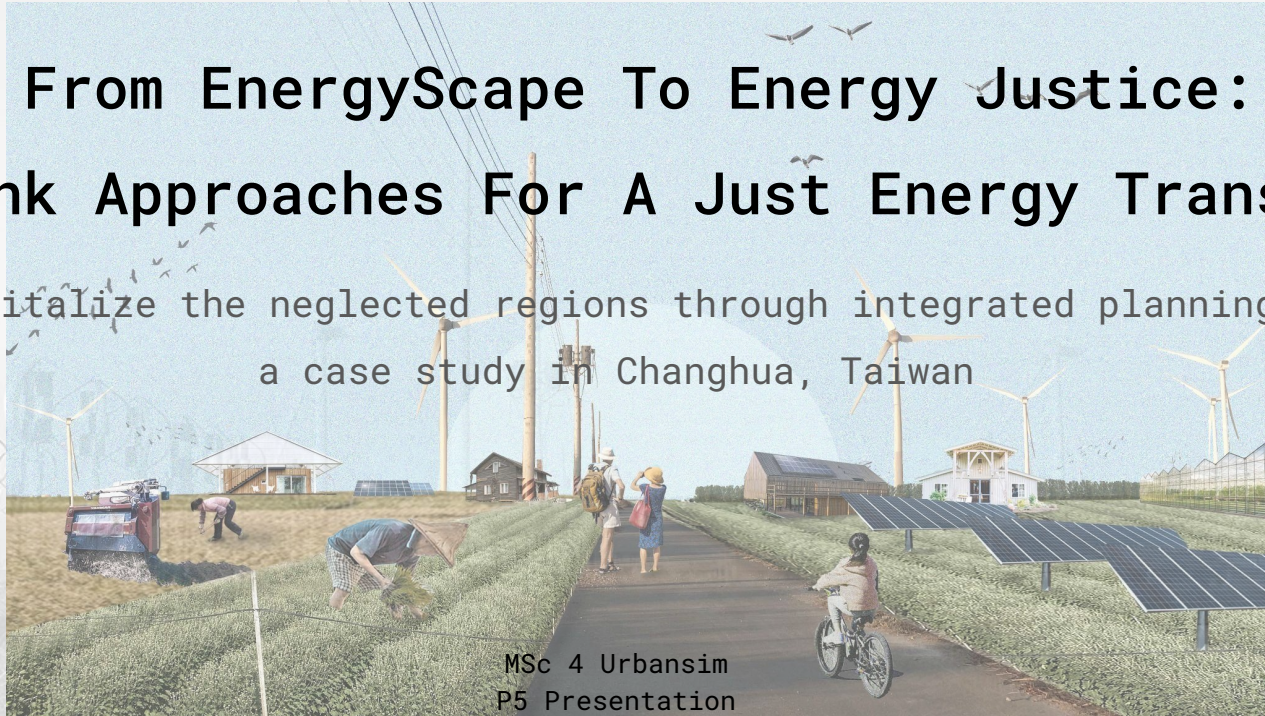


From EnergyScape To Energy Justice: Rethink Approaches For A Just Energy Transition

Revitalize the neglected regions through integrated planning:
a case study in Changhua, Taiwan



MSc 4 Urbansim
P5 Presentation

Kuan-Ting Liu (Lucy) 5582911

Planning Complex Cities

First mentor: Marcin Dabrowsk

Second mentor: Ulf Hackauf

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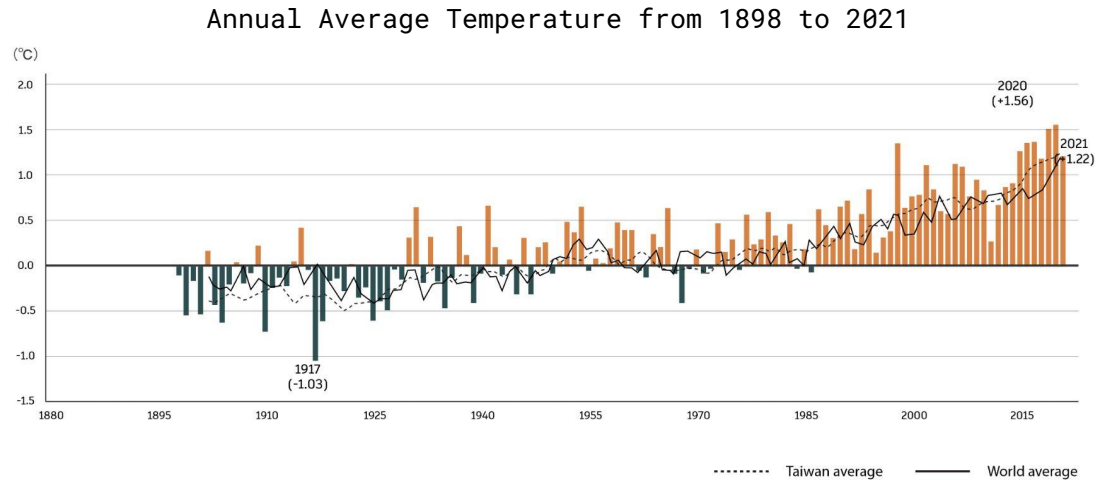
01

Context Of Problem Field



Context Of Problem Field

-Climate change



source: Central Weather Bureau & NASA
Edited by Author

Context Of Problem Field

People protest for climate justice at COP27

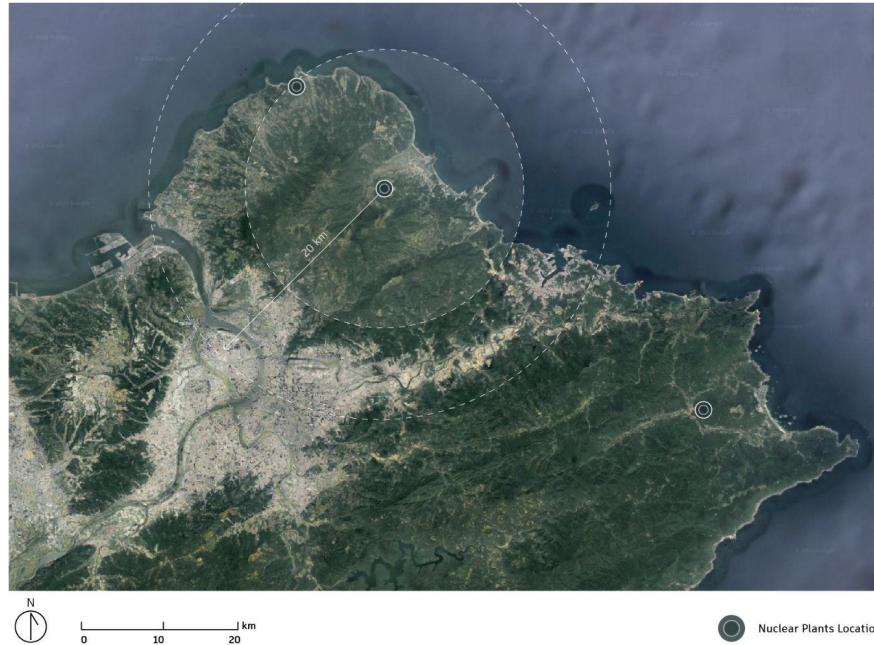


source: UNFCC (2022)

Context Of Problem Field

- Two nuclear power plants: within 30 km of the capital
- $\frac{1}{3}$ of Taiwanese are included

Location of the Nuclear Power Plants



source:Google Earth (2023)

Context Of Problem Field

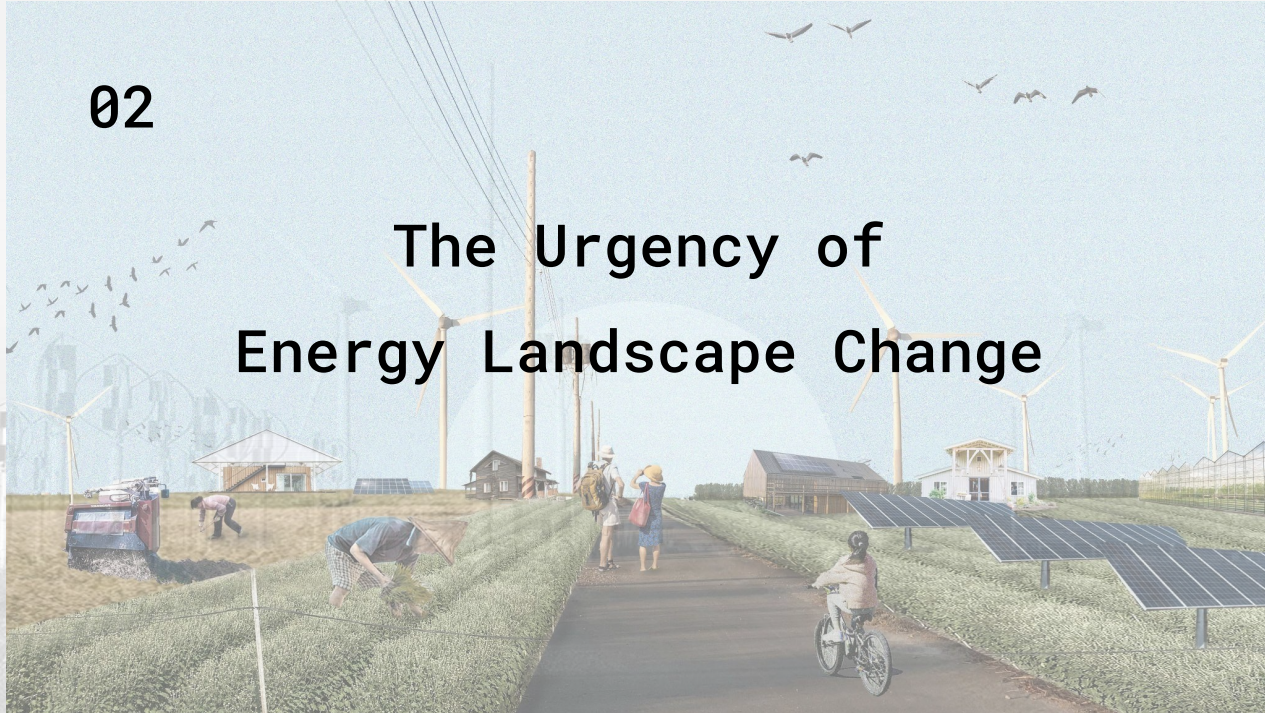
nuclear power plants in Taiwan



source: Business Today(2021)

02

The Urgency of Energy Landscape Change



The Urgency of Energy Landscape Change

-The proposed of ideal condition: agriculture

Ideal multifunctional use in agricultural lands



source:UEUE Cooperation (2023)

The Urgency of Energy Landscape Change

-Current condition: agriculture

Current multifunctional use in agricultural lands



source:News&Market (2020)

The Urgency of Energy Landscape Change

-The proposed of ideal condition: aquaculture

Ideal multifunctional use in aquacultural lands



source:News&Market (2020)

The Urgency of Energy Landscape Change

-Current condition: aquaculture

Current multifunctional use in aquacultural lands



source:MEA (2021)

The Urgency of Energy Landscape Change

-The landscape change in agricultural lands

The landscape changes from 2018 to 2023



source:Google Earth (2023)

The Urgency of Energy Landscape Change

- The landscape change in aquacultural lands

The landscape changes from 2018 to 2023



source:Google Earth (2023)

The Urgency of Energy Landscape Change

-The landscape change in mountainside areas

The landscape changes from 2018 to 2023



source:Google Earth (2023)

03

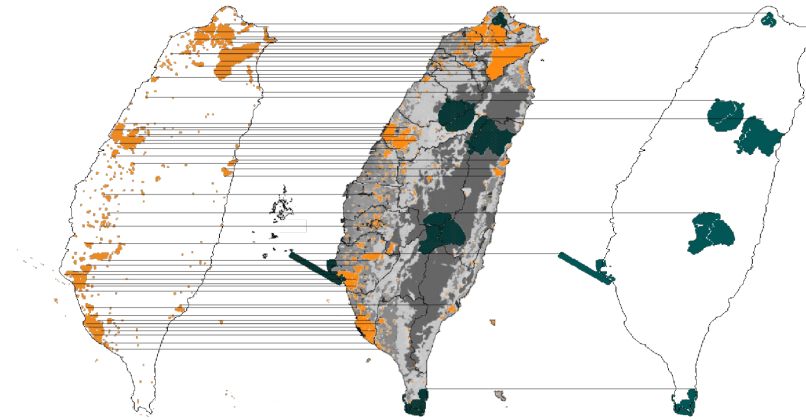
The Challenges Behind The Urgency



The Challenges Behind The Urgency

-Systematic deficiencies lead to disorderly changes in the landscape.

Separate Planning Systems



Urban Planning System

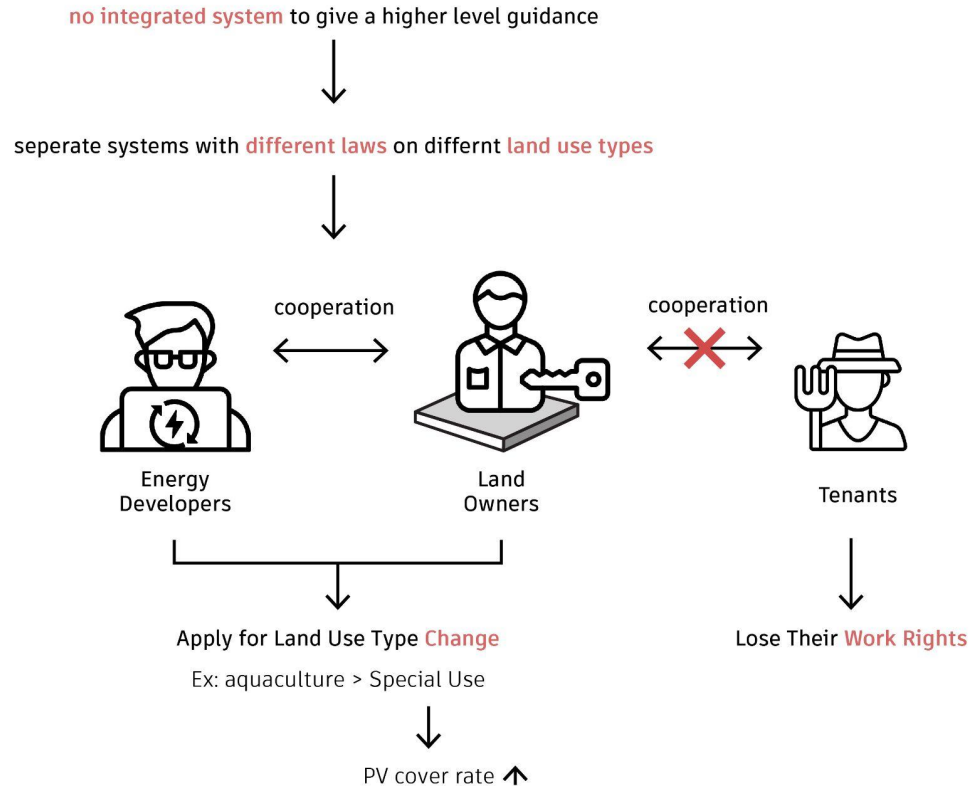
Regional Planning System
(Non-urban area)

National Park System



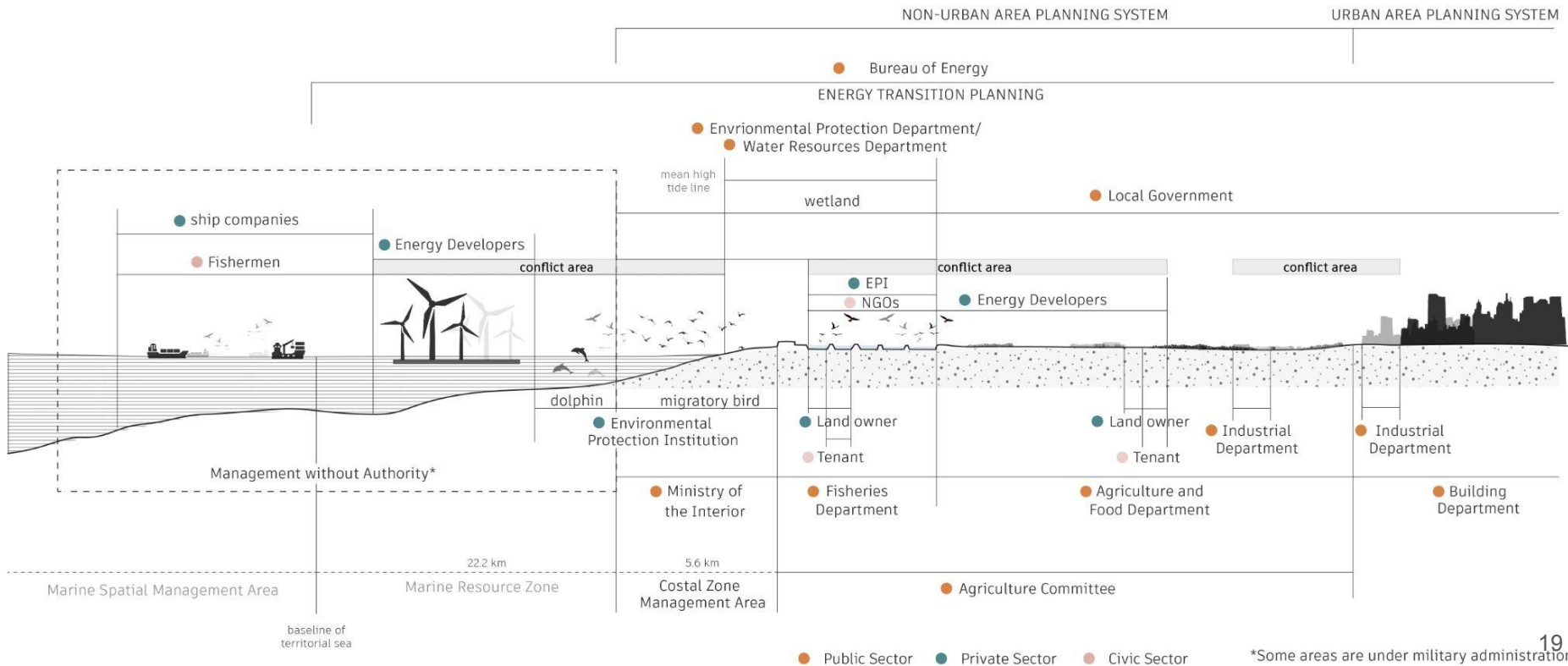
The Challenges Behind The Urgency

-Systematic deficiencies lead to disorderly changes in the landscape.



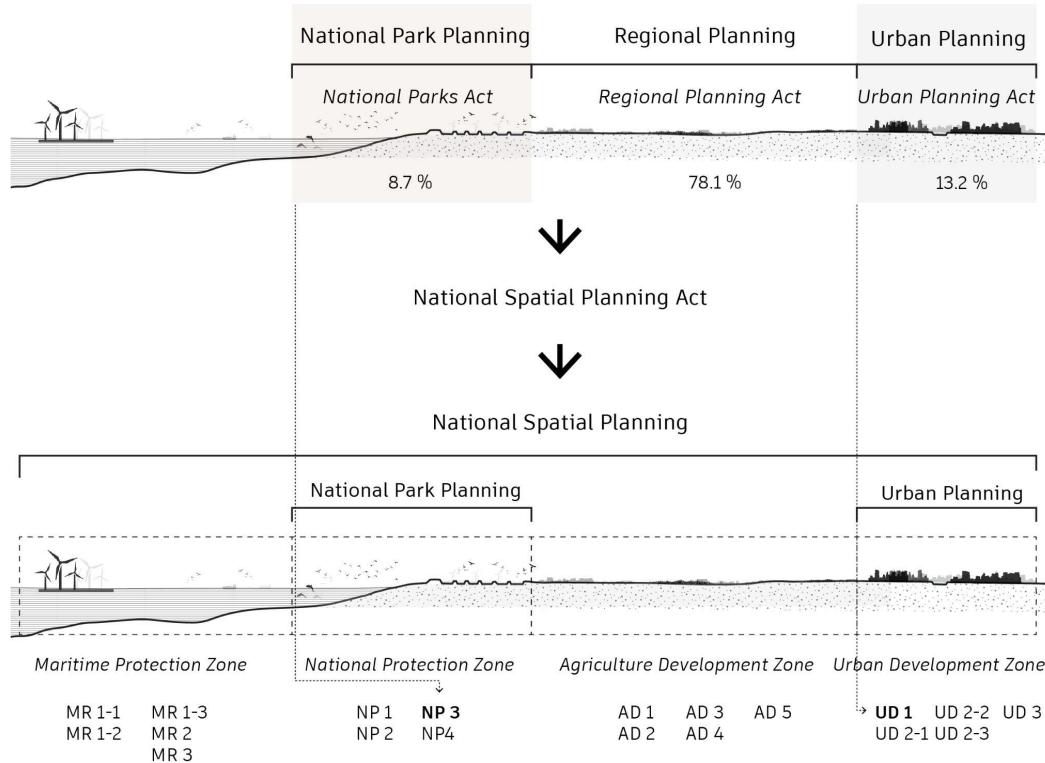
The Challenges Behind The Urgency

-Systematic deficiencies lead to disorderly changes in the landscape.



The Challenges Behind The Urgency

-2025 National Spatial Plan: another threat? or a tool to mitigate problems?



04

Case Study Area: Changhua

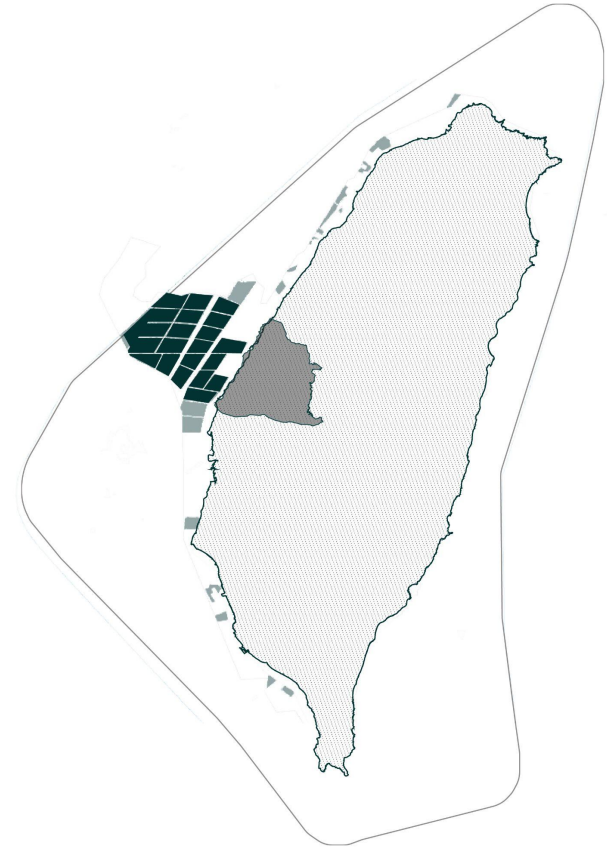
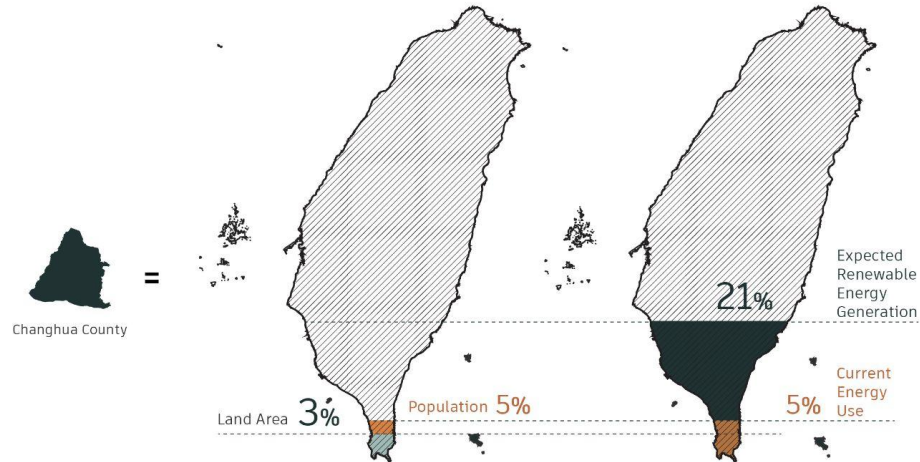


Case Study Area: Changhua

- Best solar and wind energy potential in Taiwan
- 21 of Taiwan's 36 wind farms are located here
- Most efficient solar potential

-Many hidden threats

Wind Farm Locations

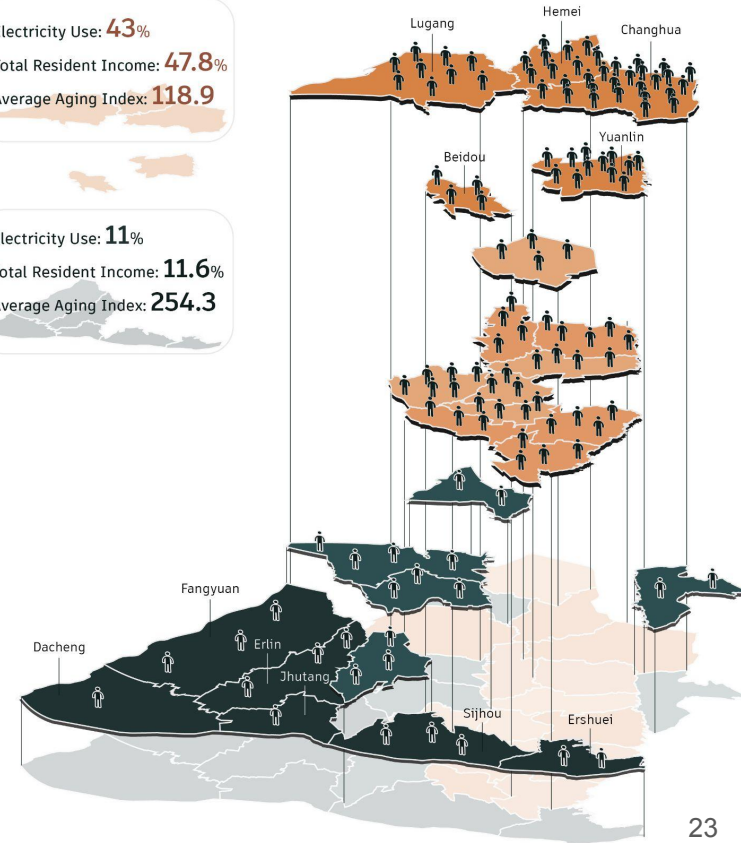


Case Study Area: Changhua

-Significant imbalance in development between districts

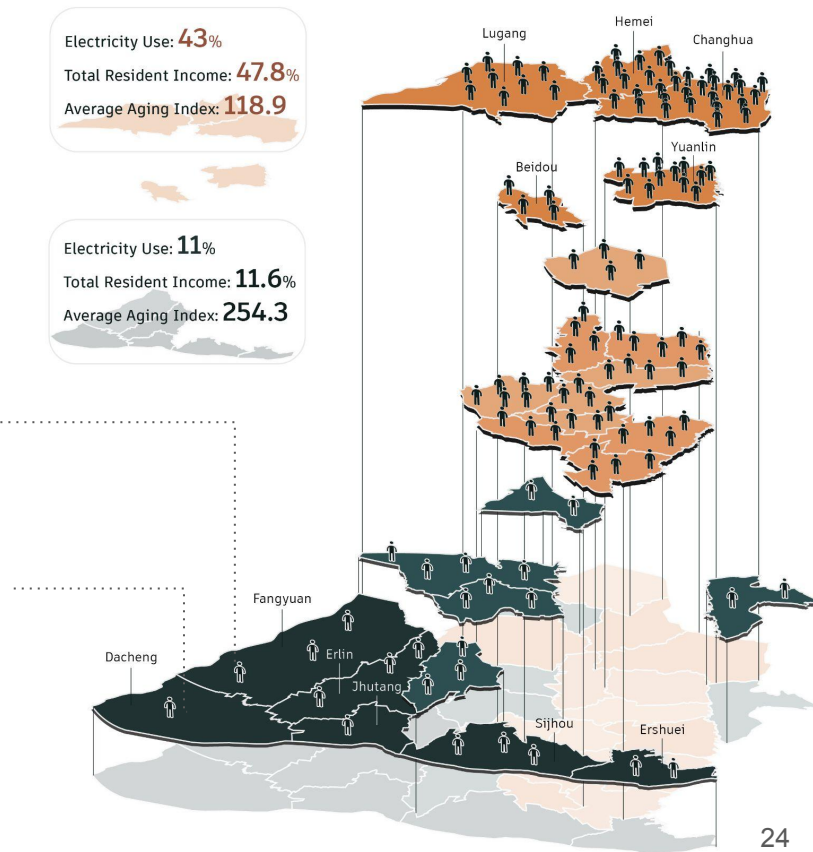
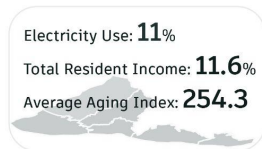
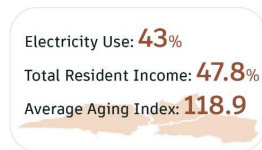
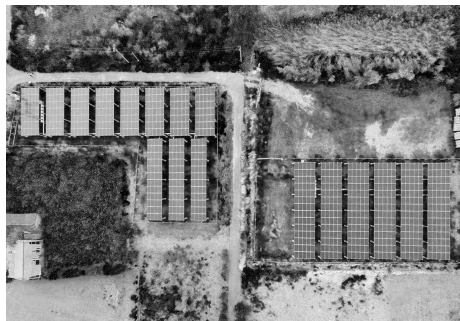
-**Inequality** of regional development strategies

-**Uneven** resources distribution between townships



Case Study Area: Changhua

-RE development projects are concentrated in South-West regions



Case Study Area: Changhua

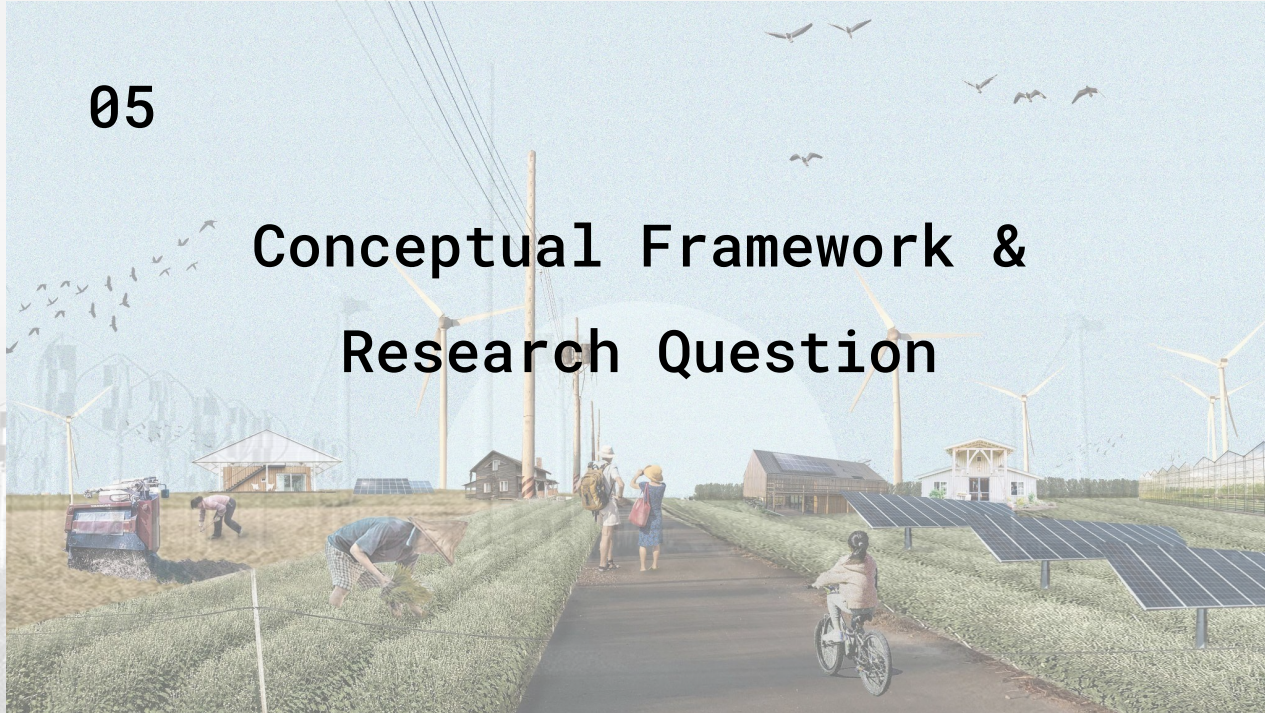
RE conflicts in society, living environment, and ecosystem.



source: Xu Zhen Tang & Lin Ji Yang (2021)

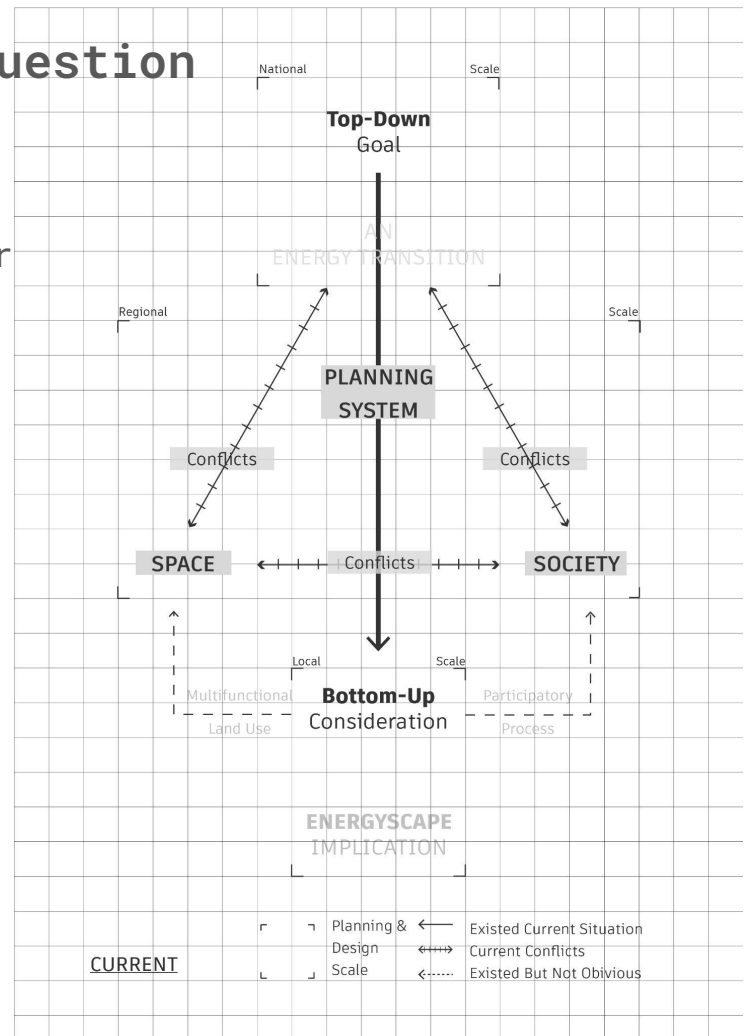
05

Conceptual Framework & Research Question

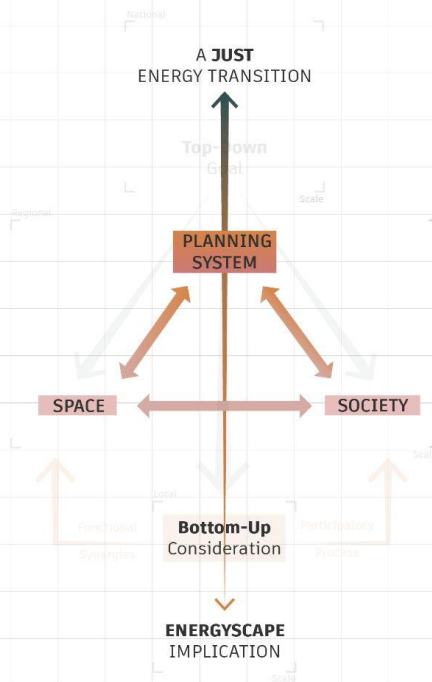


Conceptual Framework & Research Question

- Spatial** and **Social** perspectives: not included
- Local considerations and needs can not be heard
- Top-Down Goal and Bottom-up: **huge gap**



Conceptual Framework & Research Question



Research Question

What **spatial** and **social** needs and considerations should be included in regional planning and design, building up the **systemic changes for integrated planning** for a **just** energy transition in Taiwan?

Sub-Questions

- What are the impacts of the energyscape on the surrounding environment?
- What systemic deficiencies are hidden in the current energy transition planning that needs to be changed?
- How can regional planning and design drive systemic change to develop an integrated plan for the energy transition?
- How can resources be reallocated to create value and rebuild social equity for neglected areas?
- How can research on the implications of energyscapes help redistribute the power and interests of stakeholders in the energy transition?

Conceptual Framework & Research Question

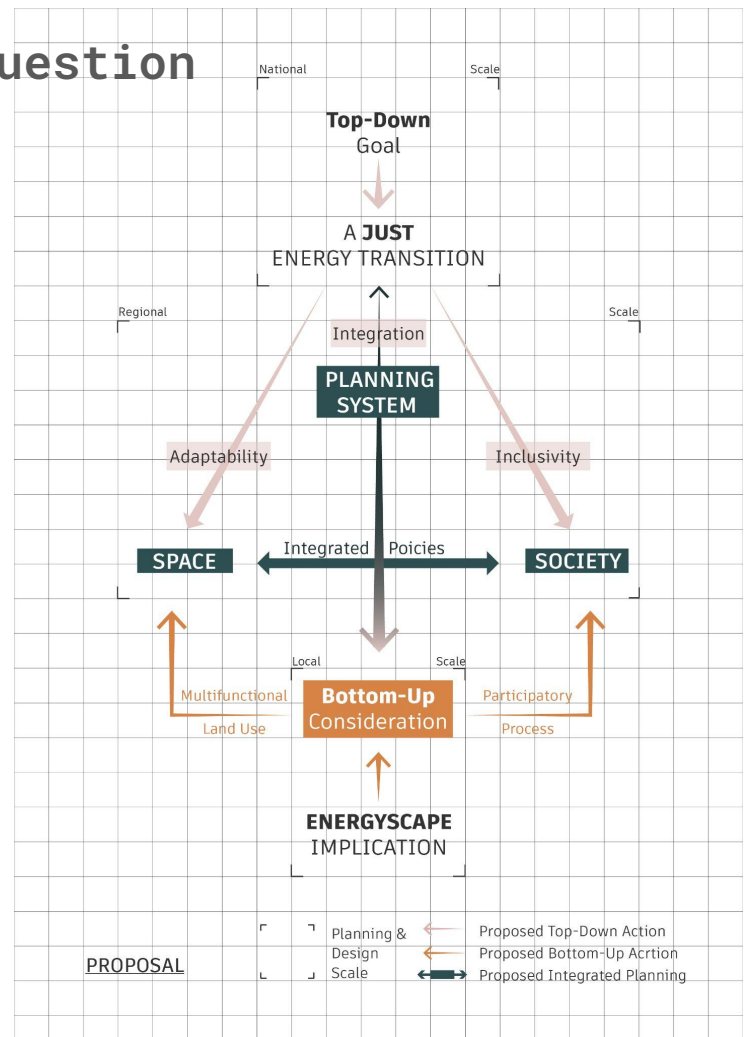
-**Energyscape impact study:** provide local considerations included social and spatial perspectives

-Space: adaptability

-Planning system: integration

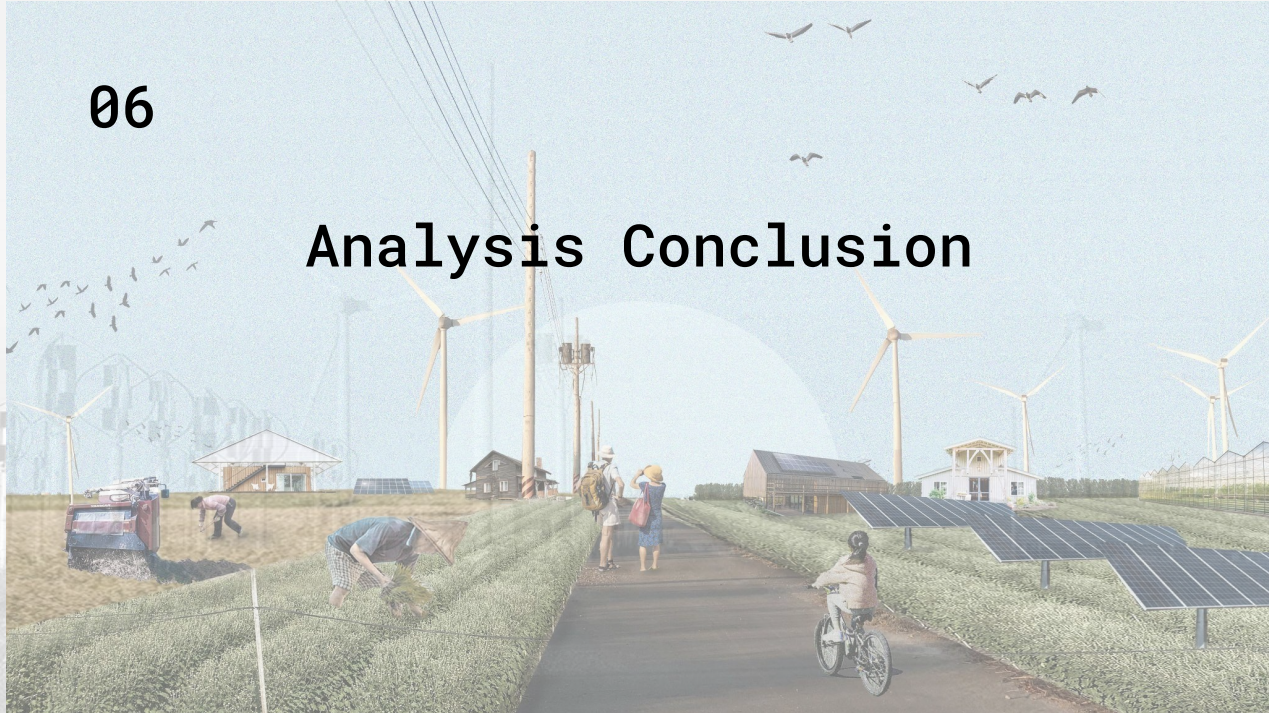
-Society: inclusivity

-Sectors: collaboration



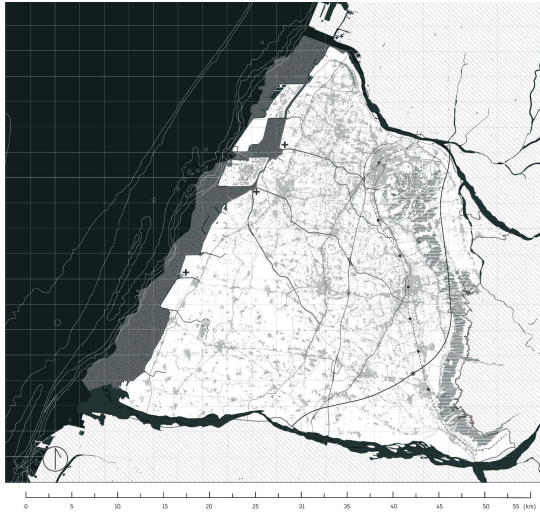
06

Analysis Conclusion

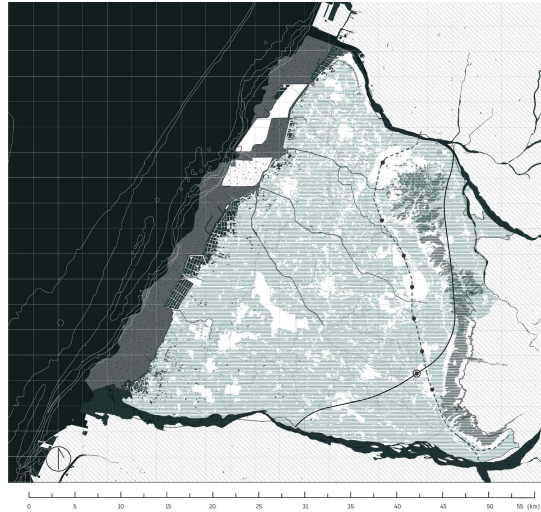


Analysis Conclusion-Spatial

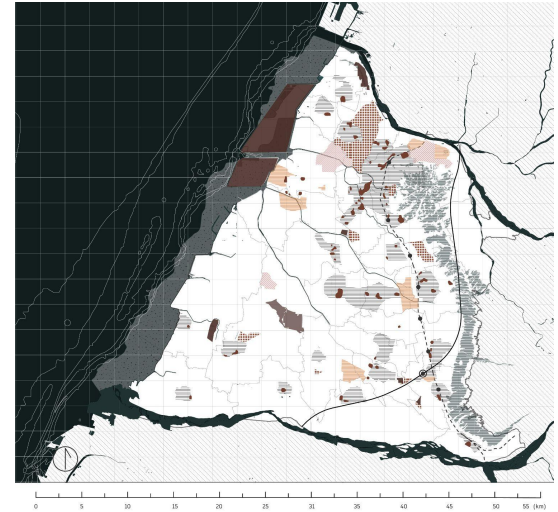
Analysis of built environment, agriculture, and industrial activities



Built Environment



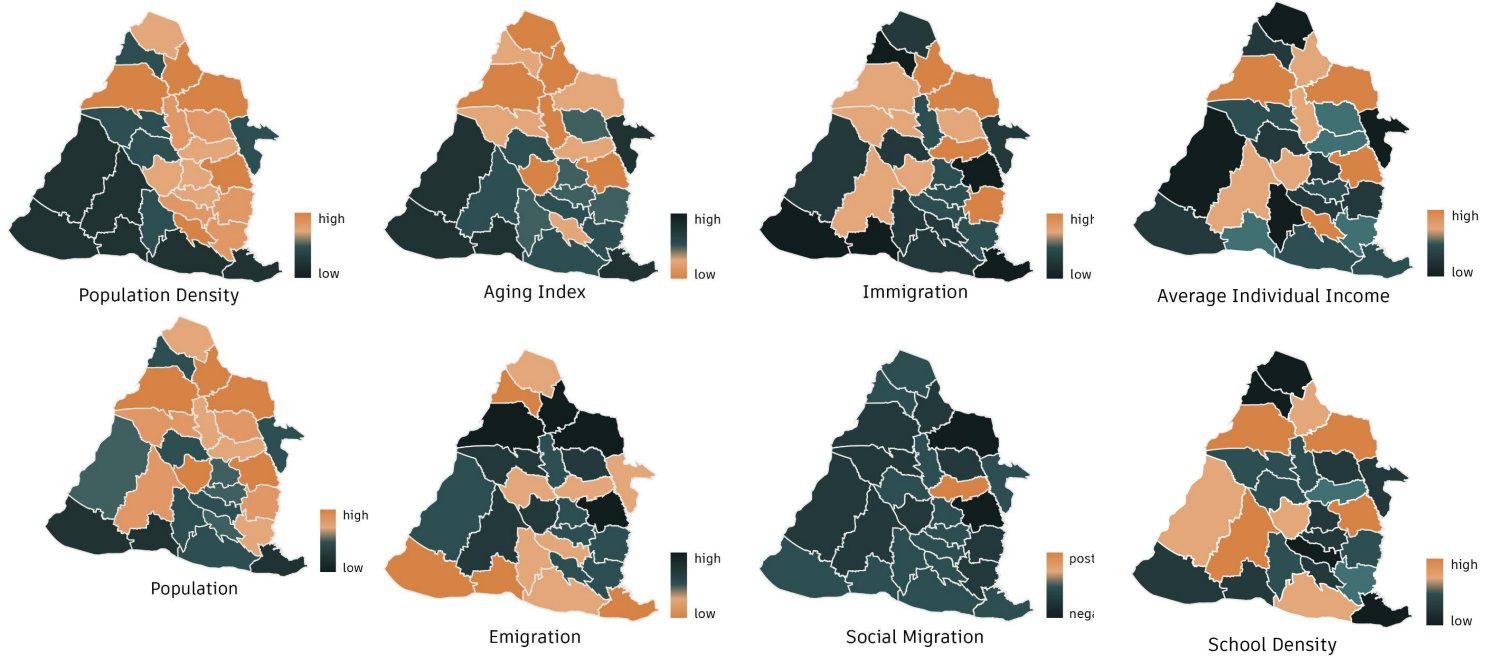
Agricultural Activities



Industrial Activities

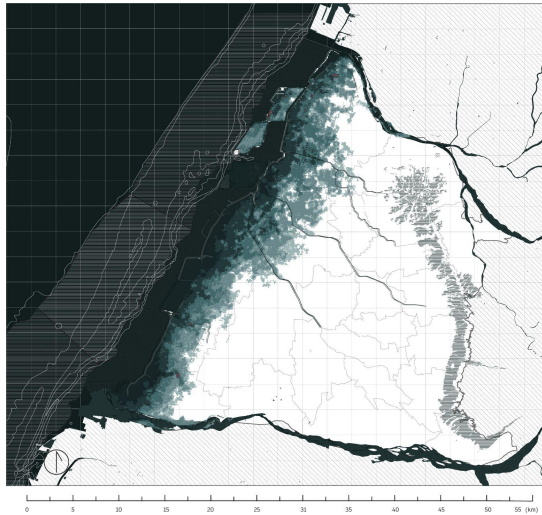
Analysis Conclusion-Socio-Economic

Analysis of socio-economic activities and conditions

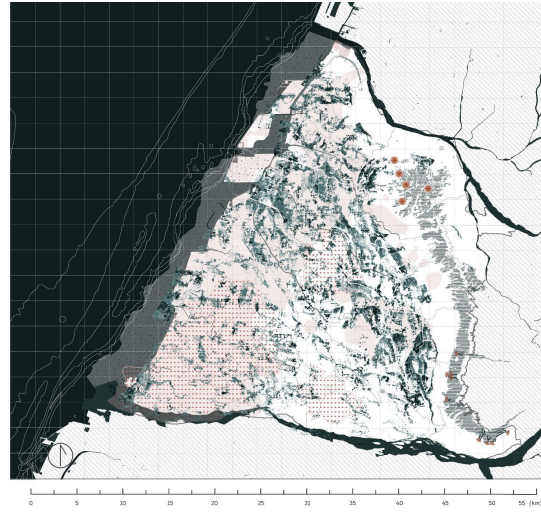


Analysis Conclusion-Environmental & Ecological

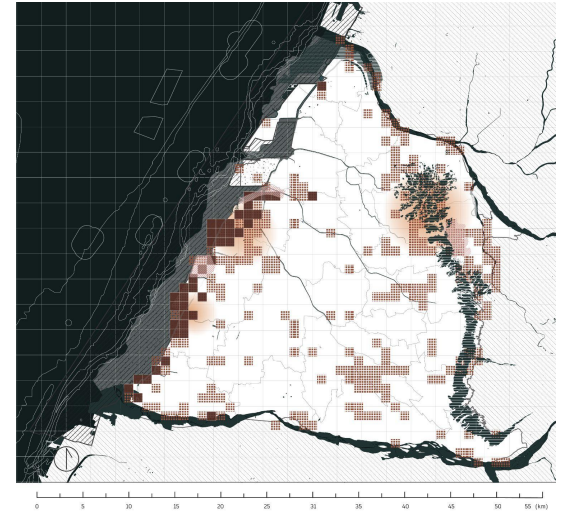
Analysis of sea-level rise, natural disasters, and ecological sensitivities



Sea-level Rise



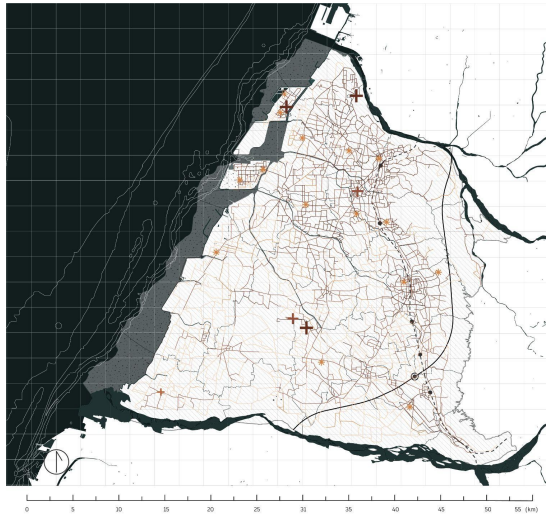
Natural Disasters



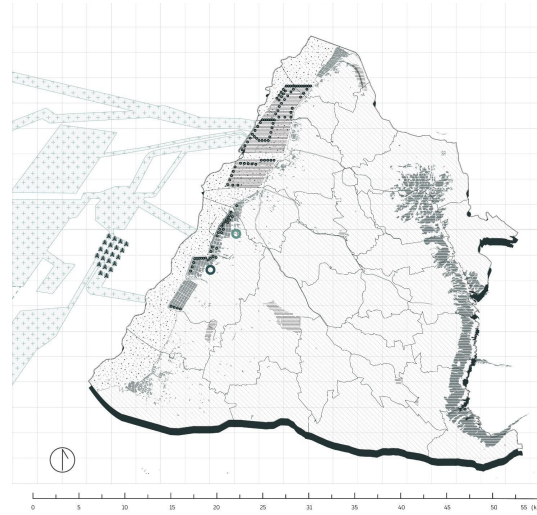
Ecological Sensitivities

Analysis Conclusion-Energy Infrastructure

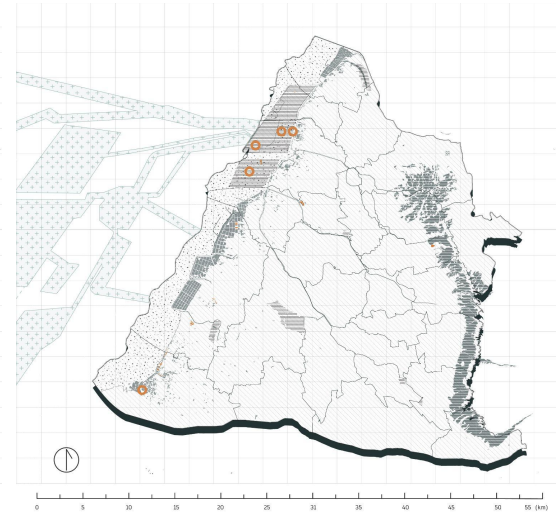
Analysis of energy infrastructure, wind farms, and solar farms



Energy Capacity & Substations



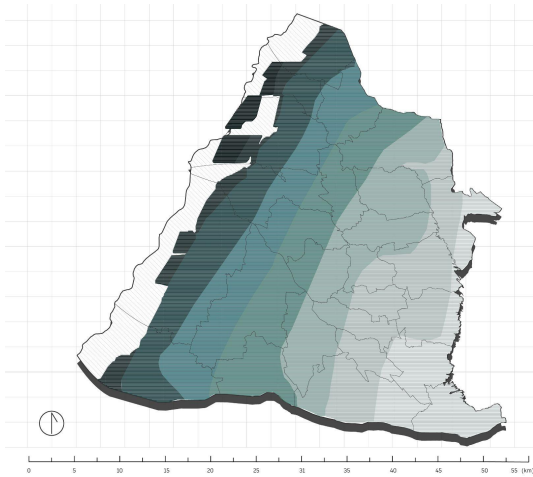
Wind Farm Locations



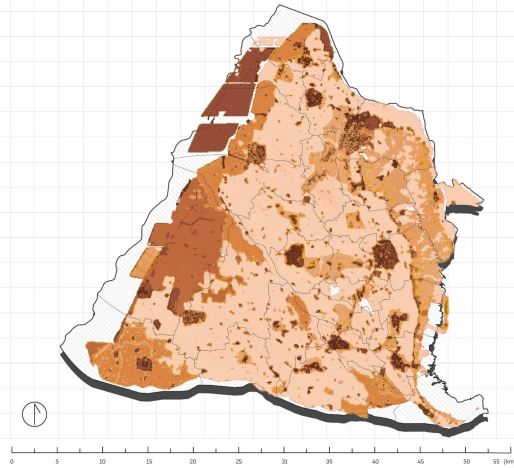
Solar Farm Locations

Analysis Conclusion-Energy Potential

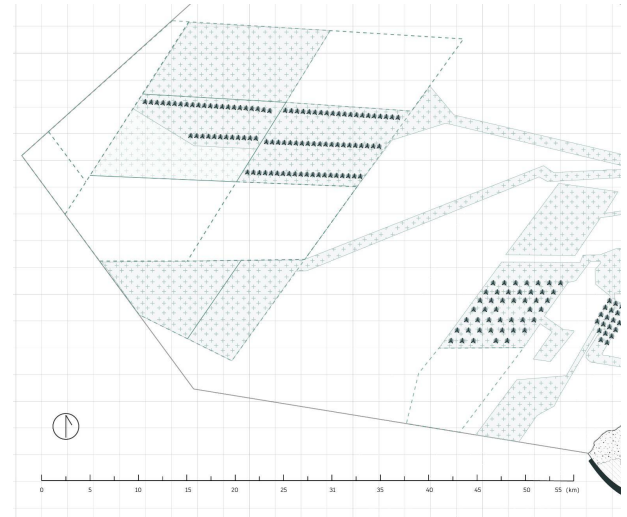
Analysis of wind potential, solar potential, and offshore wind farms



Wind Potential



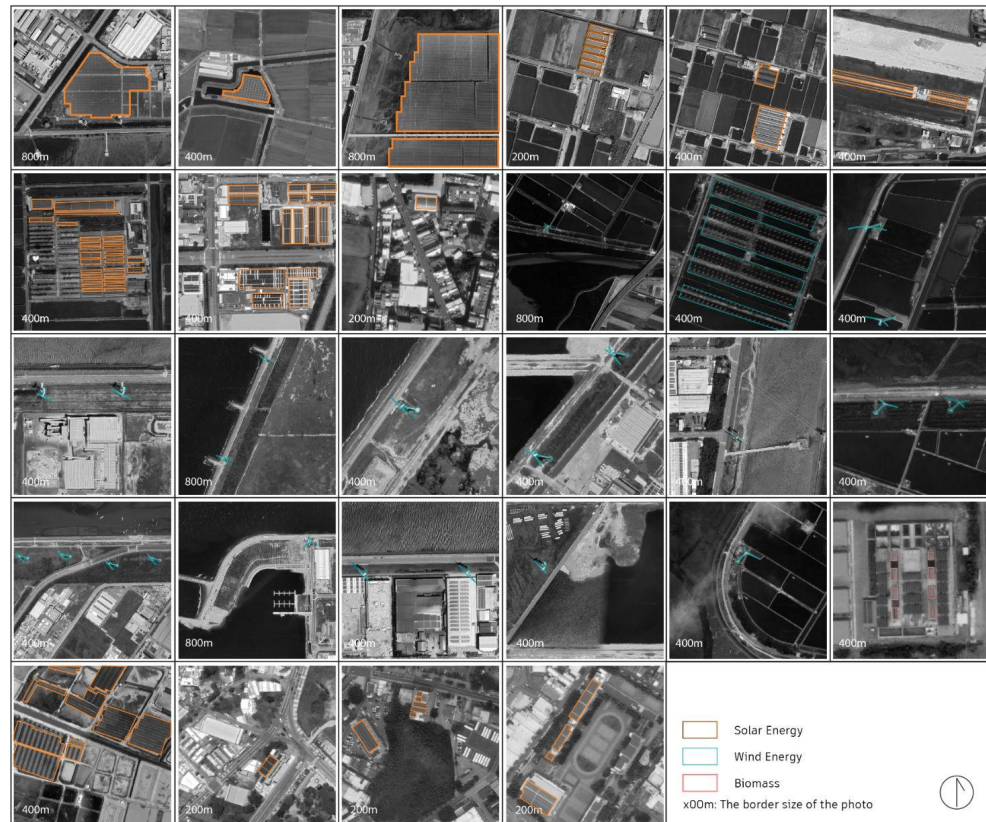
Solar Potential



Offshore Wind Farm Potential

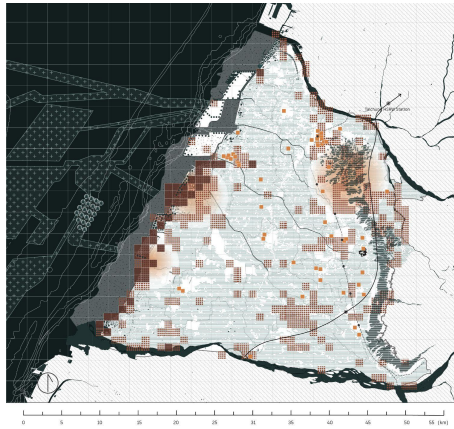
Analysis Conclusion-Energy Landscape

Energy Landscape Analysis

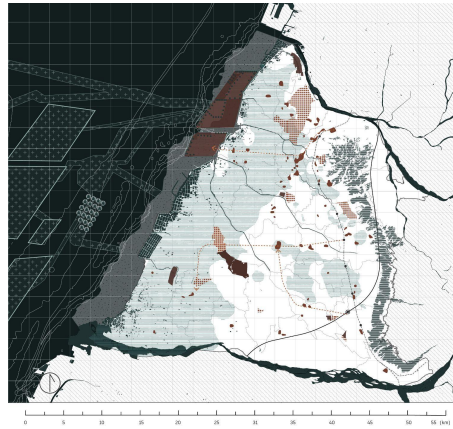


Analysis Conclusion-SWOT

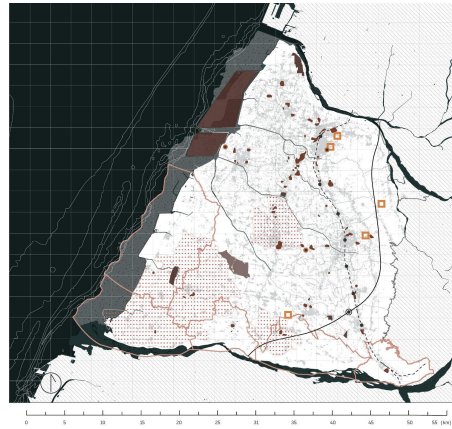
SWOT Analysis



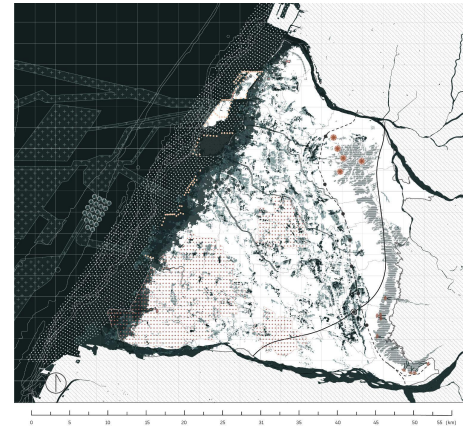
Strengths



Opportunities



Threats



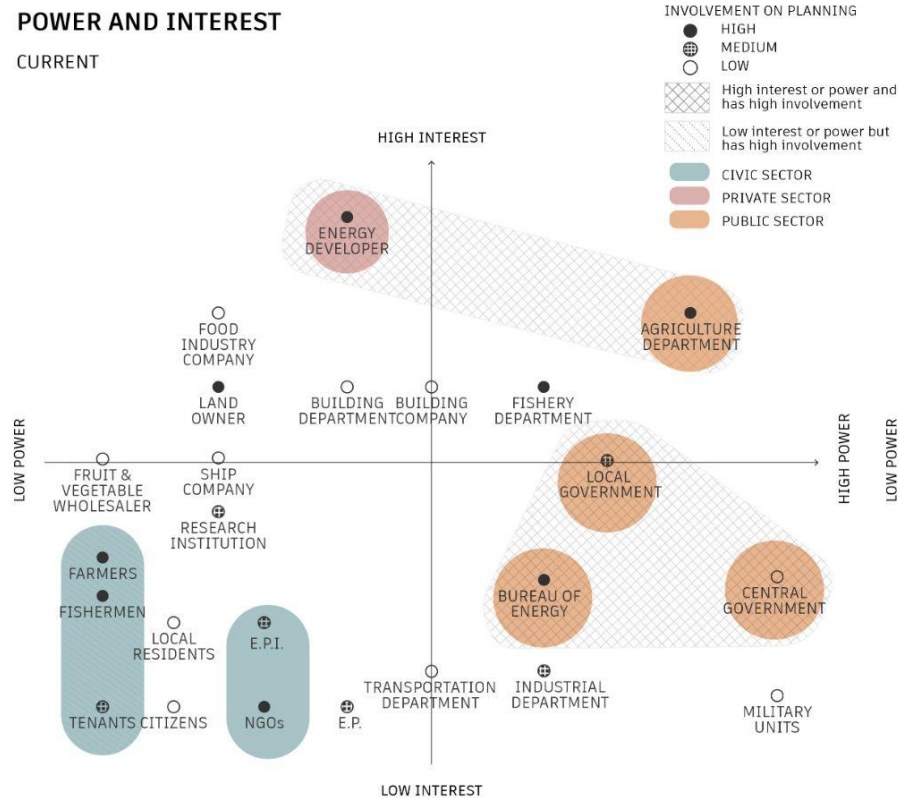
Weakness

Analysis Conclusion-Stakeholders

Stakeholders Analysis

POWER AND INTEREST

CURRENT



FUTURE



Analysis: Conclusion

Potential Areas

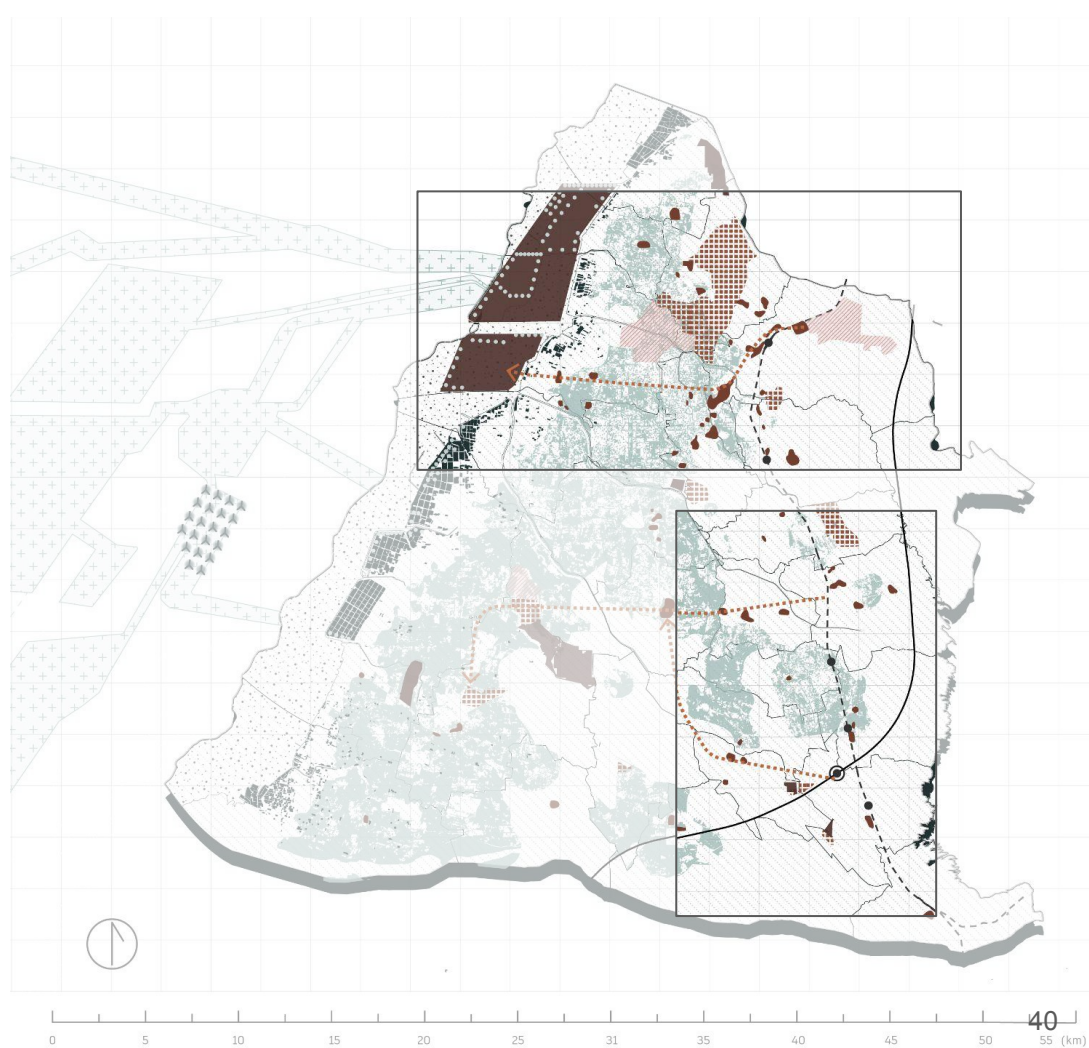
- concentrated in the west
- Multifunctional land use:
 - Northwestern:industry
 - Southwestern:agriculture



Analysis: Conclusion

Potential Areas

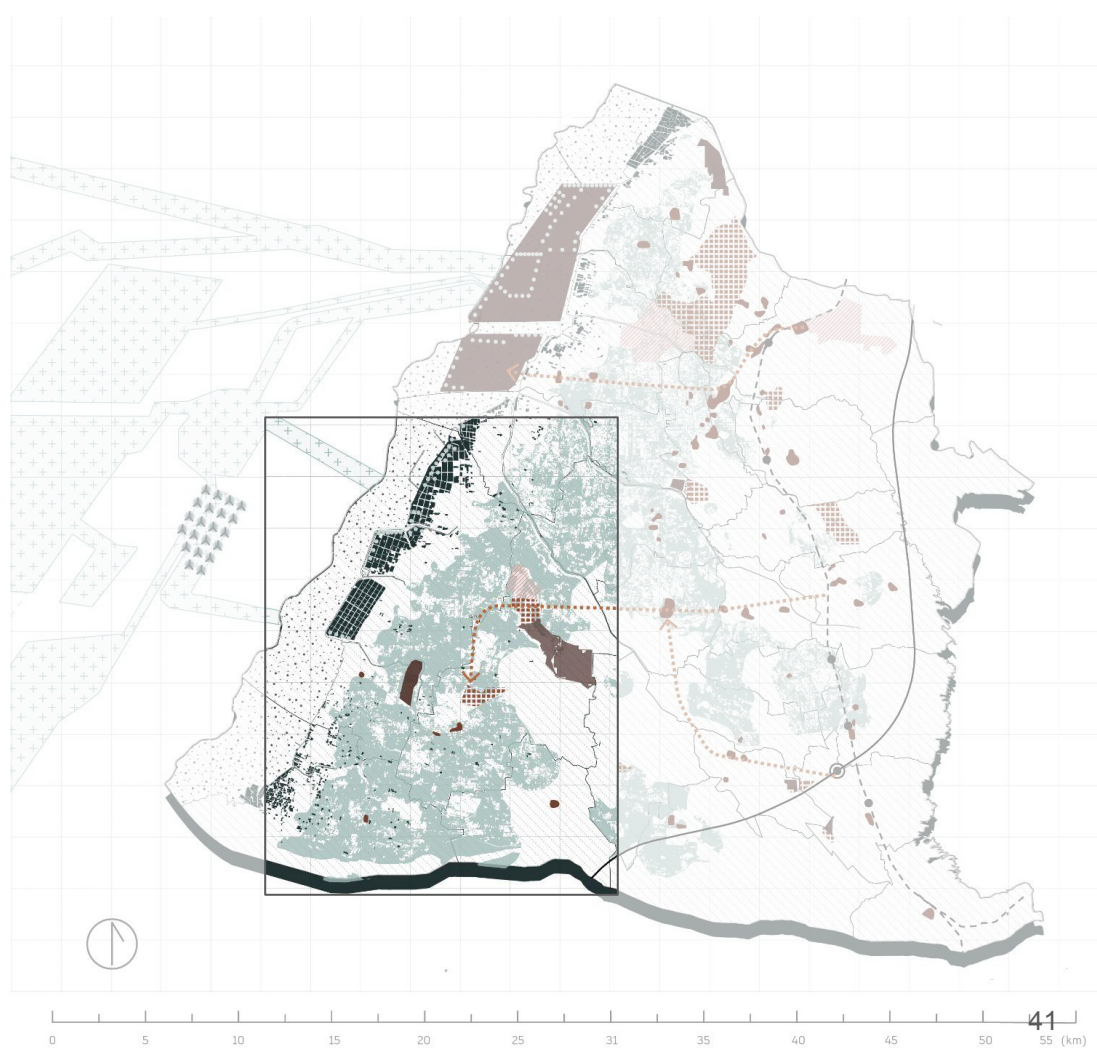
- concentrated in the west
- Multifunctional land use:
 - Northwestern:industry
 - Southwestern:agriculture



Analysis: Conclusion

Potential Areas

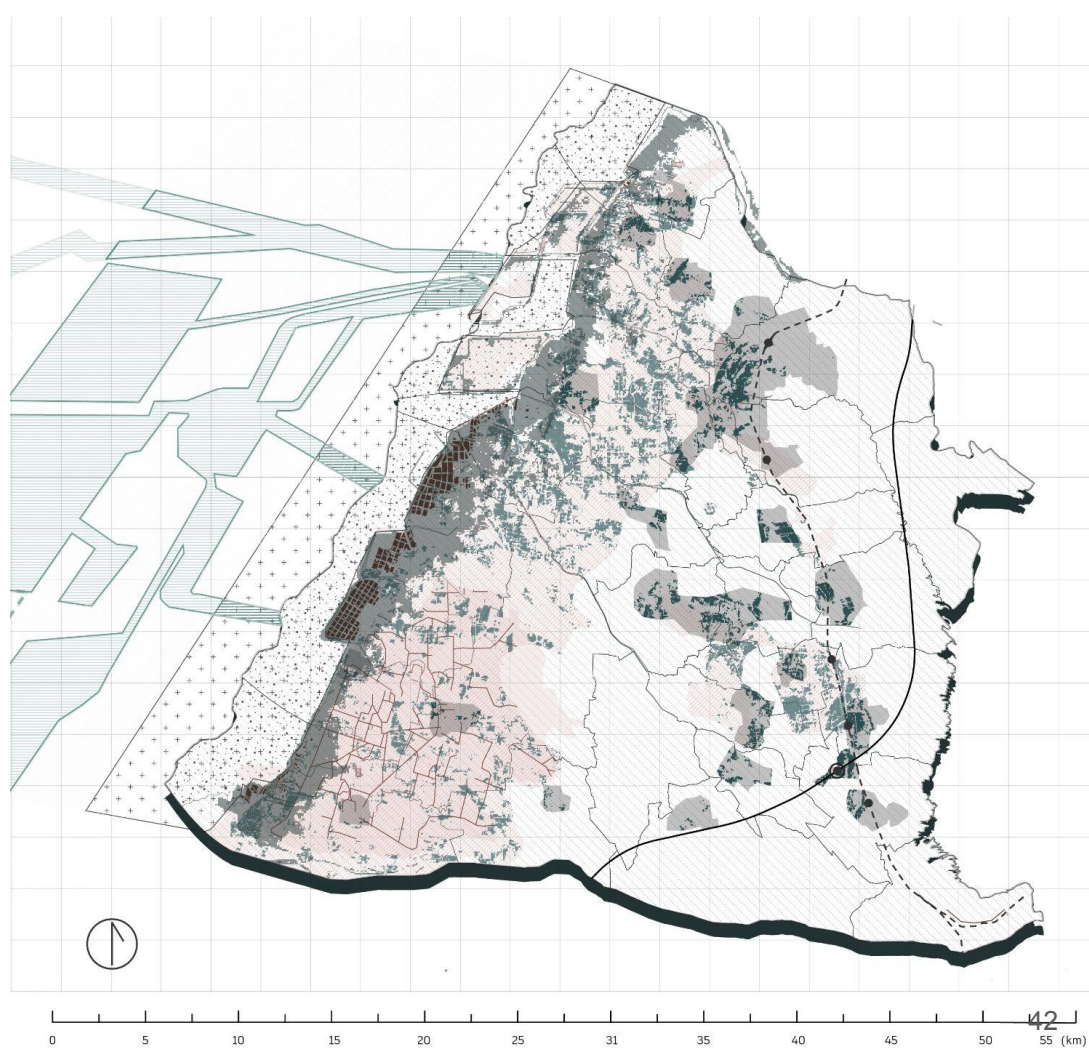
- concentrated in the west
- Multifunctional land use:
 - Northwestern:industry
 - Southwestern:agriculture



Analysis: Conclusion

Vulnerability Areas

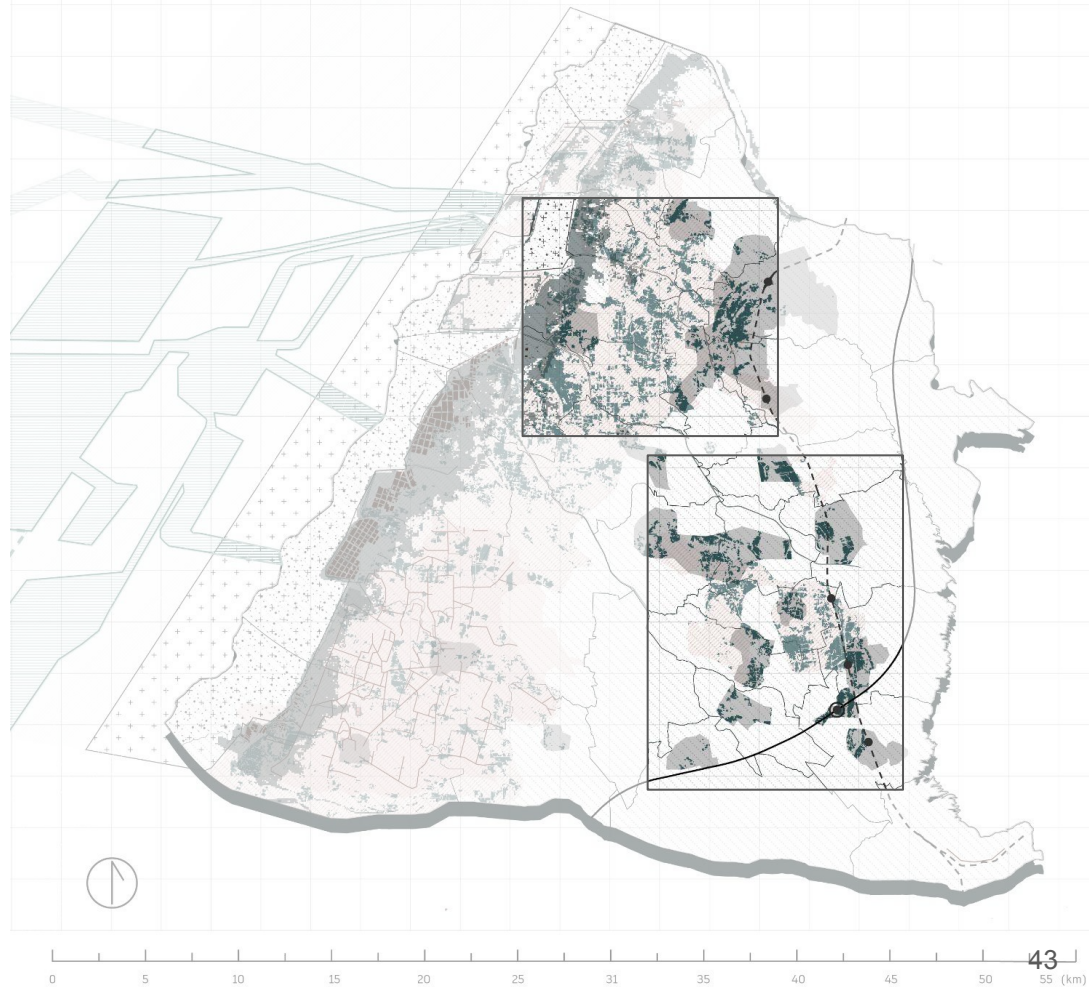
- concentrated in the west
- Northwestern:environmental risk
- Southwestern:inadequate infrastructure



Analysis: Conclusion

Vulnerability Areas

- concentrated in the west
- Northwestern:environmental risk
- Southwestern:inadequate infrastructure



Analysis: Conclusion

Vulnerability Areas

- concentrated in the west
- Northwestern:environmental risk
- Southwestern:inadequate infrastructure



07

Vision



Vision

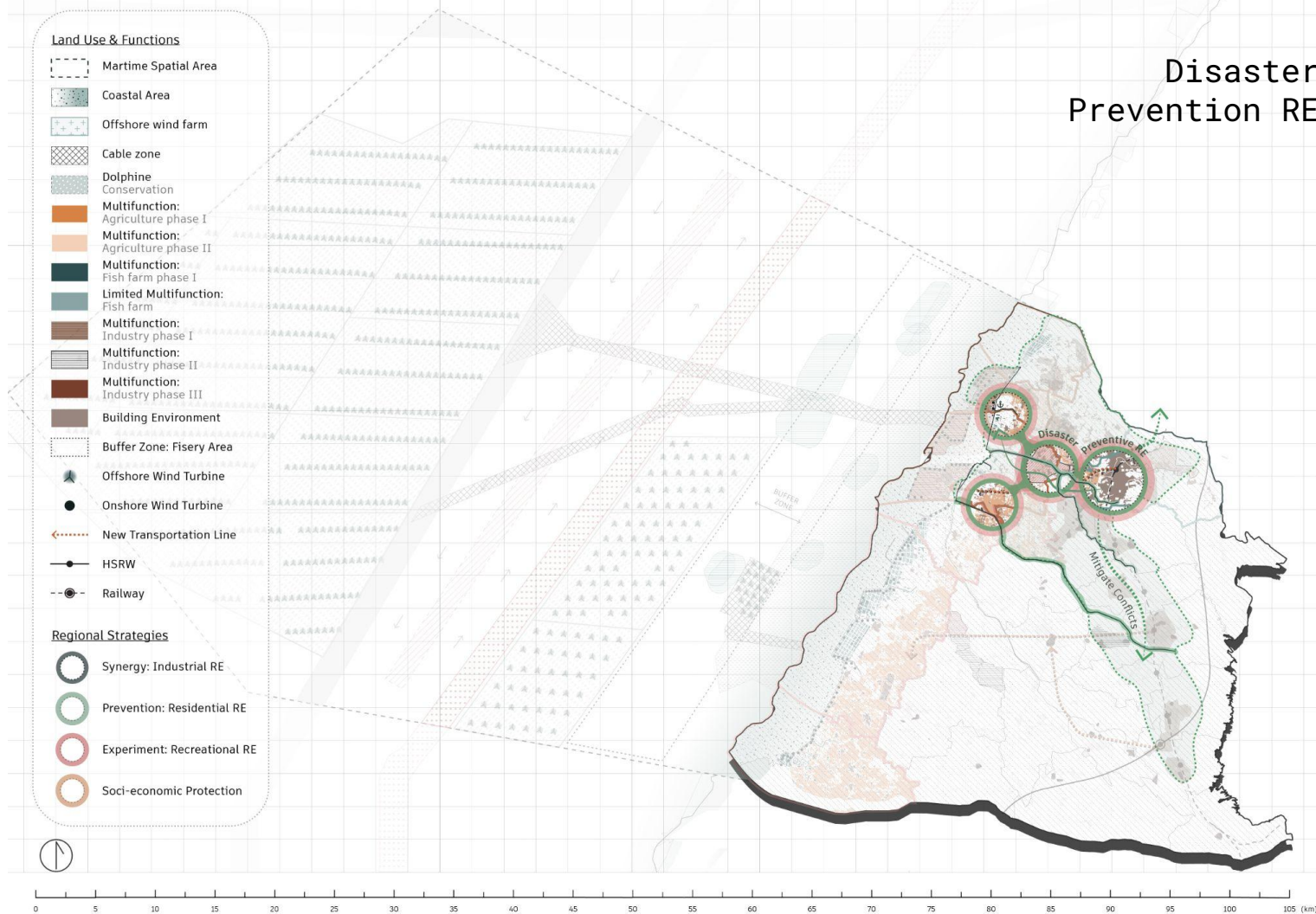


Vision



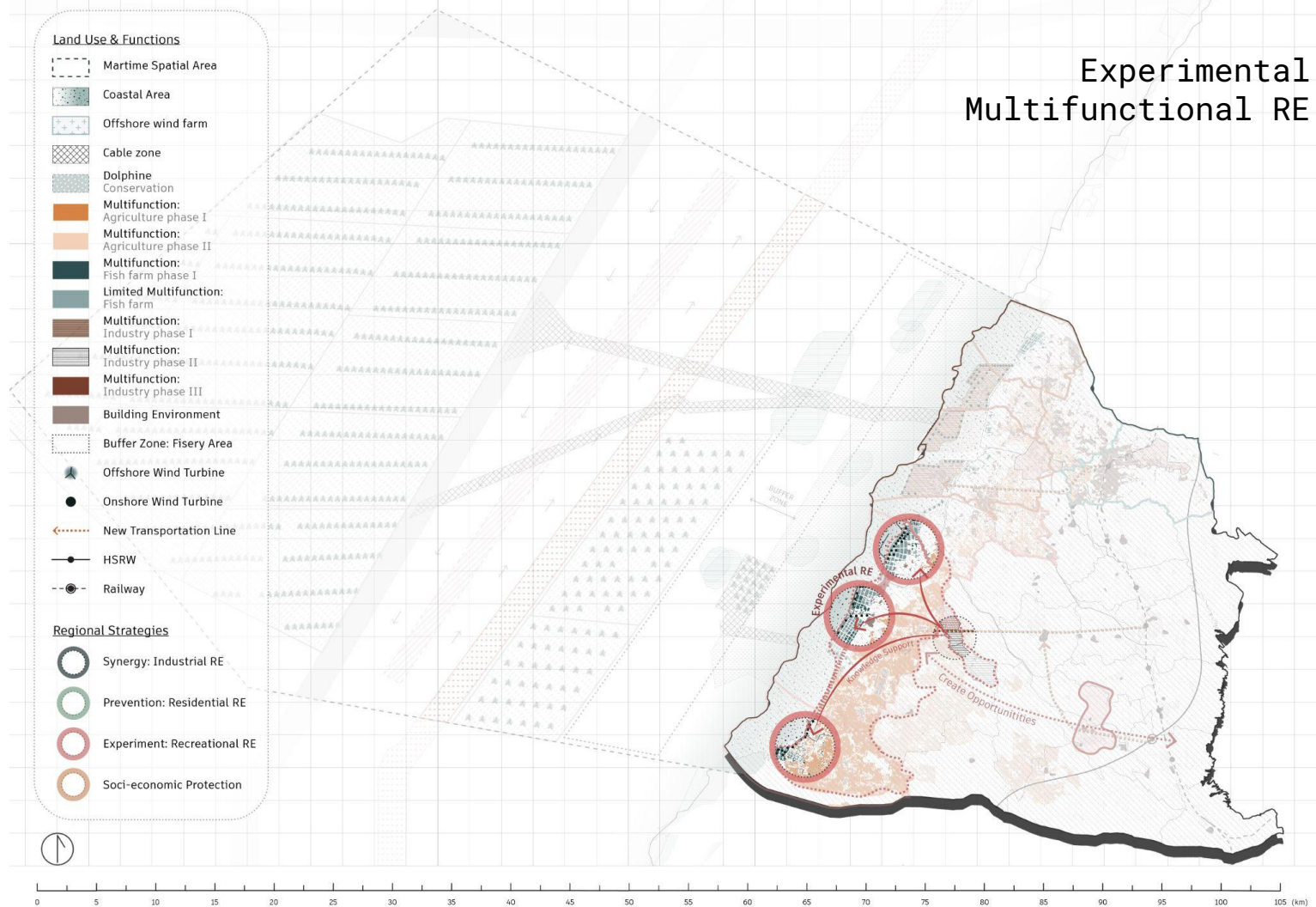
Vision

Disaster Prevention RE



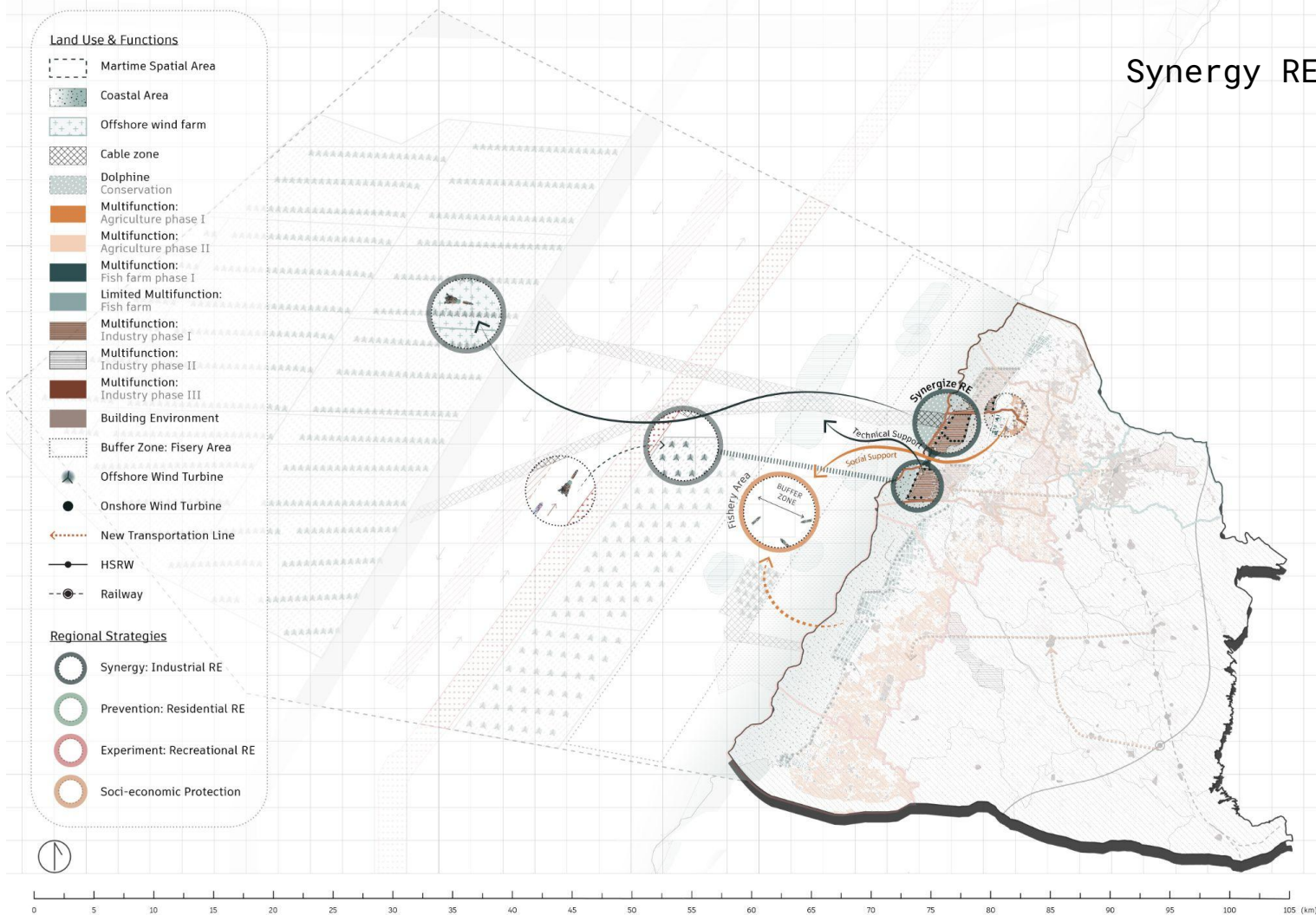
Vision

Experimental Multifunctional RE



Vision

Synergy RE



Vision

-Preventive RE

-Experimental RE

-Synergy RE

Land Use & Functions

--- Maritime Spatial Area

Coastal Area

Offshore wind farm

Cable zone

Dolphine Conservation

Multifunction: Agriculture phase I

Multifunction: Agriculture phase II

Multifunction: Fish farm phase I

Limited Multifunction: Fish farm

Multifunction: Industry phase I

Multifunction: Industry phase II

Multifunction: Industry phase III

Building Environment

--- Buffer Zone: Fishery Area

Offshore Wind Turbine

Onshore Wind Turbine

--- New Transportation Line

HSRW

Railway

Regional Strategies

○ Synergy: Industrial RE

○ Prevention: Residential RE

○ Experiment: Recreational RE

○ Soci-economic Protection



Vision Map

Adaptability

Inclusivity

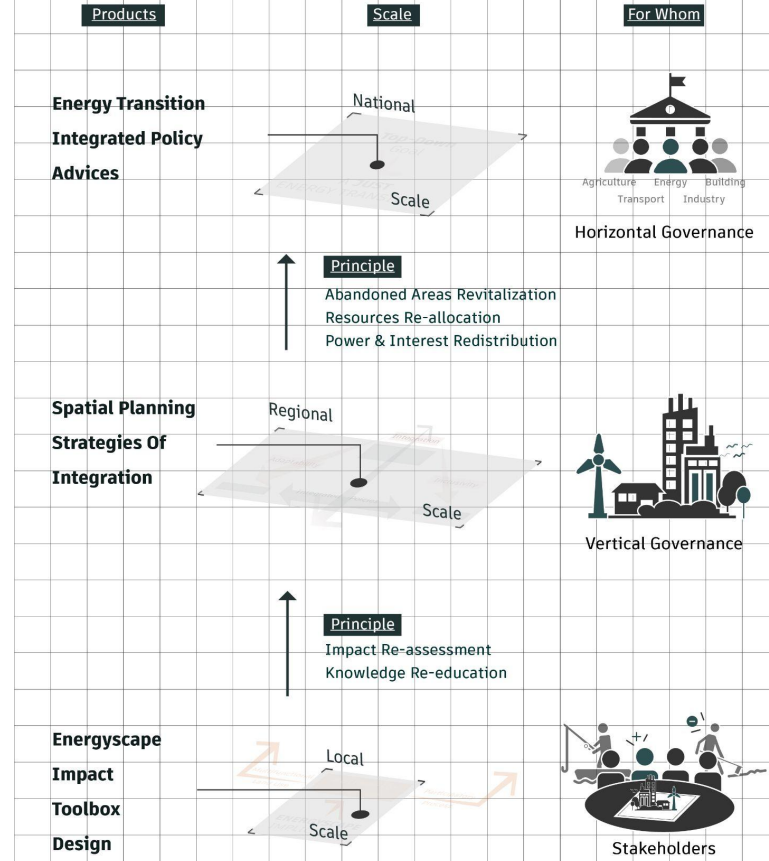
Integration



Vision

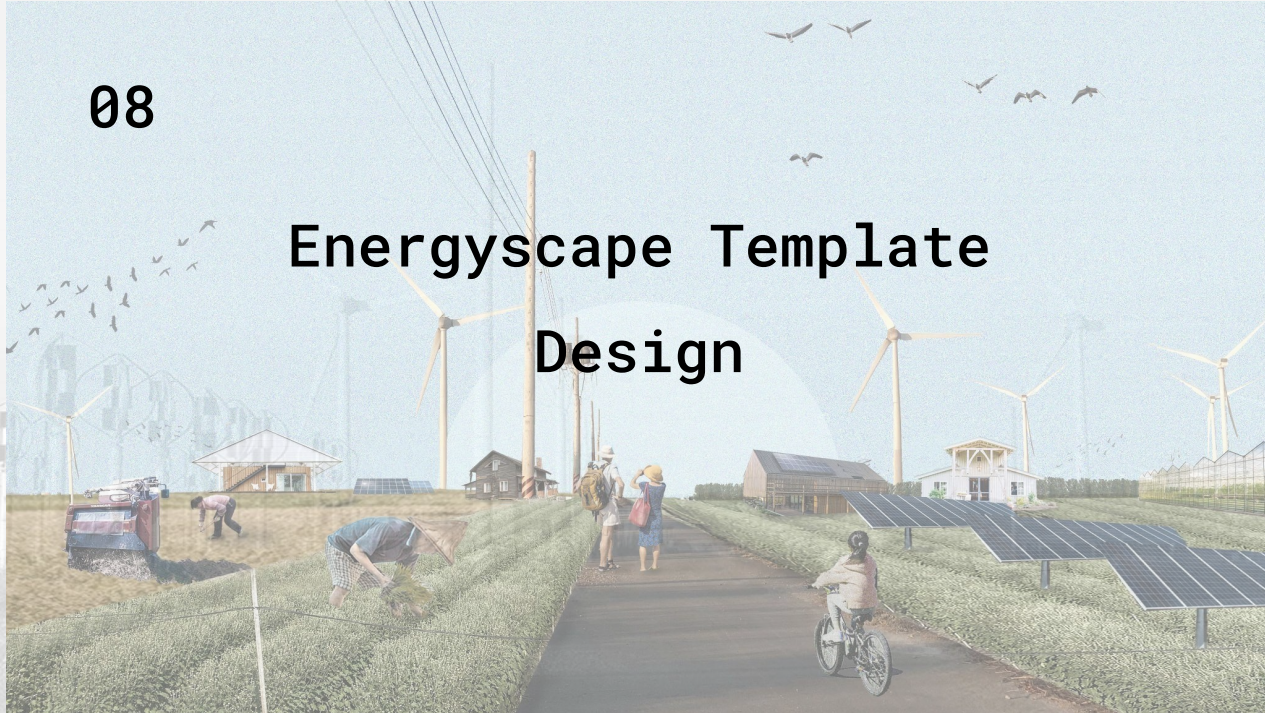
Prediction of Products

- Energyscape Template Design: local scale
- Integrated Regional Strategies: regional scale
- Integrated Policy Recommendations: national scale



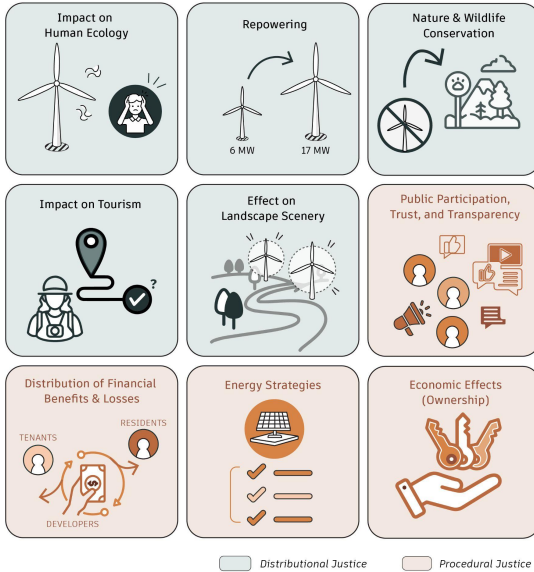
08

Energyscape Template Design

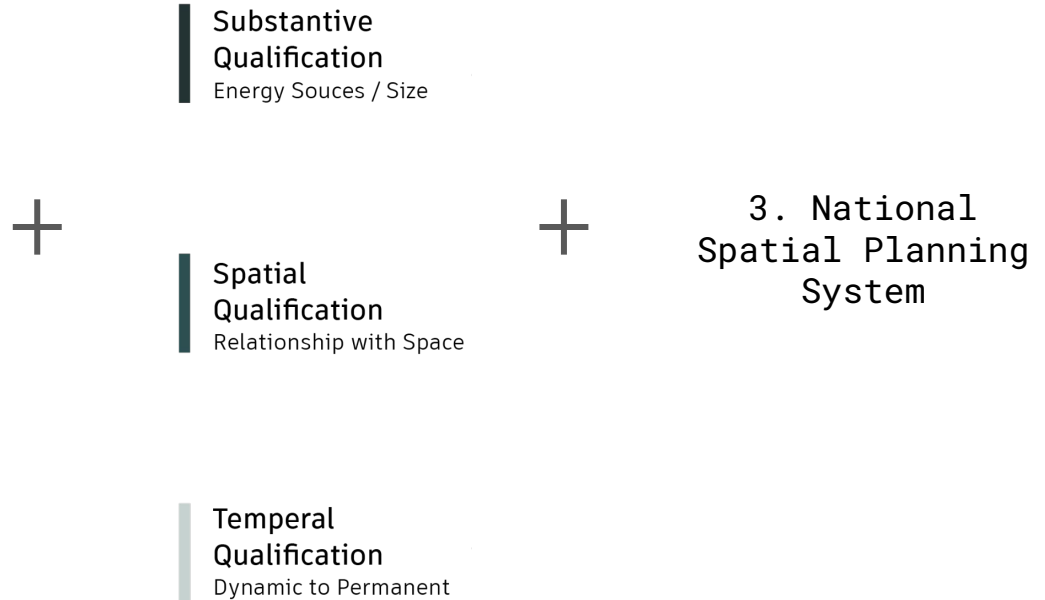


Energyscape Template Design

1. Social Acceptance of Energy Infrastructure Factors

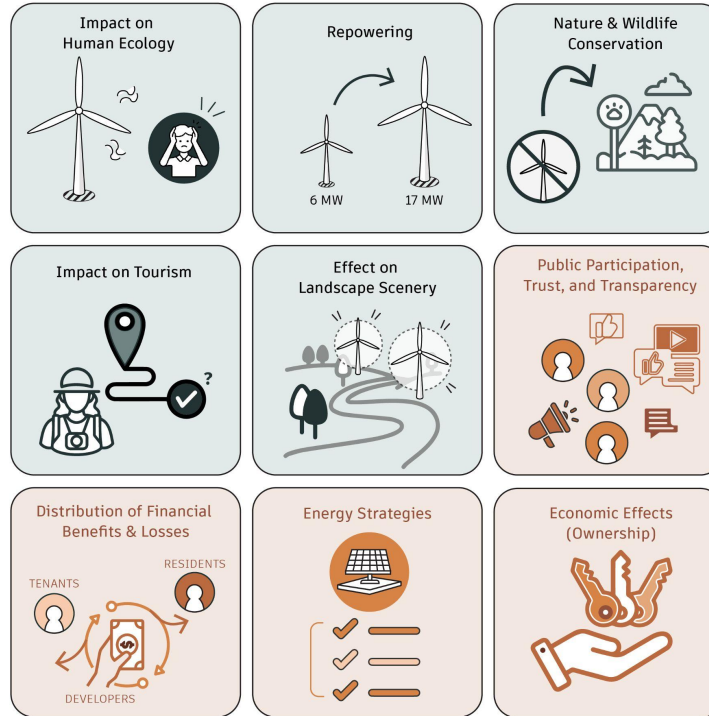



2. Qualification of Energy Landscape Types




Energyscape Template Design

Design principles: Social Acceptance of Energy Infrastructure Factors



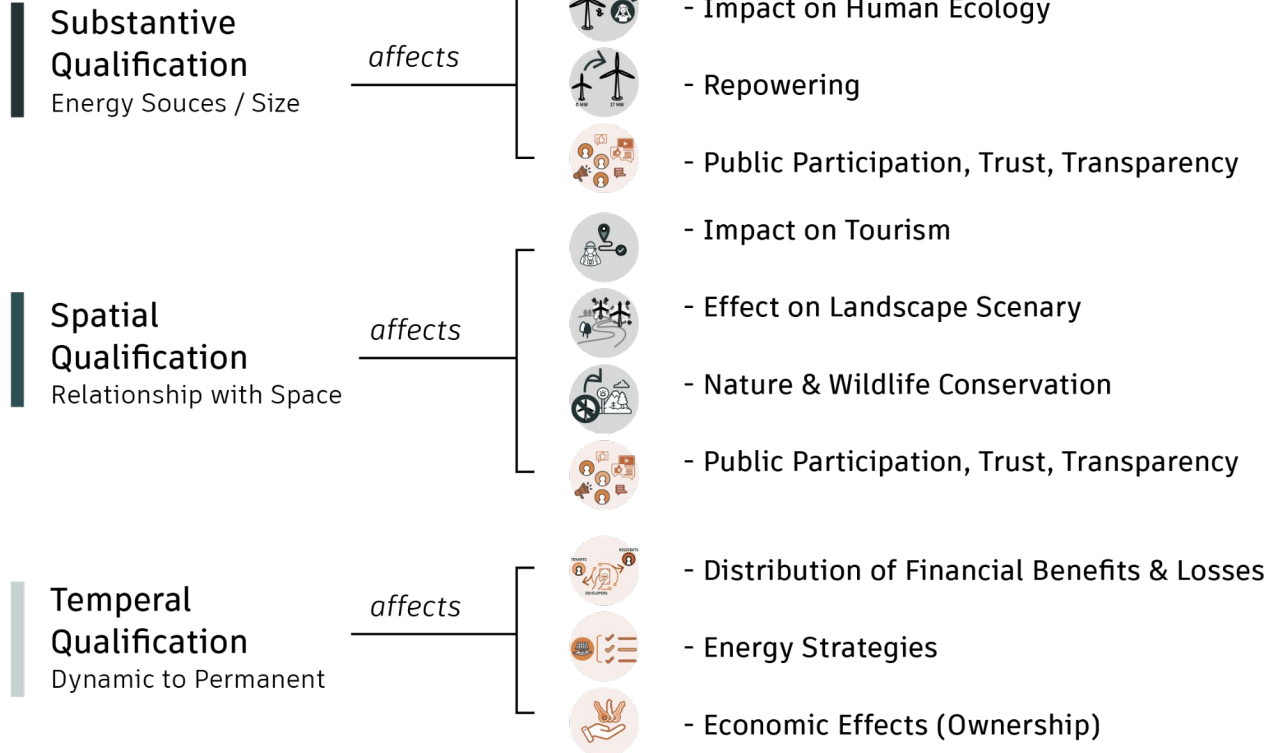
 Distributional Justice

 Procedural Justice

Energyscape Template Design

Energy Landscape Type

Impact On Social Acceptance

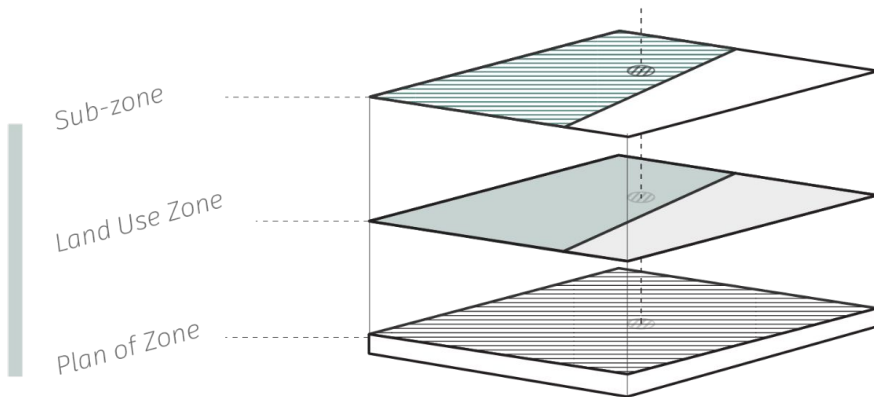


Energyscape Template Design

-Methodology of the energyscape template design:

Temporal Qualification

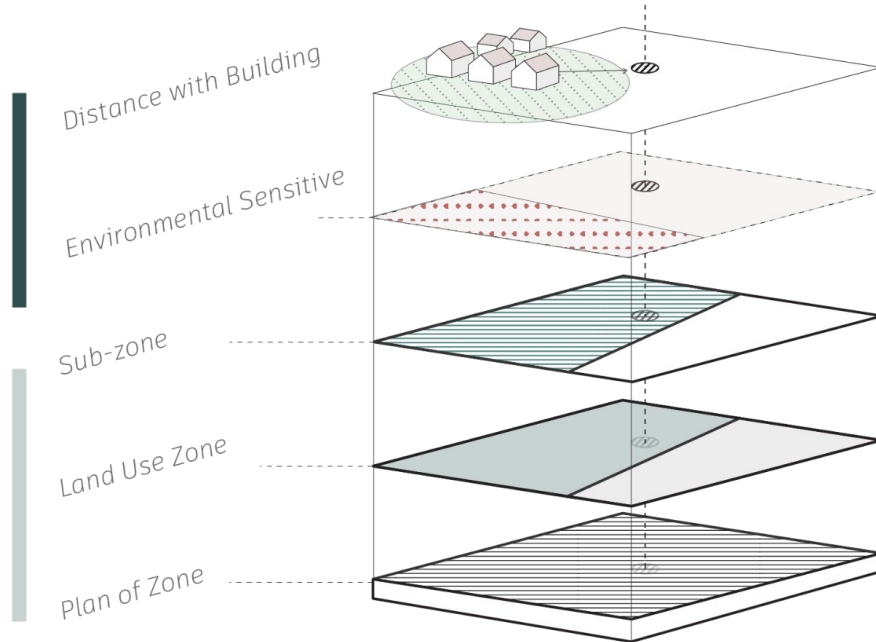
-  - Distribution of Financial Benefits & Losses
-  - Energy Strategies
-  - Economic Effects (Ownership)



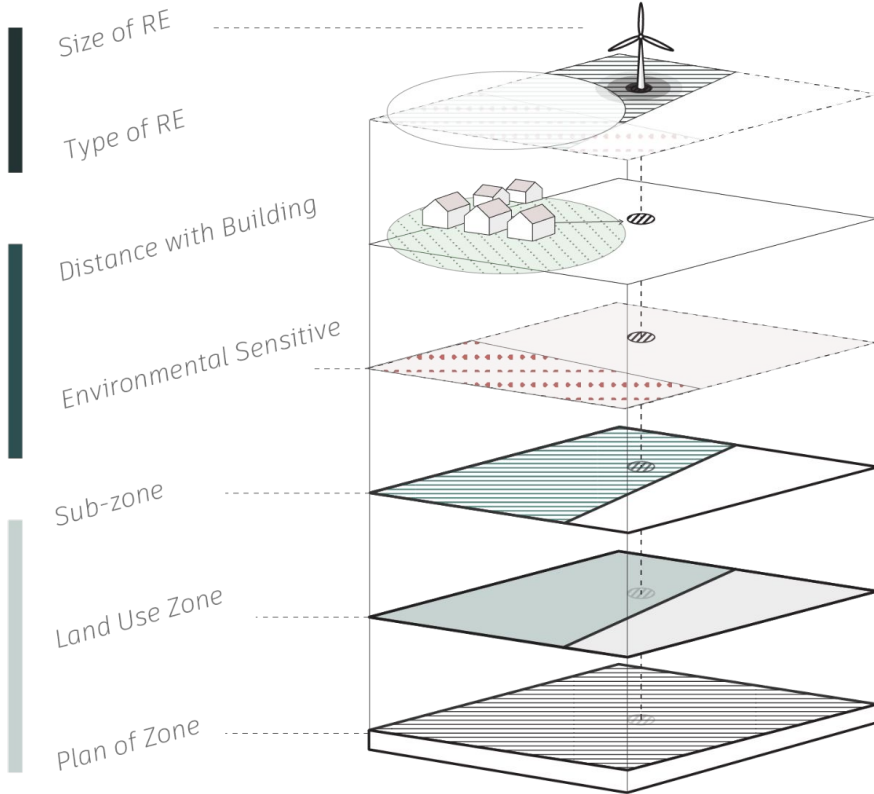
Energyscape Template Design

-Methodology of the energyscape template design:
Spatial Qualification

-  - Impact on Tourism
-  - Effect on Landscape Scenario
-  - Nature & Wildlife Conservation
-  - Public Participation, Trust, Transparency



Energyscape Template Design



-Methodology of the energyscape template design:
Substantive Qualification

Energyscape Template Design

-For participatory planning process

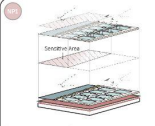
-4 main land use zone

-National Protection Zone

-Marine Resource Zone

-Urban Development Zone

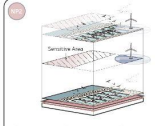
-Agriculture Development Zone



101

The area has a high degree of elevation, mineral sensitivity. Such as mountain conservation axis and national wetlands. There are five buildings nearby.

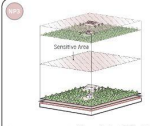
- Type: Solar / Wind Energy
- Size: ≤ 0.3 MW / 0.5-2 MW / >2 MW
- Density:
 - Rooftop: $<70\%$
 - Ground: $\leq 10\%$
- Distance: ≥ 300 m
- Environmental Sensitive: exclude the area



102

The area has an environmental sensitivity of level close to the AD3 zone with relatively recent relics.

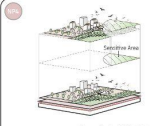
- Type: Solar / Wind Energy
- Size: ≤ 0.3 MW / 0.5-2 MW / >2 MW
- Density:
 - Rooftop: $<70\%$
 - Ground: $<10\%$
- Distance: ≥ 300 m
- Environmental Sensitive: exclude the area



103

Areas in this region are national parks. Detailed regulations relating to renewable energy use follow each national park plan.


- Type: Solar / Wind Energy
- Size: ≤ 0.3 MW / 0.5-2 MW / >2 MW
- Density:
 - Rooftop: $<70\%$
 - Ground: $<10\%$
- Distance: ≥ 300 m
- Environmental Sensitive: exclude the area



104

The area is located in an urban area with conservation area character. Higher environmental sensitivity compared to other urban areas.

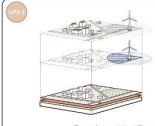
- Type: Solar / Wind Energy
- Size: ≤ 0.3 MW / 0.5-2 MW / >2 MW
- Density:
 - Rooftop: $<70\%$
 - Ground: $<10\%$
- Distance: ≥ 300 m
- Environmental Sensitive: exclude the area



105

This area has a high population density and is not suitable for wind energy installations. Solar energy on rooftops is encouraged and less restricted.

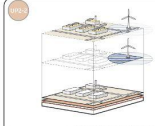
- Type: Solar Energy
- Size: ≤ 0.5 MW / 0.5-2 MW
- Density:
 - Rooftop: flexible?
 - Ground: $<70\%$
- Distance: ≥ 300 m
- Environmental Sensitive: exclude the area



106

This area is located on urban area but with lower population density.

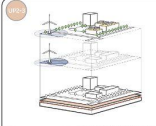
- Type: Solar / Wind Energy
- Size: ≤ 0.5 MW / 0.5-2 MW / >2 MW
- Density:
 - Rooftop: flexible?2
 - Ground: $<10\%$
- Distance: ≥ 400 m
- Environmental Sensitive: exclude the area



107

Mostly industrial use areas. Integration with RE requires following the development plan for the area.


- Type: Solar / Wind Energy
- Size: ≤ 0.5 MW / 0.5-2 MW / >2 MW
- Density:
 - Rooftop: flexible?2
 - Ground: $<10\%$
- Distance: ≥ 300 m
- Environmental Sensitive: exclude the area



108

Less dense urban areas reserved for future development. RE requires following Urban Planning Law.

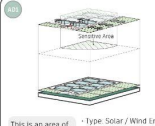
- Type: Solar / Wind Energy
- Size: ≤ 0.5 MW / 0.5-2 MW / >2 MW
- Density:
 - Rooftop: flexible?2
 - Ground: $<10\%$
- Distance: ≥ 400 m
- Environmental Sensitive: exclude the area



109

This zone is reserved for agricultural development. RE requires following Urban Planning Law. Lower density than AD1.

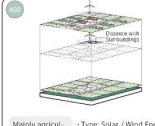
- Type: Solar / Wind Energy
- Size: ≤ 0.5 MW / 0.5-2 MW / >2 MW
- Density:
 - Rooftop: flexible?2
 - Ground: $<10\%$
- Distance: ≥ 400 m
- Environmental Sensitive: exclude the area



110

This is an area of prime agricultural land with a focus on agriculture development. Landscape change needs to be reviewed for use assessment.

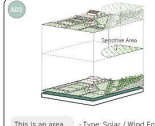
- Type: Solar / Wind Energy
- Size: ≤ 0.3 MW / 0.5-2 MW / >2 MW
- Density:
 - Rooftop: $<80\%$
 - Ground: $<10\%$
- Distance: ≥ 300 m
- Environmental Sensitive: exclude the area



111

Mainly agricultural land, but less environmentally sensitive than AD1. Solar energy on the ground needs to be versatile for use.

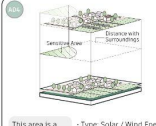
- Type: Solar / Wind Energy
- Size: ≤ 0.5 MW / 0.5-2 MW / >2 MW
- Density:
 - Rooftop: $<80\%$
 - Ground: $<10\%$
- Distance: ≥ 300 m
- Environmental Sensitive: exclude the area



112

This is an area of sloping farmland construction requires assessment of the potential for landslides.

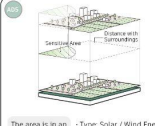
- Type: Solar / Wind Energy
- Size: ≤ 0.5 MW / 0.5-2 MW / >2 MW
- Density:
 - Rooftop: $<80\%$
 - Ground: $<10\%$
- Distance: ≥ 300 m
- Environmental Sensitive: exclude the area



113

This area is in a rural area or an indigenous settlement. It has a higher population than AD1-3 and is surrounded by agricultural land.

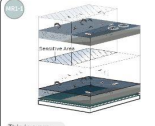
- Type: Solar / Wind Energy
- Size: ≤ 0.5 MW / 0.5-2 MW / >2 MW
- Density:
 - Rooftop: $<80\%$
 - Ground: $<10\%$
- Distance: ≥ 350 m
- Environmental Sensitive: exclude the area



114

The area is in a rural area, but with agricultural activity. It is more densely populated than AD1-AD3.

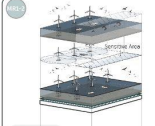
- Type: Solar / Wind Energy
- Size: ≤ 0.5 MW / 0.5-2 MW / >2 MW
- Density:
 - Rooftop: $<80\%$
 - Ground: $<10\%$
- Distance: ≥ 350 m
- Environmental Sensitive: exclude the area



115

This is a protected area. Due to the sensitivity, wind farms are prohibited. Solar installations need to follow the project plan.

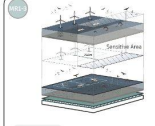
- Type: Solar Energy
- Size: ≤ 0.5 MW / 0.5-2 MW / >2 MW
- Density:
 - Ground: project based?7
- Distance: ≥ 300 m
- Environmental Sensitive: exclude the area



116

This area is a reserve area for major construction projects approved by the Central Government.

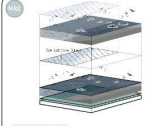
- Type: Solar / Wind Energy
- Size: ≤ 0.5 MW / 0.5-2 MW / >2 MW
- Density:
 - Ground: project based?7
- Distance: ≥ 250 m
- Environmental Sensitive: exclude the area



117

This area is a reserve area for major construction projects approved by the Central Government.

- Type: Solar / Wind Energy
- Size: ≤ 0.5 MW / 0.5-2 MW / >2 MW
- Density:
 - Ground: project based?7
- Distance: ≥ 250 m
- Environmental Sensitive: exclude the area



118

No man-made facilities are installed in areas where the nature of use is compatible. RE must be located at a distance from sensitive areas.

- Type: Solar / Wind Energy
- Size: ≤ 0.5 MW / 0.5-2 MW / >2 MW
- Density:
 - Ground: project based?7
- Distance: ≥ 250 m
- Environmental Sensitive: exclude the area



119

Other water use planned or used.

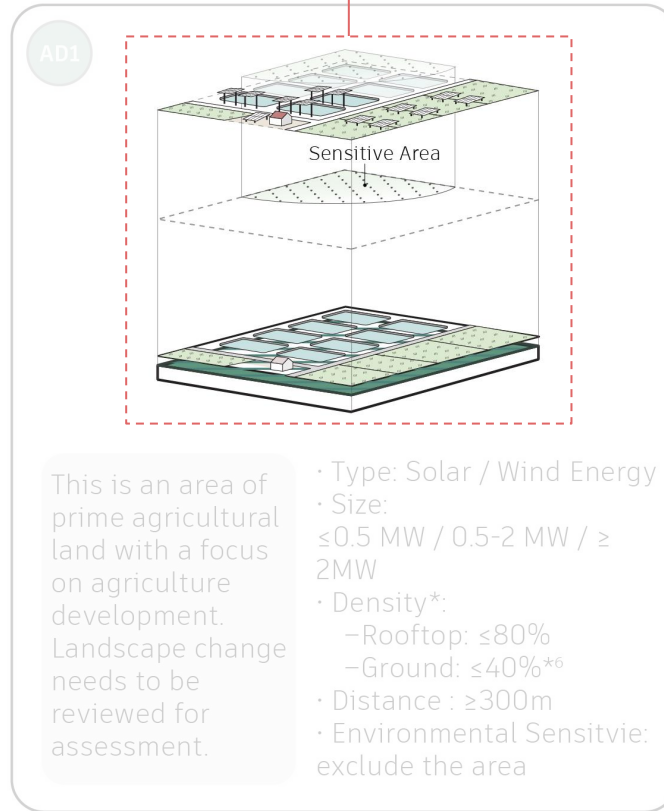
- Type: Solar / Wind Energy
- Size: ≤ 0.5 MW / 0.5-2 MW / >2 MW
- Density:
 - Ground: project based?7
- Distance: ≥ 250 m
- Environmental Sensitive: exclude the area

Energyscape Template Design

Combination
Results

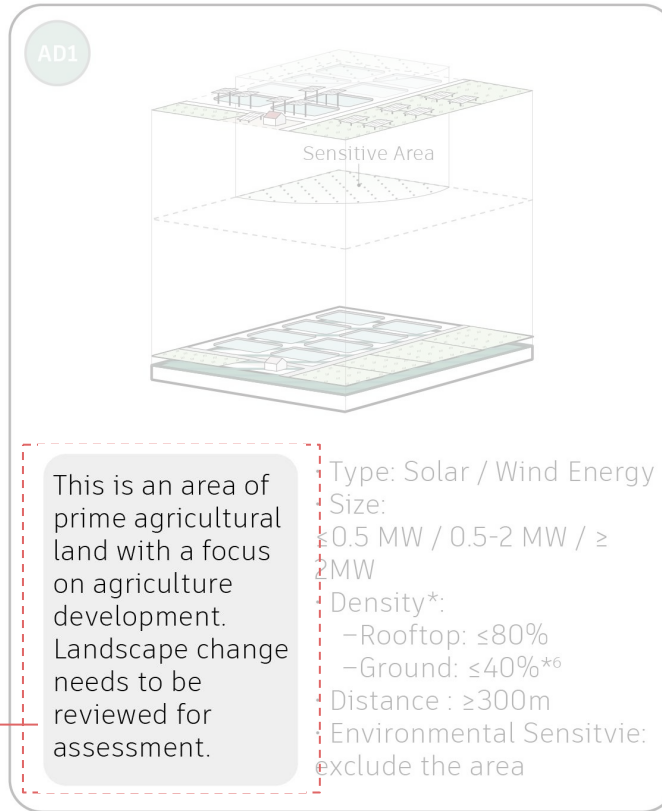
Example of the
landscape

Visualisation



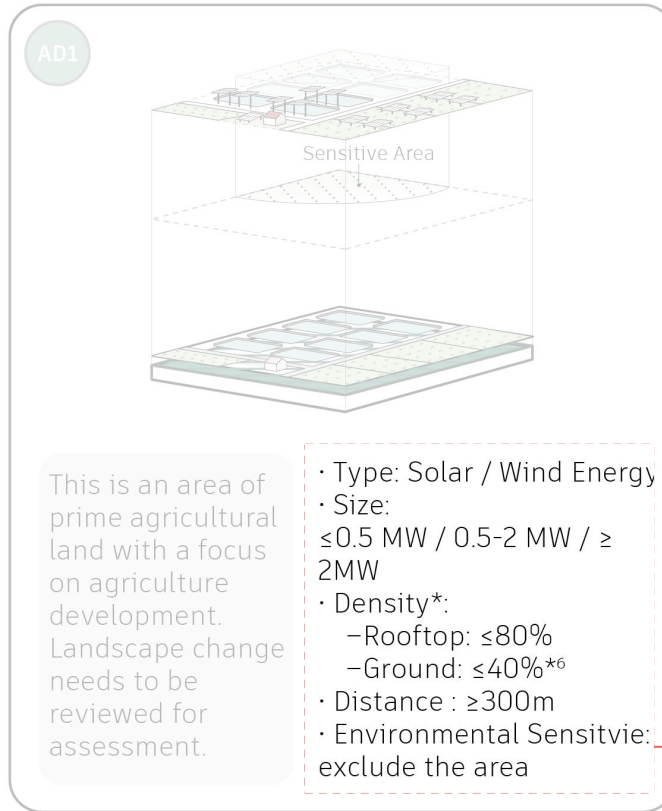
Exclusion
factors

Energyscape Template Design



**Definition of
Sub-Land use zone**

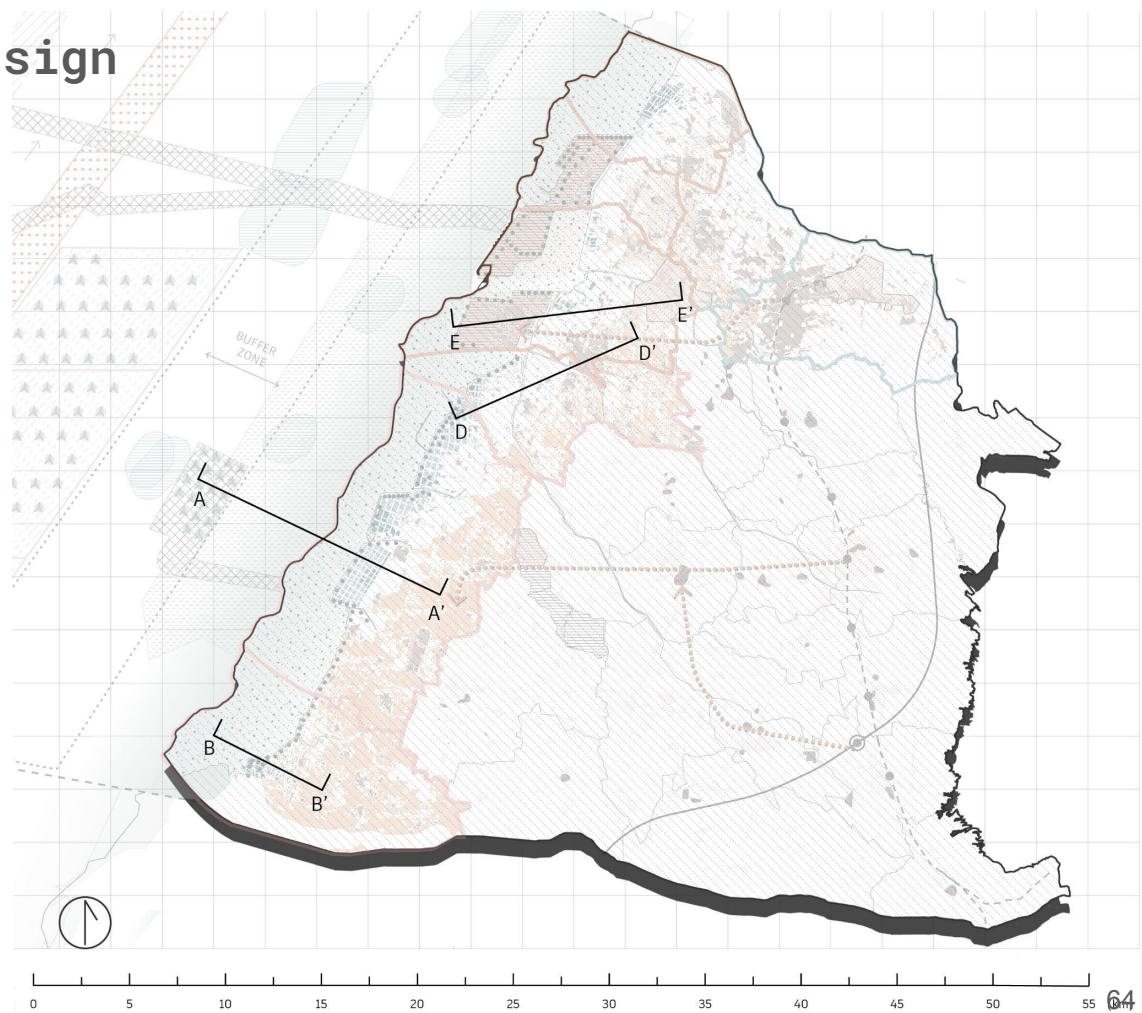
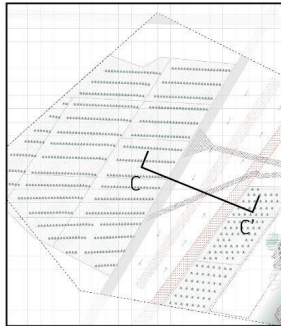
Energyscape Template Design



Regulations

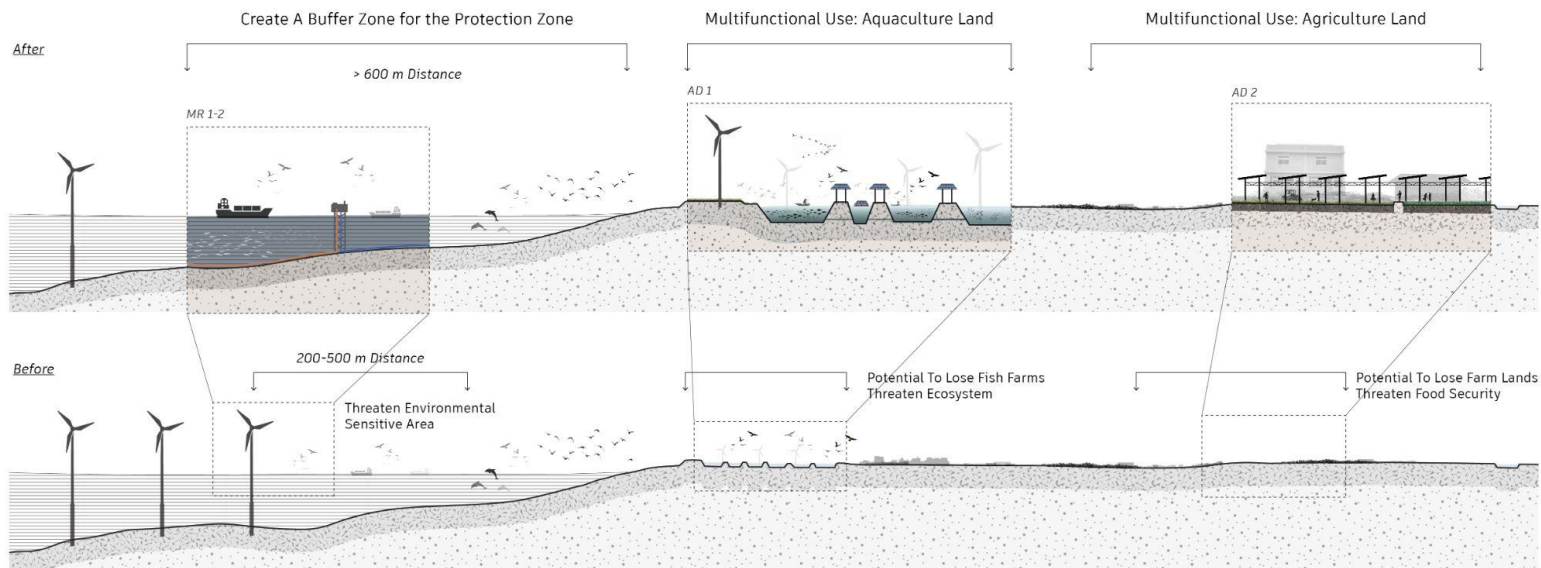
Energyscape Template Design

5 Zoomed-in Sections



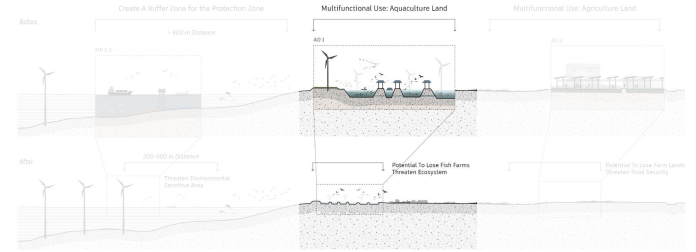
Energyscape Template Design

AA Section -Fangyuan Township-Uncompetitive Rural Area



Energyscape Template Design

AA Section -AD1 / Aquacultural Land Area



AD1

Sensitive Area

- Type: Solar / Wind Energy
- Size: ≤ 0.5 MW / $0.5-2$ MW / ≥ 2 MW
- Density*:
 - Rooftop: $\leq 80\%$
 - Ground: $\leq 40\%*$
- Distance: ≥ 300 m
- Environmental Sensitive: exclude the area

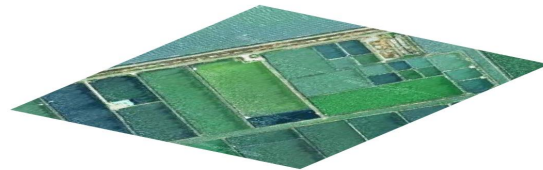
This is an area of prime agricultural land with a focus on agriculture development. Landscape change needs to be reviewed for assessment.

Energyscape Template Design

Co-Exploration Process

Implementation Steps

- ① Location Selection
- ② Land Zone Define
- ③ Environmental Sensitive Check
e.g. ecological sensitives
- ④ Land Use Type Define:
define land functional activities



①

Satellite Images:



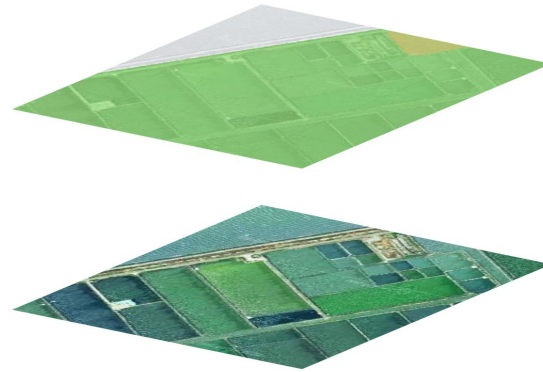
source: Geographic Information System for National Planning

Energyscape Template Design

Co-Exploration Process

Implementation Steps

- ① Location Selection
- ② Land Zone Define
- ③ Environmental Sensitive Check
e.g. ecological sensitives
- ④ Land Use Type Define:
define land functional activities



②

National Spatial Planning:
AD1 zone



①

Satellite Images:



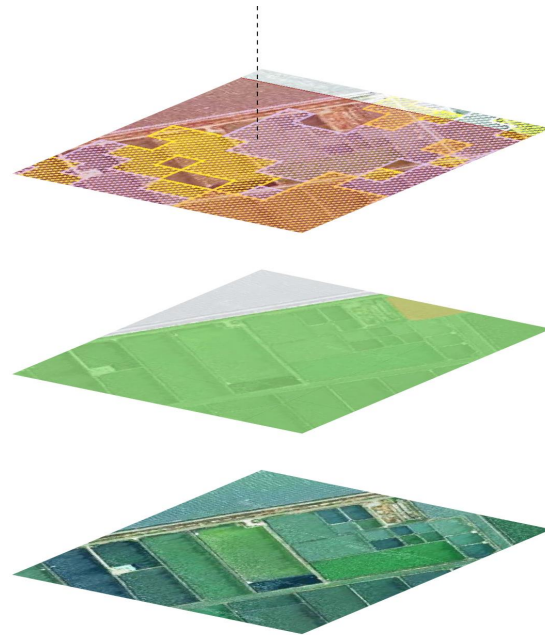
source: Geographic Information System for National Planning

Energyscape Template Design

Co-Exploration Process

Implementation Steps

- 1 Location Selection
- 2 Land Zone Define
- 3 Environmental Sensitive Check
e.g. ecological sensitives
- 4 Land Use Type Define:
define land functional activities



- 1 Satellite Images:
- 2 National Spatial Planning:
AD1 zone
- 3 Environmentally sensitive:
flooding, waterfowl
hotspots

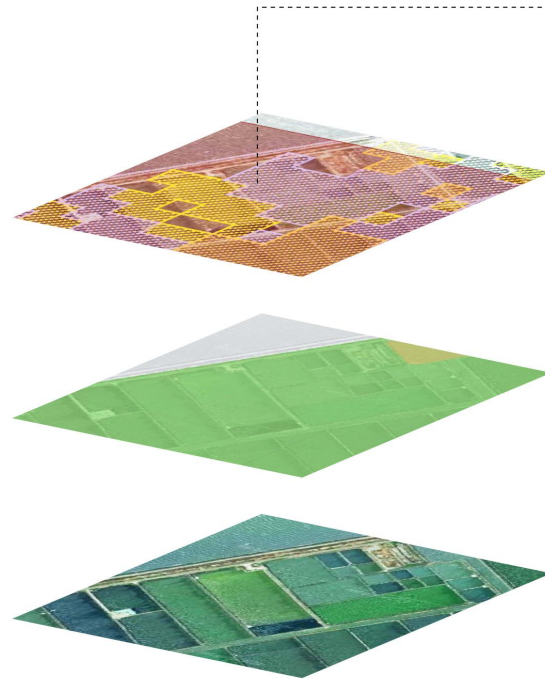
source: Geographic Information System for National Planning

Energyscape Template Design

Co-Exploration Process

Implementation Steps

- 1 Location Selection
- 2 Land Zone Define
- 3 Environmental Sensitive Check
e.g. ecological sensitives
- 4 Land Use Type Define:
define land functional activities



4
Aquaculture Use



3
Environmentally sensitive:
flooding, waterfowl
hotspots



2
National Spatial Planning:
AD1 zone



1
Satellite Images:

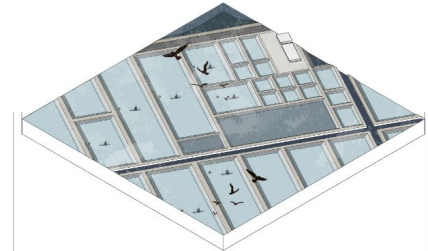
source: Geographic Information System for National Planning

Energyscape Template Design

Co-Exploration Process

- 5 **Regulations Checking**
permission Area
distance with the built environment
- 6 **Energy Source Selection**
- 7 **Energy Size & Type Selection**
 - size
 - < 0.5MW
 - 0.5-2MW
 - >2MW
 - Type
 - Rooftop
 - On The Ground
- 8 **Cover Rate**
Check on the template cards

Current

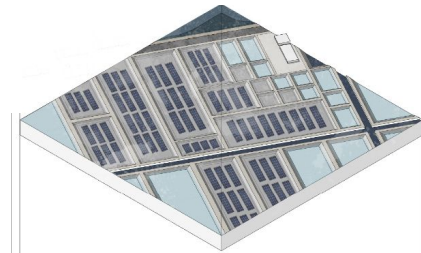


Energyscape Template Design

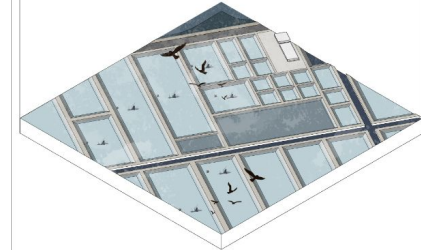
Co-Exploration Process

- 5 **Regulations Checking**
permission Area
distance with the built environment
- 6 **Energy Source Selection**
- 7 **Energy Size & Type Selection**
 - size
 - < 0.5MW
 - 0.5-2MW
 - >2MW
 - Type
 - Rooftop
 - On The Ground
- 8 **Cover Rate**
Check on the template cards

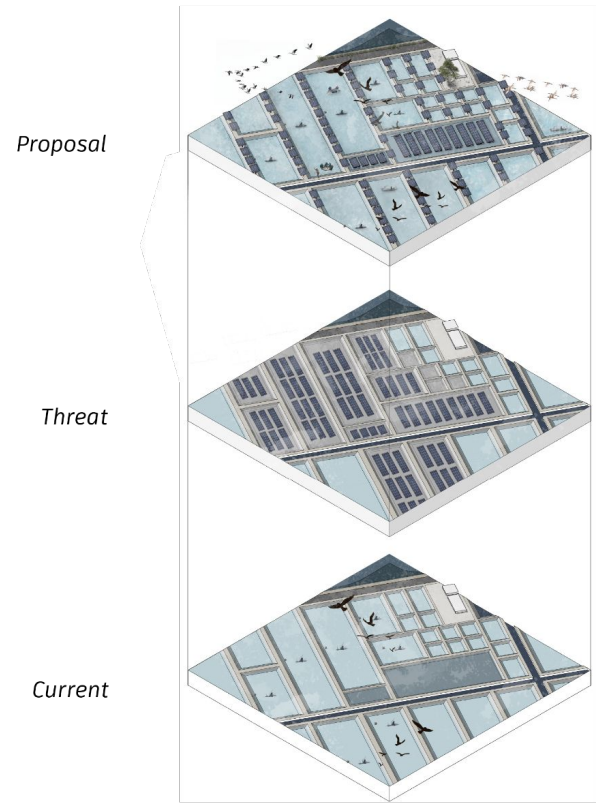
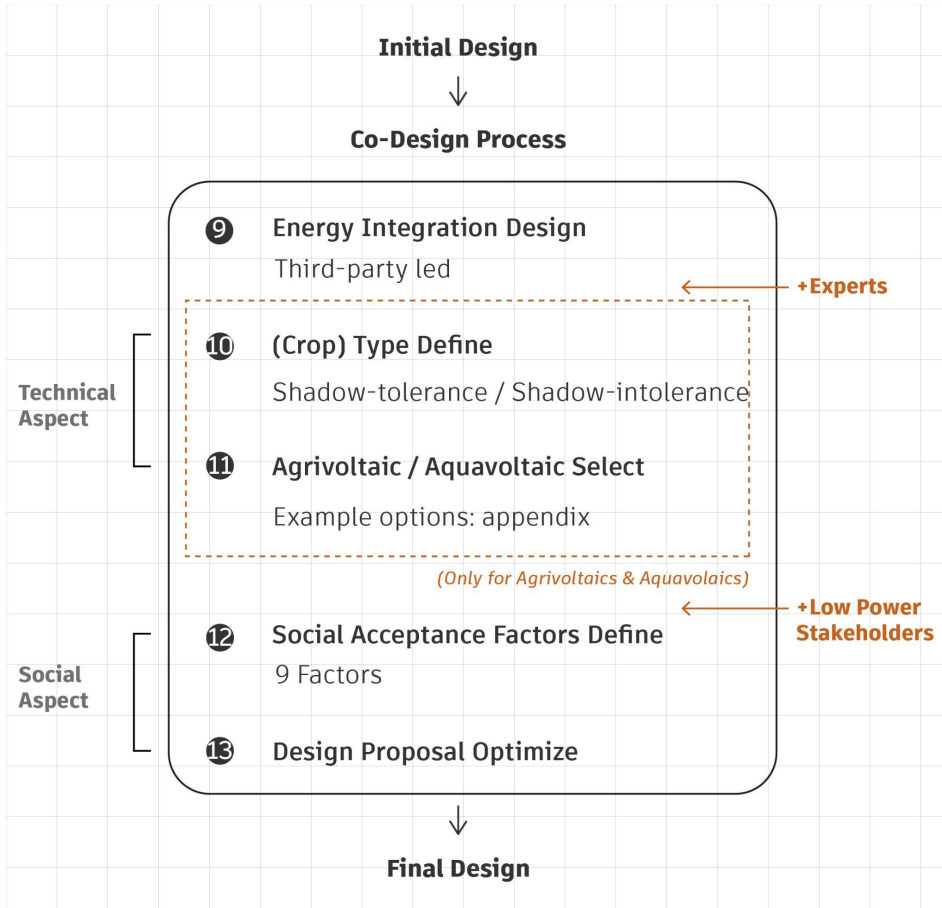
Threat



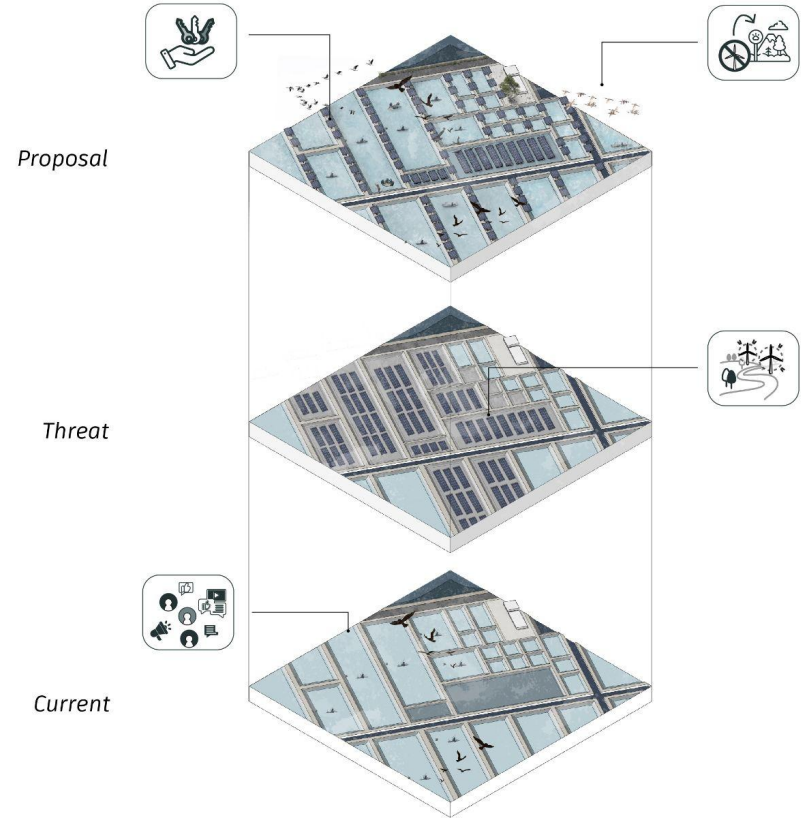
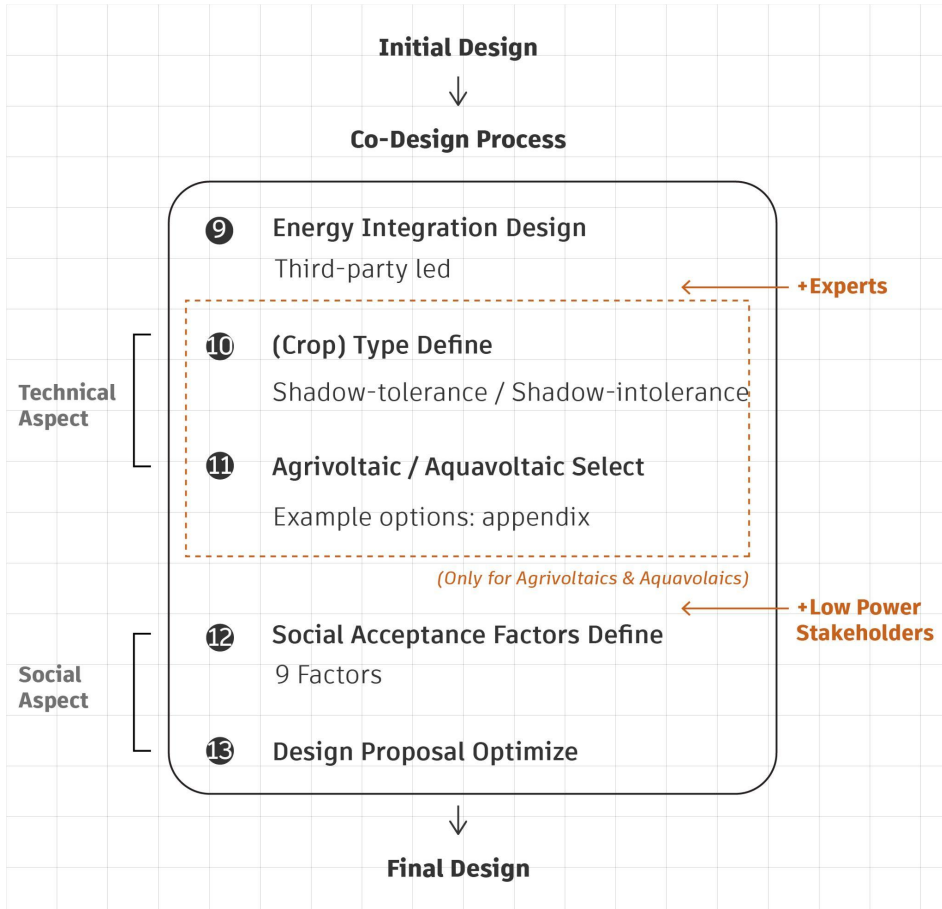
Current



Energyscape Template Design

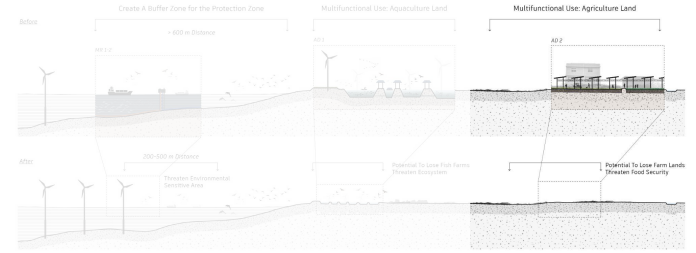
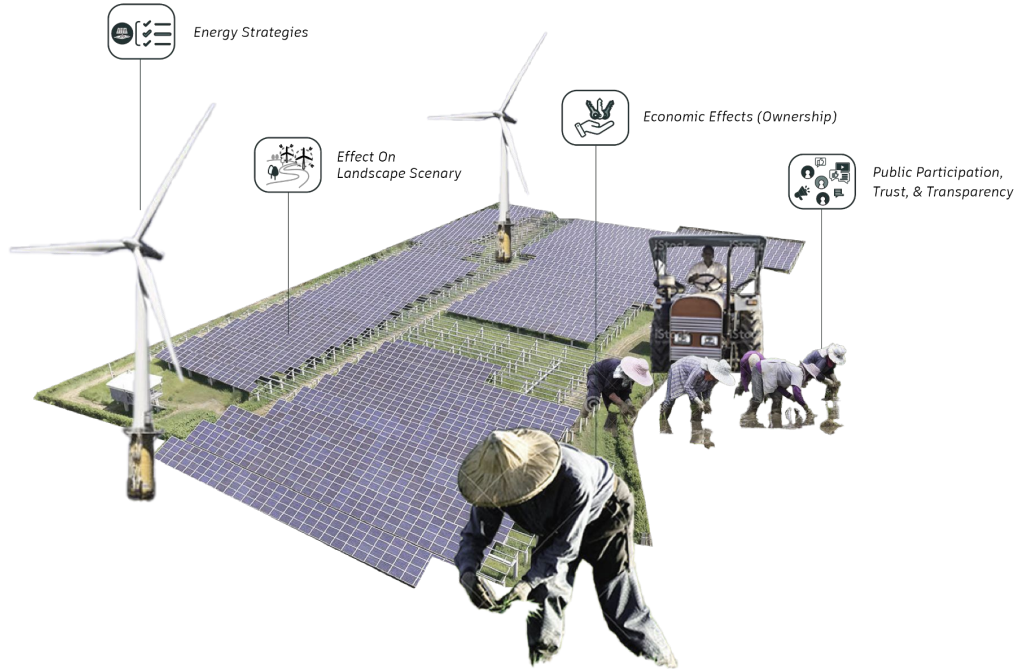


Energyscape Template Design



Energyscape Template Design

AA Section -AD2 / Agricultural Land Area



AD2

Distance with Surroundings

- Type: Solar / Wind Energy
- Size: ≤ 0.5 MW / 0.5-2 MW / ≥ 2 MW
- Density*:
 - Rooftop: $\leq 80\%$
 - Ground: $\leq 40\%^{**}$
- Distance: ≥ 300 m
- Environmental Sensitive: exclude the area

Mainly agricultural use, but less environmentally sensitive than AD1. Solar energy on the ground needs to be versatile for use.

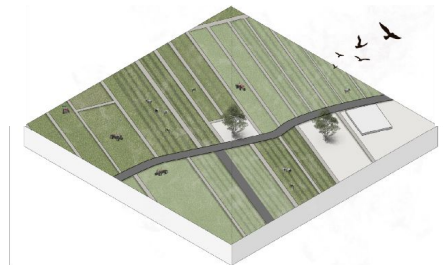
Energyscape Template Design

AA Section

-AD2

-Agricultural Land Area

Current

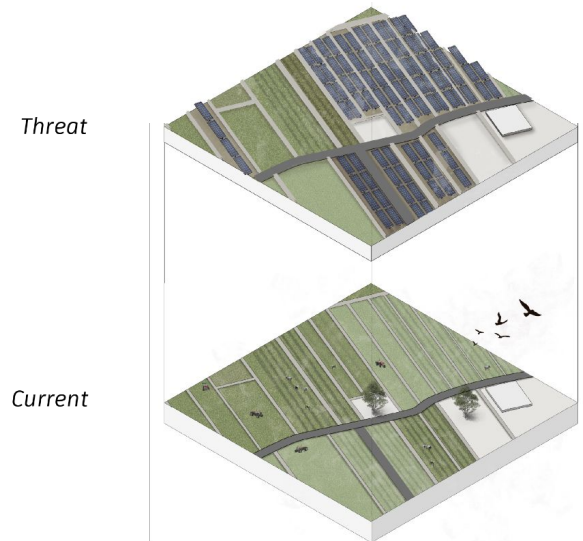


Energyscape Template Design

AA Section

-AD2

-Agricultural Land Area

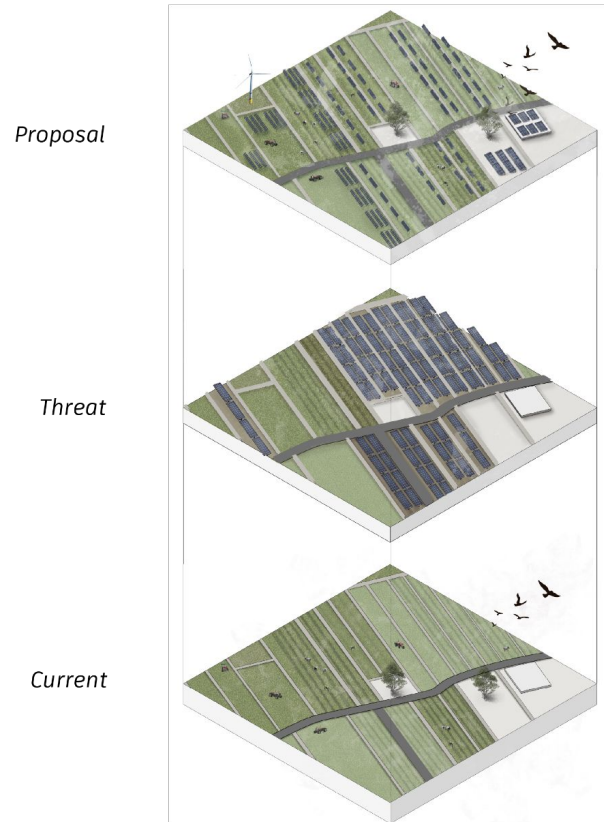


Energyscape Template Design

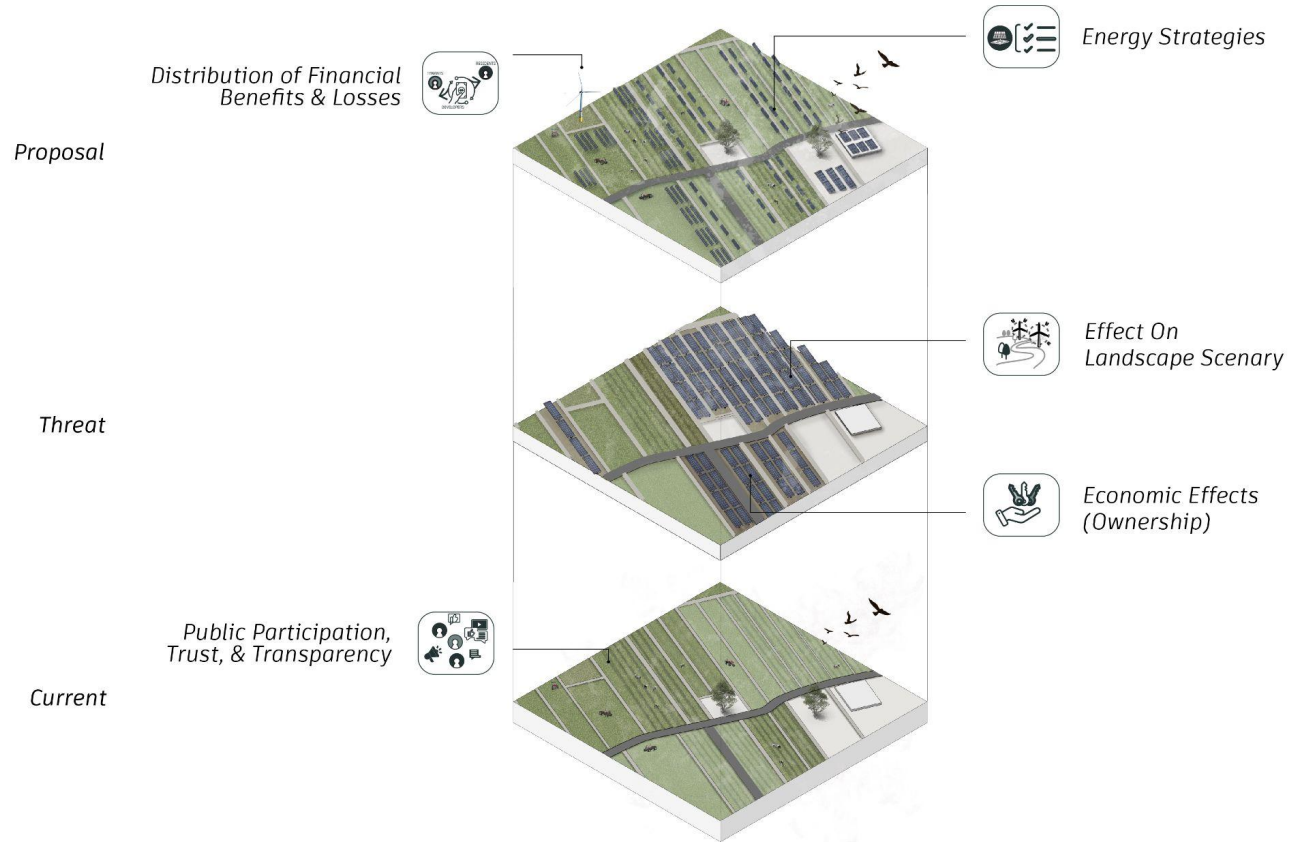
AA Section

-AD2

-Agricultural Land Area

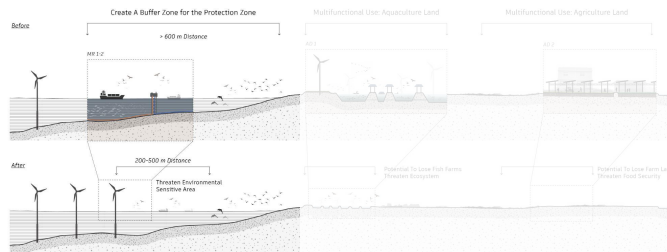
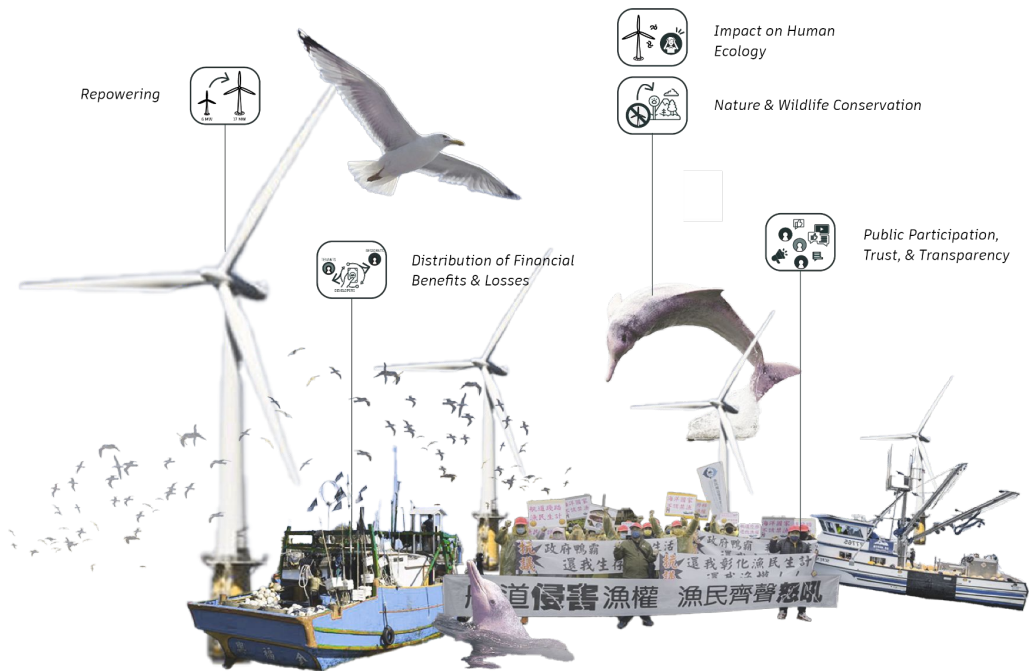


Energyscape Template Design



Energyscape Template Design

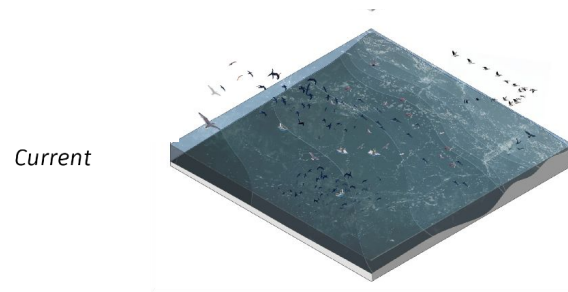
AA Section -MR1-2 / Marine Spatial Area



MR1-2

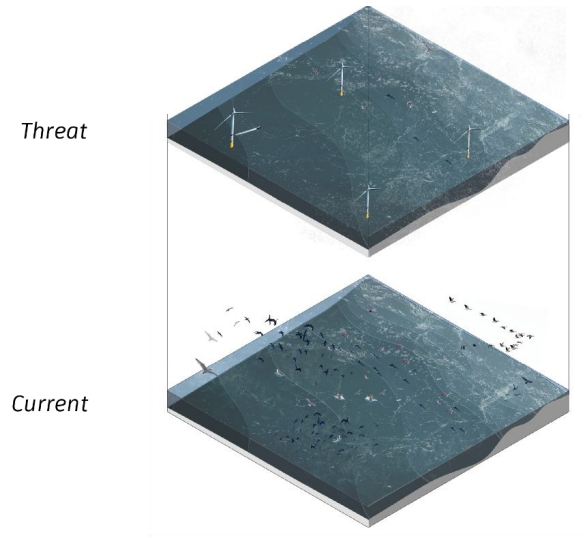
- This area is a reserve area for major construction projects approved by the Central Government.
- Type: Solar / Wind Energy
- Size: ≤ 0.5 MW / $0.5-2$ MW / ≥ 2 MW
- Density*:
 - Ground: project-based*7
- Distance: ≥ 750 m*8
- Environmental Sensitive: exclude the area

Energyscape Template Design



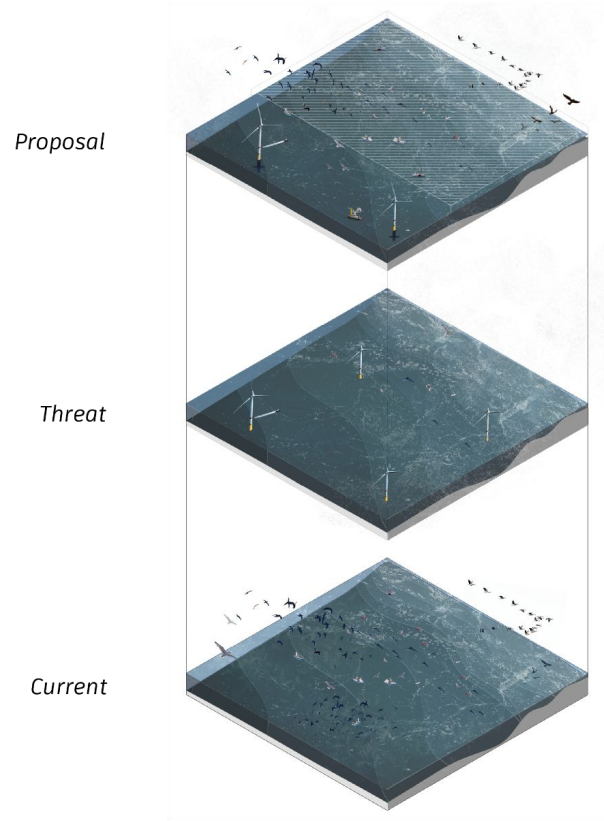
AA Section
-MR1-2
-Marine Spatial Area

Energyscape Template Design



AA Section
-MR1-2
-Marine Spatial Area

Energyscape Template Design

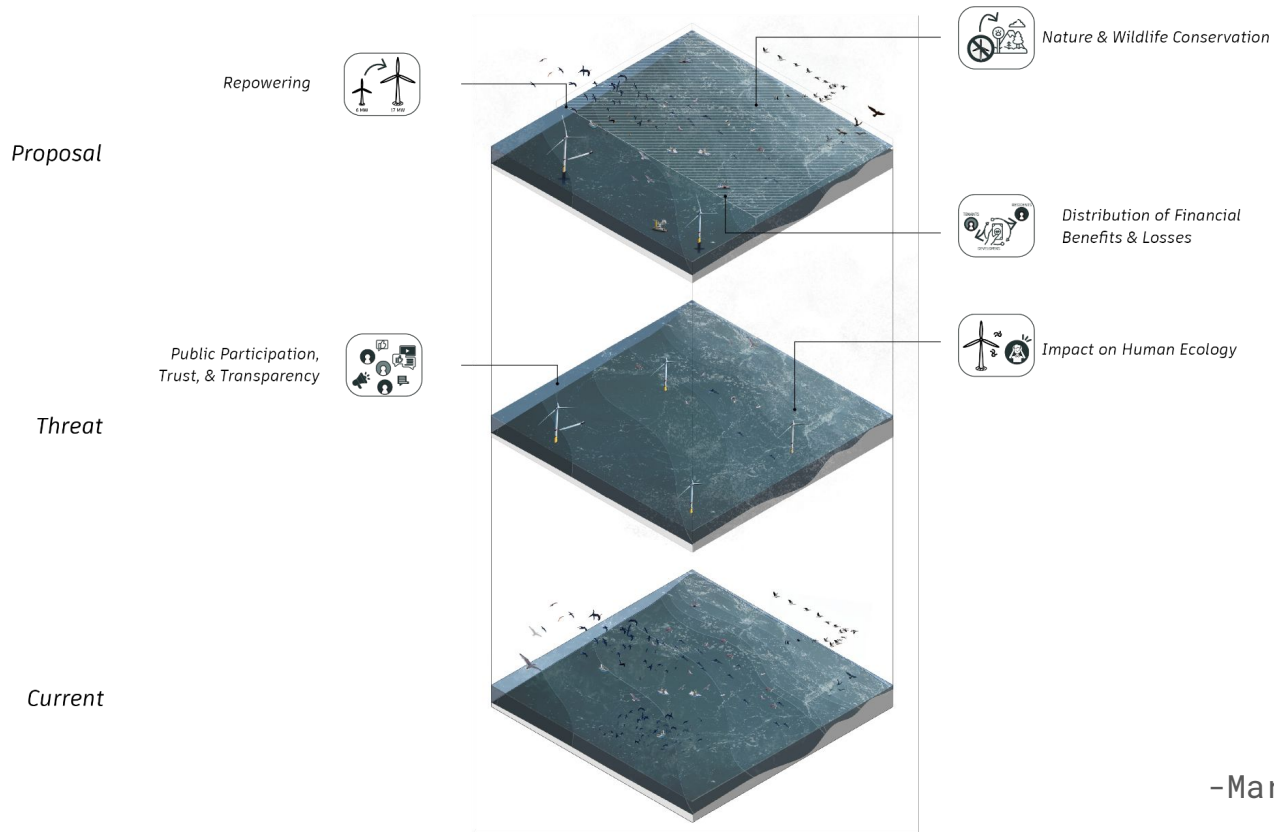


AA Section

-MR1-2

-Marine Spatial Area

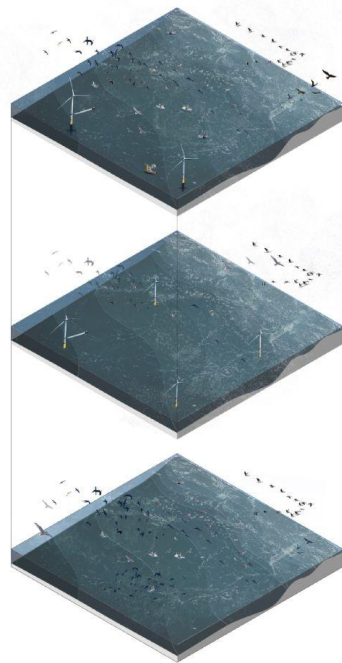
Energyscape Template Design



AA Section
-MR1-2
-Marine Spatial Area

Energyscape Template Design

AA Section -Fangyuan Township- Uncompetitive Rural Area

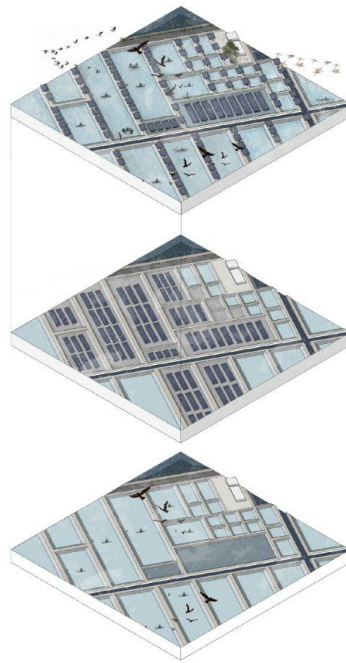


A1 Marine Spatial Area

PROPOSAL

Threat

CURRENT

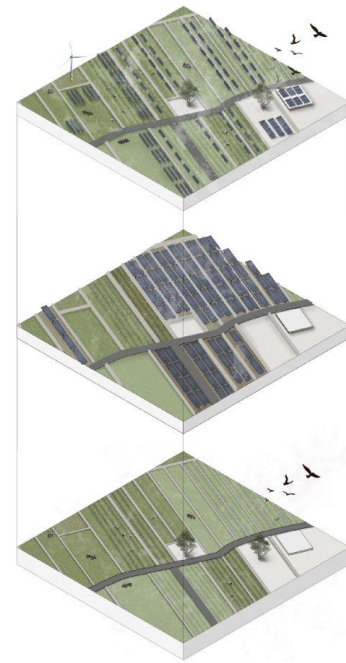


PROPOSAL

Threat

CURRENT

A2 Aquacultural Land Area



A3 Agricultural Land Area

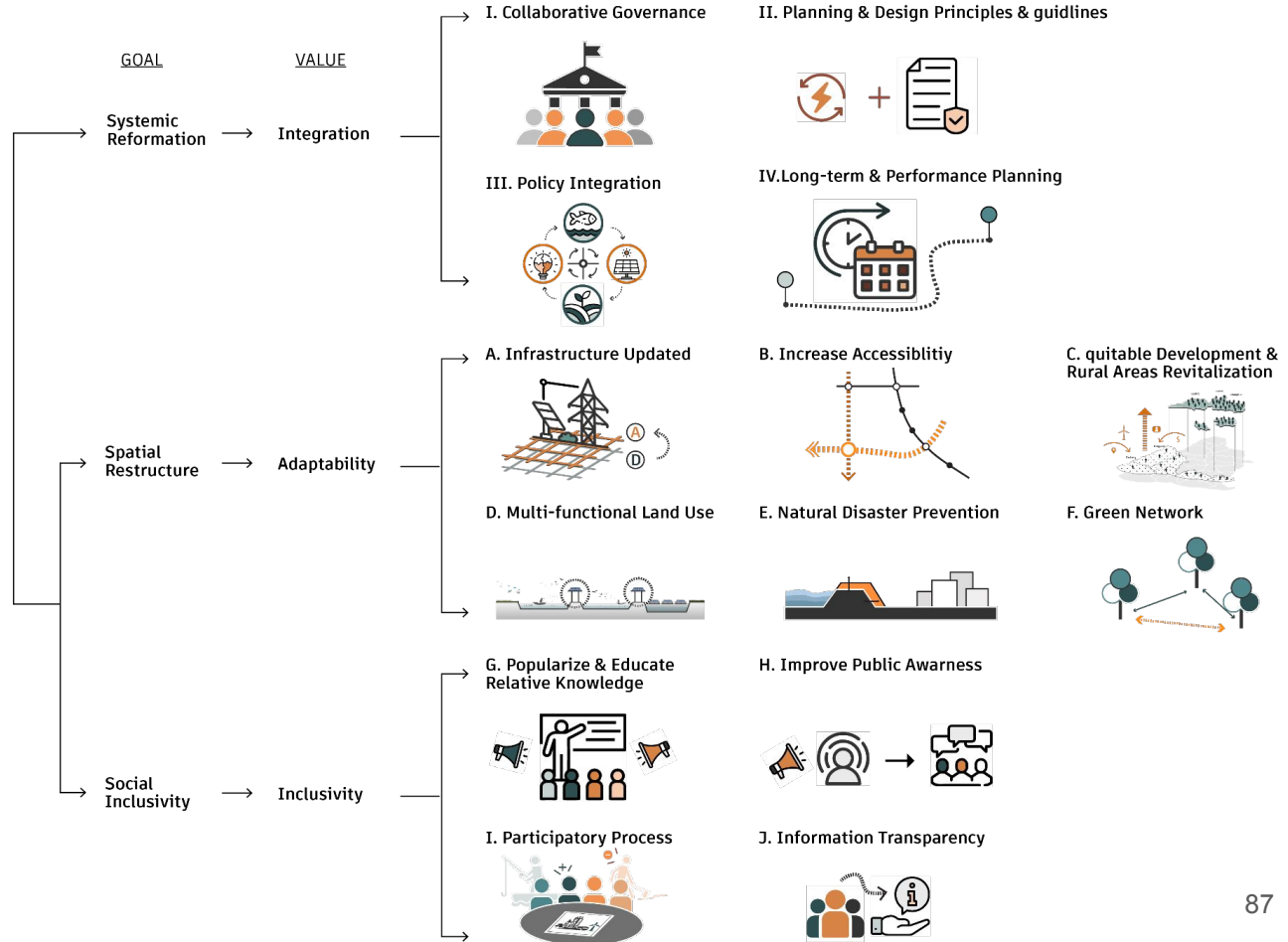
09

Regional Strategies



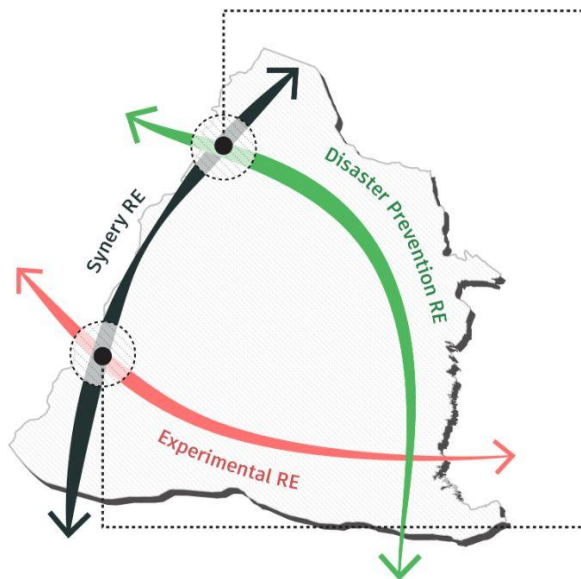
Regional Strategies

- Systemic Reformation
- Spatial Restructure
- Social Inclusivity



Regional Strategies

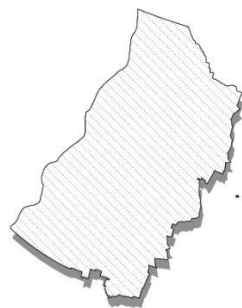
City Scale:
Regional Planning & Design



District Scale:
Regional Strategies

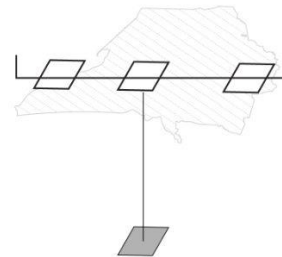


Lugang Township

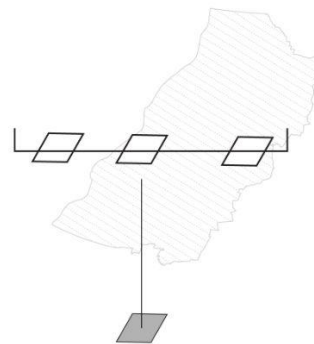


Fangyuan Township

Local:
Energyscape Design



Energyscape Template
Implementation



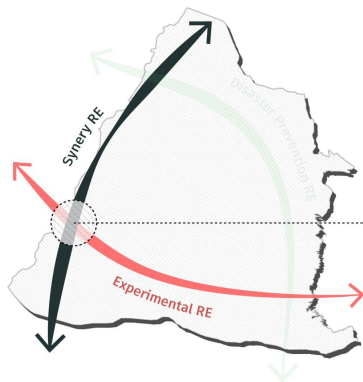
Energyscape Template
Implementation

Regional Strategies

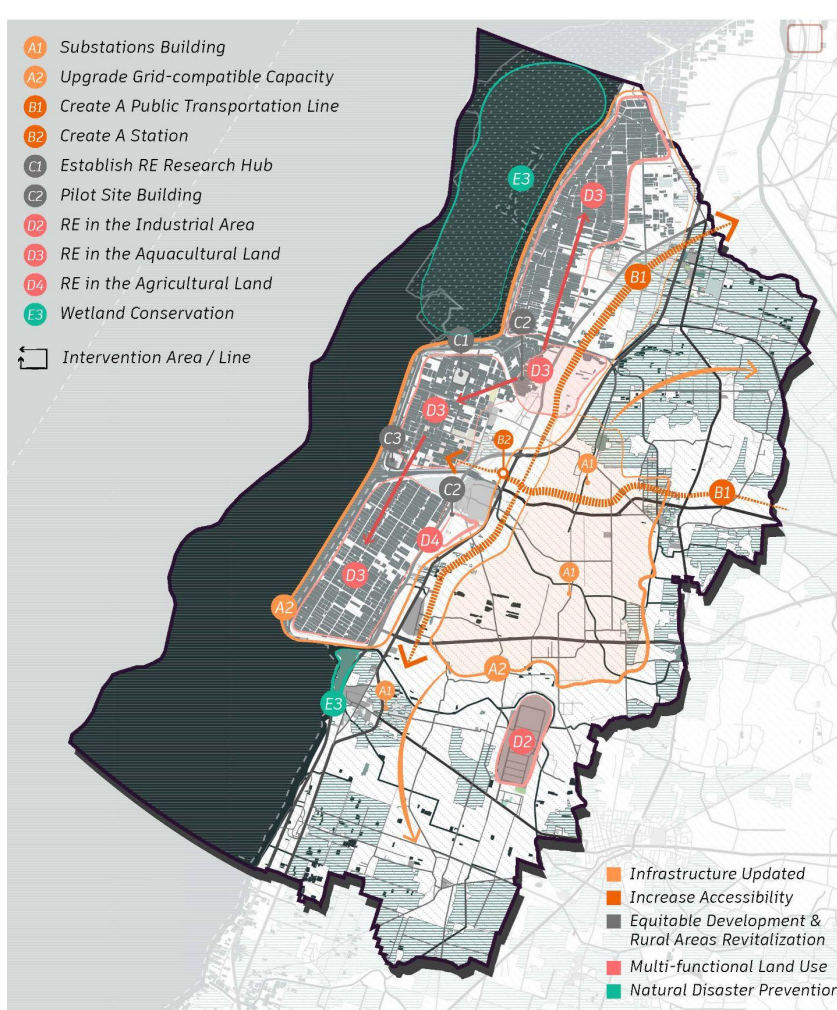
Fangyuan Township

-Experimental RE for Synergy

City Scale:
Regional Planning & Design



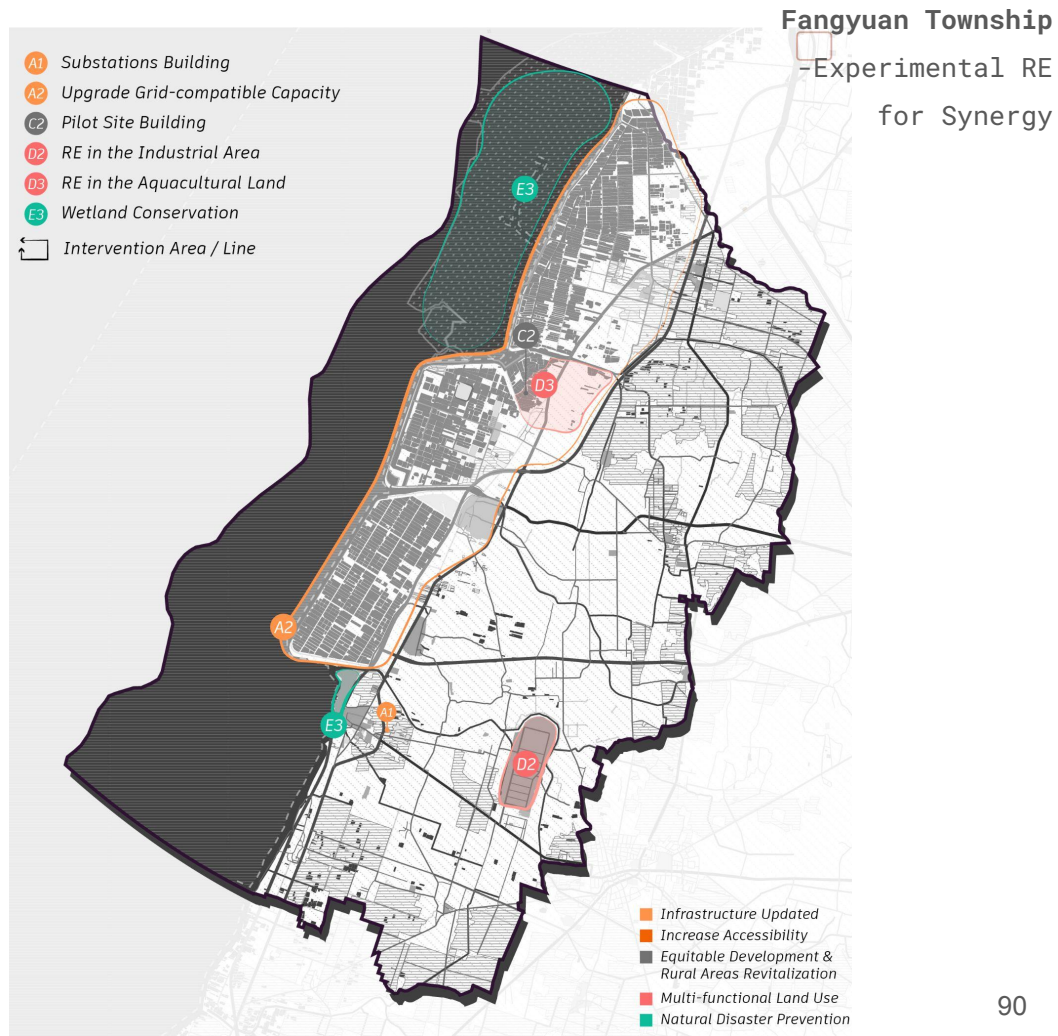
District Scale:
Regional Strategies



Regional Strategies

Phase I 2025: Preparation Stage

- RE Experiment in aquaculture
- Update RE infrastructure
- Pilot site building: combine with social strategies

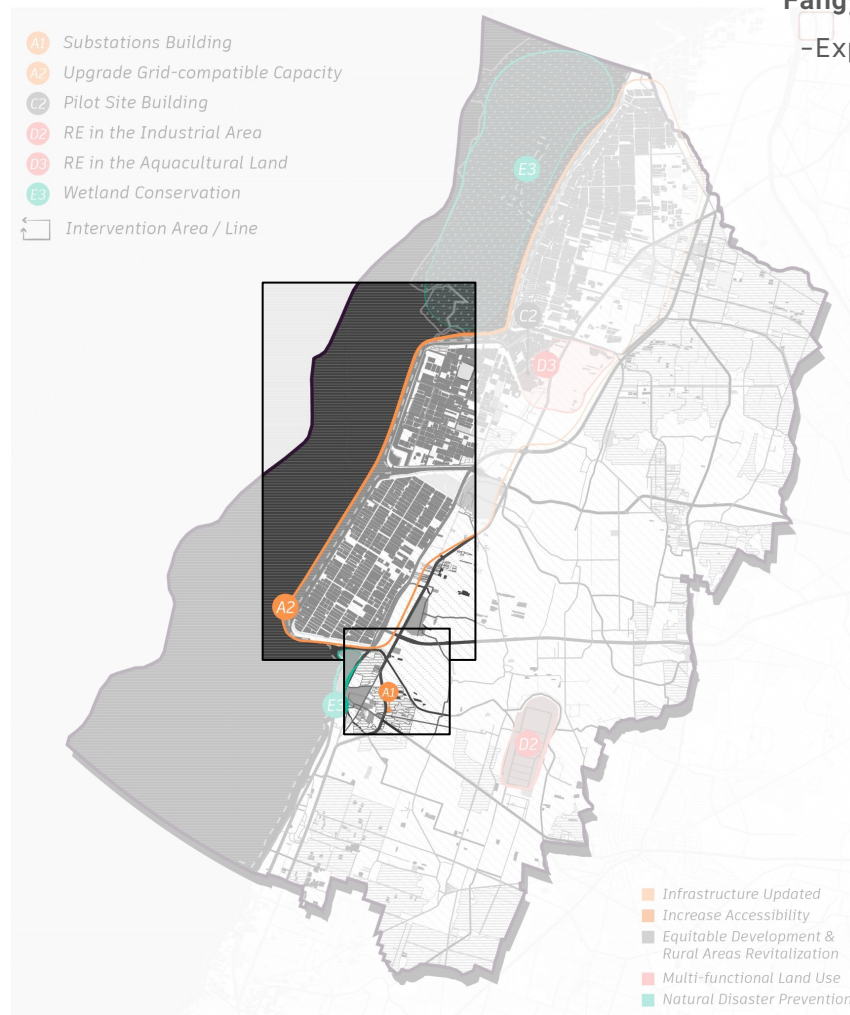


Regional Strategies

Phase I 2025: Preparation Stage

-Update RE infrastructure

-Substations building

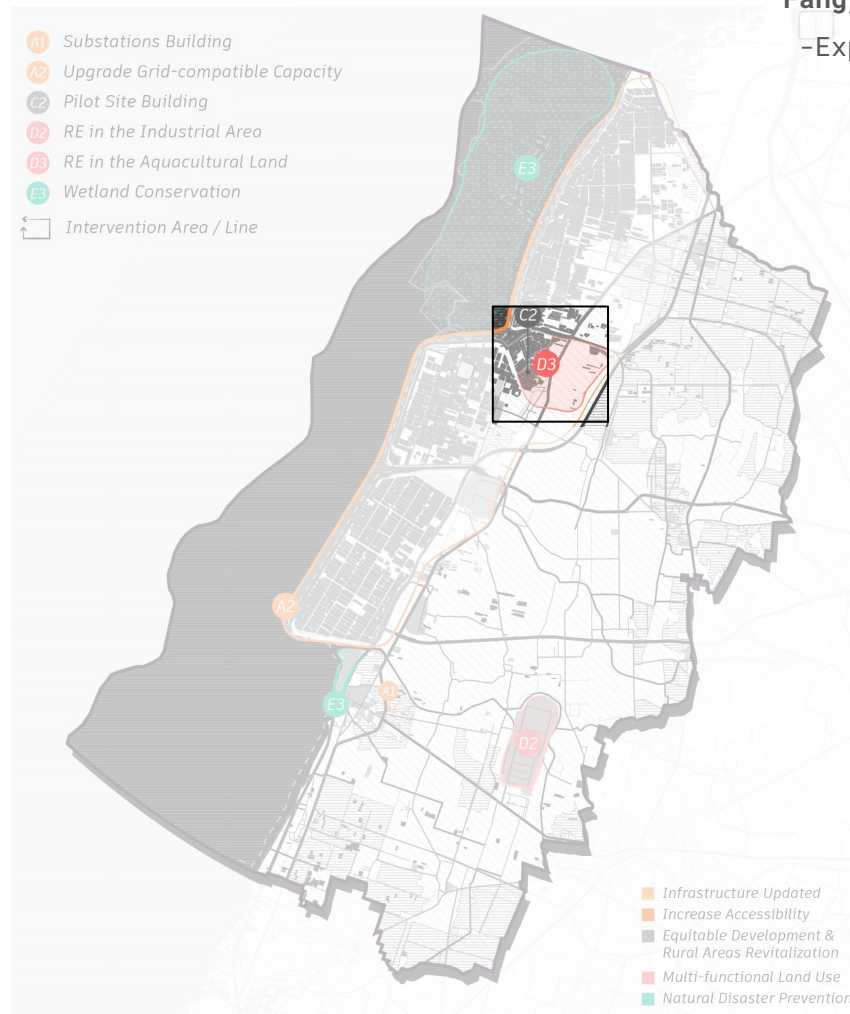


Regional Strategies

Phase I 2025: Preparation Stage

-Pilot site building: RE

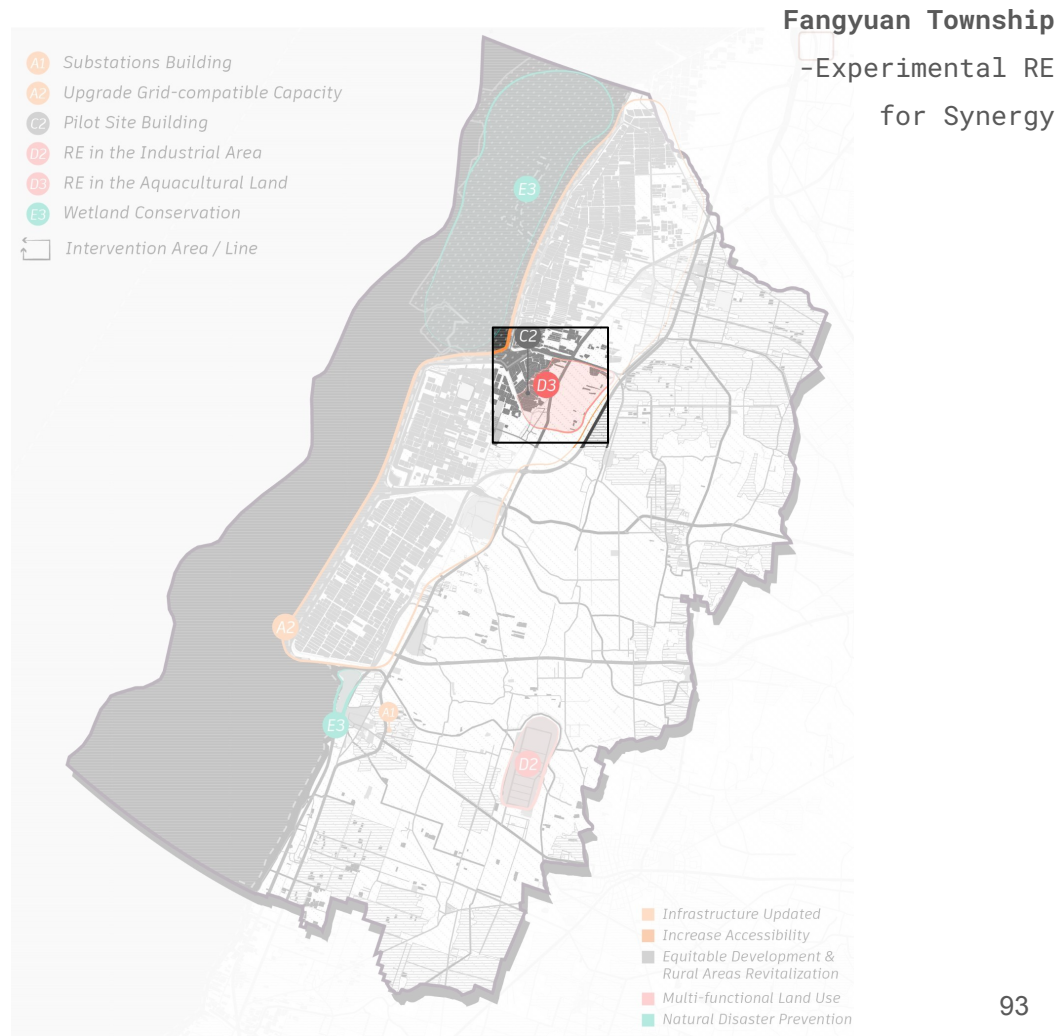
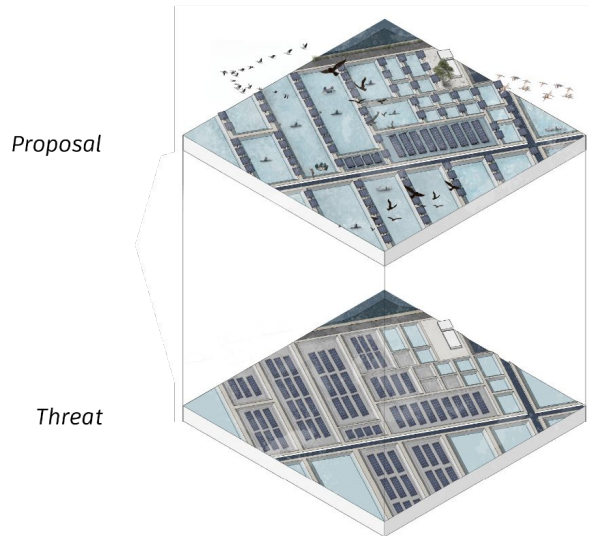
Experiment in aquaculture



Regional Strategies

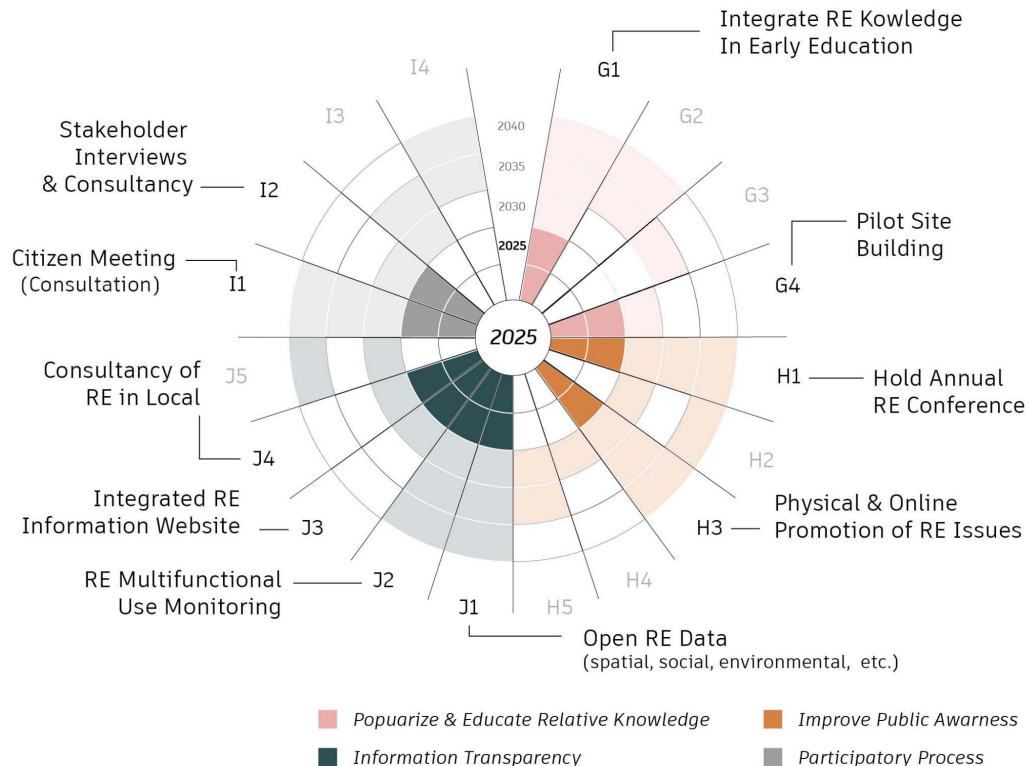
Phase I 2025: Preparation Stage

-Implementation of Energyscape Template

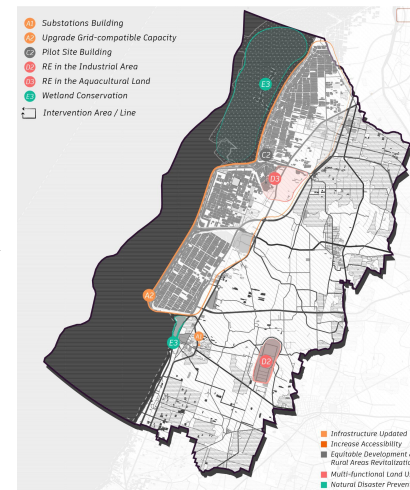


Regional Strategies

Phase I 2025: Preparation Stage



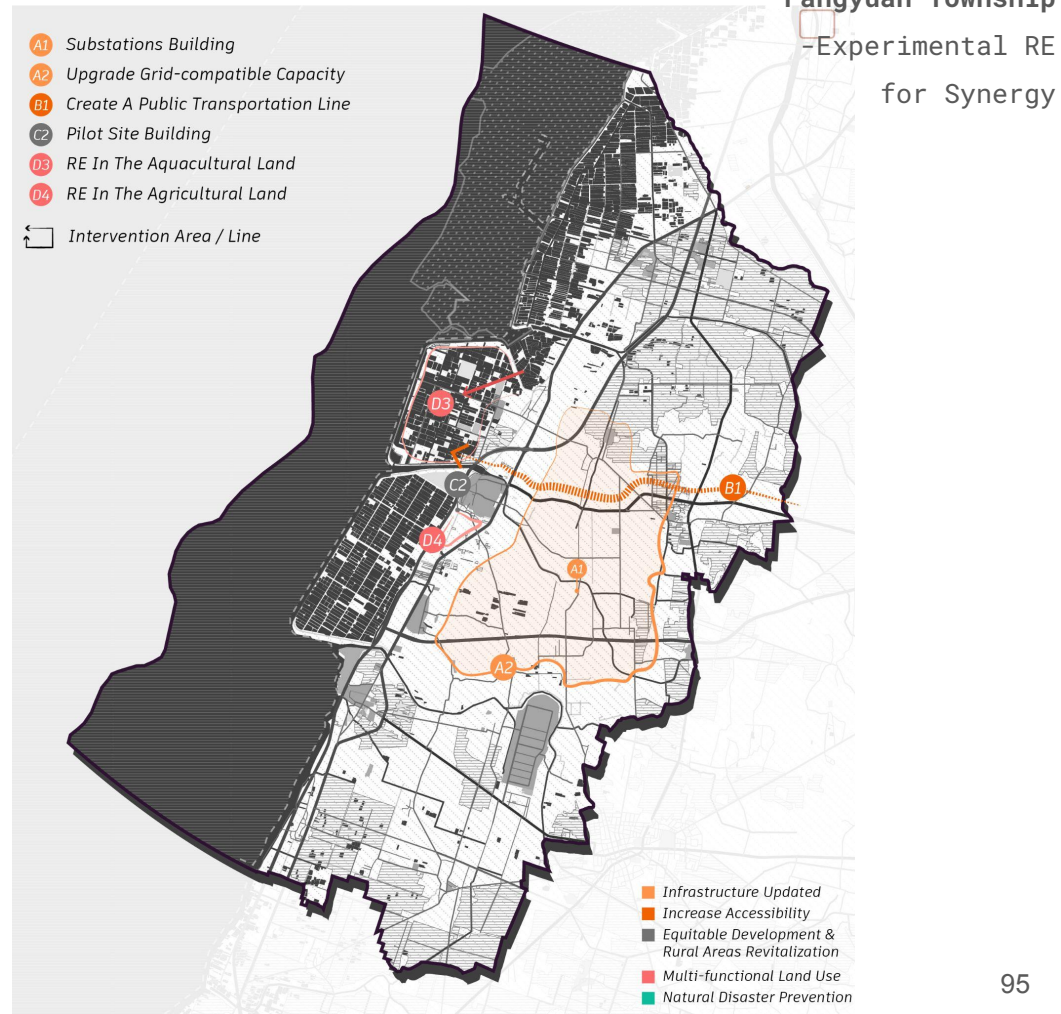
support



Regional Strategies

Phase II 2030: Implementation Stage

- RE Experiment in agriculture
- Expand RE infrastructure renewal
- Pilot site building
- Create public transportation (W&E)



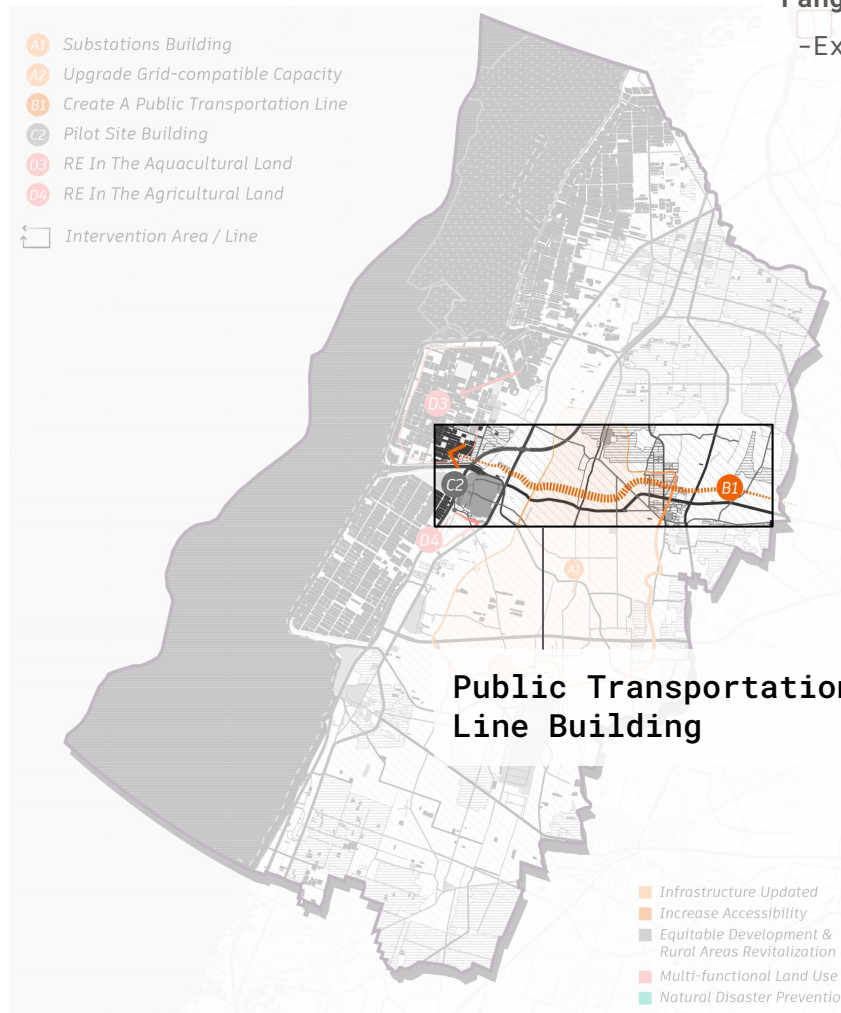
Regional Strategies

Phase II 2030: Implementation Stage

-Create public transportation (W<>E)

Fangyuan Township

-Experimental RE
for Synergy

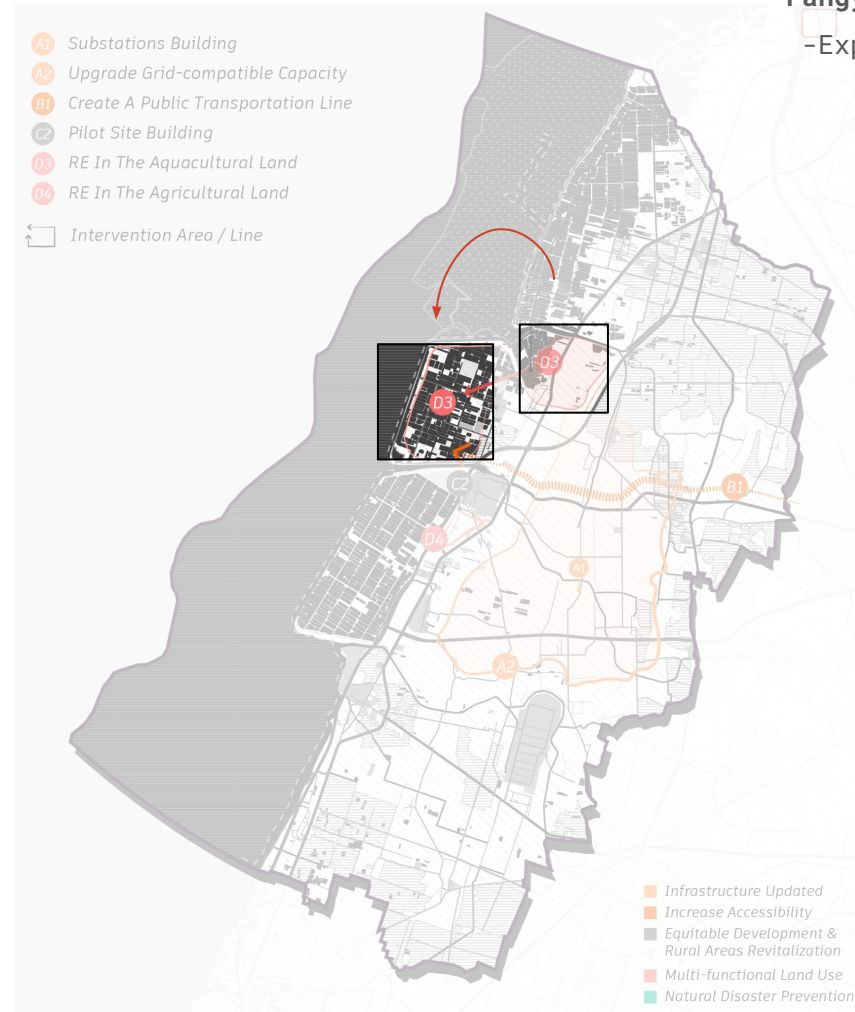


Regional Strategies

Phase II 2030: Implementation Stage

-Implementation of multifunctional use of aquaculture

-Experimental RE
for Synergy

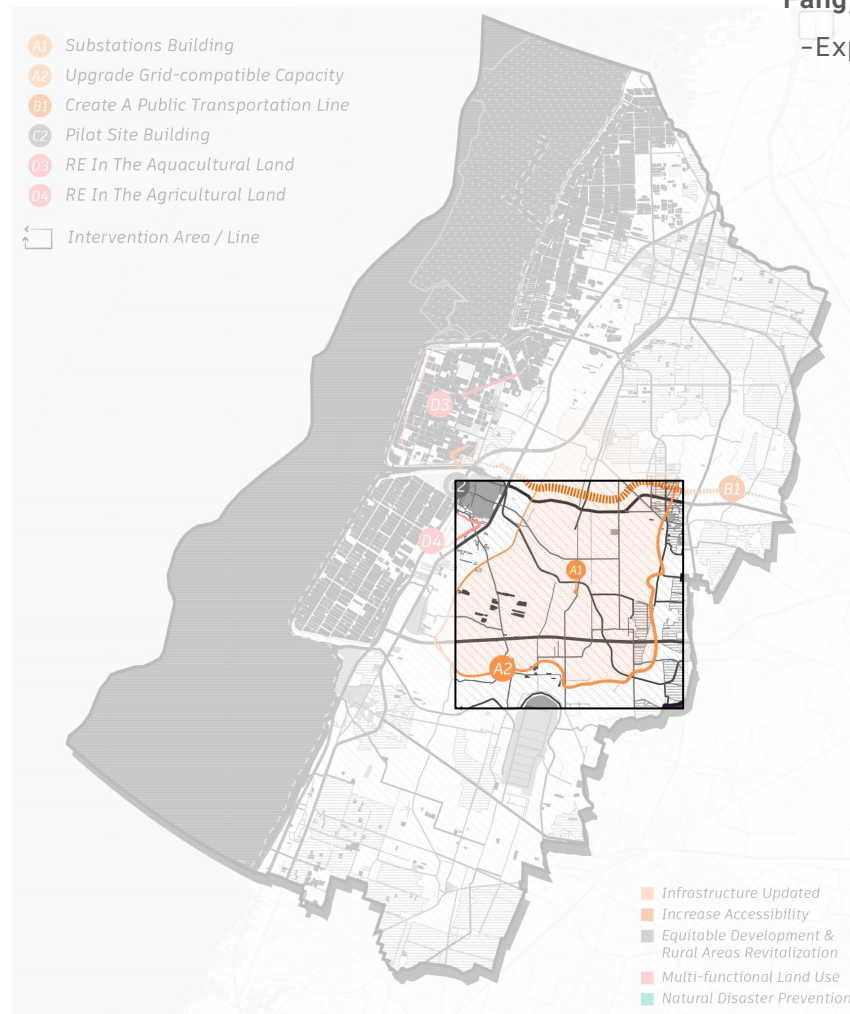


Regional Strategies

Phase II 2030: Implementation Stage

-Expand the updated RE infrastructure

-Experimental RE for Synergy



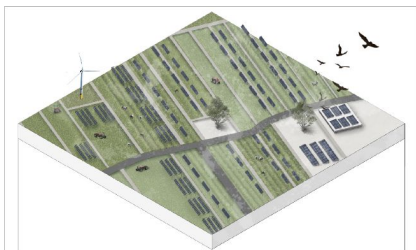
Regional Strategies

Phase II 2030: Implementation Stage

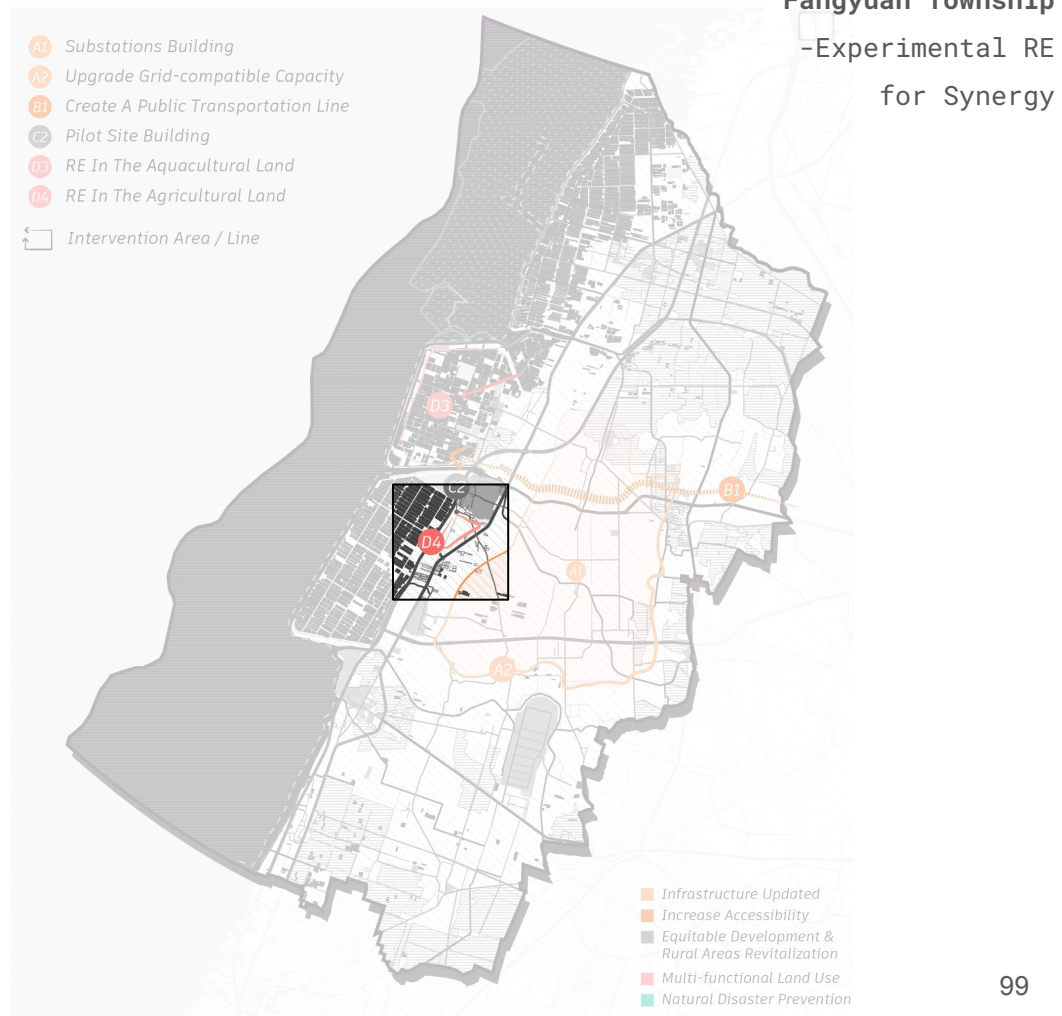
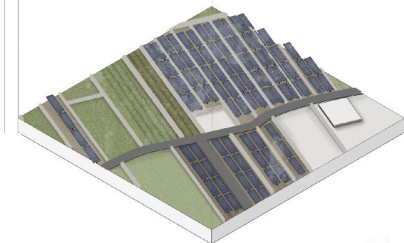
-Implementation of Energyscape

Template: Agricultural land

Proposal

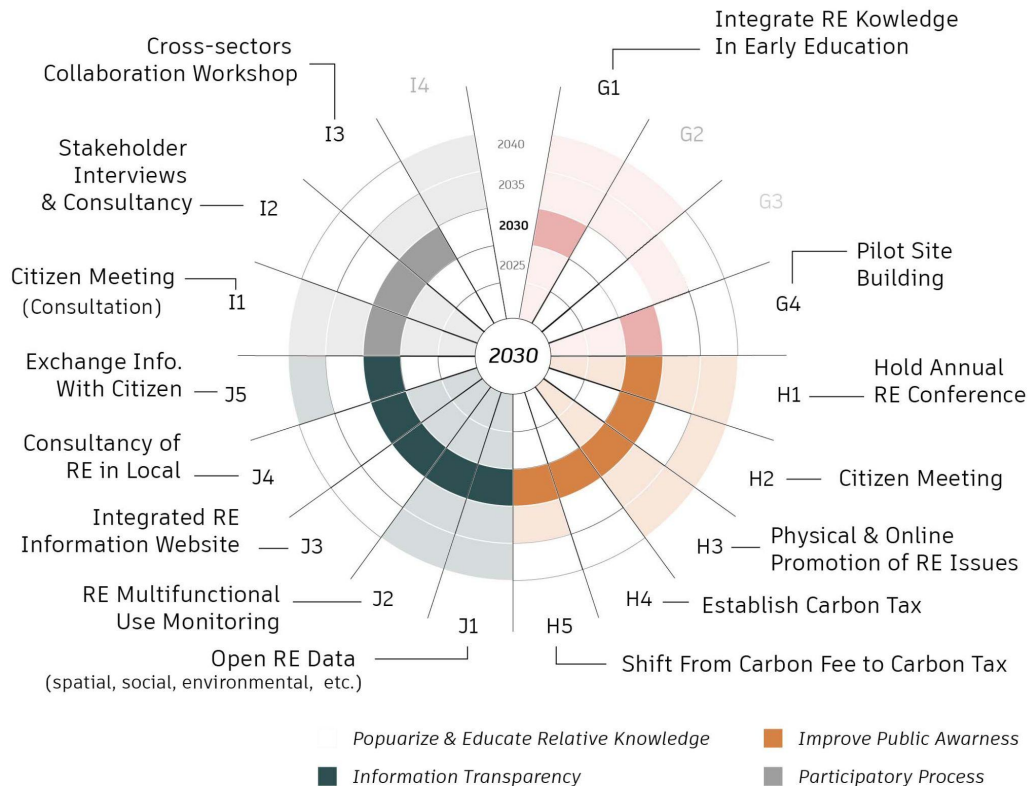


Threat

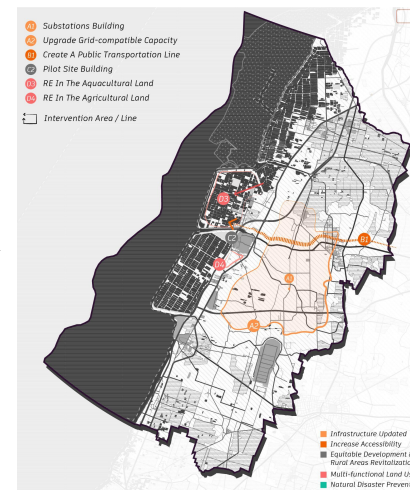


Regional Strategies

Phase II 2030: Implementation Stage



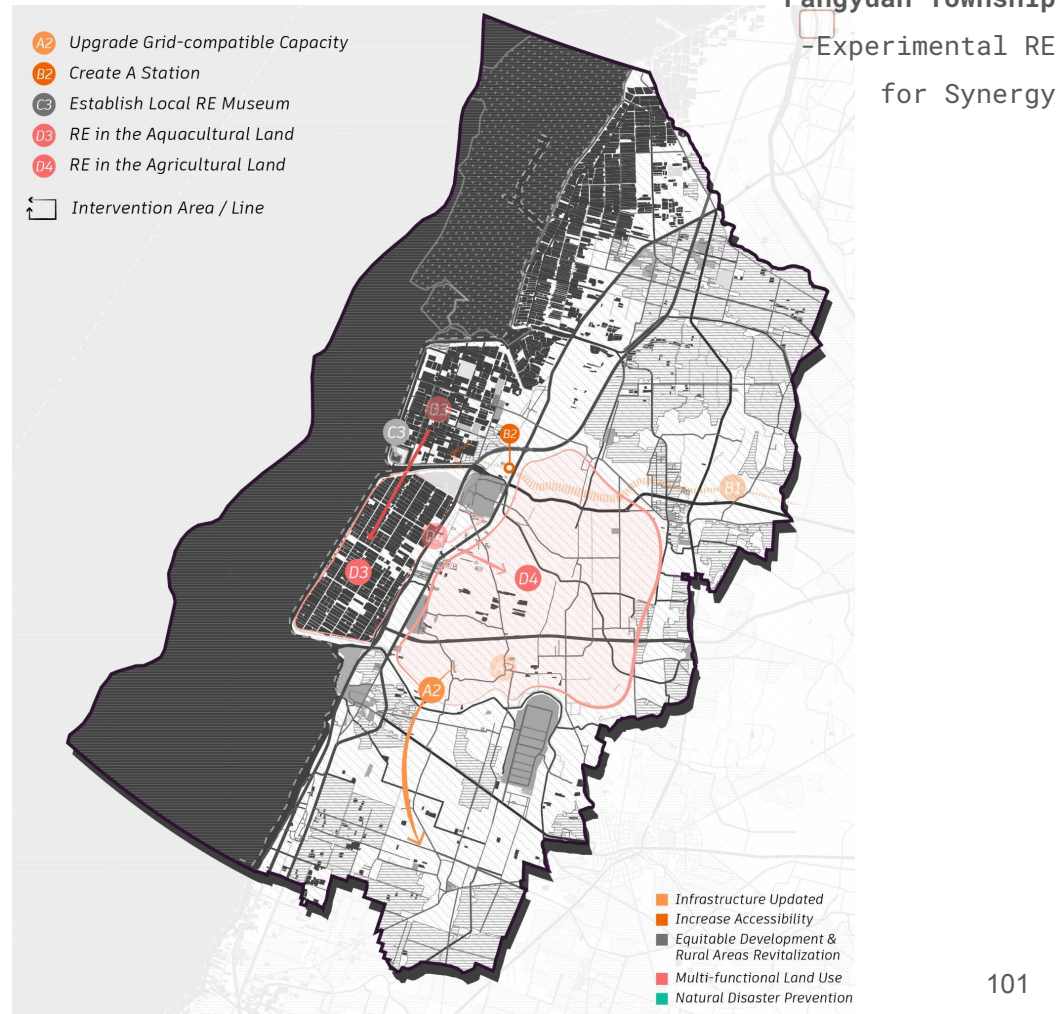
support



Regional Strategies

Phase III 2035: Expansion Stage

- Expand RE in aquaculture & agriculture
- Expand the updated RE infrastructure
- Assessment with stakeholders: increase public awareness



Regional Strategies

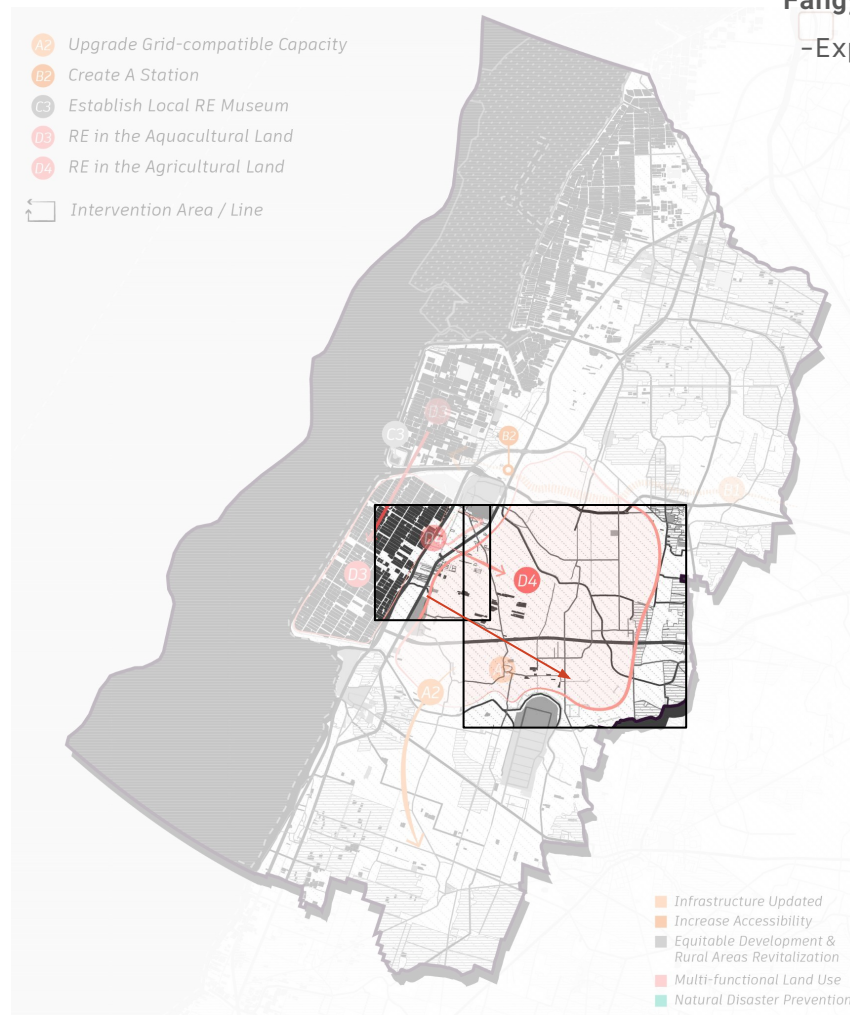
Phase III 2035: Expansion Stage

-Expand RE in agriculture

Fangyuan Township

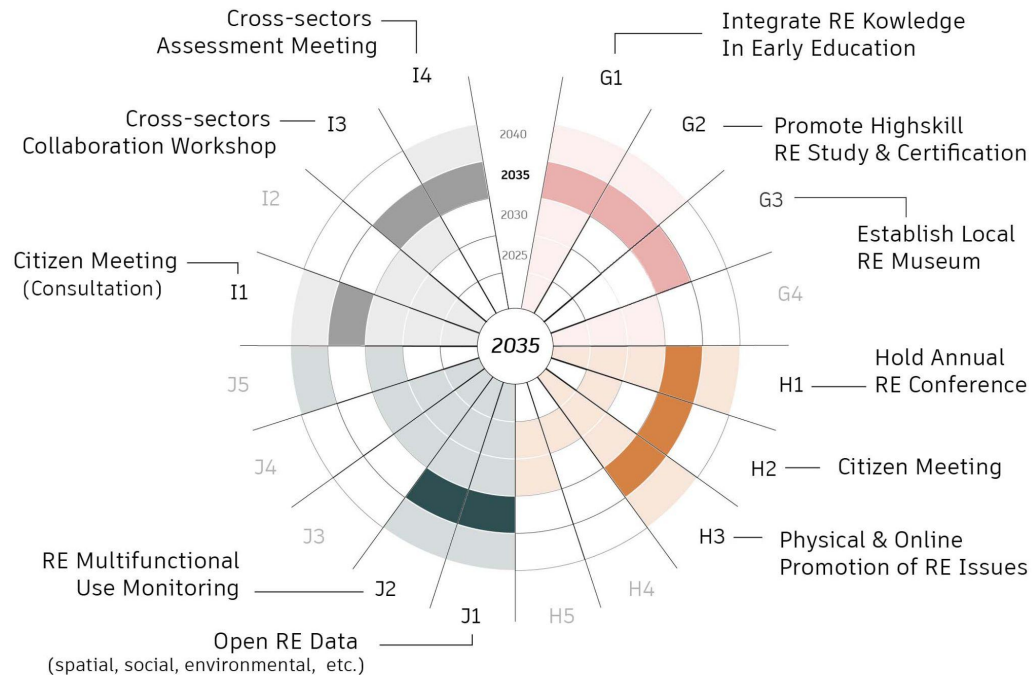
-Experimental RE

for Synergy



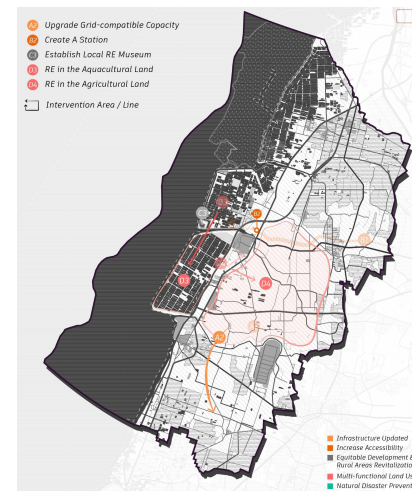
Regional Strategies

Phase III 2035: Expansion Stage



- Popularize & Educate Relative Knowledge
- Improve Public Awareness
- Information Transparency
- Participatory Process

support

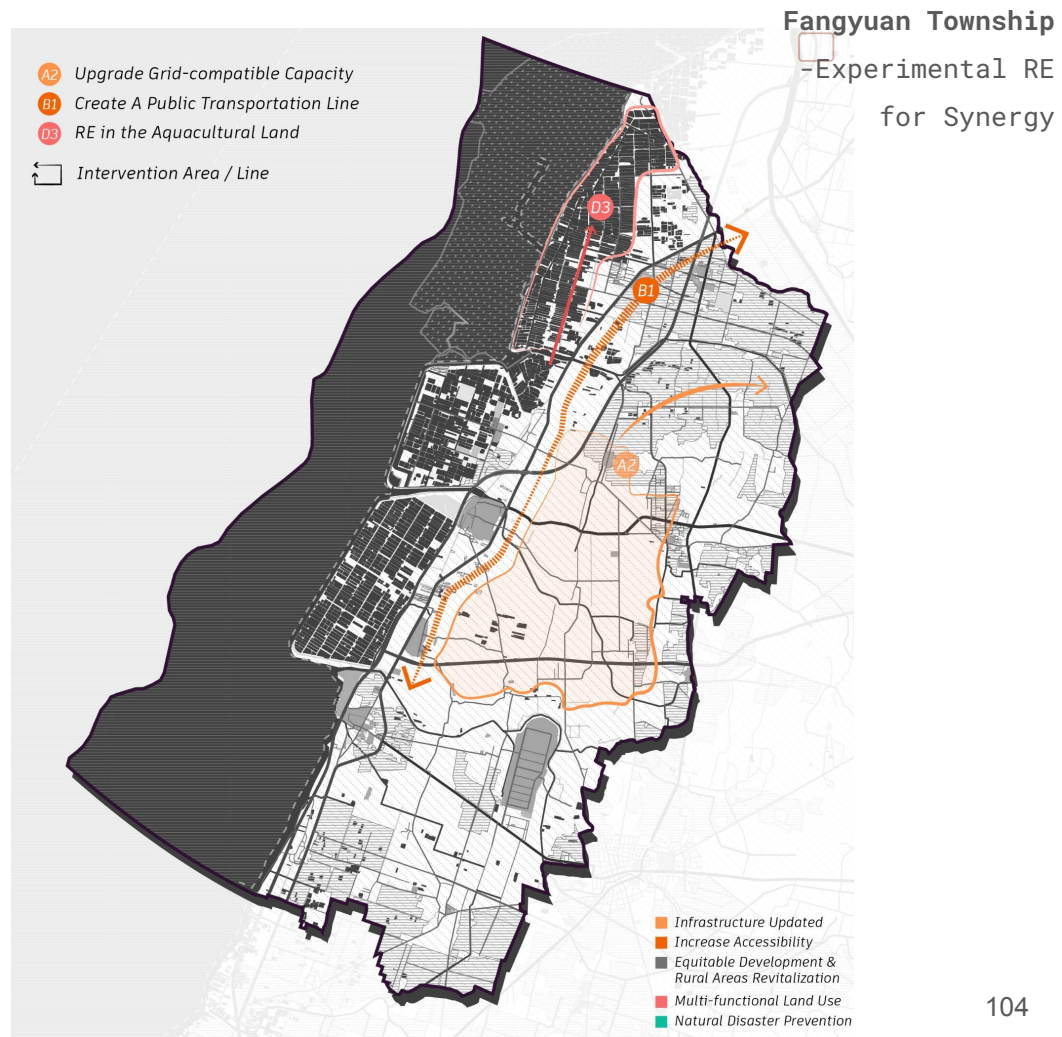


Fangyuan Township
-Experimental RE
for Synergy

Regional Strategies

Phase IV 2040: Enhancement Stage

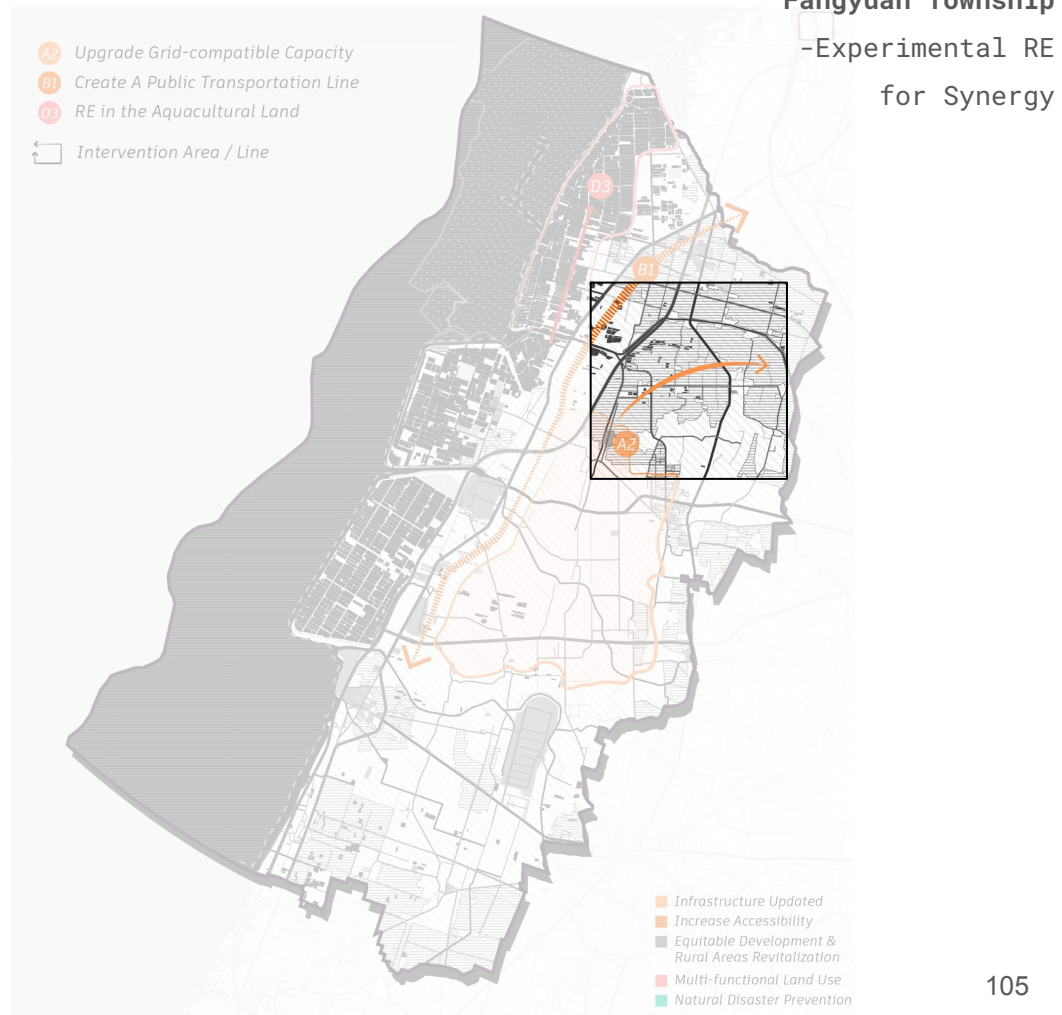
- Expand the updated RE infrastructure
- Create public transportation (N&S)
- Improve RE education



Regional Strategies

Phase IV 2040: Enhancement Stage

-Expand the updated RE infrastructure



Regional Strategies

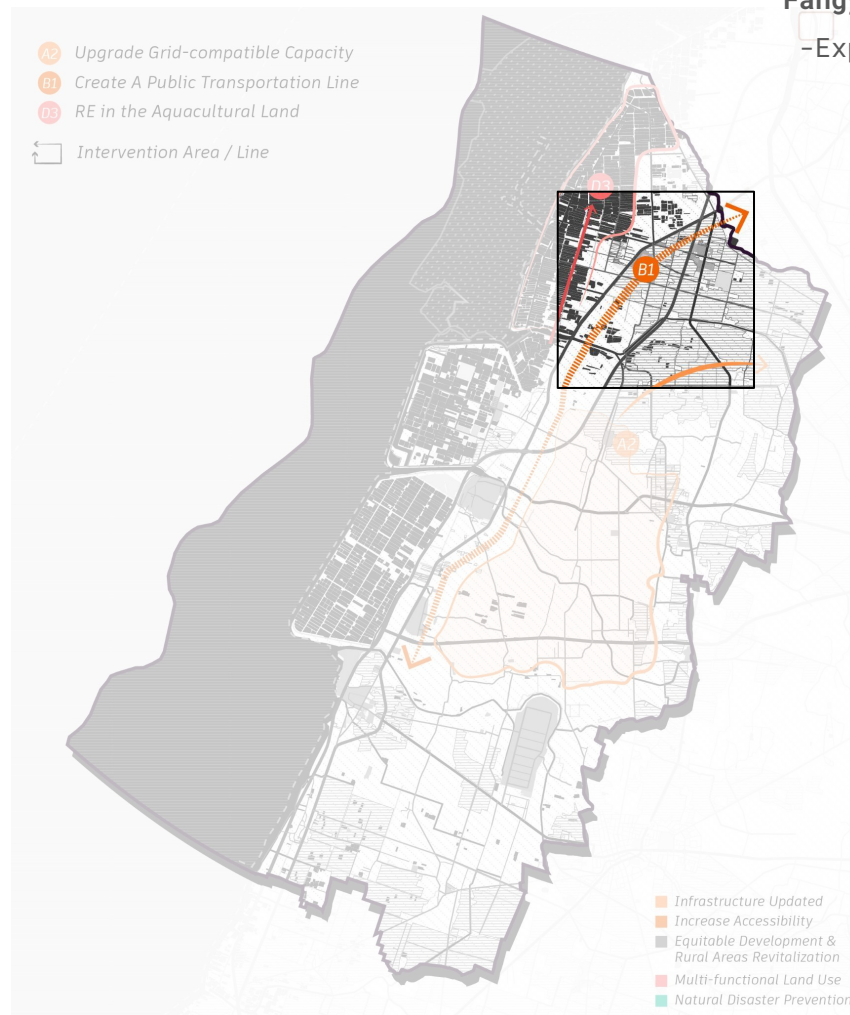
Phase IV 2040: Enhancement Stage

-Create public transportation (N<>S)

Fangyuan Township

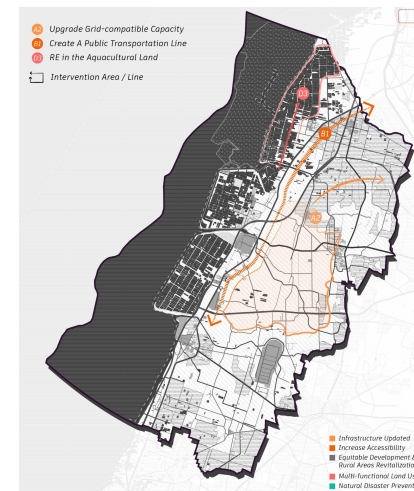
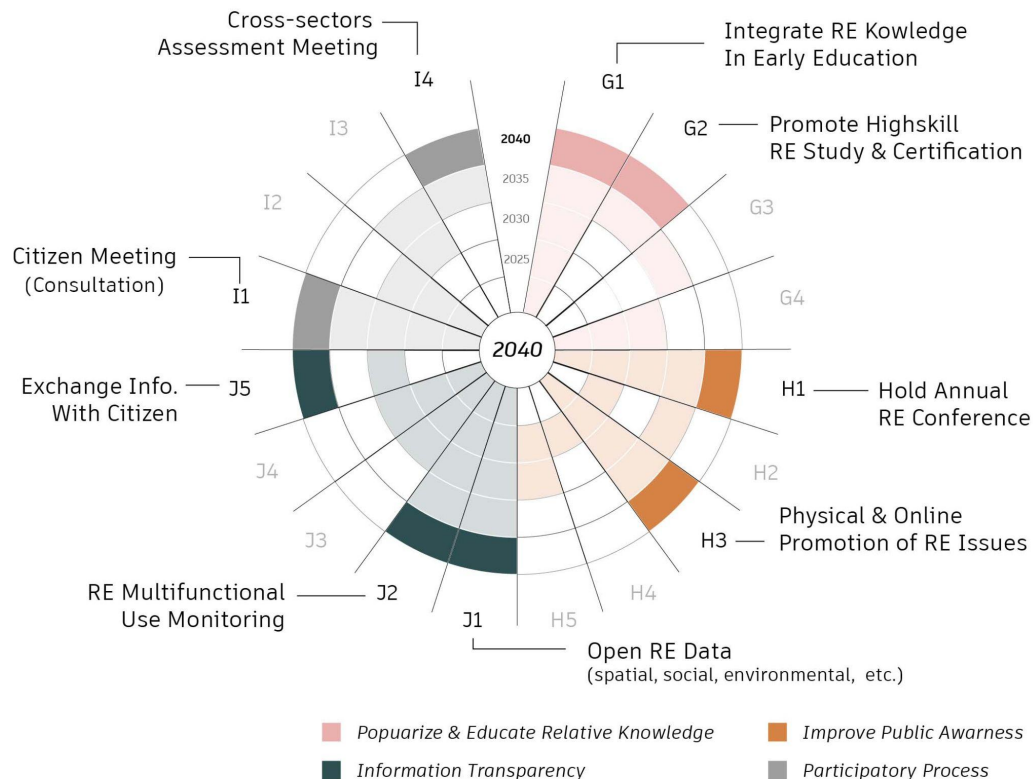
-Experimental RE

for Synergy



Regional Strategies

Phase IV 2040: Enhancement Stage



10

National Energy Transition Advice & Reflection



National Energy Transition Advice

■ Operational Advice ■ Mix of Operational & Strategic Advice ■ Strategic Advice

1. Create a holistic plan, including spatial and social perspectives, and build up planning and design principles in the energy transition planning process.

2. Establish an integrated planning platform for horizontal and vertical collaboration.

3. Establish a participatory planning process that includes stakeholders and encourages society to engage.

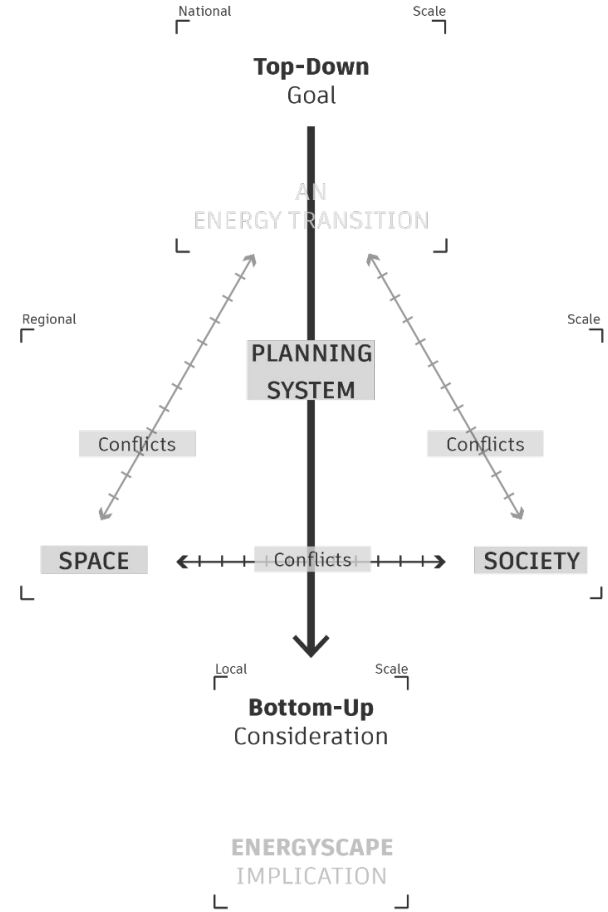
4. Explore alternative renewable energy and increase the research and implementation capacity.

5. Promote digital governance that integrates energy transition information.

6. Raise public awareness of the energy transition and integrate knowledge into the education system.

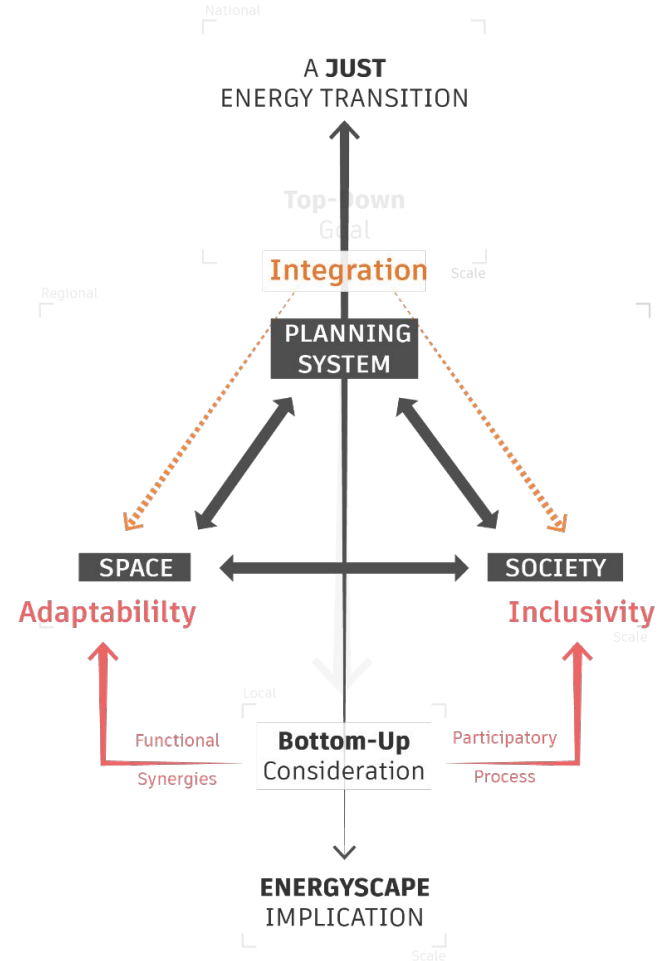
Conclusion

What *spatial* and *social* needs and considerations should be included in regional planning and design, building up the systemic changes for integrated planning for a just energy transition in Taiwan?



Conclusion

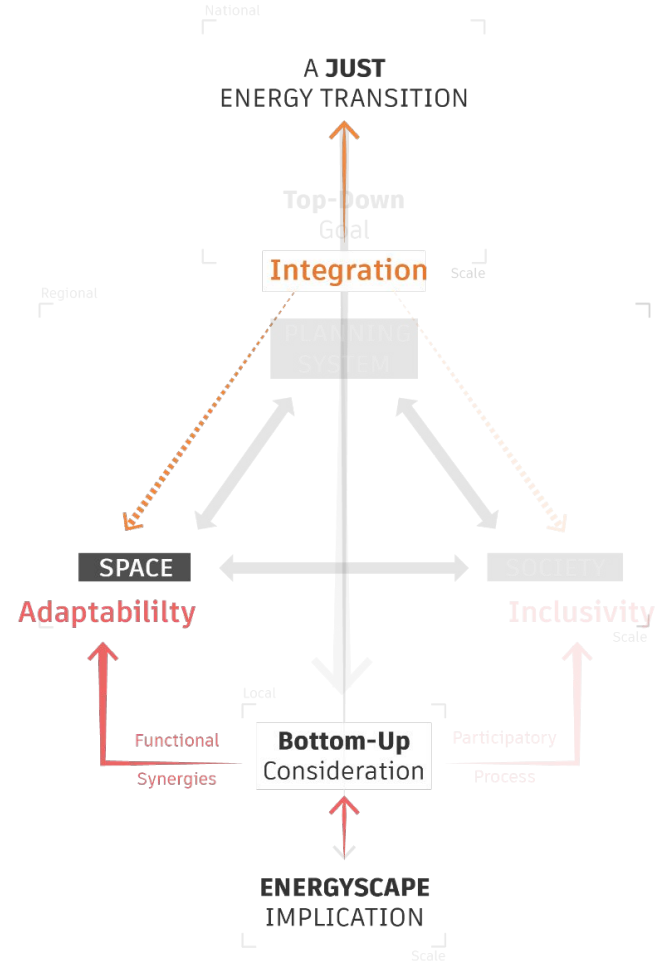
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Conclusion

Scientific Perspective

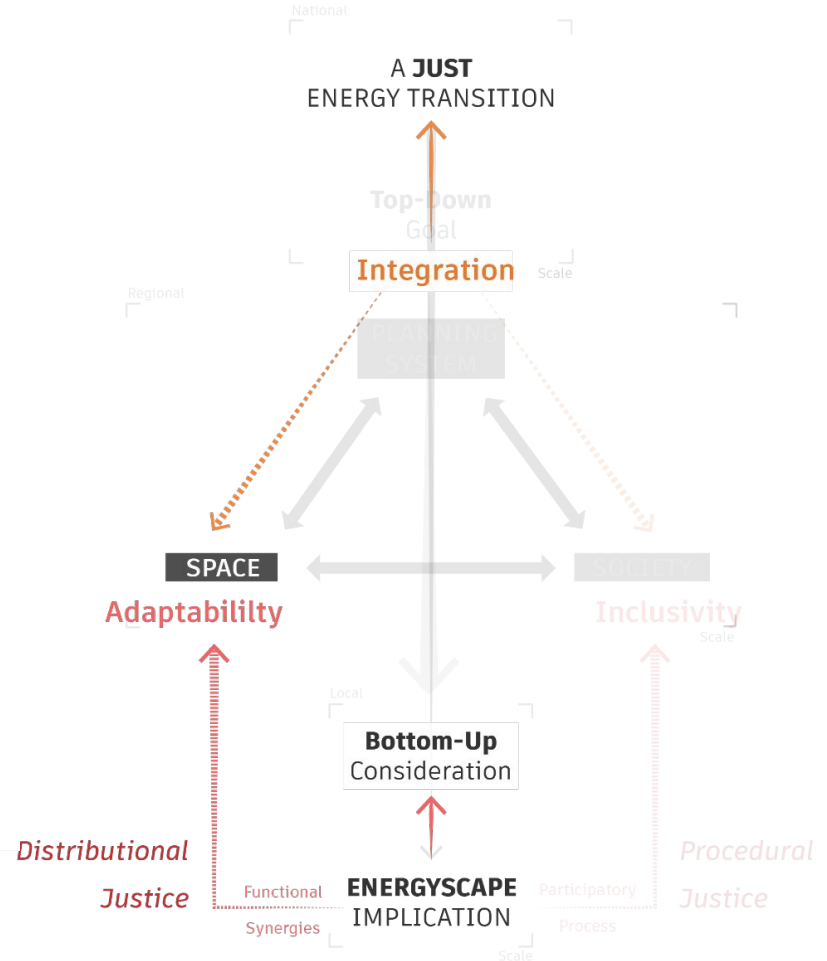
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Conclusion

Social Perspective

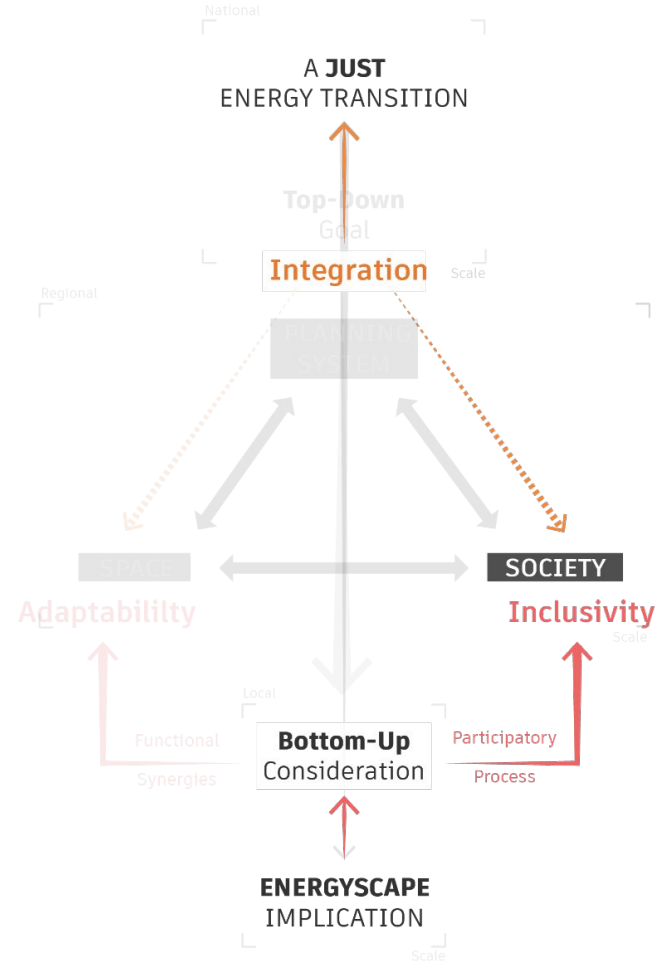
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Conclusion

Scientific Perspective

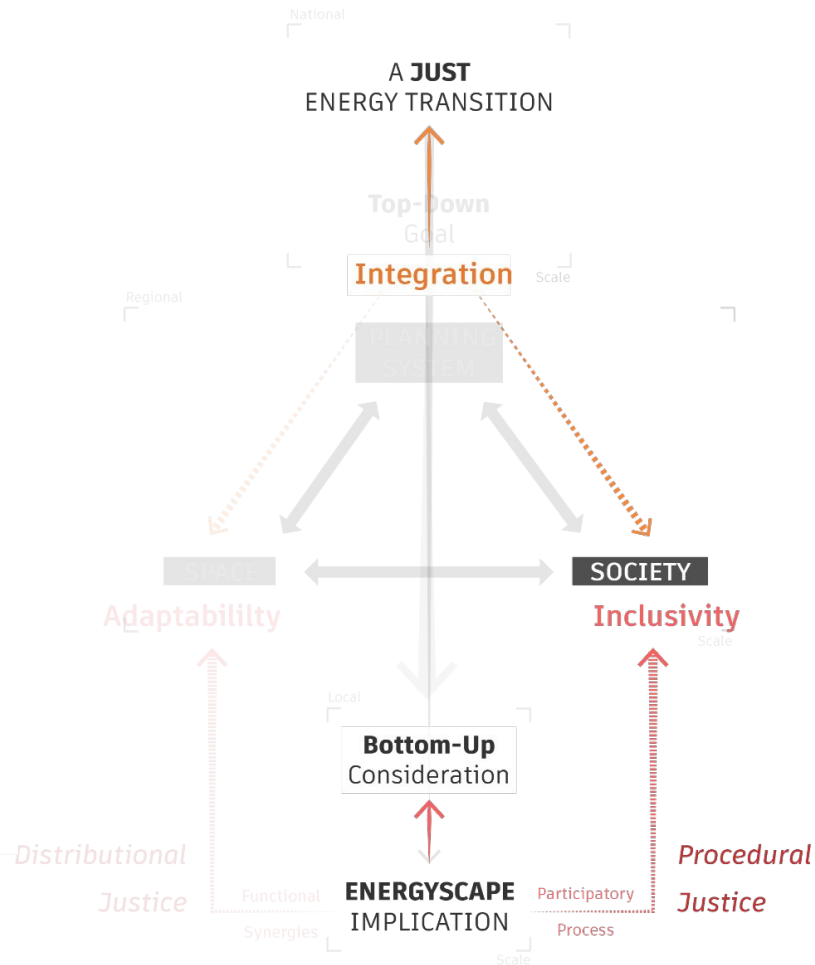
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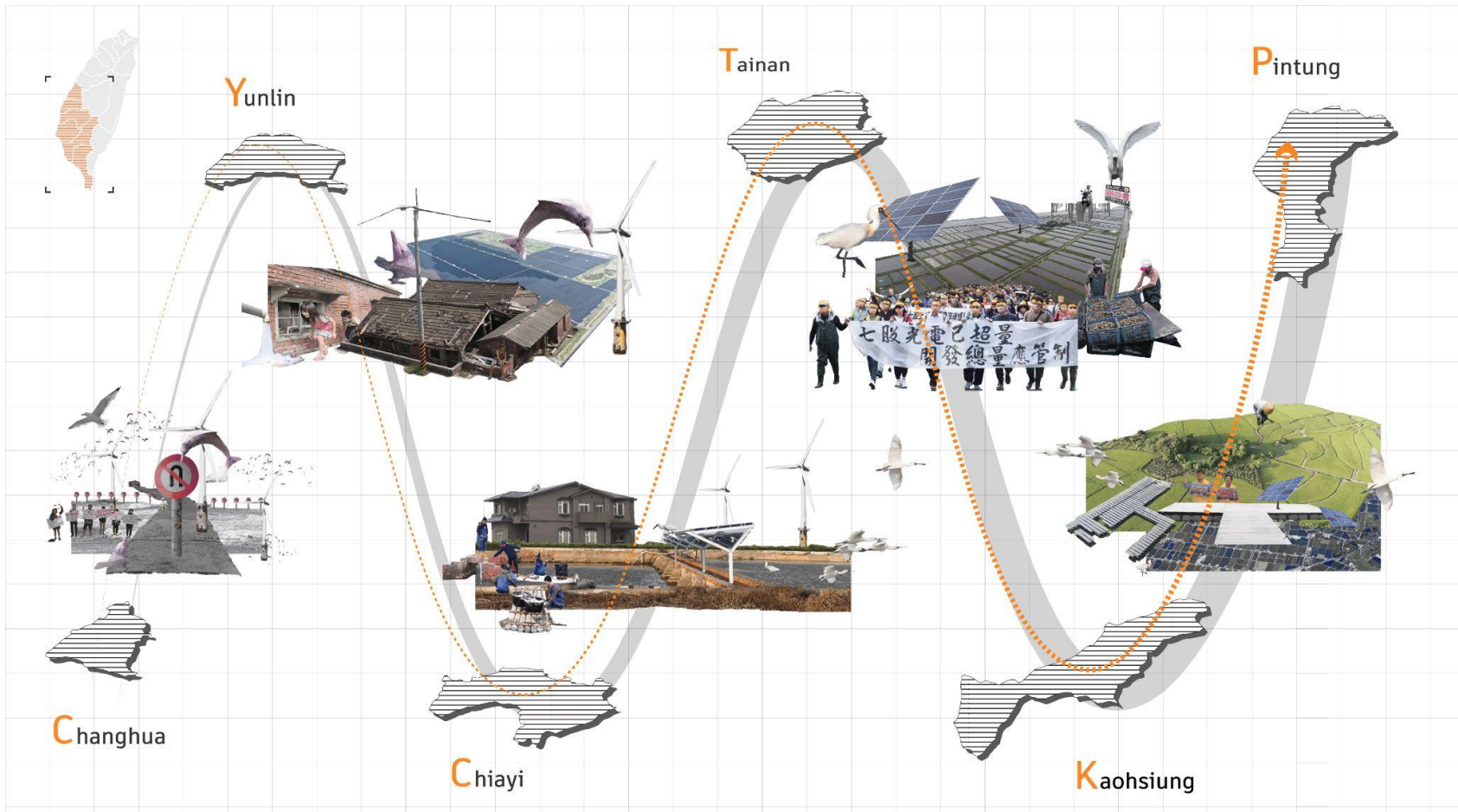
Conclusion

Social Perspective

What *spatial* and *social needs and considerations* should be included in regional planning and design, building up the systemic changes for integrated planning for a just energy transition in Taiwan?



Reflection: Transferability





Thank you