

SHIFT CONFLICTS

Integrating land use conflicts between preservation and development through adaptive planning approach in Northeast Coast National Scenic Area

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Acronyms and Abbreviations

| | |
|--------|---|
| CEPD | Taiwan Council for Economic Planning and Development |
| CPAMI | Taiwan Construction and Planning Agency, Ministry of the Interior |
| CEIP | Civilian Economic Improvement Plan |
| ESA | Environmentally sensitive area |
| EEFT | Environmental Ethics Foundaton of Taiwan |
| FACOA | Taiwan Fisheries Agency, Council of Agriculture |
| FBCOA | Taiwan Forestry Bureau, Council of Agriculture |
| FANCRI | Taiwan Forest and Nature Conservation Research Institute |
| NCNSA | Taiwan Northeast Coast National Scenic Area |
| NCNSAA | Taiwan Northeast Coast National Scenic Area Administration |
| NLPL | Taiwan National Land Use Plan Law |
| SWCB | Taiwan Soil and Water Conservation Bureau,Council of Agriculture |
| TBMTc | Taiwan Tourism Bureau, Ministry of Transport and Communications |
| WRA | Taiwan Water Resources Agency, Ministry of Economic Affairs |
| GESP | Generic and specific policy |

Preface

The research focus on how adaptive planning approach can provide opportunities to integrate conflicting interests into new forms of cooperation. The research tackles with a territorial management issue that competing interests happened in Taiwan National scenic area. In conservation areas management and planning, there are few general problems happened.

In this research project, Northeast Coastal National Scenic Area is an area with similar problems that states above. The effective of the master plan and latest policy provision (Civilian Economic Improvement Plan, 2009-now) in Northeast Coastal National Scenic Area shows insufficient integration of landscape and natural resource protection, tourism development, flood prevention. In addition, the lack of value and consensus are caused by ineffective coordination between government agencies in decision making process. Moreover, the insufficient local involvement in the planning process leads to seriously local protests. In short, the existing planning regime needs to be elaborated and find alternative opportunities to integrate the conflicts in research area.

In contemporary planning, the development of regional concepts and narratives is not at all simple; they imply changes in both the perspective on planning and the focus of planning (Hartman et al., 2011). Therefore, this study apply adaptive approach mentioned in book *Regions in Transition-Designing for adaptivity*, which explains how three regions in the Netherlands integrate developing and preserving conflict by grasping opportunities. The approach implies to this research will contribute to the diagnose of environment quality, the value of preserving and developing in research area.

The research goal is to define the and proposed the Generic and specific policy (GESP) as a strategy to the region. The generic and specific policy makes it possible to take a dynamic perspective on quality.



Figure1.1. Terrace farming in Gongliao

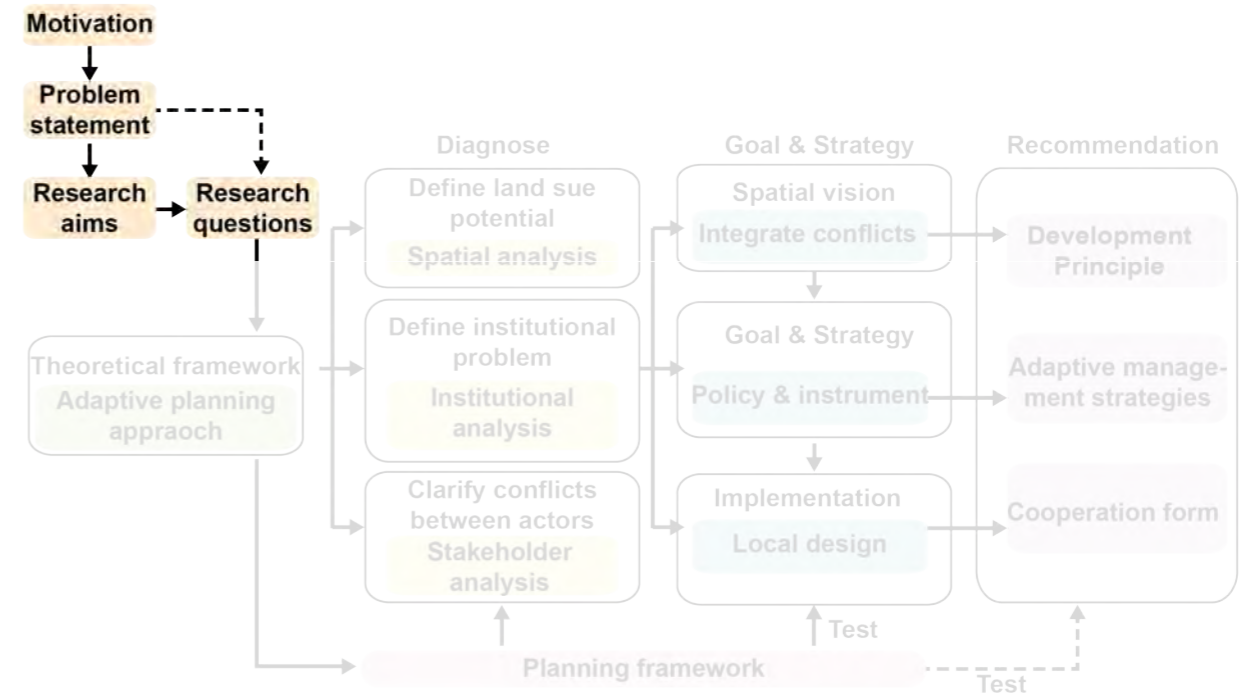
Source: www.eeft.org.tw



Figure1.2. Aodi downtown and surrounding landscape

Source: www.eeft.org.tw

Part A. Introduction



I. Background Information

In Taiwan, mountainous slopeland areas, where development is restricted, cover 73 per cent of the entire island (SWCB, 2013). The total environmentally sensitive area (ESA) delineated by the Ministry of Interior to be reserved for natural resource conservation covering 77 per cent of the total area of Taiwan (CPAMI, 1992). The ESAs can be categorized as four classes and various types of natural protection areas (NPAs). Development in these areas is neither prohibited or subject to strict regulation but different types of laws and regulations (Bristow et al., 2010)

According to Northern Regional Plan (1995) development vision, Northeast Coast area, located 40 km away to Taipei city, were designated as an national scenic area which provides the opportunity to develop and protect the quality of Taipei Metropolitan. The statistics data in 2012 showed that Northeast Coast National Scenic Area (NCNSA) ranked as 4th most visited National Scenic Area in Taiwan (TBMTTC,2012). The competent authority CPAMI is highly convinced tourism development will bring opportunities to develop Northeast Coast area, while the locals are growing awareness of develop and protect the

area quality. Social and spatial needs change rapidly, and the traditional planning system in Taiwan is not always capable of dealing with the reality.

One of the problem is that the current planning system still cannot find an efficient instrument to deal with protection and development issue. Due to the lack of a precise inventory of natural factors, the delineated ESAs in regional plans are not zoning controls (Kuo & Huang, 2010). However, the NCNSA master plan and zoning control reflecting the guidance in natural protection areas is lacking flexible framework and

leave little possibility for local initiative intervention. The other problem is the conflicting relationship between designated preservation areas and the current land use. Although most stakeholders agree that the landscape and natural resource protection are necessary, the locals and the government take the opposite attitude to landscape and environment development. The strict regulations and complex actors make it more difficult to reach agreement in the decision making process.

Three classes of conservaton areas

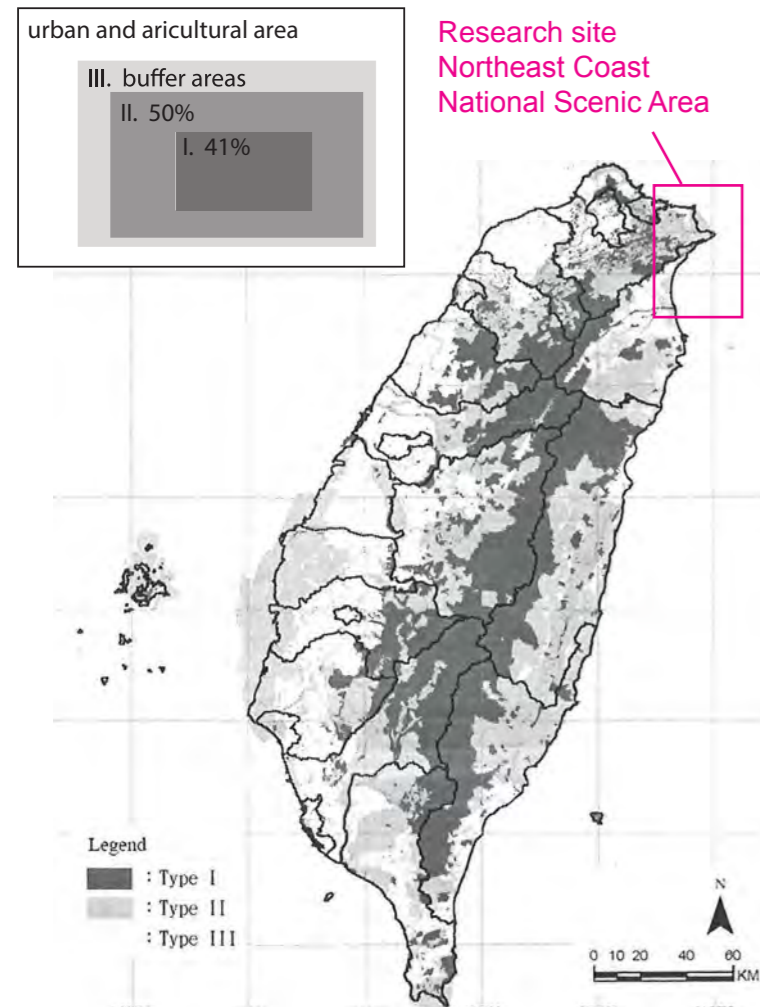


Figure1.3 Conservation areas distribution in Taiwan
Source: Map by author ,adapted from SWCB



Figure1.4 Plain area is the major urban development
Source: www.flytiger.com.tw



Figure1.5 Slopeland & valley is buffer area (Type III & II)
Source: www.flytiger.com.tw

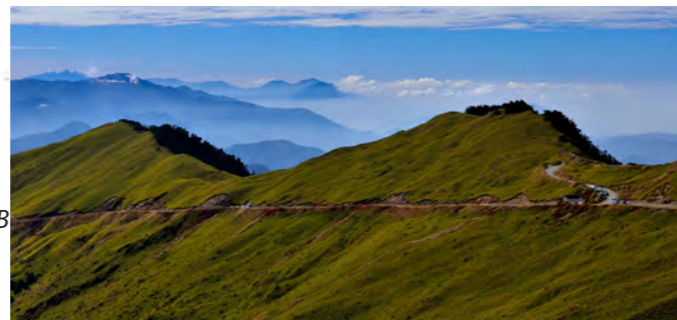


Figure1.6 Mountain area
Source: www.flytiger.com.tw

Class I : most sensitive part of Taiwan, cover 41 percent of the total Taiwan area.
Class II : mid-level sensitive part of Taiwan, nearly 50 per cent of the entire island.
Class III : serves mainly as buffers between the conservation areas and the man urban and agricultural areas. Gongliao is located at the class II and class III areas, the buffer zone plays critical roles because the trade-off in protection and development activities.

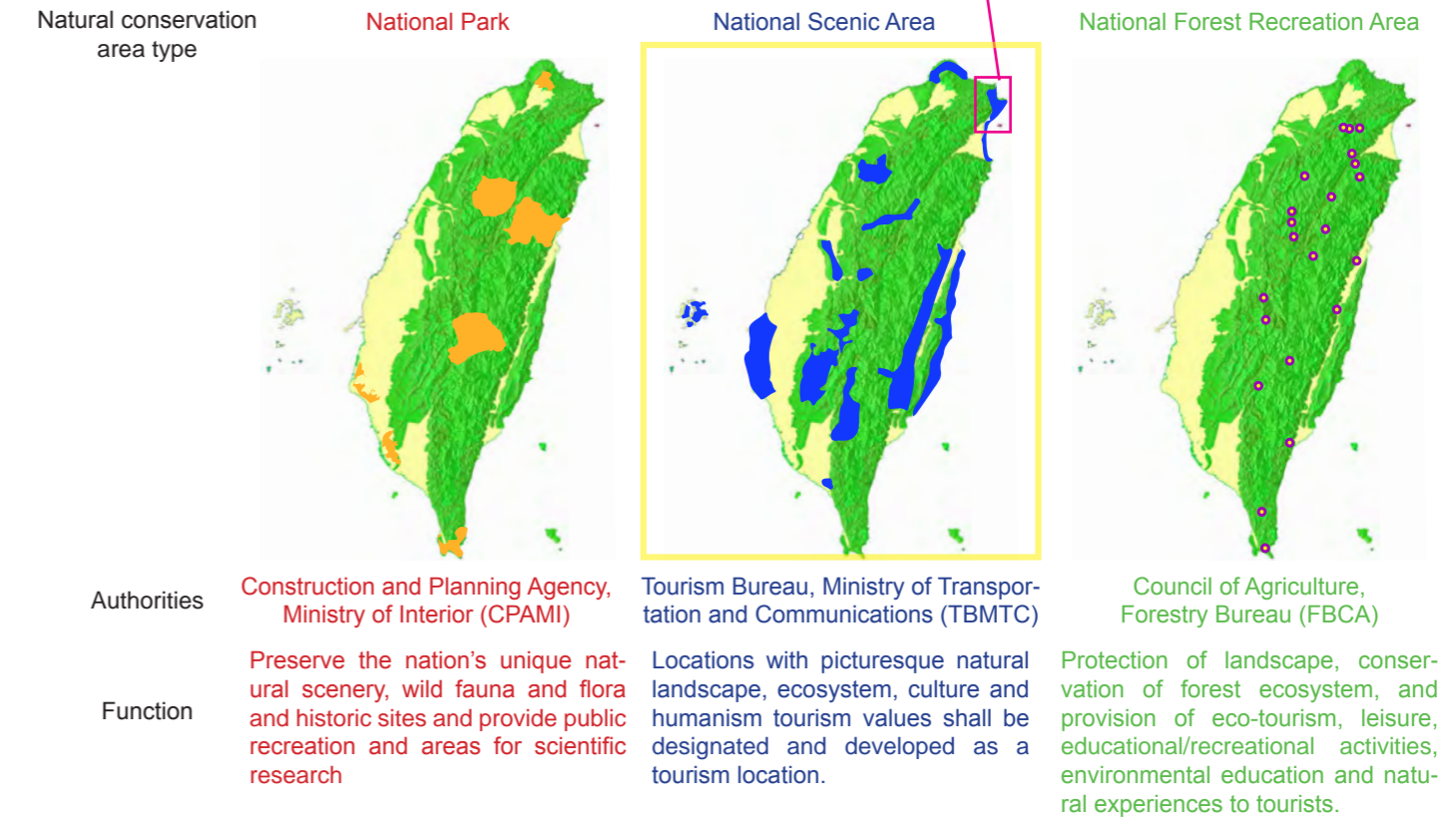


Figure1.7 Natural conservation area planning system in Taiwan

Source: Adapted from CPAMI, TBMTTC and FBCA websites (2013).

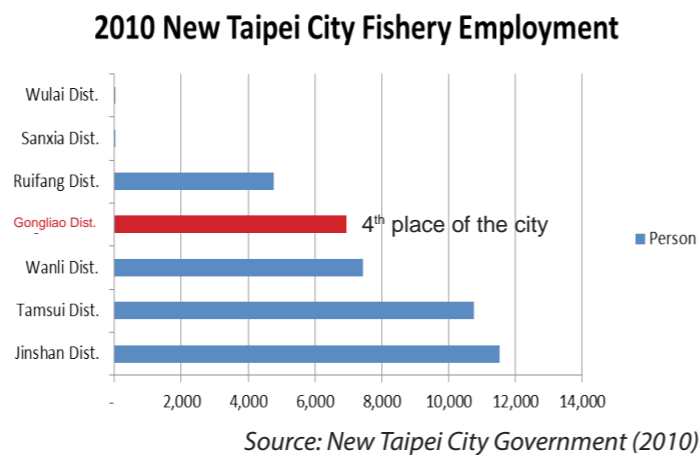
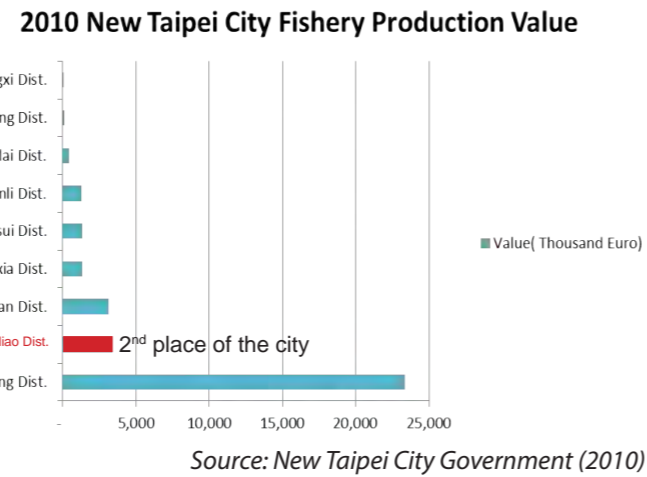
II. Project context - Northeast Coast National Scenic Area

1. General information

The context of this graduation project is Northeast Coast National Scenic Area (NCNSA). The total area is 124.85 km² with 15,759 population. Compare to Taipei City, the population density is less dense because of the natural geographical constraints. The unique natural landscape and scenery attracts more than 4.3 million visitors per year, which has potential to generate 8.5 billion New Taiwan Dollar (204 million euros) tourism income in Taiwan (0.06% GDP). The Northeast Coast National Scenic Area has cross border territories, which contains Gongliao District and Ruifang District in New Taipei City, and Toucheng Township in Yilan County. This research will focus on the spatial development issue in Gongliao District, where dominate main territory of NCNSA.

In Taiwan, the environmental preservation areas are restricted for development. It results in poor integration of living environment, and natural protection in spatial planning. The government planning authorities had developed few scenarios without negotiating with stakeholders in the decision making process, which led severe protests.

Northeast Coast National Scenic Area (NCNSA)
 Location: Gongliao, Ruifang, Toucheng
 Area: 124.85 km²
 Population: 15,759
 Density: 126 /km²
 (Taipei city density: 9800 /km²)

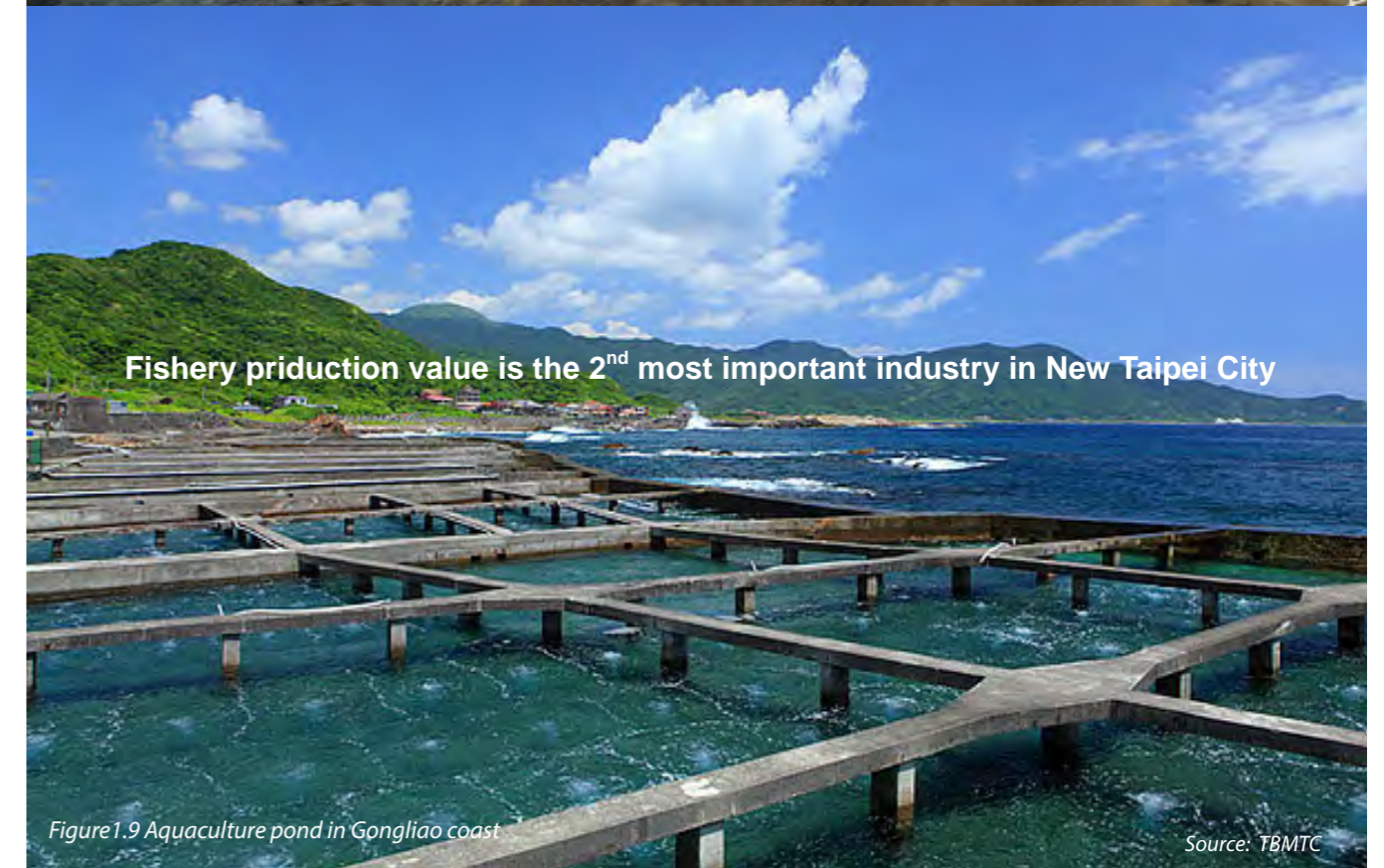


2 Economy and primary industry

Northeast Coastal area attracts more than 4.3 million visitors per year, which has potential to generate 204 million euros tourism income (0.06% GDP)

| | |
|---------------|--|
| € 204,310,895 | Tourism revenue (2011) 0.06% GDP |
| € 3,382,204 | Fishery production value (2011) |
| € 145,475 | Industry, commerce and service production value (2011) |

Source: Directorate-General of Budget, Accounting and Statistics, Executive Yuan (Taiwan),



III. The story behind Gongliao

The story begins with a beautiful project - GENE 21+ in 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.



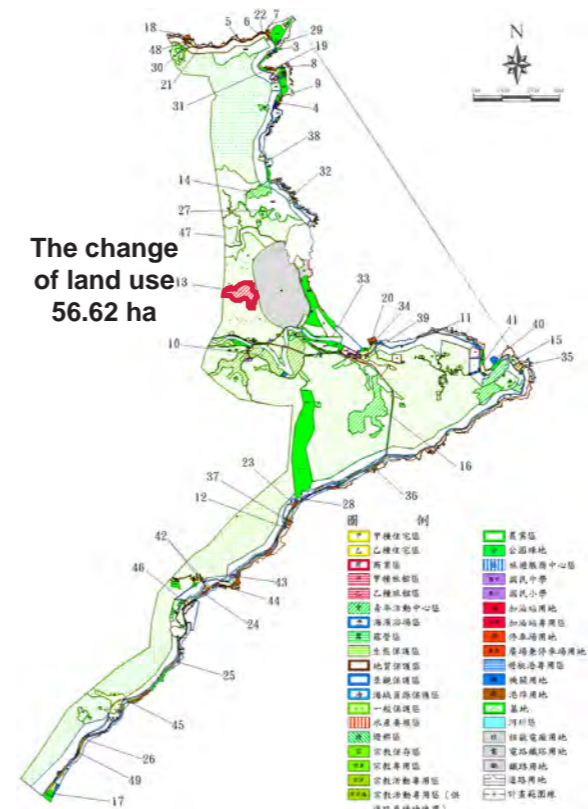
The residents concerned the GENE 21 project will become gated community instead of enhance the quality of neighbourhood environment.
 They against the draft plan of Economic Improvement Plan and accused the plan is the tailor-made proposal for developer.



One year later, Gene group managed to persuade CPAMI accept their proposal and change land use from natural conservation area to hotel zone.

Which means, the local dwellings still do not have right to maintain and extend their house in their farm.

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



The change of land use 56.62 ha



The developer will get permit to build villa in natural conservation area.



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.

Figure 1.11 The local demonstration of Civilian Economic Improvement Plan

Source: Taipei Times, 2011

IV. Project objective

1. Problem define

1.1 The natural protection framework and development restrictions in Northeastern coastal area environmentally sensitive areas (ESAs)

Under the supervision of the Council for Economic Planning and Development of the Taiwan government, the Ministry of Interior completed studies of delineation of ESAs completed in the Northern and Southern regions, Central region, and Eastern region in 1992, 1996 and 1997 respectively (Huang, Jen, & Hung, 2006). The primary studies of the delineation of ESAs are seemed as the strategy basis of natural resource protection in national-level, regional level and local level. Moreover, the delineation of ESAs response to the study of natural protection areas defined in the Natural environment preservation plan in Taiwan (1984).

In NCNSA, four categories of ESAs are defined: Ecologically sensitive area (national forests, wetlands, coastal zone conservation areas and natural preservation areas); Cultural and landscape sensitive area (scenic areas); Resource production sensitive area (forest and prime agricultural land); Natural hazard sensitive areas: flood prone areas and geologically hazardous areas (Kuo & Huang, 2010). Development in these areas is either prohibited or subject to strict regulation by different types of laws and regulations. (Huang et al., 2006).

In the existing planning system, the primary purpose of the delineation of ESAs in Taiwan at present is for the incorporation of resource conservation within the revision procedures of the four regional plans as required by the Regional Planning Act (Huang, Jen, & Hung, 2006). Since the new draft National land use planning law (2010) has not passed by Legislative Yuan, regional plan is the highest level of statutory spatial plan in Taiwan. In this case, regional plan is the basic guidance of urban and rural area development, as well as the protection of natural resource and landscape areas. Since the Northern regional plan (1992) emphasized the spatial development in urban areas, the vision and development pattern to urban-rural relationship need to be clarified.

1.2 The restriction for environmental and landscape planning in Northern coastal area

The initiative of Civilian Economic Improvement Strategic Plan- Improving Land Utilization and Landscape Quality of Northeast Coastal National Scenic Area was the national policy in 2010, approved by Executive Yuan and implemented by Construction and Planning Agency of Ministry of Interior (CPAMI). CPAMI, the highest planning agency in Taiwan, plays the leading authority to coordinate other ministries and local municipality. Since Gongliao located in four types of ESAs, development is highly restricted. The local residents need to apply building permit through complicated procedure for housing renovation. The negative effect of the strict regulation result in poorly maintained living environment. Hence, the strategic plan intended to solve the conflicting problem in designated protection area with the locals by integrating hotel area development, change land use in conservation areas, and disaster prevention into a single protect (CPAMI, 2010).

After 30 years of developments restriction, the local expected the strategic plan to solve the spatial problem and enhance local economic development. However, the local were disappointed to CPAMI draft proposal, 102.56 hectare lands were designated as collective development areas. In order to attract tourism investors, 8.58 hectare of the hotel zone were proposed in the project (CPAMI, 2010). Due to the lack of transparent information in the planning process, the benefit for local sustainable economy development and landscape protection is questionable. In addition, as civic awareness increased, the creation of new collective development areas in NCNSA resulted in conflicts of interest with the local community. In general, applying adaptive approach and planning framework to integrate natural resource protection and landscape development for sustainable future need to be clarified and implemented in NCNSA. The effective mechanism and tools that require and facilitate a social context with flexible and open institutions and multi-level governance systems need to be identified.

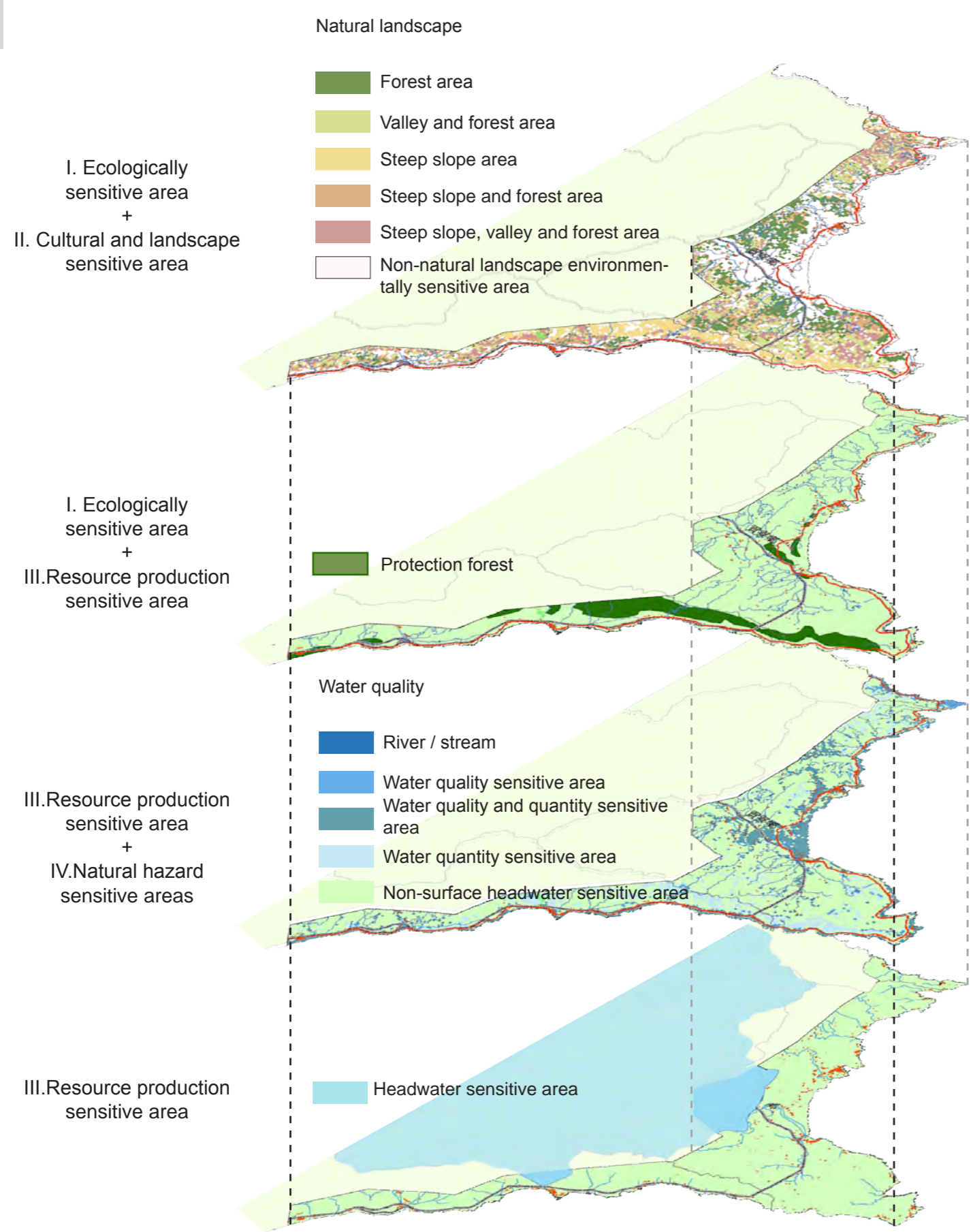


Figure 1.10 Environmentally sensitive areas in Northeast Coast National Scenic Area

Source: Map by author, adapted from CPAMI website, 2006

2. The outline of land use conflicts

The existing planning regime and strategy did not provide effective solution to accommodate conflicts and values.

For example, the Construction and Planning Agency delineated environmentally sensitive area for national land use protection and hazard prevention; the Tourism Bureau proposed new collective development in order to attract hotel investment for tourism development; the Water Resource Agency proposed ecological engineering methods for flood prevention.

In addition, the local people wanted to maintain small scale farming and renovated their house with less restricts; environmental groups claimed an eco-tourism related to local life style. Moreover, the real estate developer intended to develop the area into luxury resort. The relevant stakeholders proposed different development values in Northeast Coast areas, but the existing plan cannot integrated all demands into one single project.



How to maintain environmental quality and tourism resource?

Does tourism development help local economy?

What is the sustainable industry for local?

How to integrate water management into spatial planning?

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

3. Problem statement

3.1 The existing planning regime and strategy did not provide effective solution to accommodate conflicts and values.

The zoning plan in master plan indicates land use restrictions of the area, but the existing zoning plan does not provide sufficient options to integrate conflicts impossible solution. For example, the Construction and Planning Agency delineated environmentally sensitive area for national land use protection and hazard prevention; the Tourism Bureau proposed new collective development in order to attract hotel investment for tourism development; the Water Resource Agency proposed ecological engineering methods for flood prevention. In addition, the local people wanted to maintain small scale farming and restore the houses with less restricts; environmental groups claimed an eco-tourism related to local life style. Moreover, the real estate developer intended to develop the area into luxury resort. Although the relevant stakeholders has proposed different development projects in Northeast Coast areas, most of them did not be realized because the planning regime, instruments and regulations are not supportive enough to allow integrations of the conflicts values happen.

3.2 The proposed strategy by CPAMI did not resolve the conflict but enhance the conflict instead.

The government strategy and policy is too rigid that not allow local people to development. The four types of environmentally sensitive areas (ESAs) were designated according to Northern Regional plan (1995). In the past 30 years, development in Northeast Coast area was prohibited and restricted because of the land use regulation highly prohibit restoration and expansion of existing settlements. However, the new strategy from CPAMI in 2011 reduced the regulative intensive majority in order to attracting hotel investor for tourism development.

3.3 The urgent need for an applicable strategy that accommodates national policy and facilitates competing interests.

Northeast Coast area is a place with high landscape value, environmentally vulnerability and risk. The complex value of the territory generates pressures between conservation and development. The nature of Northeast Coast area was well preserved because of strict land use regulation. However, the development potential for sustainable development was underestimated. A sustainable vision that integrates ecosystem, risk prevention system, and socio-economic system need to be reviewed and clarified in regional level.

V. Project definition

The research goal is to define the generic and specific spatial strategy to adapt land use conflict between social and spatial changes in national scenic area. The research focus on developing spatial concepts through integrating conflicting proposals from different actors into possible projects, which accommodate local initiative and governmental policy for new forms of cooperation.

1. Hypothesis

If the adaptive planning approaches can deal with social and spatial changes by integrating land use conflicts, what is the strategy and instrument under this new planning framework?

Does adaptive planning approach could help dealing with the land use conflict in high landscape value area and reach certain consensus?

2. Main research question

What is the concept and development strategy to adapt land use conflict between social and spatial changes in national scenic area?

In order to find the answer to the question the element that contains should be researched and first. The current physical environment quality, the planning regime and instruments in research site Northeast Coast National Scenic Area, and the interrelationship between stakeholders need to be clarified. The following sub-research questions, therefore, represent the in-between steps that will be taken:

3. Sub research questions

3.1 What is the physical environment quality in northeast coastal area?

- What is the environmental preservation and conservation value in Northeast coast area?
- What is the development condition and constraints in this area?

3.2 How and to what extent the land use conflict happen in northeast coast area?

- Northeast coast area has very dynamic of landscapes, how conservation and development issue lead to land use conflicts in these area?
- What is the problem between zoning plan and current land use ?

3.3 What is the interrelationship between the relevant stakeholders?

- What is the responsible body for regulation, management, and development in the area?
- What are the conflict values and competing interests happened in the territory?

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

- What is the priority principle to develop an area while enhance environmental quality?
- What is the possible option to preserve the natural environment while grasping opportunity for the local economy?
- How adaptive approach help an area develop the spatial concept and reach a new common for the future vision?
- How does the planning framework accommodate conservation and development tasks in northeast coast region?

4. Research structure

The research goal is to define a resilient development capacity in a regional plan, that response national policies and local initiatives of sustainable development. Therefore, stimulating possible future development directions that can integrate flood prevention, landscape protection, and tourism development is the first step of this research. In addition, finding a sustainable industry development that relating to local lifestyle and cultural landscape is the second step of this research. In order to formulate this research, the policy analysis will help me to highlight the development regulation and constrains in conservation areas. Moreover, the stakeholder analysis will help me to clarify the relationship between stakeholders. In addition, the landscape analysis will help me to find the potential site of this area.

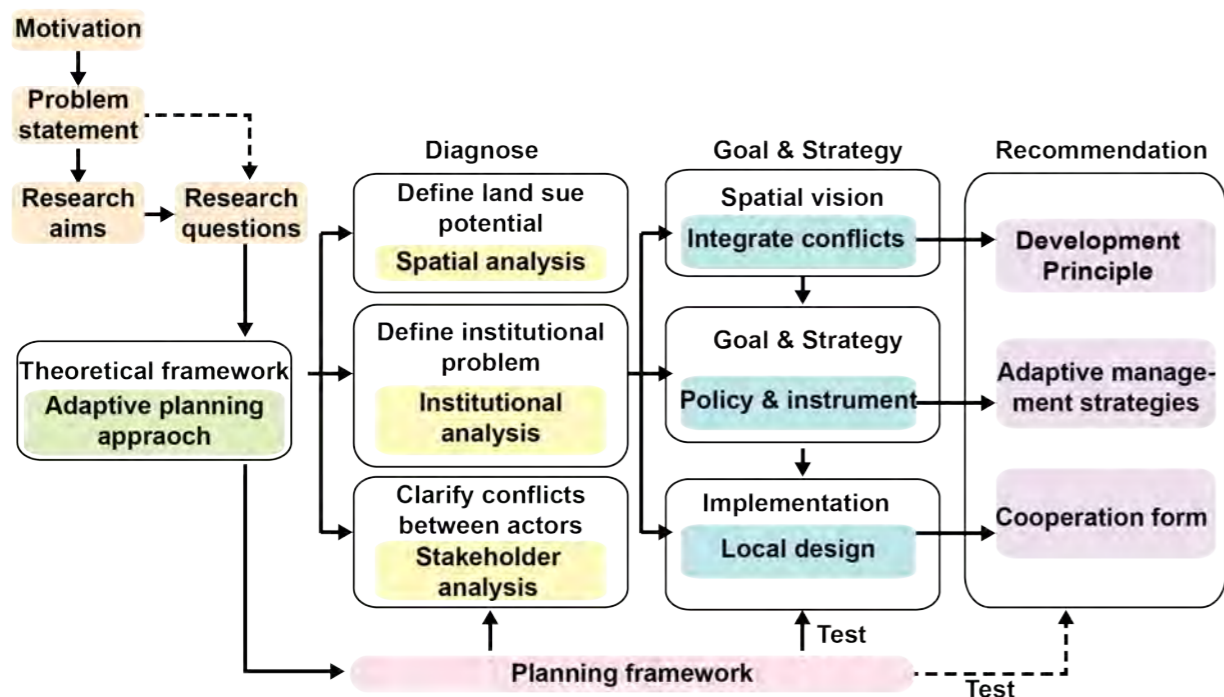


Figure1.13 Project content overview

5. Research method

5.1 Institutional analysis

Policy analysis will focus on the official report including policy and strategy report, natural conservation strategy and environmentally sensitive area delineation in National level, regional level and local level. The purpose of policy analysis is to understand the restriction and planning tool. The outcome of policy analysis will shows the governance of different territory.

5.2 Landscape analysis

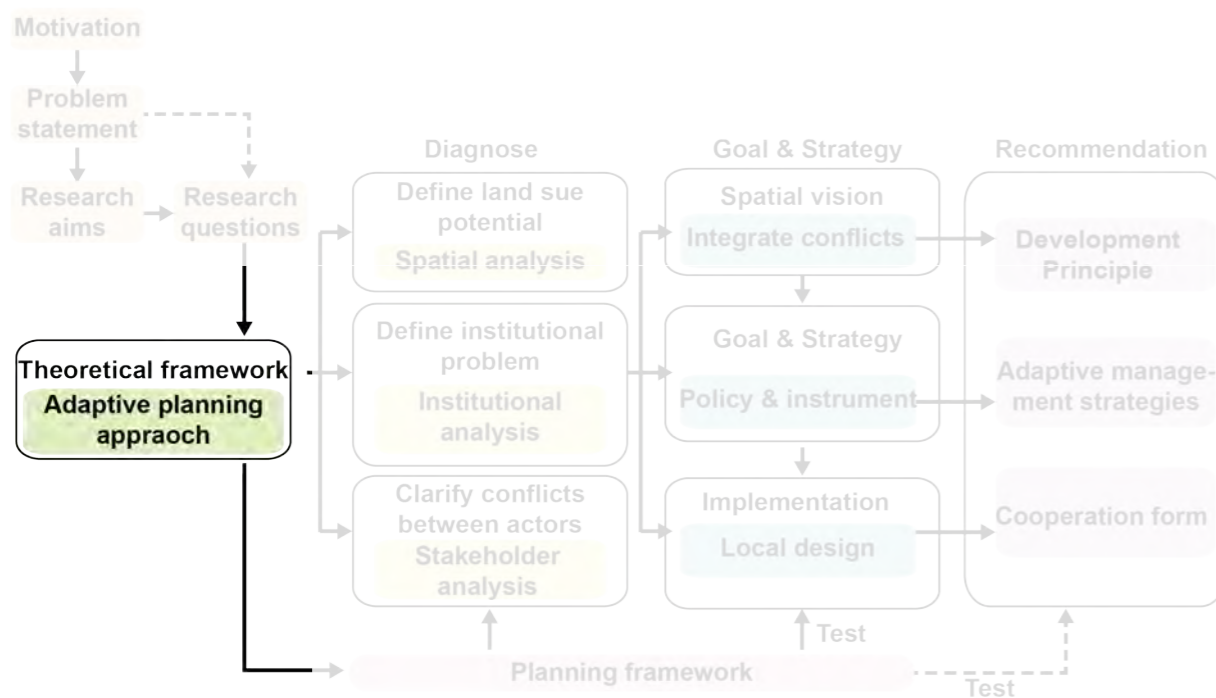
Northeast Coast area is classified as scenically sensitive area in the draft National land use planning law. The cultural landscape sensitive area identify scheme shows bellow is used for understand the formation of physical environment. In order to define the environment quality, the landscape and land use change pattern, the relation between human activities with natural environment. The conclusion of landscape analysis will be a set of landscape typology in Northeast Coast area, which is the data for the test in scenario practice. The following diagram show the landscape analysis method and approach.

5.3 Stakeholder analysis

In order to understand the demand of different stakeholders, stakeholder approach was introduced and has been used in the creation of Taijian National Park in Taiwan. This case remarked that the policy makers started to allow the local government to make independent decisions in the creation process of Taijian National Park. The Stakeholder approach helps the research to interpret the interests, conflicts or complementary relationship between stakeholders the creation process of Taijian National Park in Taiwan (Hsu & Lin, 2013). The important book in strategic management, "Strategic Management: A Stakeholder Approach," edited by W. Edward Freeman in 1984, define stakeholders as "any group or individual who can affect or is affected by the achievement of the organization objectives" (Bryson,2003; Hsu et al., 2013).

In my research, stakeholder analysis will be divided into public sector analysis and private sector analysis. First, policy and report evaluation will help me understand the relationship (conflicts and opportunities) between public sectors. Second, questionnaire and news interview will help me understand the public preference and response to propose policy. The stakeholder analysis will indicate conflicts and opportunities of value and imagination for future development. In this case, the conclusion of stakeholder analysis will contribute to scenarios creation.

Part B. Theoretical framework



I. Main concepts

This page provides an overview of definitions and explanations of the main terms used throughout this thesis, in order to provide a clear understanding of the meaning in the context of this graduation project. How and why adaptive planning approach related to this study

1. Adaptive approach is a concept to achieve robust and flexible spatial system

The regional spatial systems have to be adaptive. They must be flexible and robust. Flexibility make them capable of changing in response to processes at various scale levels when this is necessary or desirable; this termed co-evolution (Garnsey & McGlade, 2006). The increasing multi-functionality of the landscape is a reaction to rising prosperity and leisure time, the waning economic vitality of traditional agriculture, and the quest for new bases for the socioeconomic situation of the countryside. As a result, spatial concept should be developed as a strategy to link the local initiative of local government, business and residents

2. Generic and specific policies (GESP) as planning strategy

Generic and specific policies as an administrative perspective (De Roo, 2004; Hartman et al., 2011) demonstrate how spectral and integral policies can

relate to one another fruitfully. Planning according to GESP assumes that planning issues require custom-made solutions and manifest themselves at appropriate institution level. This means that a regional issue arises as a consequence of situation-specific circumstances (Hartman et al., 2011).

3. Satoyama and Satoumi initiative for sustainable use and management of landscapes

Gongliao has not designated as Globally Important Agricultural Heritage Systems (GIAHS). However, the Environmental Ethics Foundation of Taiwan and Forestry Bureau of Agriculture Council launched Satoyama and Satoumi initiative spirits in Gongliao area. The aim of the Satoyama and Satoumi initiative focus on reflecting the collective strengths of this region, including biodiversity, spectacular scenery, traditional agricultural, forestry and fishing technologies, and farming-related cultural and religious festivals that have been locally nurtured and sustained through history. (http://www.ias.unu.edu/sub_page.aspx?catID=35&ddlID=2577) The uniqueness of the collective landscape elements with agricultural and fishery industry was highly associated with these landscapes.

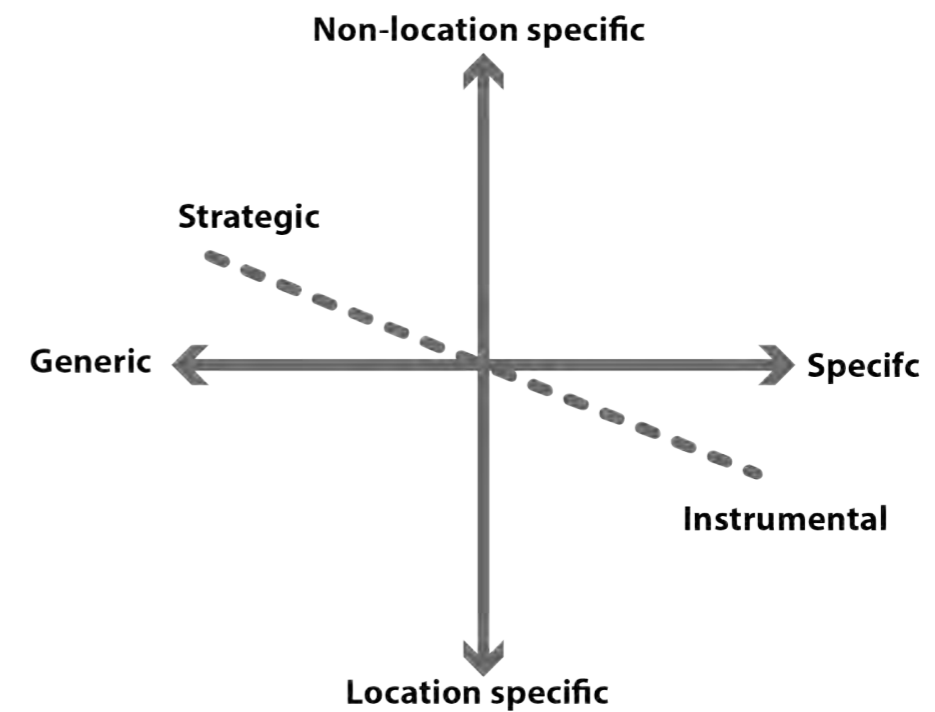


Figure 2.1 Framework for inventory existing visions for the region

Source: *Regions in transition- Design ing for adaptivity, 2001*

II. A review of adaptive planning approach

1 The concept of adaptive approach in environmental planning
 Adaptive approach in environmental planning has been advocated not only by ecologists but also political scientists and land use planner (Briassoulis, 1989). Representing a mentality of prepared responsiveness (Holling, 1978), the adaptive approach consists of a series of successive and continuous **adaptation of human activities** to variable, over space and time, environmental and socioeconomic conditions (Briassoulis, 1989). Adaptive approach stresses the need for flexibility at each step of planning process to **allow for changes** in direction necessitated by changes in goals, revised future predictions, and **availability** of new evidence (Holling, 1978). Environmental planning becomes a **continuous process of adaptive learning** (Daneke, 1983), starting with plan (or policy) formulation, proceeding to implementation, and progressing with plan **evolution into the future** (Briassoulis, 1989). Although the landscape and environment change is not fully predictable, adaptive planning approach develops solutions to problems on the basis of predictable future events. Wollenberg et al. advanced the adaptive management approach by seeking responsive framework to local demands and to facilitate collaboration among **multiple stakeholders** in the buffer zone of Indonesia Ranomafana National Park. In addition, the study addressed how scenario methods can be used to enable managers to understand landscape better, and improve adaptive action not only by responding to change, but also by anticipating them. (Wollenberg et al., 2000).

2 The method of adaptive approach in diagnosis regional quality
 This study apply adaptive approach mentioned in book *Regions in Transition-Designing for adaptivity* (2011), which explains how three regions in the Netherlands integrate developing and preserving conflict by grasping opportunities. In the Netherlands, Southwest Netherlands, BrabantStad, and Eastern Netherlands are good examples of an adaptive approach in regional spatial development concept. The distinction between administrative planning and developmental planning is abandoned. The emphasis is now on opportunities for both development and quality (Hartman, Rauws, Beeftink, & de Roo, 2011). The quality of taking account of changes so as to make the most of opportunities and avert danger is "adaptive capacity" (Hartman, Rauws, Beeftink, & de Roo, 2011) In order to disclose opportunities, it is important to know how actors in the region think about the region's future structure. That is the "regional narrative": what local innovations area desirable and have potential, what developments are undesirable, and what are the impediments and unresolved issues?
 3 The similarity and difference
 Adaptive approach provides a practical way to evaluate the conflicting value of the spatial concept. However, it does not illustrate the method to evaluate related actors. As a result, stakeholder analysis method will be added up in my research, which can contribute to an insight of conflicting interrelations
 4 The advantage and restriction of adaptive approach in this research
 In this study, monitoring of plan cannot be conducted.

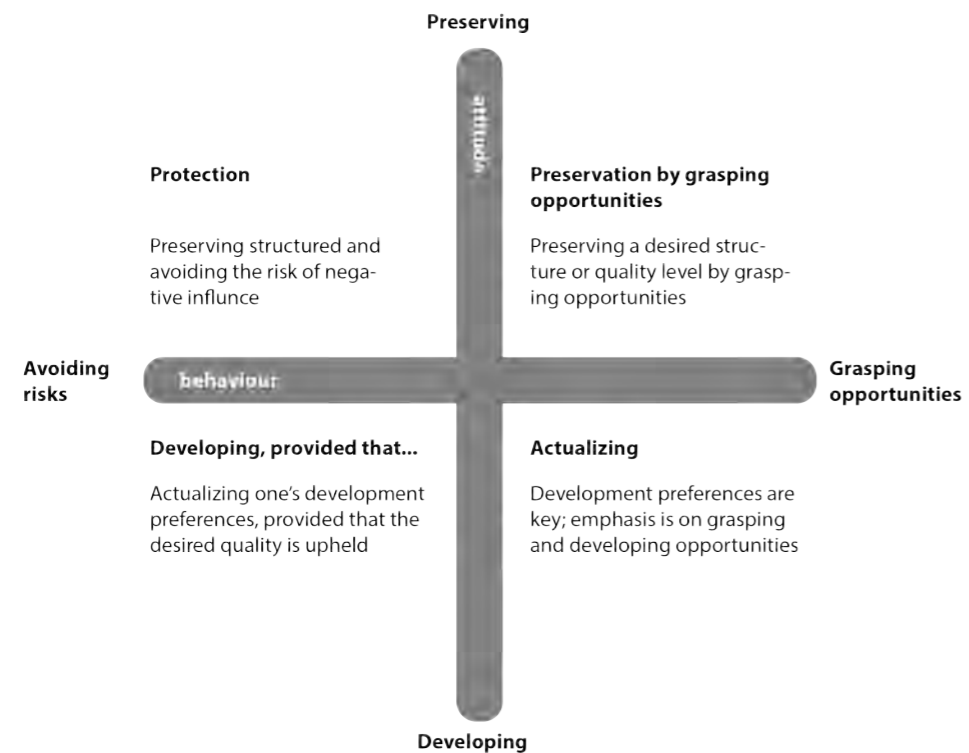


Figure 2.2 Unifying perspective for spatial development and associated conditions
 Source: *Regions in transition- Design ing for adaptivity,2001*

III. A review of Satoyama Satoumi



Figure 2.3 Concept and characteristics of satoyama (mountain village)

Source: *Japan Satoyama Satoumi Assessment,2011*

1 The concept of Satoyama and Satoumi Initiative (JSSA)

The Japan Satoyama Satoumi Assessment (JSSA) is the study of the interaction between humans and terrestrial-aquatic ecosystems (satoyama), and marine-coastal ecosystems (satoumi) in Japan. The main goal of providing scientifically credible and policy-relevant information on the significance of ecosystem services provided by satoyama and satoumi landscapes and their contributions to economic and human development for the use of policy makers. The primary characteristics of these landscapes are:
 1.1 Satoyama is a mosaic of both terrestrial and aquatic ecosystems comprised of woodlands, plantation, grasslands, farmlands, pasture, irrigation ponds and canals, with an emphasis on the terrestrial ecosystems.
 1.2 Satoumi is a mosaic of both terrestrial and aquatic ecosystems comprised of seashore, rocky shore, tidal flats, coral reefs, and seaweed/grass beds, with an emphasis on the aquatic ecosystems.
 1.3 Satoyama and Satoumi landscapes are managed with a mix of traditional knowledge and modern science (reflective of the socio-ecological contexts). There has been a rapid decline in both types of landscapes in the last half century. This has been brought

about by the convergence of trends, some endemic to Japan, others global in origins (United Nations University, 2010). Taiwan is one of a region in economic development trends with rapid urbanization areas resulting in a physical loss of Satoyama landscape as woodlands became converted to other uses (e.g. housing, golf courses), and in the degradation of the landscape with the decline in a rural population base. With fewer rural dwellers, there are fewer people available to make use of as well as manage Satoyama landscapes. This becomes apparent in Satoyama that returns to a state of nature, characterized by unchecked growth in flora and fauna formerly held in balance by Satoyama forest and wildlife management techniques. (United Nations University, 2010)

2. How Satoyama and Satoumi Initiative related to this research

This designation represents the high value and international importance associated with these landscapes, which needs to be passed on to future generations through dynamic conservation efforts. However, local communities face challenges to continuously manage these landscapes due to various factors including a rapidly aging population, depopulation, and abandonment of cultivation practices. In



Figure 2.4 Concept and characteristics of satoumi (fishery village)

Source: Japan Satoyama Satoumi Assessment, 2011

addition, the massive tourism developments and invasion of big scale hotel investments have threatened the harmonious relations between landscape quality and environmental protection, and local industry balance. This crisis of locally-adapted management practices in Satoyama and Satoumi landscapes can be considered as a demise of the “commons”. The spatial development strategy in Gongliao needs to find innovative pathways towards sustainable use and management of these landscapes.

3. The important value of Satoyama Initiative reflected in design principle

The United Nations Conference on Sustainable Development (Rio+20) in Rio de Janeiro introduced key points were highlighted in Satoyama Initiative:

3.1. Mosaic Composition

The critical feature of satoyama and satoumi landscapes is the mosaic composition of different ecosystem types that are managed by humans to produce a variety of ecosystem services benefiting human well-being.

3.2 Drop in Resiliency

Satoyama and satoumi landscapes have undergone the significant decline over the last 50 years, resulting in a drop in the resiliency of the coupled socio-eco-

logical production systems to provide a sustainable supply of ecosystem services.

3.3 Consequences for Humans and Biodiversity

Continued loss of satoyama and satoumi landscapes has important and potentially negative consequences for human well-being and biodiversity. There is, however, still a need for more research on satoyama and satoumi and the contribution they might have in the future for human well-being.

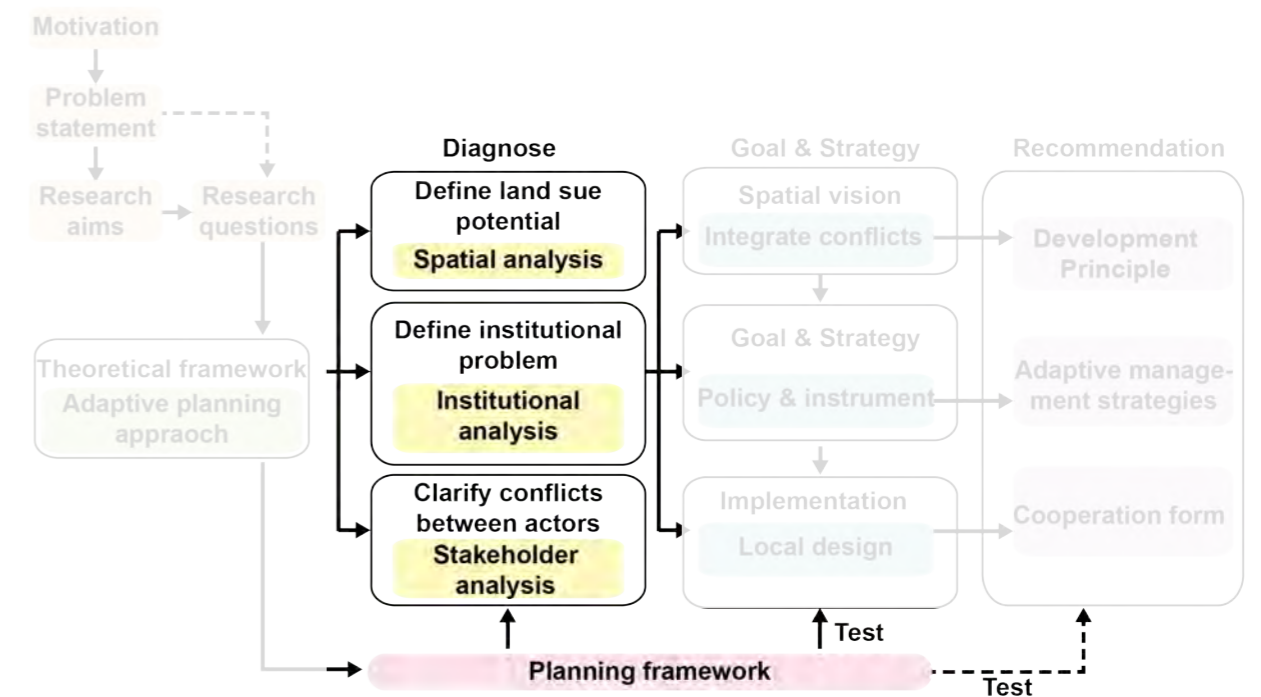
3.4 Integrated Intervention

Integrated approaches, including citizen participation, have been implemented increasingly over the past 10 years and show potential for reducing biodiversity loss and maintaining sustainable flows of ecosystem services.

3.5 New “Commons”

Critical to the success of a more integrated and holistic approaches to ecosystem management is a creation of a new “commons”, understood both as a system of co-management of ecosystem services and biodiversity within private and public land, and as a single system to produce a bundle of ecosystem services for direct and indirect use by society.

Part D. Diagnosis



I. Institutional analysis

1. Planning hierarchy and system

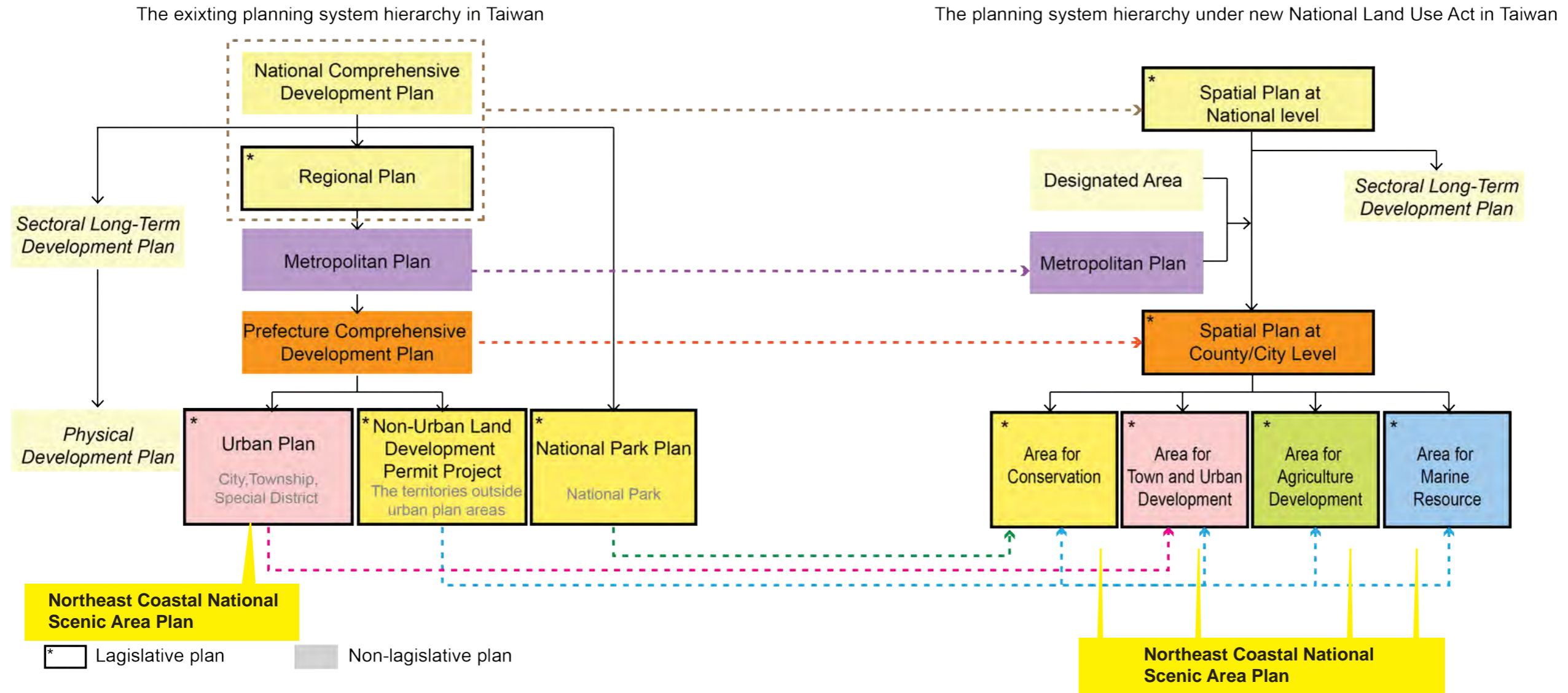


Figure 3.1 Planning regime and system in the transition period.

Source: Current planning mechanisms in Taiwan, Chen et al.(2010)

The planning system in Taiwan is now in the transition period (see the figure above), this research will contribute to the understanding of how conservation area planning can be done under new national land use planning law.

A fundamental conflict in current planning system is that NCNSA master plan is special district plan under urban plan category. The main purpose of special district plan is to delineate certain area for special purpose such as economy and industrial development of resource protection. However, only 5 per cent of the total area is defined as urban settlement in NCNSA, the other areas should be categorized as conservation areas

The new draft National Land Use Planning Law (2010) requires that the whole country be divided into four zones: conservation areas, town and urban devel-

opment areas, agriculture development areas and marine resource areas. According to Huang study on National conservation area planning in Taiwan conservation areas need to be categorized into four types: ecological resources, scenic landscapes, water resources and natural hazards. Each of conservation area is then classified into two classes according to their resources characteristics, which combined into three classes of conservation areas for the entire Taiwan area. In this case, Northeast coastal national scenic area will be categorized both in 'conservation area' and 'town and urban development area'.

The future development and vision need to be define, especially the development capacity for tourism, industry (agriculture and fishery). The development vision need to response national land protection as well as local vision.

The main problem is the existing national spatial planning system cannot provide sufficient resolution to regulate the conflicting relationship between designated preservation areas and the local development. Although most stakeholders agree that the landscape and natural resource protection are necessary, the locals and the government take the opposite attitude to landscape and environment development. The strict regulations and complex actors make it more difficult to reach agreement in the decision making process. Therefore the new draft National Land Use Planning Law (2010) requires that the whole country be divided into four function areas instead of urban areas and non-urban areas. The four function areas include conservation areas, town and urban development areas, agriculture development areas and marine resource areas.

In order to adjust the integration of human activities in protection areas, the research will evaluate the existing environmental policy and strategy of natural protection area in Taiwan.

The complexity of landscape in Northeast coast area can be a good case to study how four function areas (the figure above) formulate future spatial concept under National Land Use Act framework.

2. Regional proposal and potential

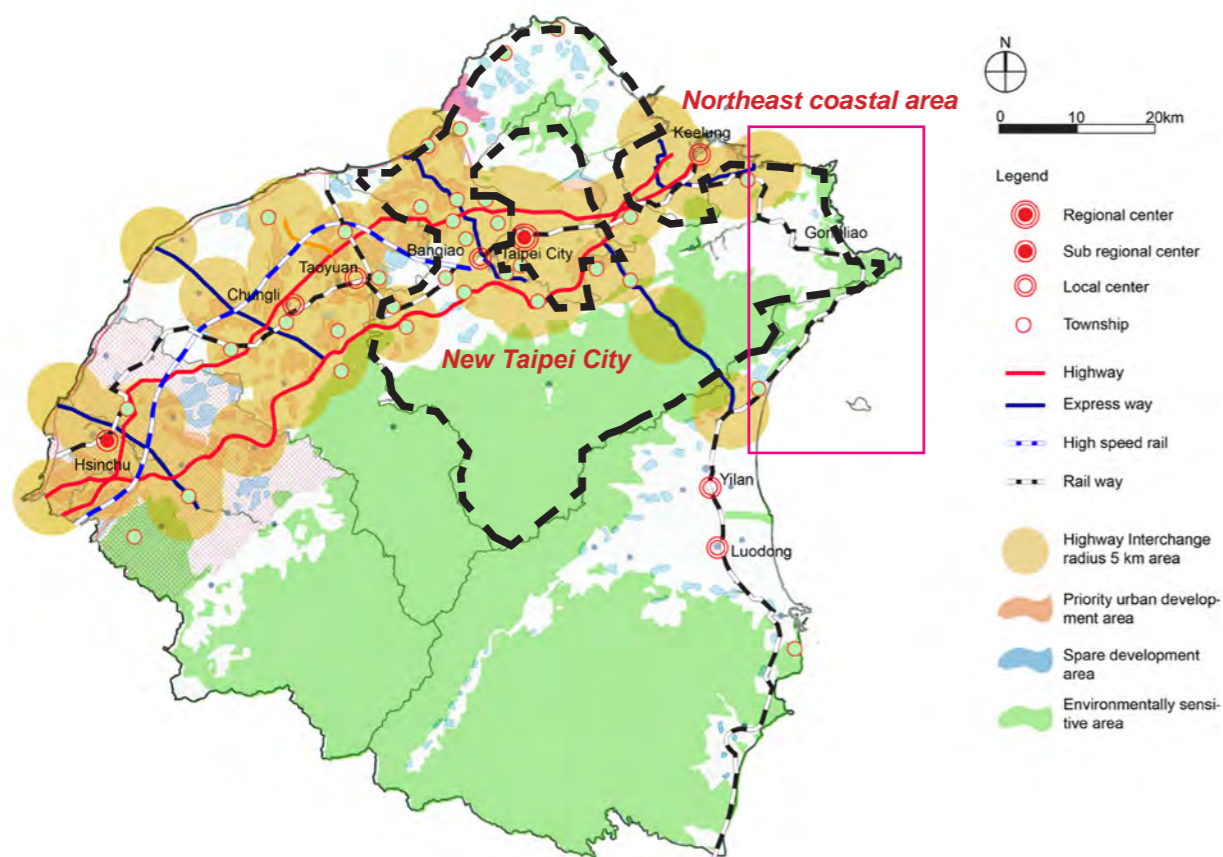


Figure 3.2 Northern Region spatial development vision in 2005

Source: Author's own elaboration based on Taiwan Northern Regional Plan (1995)

1.1 Existing proposals

In order to move toward a sustainable environment of Taipei Metropolitan, the overall object focus on implementing resource conservation and protection, enhancing industrial and economic development, and improving the quality of living environment. Four perspectives are highlighted:

- Strengthen balance between natural resources conservation and development.
- Maintain coastal landscape through ecological, social, and economic perspective with the combination of tourism and recreation function.
- Northeast National Scenic Area will be positioned as international conservation demonstration by the eco-tourism.
- Designated environmentally sensitive area and establish the adaptive ecological management standard, prevent natural resources from destroyed.

1.2 Problems and potential

In the existing planning system, the primary purpose of the delineation of ESAs in Taiwan at present is for the incorporation of resource conservation within the revision procedures of the four regional plans as required by the Regional Planning Act (Huang et al., 2006). Since the new draft National land use planning law (2010) has not passed by Legislative Yuan, regional plan is the highest level of statutory spatial

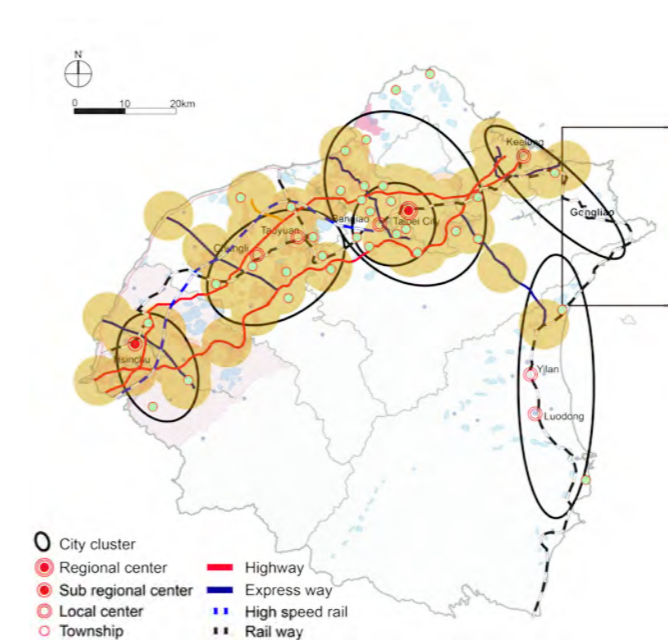
plan in Taiwan. In this case, regional plan is the basic guidance of urban and rural area development, as well as the protection of natural resource and landscape areas. Since the Northern regional plan (1992) emphasized the spatial development in urban areas, the vision and development pattern to urban-rural relationship need to be clarified.

Northeast Coastal National Scenic Area (NCNSA) provides the opportunity to develop and protect the quality of Taipei Metropolitan. NCNSA locates 40 km away to Taipei city, and ranked as 4th popular National Scenic area in Taiwan. National Scenic Area was originally set up for tourism function by Tourism Development Law, therefore, the opportunity to develop and protect the quality of Taipei Metropolitan should be considered in the Northern Regional development.

NCNSA can serve as regional park in Taipei Metropolitan, and can be used as a strategy for spatial development in terms of collaboration, integration, qualification of the landscape, regional action and network (Steffen,2006).In Northern Regional plan (1995) NCNSA is categorized as four types of environmentally sensitive areas (ESAs), and serves as buffer area between natural conservation area and urban areas (Huang et al., 2006).

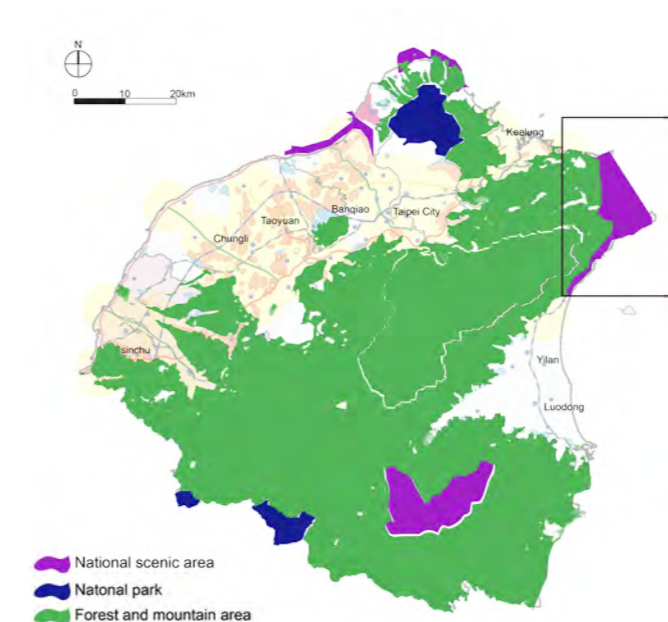
1.3 Diagnosis

A. Urban and town development area



The existing urban development and mobility system are mainly focus on west part of north region. The accessibility to Northeast coast area are relatively low.

Natural and cultural landscape conservation area

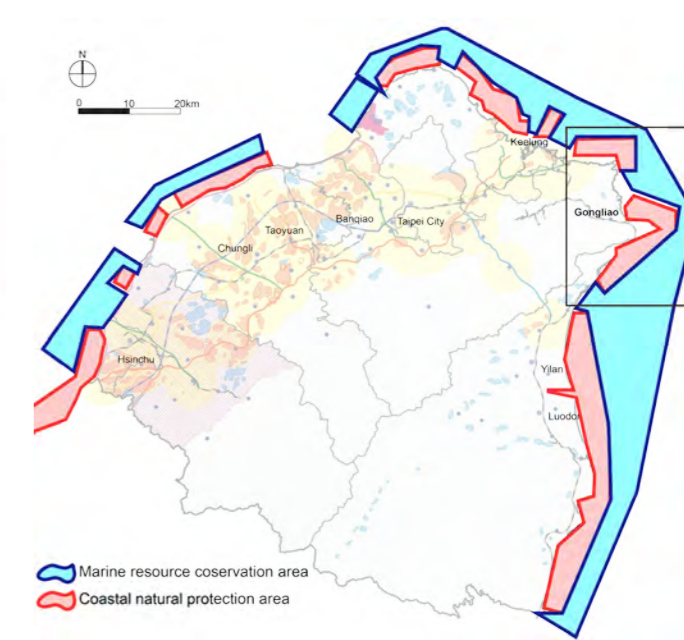


National scenic areas, national parks, and surrounding mountains serve as regional park in Taipei Metropolitan. The natural and cultural landscape can be defined as a strategy for spatial development in terms of collaboration, integration, qualification of the landscape.

Figure 3.3 Diagnose of regional spatial proposal

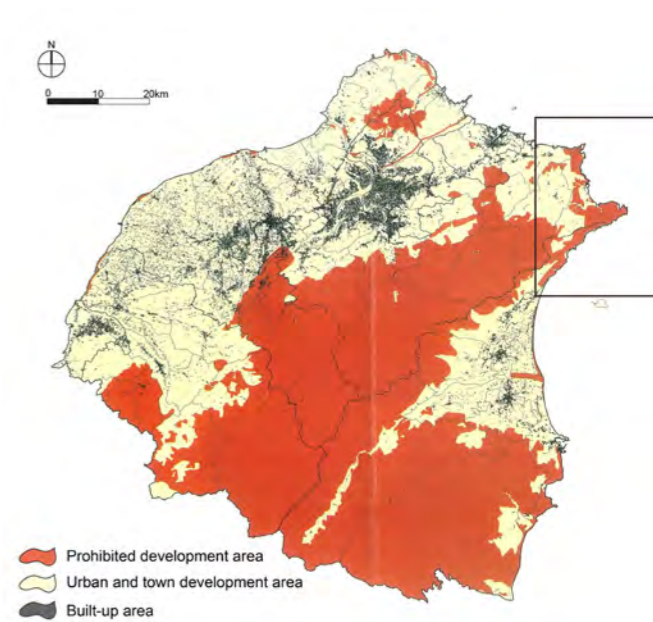
Source: All the figures are author's own elaboration based on Taiwan Northern Regional Plan (1995)

B. Coastal natural conservation area



In order to protect the coastal geographic landscape uniqueness and coral reef ecosystem for sustainable development along coastal area, Natural protection area and Marine resources conservation area are designated.

Restrict development area



Mountain areas and slopeland are restricted for development. In general, these areas are categorized as four types of environmentally sensitive areas (ESAs), and serves as buffer area between natural conservation area and urban areas (Huang et al., 2006).

3. Municipal proposal, problem and potential

3.1 The designation of environmentally sensitive area (ESA)

Under the supervision of the Council for Economic Planning and Development of the Taiwan government, the Ministry of Interior completed studies of delineation of ESAs completed in the Northern and Southern regions, Central region, and Eastern region in 1992, 1996 and 1997 respectively (Huang, Jen, & Hung, 2006). The primary studies of the delineation of ESAs are seemed as the strategy basis of natural resource protection in national-level, regional level and local level. Moreover, the delineation of ESAs response to the study of natural protection areas defined in the Natural environment preservation plan in Taiwan (1984). In NCNSA, four categories of ESAs are defined: Ecologically sensitive area (national forests, wetlands, coastal zone conservation areas and natural preservation areas); Cultural and landscape sensitive area (scenic areas); Resource production sensitive area (forest and prime agricultural land); Natural hazard sensitive areas: flood prone areas and geologically hazardous areas (Kuo & Huang, 2010). Development in these areas is either prohibited or subject to strict regulation by different types of laws and regulations. (Huang et al., 2006)

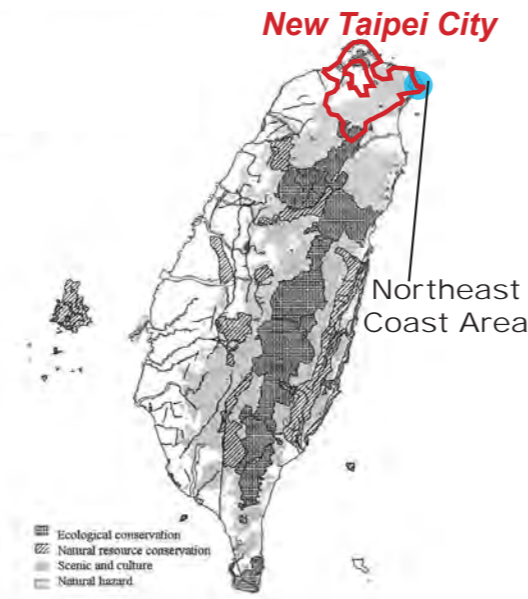
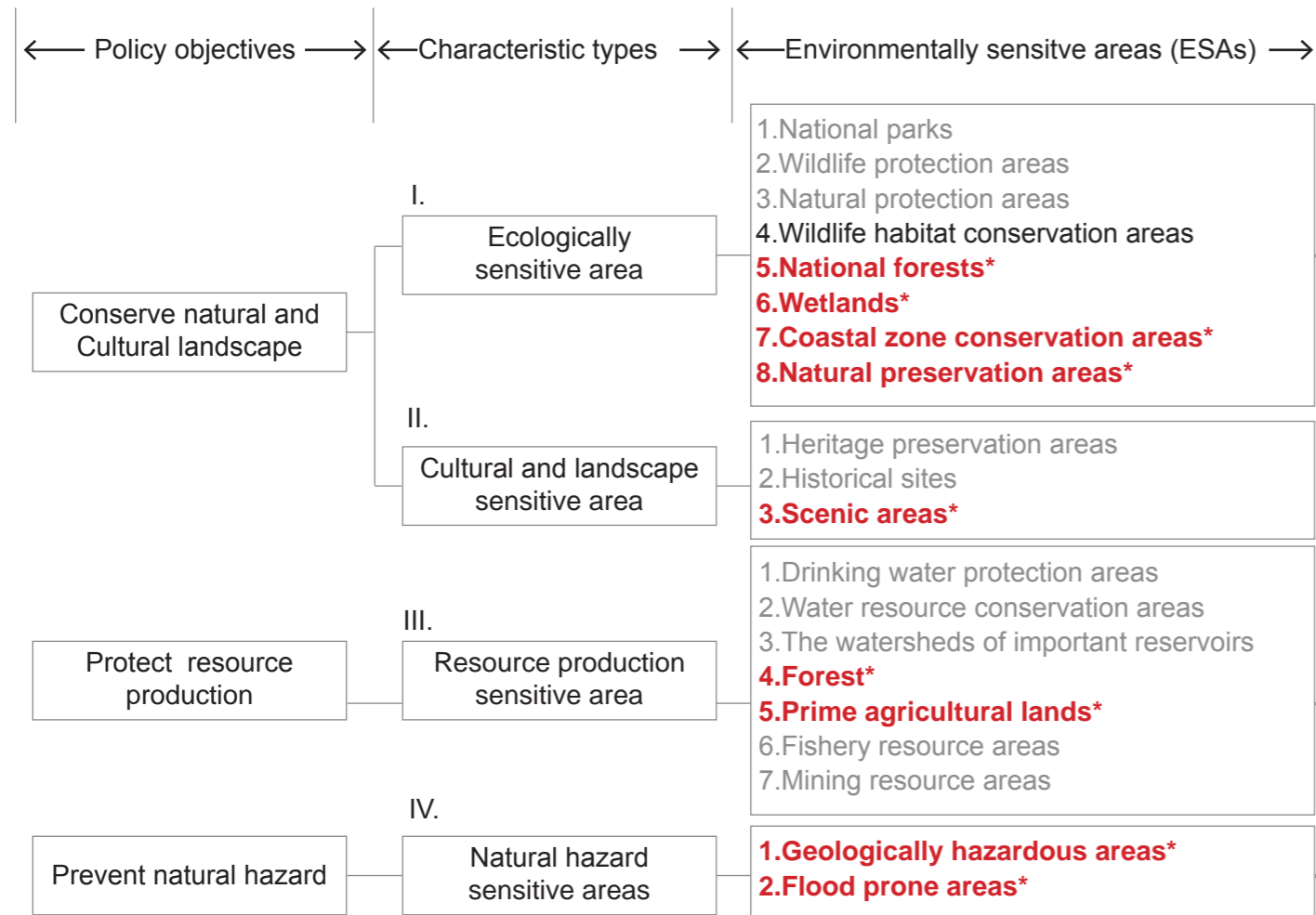


Figure 3.4 Conservation areas distribution in Taiwan

Source: National Conservation Area Planning and Disaster Prevention Space Planning (CPAMI, 1984; Huang et al., 2006).



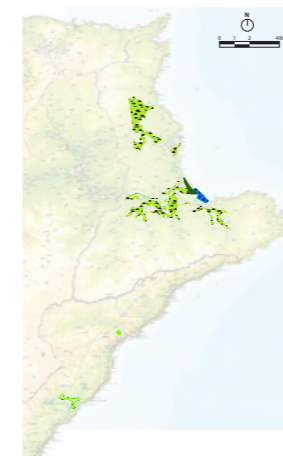
Note: *ESAs located inside the territory of NCNSA

Source: Northern and Southern Regional Plan (CPAMI, 1995)

I.5 National forest



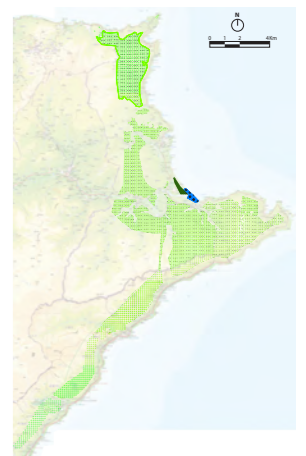
I.6 Wetlands



I.7 Coastal zone



I.8 Natural conservation areas



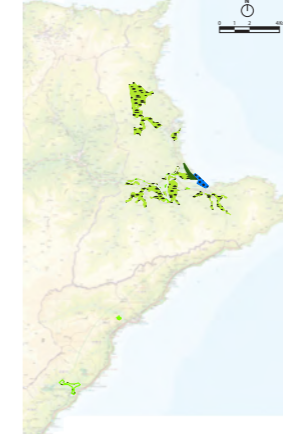
II.3 Scenic areas



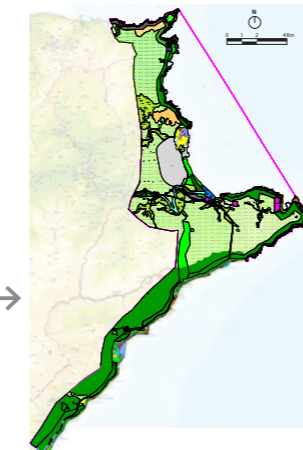
III.4 Forest



III.5 Primary agricultural lands



IV.1 Geologically hazardous areas



IV.2 Flood prone areas

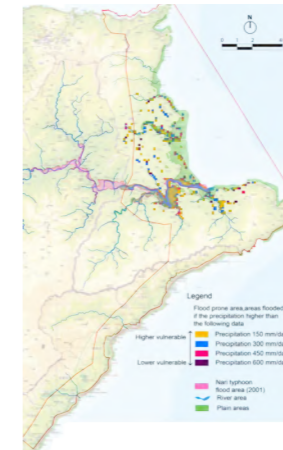


Figure 3.5 Sets of figure represent the environmentally sensitive areas in Northeast Coast National Scenic Area

Source: Draw by author

3.2 Northeast Coast National Scenic Area Master Plan

Northeast National Scenic Area master plan is the main spatial development plan in Northeast coast area. The land use map accommodate main purpose of preserving natural environment. Local employment and economy development in Gongliao are highly related to its environment quality. The implementation

and land use distribution in NCNSA master plan third overall review draft report (2010) seems provide very few opportunity to integrate development opportunity and environment quality into the planning framework.

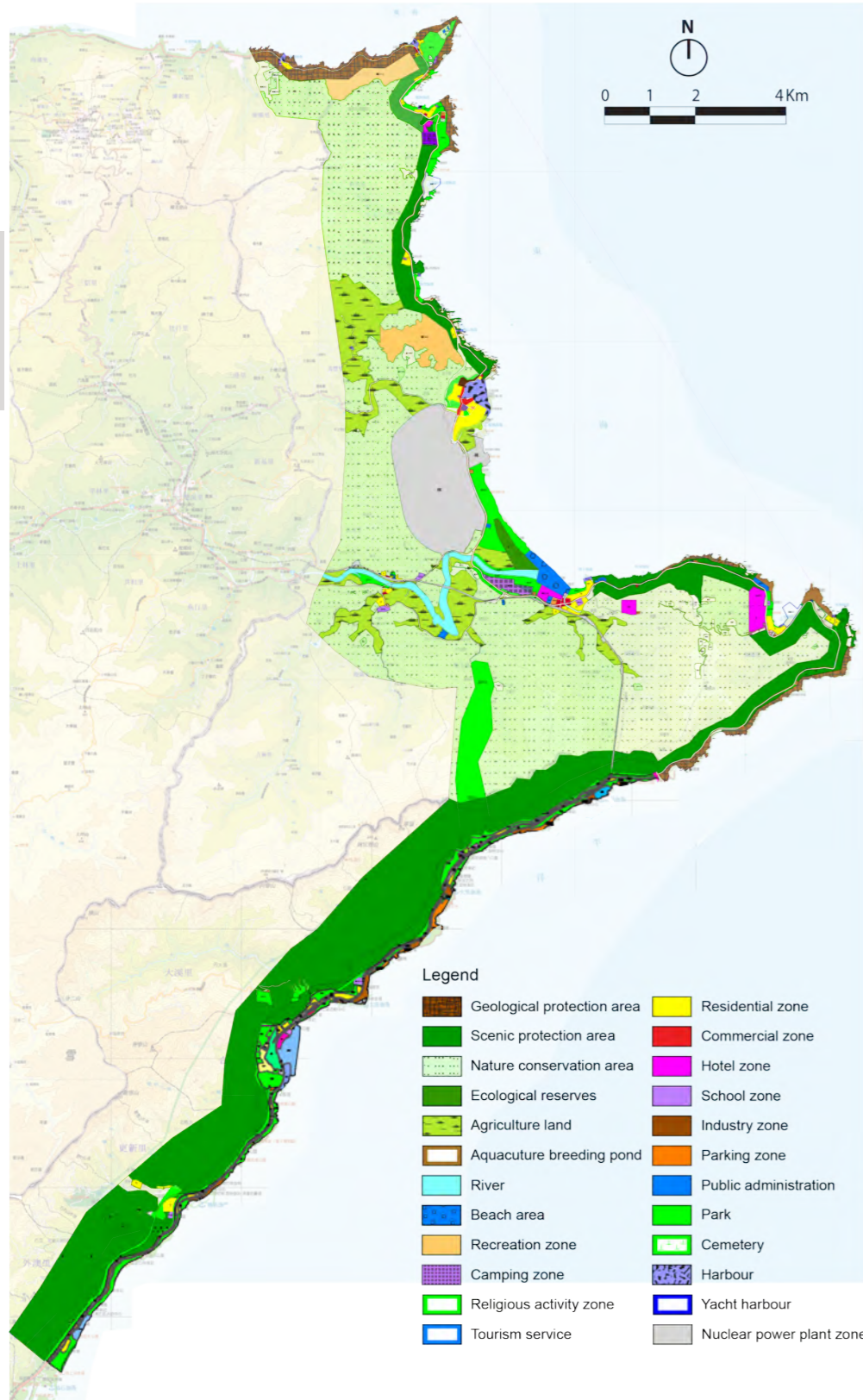


Figure 3.6 Northeastern Coastal Scenic Area Master Plan Land Use map (2010)

Source : Construction and Planning Agency, Ministry of Interior, 2010

3.3 Land use regulation and enforcement

In order to protect natural resource and landscape from development, the master plan uses different regulatory enforcement of land use regulation.

As a result, the natural environment and landscape are well maintained in scenic conservation zone, ecological protection zone, geological protection zone,

water resource protection zone, marine resource conservation zone, the land use regulation is robust and lack of flexible for local development. Agriculture and dwelling are main demand of the area. Very few recreational and tourism development project locate at coastal area (Fulong beach).

Table 1. Northeast Coast National Scenic Area master plan and land use regulation

| Regulatory Intensity | Land use | New construction | Renovation / Reconstruction / Expansion |
|------------------------------|---|----------------------|--|
| Highly restricted Regulation | Ecological Protection Zone, Geological Protection Zone, Water Resource Protection Zone, Marine Resource Protection Zone | | X |
| Middle restricted regulation | Scenic protection zone | X | H<7m Note* BA<125m ² |
| Normal restricted regulation | Natural conservation zone, Slope-land | X | H<10.5m Note* BA<165m ² |
| Low restricted regulation | Residential zone | BCR: 0.5 FAR: 1 | |
| | Commercial zone | BCR: 0.6 FAR: 2.4 | |
| | Hotel zone | BCR: 0.4 FAR: 3.2 | |

H: Building height

A: Site area

BA: Building area

BCR: Building coverage ratio = Building area / Site area

FAR: Floor area ratio = Gross floor area / Site area

Source: Source: Northeastern Coastal Special Scenic Area Plan third comprehensive review (2010)

Note:* The constructions need to be reviewed and approved under competent authorities for national defence and security, public facilities purpose.

3.4 New proposal and decision making process

A. Third comprehensive review of NCNSA master plan

In order to deal with social and land use demand and accommodate increasing tourism development, the third comprehensive review of NCNSA master plan intended to change land use layout for hotel and recreational developers. More than 100 hectares natural conservation land was proposed to change land use into Hotel zone and recreational zone (see figure). As a result, the locals concerned the massive change of land use proposed may threaten the landforms and landscape quality.

B. Civilian Economic Improvement Plan

In addition, the Civilian Economic Improvement Plan (2011) proposed to change 200 hectares agricultural land into residential zone, commercial zone and hotel zone. The change of land use has significant meaning for future development, most of the agriculture land plan was not aware of the general vision of Gongliao, the land use change only reflect the developer's demand but not capable to deal with the local needs.

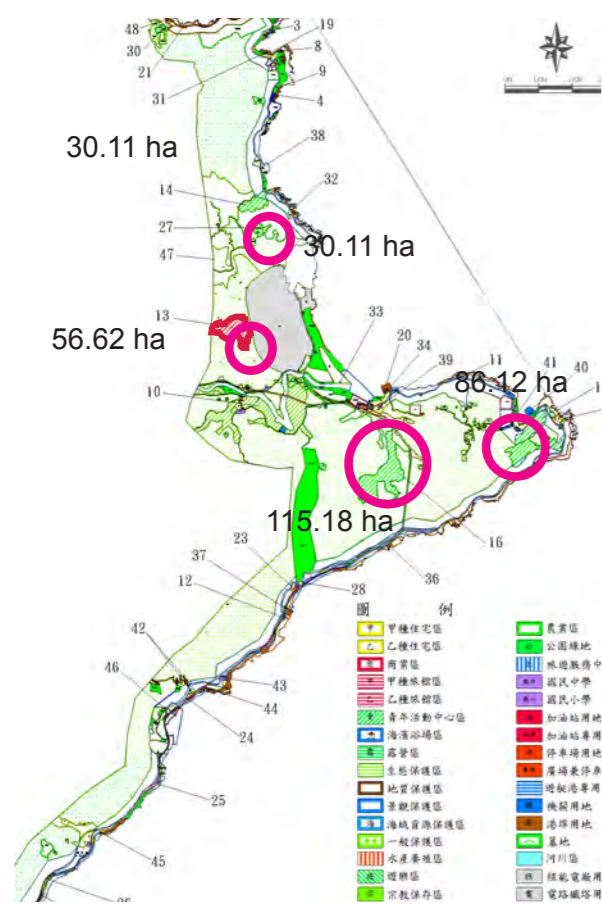
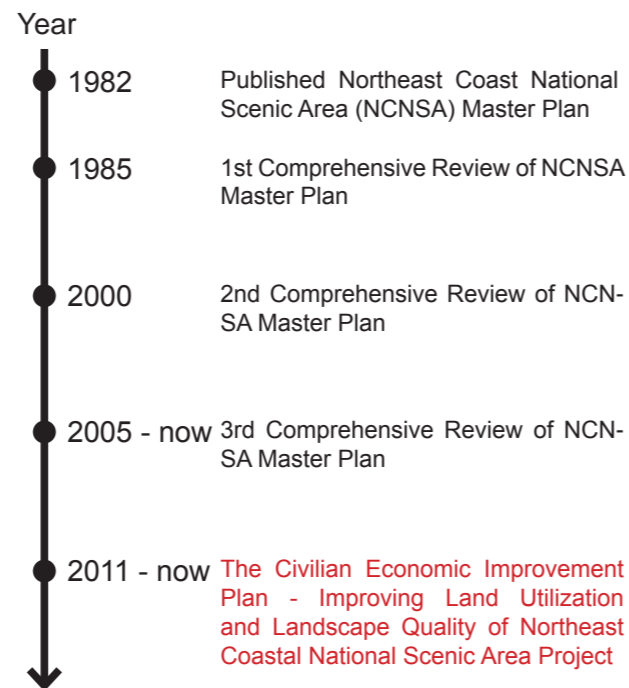


Figure 3.7 Change zoning plan in 3rd comprehensive review of Northeast coast national scenic area master plan
Source: CPAMI,2010



Figure 3.8 Draft expropriation project of Civilian Economic Improvement Plan(2011)
Source: CPAMI,2011

Source: CPAMI,2010

Source: CPAMI,2011

C. Plan making process and decision making process

The planning making process includes three phases: proposal phase, collaboration phase, and approval phase. In the proposal phase, the local meeting sometimes become policy announcement instead of a real conversation between plan maker and stakeholders. The planning agency plays main leading actor for the spatial planning and development direction. The case in Northeast coast area is that the change of land use, enforcement condition, development instrument has already decided before publish of draft

plan (collaboration phase). As a result, local people got confused about how future development vision was made, and how plan make understand the local demand. In the other words, the decision making process is not always transparent enough for all stakeholder. The opportunity for stakeholders to choose and decide the future development is missing in current planning framework. This is the common conflicts in other spatial project in Taiwan.

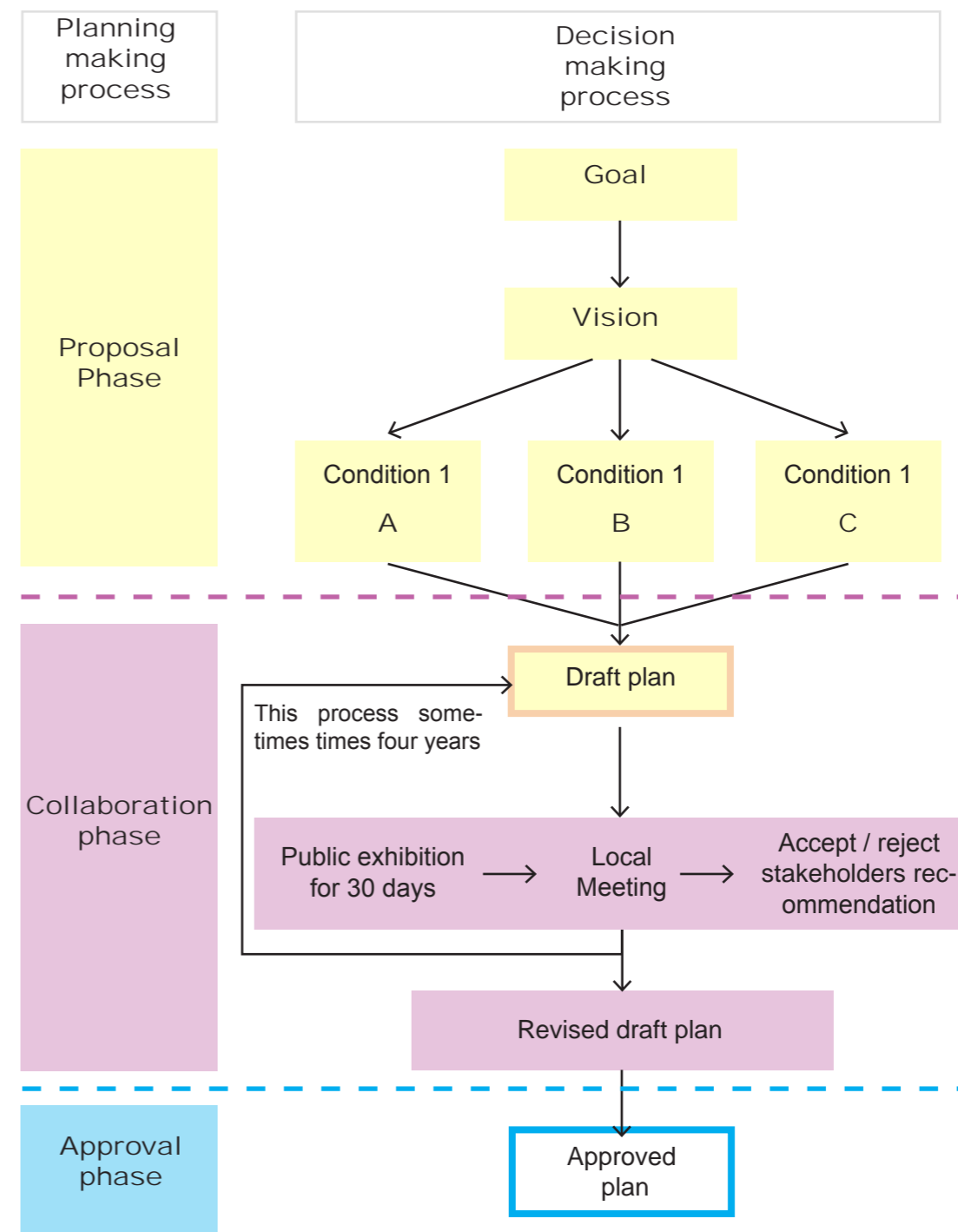


Figure 3.9 Plan making process and decision making process in 3rd Comprehensive Review of NCNSA Master Plan and Civilian Economic Improvement Plan
Source: Author's own elaboration based on the involvement experience of the project

Source: Author's own elaboration based on the involvement experience of the project

II. Stakeholder analysis

1. Stakeholder analysis in general

In order to moving from single stakeholder to multi-stakeholder frameworks, a stakeholder analysis is an important part of diagnosis of the problem and potential of conflicting value of target group.

This part used analytical matrices of stakeholders to discuss the problem and potential of northeast coastal national scenic area, to understand the competing interests, conflicts, compromises and interactions between those stakeholders. It helps to understand the actual needs of local stakeholders, the possible proposal of private investment. In addition, it allows for recognition of existing spatial organizations, responsibilities and goals of different stakeholder. Over the next few pages, firstly the general information is given on stakeholder analysis, which is applied to the context of this graduation project.

This research, stakeholder analysis will be divided into public government sector, local private sector, and non-local private sector.

There are currently nearly 15,800 residents, 1, 400 landowners around the Northeast national scenic area and additionally there are active community development groups, NGOs, and tourists, etc. (CPA-MI,2010). Consequentially the relationships between stakeholders are complicated.

This study first utilized observation and literature review to understand all systems, and then applied the classifications of "local," "non-local," "public sector" and "private sector" to identify stakeholders in the planning process of Northeast national scenic area and Civilian Economic Improvement Plan. Stakeholders were divided into four dimention: A - The first stakeholders (Empowerment), B - The secondary stakeholders (Alliance and partnerships), C - The third stakeholders (Properly inform and contact), and D - The fourth stakeholders (Poorly contact).

The study is based on official document review questionnaires and news interview. The stakeholder comments collected in the public display period for Northeast National Scenic Area master plan of third comprehensive review (2010), questionnaires survey from questionnaire of Civilian Economic Improvement Plan(2011) helps this research to understand the conflicts and opportunities between public government sector, local private sector, and non-local private sector. In addition, the analysis helps this research to understand the preference of stakeholders and the response to proposed policy.

Furthermore, the authors examined the combined findings from literature review and analysis, partici-

patory observation, and study of the key stakeholders comments and questionnaires, using two indicators of "Importance" (intensity of impact by the planning process of Civilian Economic Improvement Plan or the degree of influence on its planning process) and "Influence" (power to promote or obstruct the planning process of Civilian Economic Improvement Plan).

Through the cross sector meetings with public sectors, public presentations and discussions with residents, repeated assessment and comparison, the authors completed the stakeholder analysis as summarized in an importance/influence matrix

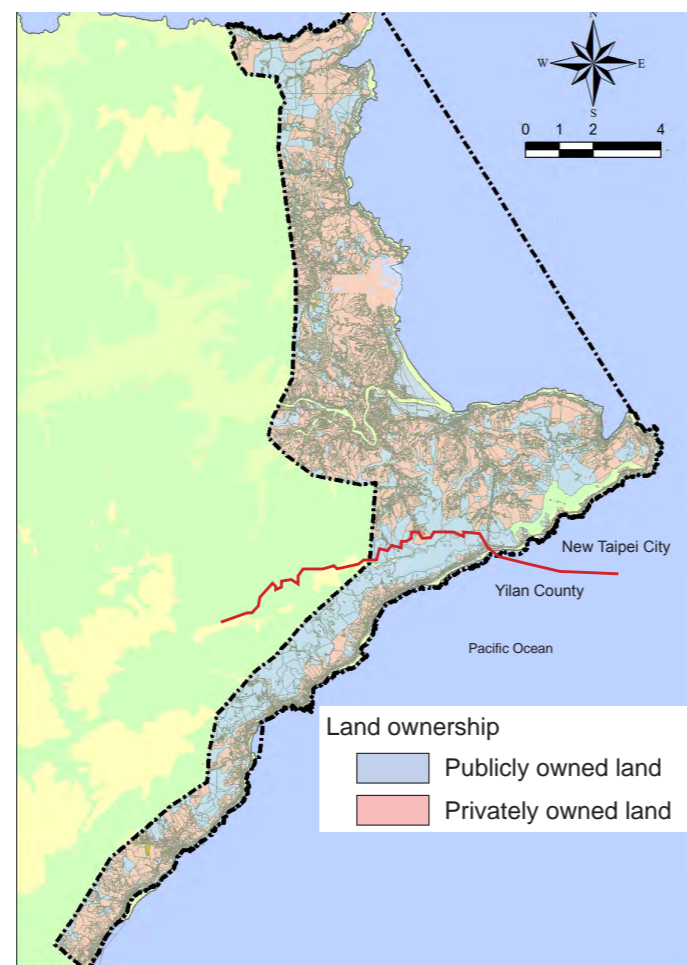
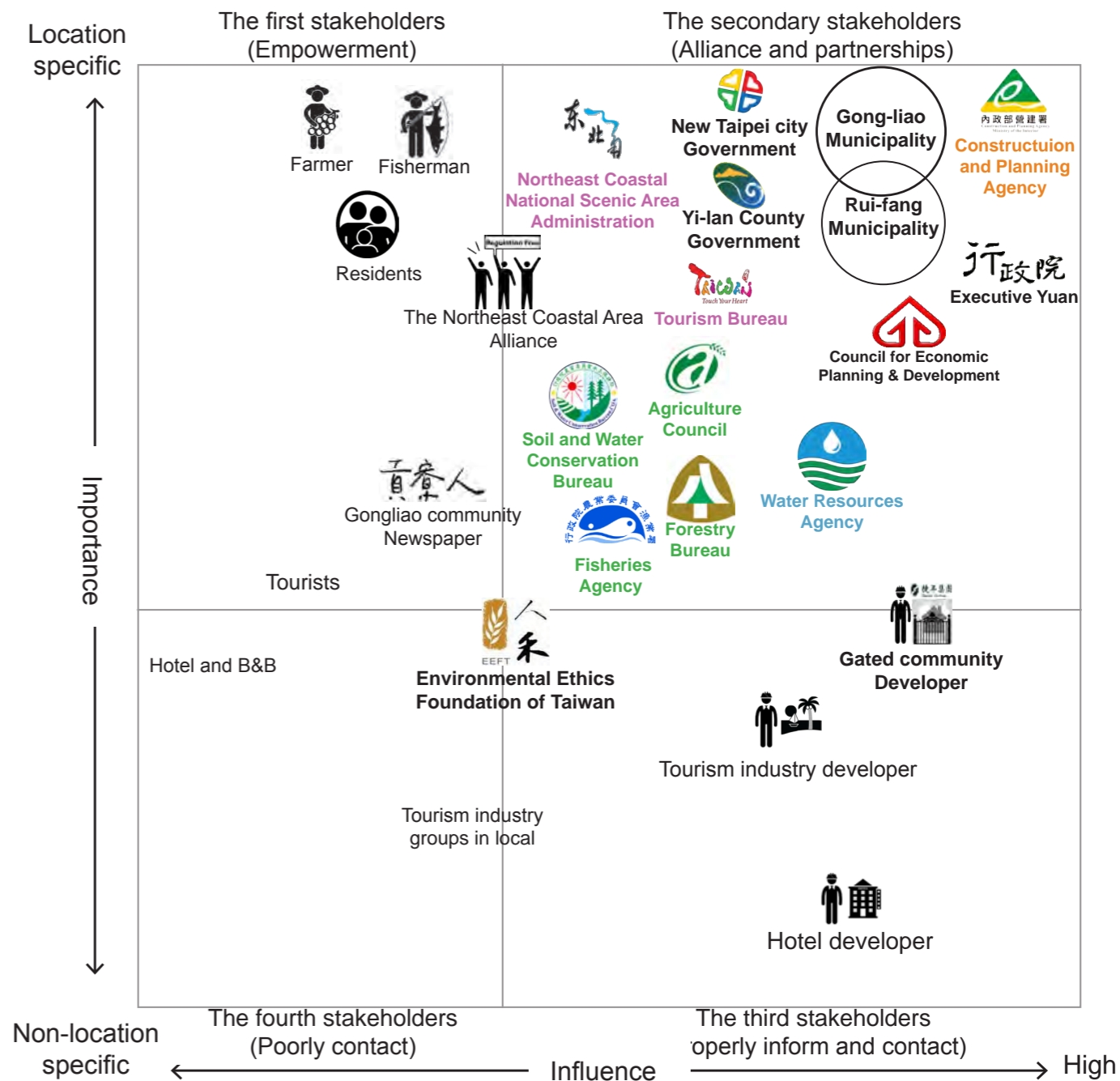


Figure 3.5 Land ownership in Taiwan

Source: Civilian Economic Improvement Plan(2011)

2. Stakeholder influence

Trough the staleholder matrix analysis, this research defines four types of stakeholders. Stakeholders were divided into four dimention: A - The first stakeholders (Empowerment), B - The secondary stakeholders (Alliance and partnerships), C - The third stakeholders (Properly inform and contact), and D - The fourth stakeholders (Poorly contact). Not all of them are well informed and involved during decision making process.



Note:

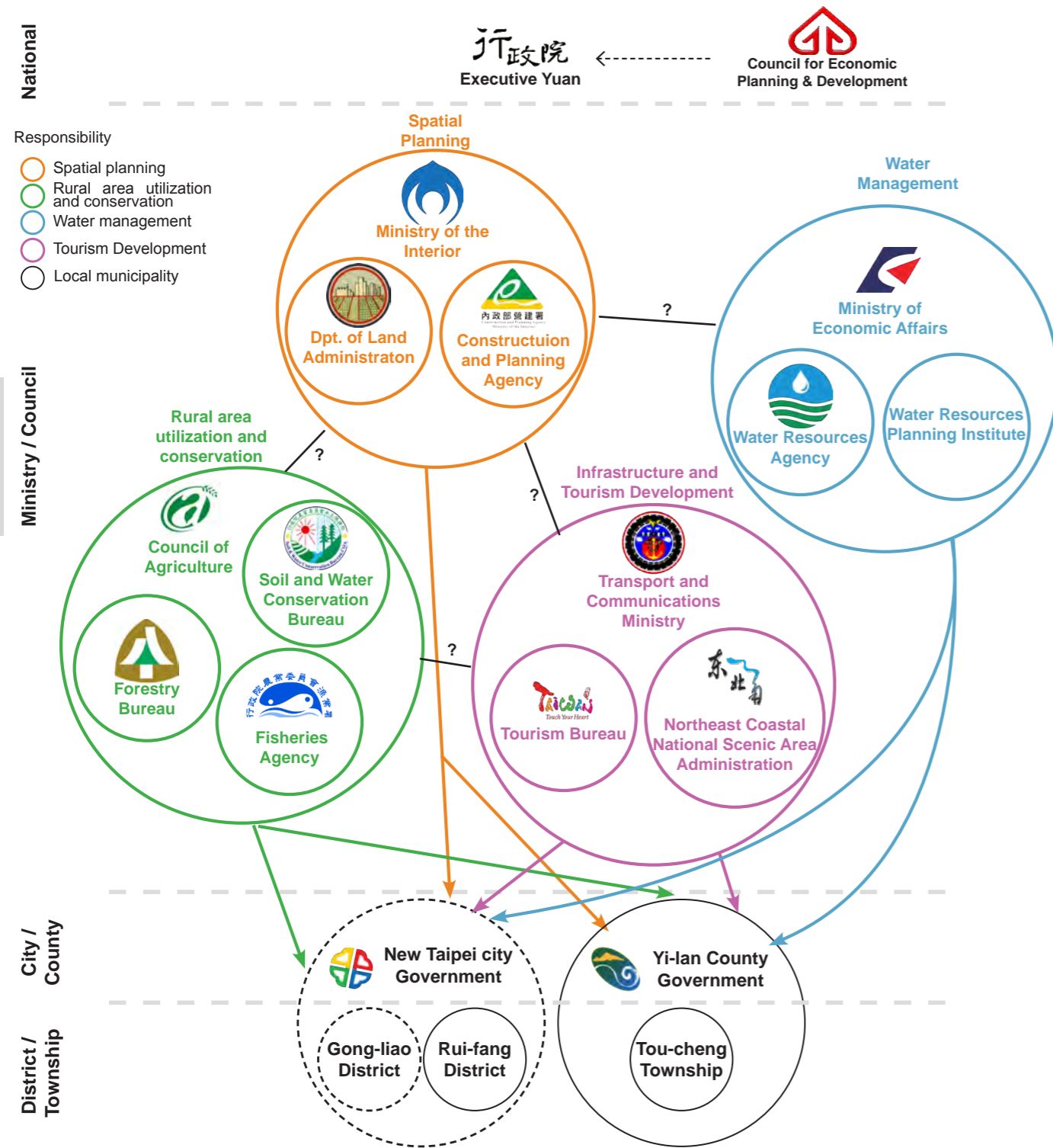
Tourism industry developer including Ginsa Gulf Limited, Ginyu Gulf Recreation Limited, and Koda Recreation Limited.

Hotel and gated community developer including Gene Group.

Local civic group including Gongliao Community Newspaper, The Northeast Coastal Area Alliance and Yanliao Anti Nuclear Power Association.

Non local NGOs include Environmental Ethics Foundation of Taiwan

3. Involving public sectors



3.1 Responsibility of public sectors

The responsibility of public sectors is shown in the diagram. The competent authority in central government level

A. Policy maker

Council for Economic Planning and Development (CEPD) is responsible for drafting overall plans and strategies. It also assessed development projects and proposals and programs submitted to the Executive Yuan.

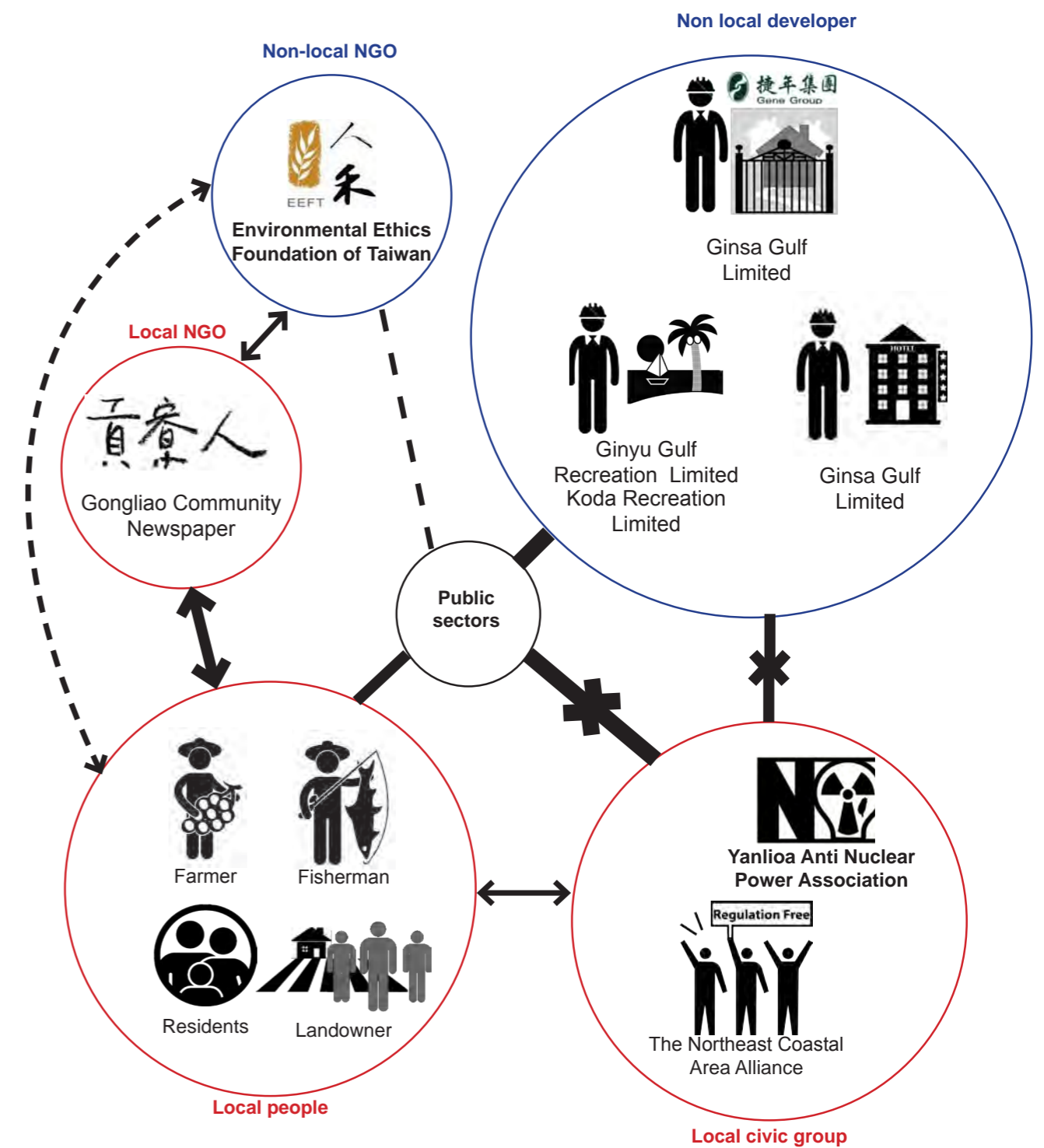
B. Spatial planning

Construction and Planning Agency, Ministry of the Interior (CPAMI) is the competent authority for the approval of regional plan, master plans, master and detailed plans, and special district plans.

C. Rural area utilization and conservation

Council of Agricultural (COA) is charged with overseeing affairs related to agriculture, forestry, fishery, soil and water conservation affairs. The Forestry Bureau, Fishery Agency, and Soil and water conservation Bureau are competent authorities in mountain, coastal and rural area development.

4 Involving private sectors



D. Water management

Water Resources Agency (WRA) is charged with review of administrative plans, the planning, implementation, and management of water resources and water hazard.

E. Tourism Development

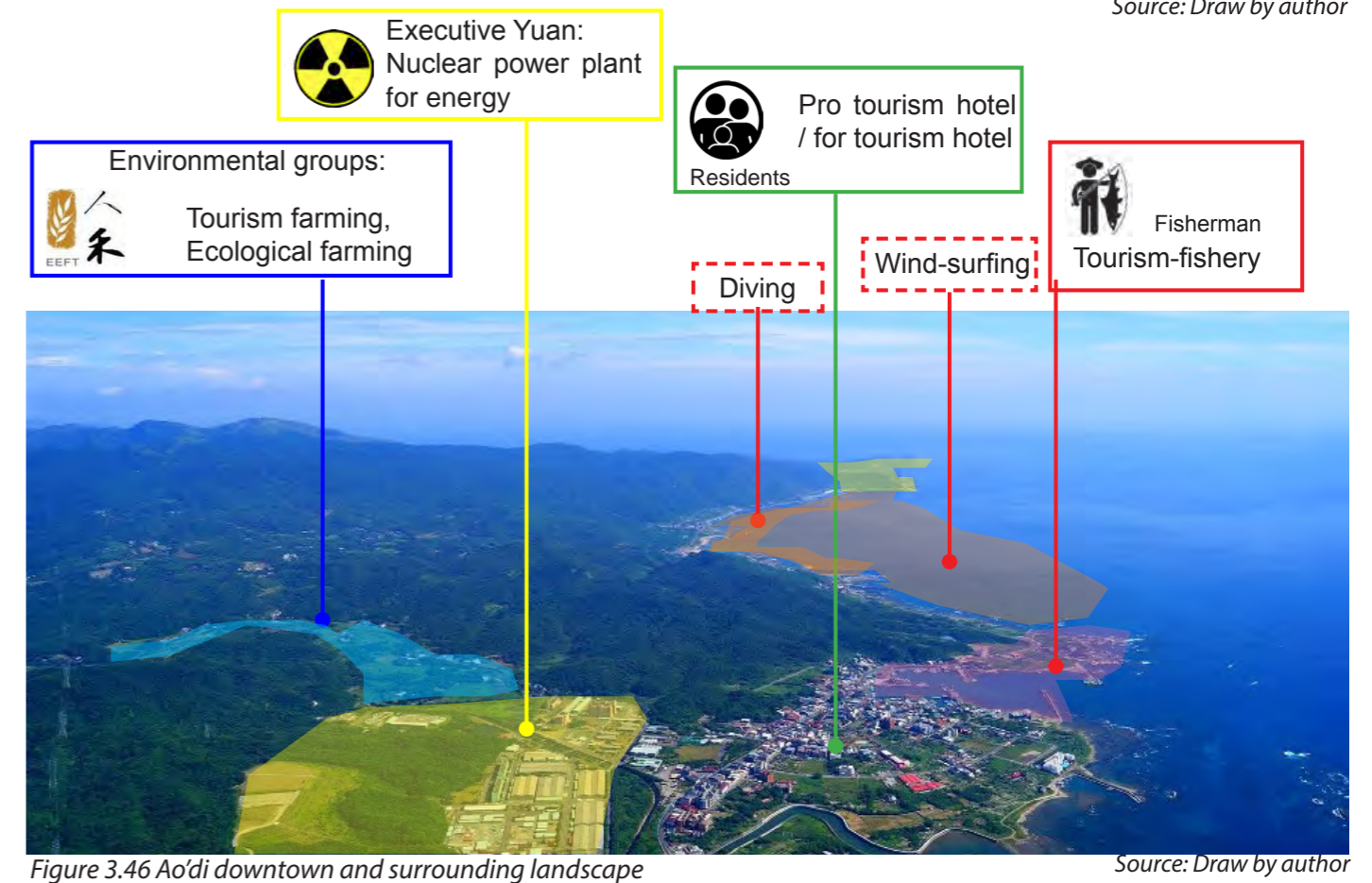
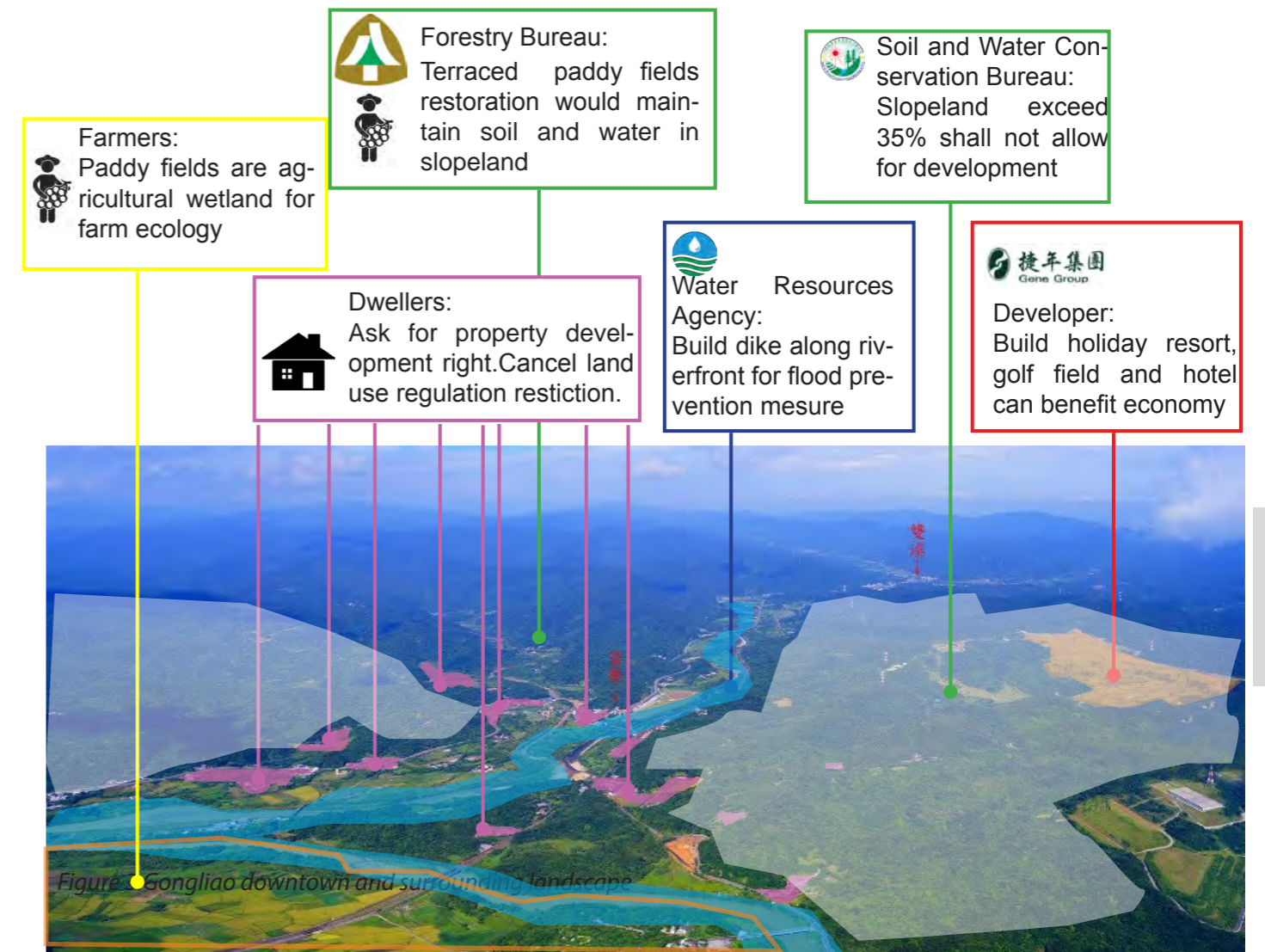
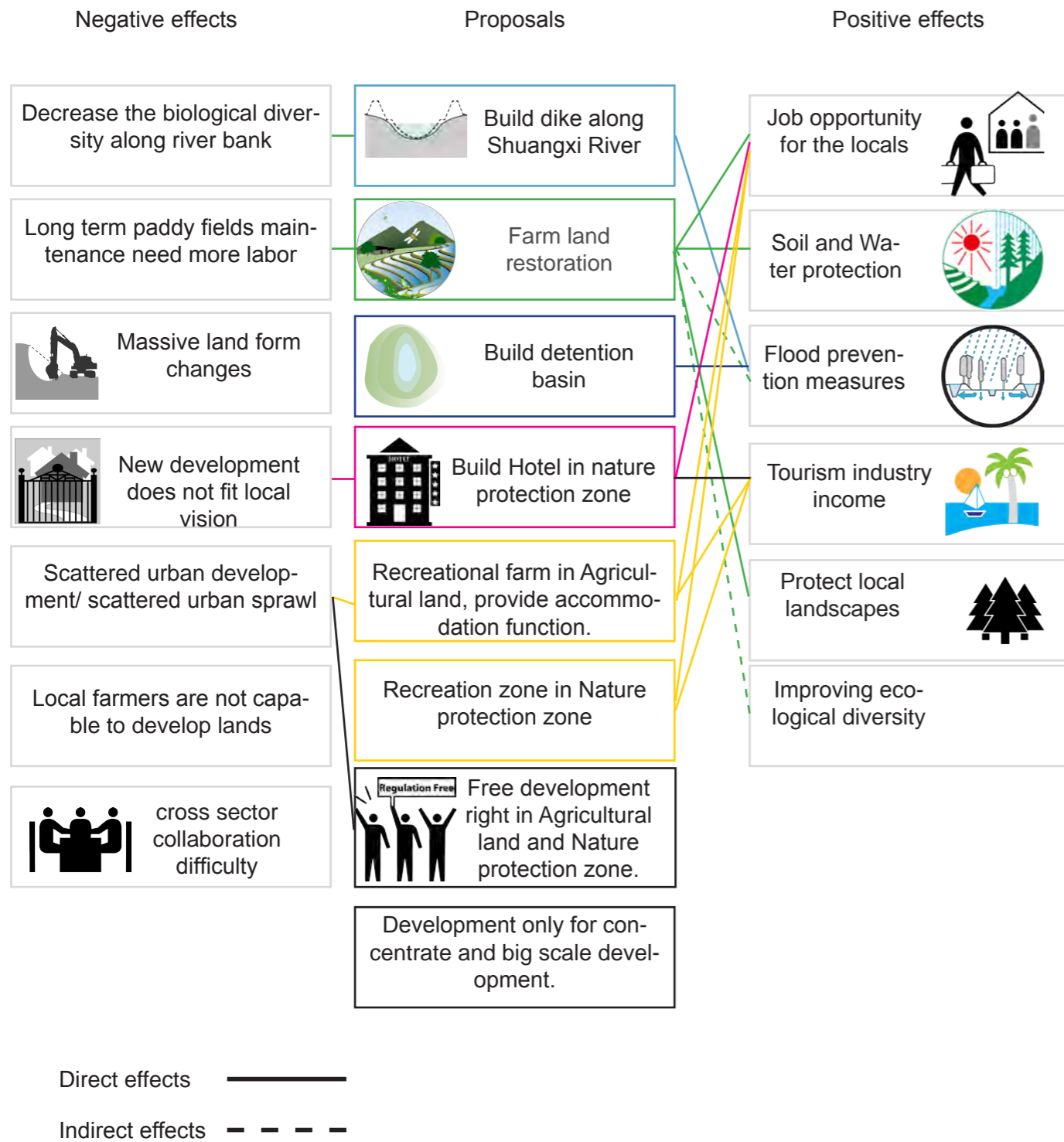
Tourism Bureau, Transport and Communications Ministry (TBMT) is charge with tourism and transportation development planning and management.

3.2 The problems in governance level

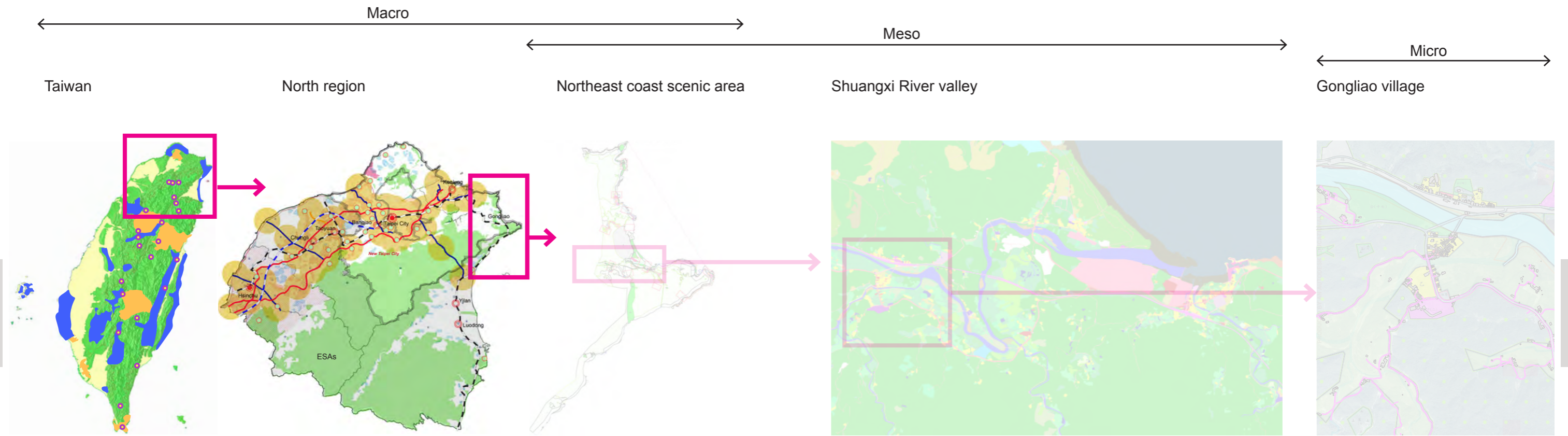
CPAMI is the key competent authority to accommodate proposals from national land conservation, water management, agricultural development, marine resource conservation and tourism development into spatial development. It means the implementation and review of spatial development plan should accommodate the contradicting issues among demanding land use and functions.

5. Conflicts matrix and spatial conflicts

How the locals feel about Northeast coast National Scenic Master plan in 2010, Civilian Economic Improvement Plan in 2011, terraced paddy fields restoration project in 2012?



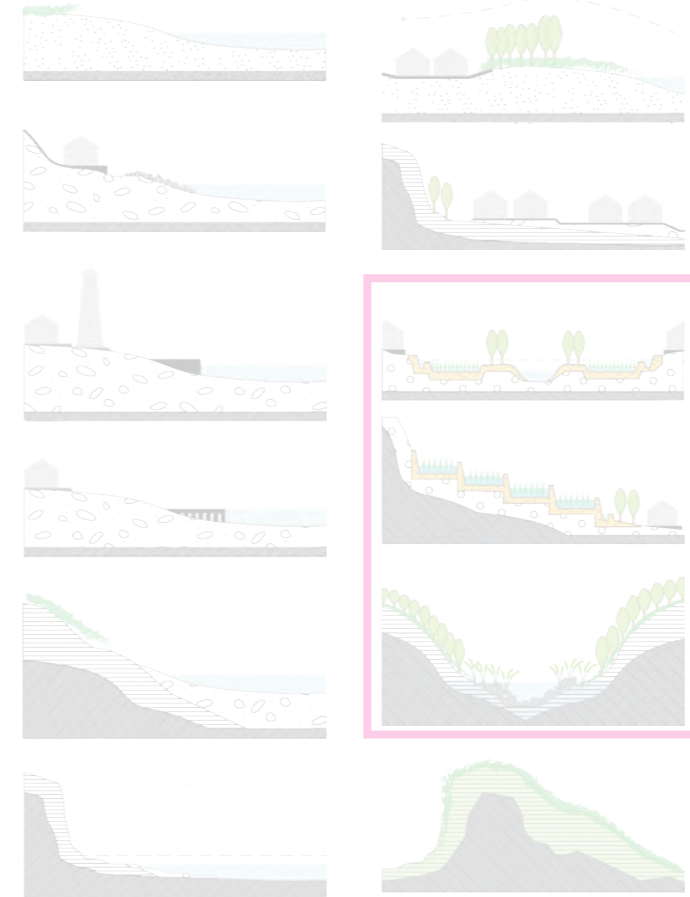
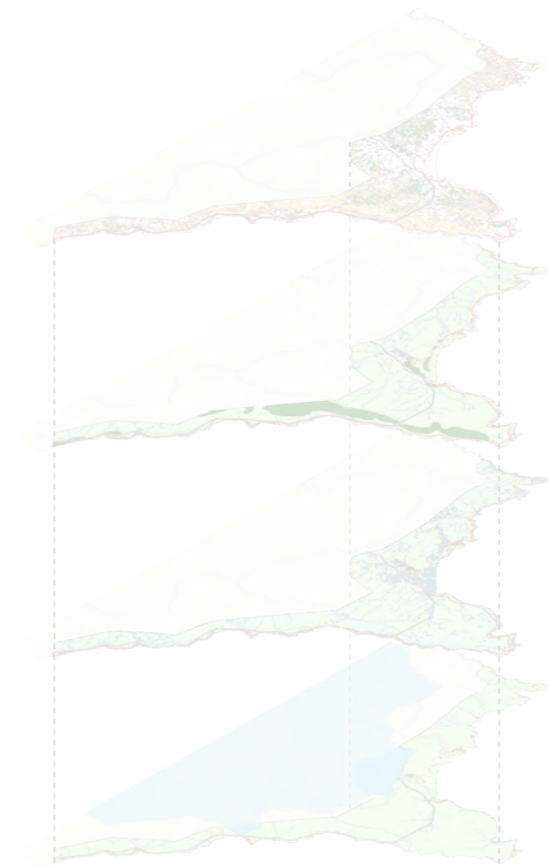
III. Spatial analysis



Context

The regional scale is analysed as being the context for the regional scale strategic proposal. Three main existing proposals on this scale are illustrated on the following pages:

The coastal Area natural environment protection plan proposal by Ministry of Interior for coastal natural resource conservation and biodiversity (Minister of Interior, 2010), and the Taiwan northern regional plan proposed by Construction and Planning Agency for implementing resource conservation and protection, enhancing industrial and economic development, and improving the quality of living environment (CPAMI, 2005). In addition, a series of more general analysis maps are shown.



1. Geography and topography

1.1 Geography

There are three major types of terrain in Northeast coast area, which are submergence coast, fault coast, and sandy coast.

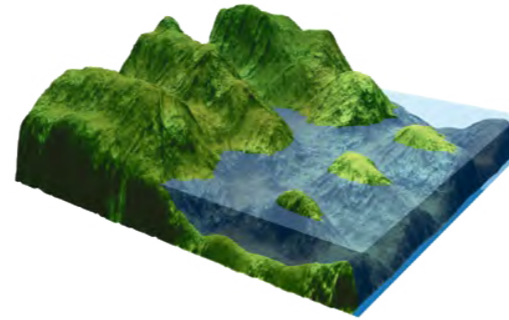


Figure 3.10 Distribution of coastal type

A. Submergence coast

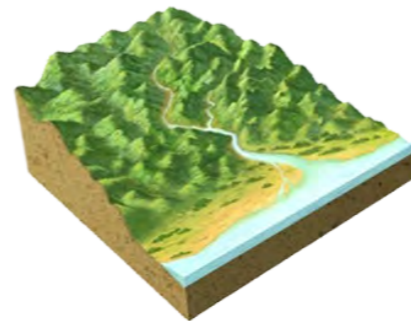
There are three major types of terrain in Northeast coast area.

The north of Sandiaojiao is mainly submergence coast, which is stretches along the coast that have been inundated by the sea due to a relative rise in sea levels. Because the coastline is vertical to the northeast monsoon, winds and waves erosion led to several bays and cliffs.



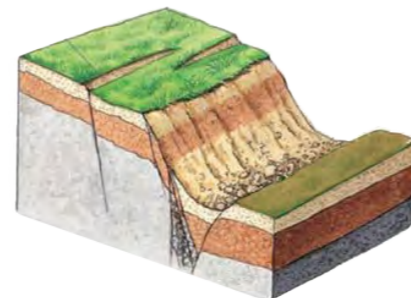
B. Sandy coast

From Ao'di to Fulong along with Shuangxi river delta, where is the location of major villages settlements, is sand and gravel coast.



C. Fault coast

The south of Sandiaojiao is mainly fault coast, which is a fault scarp separating a higher-standing earth block-which, after faulting, forms the land-from a lower-lying block-which, after faulting, is depressed below sea level. The northeast-southwest oriented geological structure parallels the coastline and the northeast monsoon. The coastline is relatively smooth because less destructive erosion formation. Wave-cut platform and gravel coast are common topography.



1.2 Topography

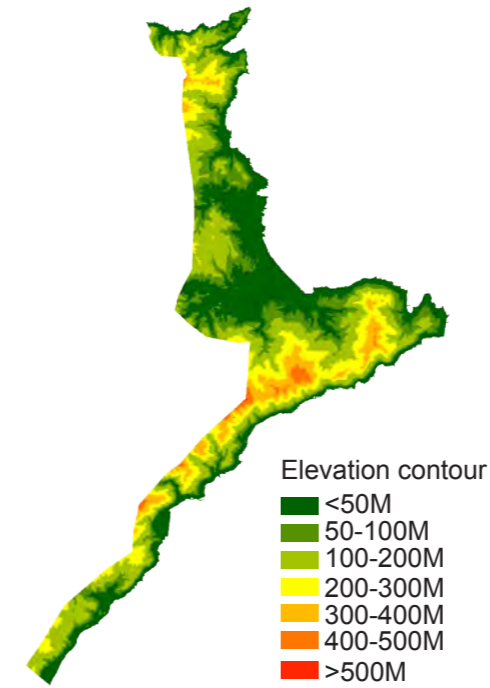


Figure 3.11 Elevation contour

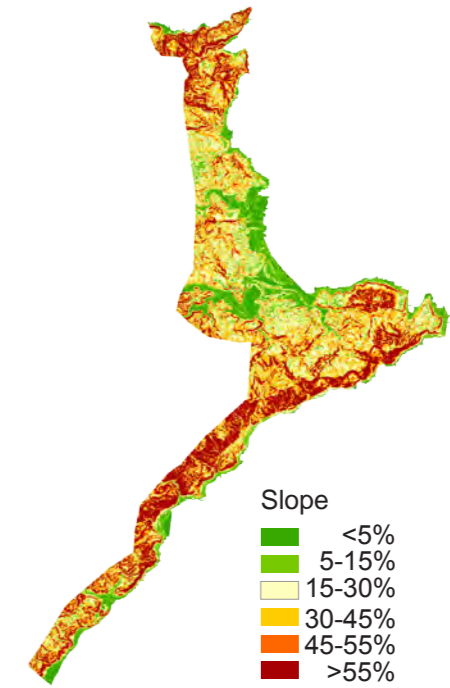


Figure 3.12 Slope

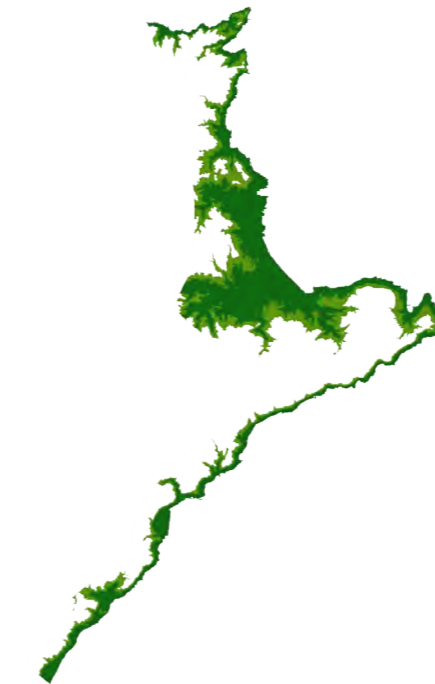


Figure 3.13 Elevation contour lower than 100M
Source: Author's own diagram.

| Elevation | Area(ha) | Percent (%) |
|-----------|----------|-------------|
| <50M | 2,967.86 | 32% |
| 50-100M | 1,751.75 | 19% |
| 100-200M | 2,523.27 | 27% |
| 200-300M | 1,301.94 | 14% |
| 300-400M | 575.66 | 6% |
| 400-500M | 108.28 | 1% |
| >500M | 2.08 | 0% |
| Sum | 9,230.84 | 100% |

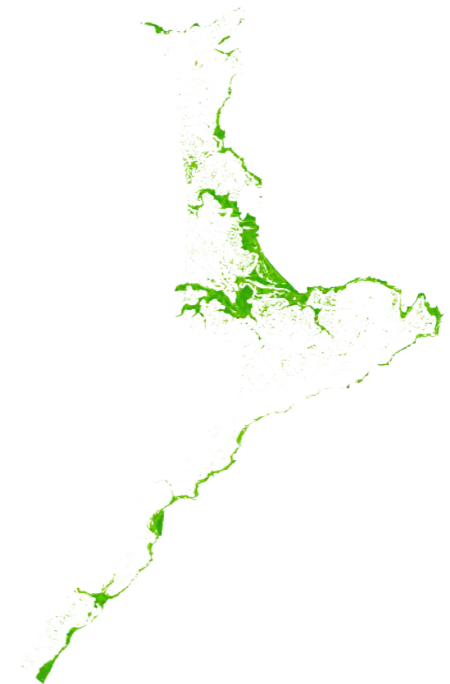


Figure 3.14 Less steep areas (Slope less than 15%)
Source: Author's own diagram.

| Slope | Area(ha) | Percent (%) |
|--------|----------|-------------|
| <5% | 832.97 | 9% |
| 5-15% | 1,238.25 | 13% |
| 15-30% | 2,113.17 | 23% |
| 30-45% | 2,124.73 | 23% |
| 45-55% | 1,001.96 | 11% |
| >55% | 1,919.76 | 21% |
| Sum | 9,230.84 | 100% |

2. Area for marine and fishery development

2.1 Unique coastal geological landscape



Figure 3.15 Bitou cape

Source: Flickr



Figure 3.16 Long dong

Source: Flickr



Figure 3.17 Sandiego cape

Source: Flickr



Figure 3.18 Unique coastal geological landscape

Source: Author's own diagram.

2.2 Fishery port

Fishery port is highly related to existing villages, most villages are located within 1,000 meters distance to fishery port.



Figure 3.19 Long dong fishery port

Source: blog.xuite.net/mejun0322/



Figure 3.20 Long dong fishery port & village

Source: blog.xuite.net/mejun0322/



Figure 3.21 Long dong diving

Source: blog.xuite.net/mejun0322/

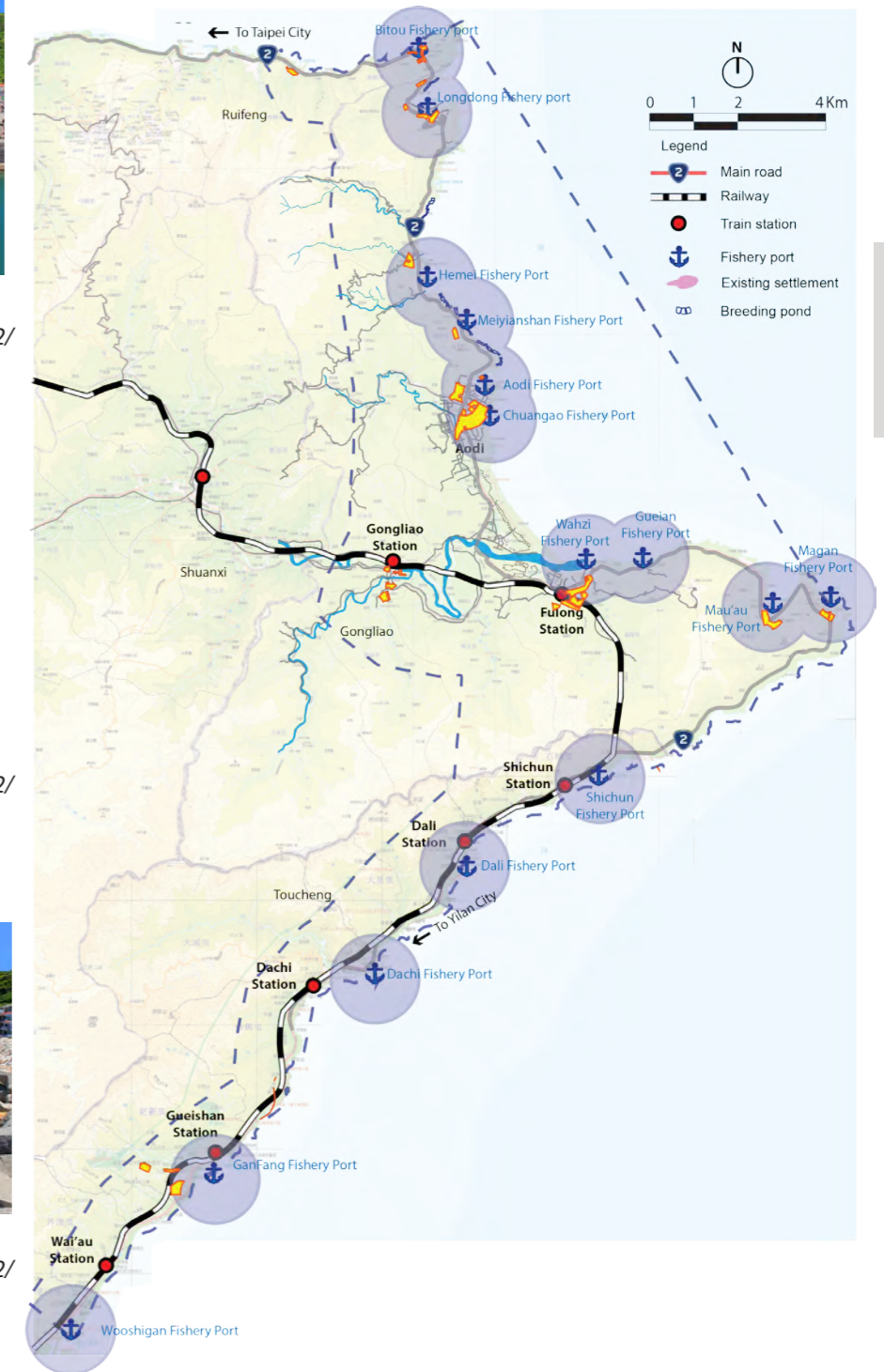


Figure 3.22 Fishery port and existing settlement

Source: Map by author

3. Area for conservation

3.1 Rare and valuable animal habitats

In addition, Gongliao is located in bird migration pathway, the diversity of landscapes such as river, woods, bushes, meadows, farmlands and wetlands provide various habitat for migratory birds and local animals.

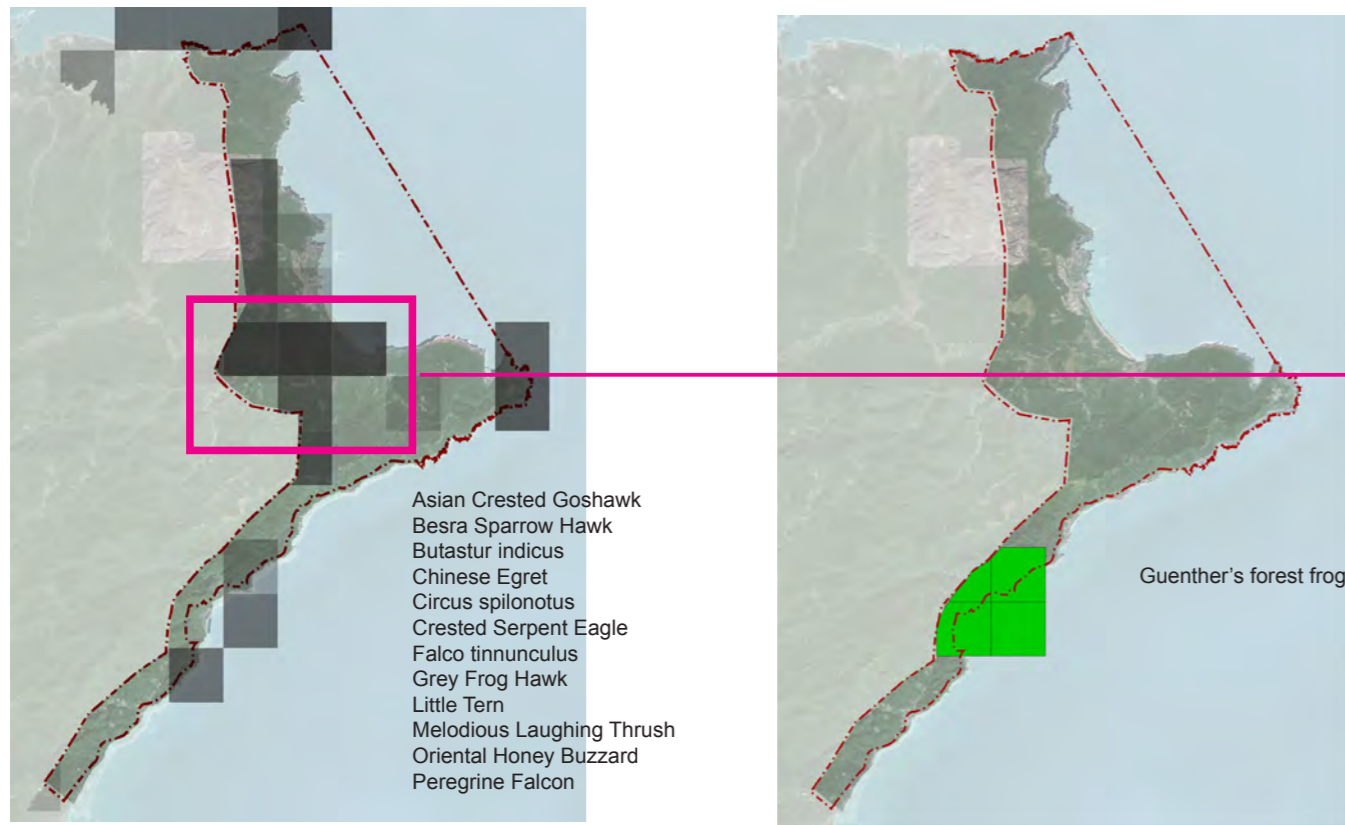


Figure 3.23 Rare and valuable birds habitat

Figure 3.24 Rare and valuable amphibians habitat

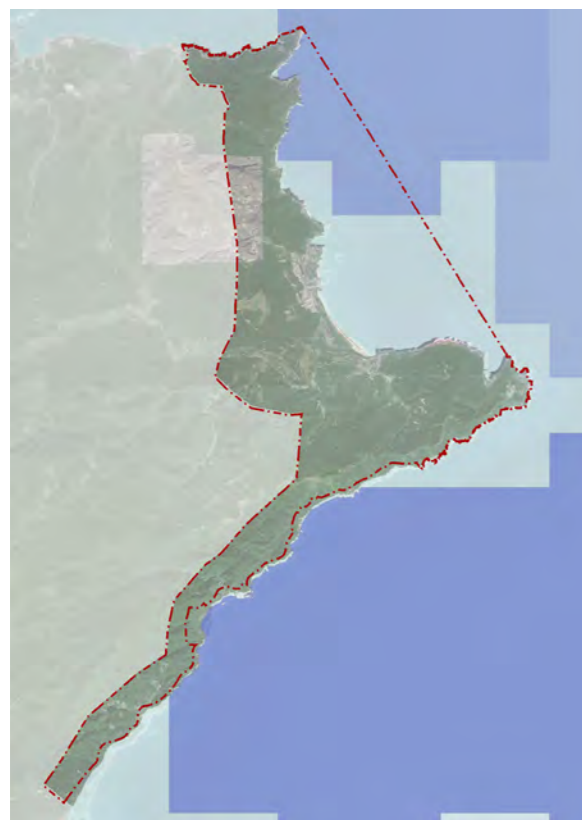


Figure 3.25 Rare and valuable fishes habitat

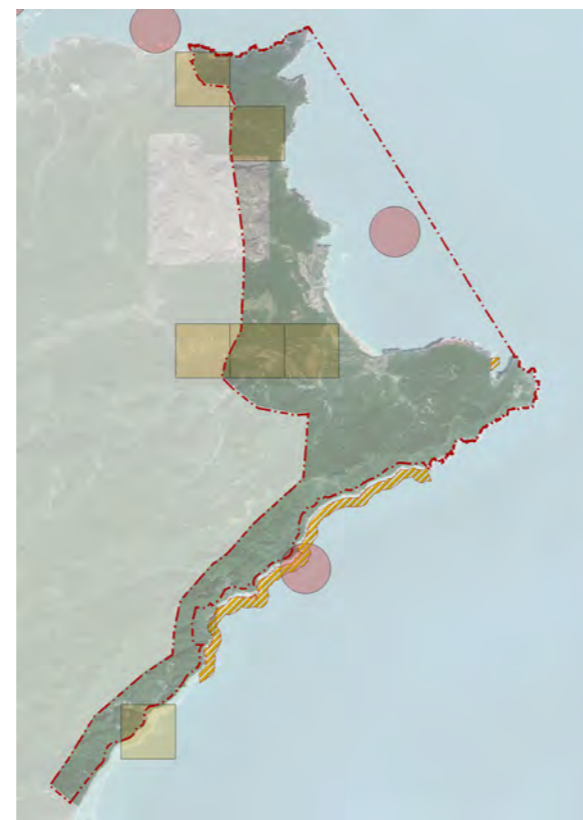


Figure 3.26 Natural fishery resource

3.2 Major farm land and



Figure 3.27 Diversity birds in Gongliao

Source: kongliao-water-terrace.blog

3.3 Flood prone area

The figure shows flood prone areas are mainly located along Shuangxi River and Fangliao Stream. Tianliaoyang is the main agriculture wetland along Shuangxi River, when daily precipitation excess 150mm/day, Tianliaoyang will flood and help adjust water level of Shuangxi River.

From year 2009 to 2013, there are 11 times the daily precipitation excess 150 mm in one day.

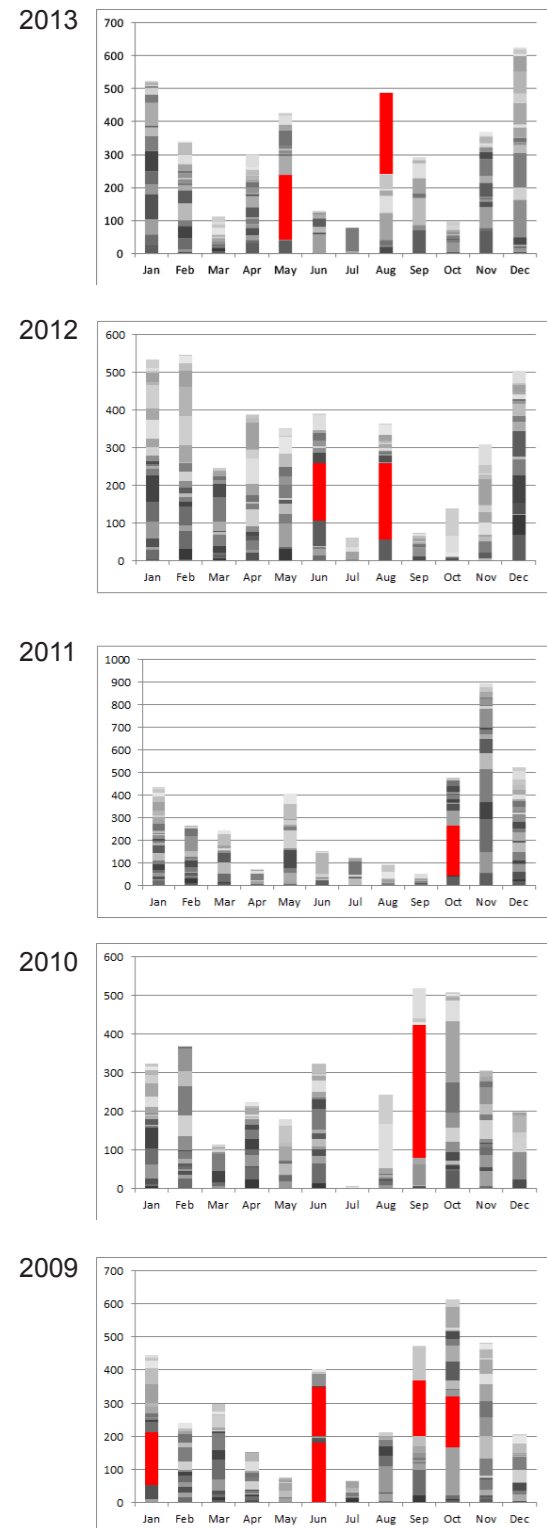


Figure 3.28 2009-2013 single-day rainfall (mm)

Source: Taiwan Central Weather Bureau (www.cwb.gov.tw)

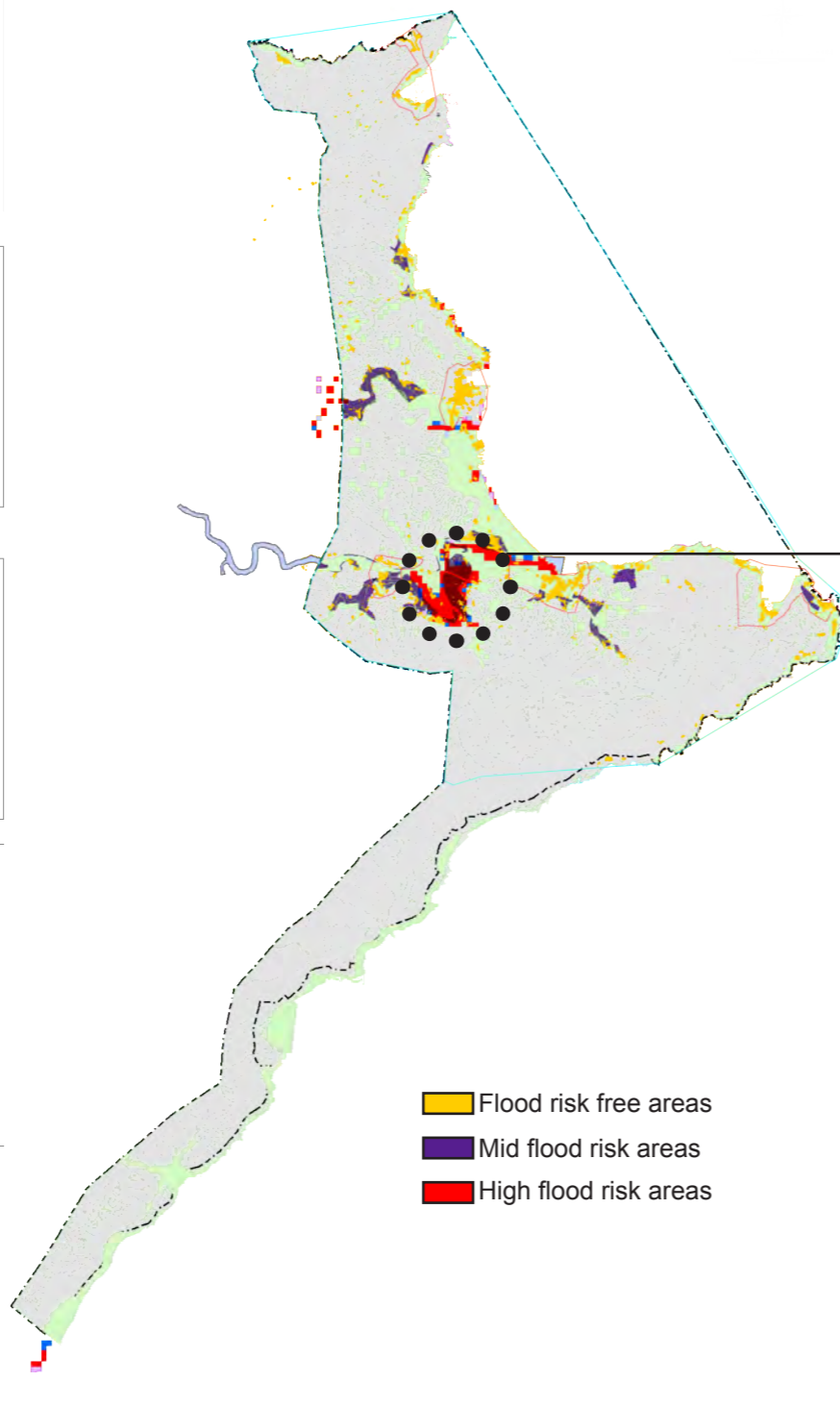


Figure 3.28 Flood prone areas

Flood plain Tianliaoyang

Tianliaoyang is a floodplain and birds habitat next to Shuangxi River. The name means a ocean-like agriculture field which indicates the geography nature of constant flooding low plain. Tianliaoyang not only plays important role to adjust water level of Shuangxi River, but also protect village from flood and severe precipitation.



Figure 3.29 Tianliaoyang wetland in summer time.



Figure 3.30 Tianliaoyang wetland after Nathan typhoon (2004) become flooded.

4. Area for town and urban development



Figure 3.31 Road and mobility system

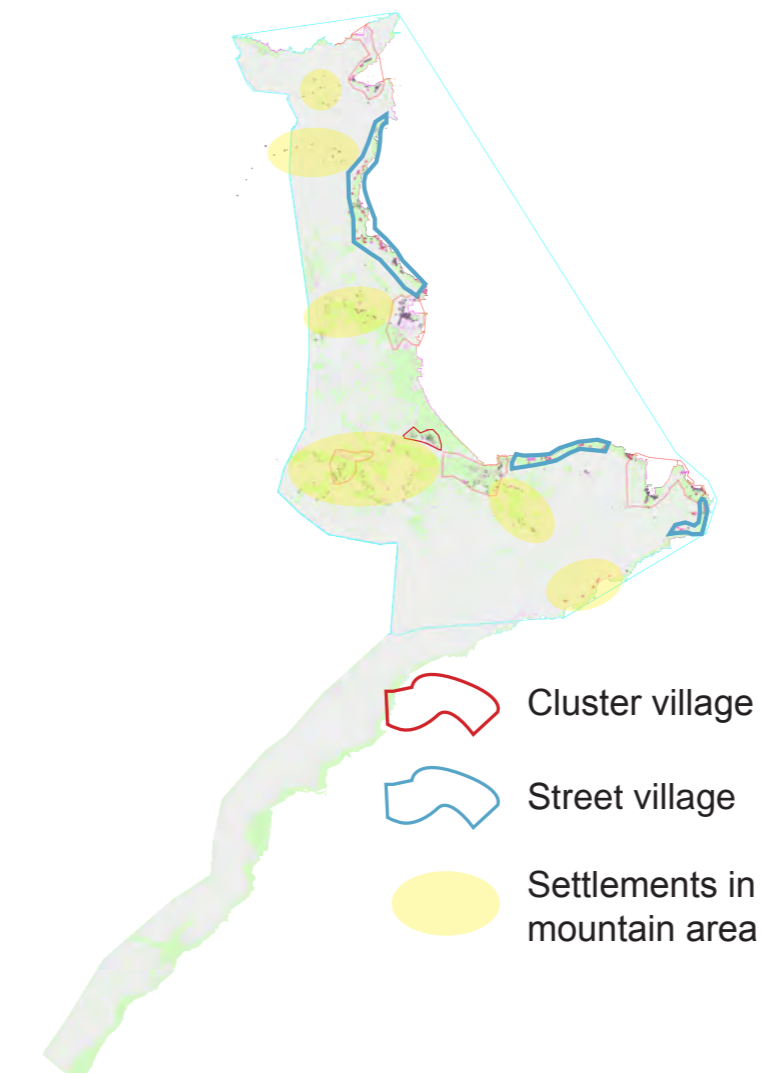


Figure 3.32 Villages and town

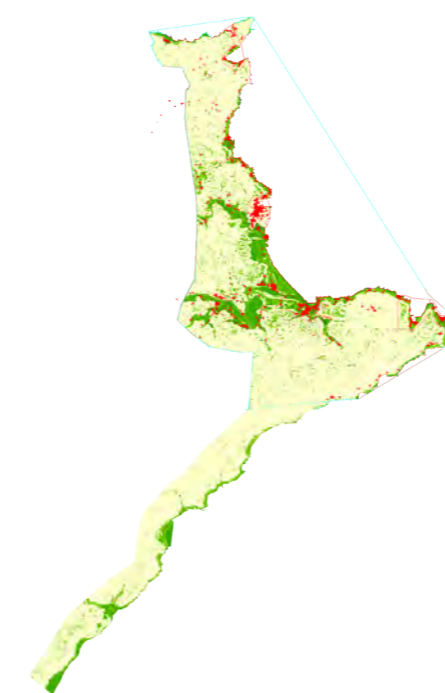


Figure 3.33 Existing villages

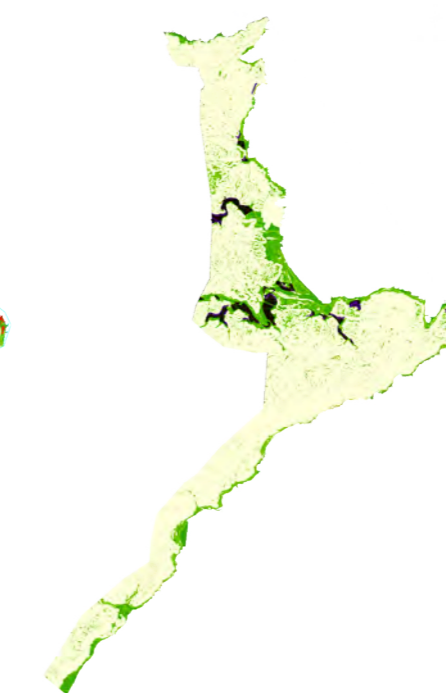


Figure 3.34 Potential areas

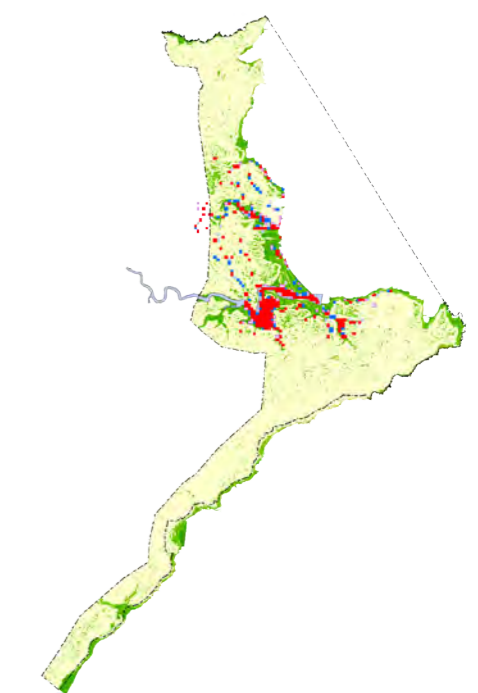


Figure 3.35 Potential areas with flood risks

5. Landscape typology analysis

Northeast coast area landscapes are incredibly diverse, it can be roughly defined as valley, mountain and coastal areas. Each of these areas represent specific function, and therefore require different strategies.

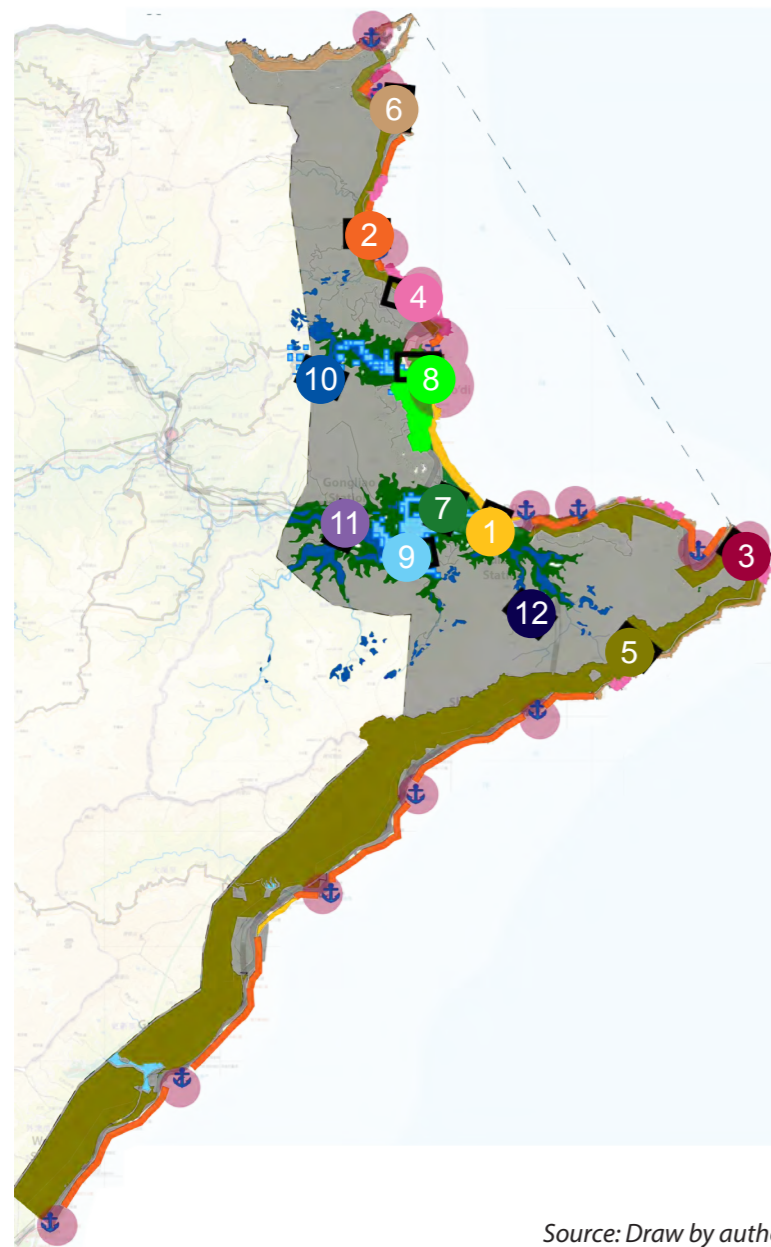
Northeast coast area is highly vulnerable to flood and landslides due to both its geography and its diversity of natural landscape ecological system. In addition, different areas are suitable in different ways of development due to variation in landforms and land use provide different carrying capacity for certain functions.

To understand the range and nature of carrying capacity or development condition through out the area, this study set out to develop a set of valley, mountain and coastal landscape typologies representative of the range of conditions found in Gongliao that would reflect Northeast coast area as well.

The 10,000 hectares of valley, mountain, and shore-line were analysed through three distinct lenses: geomorphology, or the physical landforms that related to mountain, valley and coastal processes, and the built environment, or the uses and the density that are found throughout the research area.

Geomorphology is a composite of the landforms, slope, elevation and waterfront conditions, which together depict the carrying capacity or development potential.

Land uses and density, including the types of uses, function, infrastructure, and populations, are a measure of an area's carrying capacity to further development that are present. This gives an indication of the magnitude of the consequences should the area be impacted by extra development.



Source: Draw by author

5.1 Landscape typology

| | | ● High | ◐ Medium | ○ Low | Environment conservation | Agriculture development | Fishery development | Build-up area and settlement | Recreation activity |
|-------------------|--------------------|--------|----------|-------|--------------------------|-------------------------|---------------------|------------------------------|---------------------|
| 5 | Coastal ridge | ● | ○ | ○ | ○ | ○ | ○ | ○ | ◐ |
| 6 | Cliff | ● | ○ | ○ | ○ | ○ | ○ | ○ | ● |
| 12 | Mountain ridge | ● | ○ | ○ | ○ | ○ | ○ | ○ | ◐ |
| Coastal villages | | | | | | | | | |
| 2 | Pebble shore | ● | ○ | ◐ | ◐ | ◐ | ◐ | ◐ | ◐ |
| 4 | Breeding pond | ● | ○ | ● | ◐ | ○ | ○ | ○ | ○ |
| 3 | Marina | ● | ○ | ● | ◐ | ○ | ○ | ◐ | ◐ |
| 8 | Plain | ◐ | ○ | ○ | ○ | ○ | ○ | ● | ○ |
| 1 | Sand beach | ● | ○ | ○ | ○ | ○ | ○ | ◐ | ● |
| Mountain villages | | | | | | | | | |
| 7 | Windbreak | ● | ○ | ○ | ○ | ○ | ○ | ◐ | ◐ |
| 9 | Flood plain | ● | ● | ○ | ○ | ○ | ○ | ◐ | ◐ |
| 11 | Valley | ● | ◐ | ○ | ○ | ○ | ○ | ◐ | ◐ |
| 10 | Terraced farm land | ● | ● | ○ | ○ | ○ | ○ | ◐ | ○ |

5.2 Landscape typology impressions

1 Sand beach



2 Pebble shore



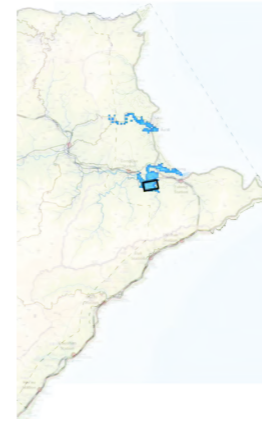
3 Marina



4 Breeding pond



9 Wetland



10 Terraces



11 Valley



12 Mountain ridge



5 Coastal ridge



6 Cliff



7 Windbreak



8 Plain



5.3 Landscape typology issue

12 types of landscape conflicts, see Appendix II

The slope define the general function of the area

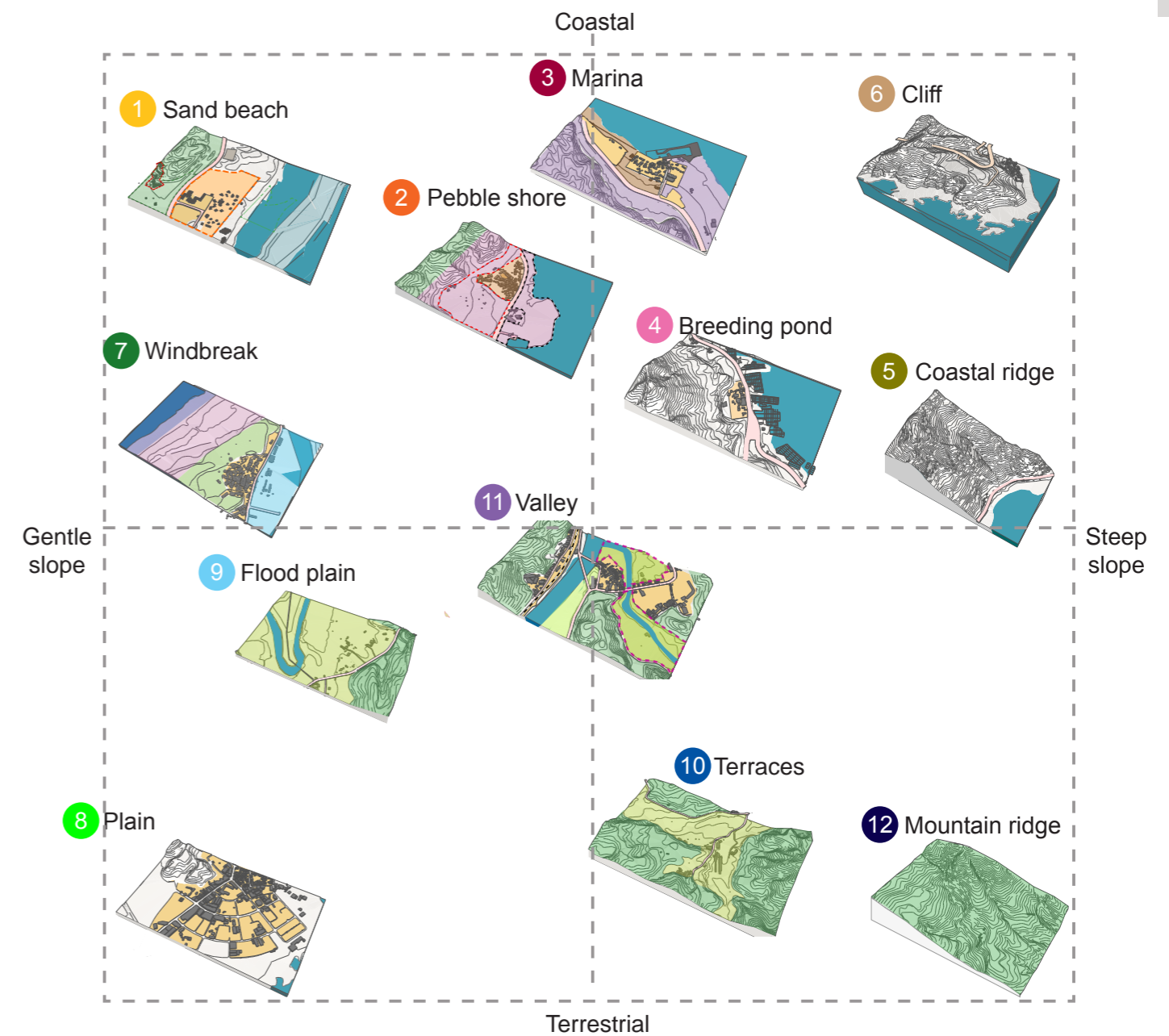
Steep slopes 55 % of total area is prohibited to develop
 Gentle slopes 36 % of total area is restricted to develop
 Plain 9% of total area is plain

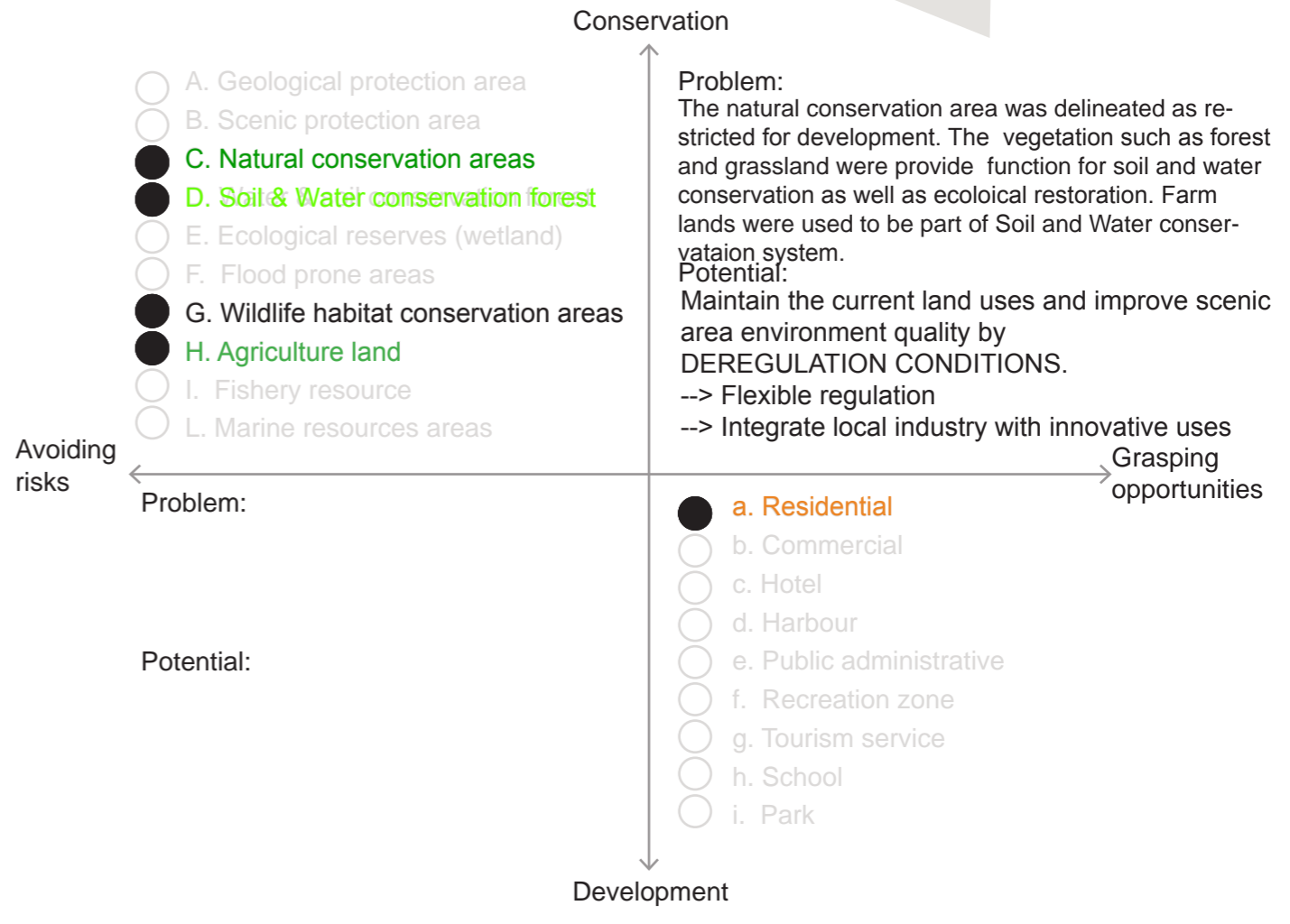
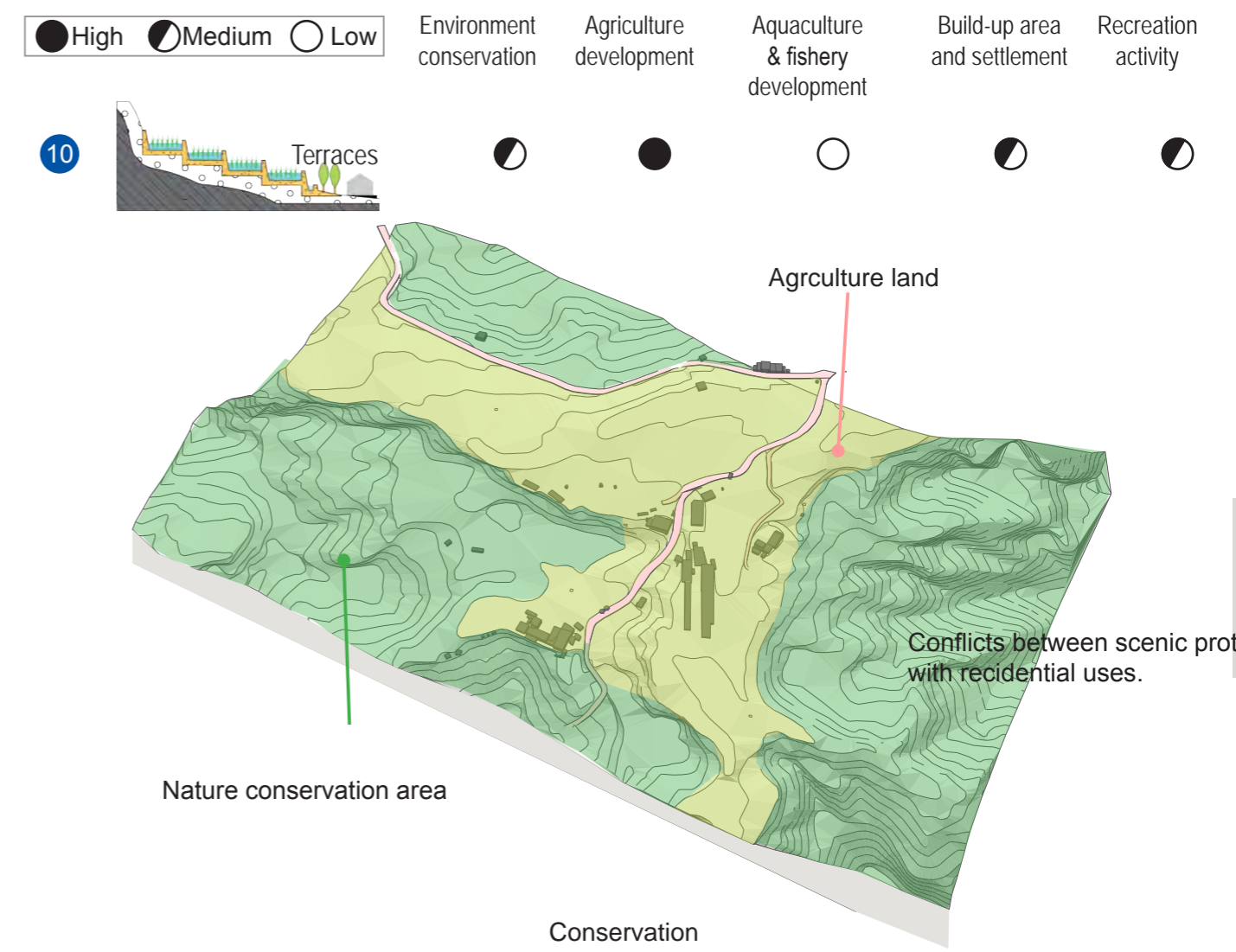
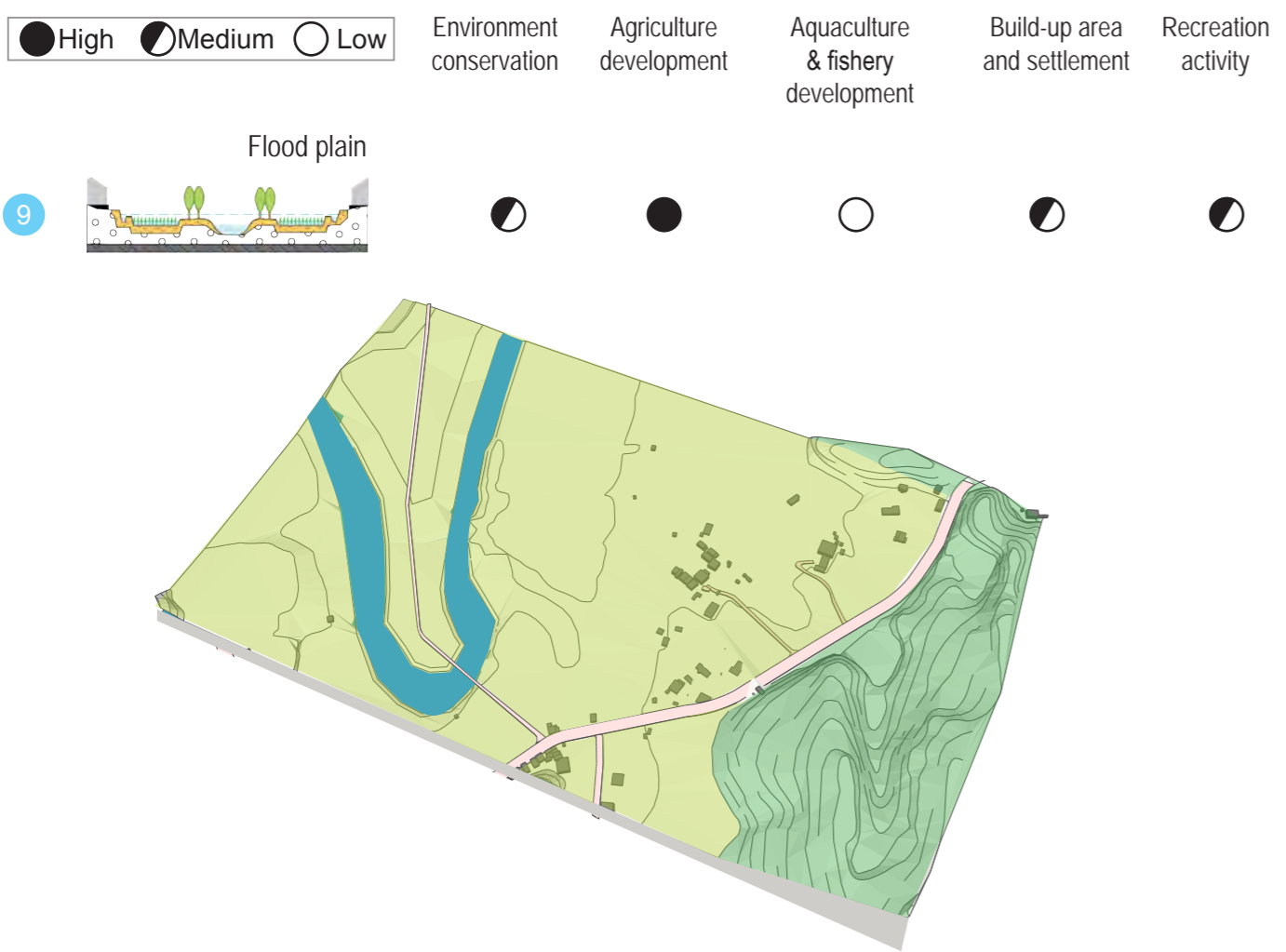
Mountain village

Soil and Water protection
 Flood prone areas
 Decreasing farm land uses

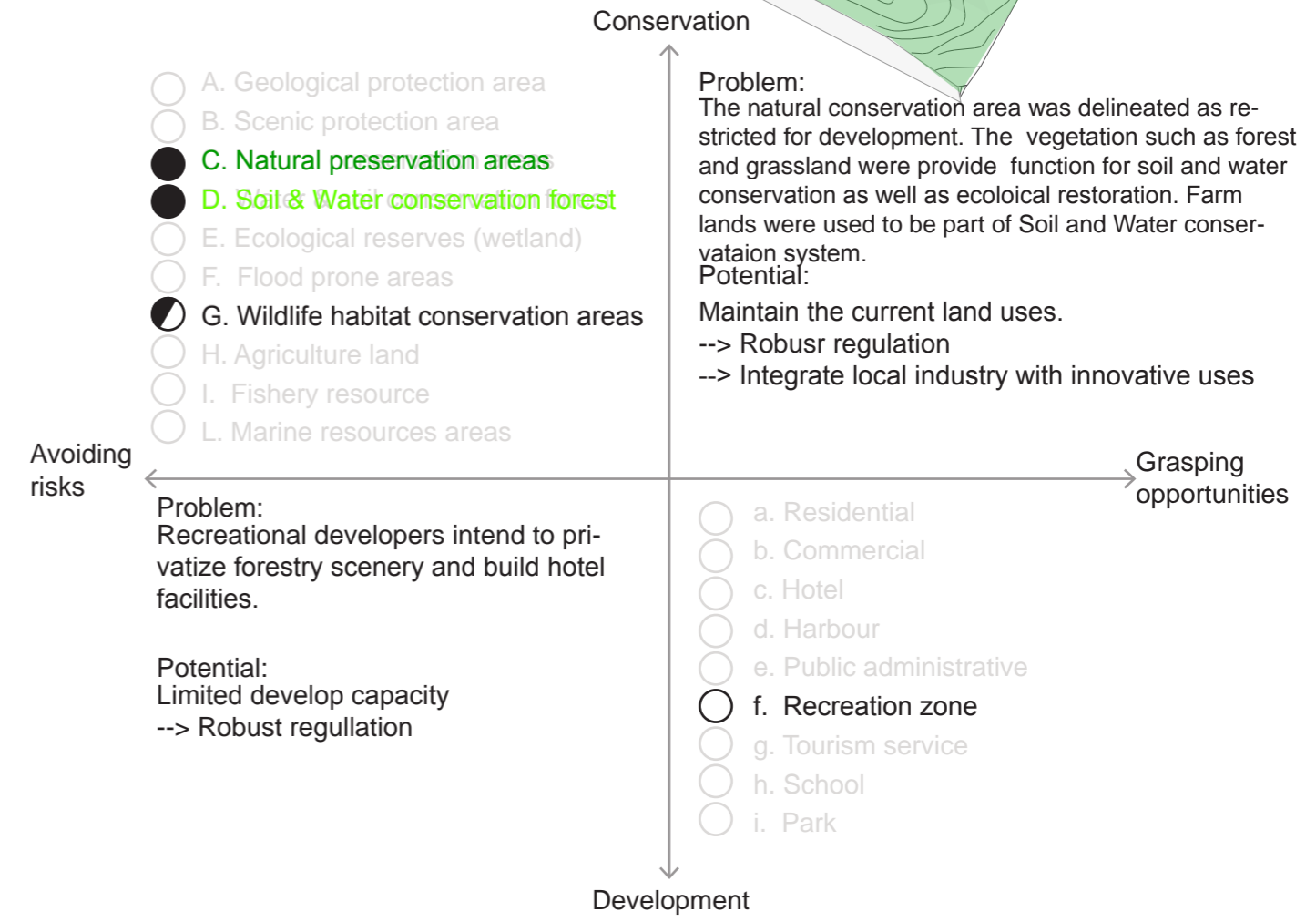
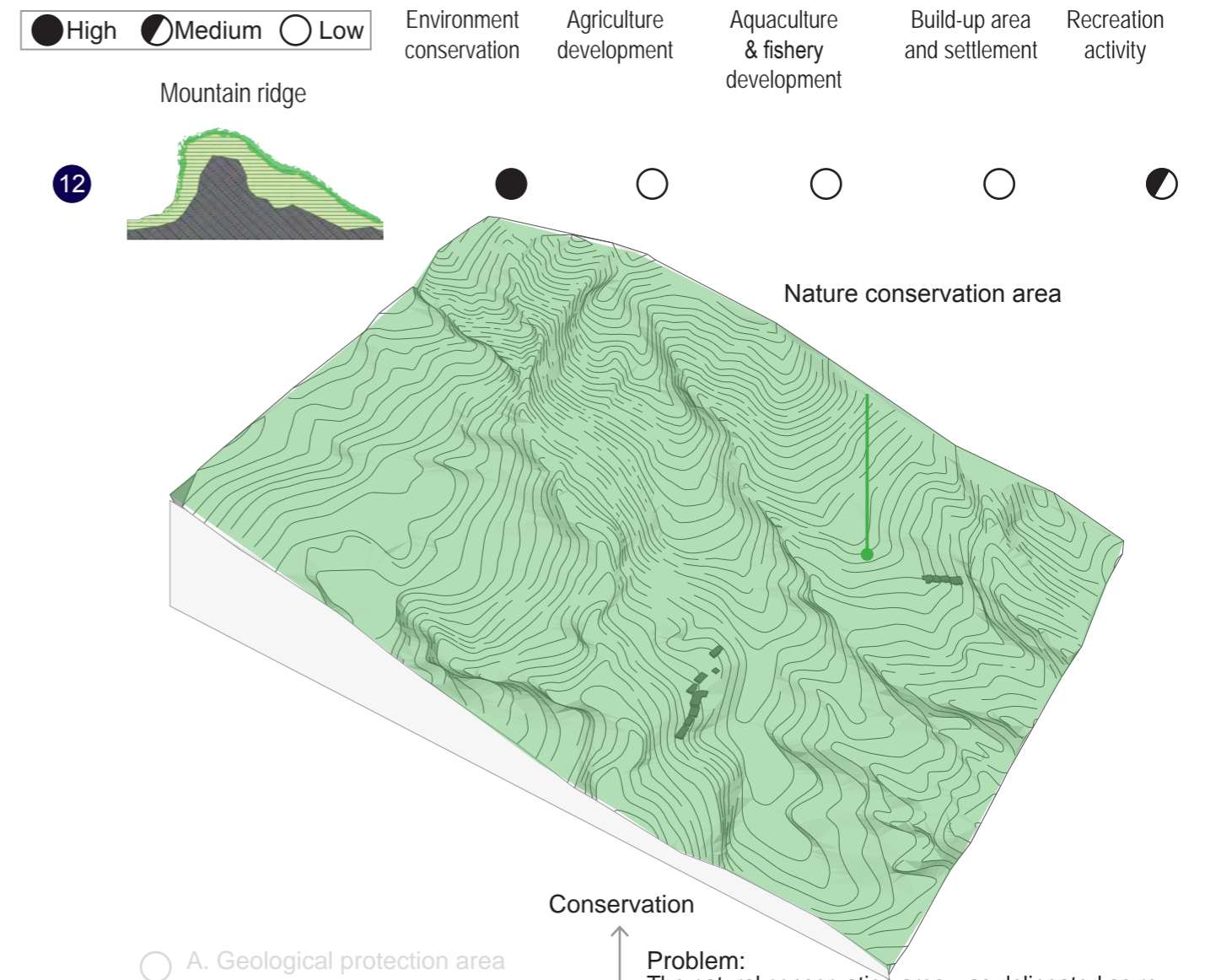
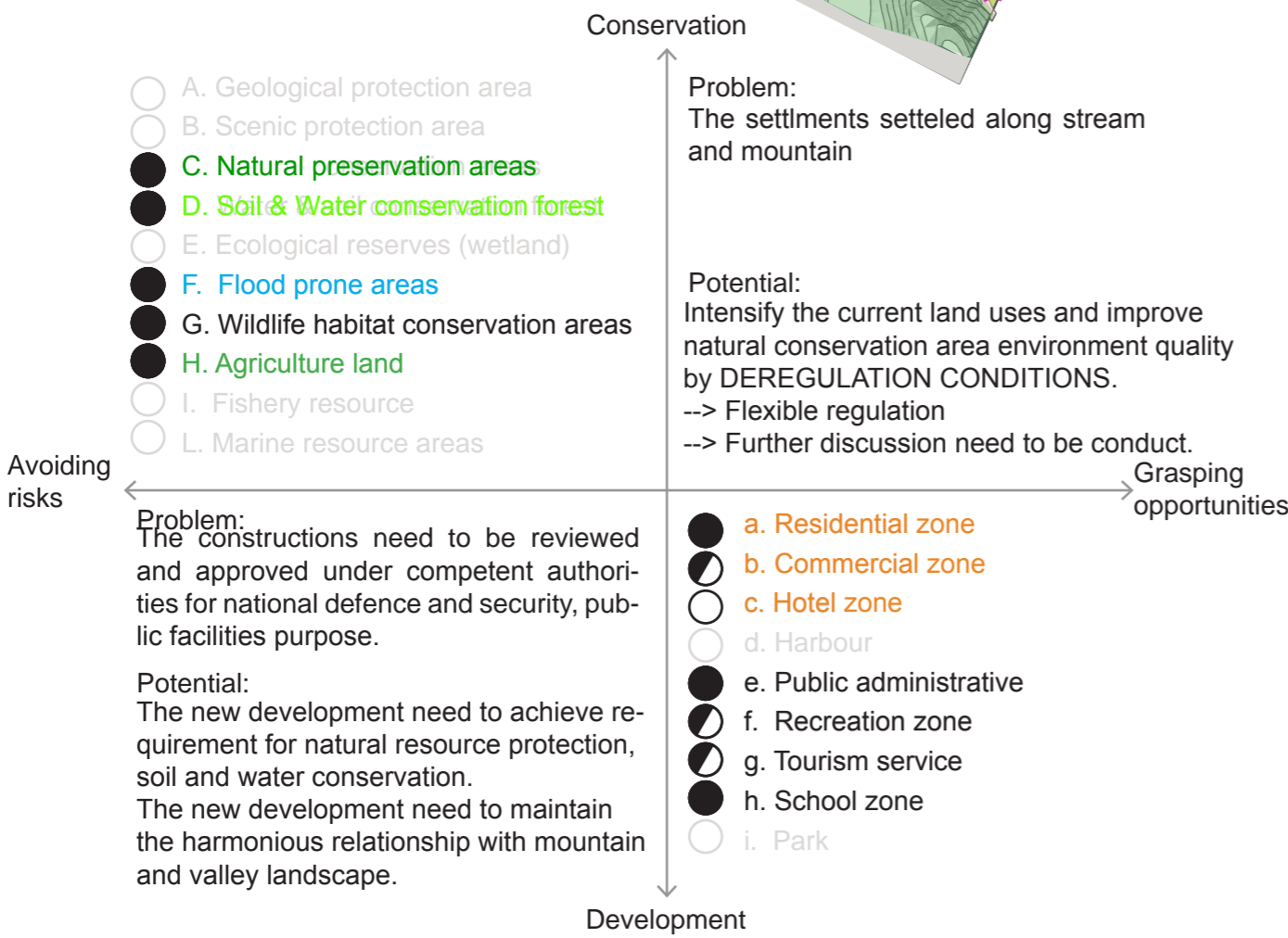
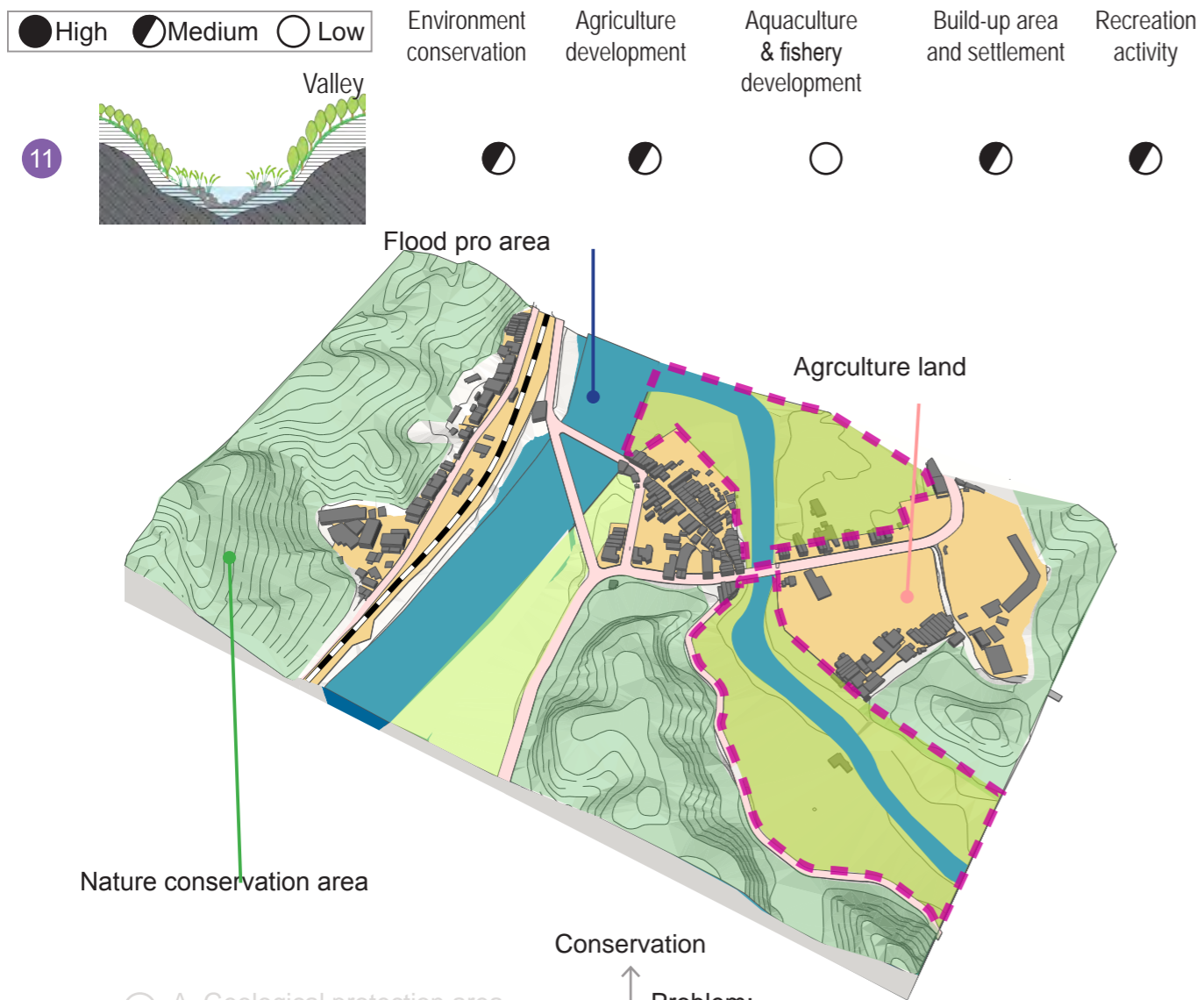
Coastal village

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





Conflicts between scenic protection with residential uses.



6. Local scasl analysis - Shuangxi river bank



Figure 3.37 Zoning plan map Source: CPAMI,2010

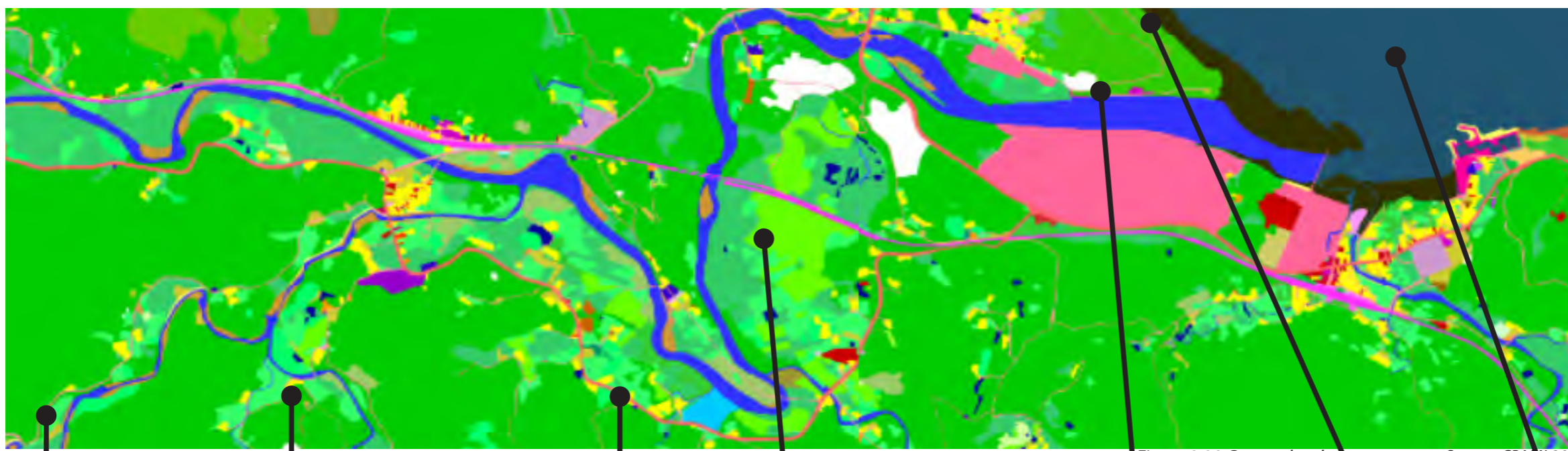


Figure 3.38 Current land use map Source: CPAMI,2010

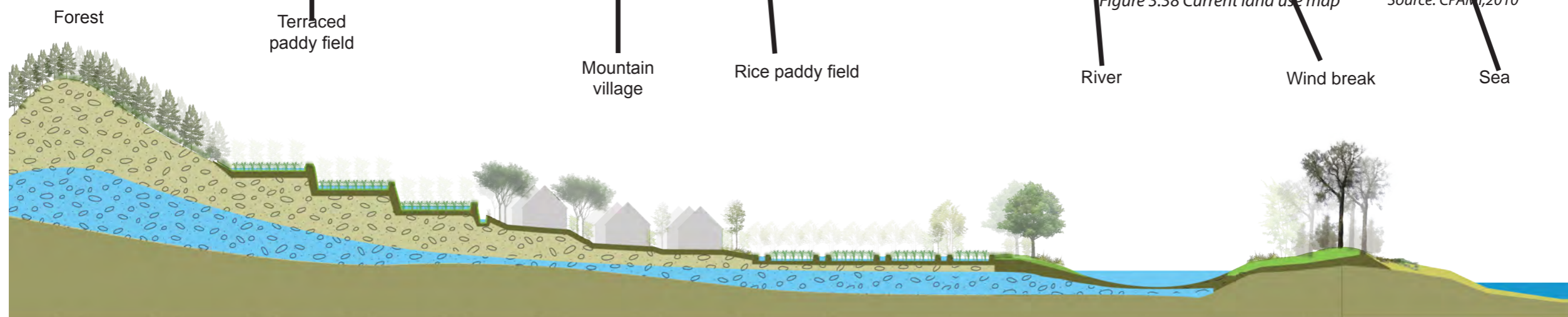


Figure 3.39 The current land use section along Shuangxi river

6.1 The differences between zoning plan and land use

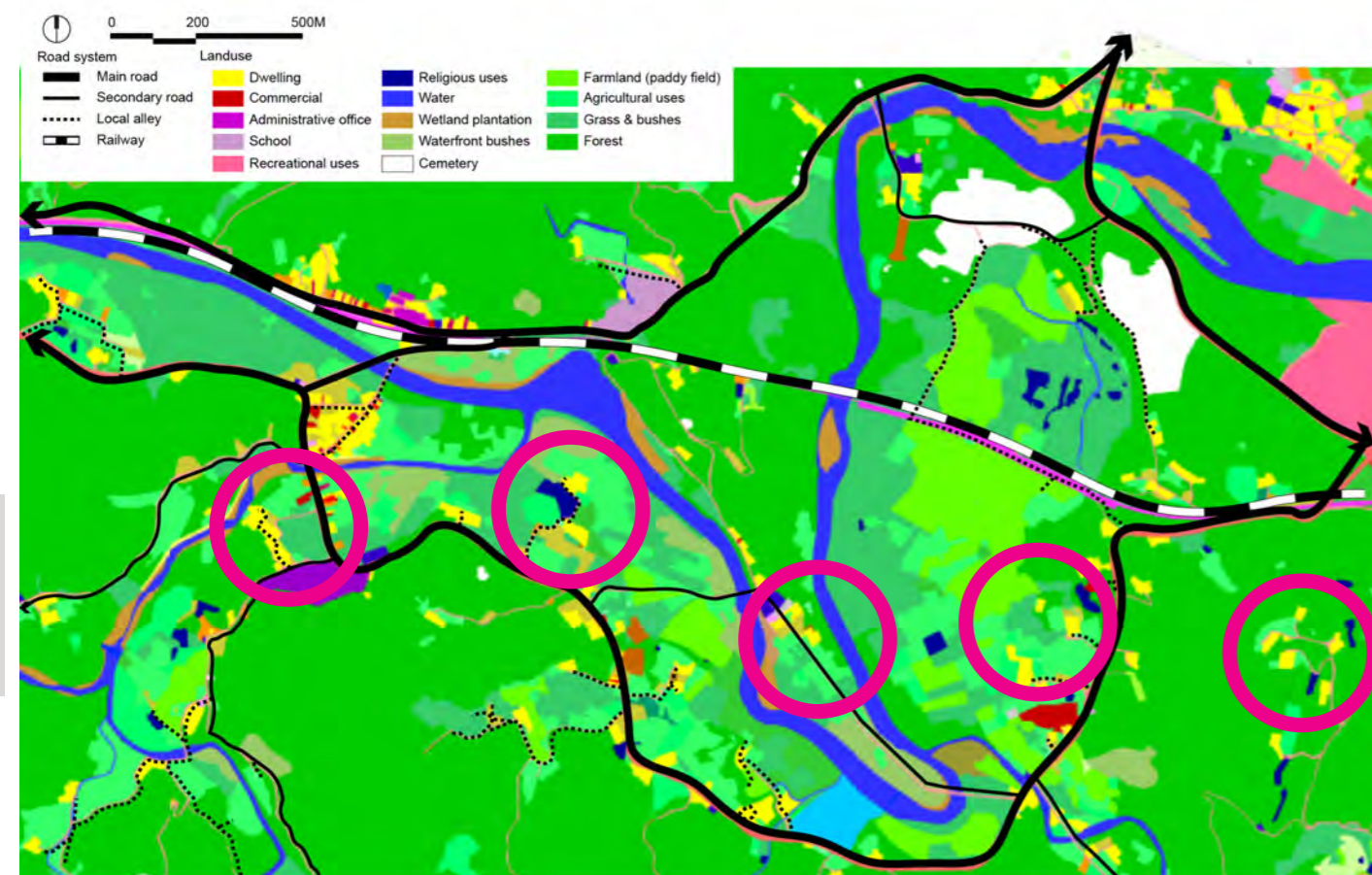


Figure 3.40 Current land use map

2. Zoning plan

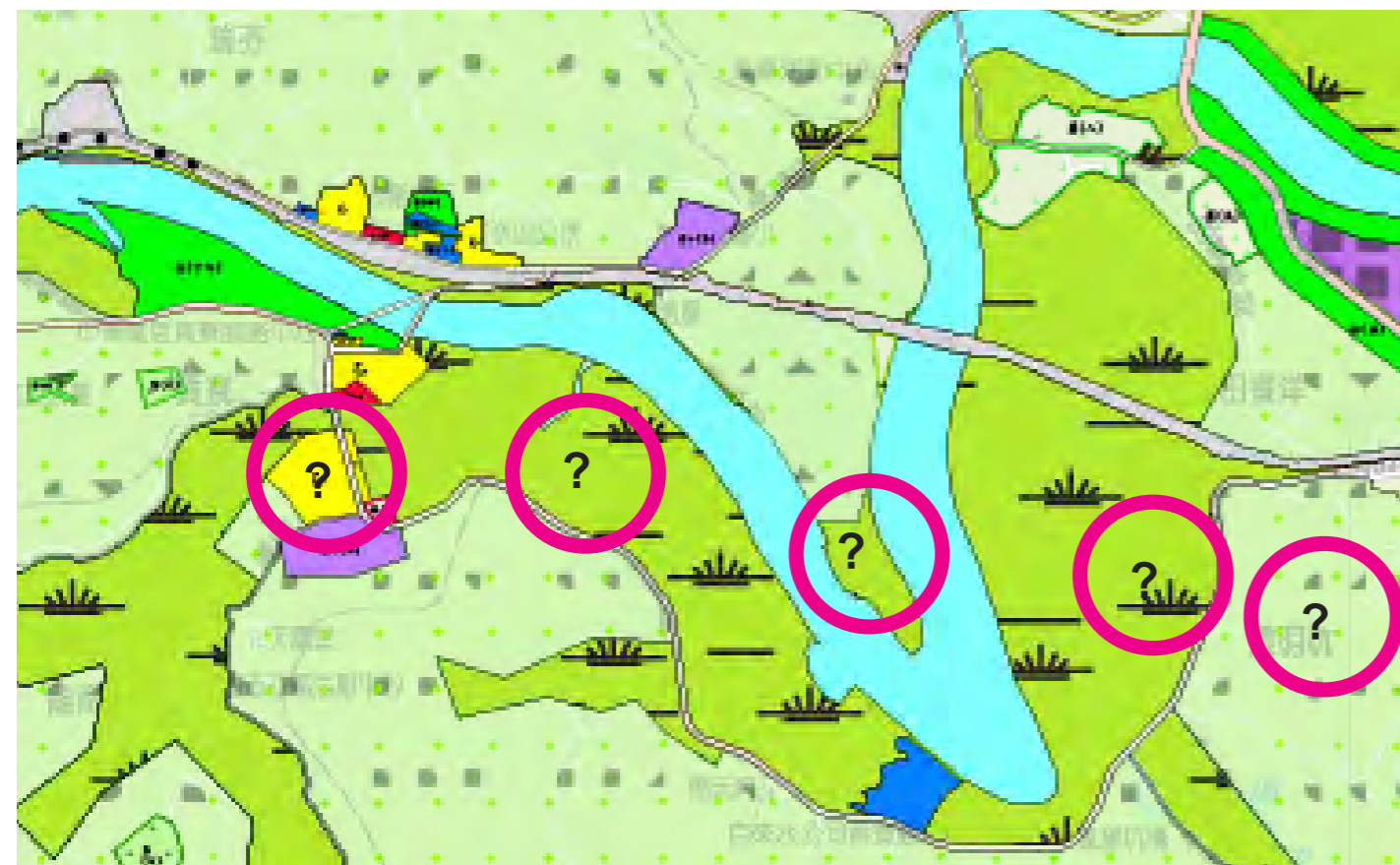


Figure 3.41 Zoning plan map

6.2 Road system and villages

The village clusters are mainly located along the main road system. The scattered houses are barns and in the agricultural land. Since the topography and river domain the development of villages, the pattern of settlements are organic.

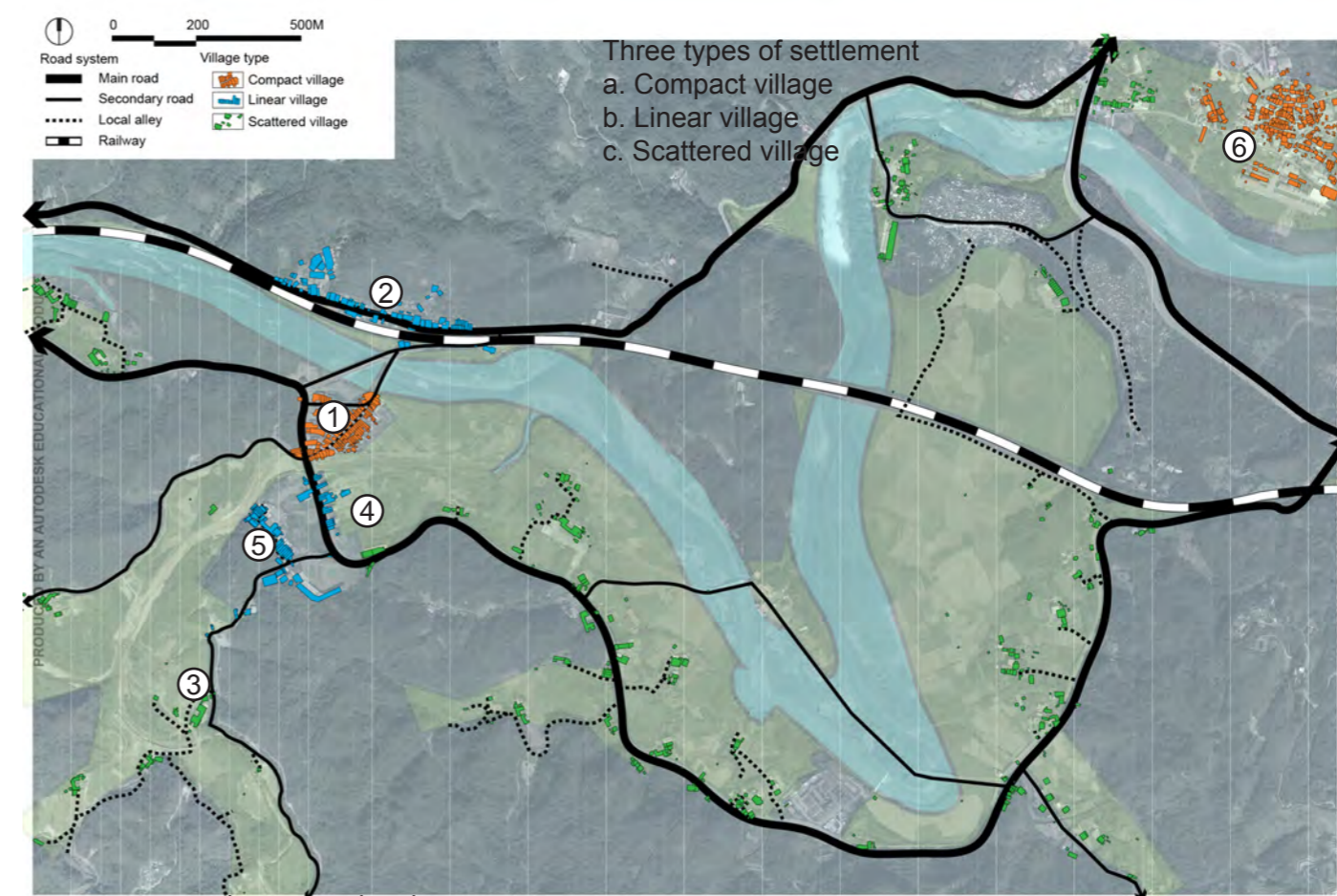


Figure 3.42 Road system and settlements

1.1 Village and settlement type



① Compact village in gongliao



② Linear village along between railway and mountain



③ Scattered village in farmland and mountain



④ Small settlements along main road and farmland



⑤ Village between mountain and farmland



⑥ Mixed farmland

2. Waterway and ecological system (River, stream, and irrigation)

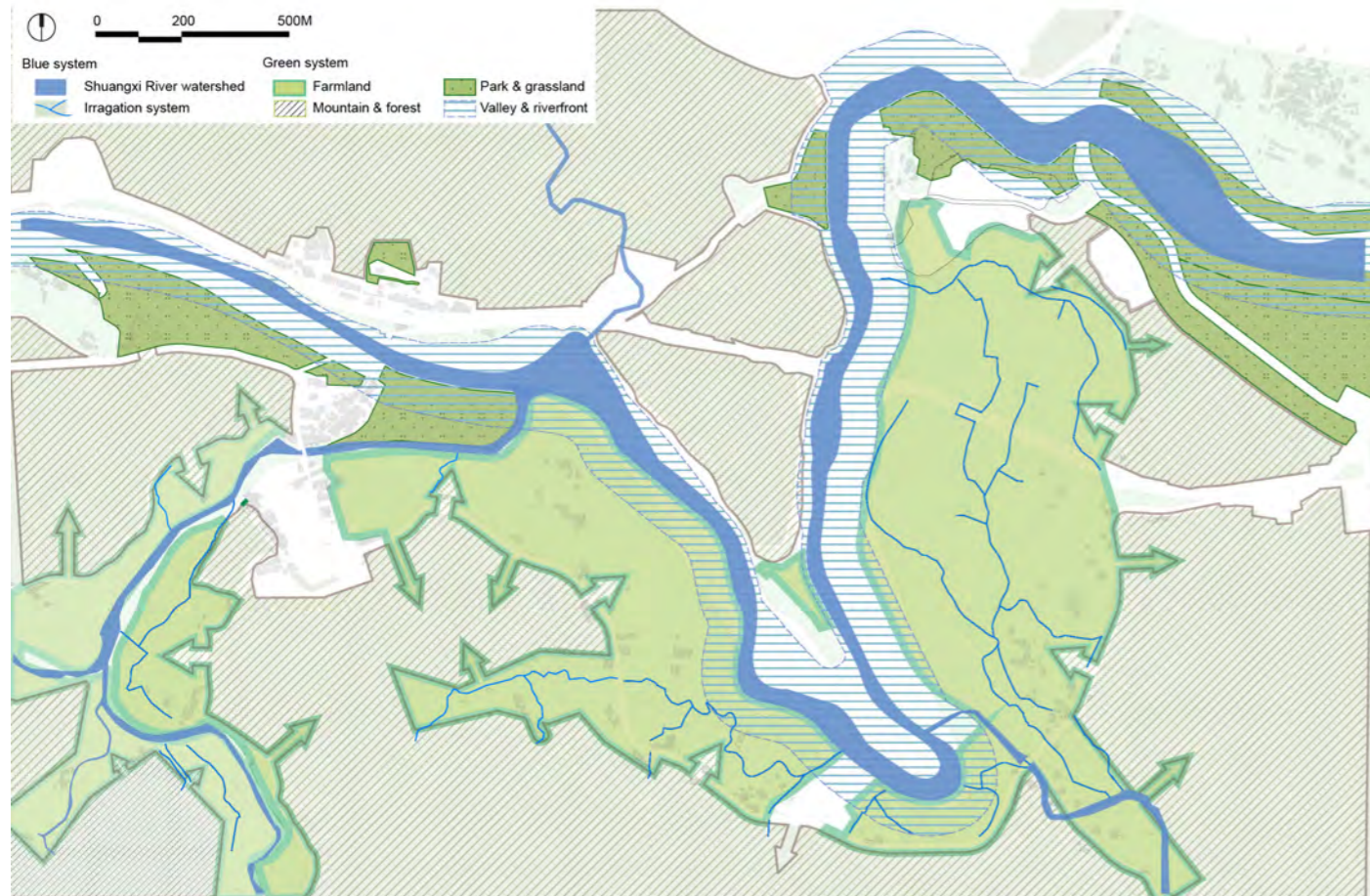


Figure 3.43 Green system and blue system

Source: Map by author

Waterfront quality



Riverfront dike



The backside of townhouse without access to stream



Riverfront plantation & woods



Floodplain and park between river and village

3. Flood prone area

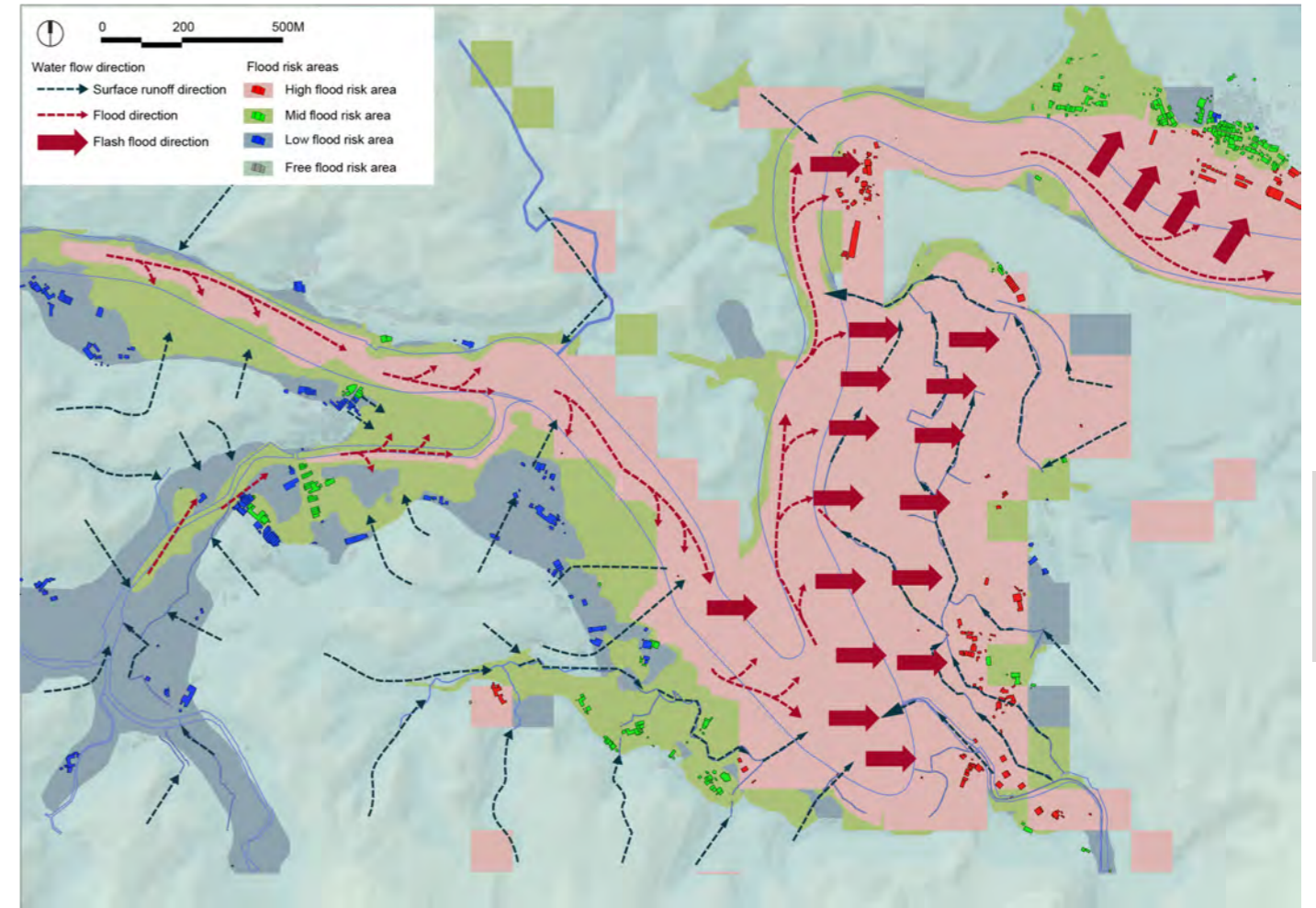


Figure 3.44 Flood prone area

Source: Map by author

High flood risk area



Stilt house in high flood risk area

Mid flood risk area

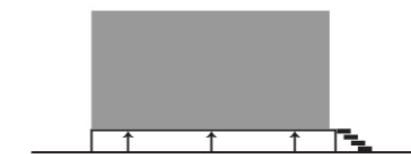


Small settlements along main road and farmland

Low flood risk area



Small settlements along main road and farmland



IV. Conclusion

1. Conclusion of Institution analysis

- The reform of planning system gives general function development direction, but it is not clear in the smaller level of development
- New proposal does not resolve existing land use conflict problem
- Decision making process takes long time to meet consensus.

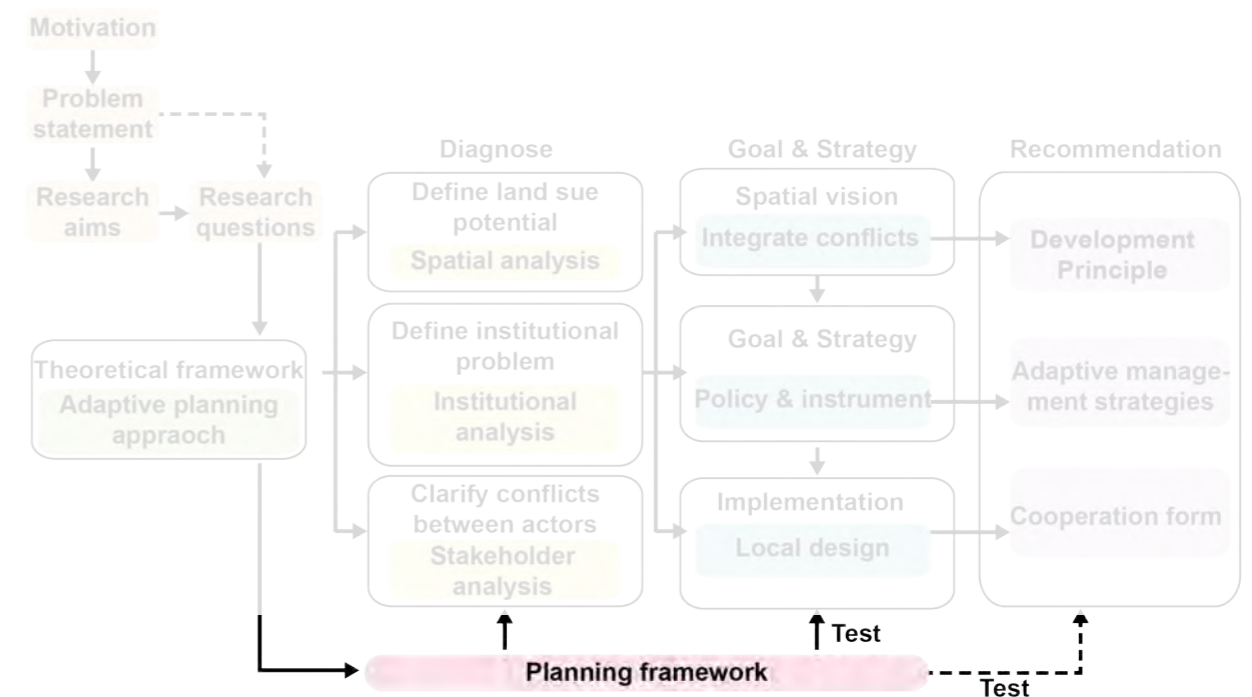
2. Conclusion of Spatial analysis

- Land form defines the land use function.
- Slope defines the available land use territory and mobility pattern.
- Soil and water conservation is the common issue in mountain, valley and coastal area.
- Same zoning in different landscapes should provide different development standard
- Zoning control restrict the possibility to integrate possible development

3. Conclusion of Stakeholder analysis

- Not all of them are well informed and involved during decision making process.
- There are conflict and complex relationships between public sectors and private sectors.
- The implementation and review of spatial development should define a new way to accommodate stakeholder in different planning making stage.

Part D. Adaptive Planning framework



I. Adaptive planning framework

1. Generic and specific policy

How adaptive planning approach can imply in a place and deal with the trend of land use change and social demand? A generic and specific policy could be the possible solution to deal with to problem in NCNSA.

2. Non-location specific strategy as generic policy in municipal planning

In municipal planning level, the general spatial concept should be indicated for future development direction. The integration of land use function is the general and non-location specific strategy in municipal level.

3. Location specific instrument as specific policy in neighbourhood design

In neighbourhood design level, however, gives an exemplary insight of adaptive planning approach work in one specific site. The adaptation of conflict land use value (preservation and development) is the location specific instrument in neighbourhood level.

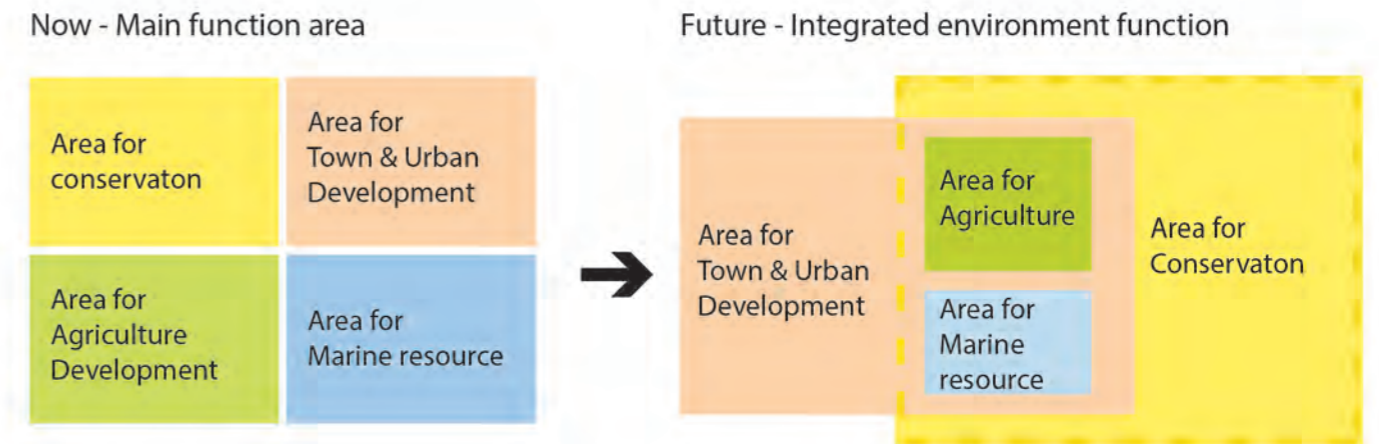


Figure 4.1 Integrate land use function

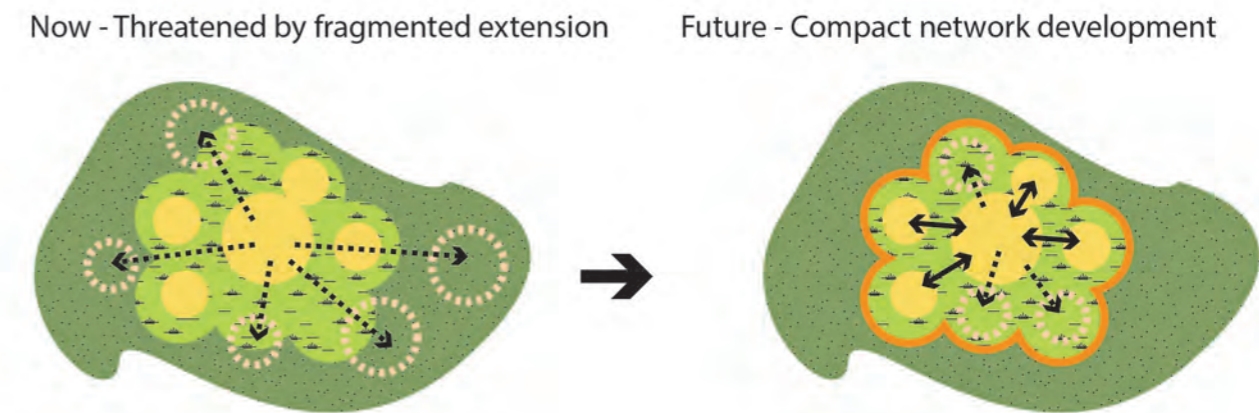
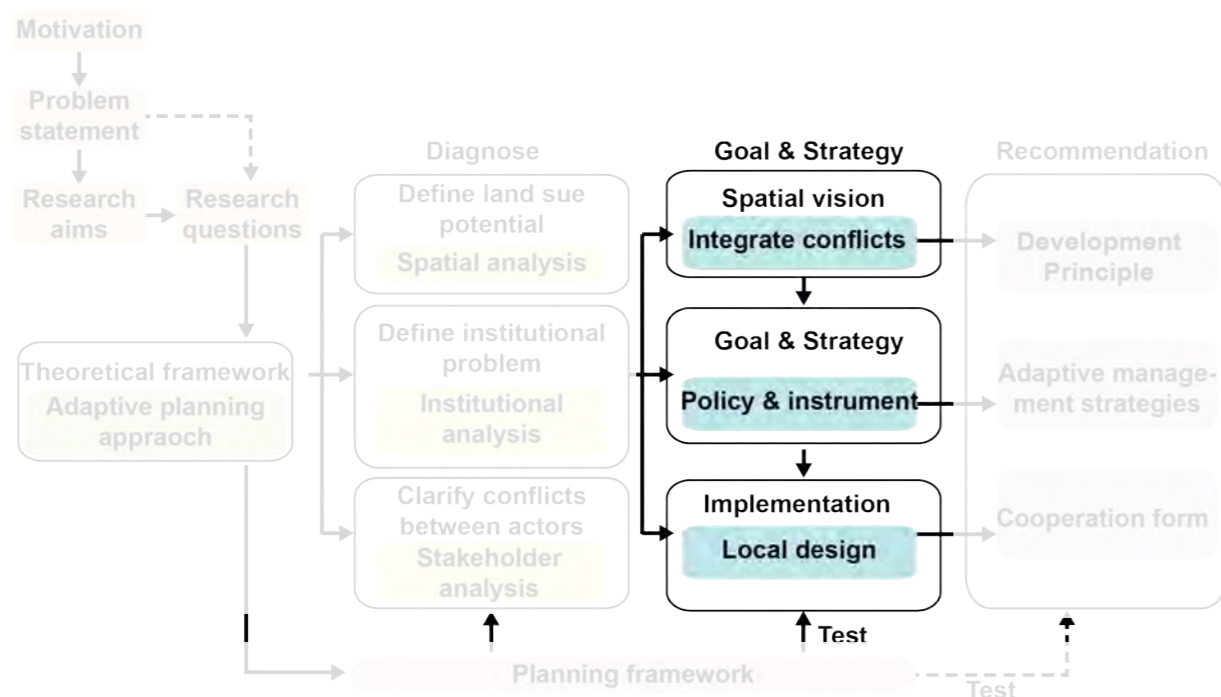


Figure 4.2 Toward "preservation by grasping opportunities" (left) and "development with risk avoidance"(right)

Source: Regions in transition- Design ing for adaptivity,2001

Part E. Strategy



I. Develop spatial concept

The planning framework proposed in Regions in transition provides general steps in adaptive planning approach. Official document review, stakeholder analysis, landscape typology analysis, will combine with this planning framework in these steps.

Step 1. Determining the “field of action“

- Set the general direction
- Focus on the relation with the environment and the public appreciation.
- Focus on shifting planning regime from functionality to quality and makeability to adaptively.

Step 2. Input of situation

- Area analysis consists three parts
Classifying area characteristics and existing ideas, plans and visions for the development of the region. The connection of process macro meso and micro process multi-level analysis as an initial step towards disclosing the “pluripotential”. This step will indicate to what extent a place is able to latch onto influences from outside. Placing the outcome of multi-level analysis in space and time. The purpose is to position place with diverse development directions in relation to one another, so in turn to identify connections between functions and areas that can yield synergy.

Step 3. Through put of the place

This step provides insight into which considerations (material, organizational or institutional must be weighted up for the further progress of promising developments. The basis is laid down for weighing up the investments and interventions

Step 4. Output of conditions for spatial development.

The field of action in step 1 sets the general direction. The area analysis of step 2 and the deliberations of step 3 will be rendered in spatial terms. The quality and distinctiveness are the qualitative integration of spatial intervention and functions. The intervention must bring quality improvement, thereby contributing to the distinctiveness of the place.

II. Determining general direction

The figure illustrates the general direction in Northeast coast area. Four development functions are explained in the following set of maps.

1. Area for town and urban development



Figure 5.1 Town and village development principle

Source: draw by author

2. Area for conservation

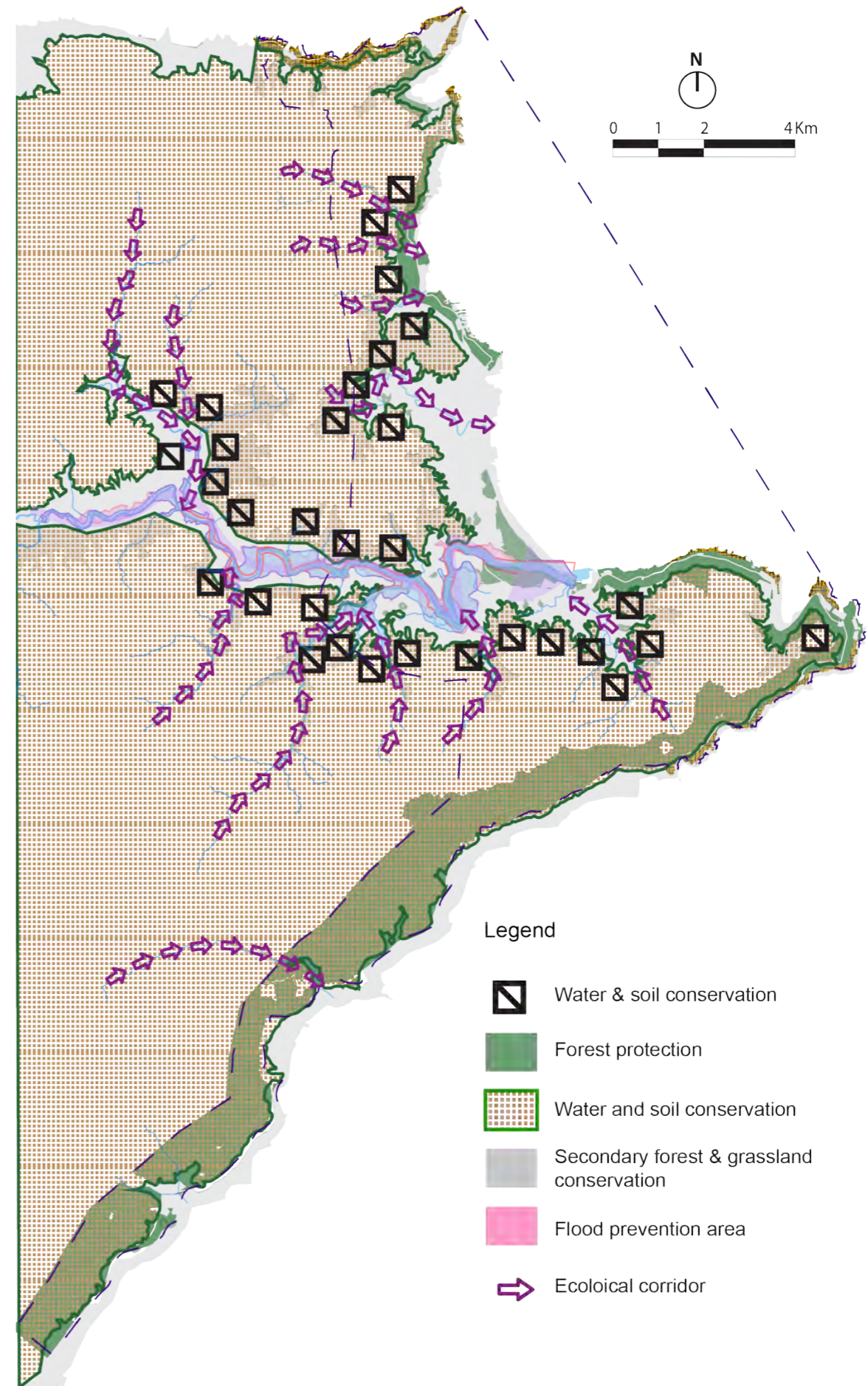


Figure 5.2 Conservation and preservation principle

Source: draw by author

3. Area for agriculture development

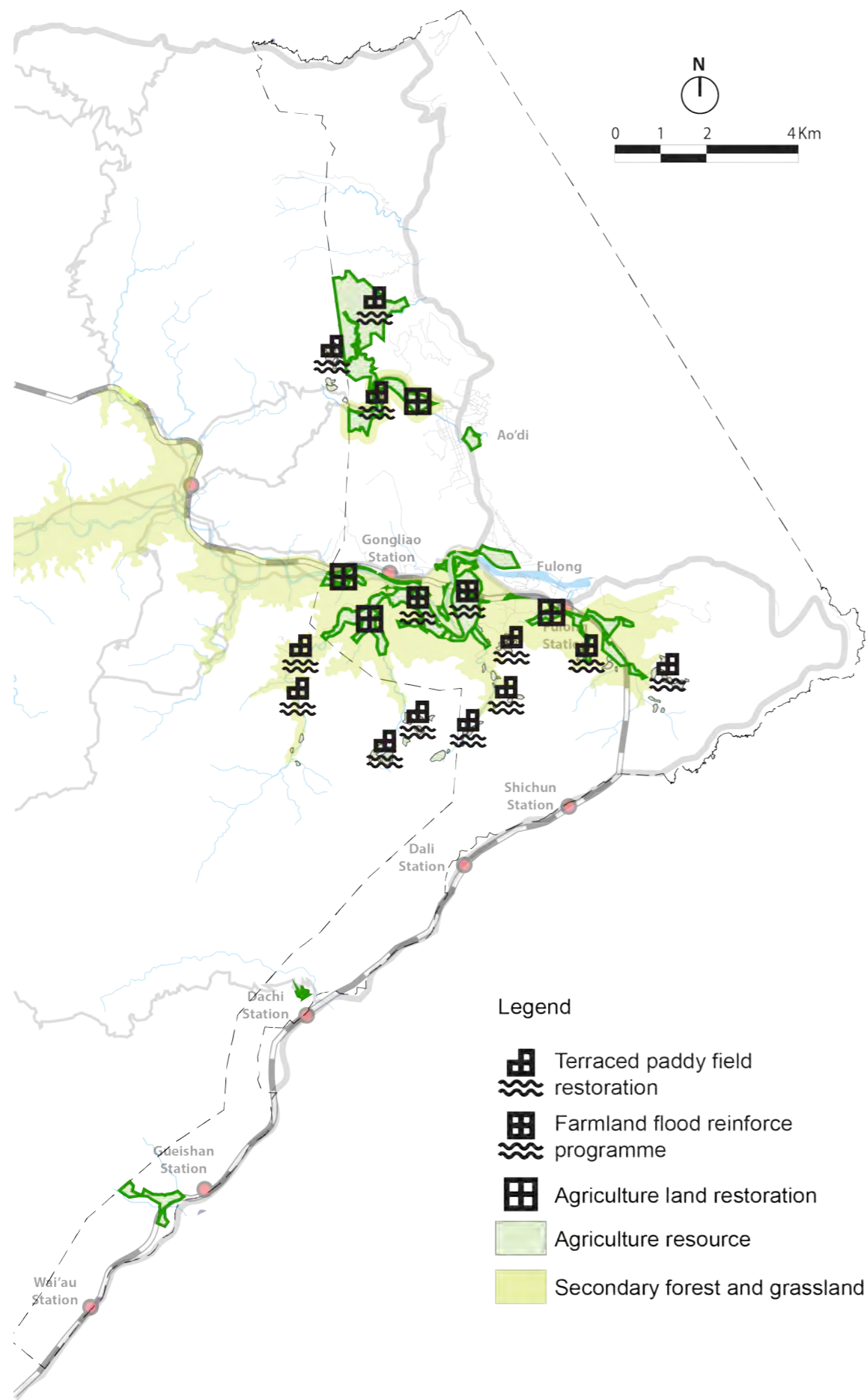


Figure 5.3 Agriculture development principle

Source: draw by author

4. Area for marine and fishery resource

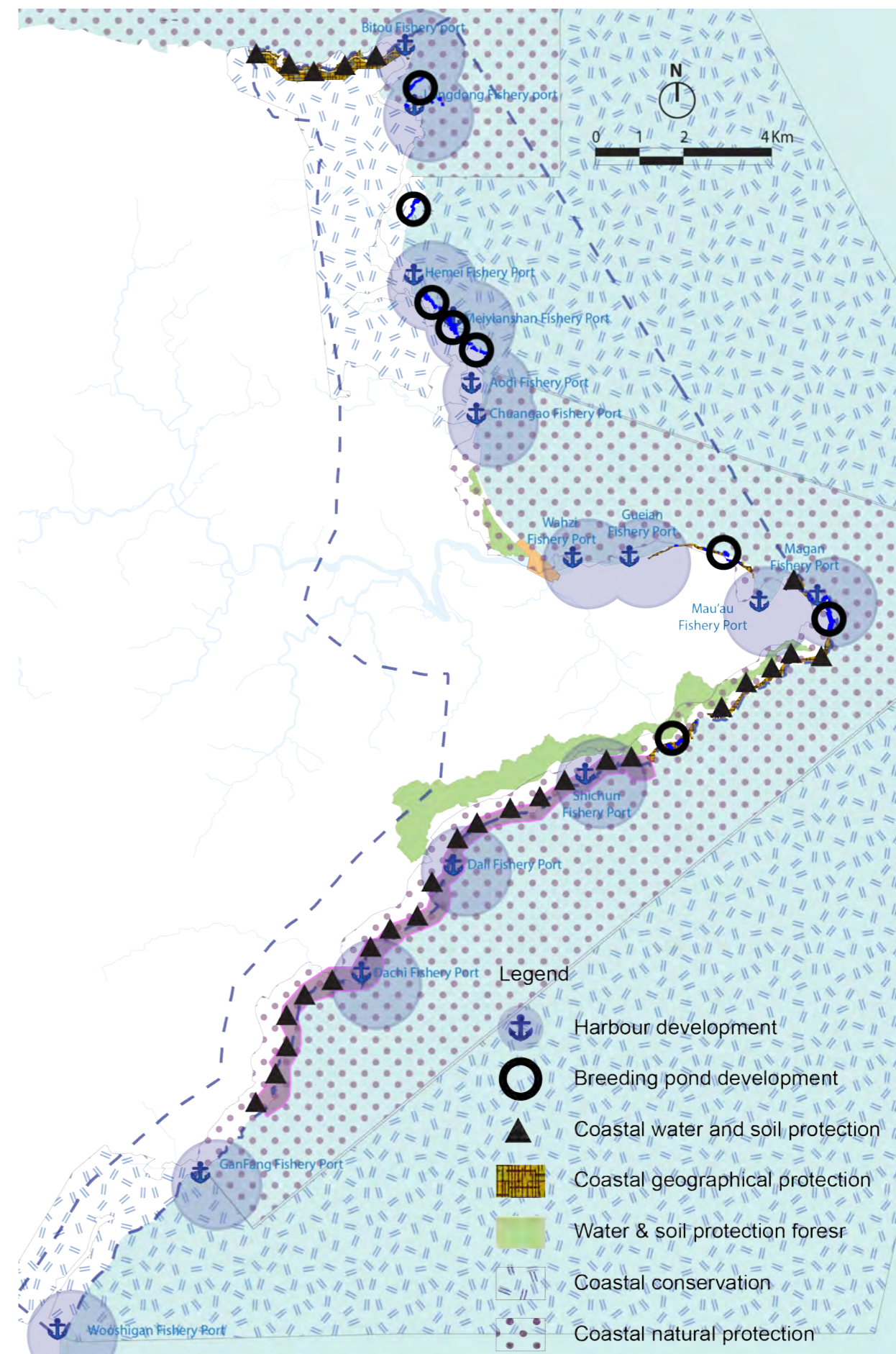


Figure 5.4 Marine resource and fishery industry development principle

Source: draw by author

5. General spatial concept

Six areas are defined according to the location or the landscape function.

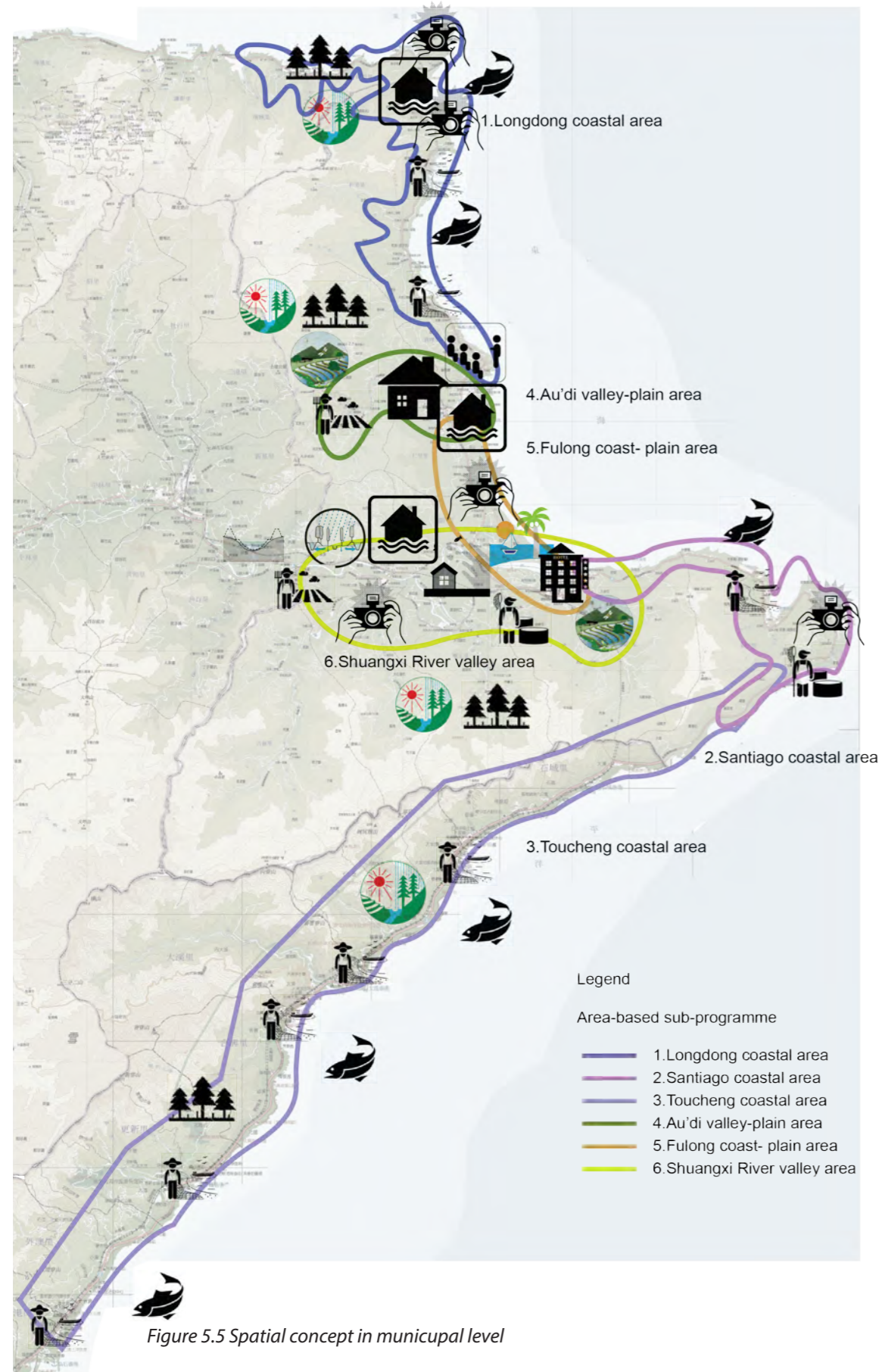


Figure 5.5 Spatial concept in municipal level

Source: draw by author

III. Test site - Shuangxi River valley area

1. Determining the "field of action"

This research will use Shuangxi River valley area as an example to stimulate how this adaptive planning framework apply in real place.

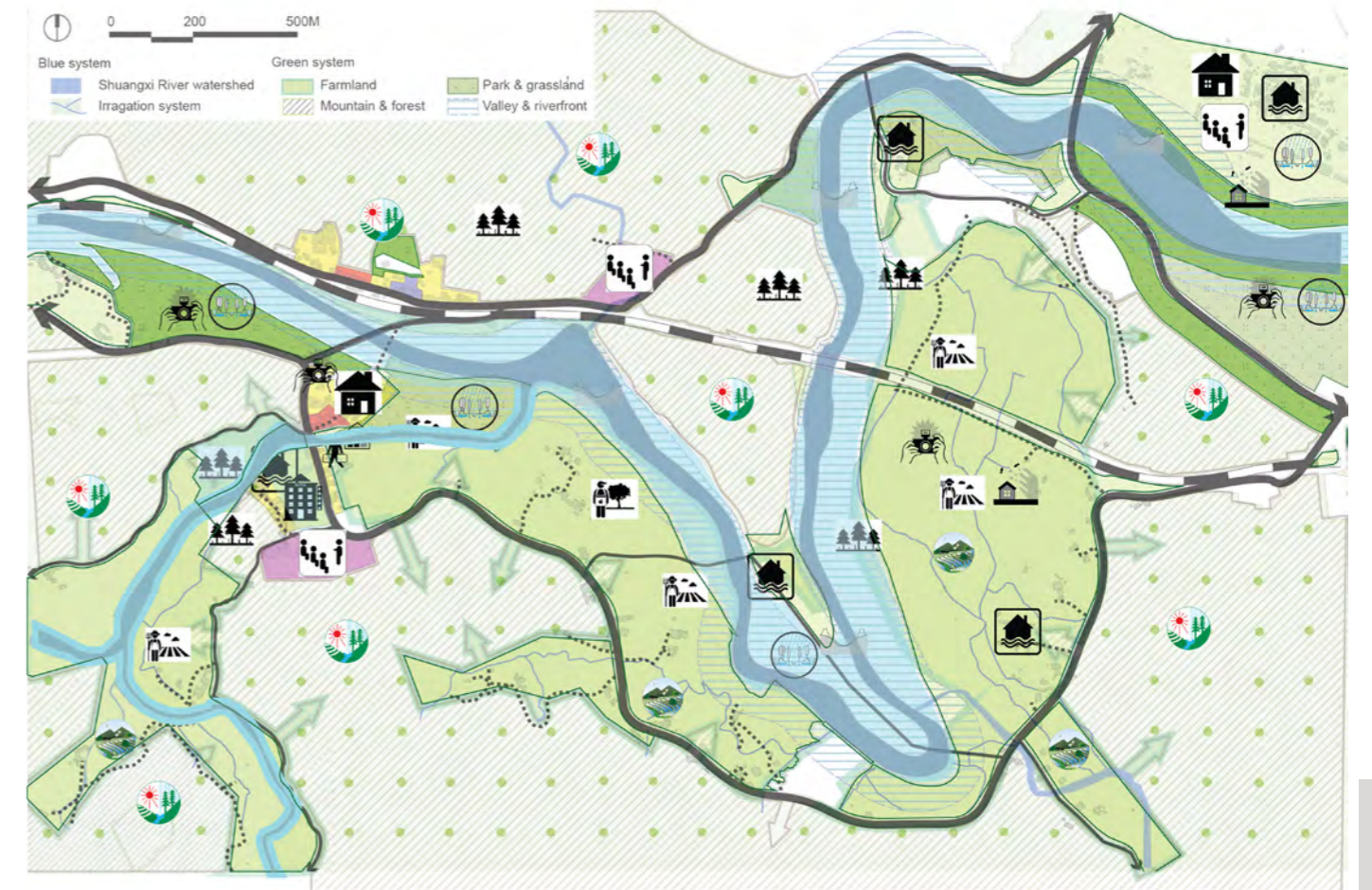


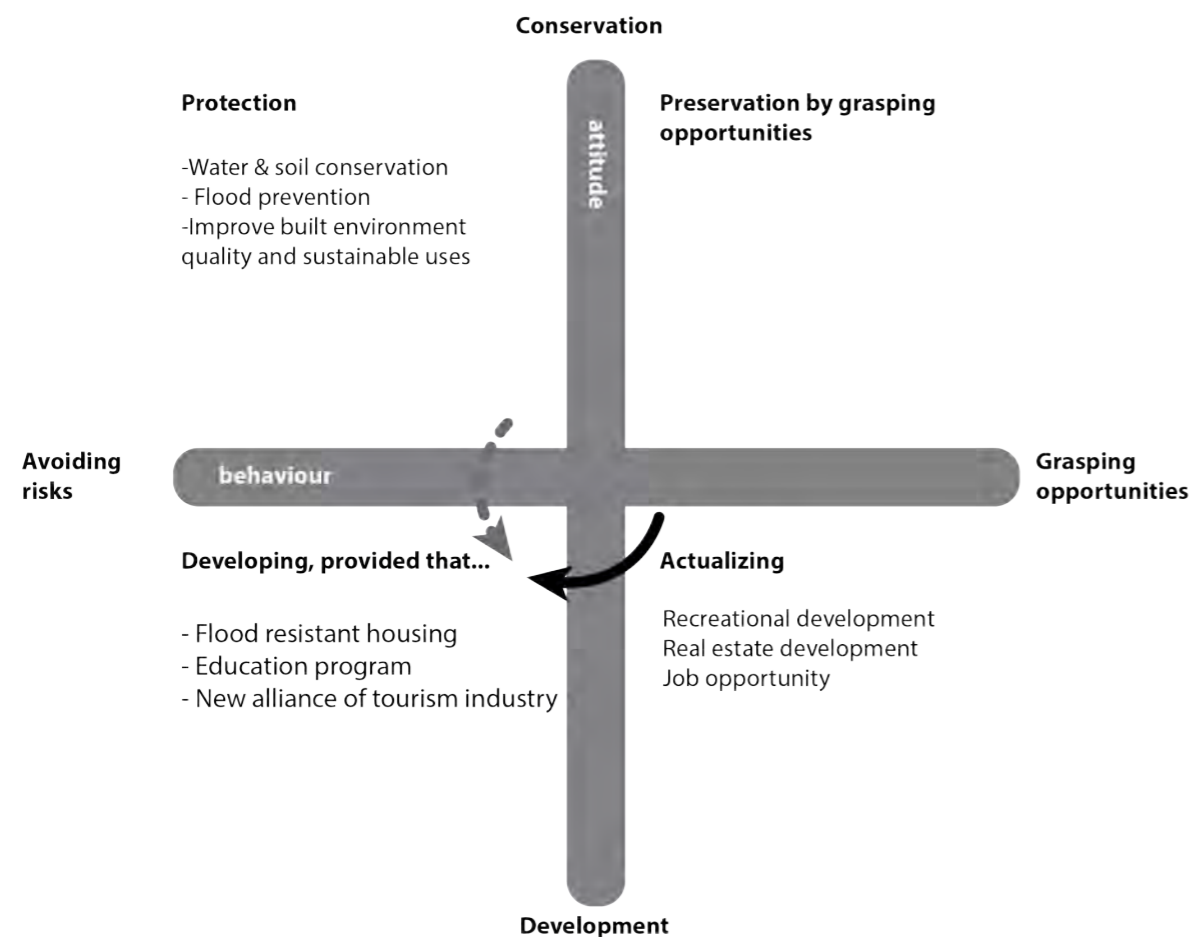
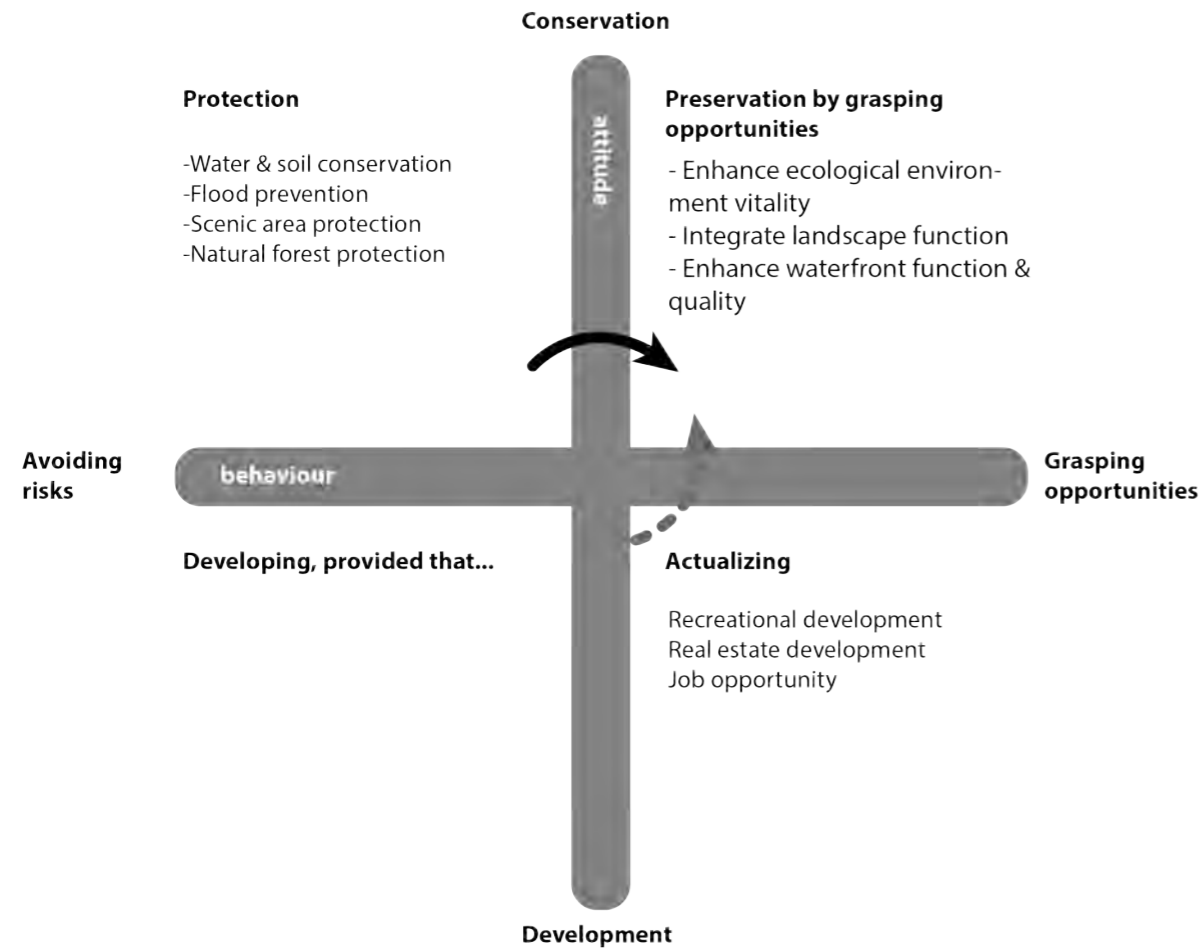
Figure 5.6 Shuangxi River valley area spatial development concept

Source: draw by author



2. Input of situation



2.1 Integrate conservation and development issue



2.2 Define possible strategy



Action plan

| | | |
|---|---|--|
|  | Ecological environment vitality | Increase / maintain farm land, wetland and forests ecosystem with existing plantation and ecological pathway. Reduce development impact and massive landform changes in new development. |
|  | Integrate landscape function | Integrate existing farm land, woods land and forest , village into part of water and soil conservation system. Integrate flood mitigation measure with water and soil protection function. |
|  | Enhance waterfront quality | Integrate ecological engineering flood method along riverfront. Integrate riverfront park with detention basin. |
|  | Flood resistant housing typology | Define flood resisting housing typology. Prevent existing settlements from flood. |
|  | Education program | local education program for water and soil management (Government and NGOs cooperation). Eco tourism training programme. |
|  | New tourism collaboration | New development project become part of flood prevention system. Promot tourism activities which can benefit local economy and improve living environment quality. Public & private partnership and development fund for local infrastructure facilities. |

3. Through put of the place

3.1 Development principle

The first part shows general six principles to guide future development vision. The second part shows how which landscape type can apply the policy, and the possible actors can be involved. Few instruments are selected as inspiration for involved actors to choose the best way for the site.

1. Ecological environment vitality

The mountain, valley and coast provide dynamic land use function to maintain Soil and Water conditions in environmentally sensitive areas. The quality of the natural landscape and security of current settlements should be considered as the first priority.

The preservation and restoration of landscape elements in combine with new uses such as small scale business, low environment impact recreation.

2. Integrate landscape function

The old farm land properties are modernized to meet the demand of contemporary land use especially support soil and water conservation and innovation agricultural /non-agricultural uses.

Farm lands offer the place for the extension of city mentality and transitional landscape from built-up area to natural environment.












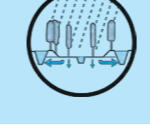















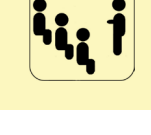





3. New alliance of tourism industry

This refers to establishing connections between farmers, local dwellers, developers and the general public in order to strike a balance between profitability and landscape preservation.

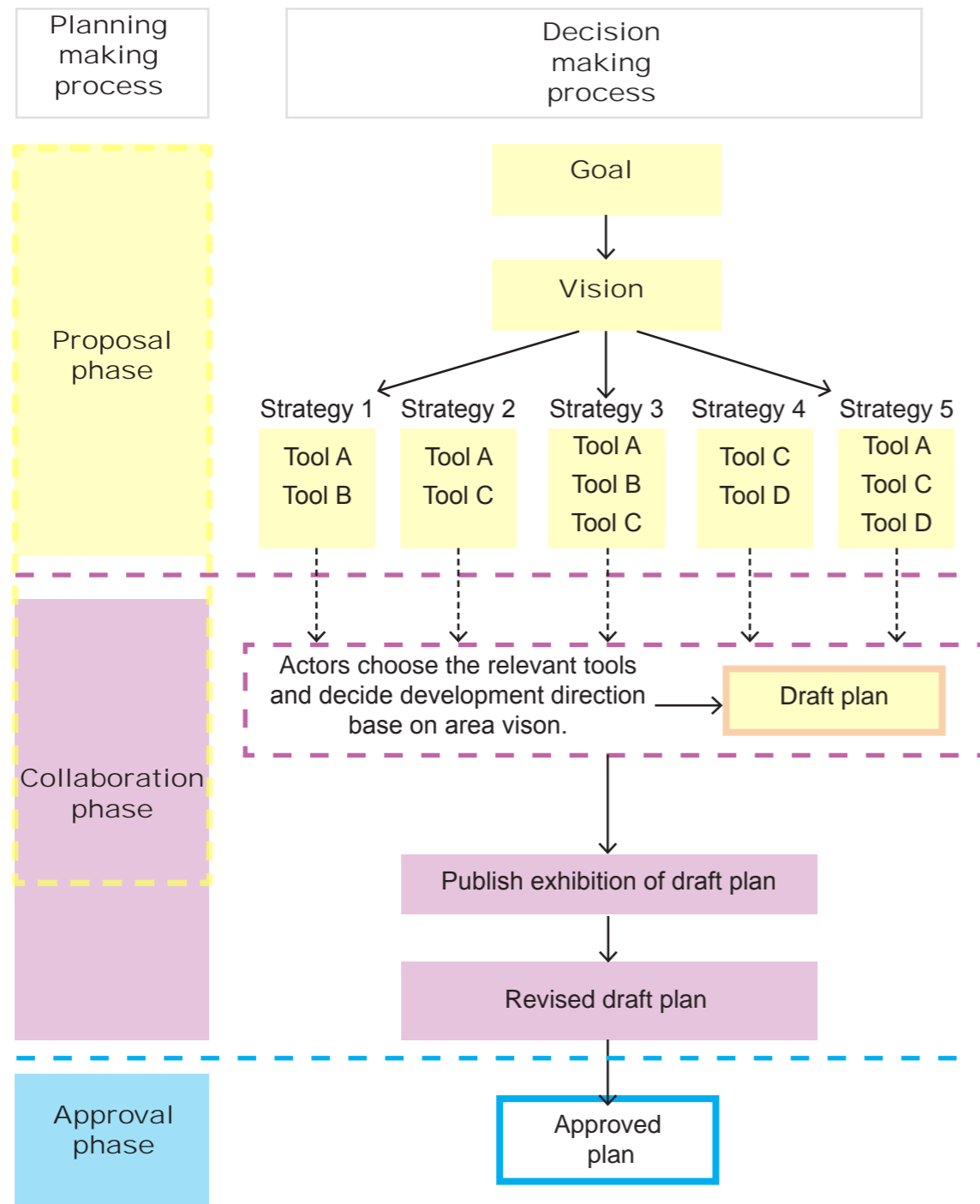
The main idea is to improve the quality through tourism development.

According to the limitation development capacity, big scale development is not allowed. Any new investment should intensify the current settlement and its environment quality.

3.2 Recommend stakeholder collaboration form

| Conditions | Developer | Local participants | Government sector / NGO | Other stakeholder |
|--|---|--|---|---|
|  Ecological environment vitality |  Area developer | +  Residents | +  Soil & Water conservation Bureau | +  |
|  Integrate landscape function |  Area developer | +  Farmers | +  Forestry Bureau +  Agriculture Council | +  |
|  Enhance waterfront function & quality |  Area developer | +  Residents | +  Water Resource Agency +  Construction & Planning Agency | +  |
|  Flood resistant housing |  Housing developer | +  Residents | +  Construction & Planning Agency | +  |
|  New alliance of tourism industry |  Tourism developer | +  Landowners | +  Tourism Bureau | +  |
|  Education program |  Area developer | +  Residents | +  Environmental Ethics Foundation of Taiwan +  Local newspaper | +  |

3.3 Proposed planning making process



Function addressed

Integrate farm land into soil and water conservation system

Potential for benefit

- Flood mitigation
- Soil conservation
- Aquatic ecosystem
- Socioeconomic aspects

Case study - Farmland restoration in Gongliao



Integrate terraced paddy fields into water & soil conservation system

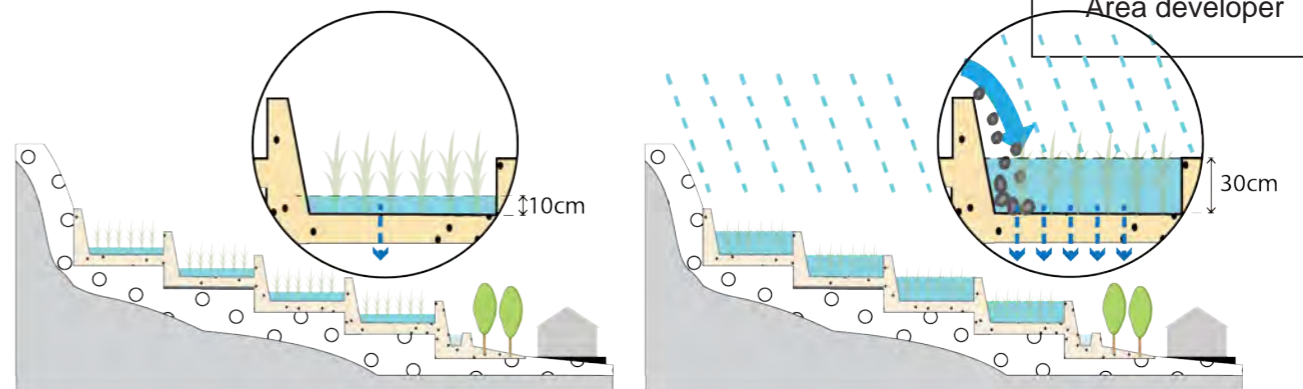
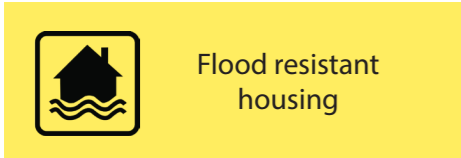


Figure 5.7 Terraced farming water restoration solution

Applicability

| Applicability to landscape type | | |
|---|--------------------|----------------------------------|
| 1 | Sand beach | <input type="radio"/> |
| 2 | Pebble shore | <input type="radio"/> |
| 3 | Marina | <input type="radio"/> |
| 4 | Breeding pond | <input type="radio"/> |
| 5 | Coastal ridge | <input type="radio"/> |
| 6 | Cliff | <input type="radio"/> |
| 7 | Windbreak | <input checked="" type="radio"/> |
| 8 | Plain | <input checked="" type="radio"/> |
| 9 | Flood plain | <input checked="" type="radio"/> |
| 10 | Terraced farm land | <input checked="" type="radio"/> |
| 11 | Valley | <input checked="" type="radio"/> |
| 12 | Mountain ridge | <input type="radio"/> |
| <input checked="" type="radio"/> High <input checked="" type="radio"/> Medium <input type="radio"/> Low | | |

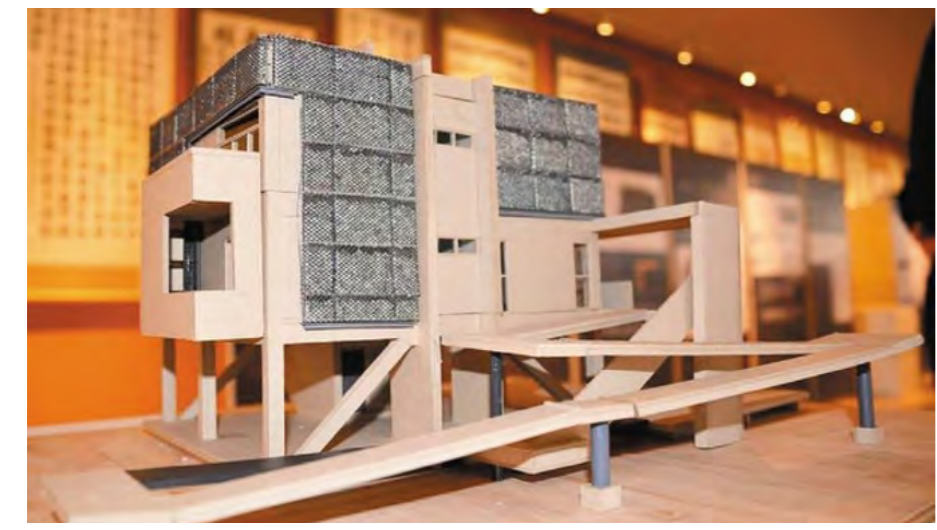
| Collaboration stakeholder | | |
|---------------------------|----------------|-------------------------------------|
| Public sector | | |
| | CPAMI | <input checked="" type="checkbox"/> |
| | WRA | <input checked="" type="checkbox"/> |
| | TBMT | <input type="checkbox"/> |
| | NCNSAA | <input type="checkbox"/> |
| | SWCB | <input checked="" type="checkbox"/> |
| | COA | <input checked="" type="checkbox"/> |
| | FBCOA | <input type="checkbox"/> |
| | FACOA | <input type="checkbox"/> |
| Private sector | | |
| | Civic group | <input checked="" type="checkbox"/> |
| | Residents | <input checked="" type="checkbox"/> |
| | Area developer | <input type="checkbox"/> |



Function addressed
Illustrate possible options to live with water

Potential for benefit
Flood mitigation
Flood prevention education

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



Flood resistant neighborhood

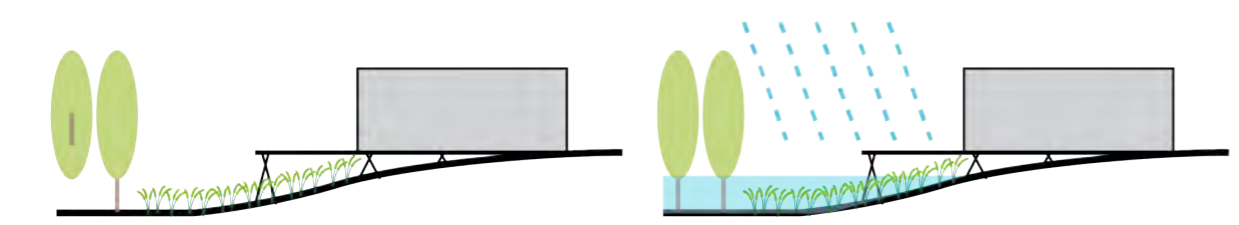


Figure 5.8 Elevated housing solution

Applicability to landscape type

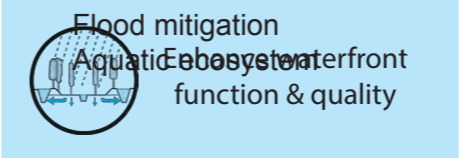
| | | |
|----|--------------------|---|
| 1 | Sand beach | ● |
| 2 | Pebble shore | ● |
| 3 | Marina | ◐ |
| 4 | Breeding pond | ● |
| 5 | Coastal ridge | ◐ |
| 6 | Cliff | ○ |
| 7 | Windbreak | ● |
| 8 | Plain | ◐ |
| 9 | Flood plain | ● |
| 10 | Terraced farm land | ● |
| 11 | Valley | ● |
| 12 | Mountain ridge | ○ |

● High ◐ Medium ○ Low

Collaboration stakeholder

| | |
|----------------|---|
| Public sector | |
| CPAMI | ☑ |
| WRA | ☑ |
| TBMTC | ○ |
| NCNSAA | ☑ |
| SWCB | ○ |
| COA | ○ |
| FBCOA | ○ |
| FACOA | ☑ |
| Private sector | |
| Civic group | ☑ |
| Residents | ☑ |
| Area developer | ☑ |

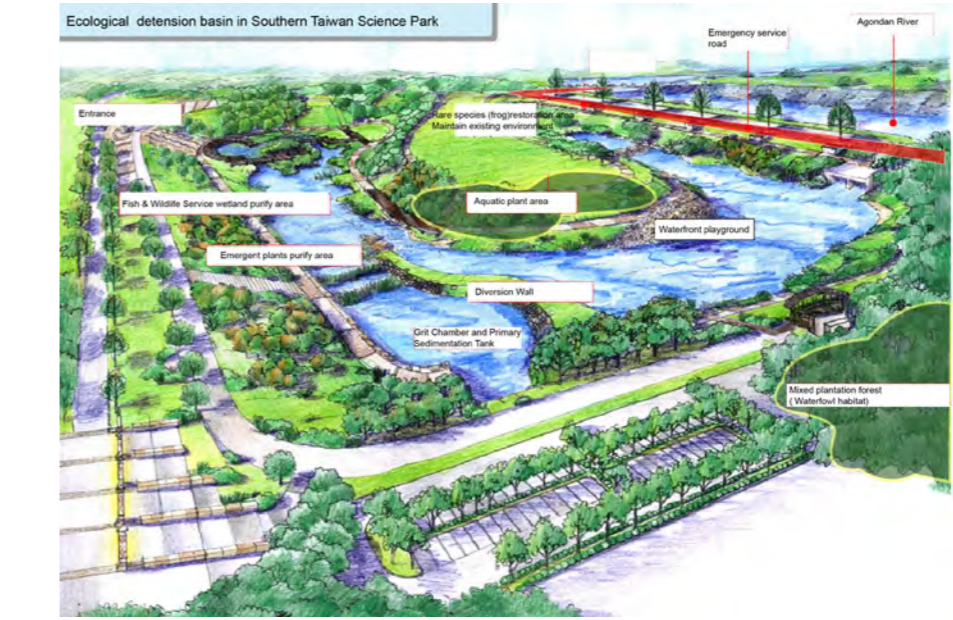
Source: Draw by author



Function addressed
Transform riverfront park into an ecological landscape

Potential for benefit
Flood mitigation
Aquatic ecosystem

Case study - Ecological detension basin in Southern Taiwan Science Park



Source: Green pavilion website (<http://www.topid.net/>)

Integrate detention pond with waterfront park

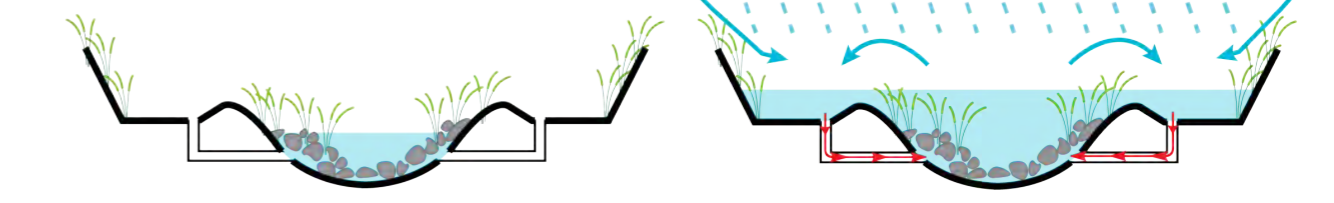


Figure 5.9 Water front park solution

Source: Draw by author

Applicability to landscape type

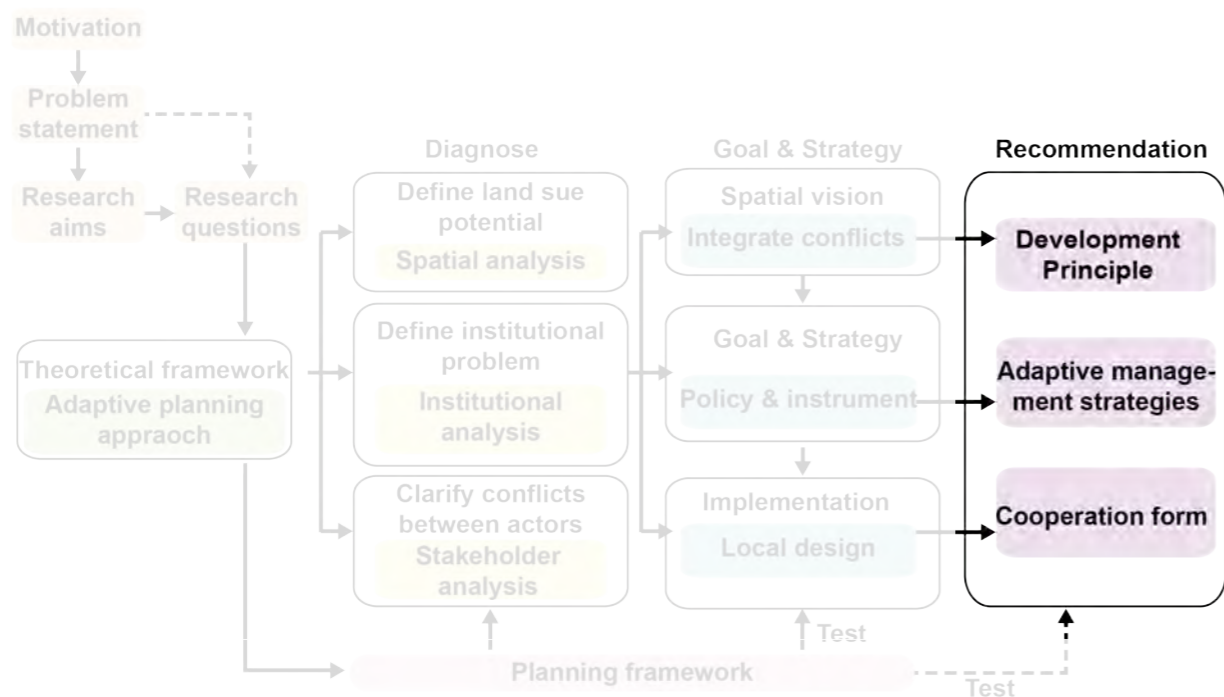
| | | |
|----|--------------------|---|
| 1 | Sand beach | ◐ |
| 2 | Pebble shore | ◐ |
| 3 | Marina | ◐ |
| 4 | Breeding pond | ◐ |
| 5 | Coastal ridge | ◐ |
| 6 | Cliff | ○ |
| 7 | Windbreak | ◐ |
| 8 | Plain | ● |
| 9 | Flood plain | ● |
| 10 | Terraced farm land | ◐ |
| 11 | Valley | ● |
| 12 | Mountain ridge | ◐ |

● High ◐ Medium ○ Low

Collaboration stakeholder

| | |
|----------------|---|
| Public sector | |
| CPAMI | ☑ |
| WRA | ☑ |
| TBMTC | ○ |
| NCNSAA | ☑ |
| SWCB | ☑ |
| COA | ○ |
| FBCOA | ☑ |
| FACOA | ○ |
| Private sector | |
| Civic group | ☑ |
| Residents | ☑ |
| Area developer | ☑ |

Part F. Evaluation & Recommendation



I. The relationship between research and design

The research aims to find possible solution in dealing with territorial conflicts in dynamic environment area. The research focus on three parts: existing planning proposal, landscape, and stakeholders.

Firstly, the existing planning proposal has difficult in accommodating spatial changes and land use demand. The reason is the zoning control and regulations make development potential and capacity very limited. Secondly, the dynamic landscapes dominate land use and its function. However, zoning cannot provide sufficient instrument for local users' demand and development opportunity. The rural landscape in this research site consist farmland, grassland, and secondary woods, zoning control can efficiently prevent environmentally sensitive areas from development, but a sub-zone for development with certain conditions is necessary. Thirdly, diversity of actors in the area shows complex interrelationship. New forms of planning framework which can reflect multi actors' demands and reach new commons of the area are necessary.

II. The relationship between the theme of the studio and the subject chosen within this framework

The research tackles with a territorial management issue that competing interests happened in Taiwan National scenic area. The Urbanism Research Theme international planning and developing regions focus on comparative analysis of verify forms of intervention through spatial planning and territorial management and building valid methodology for international case studies. In addition, Complex cities studio focuses research on spatial planning, spatial strategy formulation and design, my research theme will be relevant to The Urbanism Research Theme international planning and developing regions.

Taiwan is located in seismic zone and on the routes of South Pacific typhoon, more than 70 per cent of the total Taiwan area are designated as environmentally sensitive areas. Because the rapid urban development has occupied most of the plain areas, which increases the development pressure in urban fringe and rural area. Therefore, the existing planning regime in Taiwan needs to be elaborated and find alternative instruments to resolve the competing interests and conflicts in the case study area. A regional plan in Northeast coastal national scenic area will be de-

veloped as an exemplary case that can define the development capacity for sustainable development. Hence, a planning regime that consider environmental, economic, and social factor into the conservation areas management needs to be clarified. Taiwan is part of South-east Asia developing regions, the study in Taiwan can learn the international spatial planning methodology, and transfer the experience as part of comparative analysis for future research.

III. The relationship between the methodical line of approach of the studio and the method chosen in this framework

Complex cities studio focuses research on spatial planning, spatial strategy formulation and design, therefore this research intends to test if adaptive planning approach could offer the potential to develop spatial vision and concept. In addition, this research also gives a test the applicability of shifting the planning tradition from plan-making to place-making in Taiwan. Instead of focus on ecosystem management, this research focuses on the possible strategy and instrument that could apply to the case study area..

As mentioned in the landscape diagnose, the same zoning type could not accommodate the land use problems in different site. It means that residential zone in coastal area and mountain area has different issue which is highly related to its location and environment. The planning itself should provide the capacity for changes. Spatial development and conservation is a shift process, the planning strategy should be adaptive to deal with land use changes according to social demand, while lead the area toward a prosperous vision. In the case study site, development area and non-development area are clearly defined. Farm land was designated as buffer area to shape the extension of existing settlement. The real situation is more complex than existing zoning. Accordingly, the responsible and value of Soil and Water protection and flood prevention measure was not conveyed in development area such as residential zone and commercial zone. A multifunction buffer area which can accommodate natural disaster and new development capacity is necessary. As a result, new zoning type that could accommodate existing land use into multifunction uses in existing master plan should be elaborated.

IV. The relationship between the project and the wider social context

Since the existing planning regime in Taiwan needs to be reviewed and find alternative instruments to accommodate competing interests and conflicts, the research in Northeast Coast National Scenic Area will be an exemplary case that can define the development capacity for sustainable development.

In addition, this research only provides the possible strategy and tool, which is based on the idea of adaptive approach in the Netherlands regional planning. Hence, a planning regime that consider environmental, economic, and social factor into the conservation areas management will transfer as an international spatial planning comparative analysis for further research.

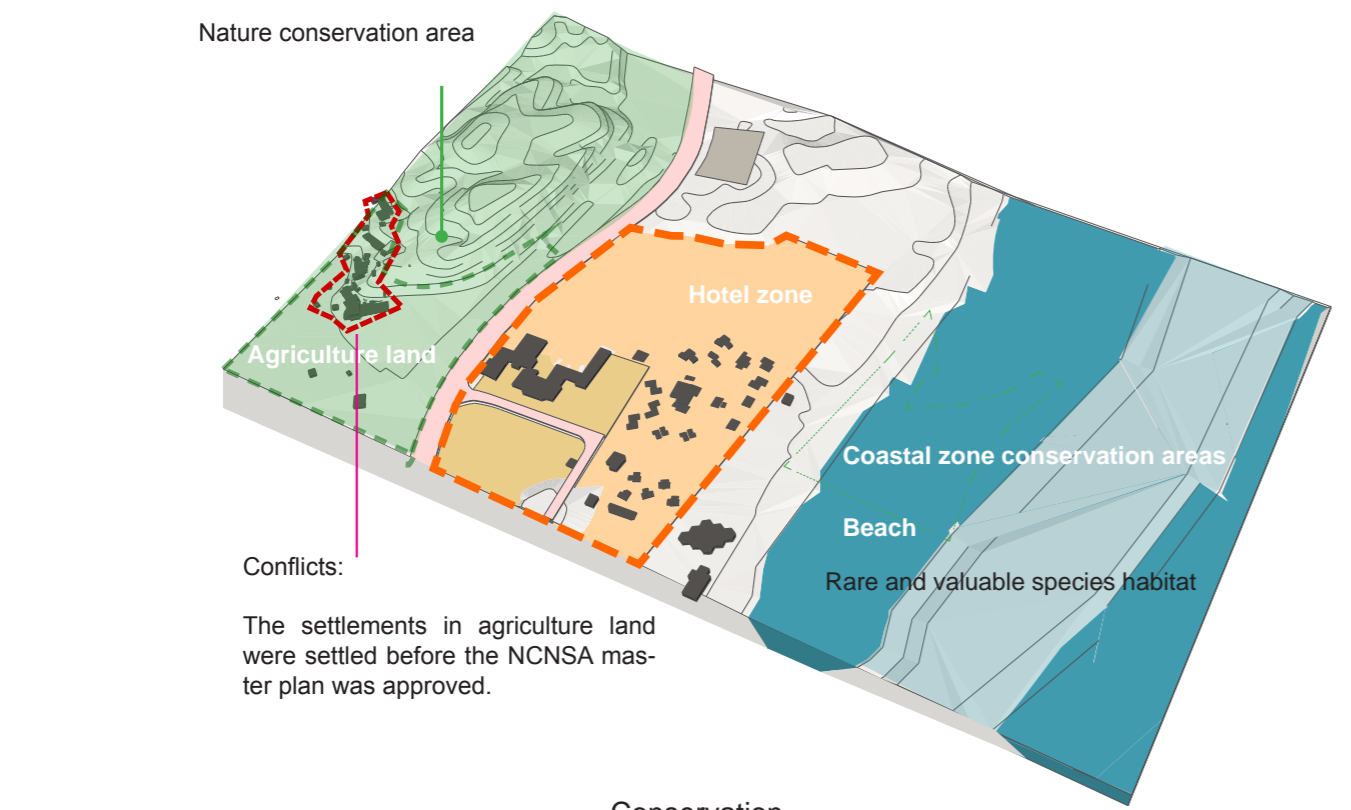
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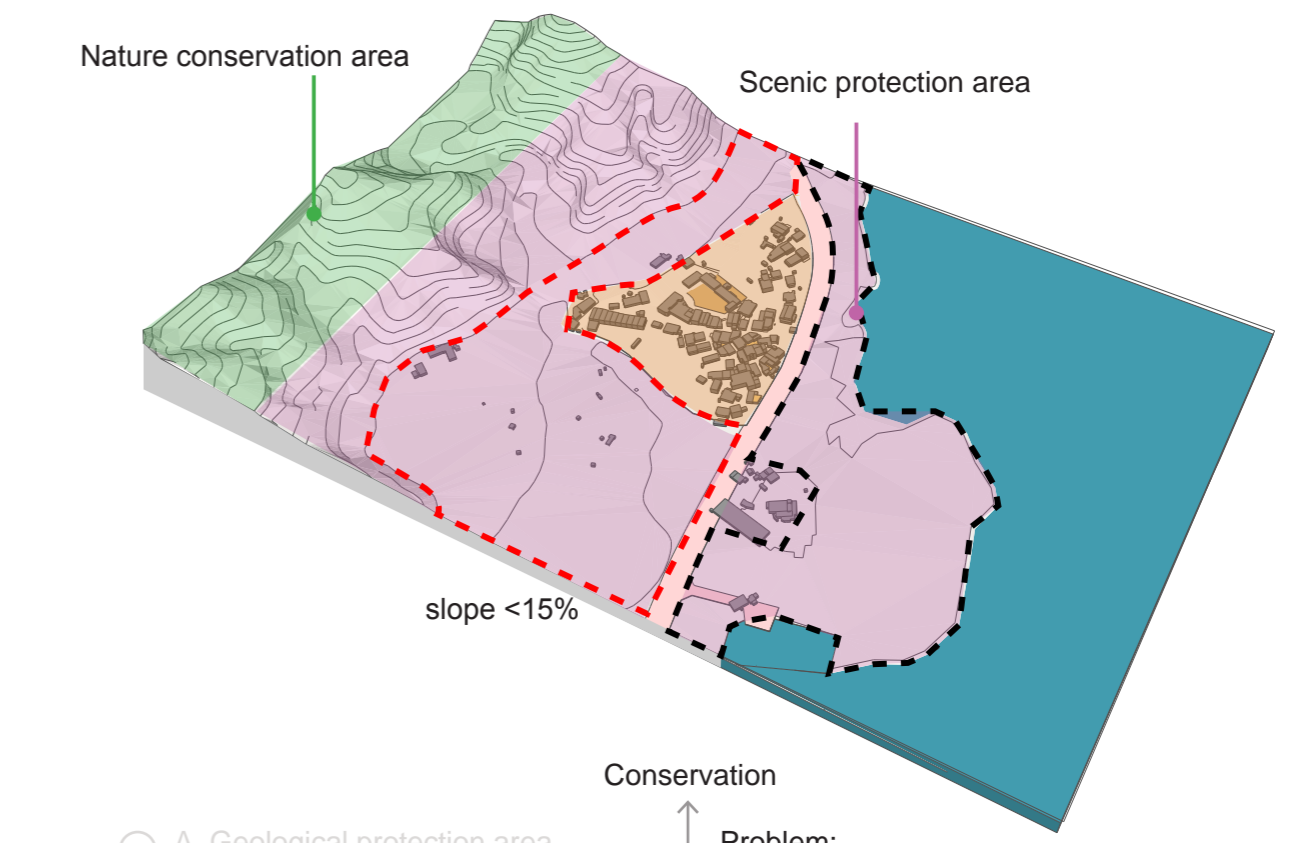
Internet sources

- Website of the Laws and Regulations Database of China, <http://law.moj.gov.tw/Eng/>
- Website of the Construction and Planning Agency Ministry of Interior, <http://www.cpami.gov.tw/eng/>

Appendix II - landscape types



Conflicts:
The settlements in agriculture land were settled before the NCNSA master plan was approved.



Problem:
The scenic protection area was delineated as prohibited for development area. The average mountain slope along coastal ridge exceed 30 %, therefore the vegetation such as forest and grassland were designated for Soil and Water protection as well as fishery protection purpose. In this case, existing settlements along coastal ridge lose the development rights after the delineation of scenic protection area.

Potential:
Maintain the current land uses and improve scenic area environment quality by DEREGULATION CONDITIONS.
--> Flexible regulation
--> Further discussion need to be conduct.

