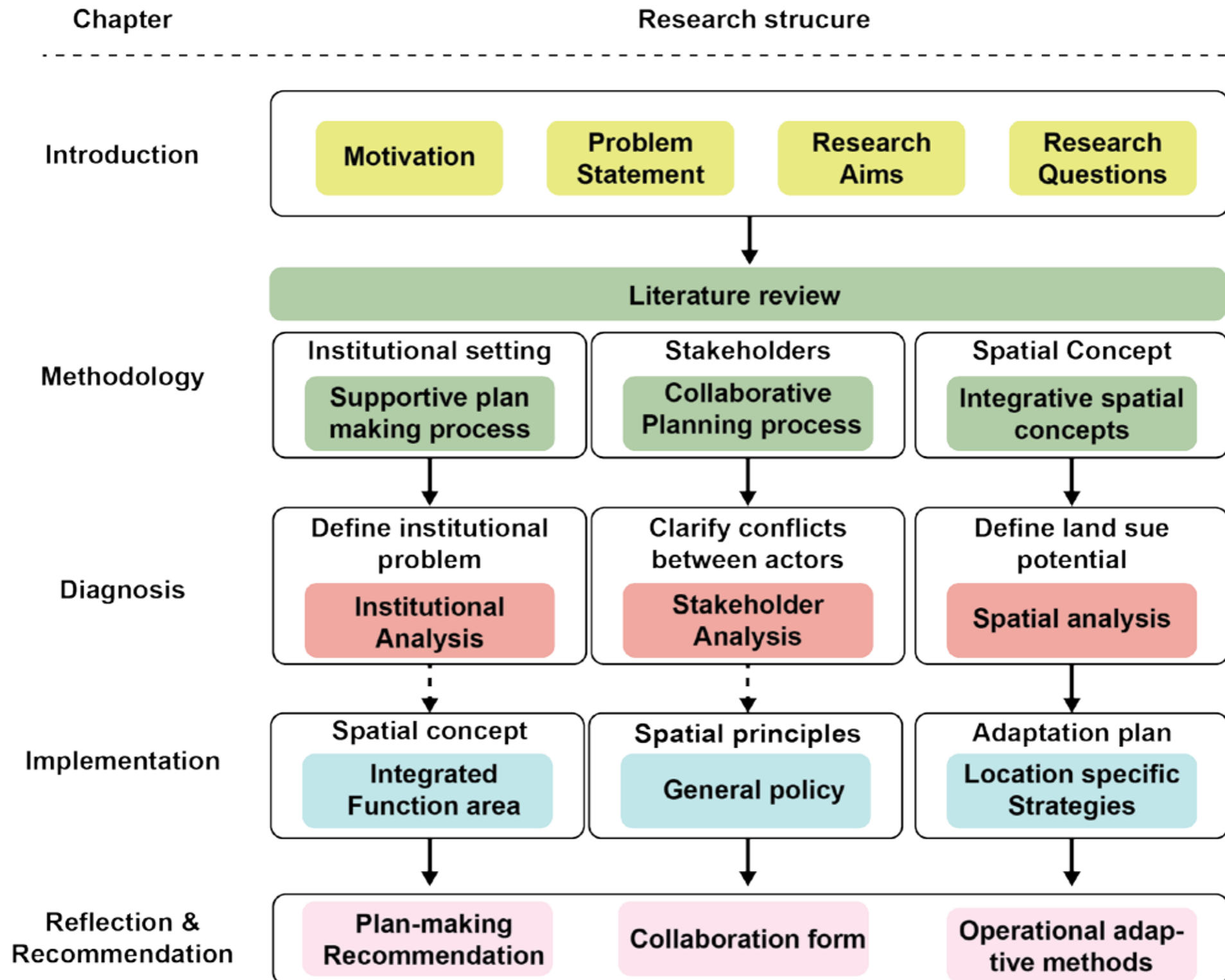
Resolving conservation and development conflicts through adaptive approach in Northeast Coast National Scenic Area

**Nien-Ping Huang (Johanna)
4239857**

**P5 presentation
26 JUNE 2014**

**Delft University of Technology, Faculty of Architecture and the Built Environment
Department of Urbanism**

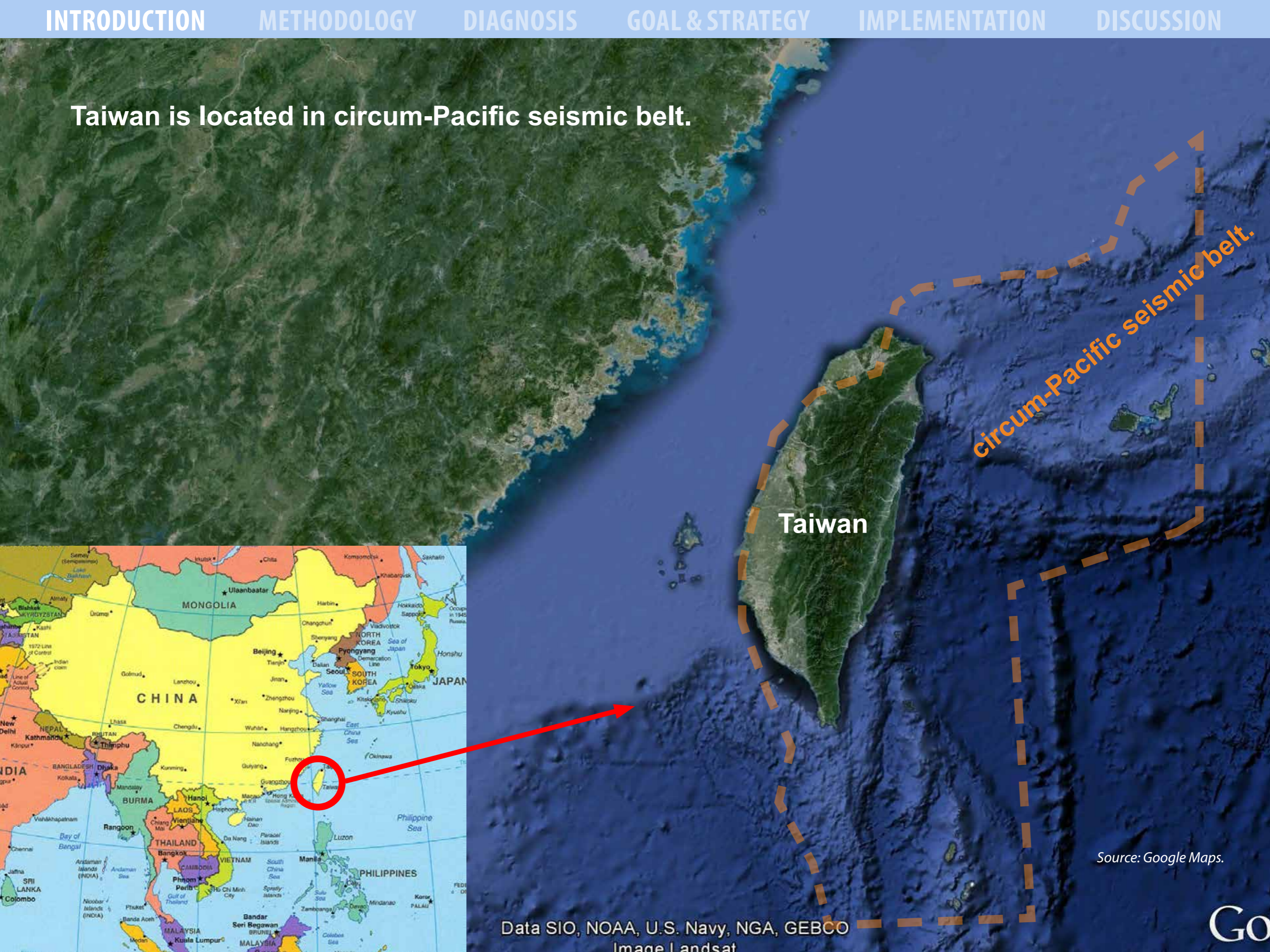
CONTENT



INTRODUCTION



Taiwan is located in circum-Pacific seismic belt.



circum-Pacific seismic belt.

Taiwan



Source: Google Maps.

Mountain covers 73 % of the island

-> Restricted to develop

-> Development v.s Conservation



Figure . Slopeland area coverage.

Source: Draw by author.



Figure . New Taipei City

Source: Google Maps.

Northeast coast area is famous for its recreation activities

**Spring Art Festival
Gongliao Sand Carving Art Festival**

PHOTOS BY MARCO3688X



**Summer Music Festival
Gongliao Rock Music Festival**

**Fall Hiking Season
Caoling Historic Trail: The Season of Silver Grass****Winter Harvest celebration
Sanshing Green Onion and Garlic Festival**

Northeast Coast National Scenic Area (NCNSA)

Location: Gongliao, Ruifang, Touchen

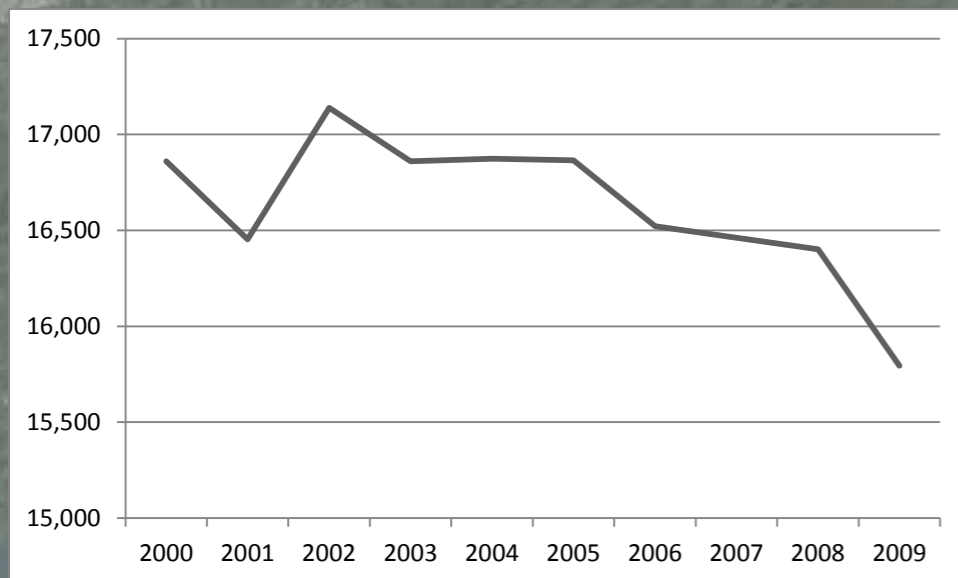
Area: 124.85 km²

Population: 15,759

Density: 126 /km²

(Taipei city density: 9800 /km²)

Decreasing population



Project context - Northeast Coast National Scenic Area

55% -> steep slopeland, prohibit to develop

35% -> gentle slopeland, restrict to develop

10% -> plain, allow to develop

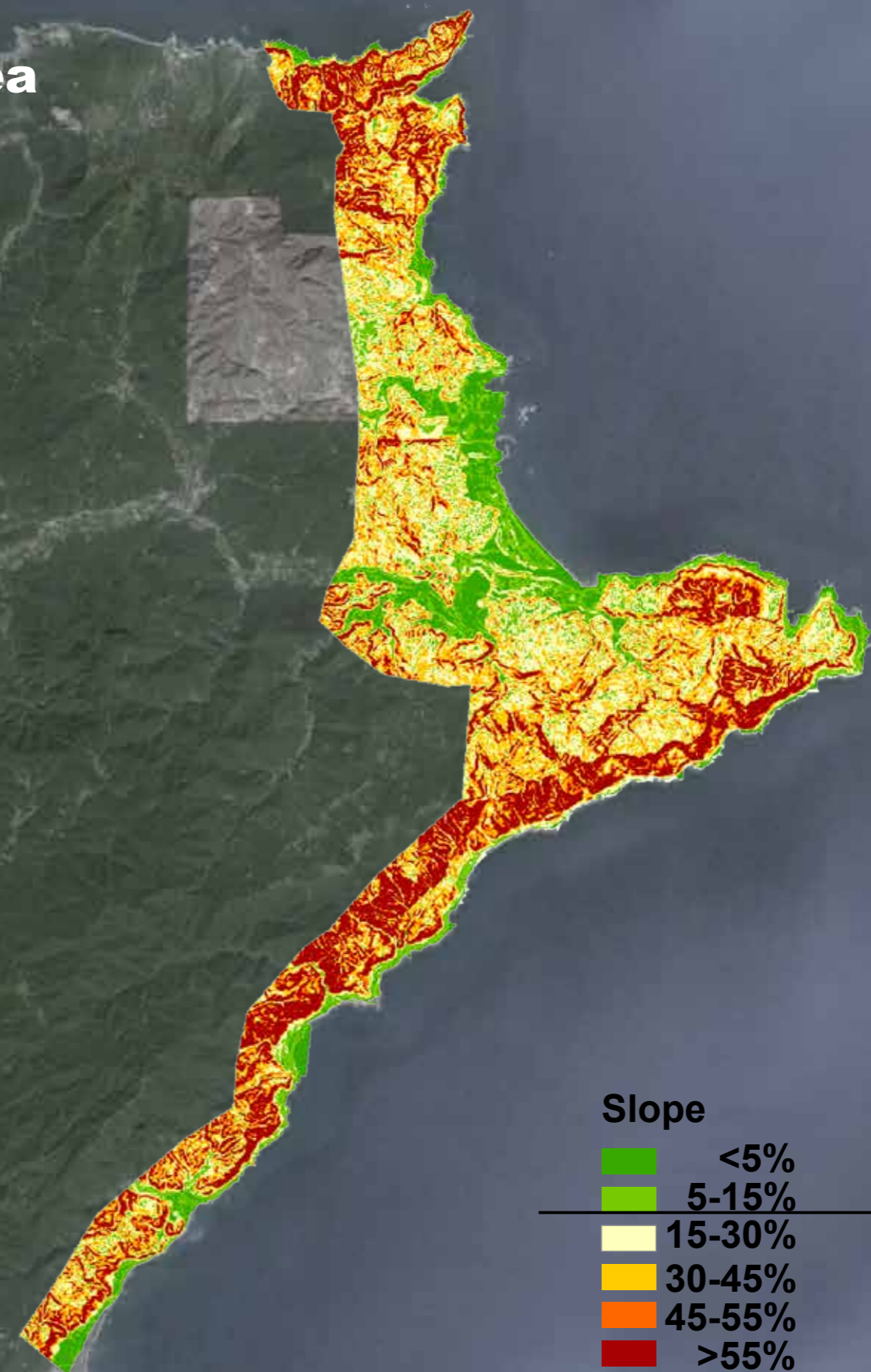


Figure 12 Slope

RESEARCH GOAL

To define a spatial strategy to **integrate land use conflict interests** between conservation and development in Northeast Coast National Scenic Area.

THE STORY BEHIND GONGLIAO

2008 The Gene group CEO invited International Architects to design for GENE 21+ Grand Land Architecture International Project. 26 famous architect group's design proposal became the selling point of the dwelling project.

Please Join my GENE 21+ Grand land Architecture International project !

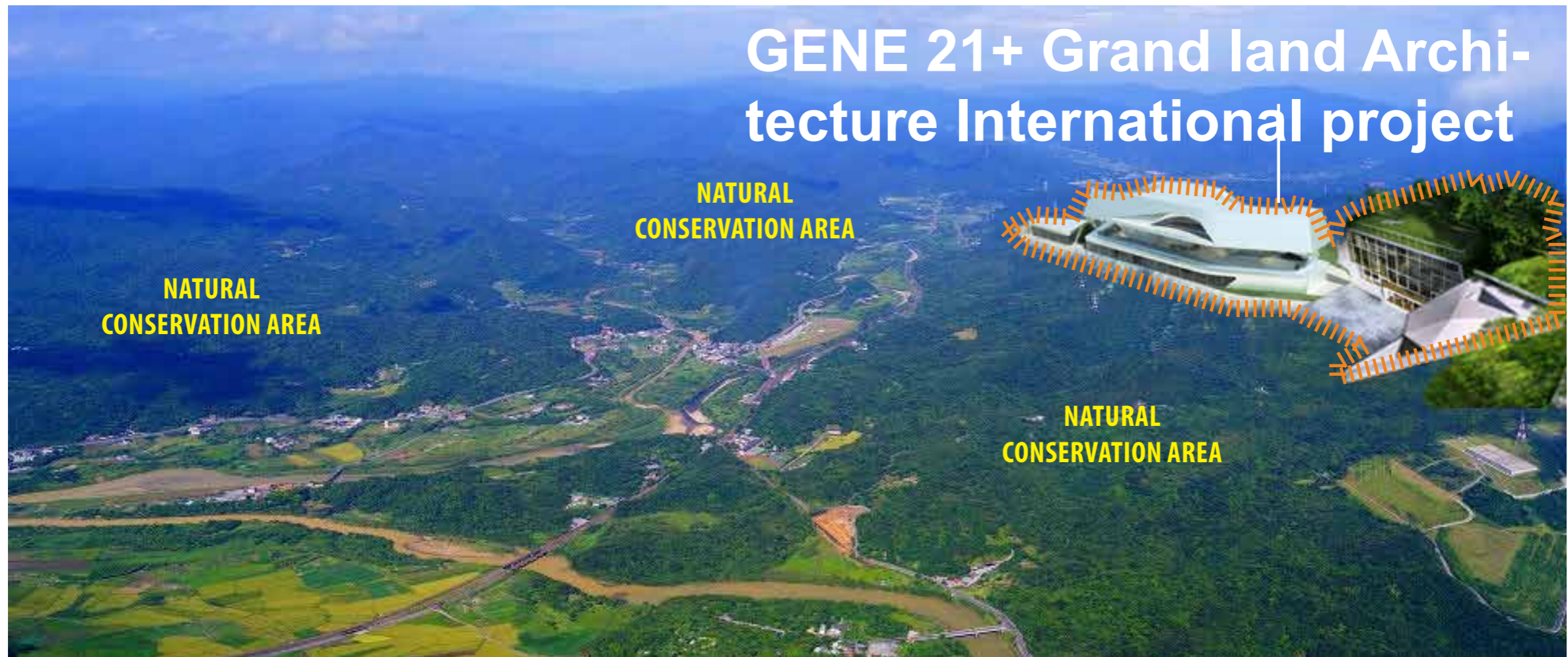


吕台年
GENE GROUP CEO



THE STORY BEHIND GONGLIAO

But the project site locates at natural conservation area in Northeast Coast National Scenic Area, **development is highly restricted.**



Demand conflicts

Farmers:
Paddy fields are agricultural wetland for farm ecology

Forestry Bureau:
Terraced paddy fields restoration would maintain soil and water in slopeland

Soil and Water Conservation Bureau:
Sloped land exceed 35% shall not allow for development

Dwellers:
Ask for property development right. Cancel land use regulation restriction.

Water Resources Agency:
Build dike along riverfront for flood prevention measure

Developer:
Build holiday resort, golf field and hotel can benefit economy

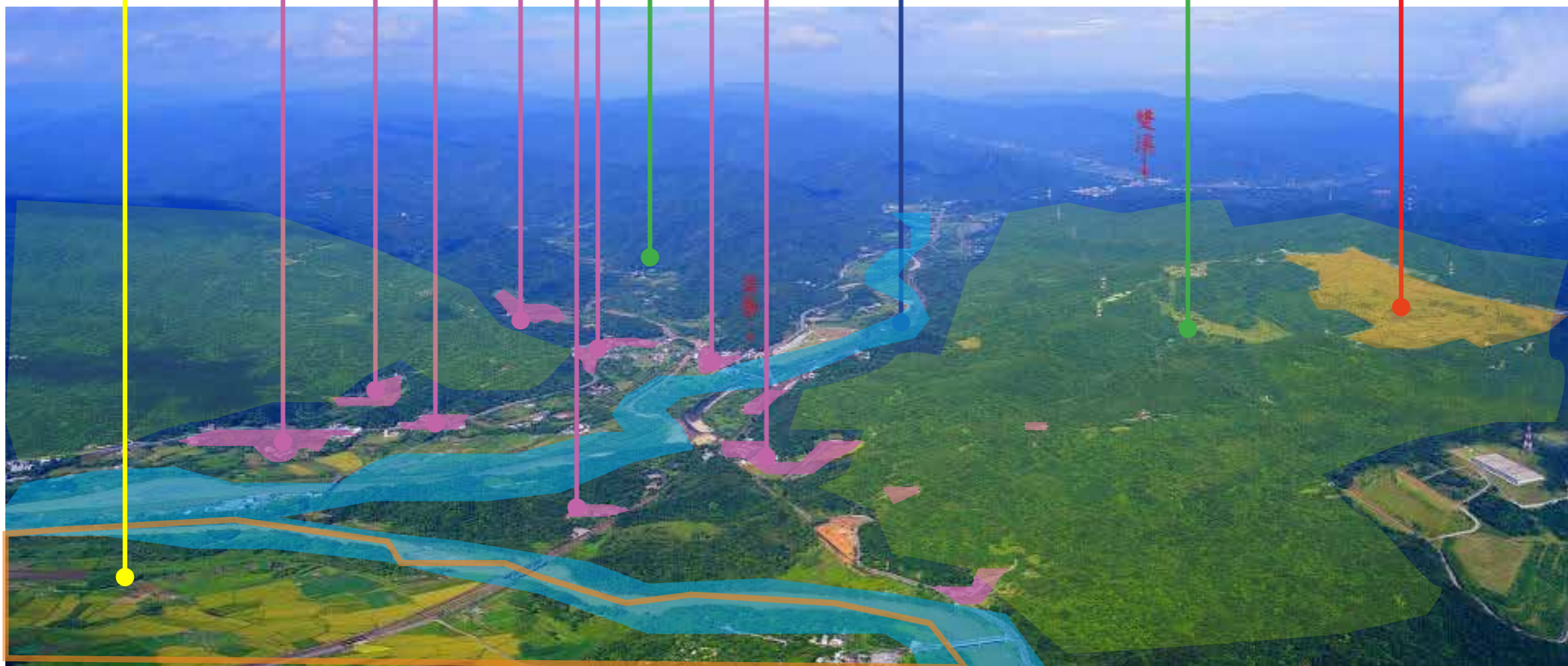


Figure Gongliao downtown and surrounding landscape

PROBLEM

The proposed strategy by Constructuion and Planning Agency did not resolve the conflict but enhance the conflict instead.

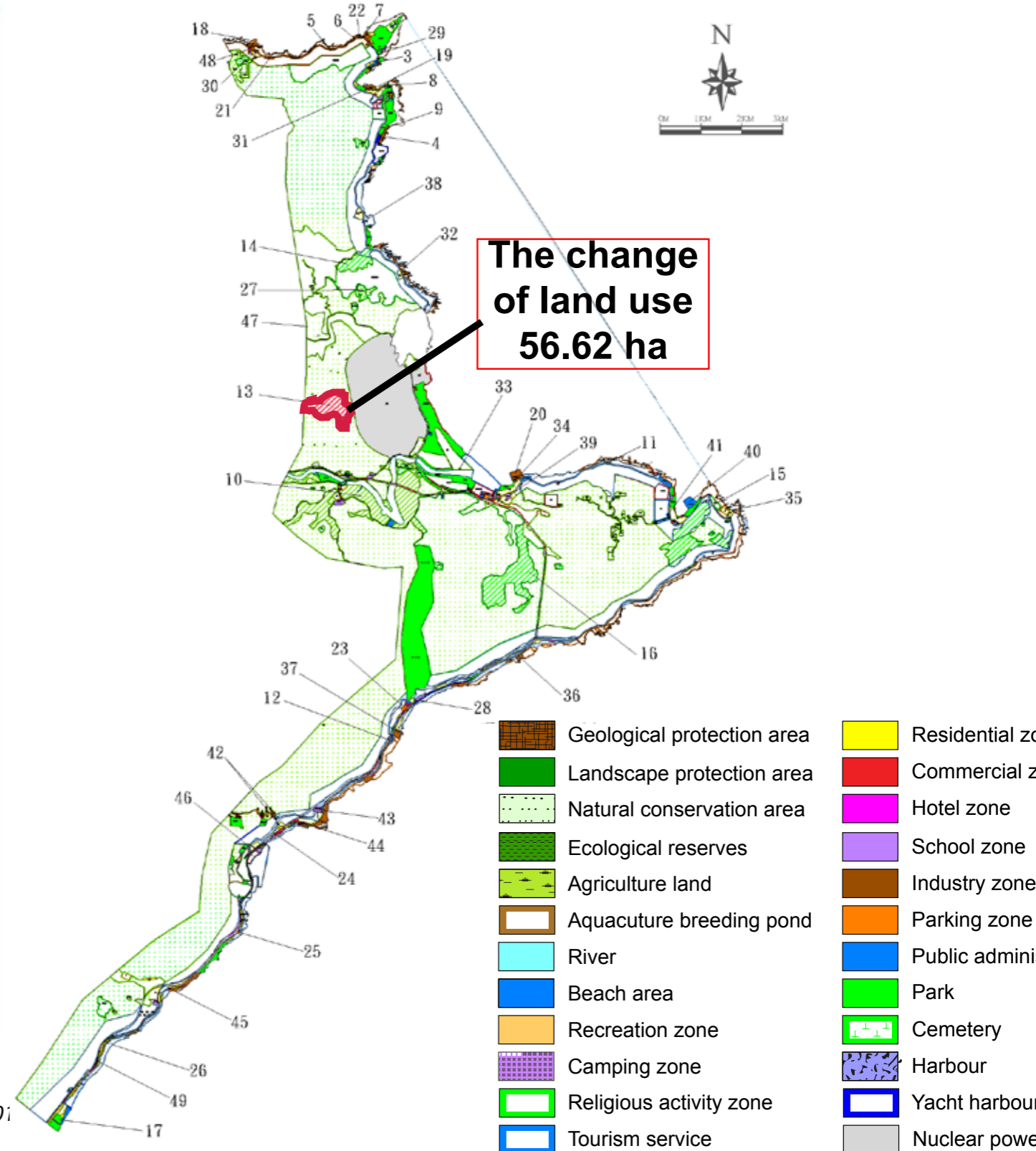
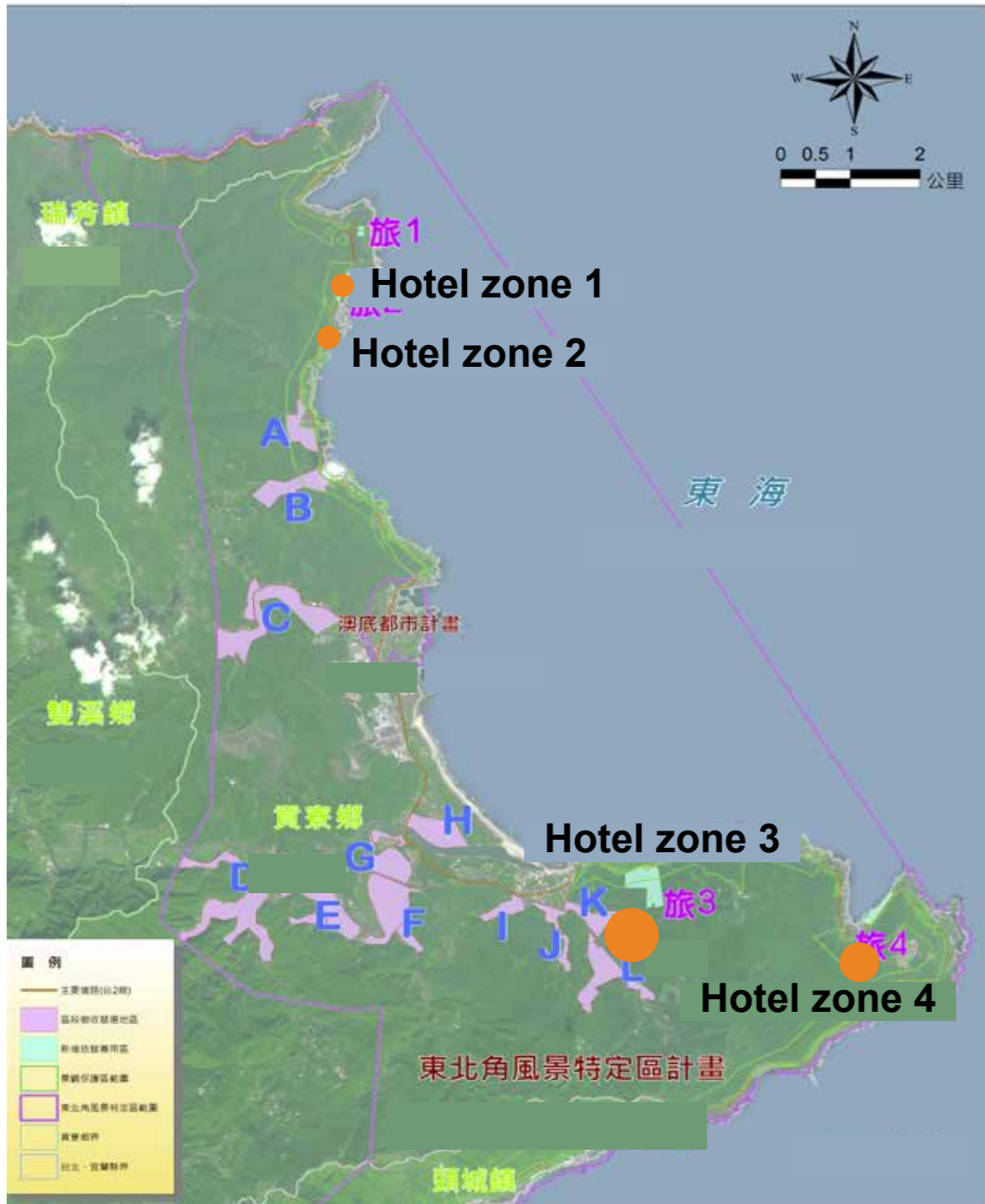


Figure . Draft expropriation project of Civilian Economic Improvement Strategic Plan

Source: CPAMI, 2010

TAIPEI TIMES

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Land seizure plans for NE coast anger residents

'WORSE THAN BANDITS': Residents said that despite promises they could keep half their land, they would have to sell at NT\$1,000 a ping and buy it back at NT\$28,000

By Lee I-chia / Staff Reporter



Environmental groups and landowners from the northeast expressed anger at a land expropriation project to make way for hotels.

The project is part of an "action plan for a land amendment to improve the people's living" originated by the Ministry of Transportation and Communications and passed by the Ministry of the Interior's Construction and Planning

Agency last year, which intends to use land in the northeast coastal area for tourism.

Smoothly sloped areas near Hemei Township (和美), Audi Village (澳底) and Fulong Village (福隆), as well as locations in Gongliao District (貢寮) and New Taipei City (新北市), are to be expropriated for development.

The initial plan, outlined in March last year, covered 688.5 hectares of land, including high-quality farmland and wetlands. After provoking strong opposition from local residents, the area was reduced to 102.56 hectares last month, but of that territory, about 88 percent is private land.

Figure1.11 The local demonstration of Civilian Economic Improvement Plan

Source: Taipei Times, 2011

The traditional planning in Taiwan needs a new strategy to deal with land use conflicts.

How to maintain environmental quality and tourism resource?

Why does the environmental protection regulation lead to negative effect to living environment quality?

Does tourism development help local economy? What is the sustainable industry for local?



How to integrate water management into spatial planning?

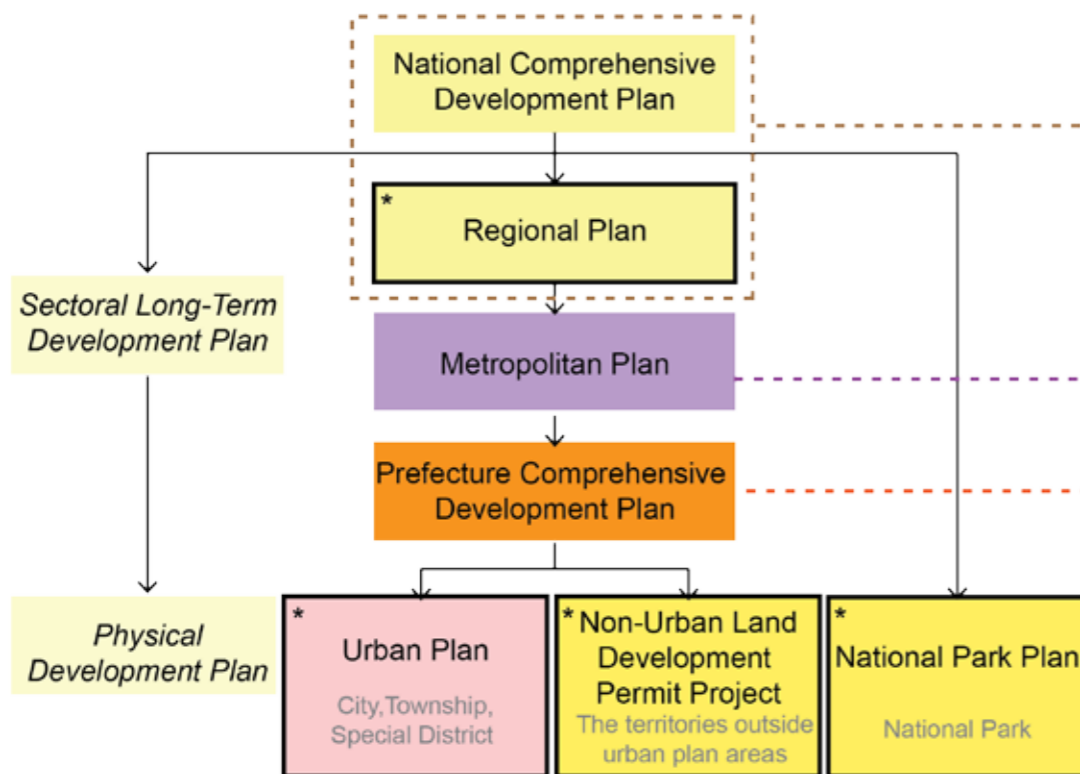
Planning system in Taiwan is in the transition period

Function areas are spatial development concepts instead of zoning plan

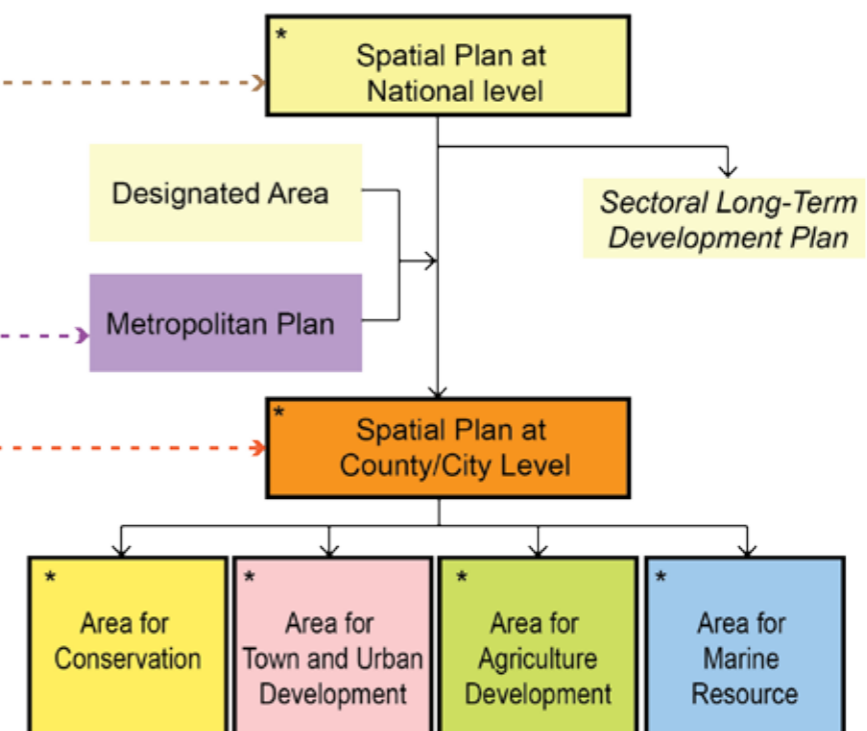
Northeast Coast National Scenic Area contains **function areas**

- Conservation area
- Town and urban development area
- Agriculture development area
- Marine resources development area

Existing planning system hierarchy in Taiwan



The planning system hierarchy under new National Land Use Act



Northeast Coast National Scenic Area

Northeast Coast National Scenic Area Plan

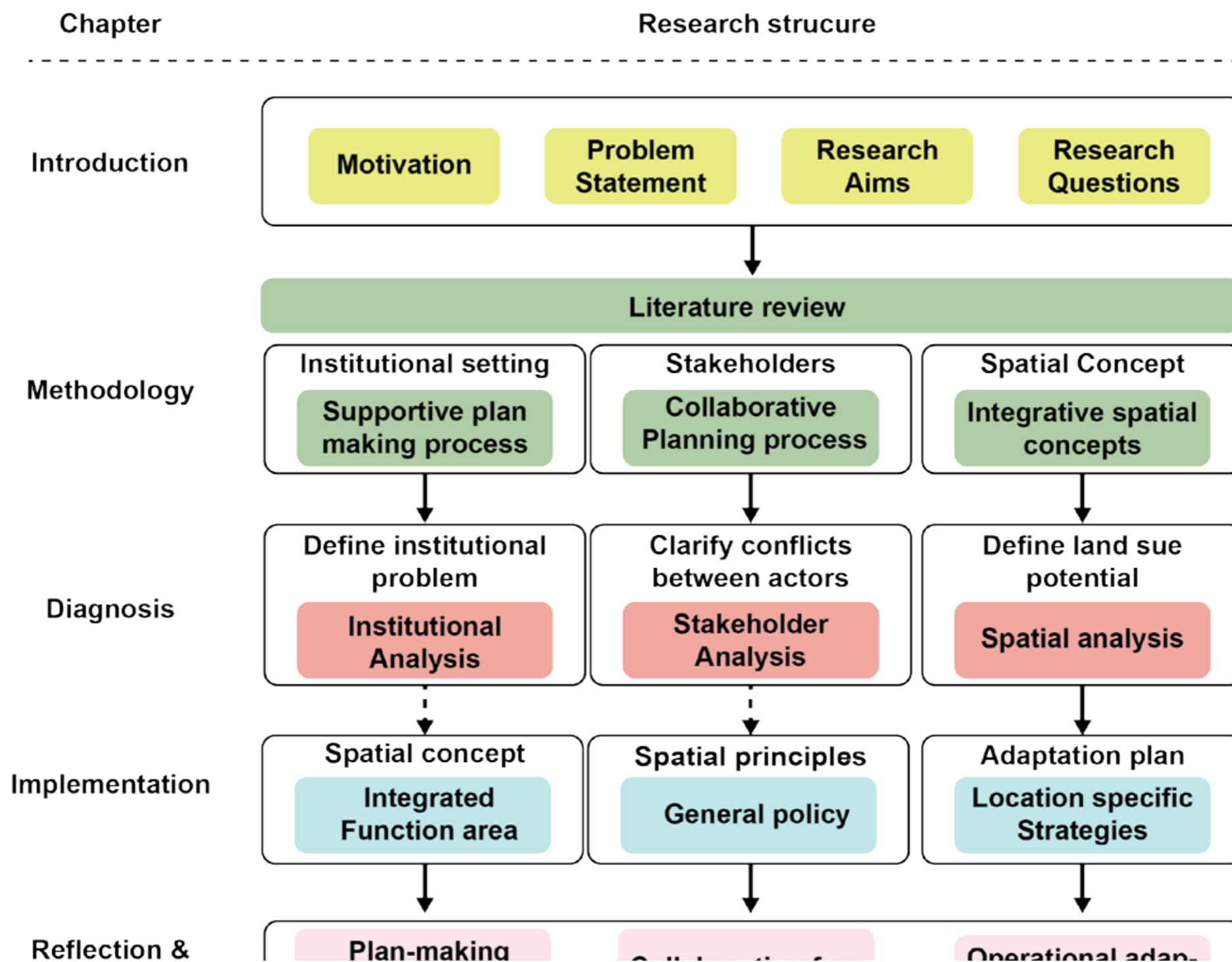
* Legislative plan

Non-legislative plan

METHODOLOGY



RESEARCH APPROACH



RESEARCH QUESTION

What is the strategy to help traditional spatial planning system to be capable of dealing with the conservation and development land use conflicts?

HYPOTHESIS

Adaptive planning approach offers opportunity to deal with land use conflicts.

LITERATURE REVIEW

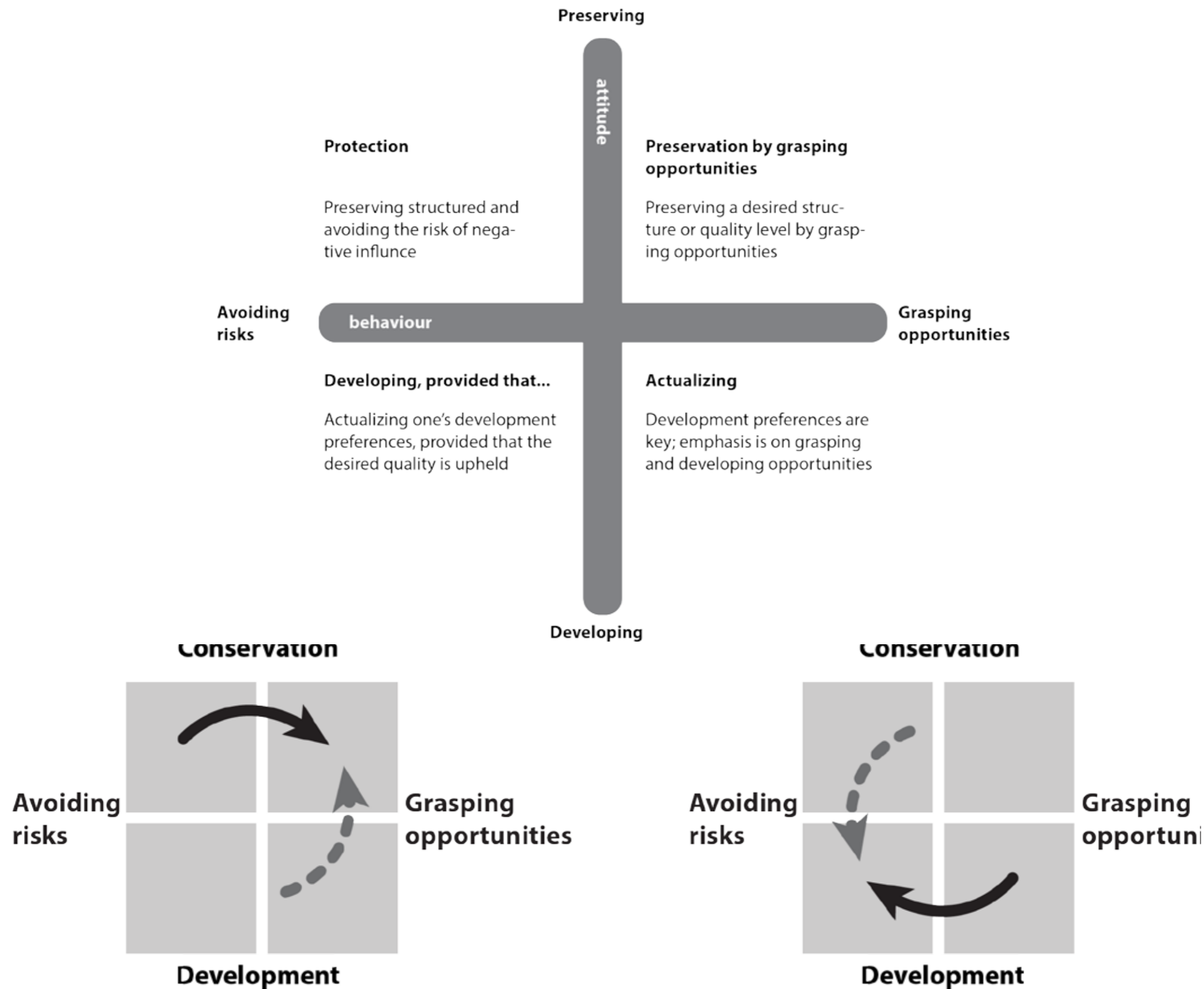
	RESILIENCE TO CHANGES	RESPONSIVE PROCESS	ADAPTION	COLLABORATION	INTEGRATION	
HOLLING, (1978) Adaptive Environmental Assessment and Management.	●	●	◐	○	○	
BRIASSOULIS, (1989) Theoretical Orientations in Environmental Planning: An Inquiry into Alternative Approaches. Environmental Management,	◐	○	HUMAN ACTIVITY & ENVIRONMENT ●	○	CO-EVOLUTION ●	
WOLLENBERG et le.,(2000) Using scenarios to make decisions about the future: anticipatory learning for the adaptive co-management of community forests.	◐	●	FRAMEWORK ●	COMMUNITY & LANDSCAP ●	STAKEHOLDERS ●	CO-MANAGEMENT ●
JAPAN SATOYAMA SATOUMI INITIATIVE (2011)	◐	◐	HUMAN & BIODIVERSITY ●	◐	CO-MANAGEMENT ●	
DUTCH ADAPTIVE PLANNING PRACTICE (2011)	●	●	PRACTICE ●	CONSERVATION & DEVELOPMENT ●	○	○

Japan Satoyama Satoumi Assessment - Adaptive co-management of society and eco-system

A mosaic of both terrestrial and aquatic ecosystems comprised of wood lands, plantation, grasslands, farmlands, pasture, irrigation ponds and canals, with an emphasis on the terrestrial ecosystems.



Integrating conservation and development issues into new strategy

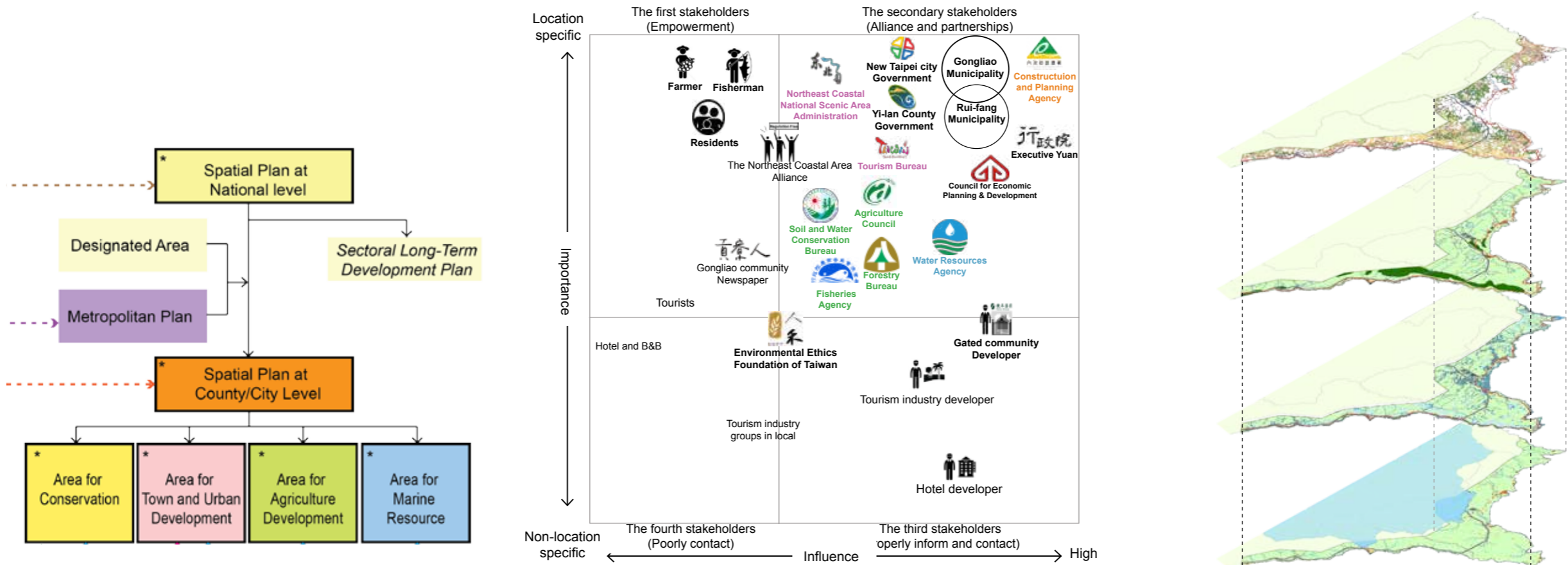


However, the implementation of plans usually takes long period and **not always conducted adaptively**.

The lack of **operational adaptive methods**, agreement on clearly stated goals, **unsupportive institutional setting**, and **complex social values and interests** are the reasons for slow adoption of adaptive approach (Kato & Ahern 2008).

RESEARCH QUESTION

What is the strategy to help traditional spatial planning system to be capable of dealing with the conservation and development land use conflicts?



1 Institutional
 What is the environmental value and development constraints?

2 Actor
 What is the interrelationship between the relevant stakeholders?

3 Spatial
 What is the physical environment quality and potential?

DIAGNOSIS

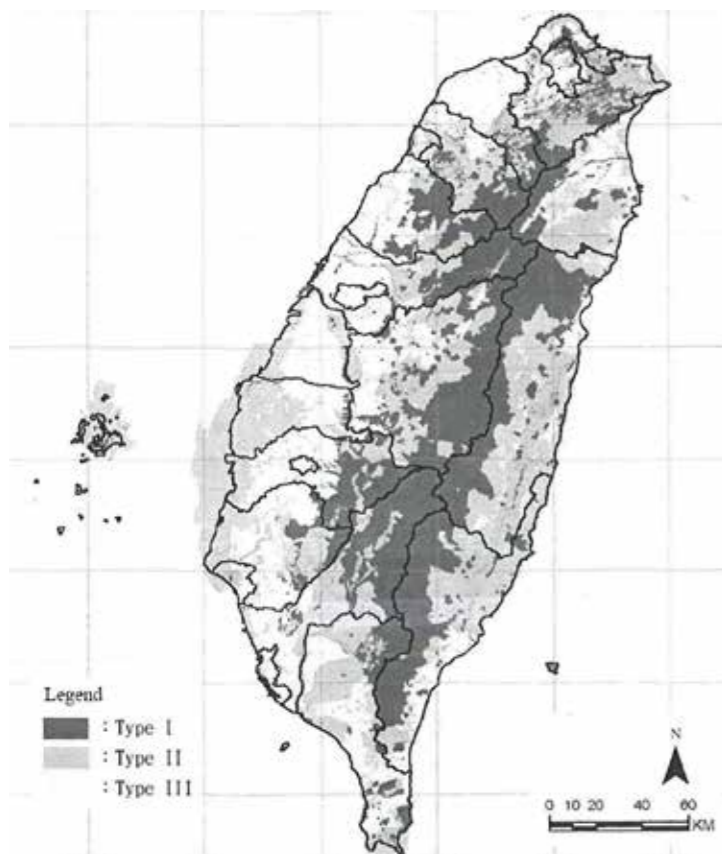


Planning tradition

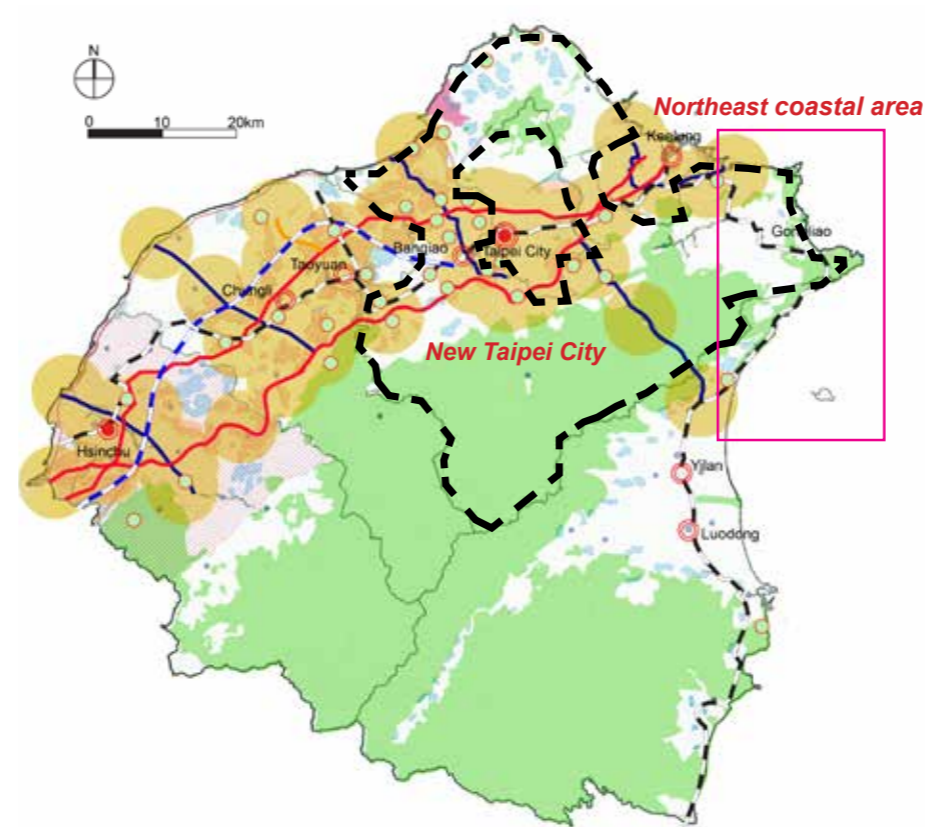
The planning system in Taiwan is concerned with

- *planning making* and
- *control of development.*

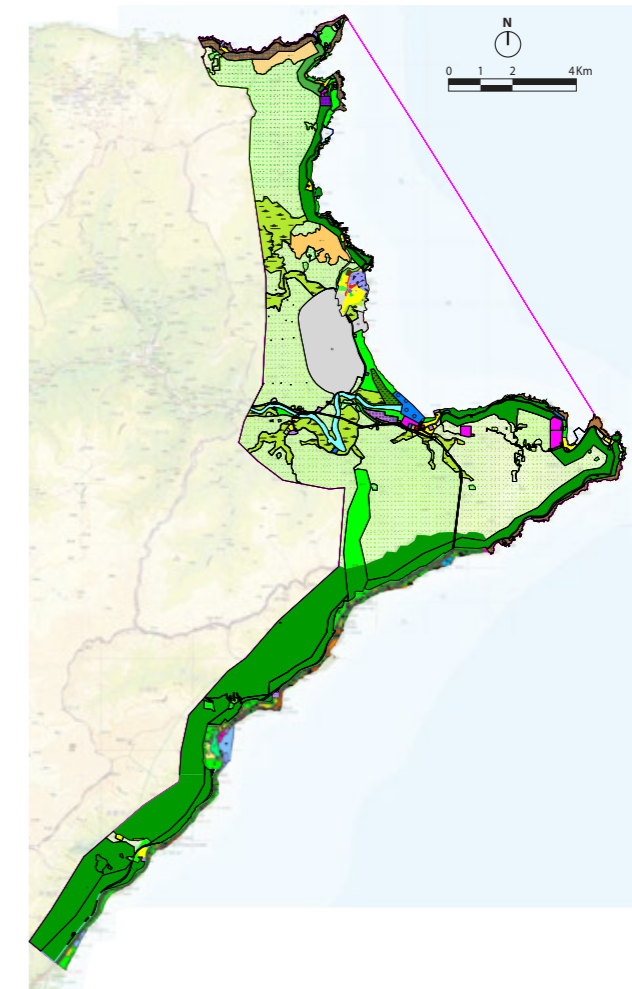
Conservation areas distribution in Taiwan



Northern Region Spatial Plan



Northeast Coast National Scenic Area Master Plan



Existing regulation constraints



Conserve natural and Cultural landscape

Protect resource Production

Prevent natural hazard

Ecologically Sensitive area

Cultural and landscape Sensitive area

Resource production Sensitive area

Natural hazard Sensitive areas

Slopeland & vegetation

- Forest area
- Valley and forest area
- Steep slope area
- Steep slope and forest area
- Steep slope, valley and forest area
- Non-natural landscape environmentally sensitive area

Protection forest

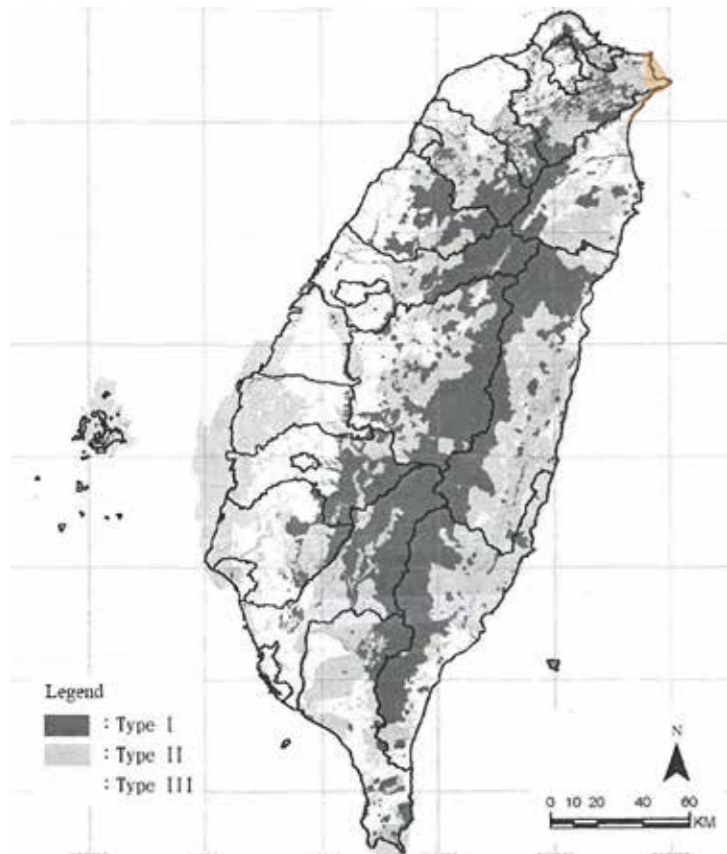
- Protection forest

Flood prone area

- Water quality sensitive area
- Water quality and quantity sensitive area
- Water quantity sensitive area
- Non-surface headwater sensitive area

Water resource

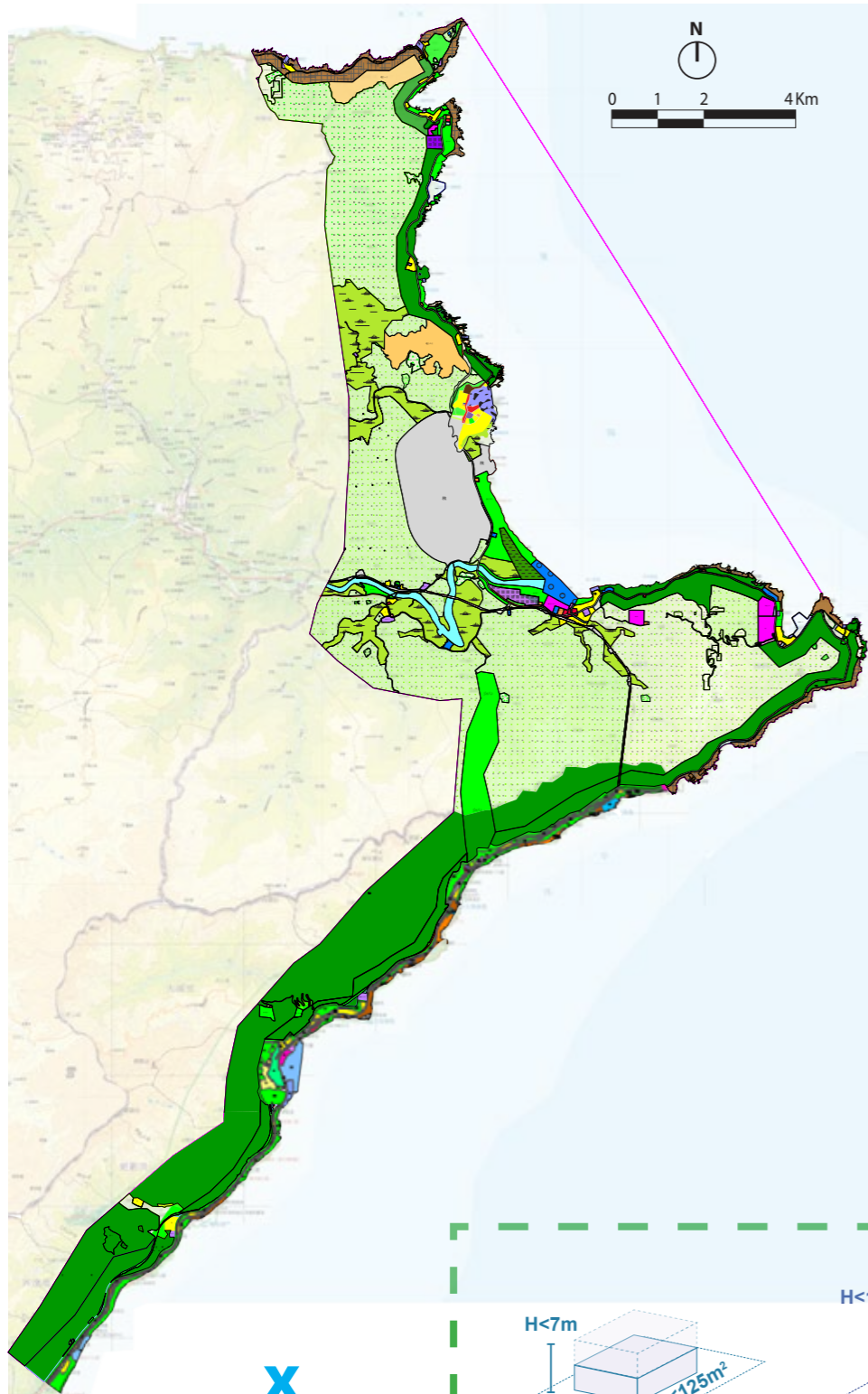
- Headwater sensitive area



Zoning and land use regulation is the main instrument

Northeast Coast National Scenic Area contains areas for

- Conservation
- Town development
- Agriculture development
- Marine resources



Legend

	Geological protection area		Residential zone
	Landscape protection area		Commercial zone
	Natural conservation area		Hotel zone
	Ecological reserves		School zone
	Agriculture land		Industry zone
	Aquaculture breeding pond		Parking zone
	River		Public administration
	Beach area		Park
	Recreation zone		Cemetery
	Camping zone		Harbour
	Religious activity zone		Yacht harbour
	Tourism service		Nuclear power plant zone

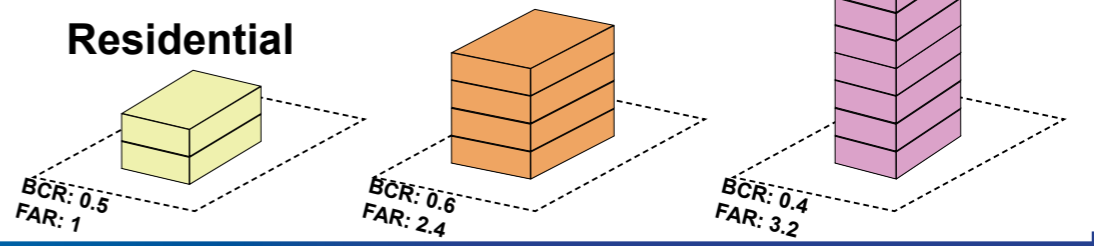
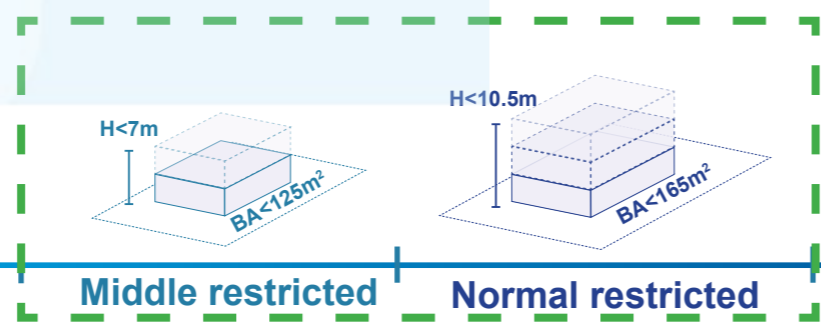
Regulatory Intensity

Highly restricted

Middle restricted

Normal restricted

Low restricted



However, the institutional cannot always dealing with the conflicts land uses

① Sand beach



⑤ Coastal ridge



⑨ Wetland



② Pebble shore



⑥ Cliff



⑩ Terraces



③ Marina



⑦ Windbreak



⑪ Valley



④ Breeding pond



⑧ Plain



⑫ Mountain ridge



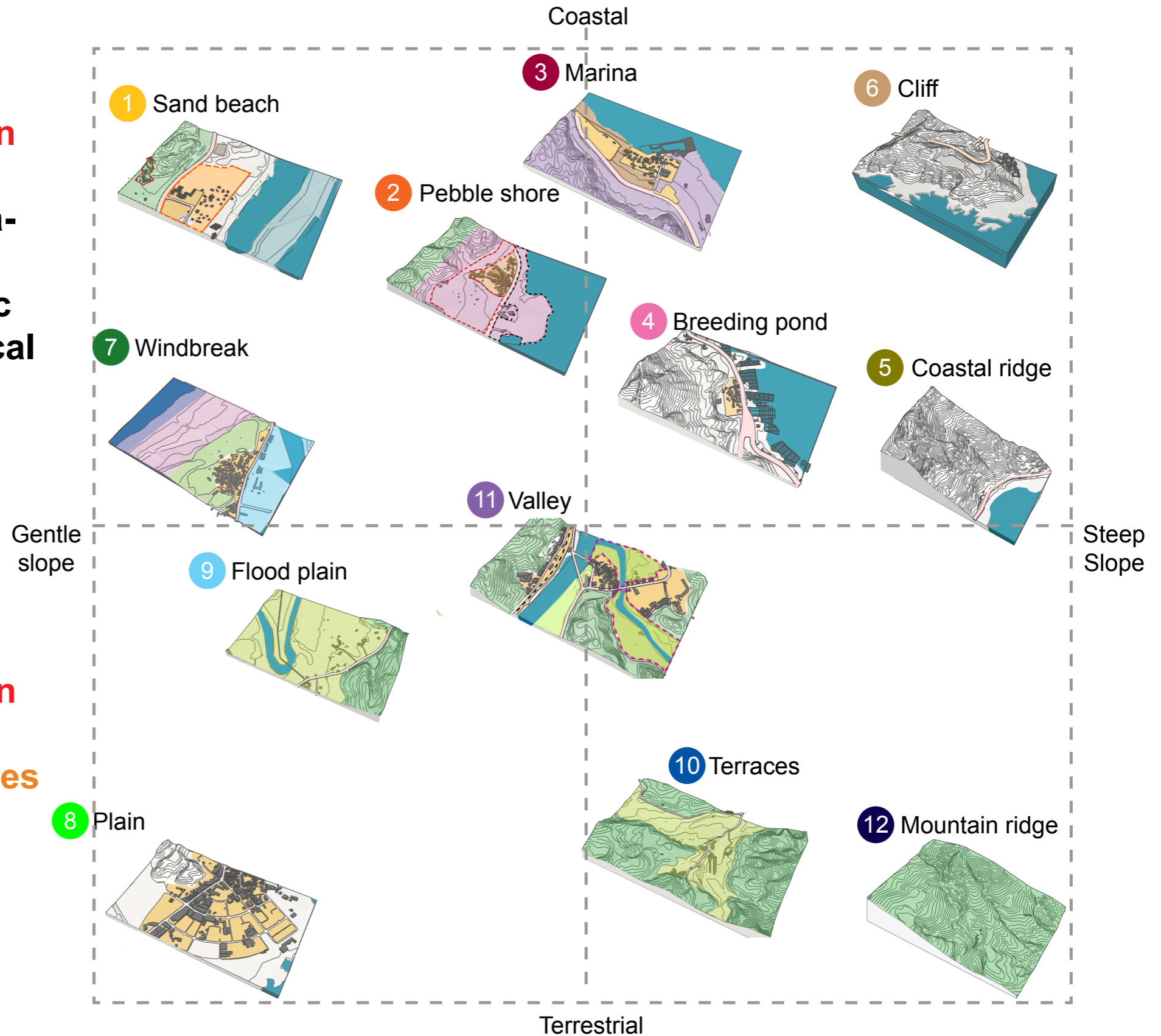
Landscape analysis

Coastal village

Soil and Water protection
Privatization of coastal landscape threaten aquaculture industry.
Conflicts between scenic protection areas with local uses

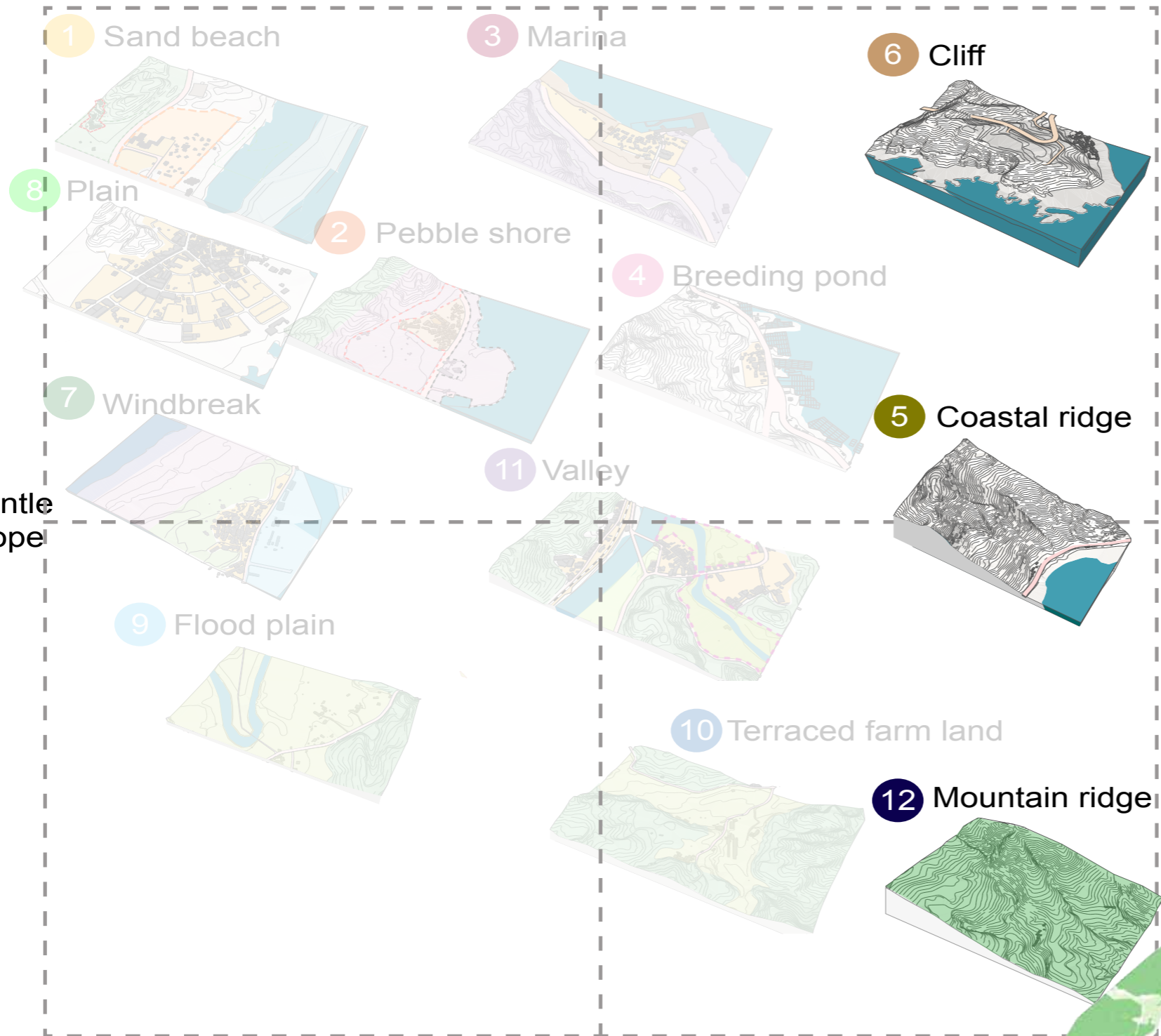
Mountain village

Soil and Water protection
Flood prone areas
Decreasing farm land uses

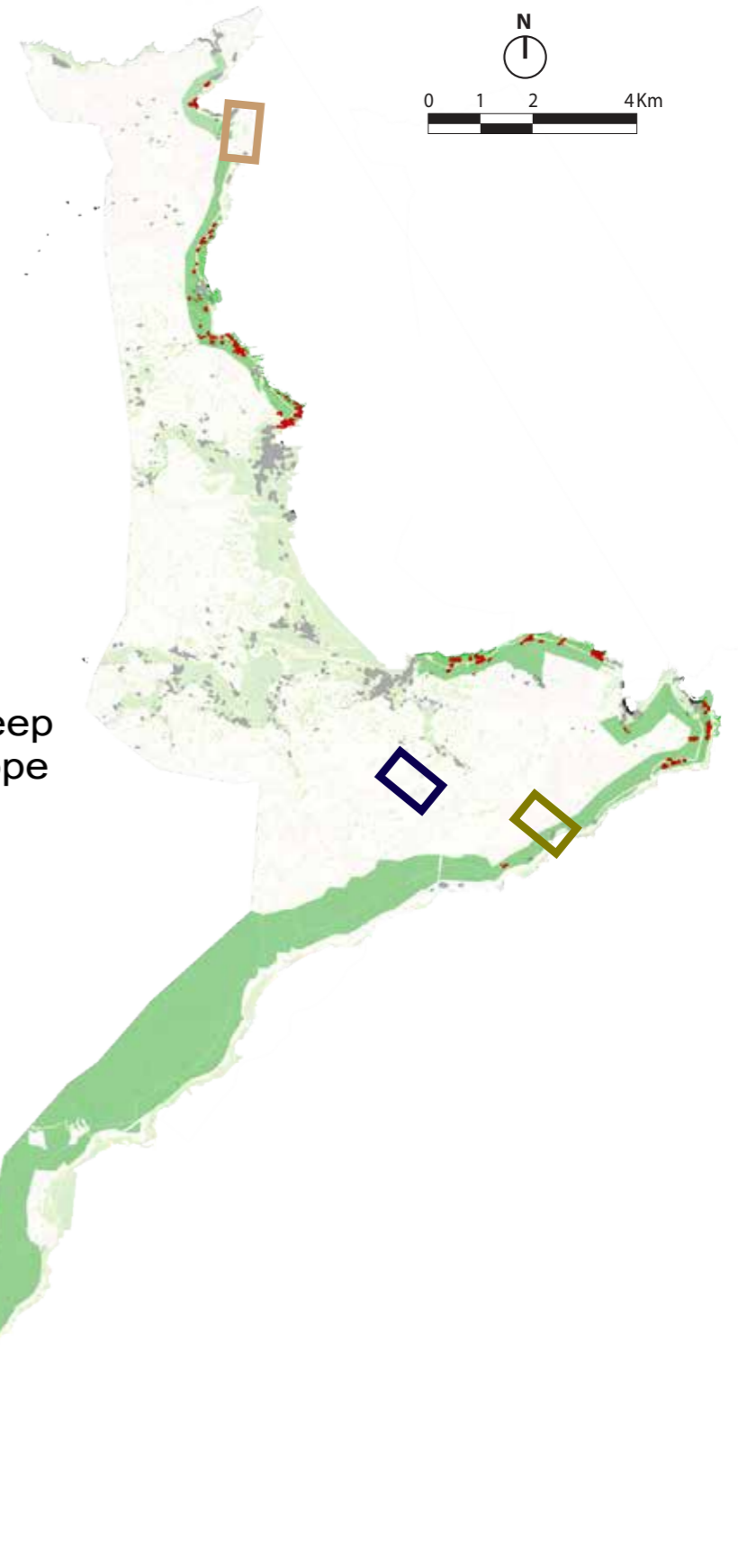


Conflicts between scenic protection areas with local uses

Coastal



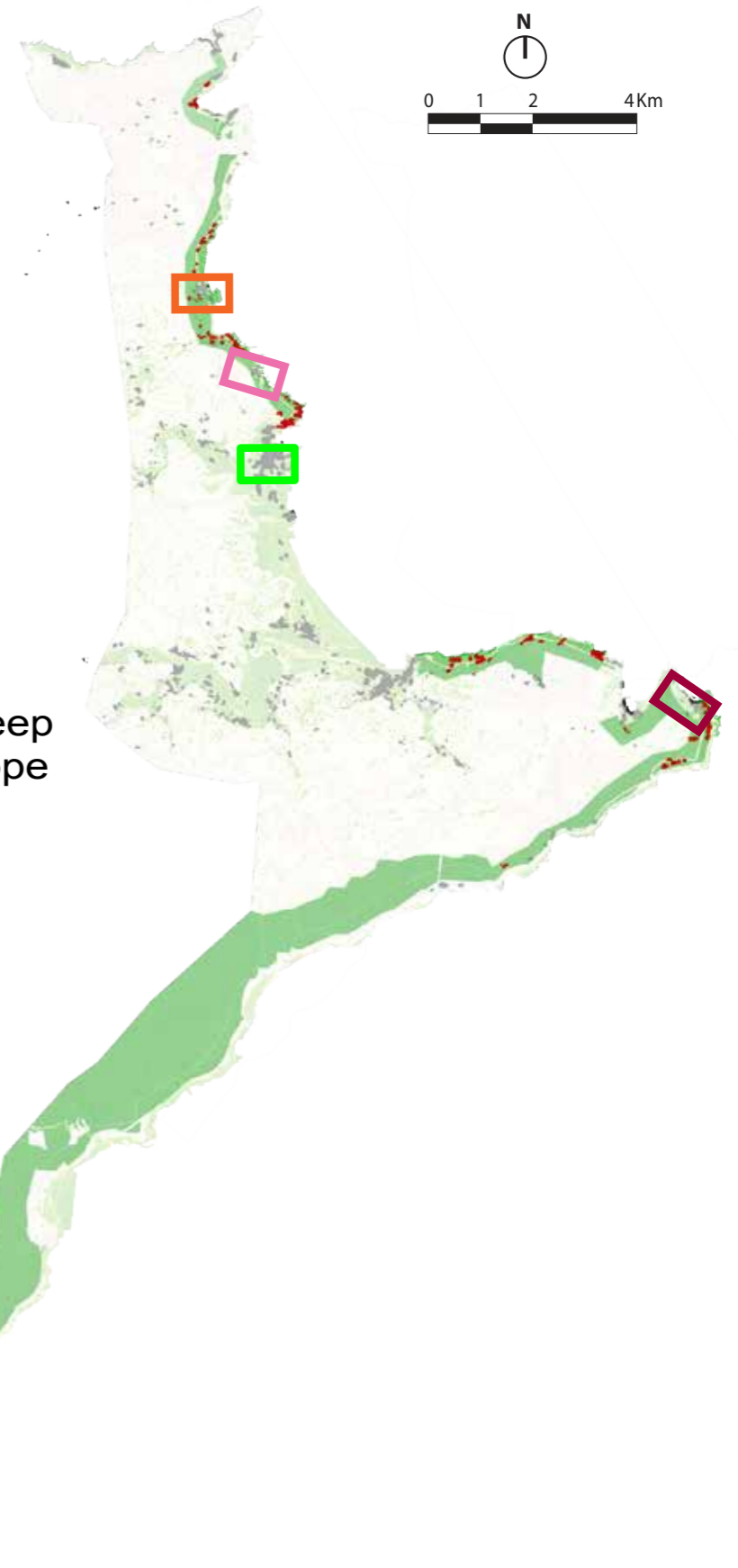
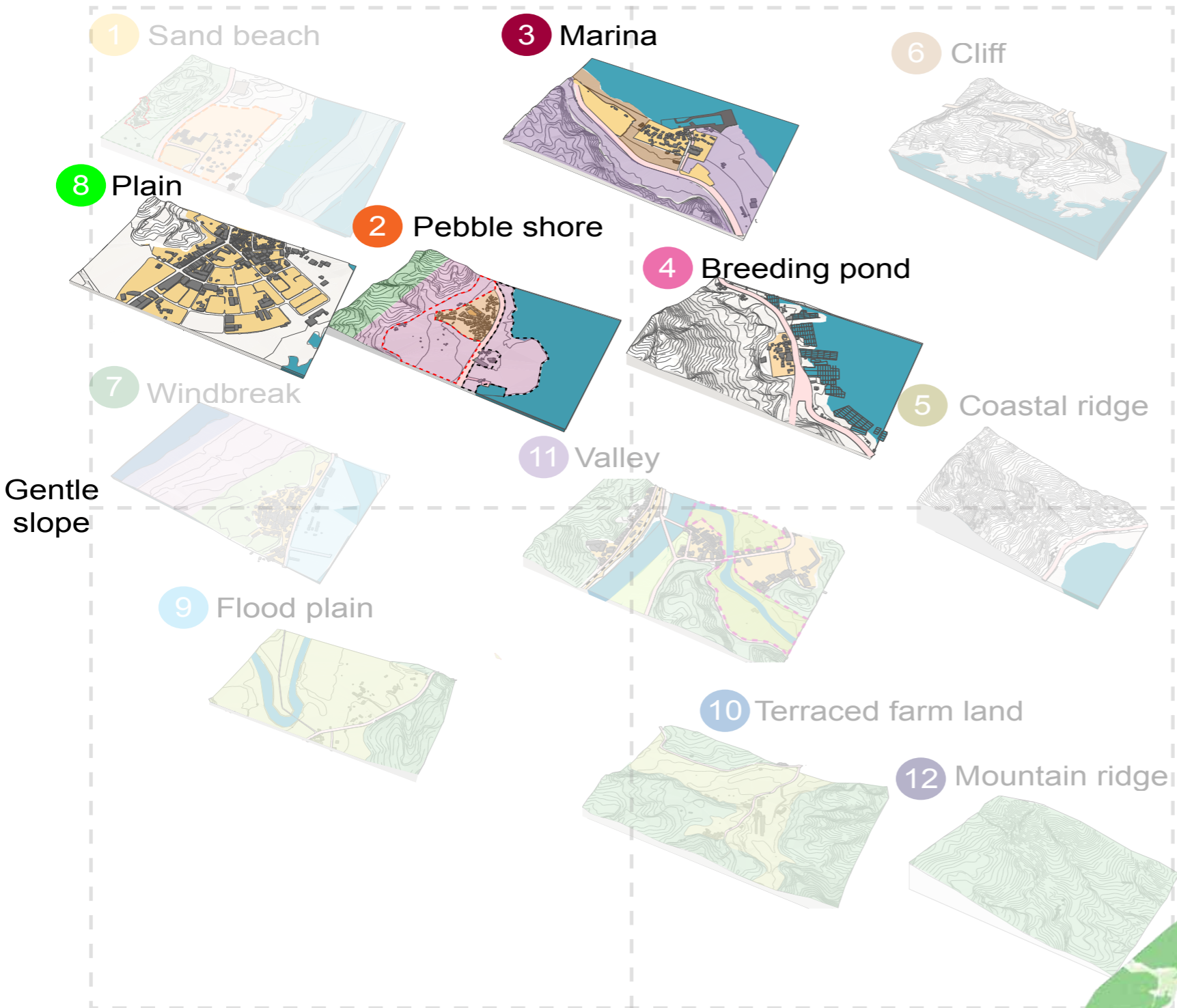
Terrestrial



Privatization of coastal landscape threaten aquaculture industry.

Coastal

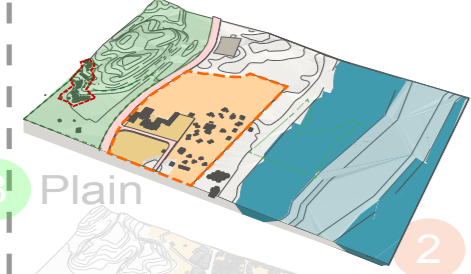
Terrestrial



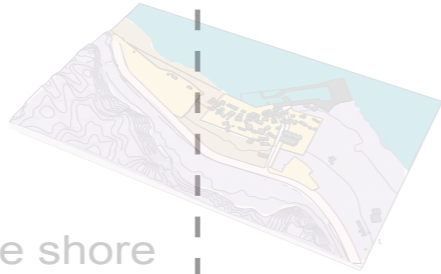
Decreasing farm land uses

Coastal

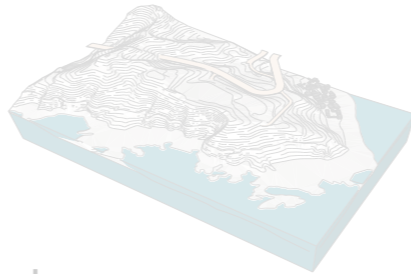
1 Sand beach



3 Marina



6 Cliff



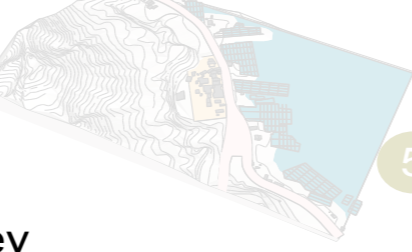
8 Plain



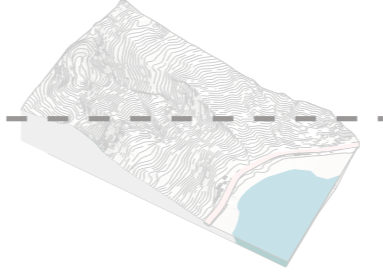
2 Pebble shore



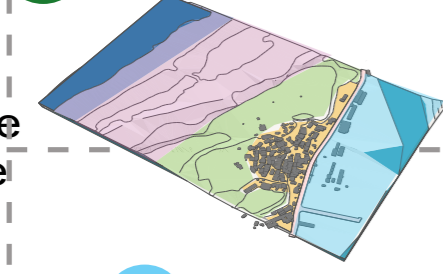
4 Breeding pond



5 Coastal ridge



7 Windbreak



11 Valley



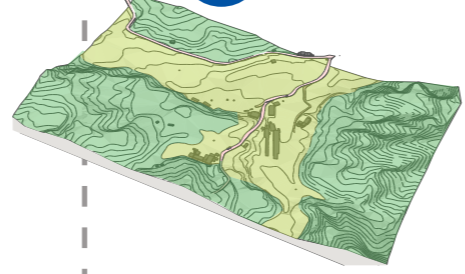
Steep slope

Gentle slope

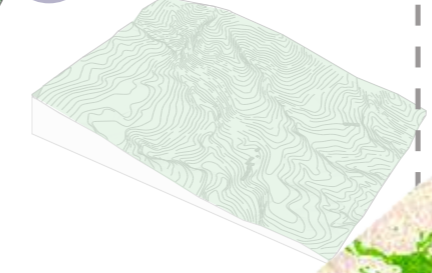
9 Flood plain



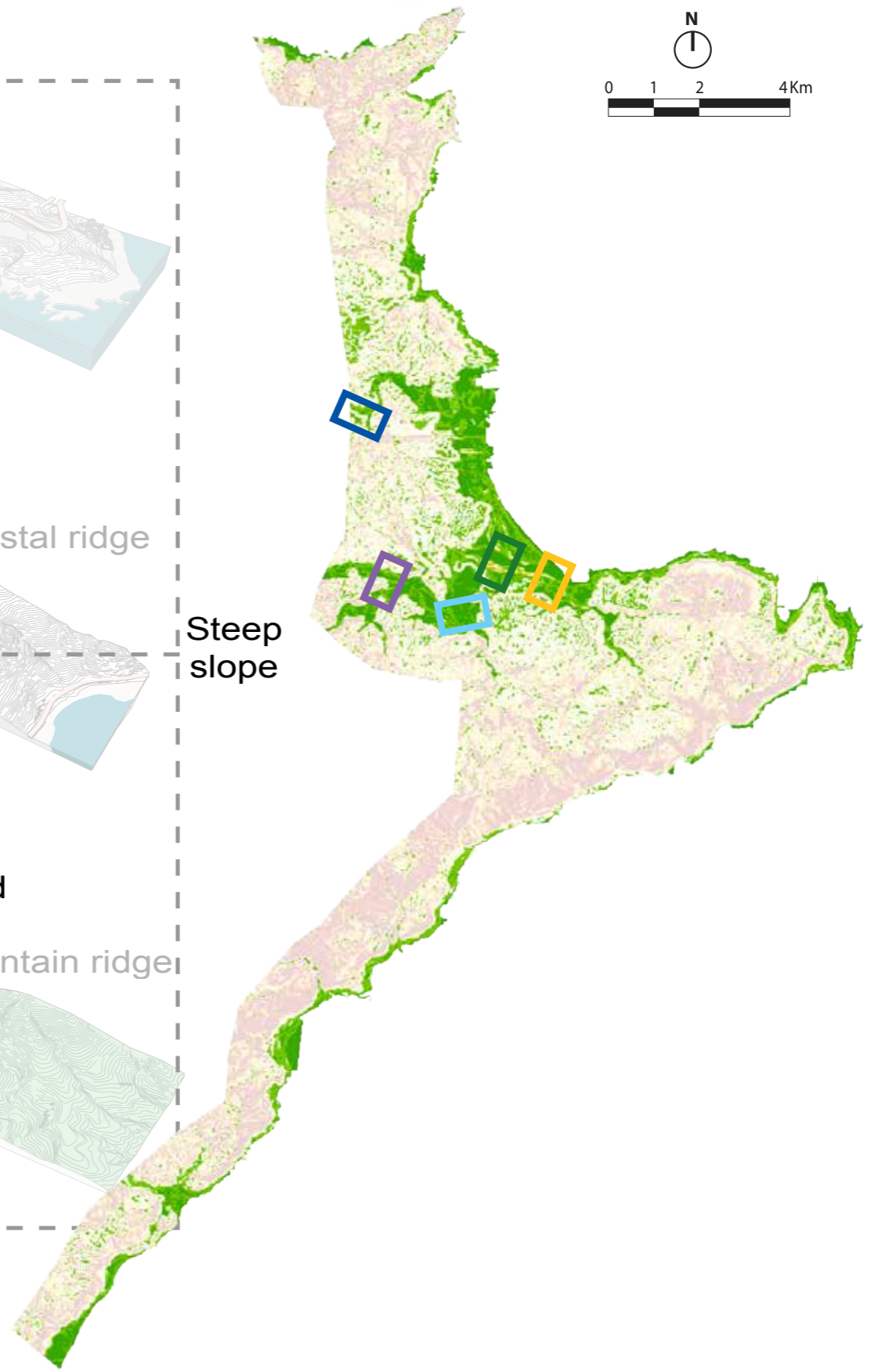
10 Terraced farm land



12 Mountain ridge



Terrestrial



Flood prone area along Shuangxi River

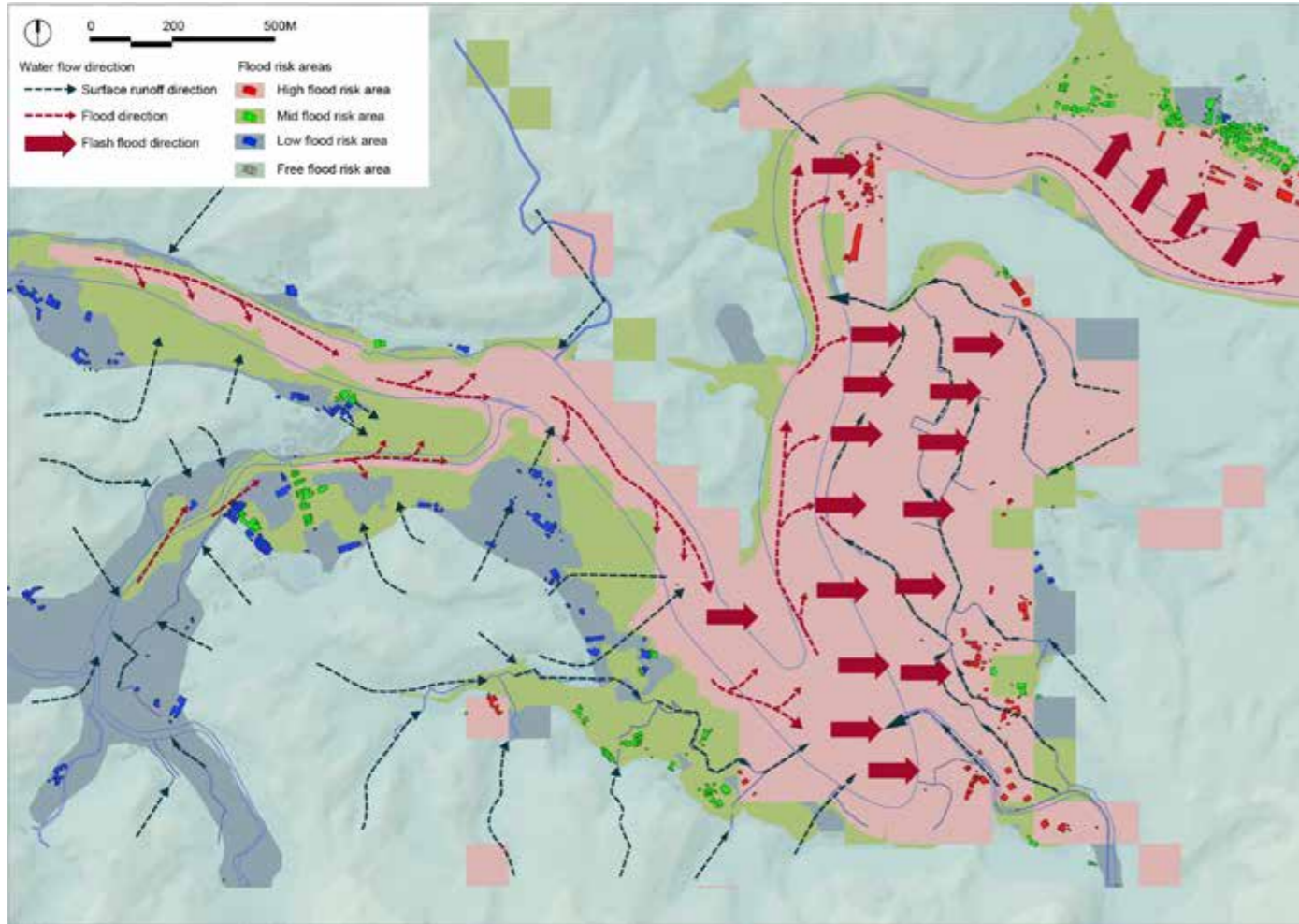
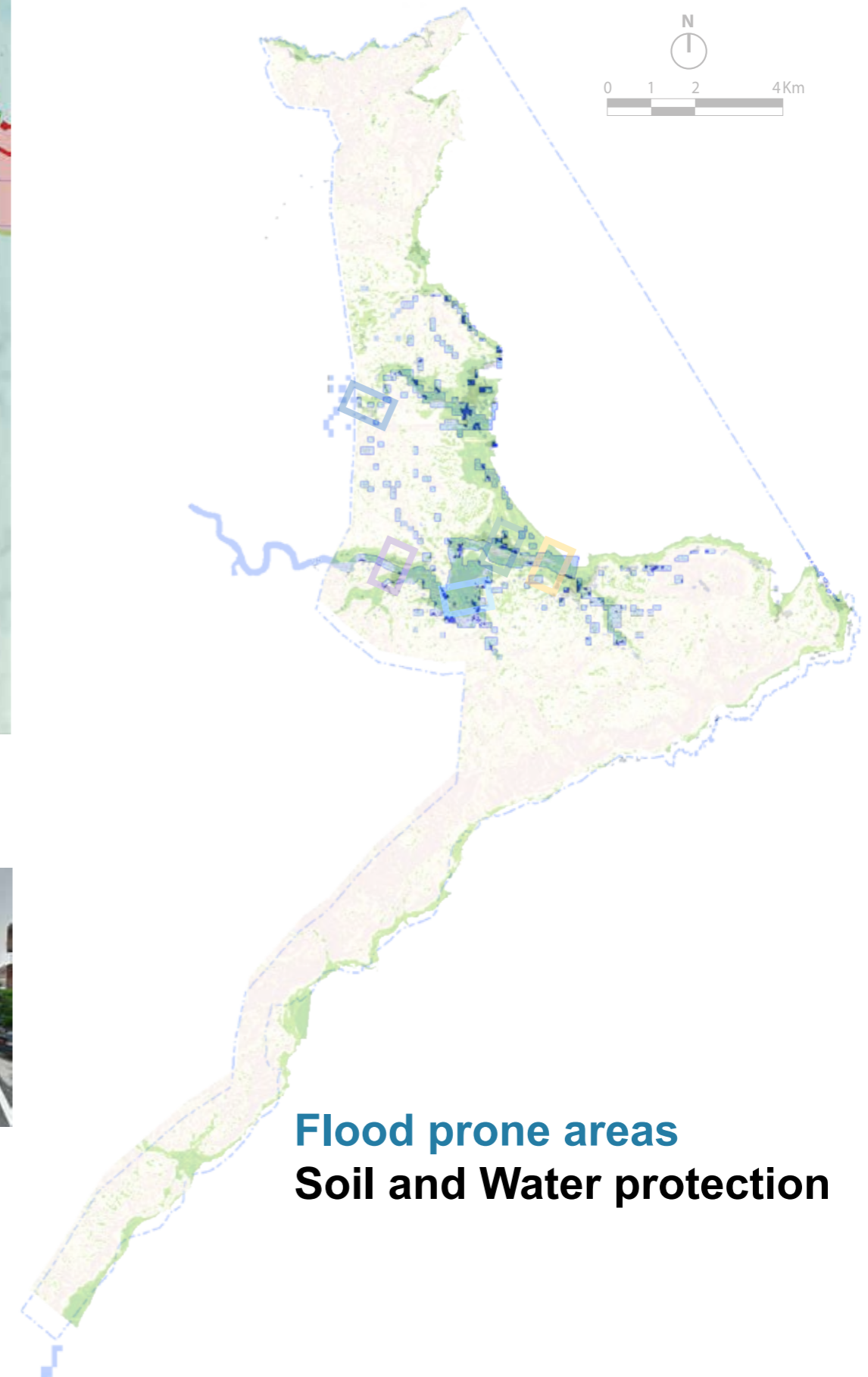


Figure 44 Flood prone area



High flood risk area



Stilt house in high flood risk area

Mid flood risk area

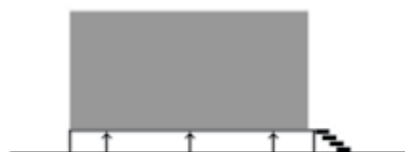


Small settlements along main road and farmland

Low flood risk area



Small settlements along main road and farmland



Flood prone areas
Soil and Water protection

Landscape is highly related to its function

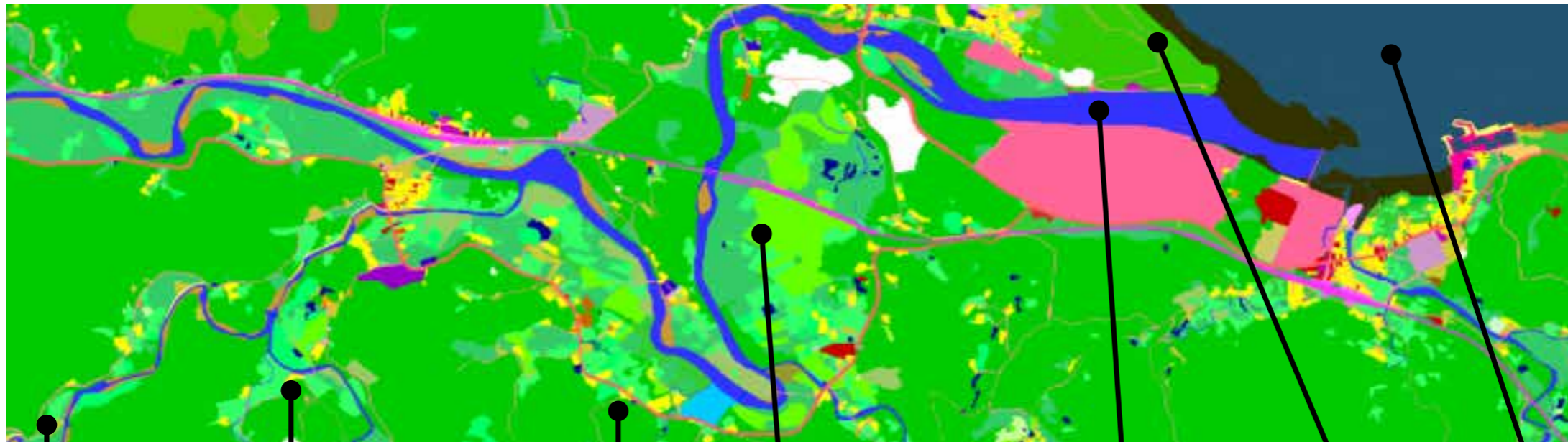


Figure 38 Current land use map

Source: CPAM, 2010

Forest **Terraced paddy field** **Mountain Village** **Rice paddy field** **River** **Wind break** **Sea**



Figure 39 The current land use section along Shuangxi river

Zoning map cannot deal with the trends of land use changes

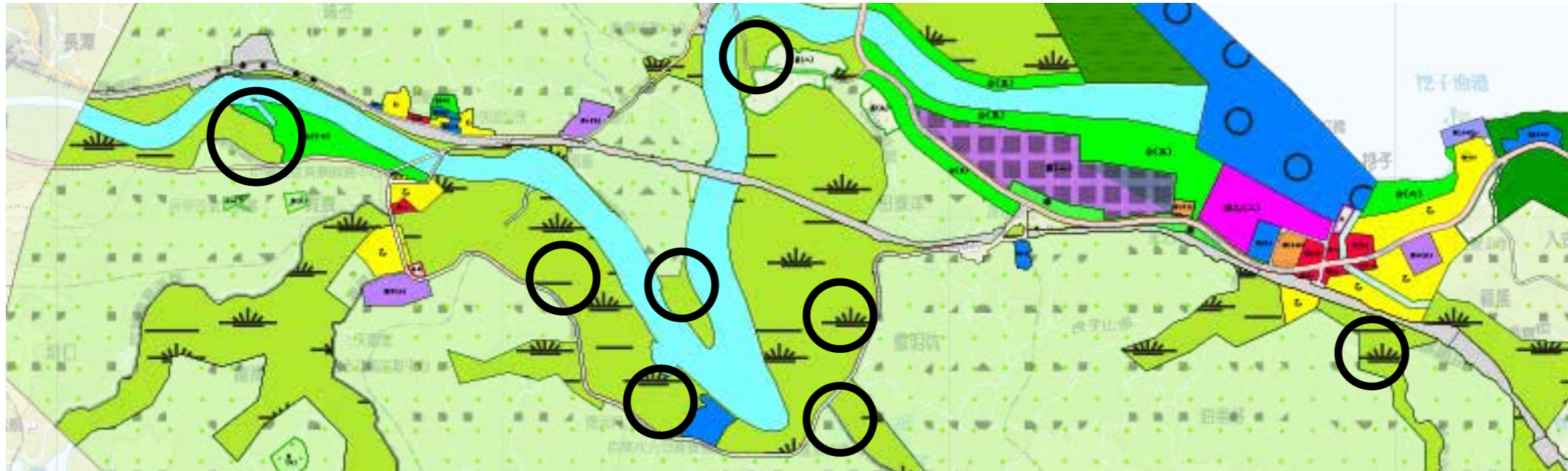


Figure 37 Zoning plan map

Source: CPAMI,2010

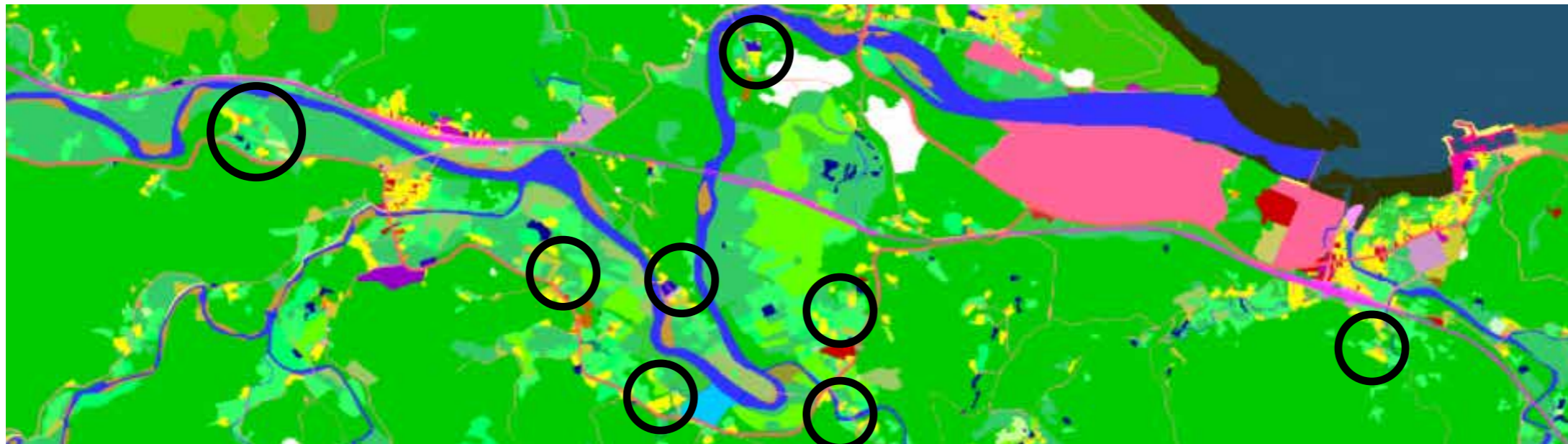


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Demand conflicts

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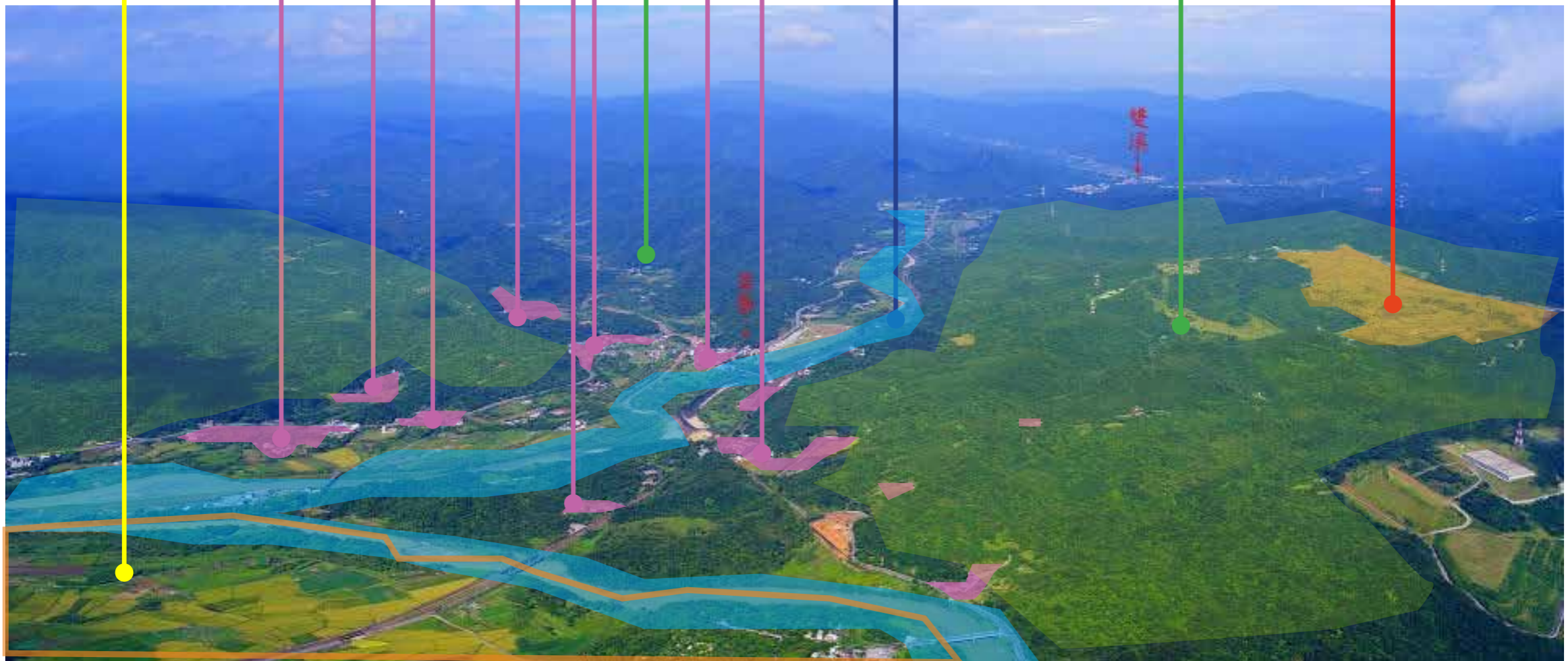
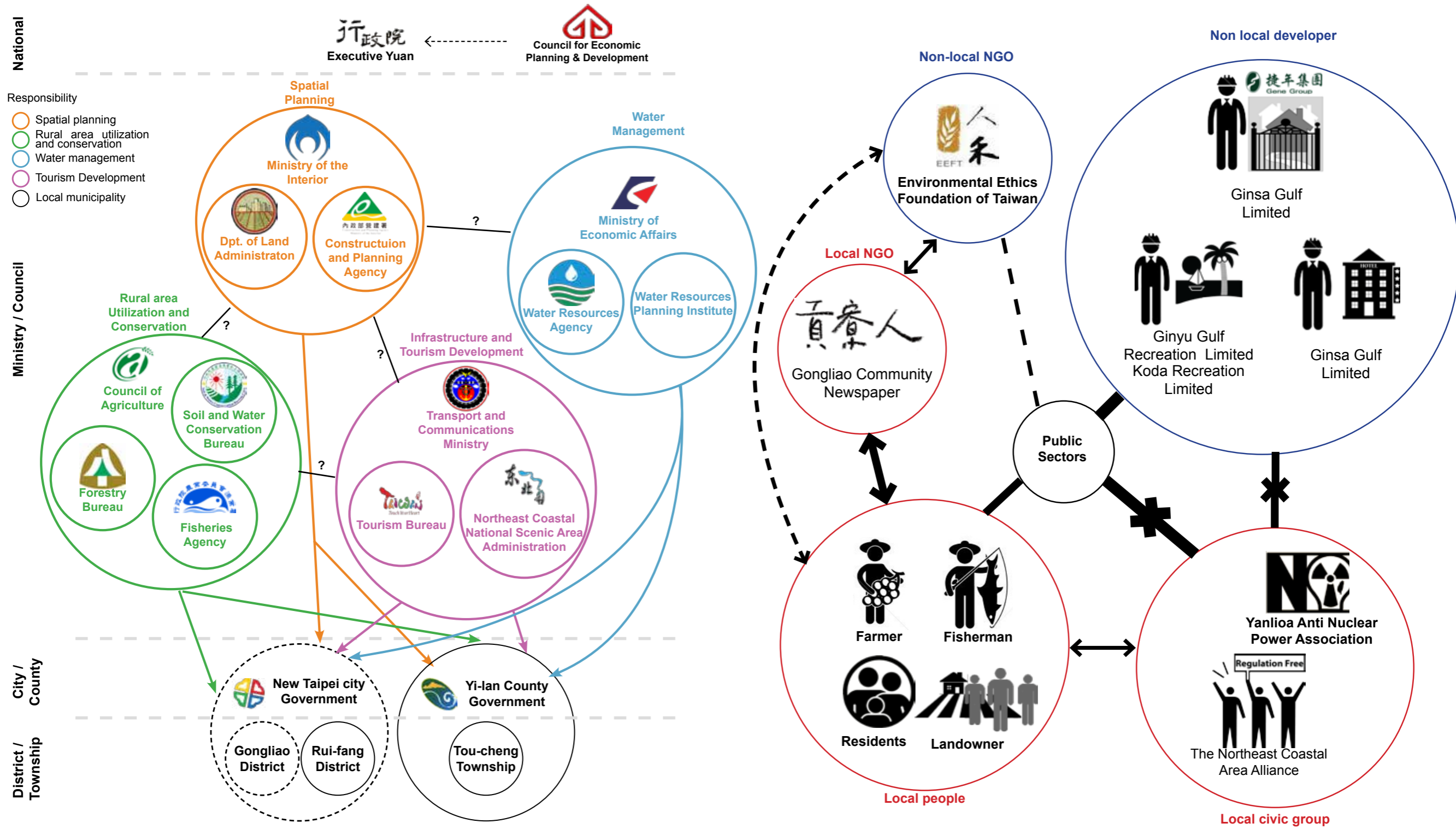


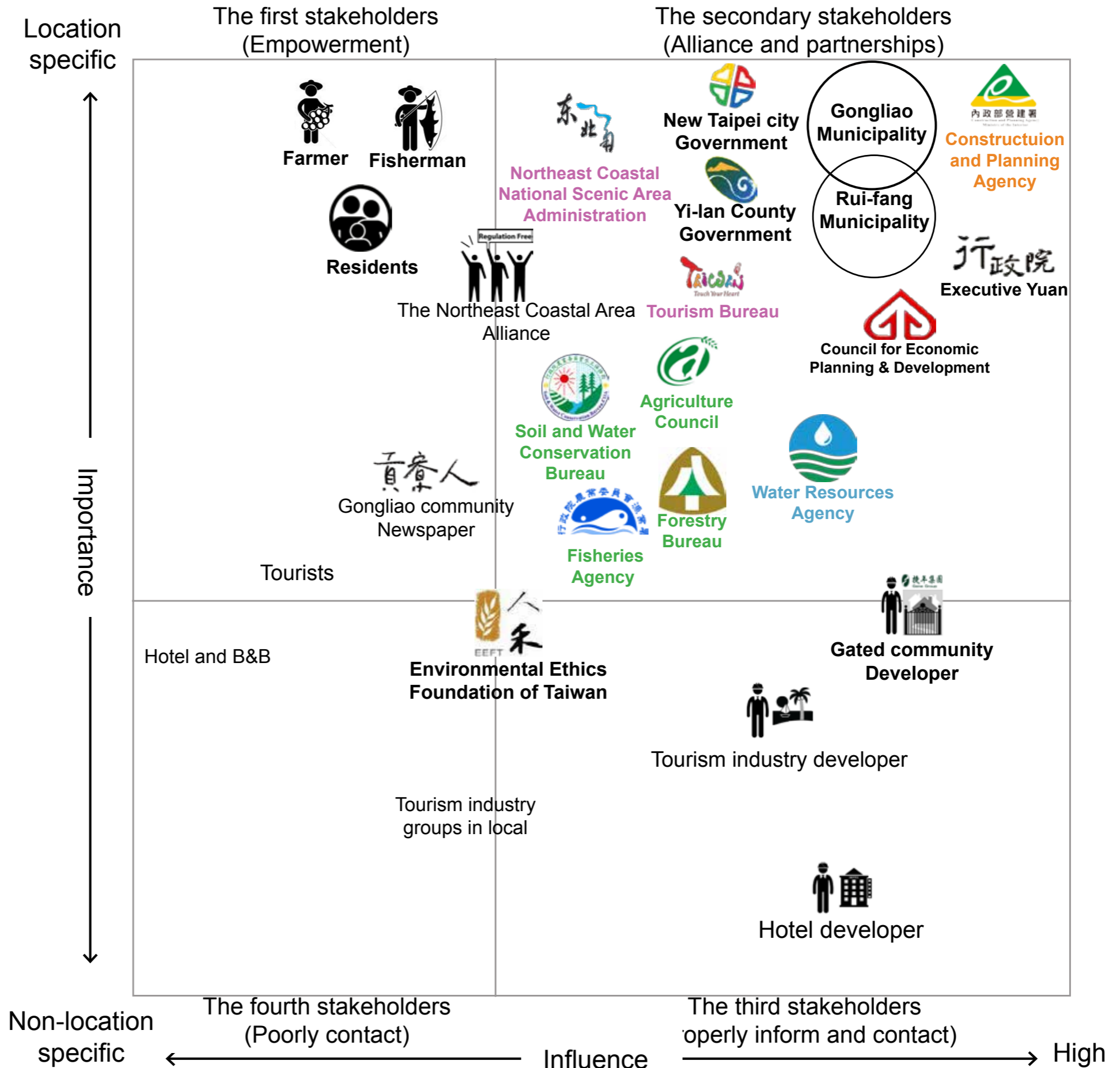
Figure Gongliao downtown and surrounding landscape

Public sectors

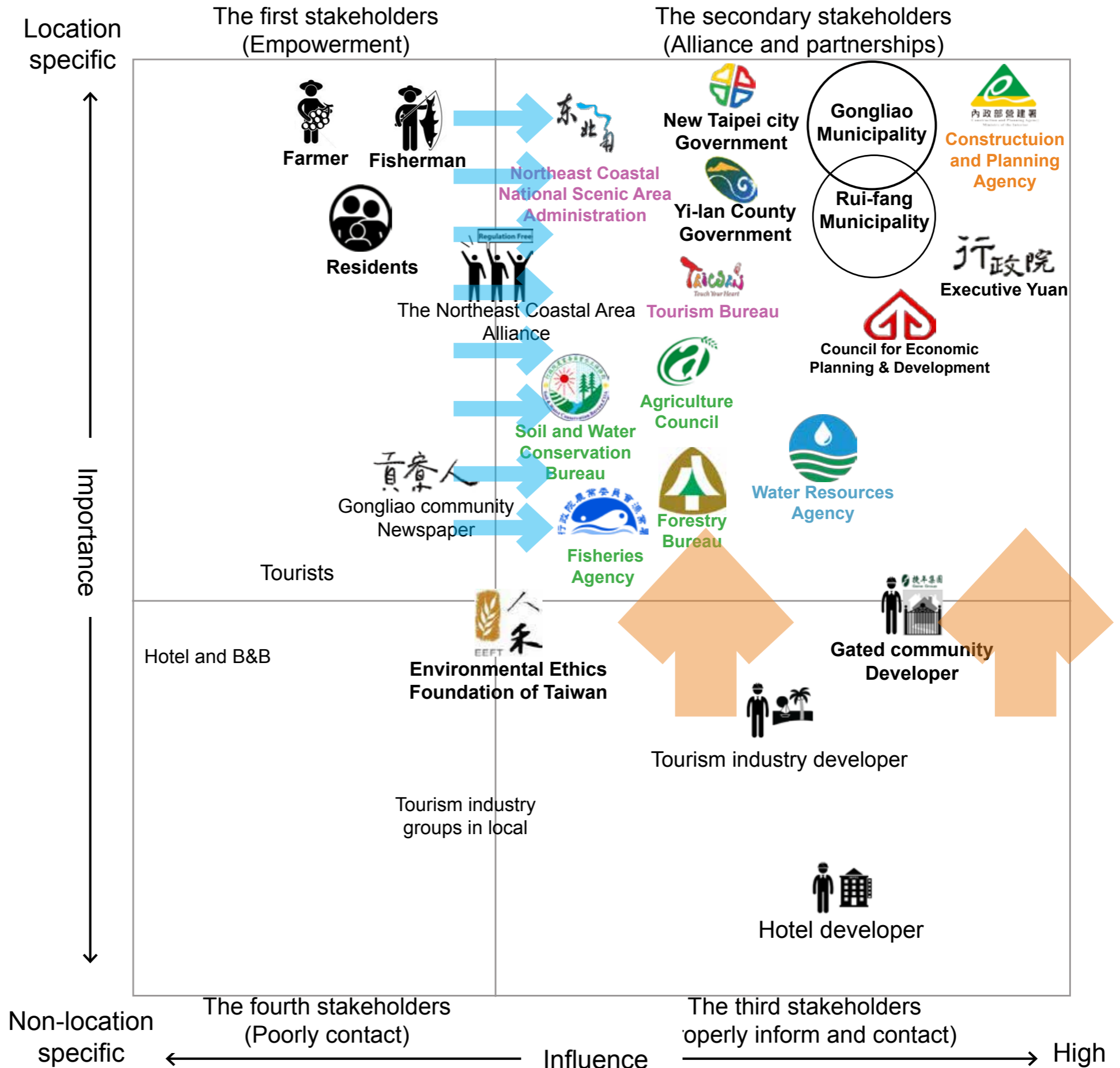
Private sectors



Stakeholder matrix



Stakeholder matrix



GOAL & STRATEGY

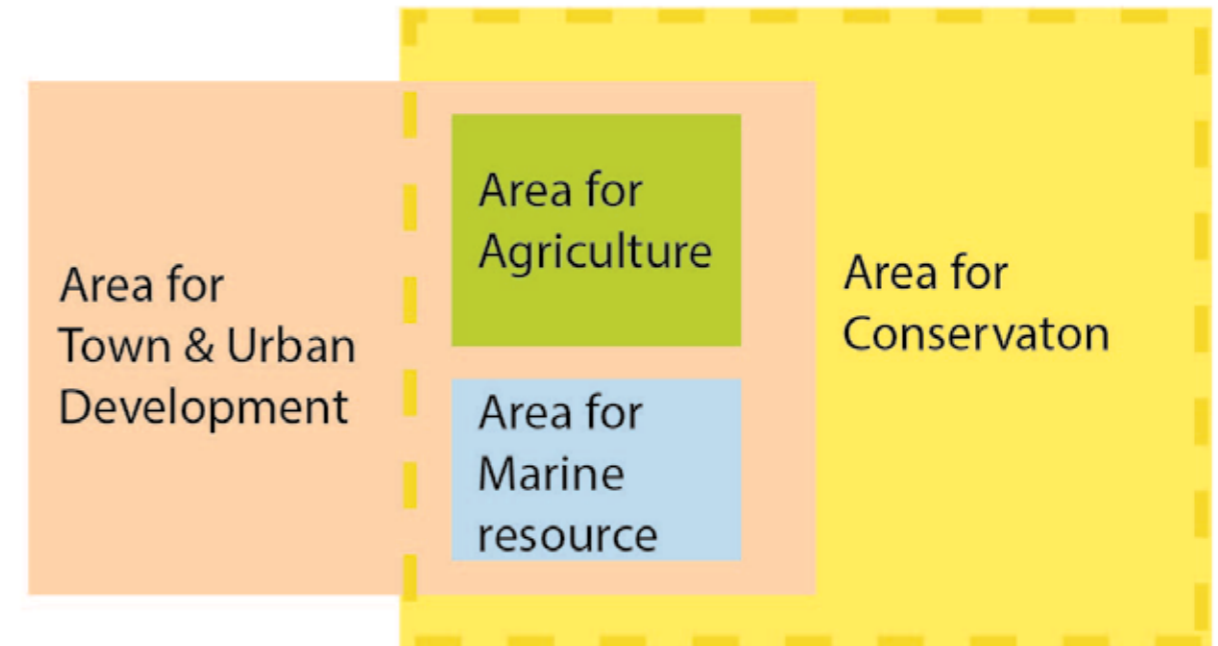


LAND USE CONCEPT

Now - Main function area

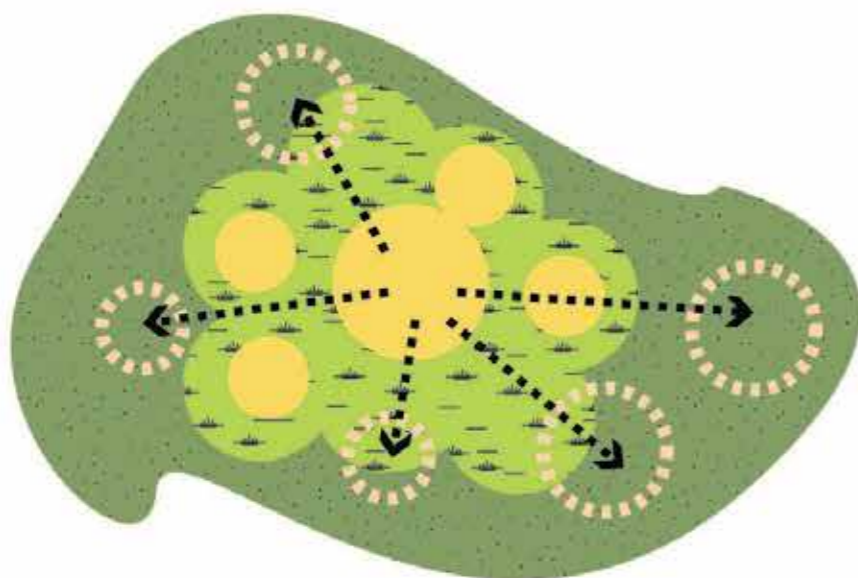


Future - Integrated environment function

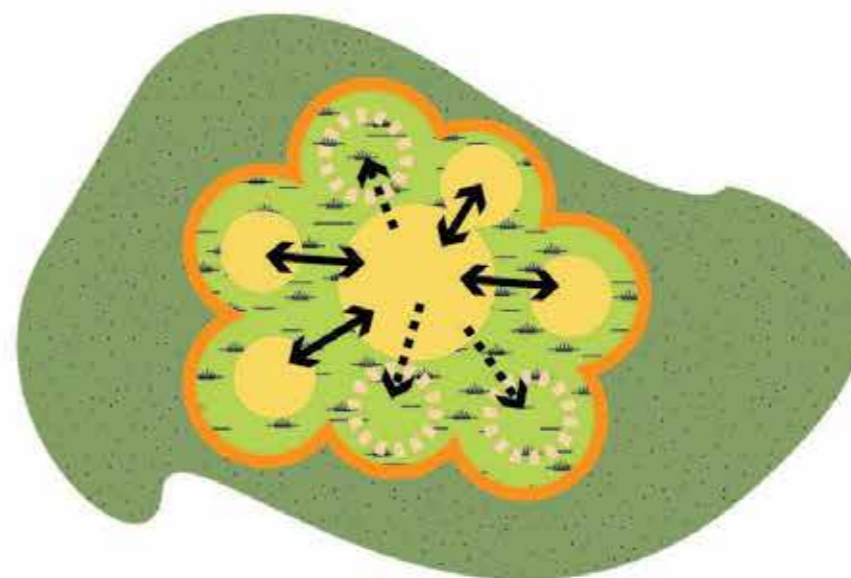


LAND USE CONCEPT

Now - Threatened by fragmented extension

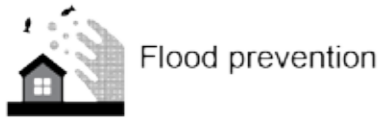
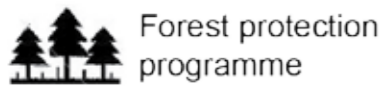


Future - Compact network development

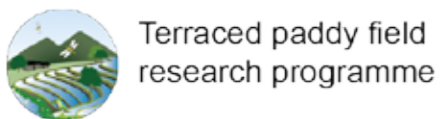
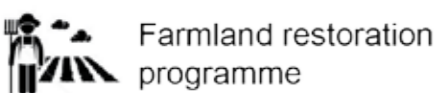


Spatial vision

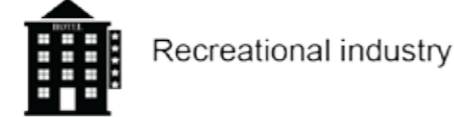
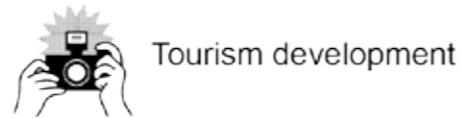
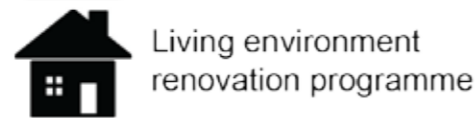
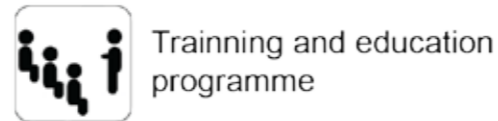
Area for conservation



Area for agriculture development



Area for town and urban development



Area for marine resource

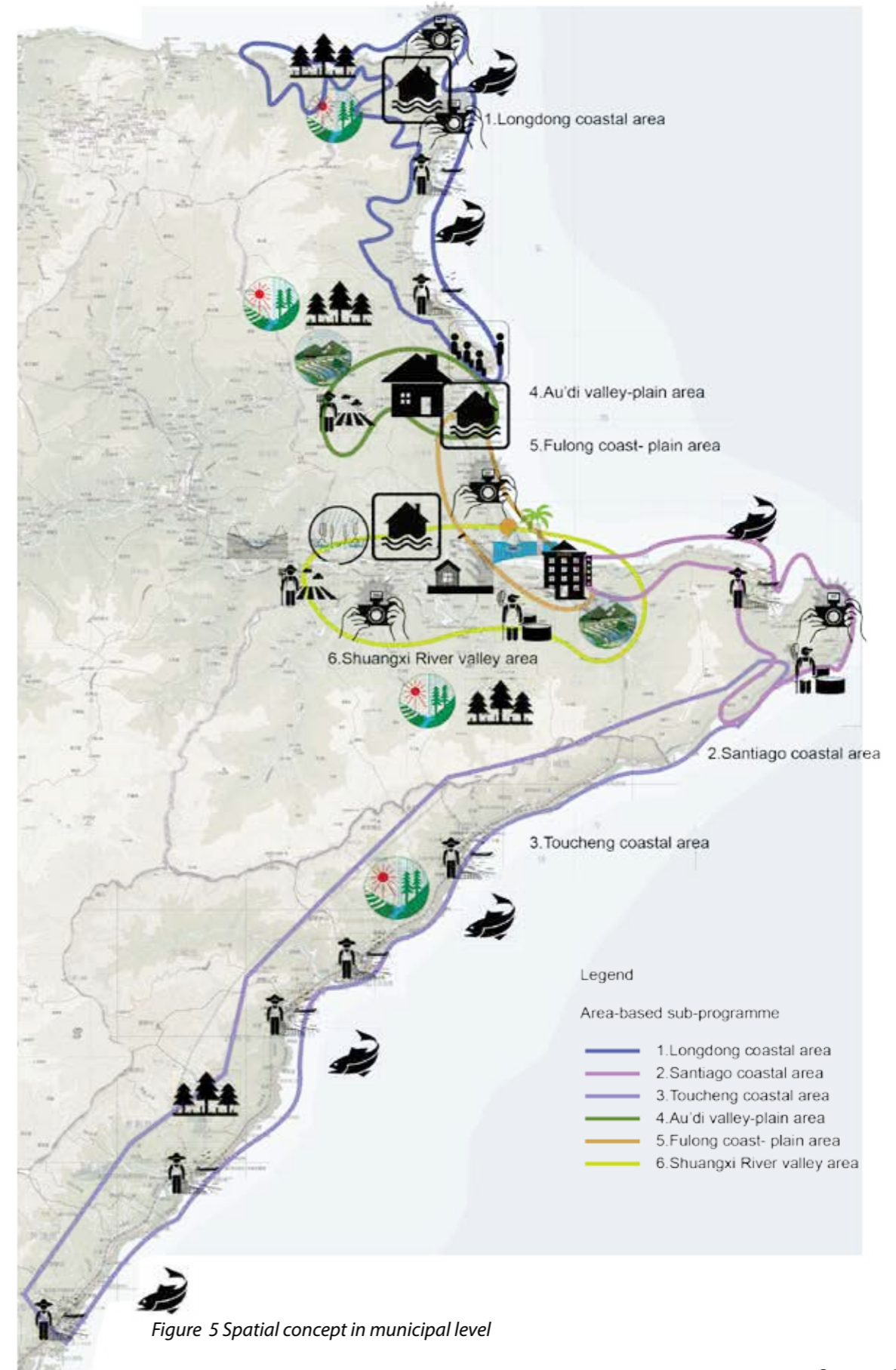
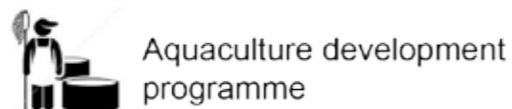
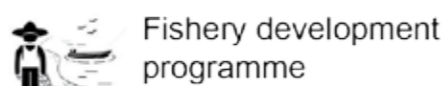
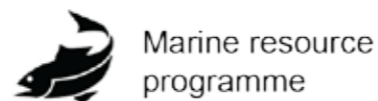











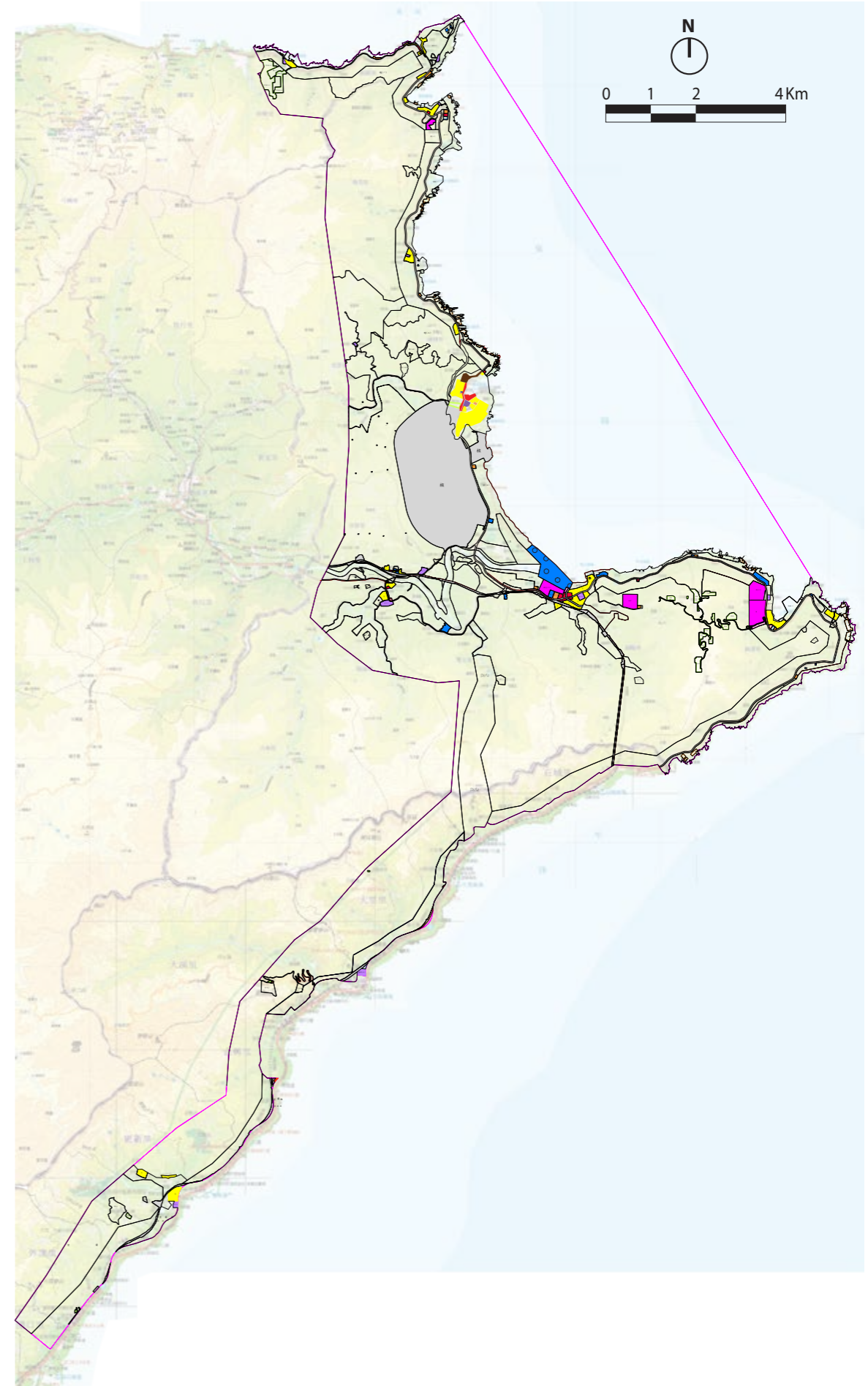
Figure 5 Spatial concept in municipal level

1. Area for town and urban development

Existing zoning map

Legend

-  Residential zone
-  Commercial zone
-  Hotel zone
-  School zone
-  Industry zone
-  Parking zone
-  Public administration
-  Cemetery
-  Nuclear power plant zone



1. Area for town and urban development

Existing zoning map

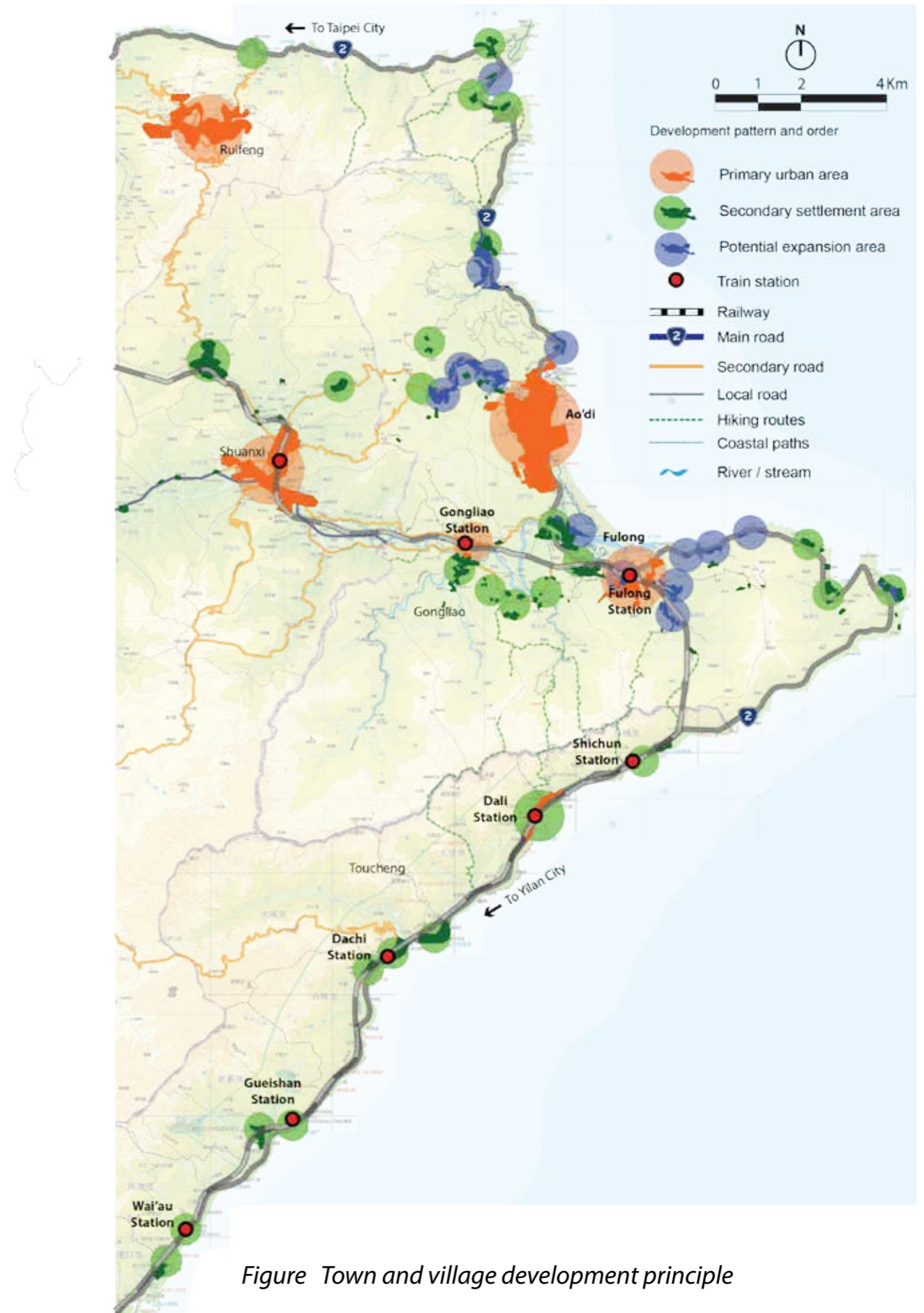
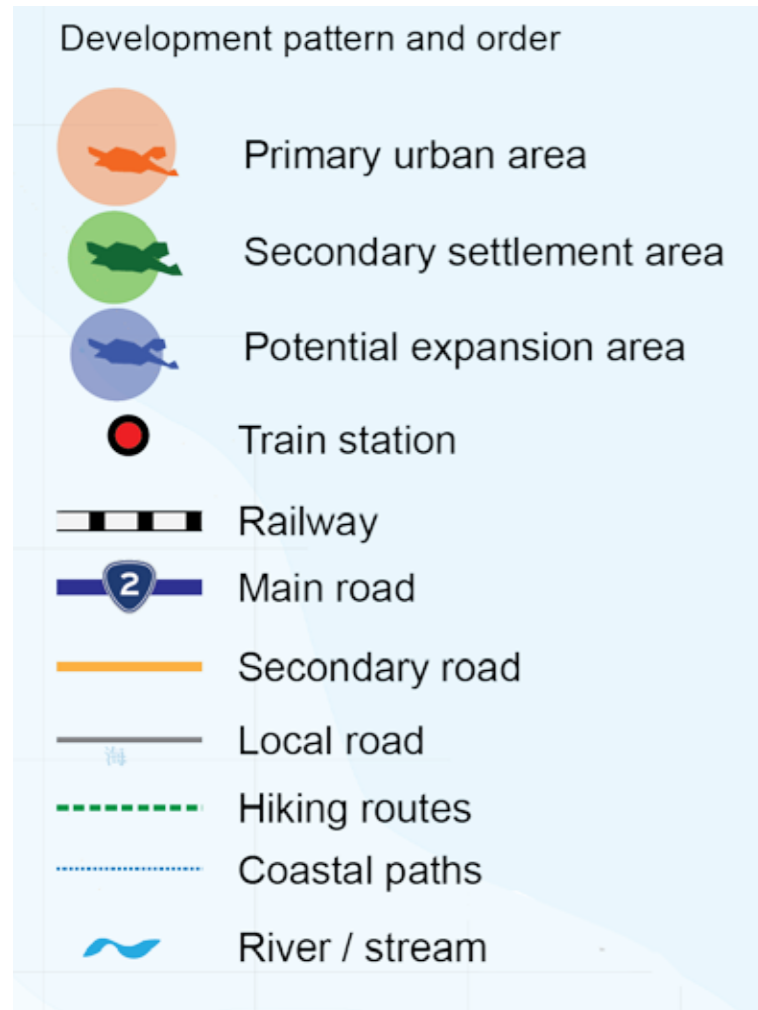








Figure Town and village development principle

2. Area for conservation

Legend

-  Water & soil conservation
-  Forest protection
-  Water and soil conservation
-  Secondary forest & grassland conservation
-  Flood prevention area
-  Ecological corridor

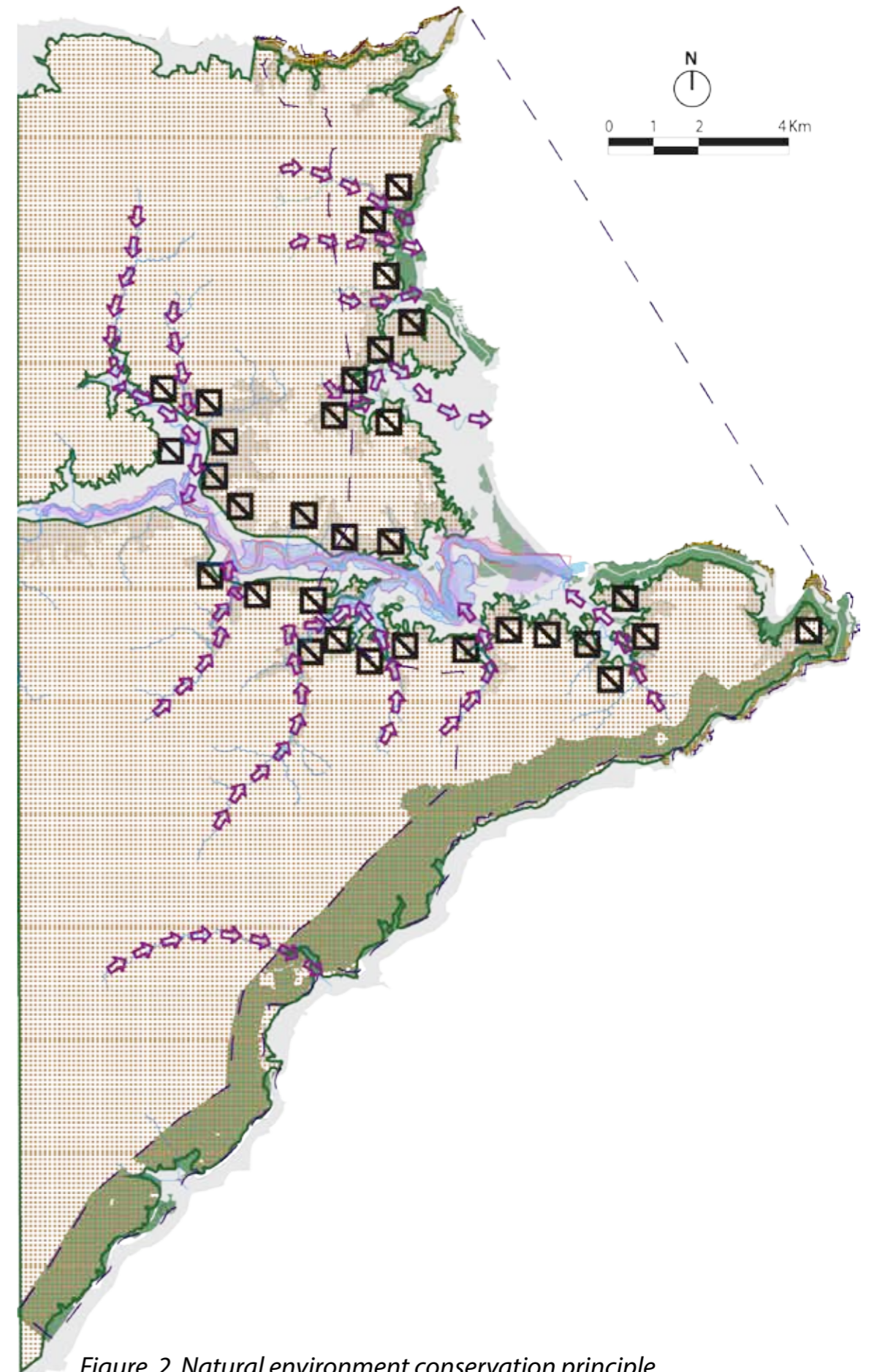


Figure 2 Natural environment conservation principle

3. Area for agriculture development

Legend

-  Terraced paddy field restoration
-  Farmland flood reinforce programme
-  Agriculture land restoration
-  Agriculture resource
-  Secondary forest and grassland

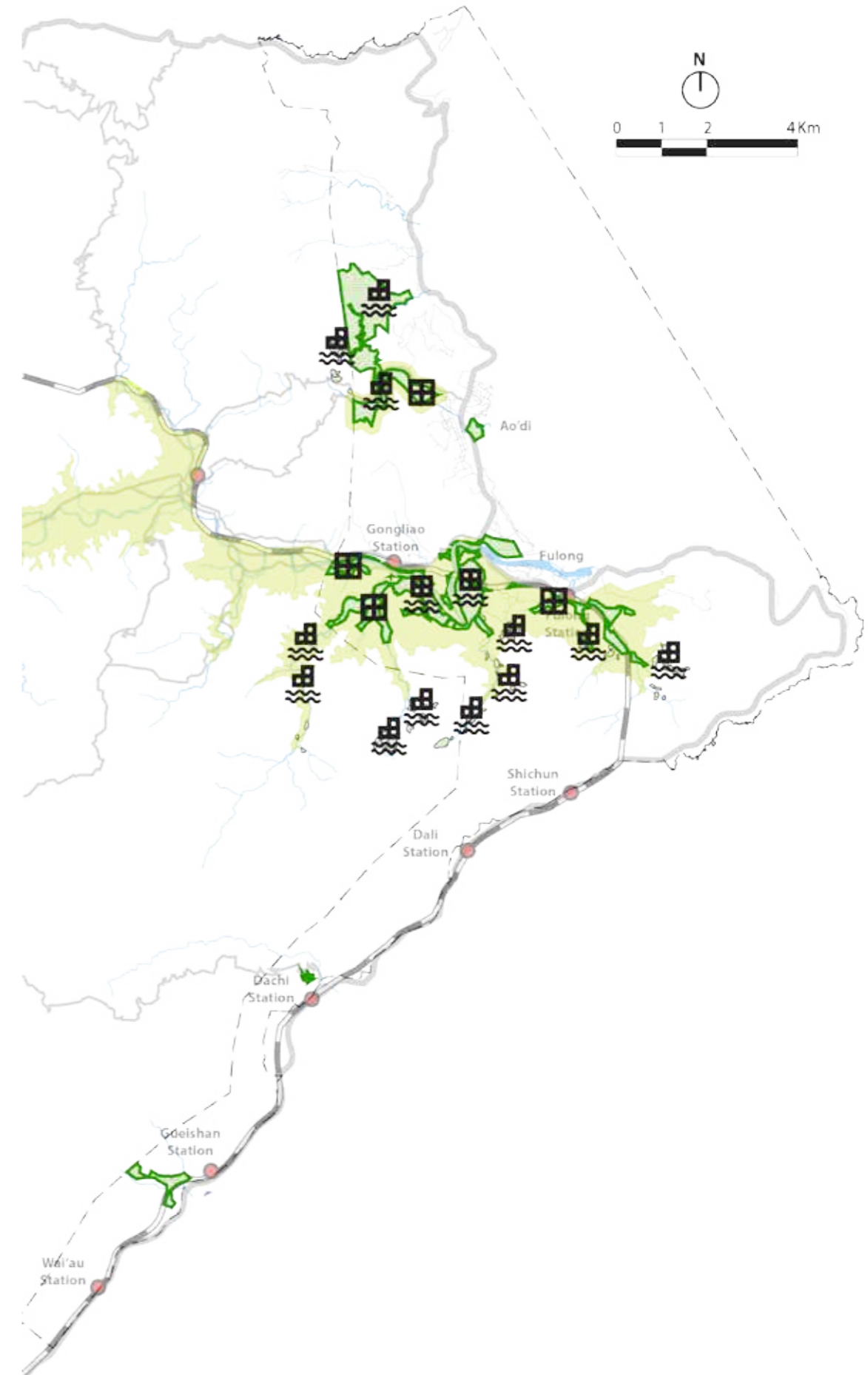


Figure 3 Agriculture development principle

4. Area for marine and fishery resource

Legend

-  Harbour development
-  Breeding pond development
-  Coastal water and soil protection
-  Coastal geographical protection
-  Water & soil protection forest
-  Coastal conservation
-  Coastal natural protection

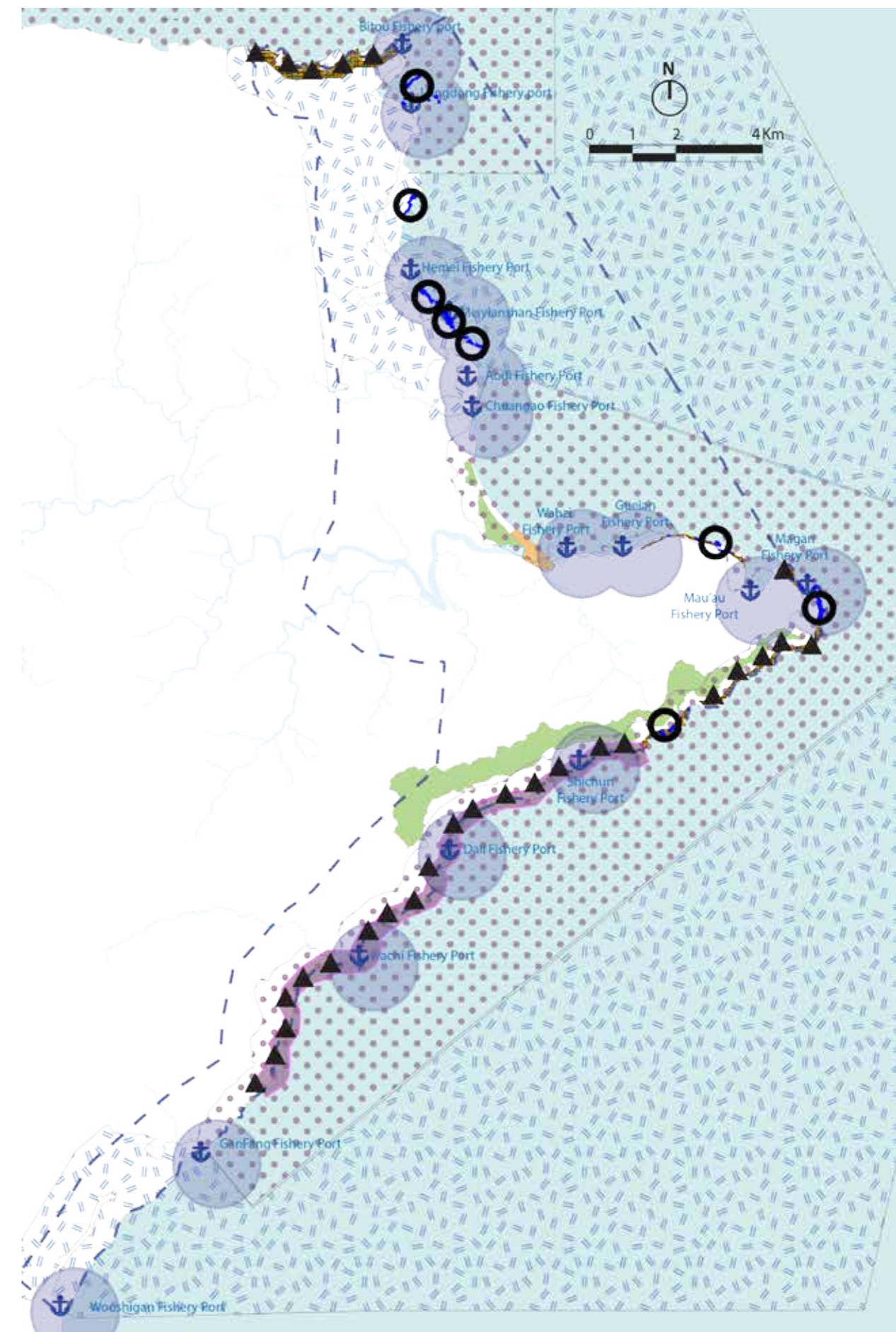


Figure 4 Marine resource and fishery industry development principle

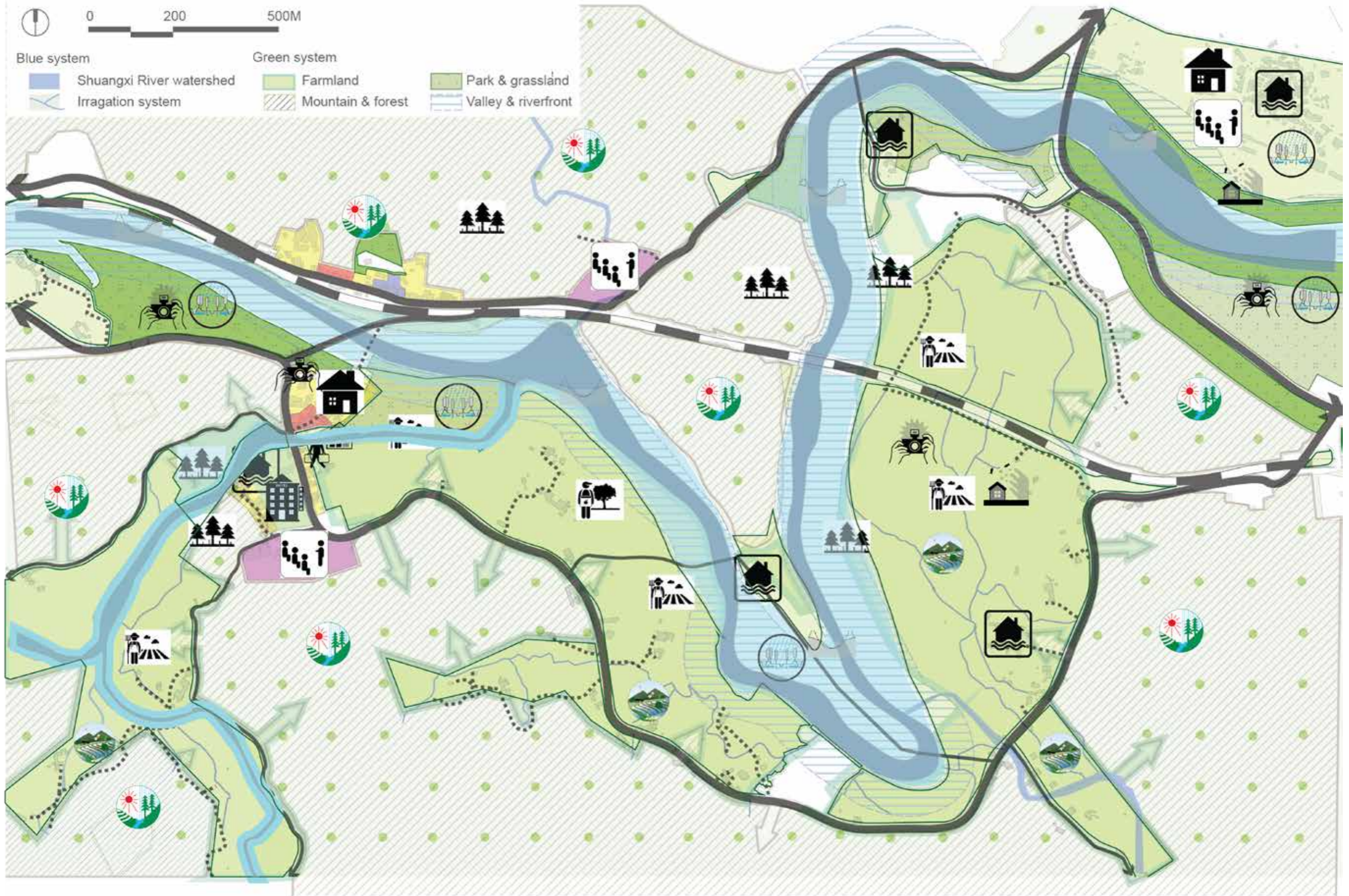
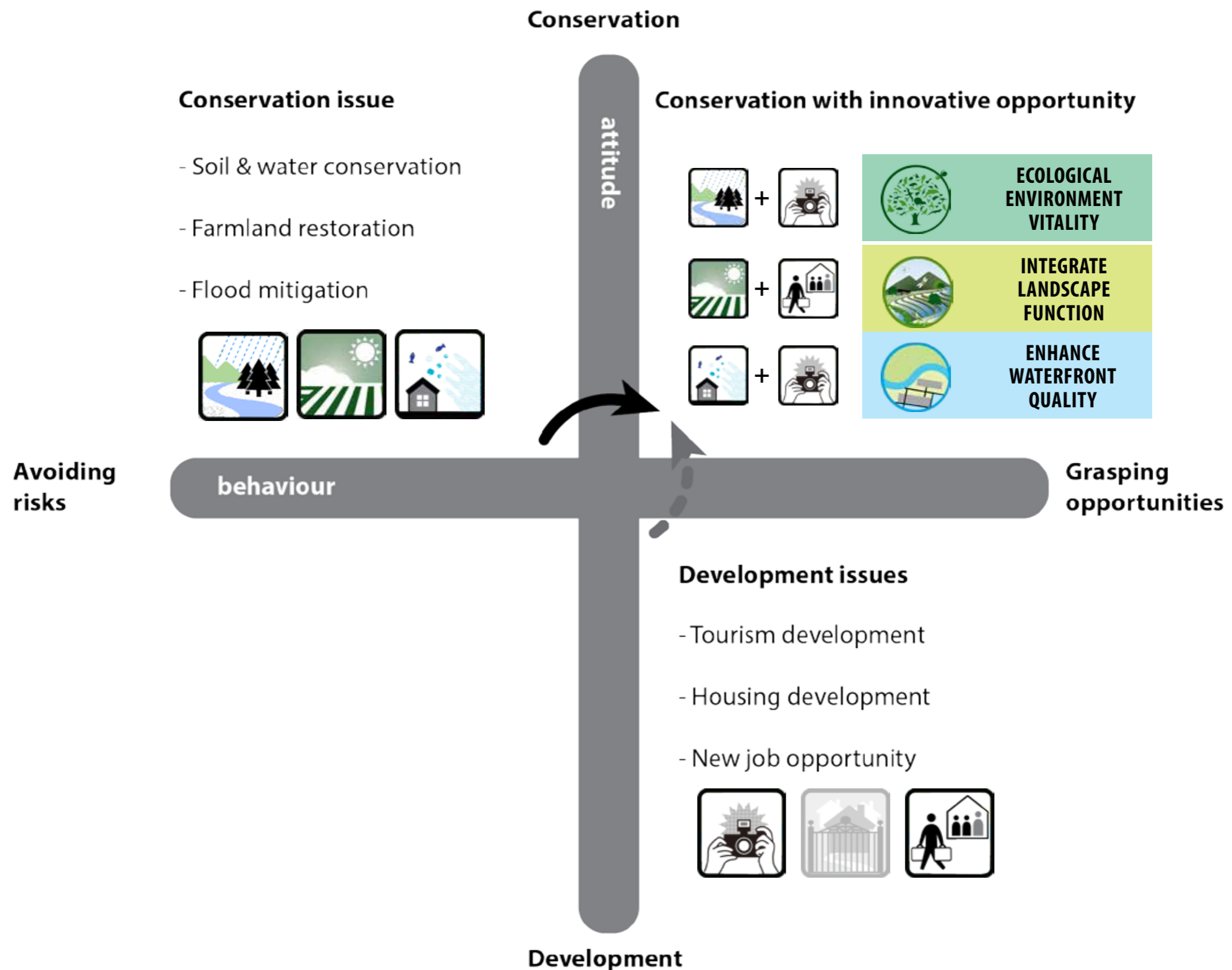
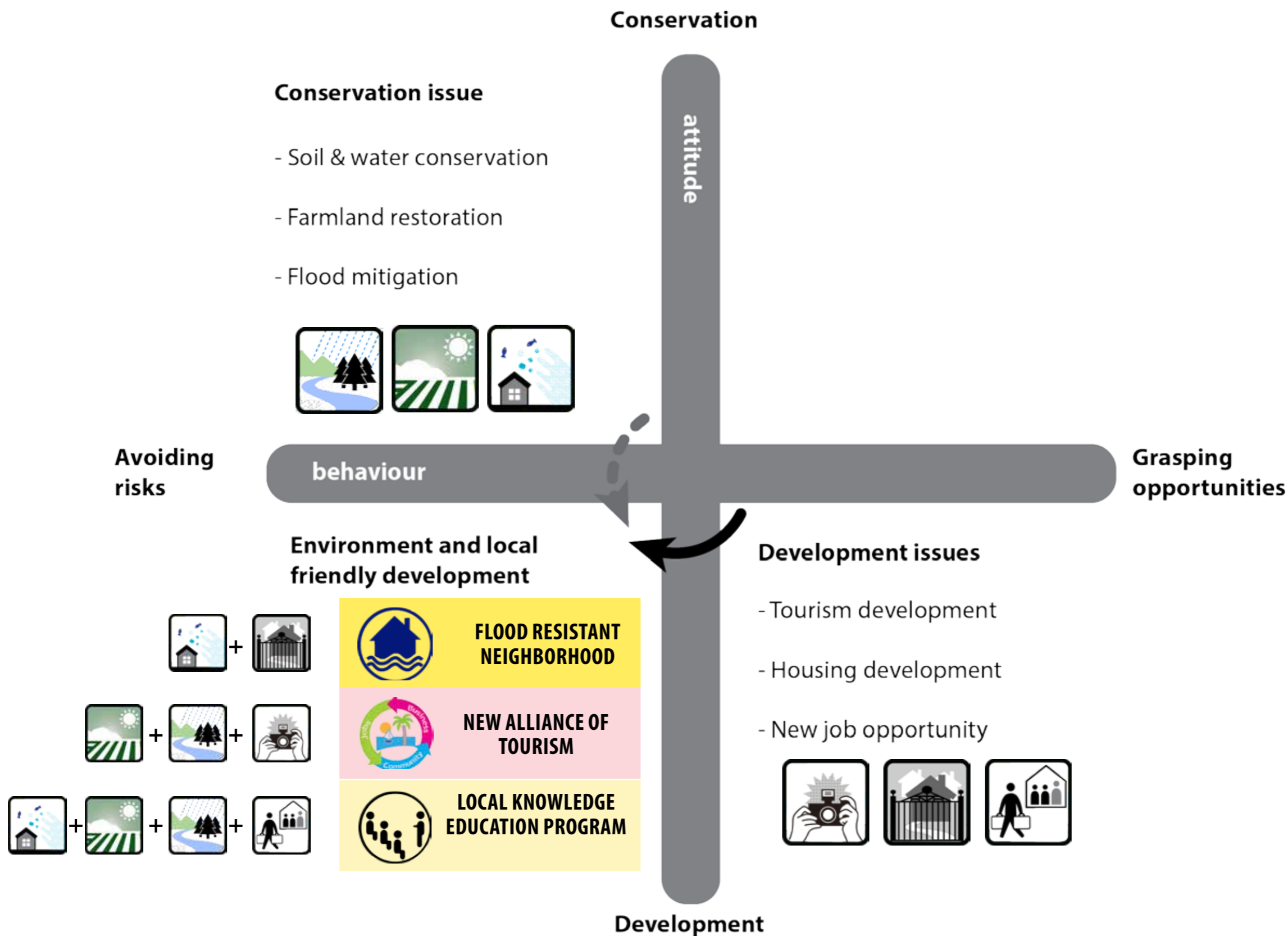


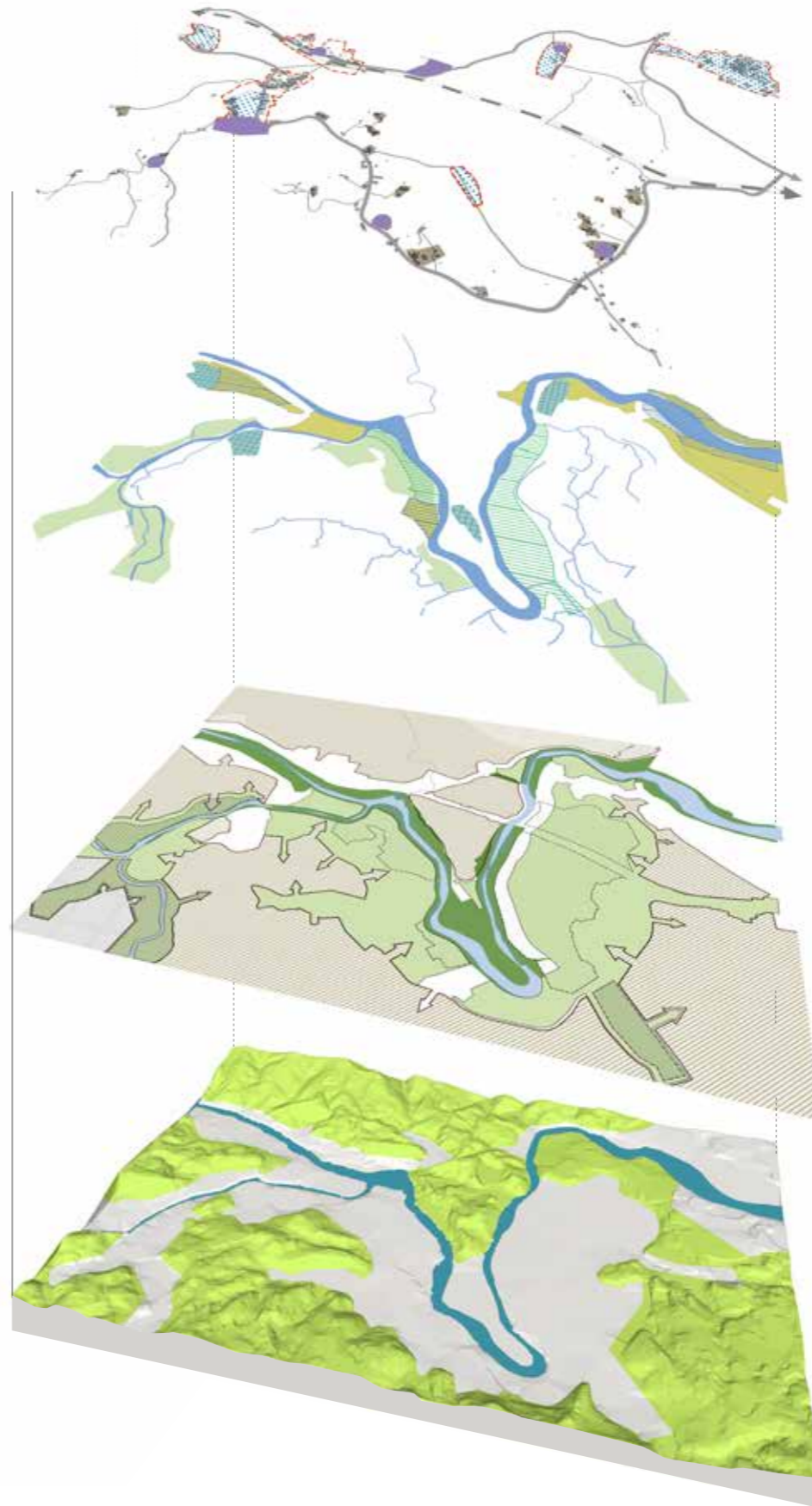
Figure 6 Shuangxi River valley area spatial development concept

2.1 Integrate conservation and development issue



2.1 Integrate conservation and development issue



Reinforce local identity***Live with water******Live with nature***

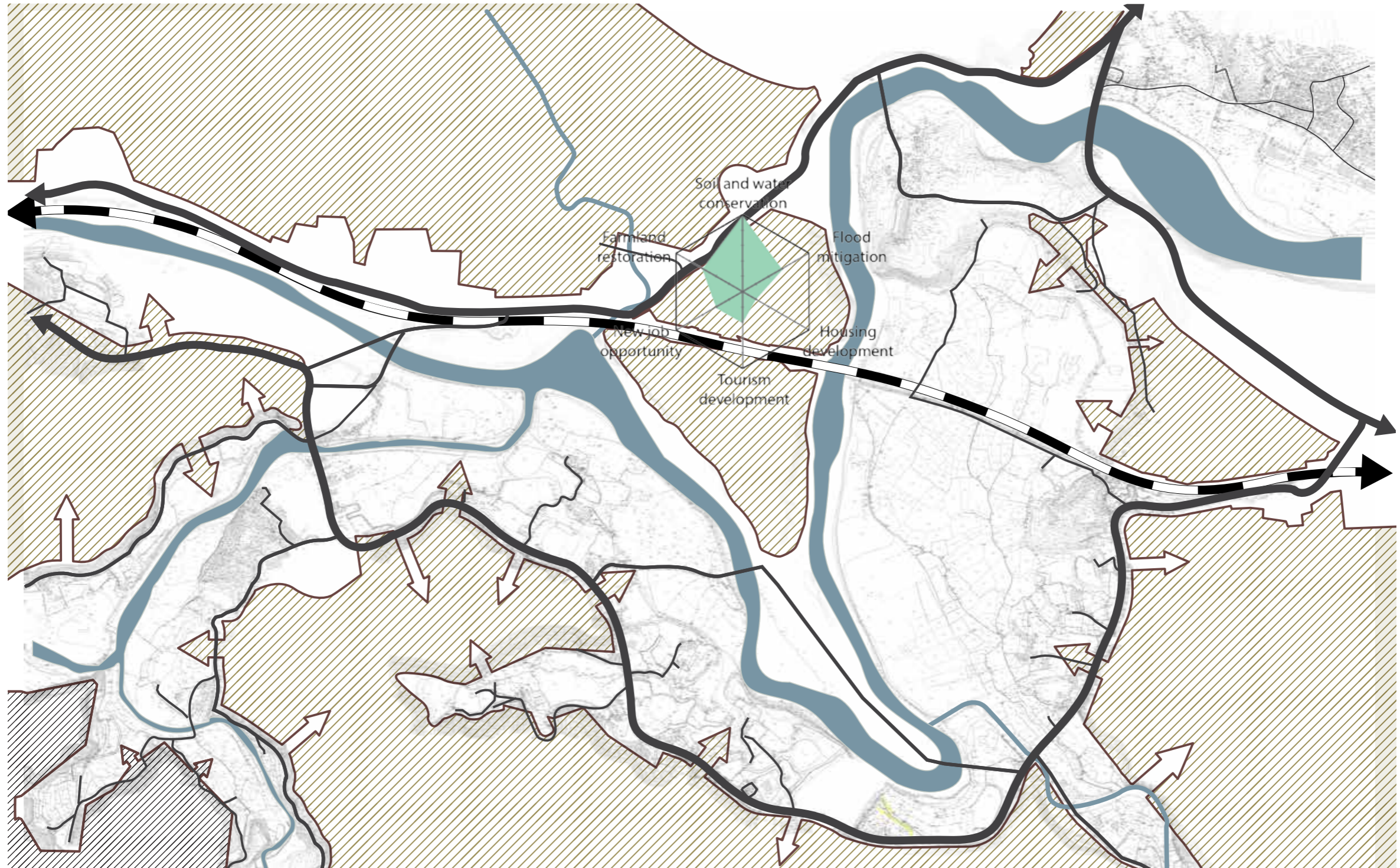
IMPLEMENTATION



1. LIVE WITH NATURE



Enhanced forest protection,



1. LIVE WITH NATURE



**ECOLOGICAL
ENVIRONMENT
VITALITY**

Enhanced forest protection, agriculture restoration,

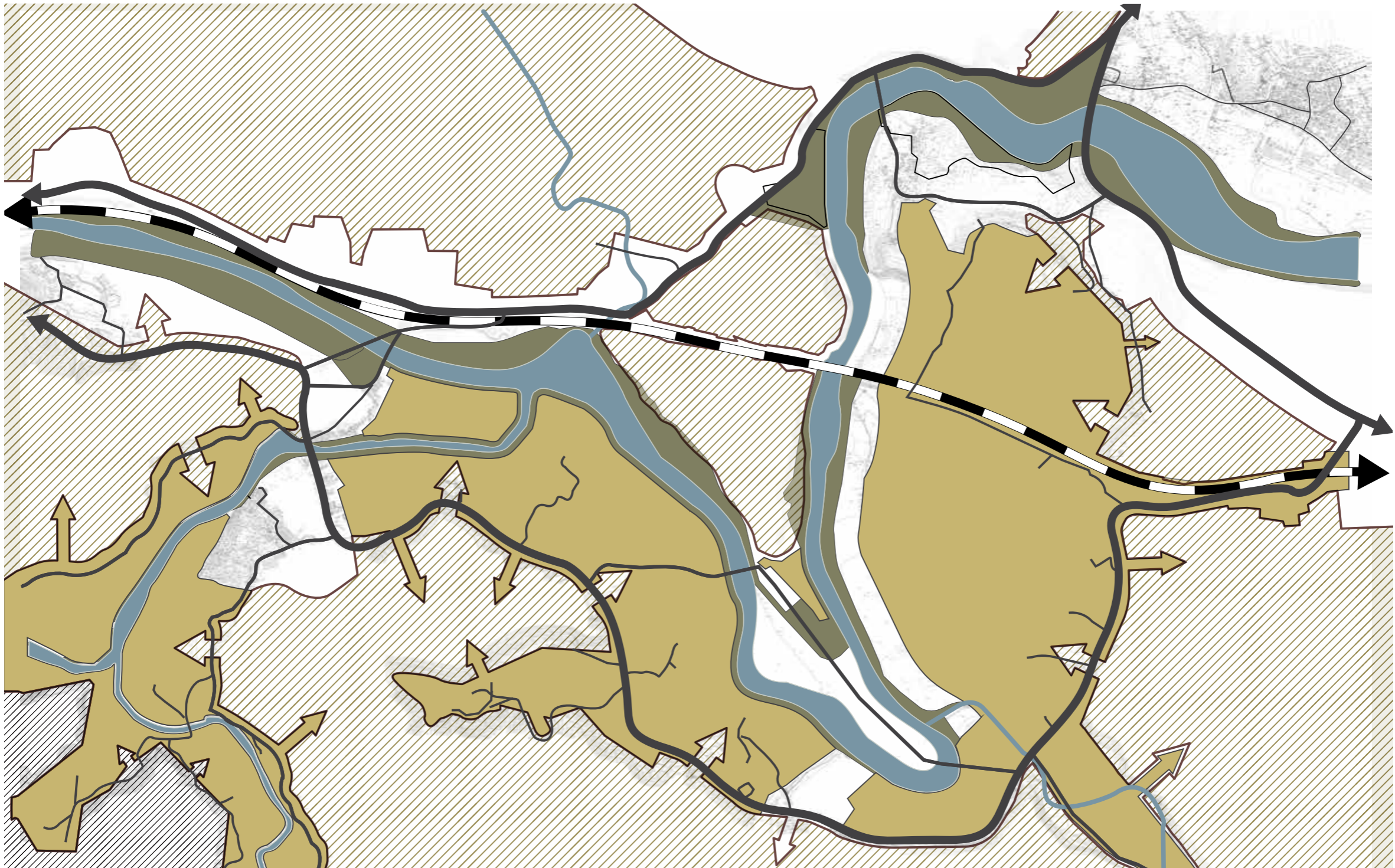


1. LIVE WITH NATURE



**ECOLOGICAL
ENVIRONMENT
VITALITY**

Enhanced forest protection, agriculture restoration, and waterfront wetland ecological system for soil and water conservation.



1. LIVE WITH NATURE

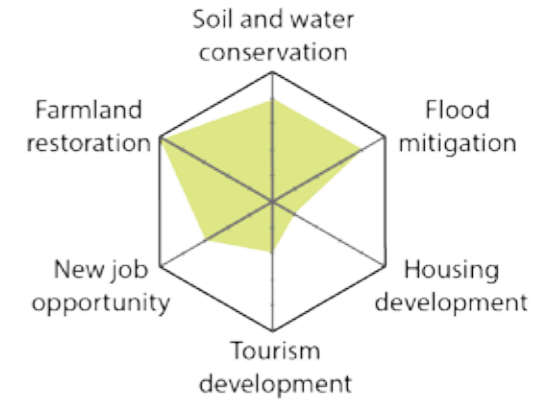


1. LIVE WITH NATURE



**INTEGRATE
LANDSCAPE
FUNCTION**

Integrate (terraced) paddy fields with soil & water conservation

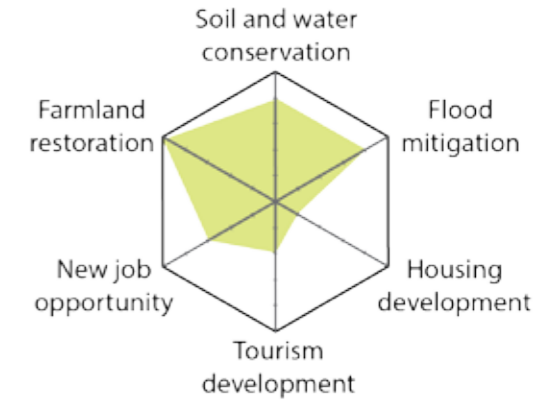


1. LIVE WITH NATURE

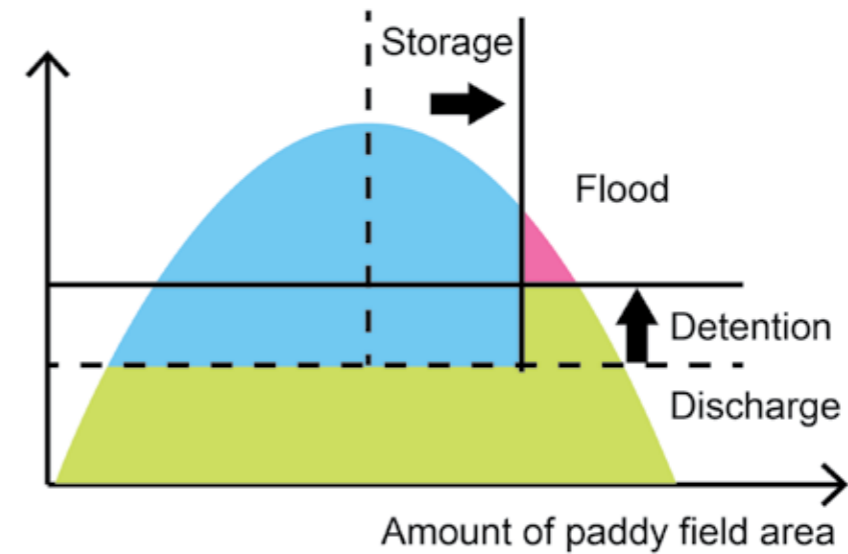
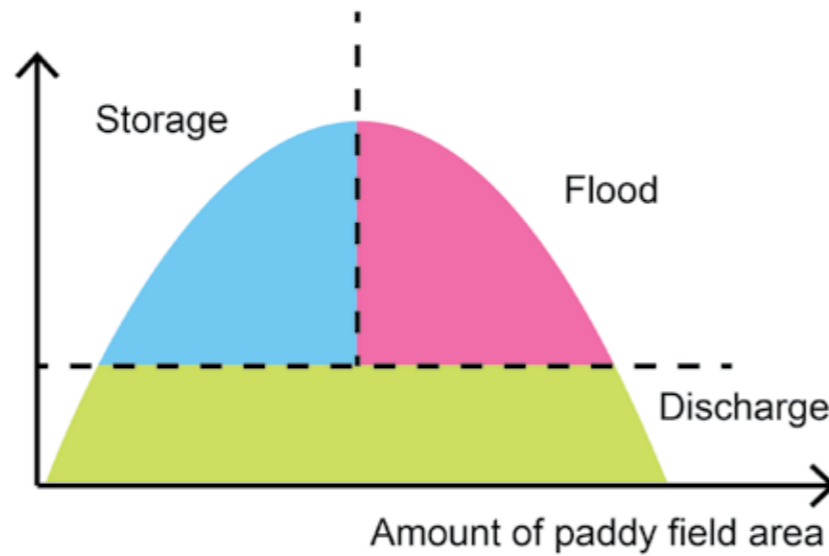


INTEGRATE LANDSCAPE FUNCTION

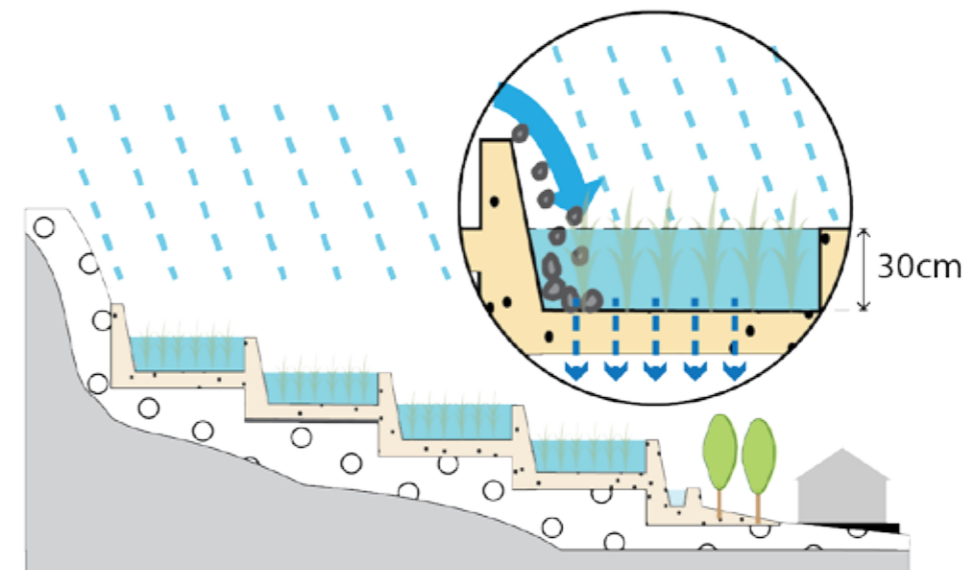
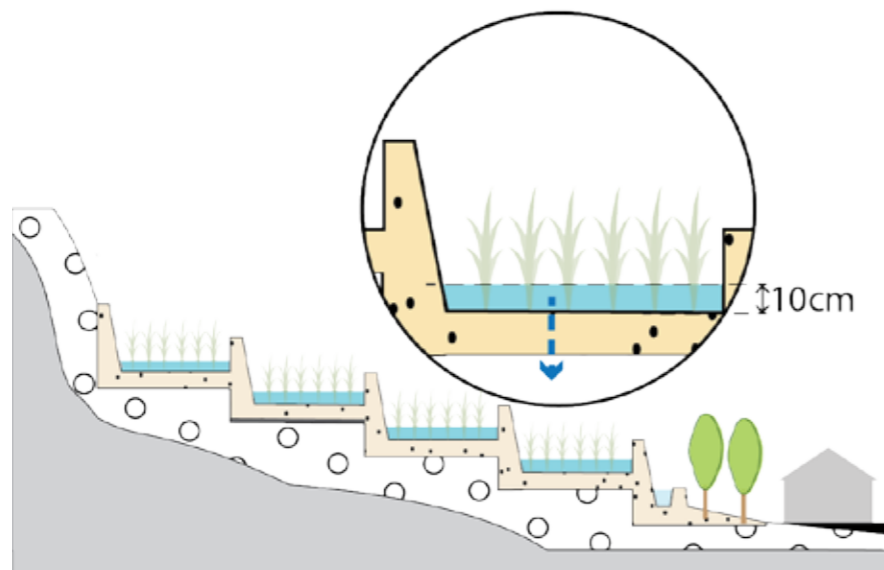
Integrate (terraced) paddy fields with soil & water conservation



Integrate farmlands with flood mitigation method



Integrate terraced paddy field into soil & water conservation function

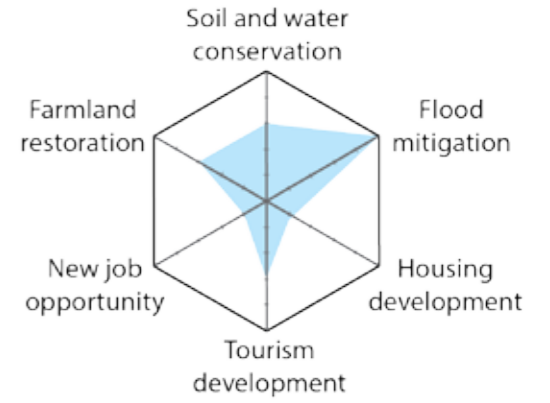


2. LIVE WITH WATER



ENHANCE WATERFRONT QUALITY

Improve waterfront quality & accessibility

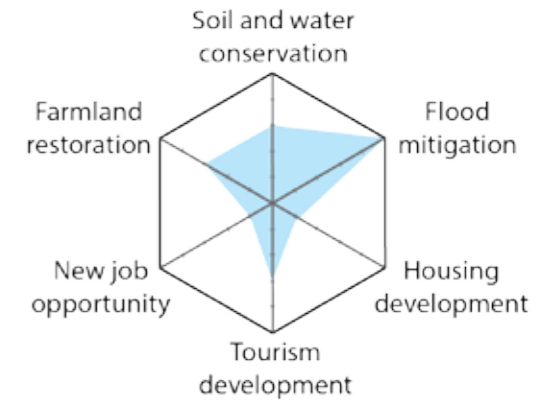


2. LIVE WITH WATER



**ENHANCE
WATERFRONT
QUALITY**

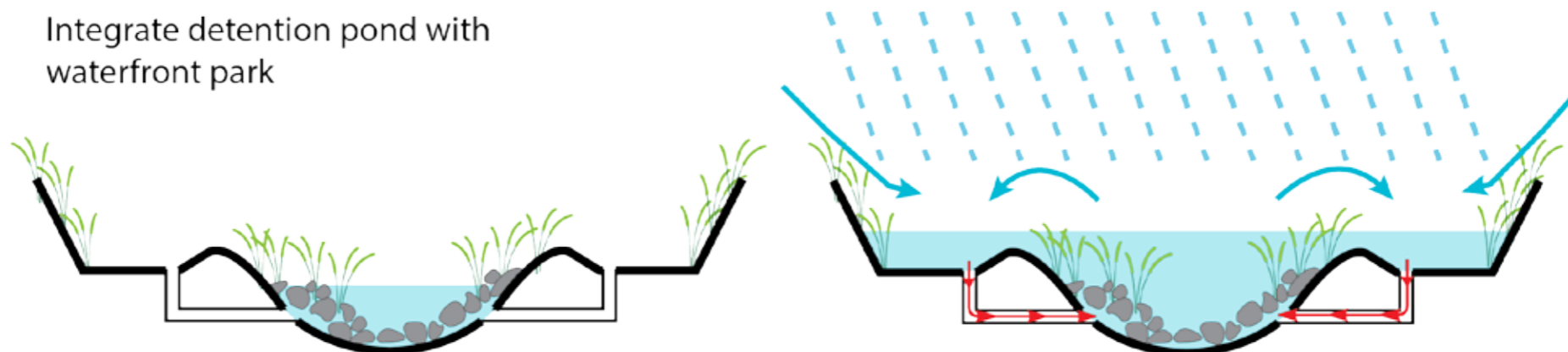
Improve waterfront quality & accessibility



Case study - Ecological detention basin in Southern Taiwan Science Park



Integrate detention pond with waterfront park

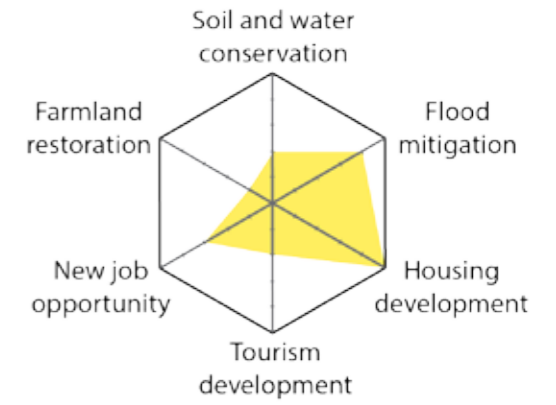


2. LIVE WITH WATER



FLOOD RESISTANT NEIGHBORHOOD

Integrate flood mitigation function Park detention basin

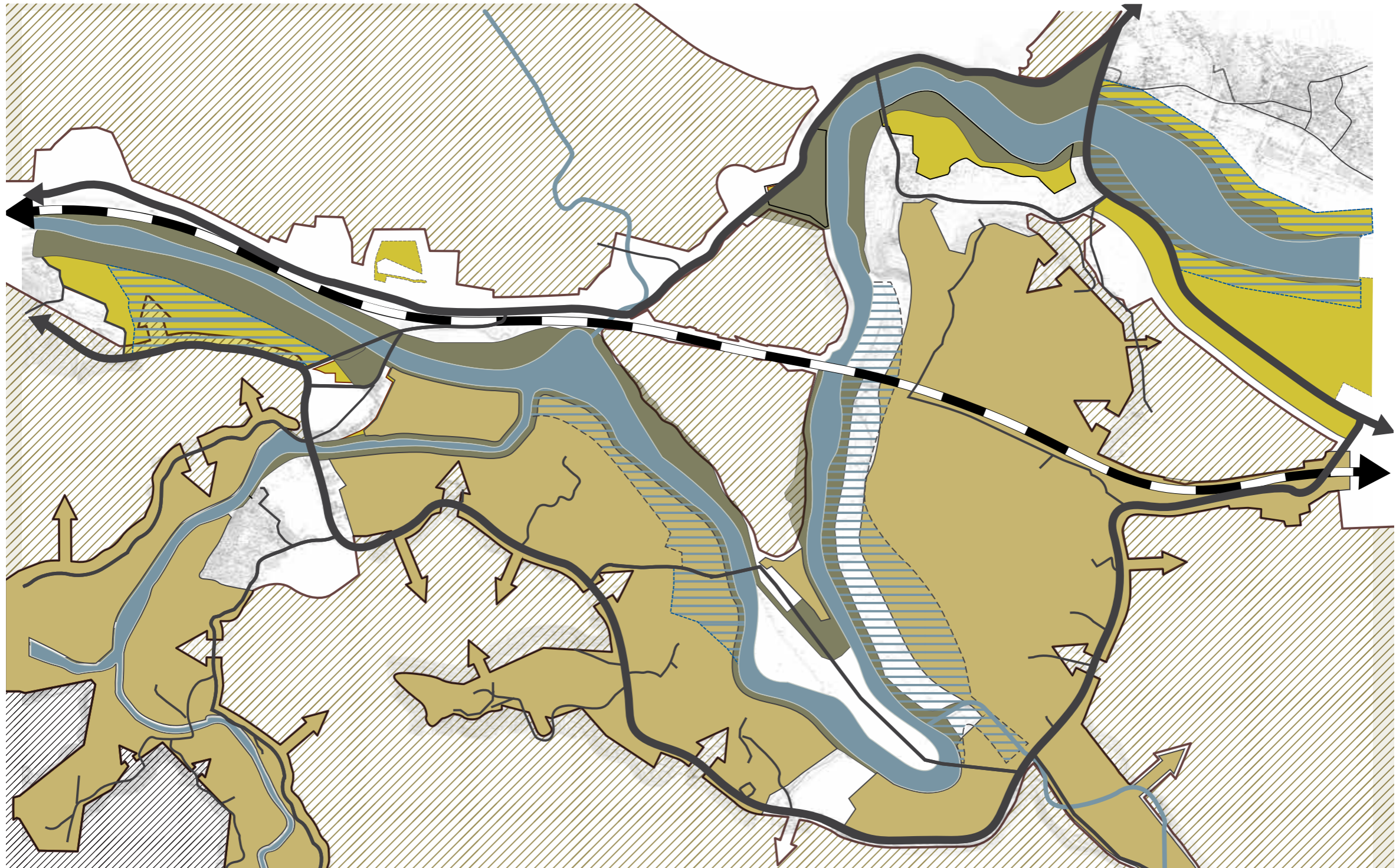
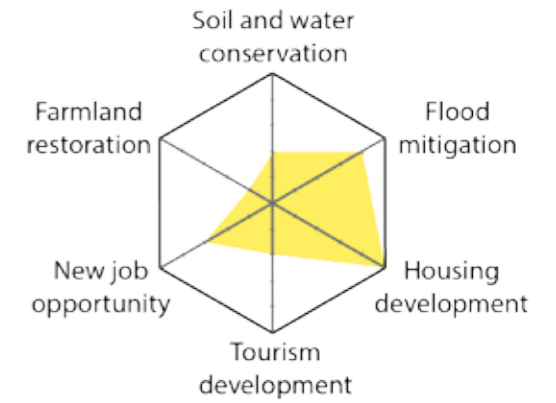


2. LIVE WITH WATER



FLOOD RESISTANT NEIGHBORHOOD

Integrate flood mitigation function
Park detension basin
Agriculture wetland detension basin

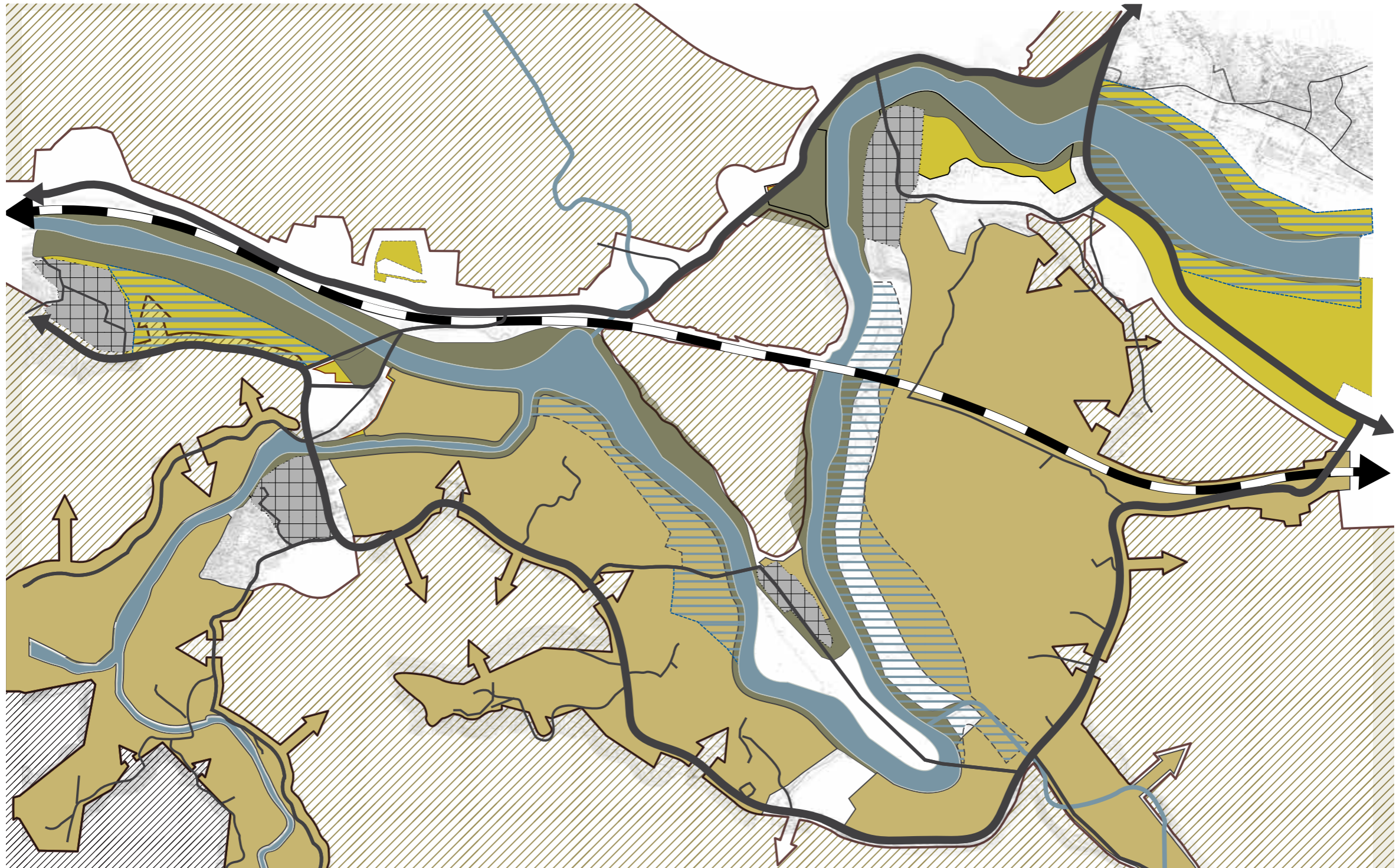
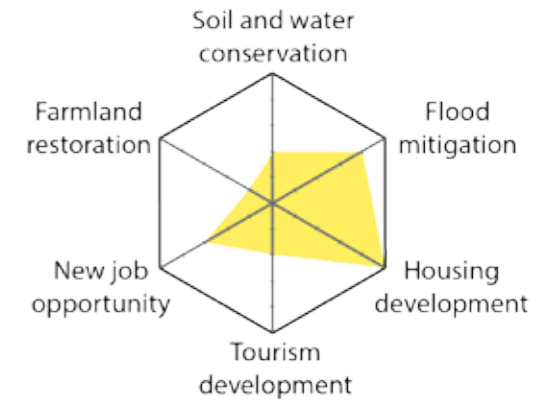


2. LIVE WITH WATER



**FLOOD RESISTANT
NEIGHBORHOOD**

Integrate flood mitigation function
Park detension basin
Agriculture wetland detension basin
Neighborhood detension basin



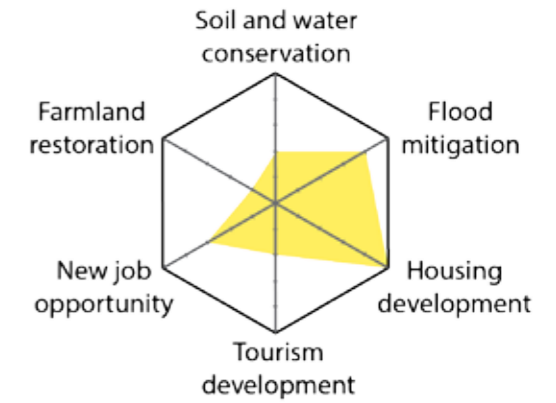
2. LIVE WITH WATER

Integrate flood mitigation function

Park detention basin

Agriculture wetland detention basin

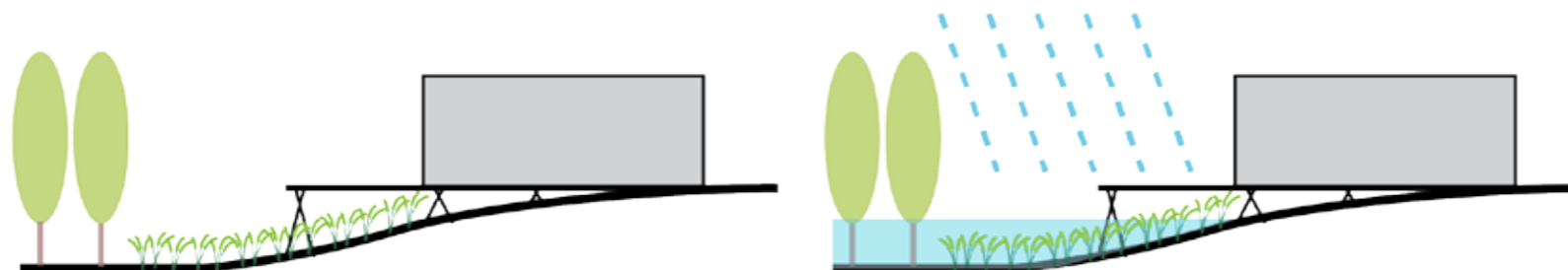
Neighborhood detention basin



Case study - Flood mitigation housing in Southwest Coast National Scenic Area in Taiwan



Flood resistant neighborhood

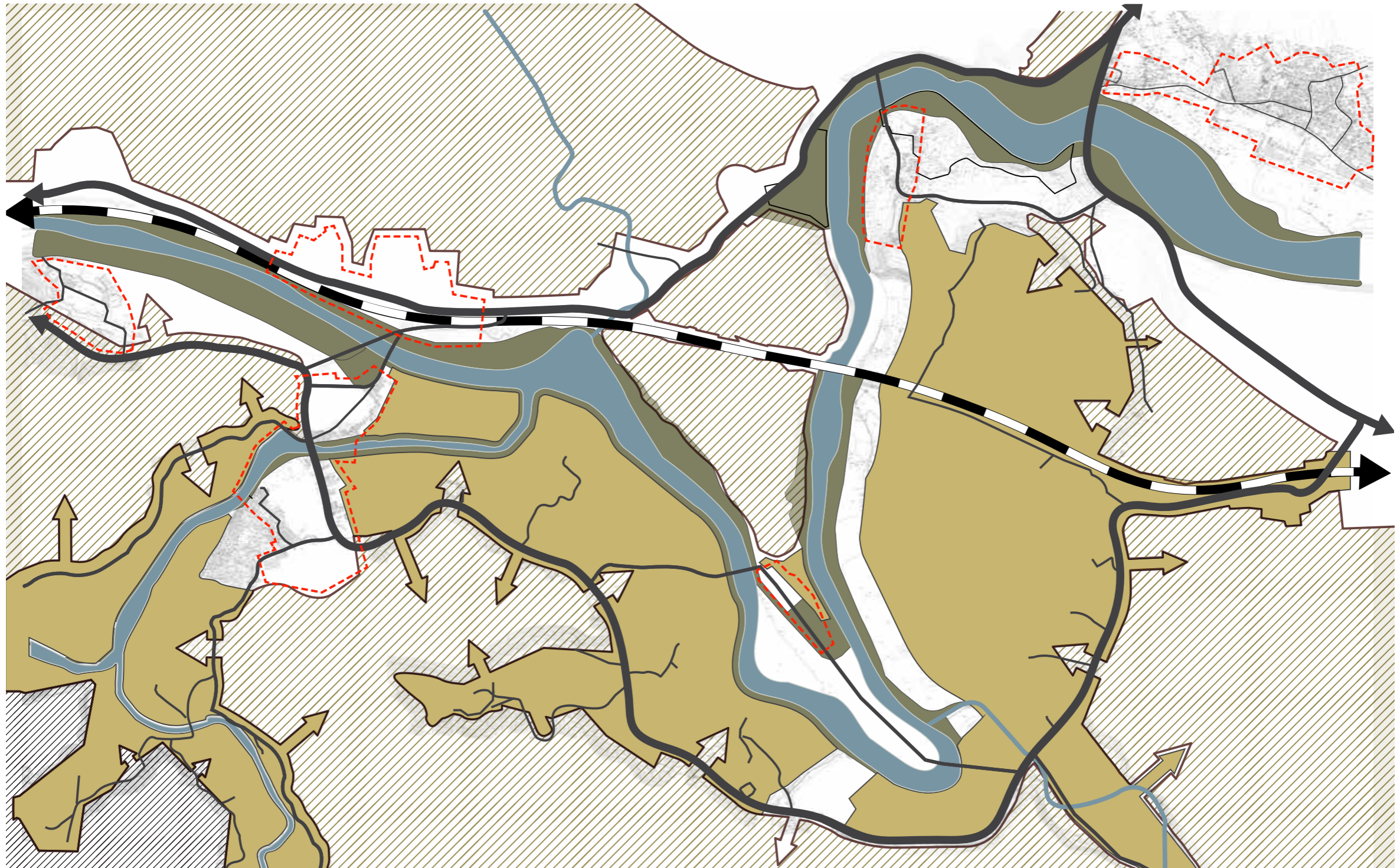
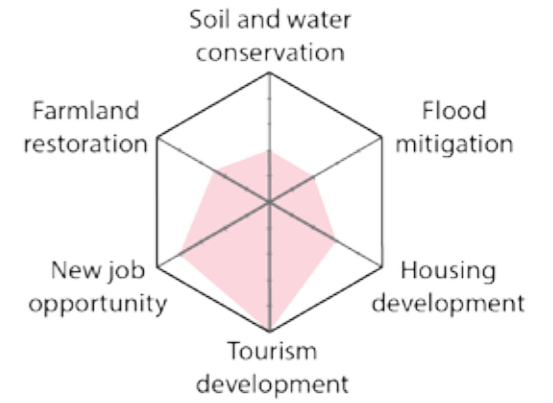


3. REINFORCE LOCAL IDENTITY



**NEW ALLIANCE OF
TOURISM INDUSTRY**

Revitalize existing village with new investment

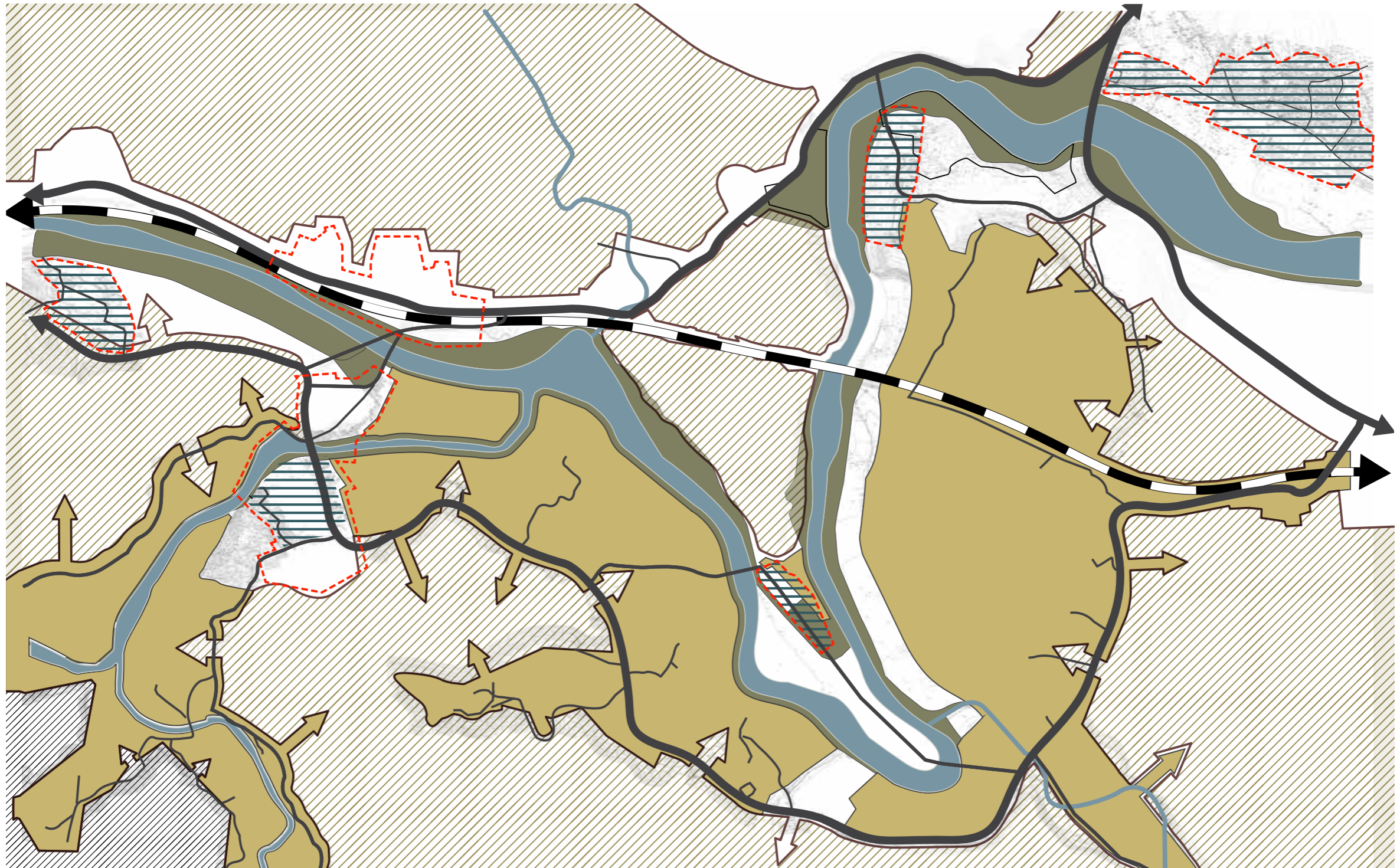
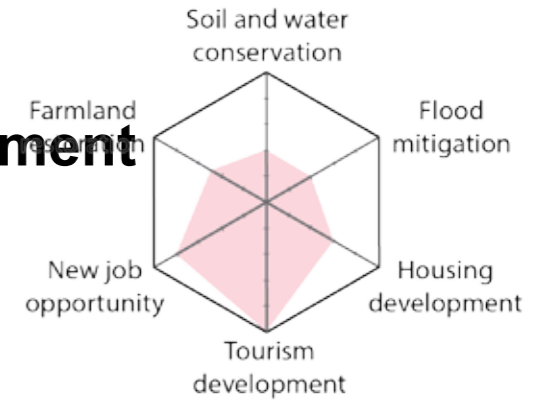


3. REINFORCE LOCAL IDENTITY



**NEW ALLIANCE OF
TOURISM INDUSTRY**

**Revitalize existing village with new investment
flood resist incentive**

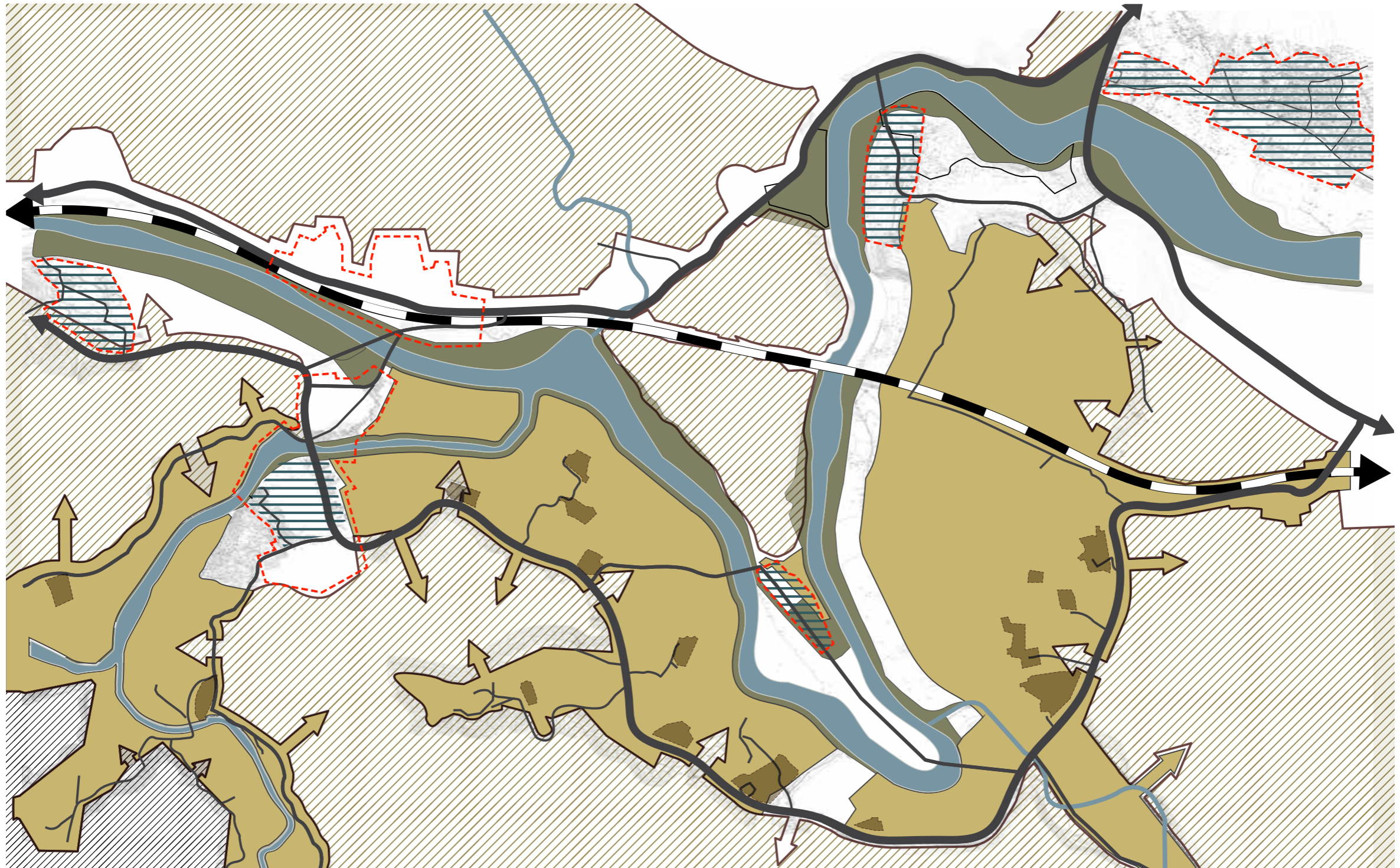
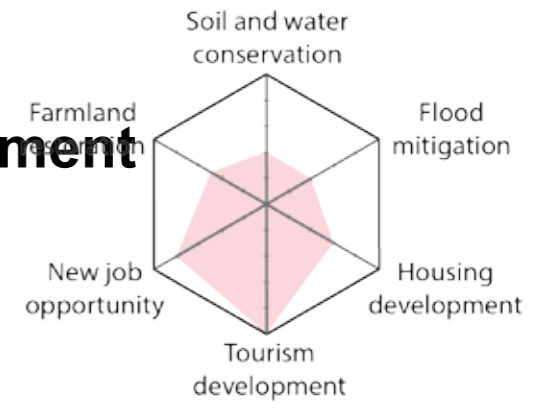


3. REINFORCE LOCAL IDENTITY



**NEW ALLIANCE OF
TOURISM INDUSTRY**

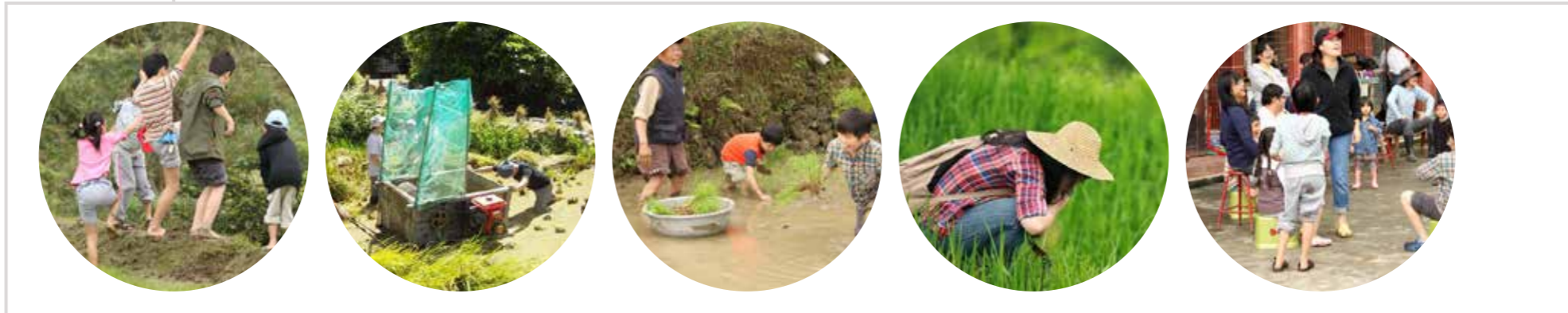
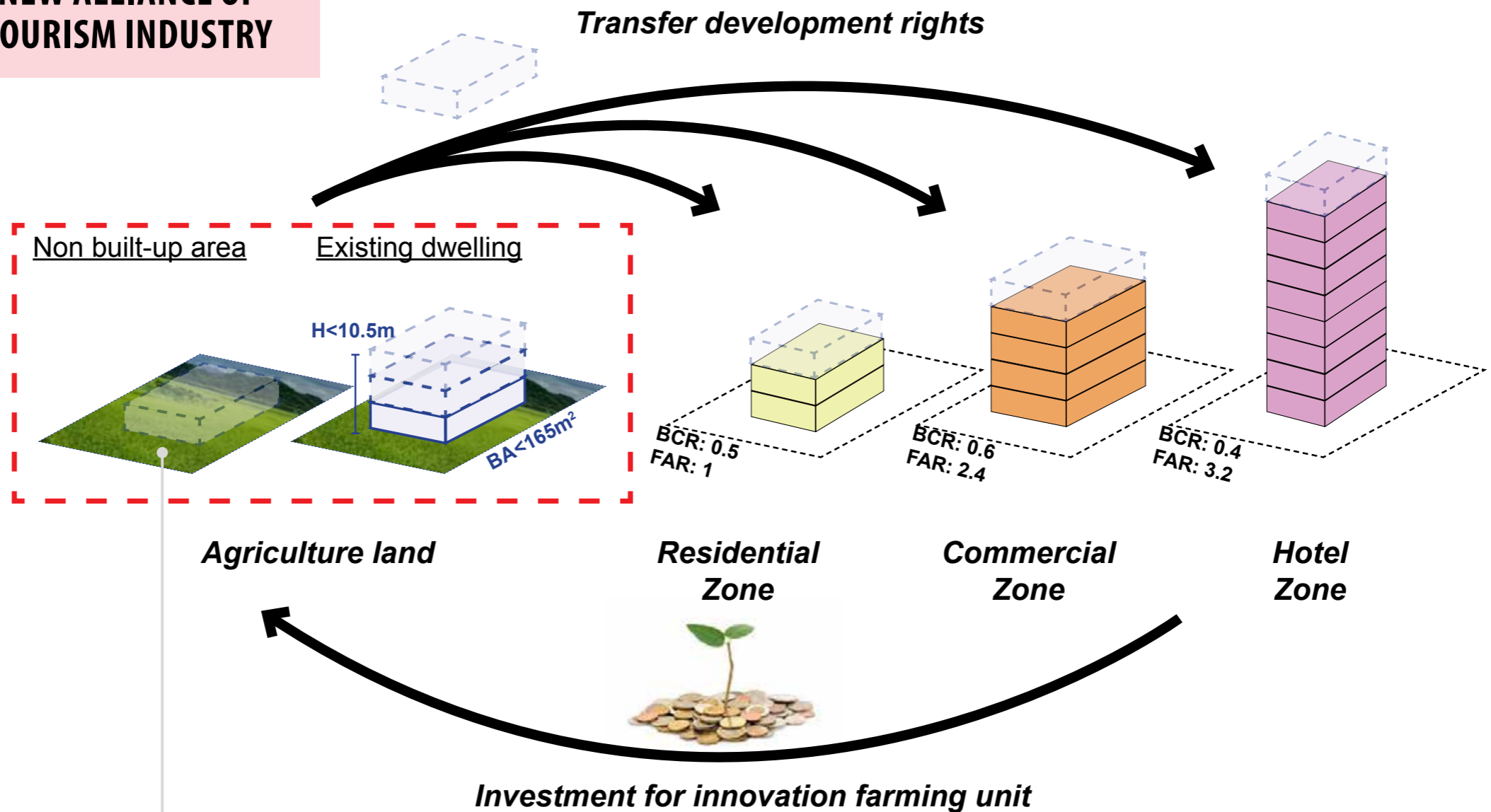
**Revitalize existing village with new investment
flood resist incentive
recreational farming incentives**



3. REINFORCE LOCAL IDENTITY



NEW ALLIANCE OF TOURISM INDUSTRY

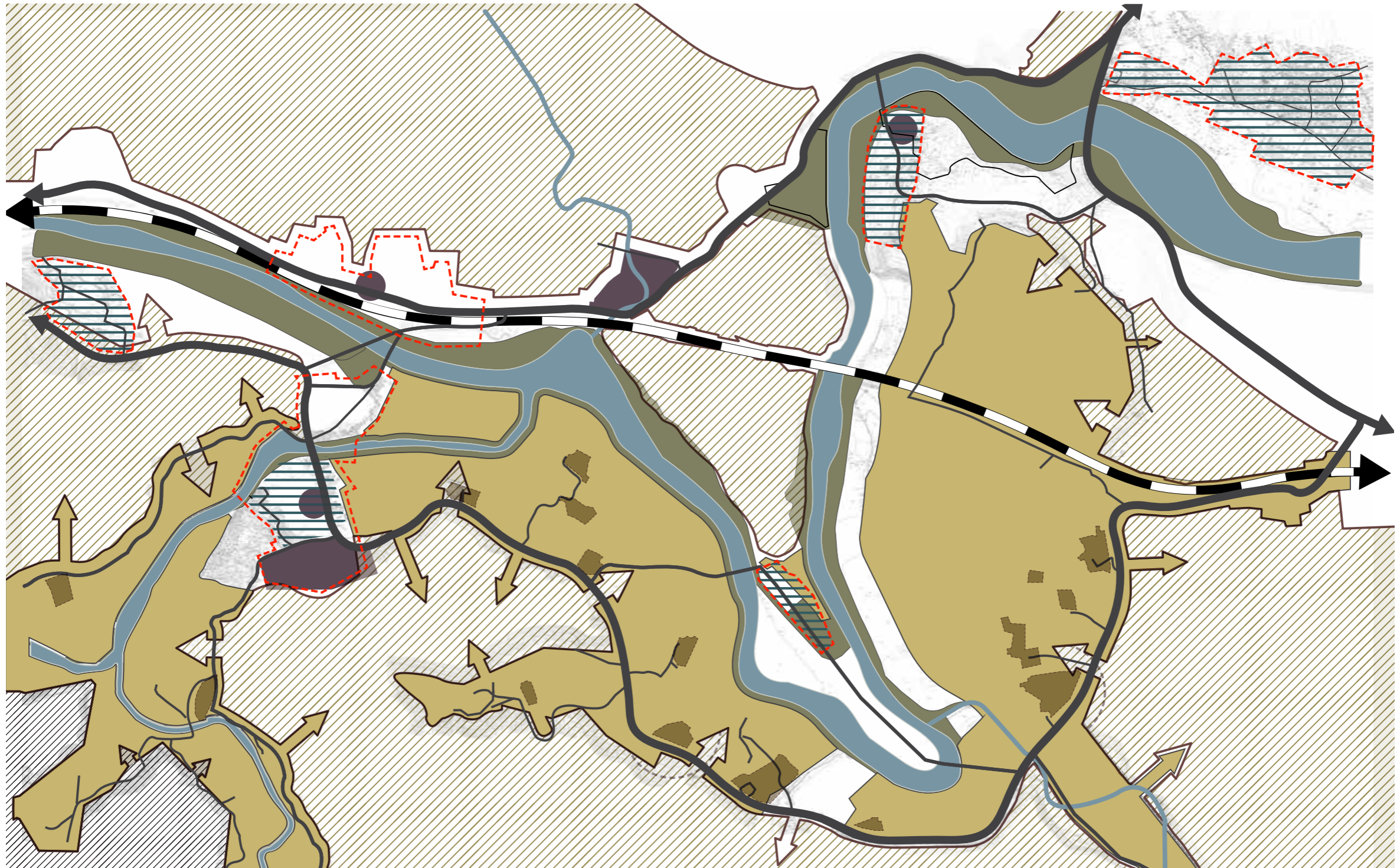
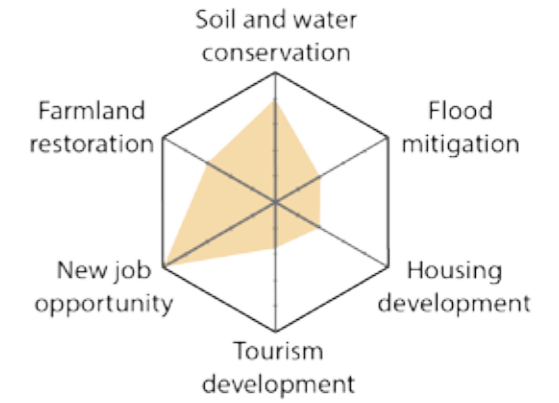


3. REINFORCE LOCAL IDENTITY



**LOCAL KNOWLEDGE
EDUCATION PROGRAM**

**Share / Exchange local knowledge
Training program**



3. REINFORCE LOCAL IDENTITY



**LOCAL KNOWLEDGE
EDUCATION PROGRAM**

**Share / Exchange local knowledge
Training program**



Eco-tourism training programme



Recreational farming











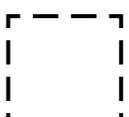















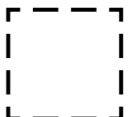





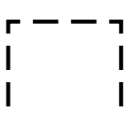


Eco-tourism training programme



Farming knowledge sharing activity

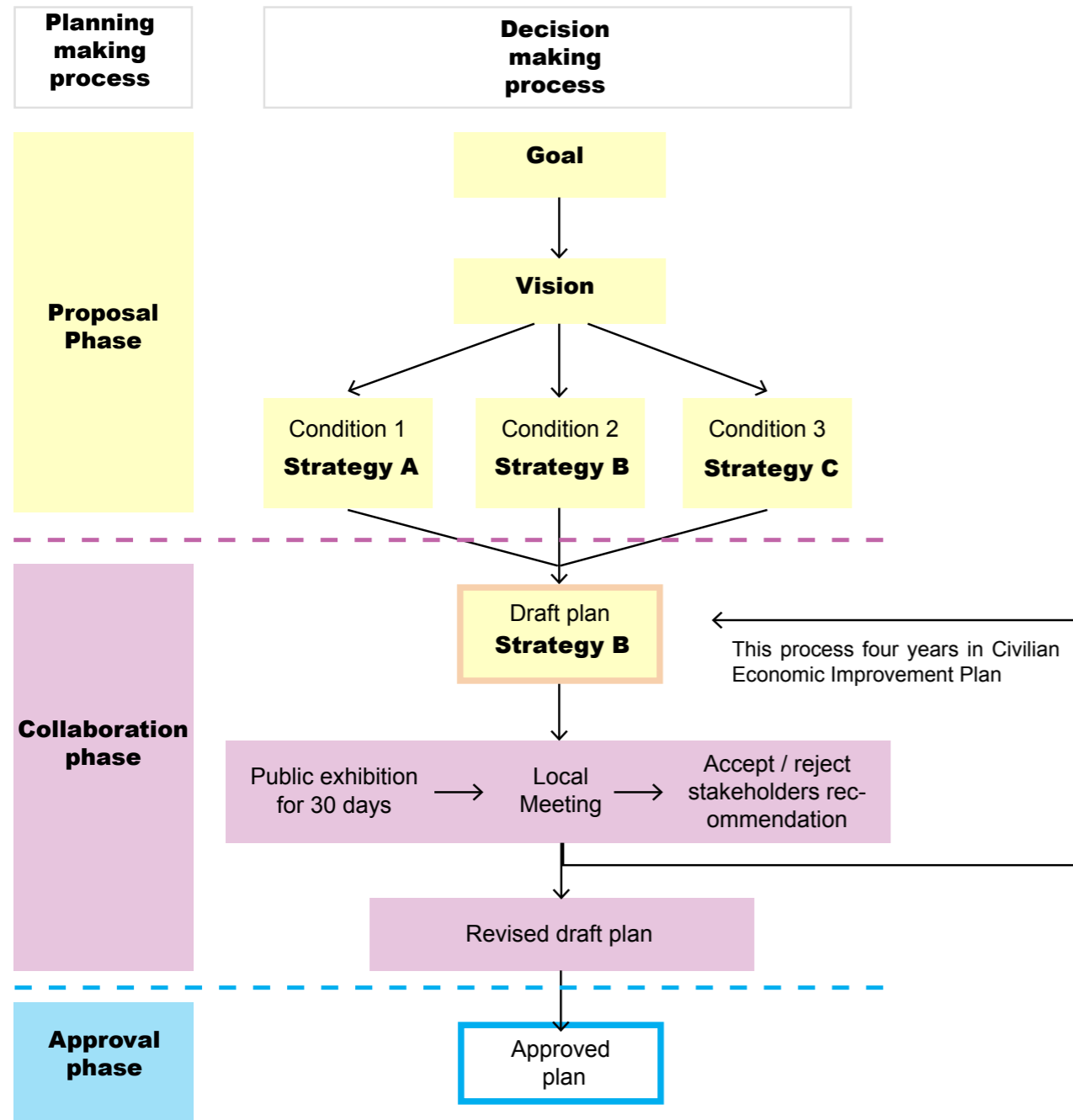
Recommend stakeholder collaboration form

Adaptation strategy	Private sector	Local participants	Public sector / NGO	Other stakeholder
 <p>Ecological environment vitality</p>	 <p>Area developer</p>	<p>+</p>  <p>Residents</p> <p>+</p>	 <p>Soil & Water conservation Bureau</p>	<p>+</p> 
 <p>Integrate landscape function</p>	 <p>Area developer</p>	<p>+</p>  <p>Farmers</p> <p>+</p>	 <p>Forestry Bureau</p> <p>+</p>  <p>Agriculture Council</p>	<p>+</p> 
 <p>Enhance waterfront quality</p>	 <p>Area developer</p>	<p>+</p>  <p>Residents</p> <p>+</p>	 <p>Water Resource Agency</p> <p>+</p>  <p>Construction & Planning Agency</p>	<p>+</p> 
 <p>Flood resistant Neighborhood</p>	 <p>Housing developer</p>	<p>+</p>  <p>Residents</p> <p>+</p>	 <p>Construction & Planning Agency</p>	<p>+</p> 
 <p>New alliance of tourism industry</p>	 <p>Tourism developer</p>	<p>+</p>  <p>Landowners</p> <p>+</p>	 <p>Tourism Bureau</p>	<p>+</p> 
 <p>Local knowledge education program</p>	 <p>Area developer</p>	<p>+</p>  <p>Residents</p> <p>+</p>	 <p>Environmental Ethics Foundation of Taiwan</p> <p>+</p>  <p>Local newspaper</p>	<p>+</p> 

DISCUSSION



Now



Proposed responsive plan-making process

