



Living Water

Sustaining the Legacy of Japan's Biwa Lakeside Water in
Contemporary Urban Development

Chenye Yang 5794722
Landscape Architecture MSC 2020

PART I: Introduction

Fascination

water system around the world



Wuzhen Water Town, China



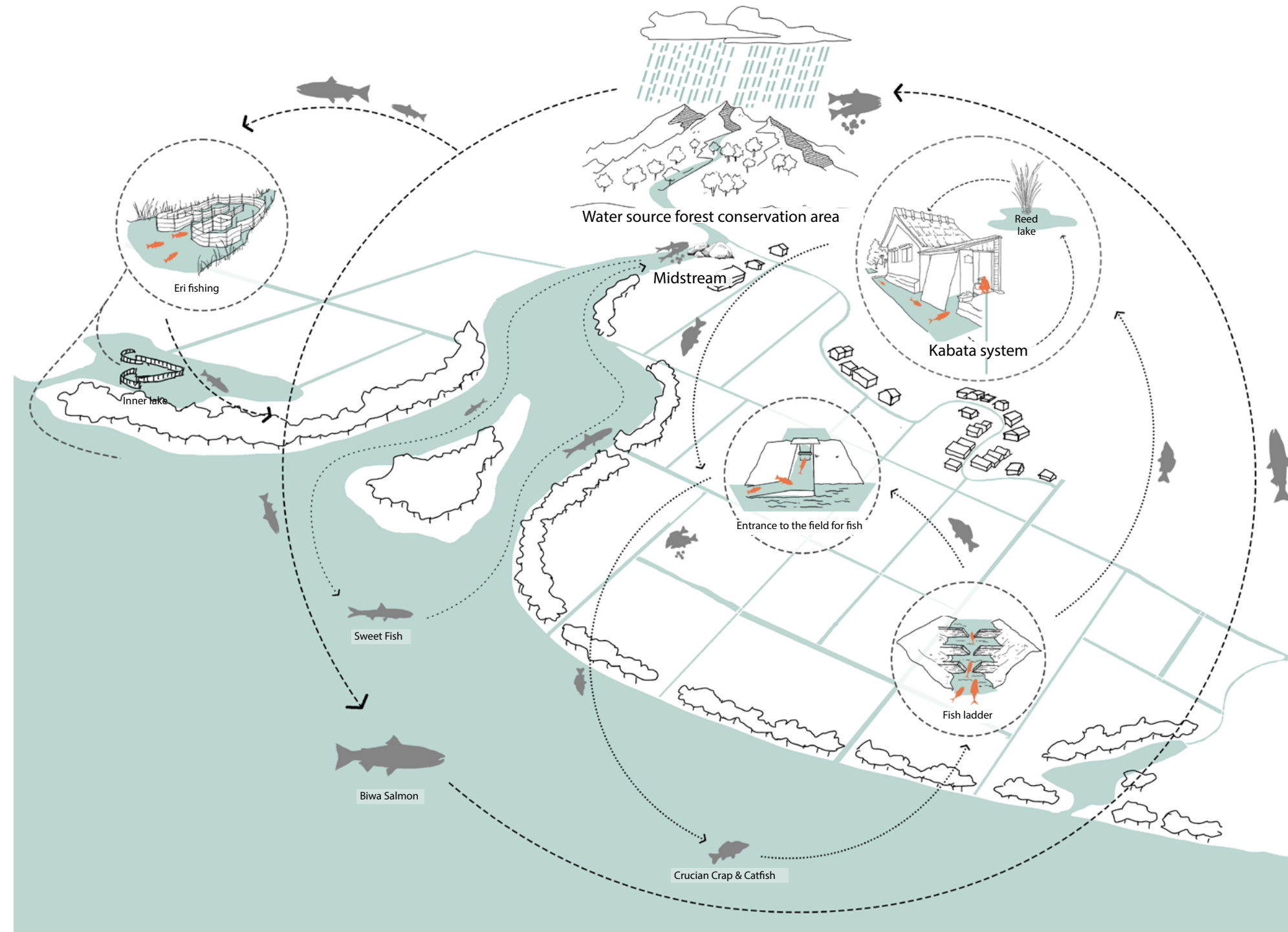
Polder Landscape, Netherlands



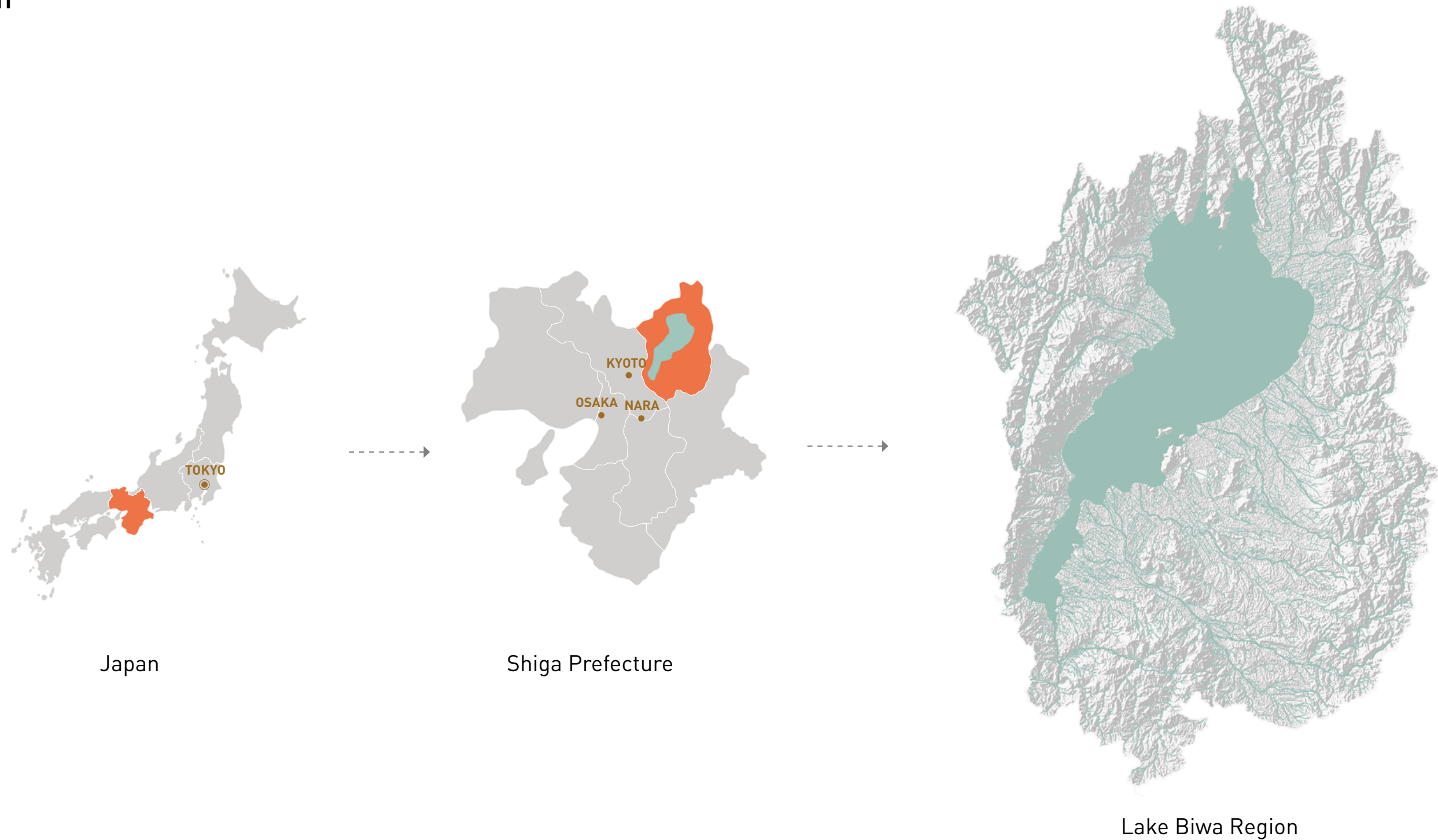
Lake Biwa Water System, Japan

Fascination

water through scales

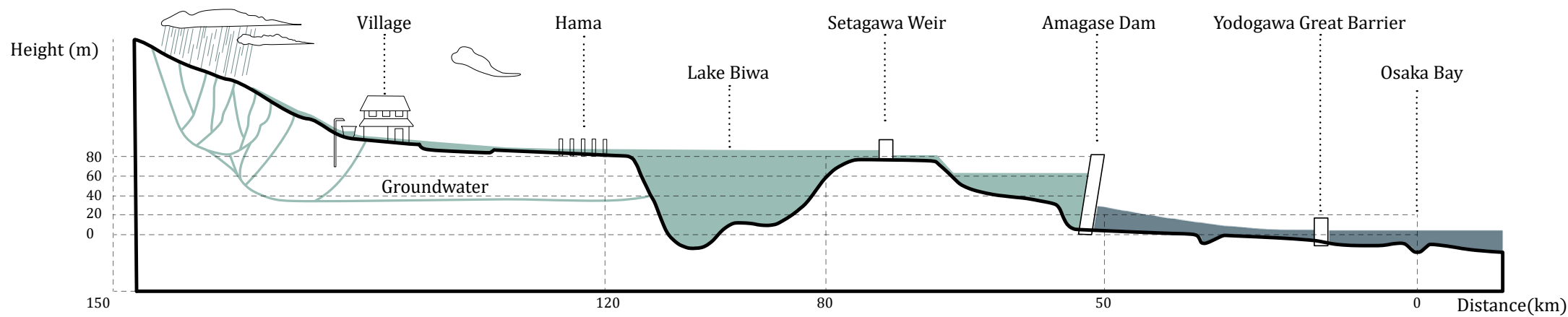
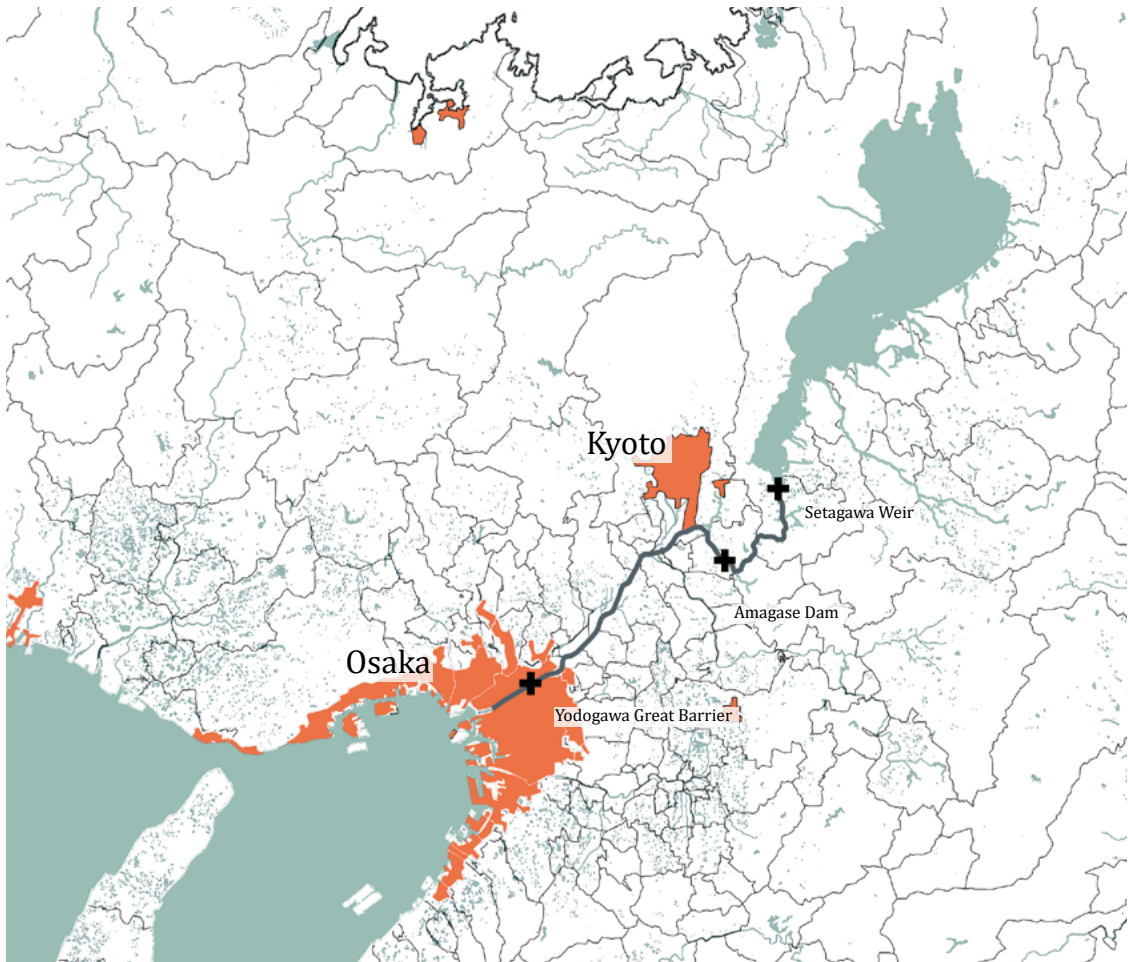


Location

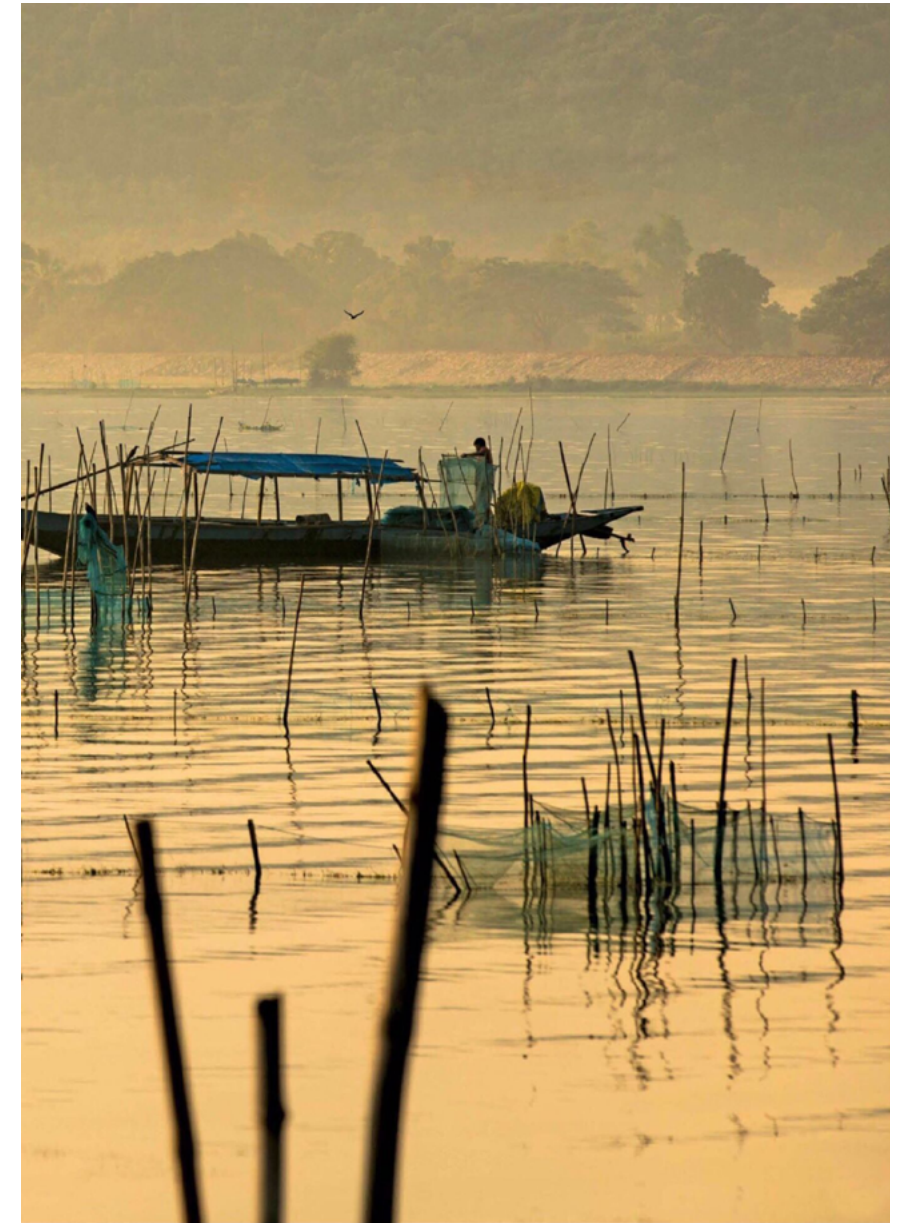


Location

structure of lake biwa basin

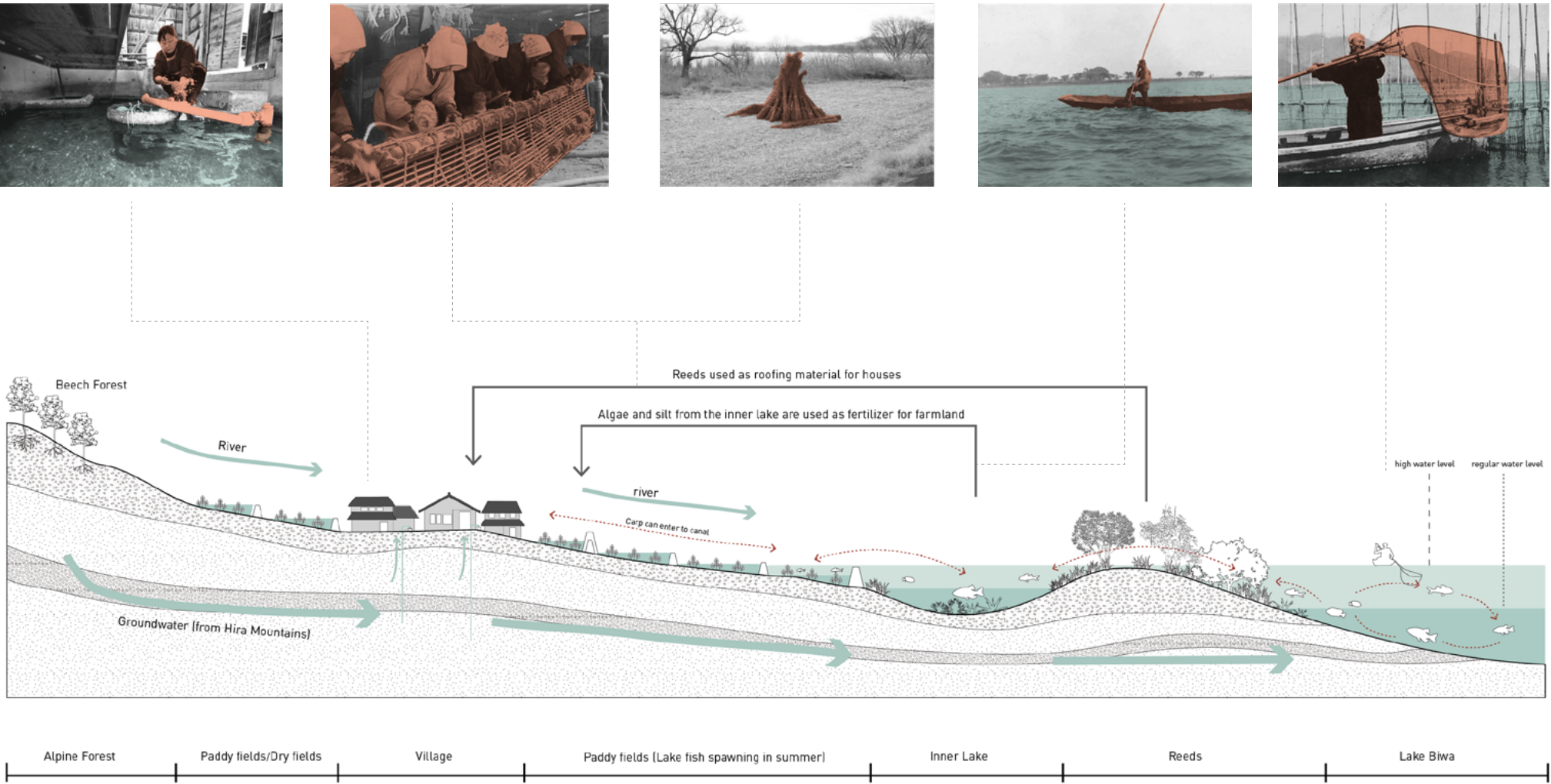


Scenic Landscapes of Lake Biwa



Traditional Balanced System

biwa lake to land integrated system

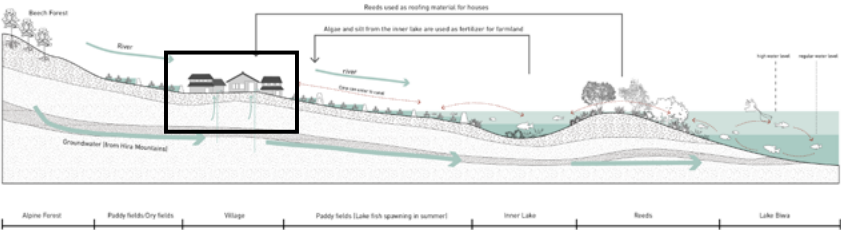
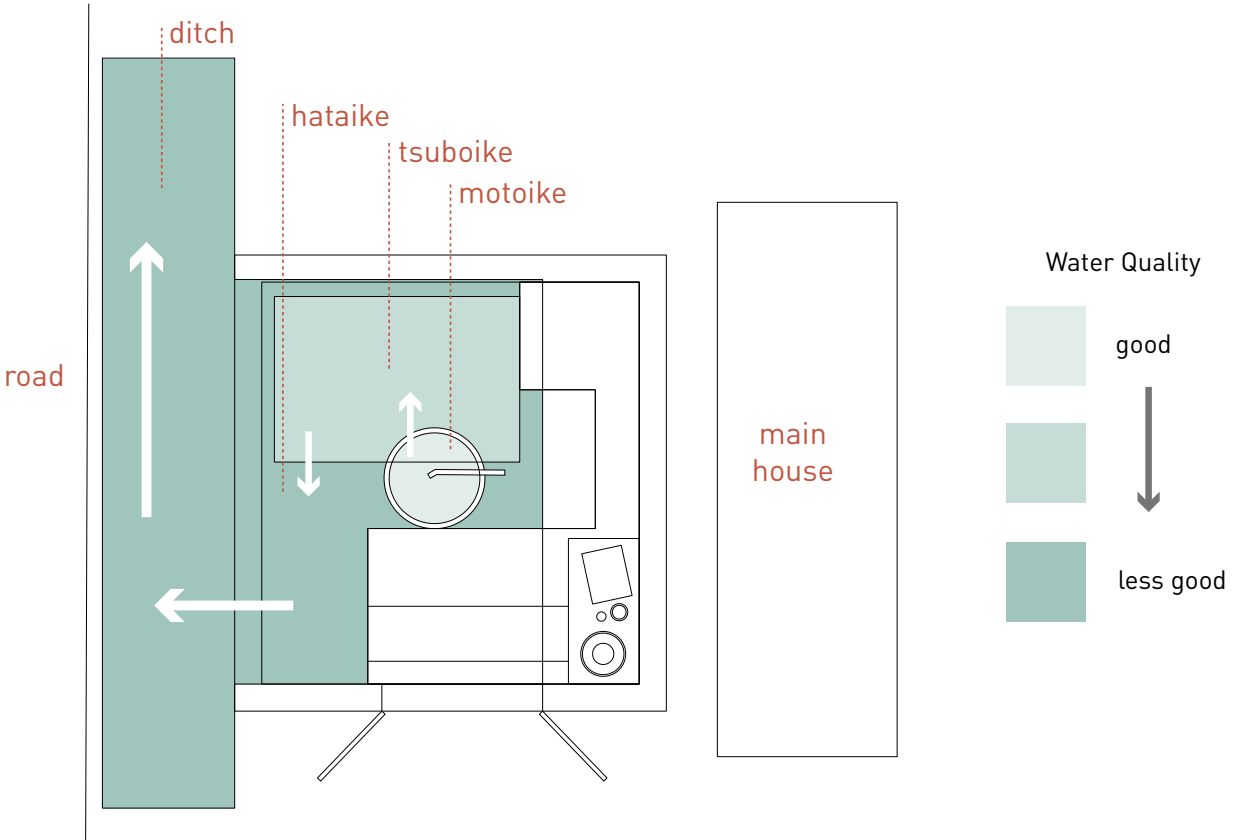
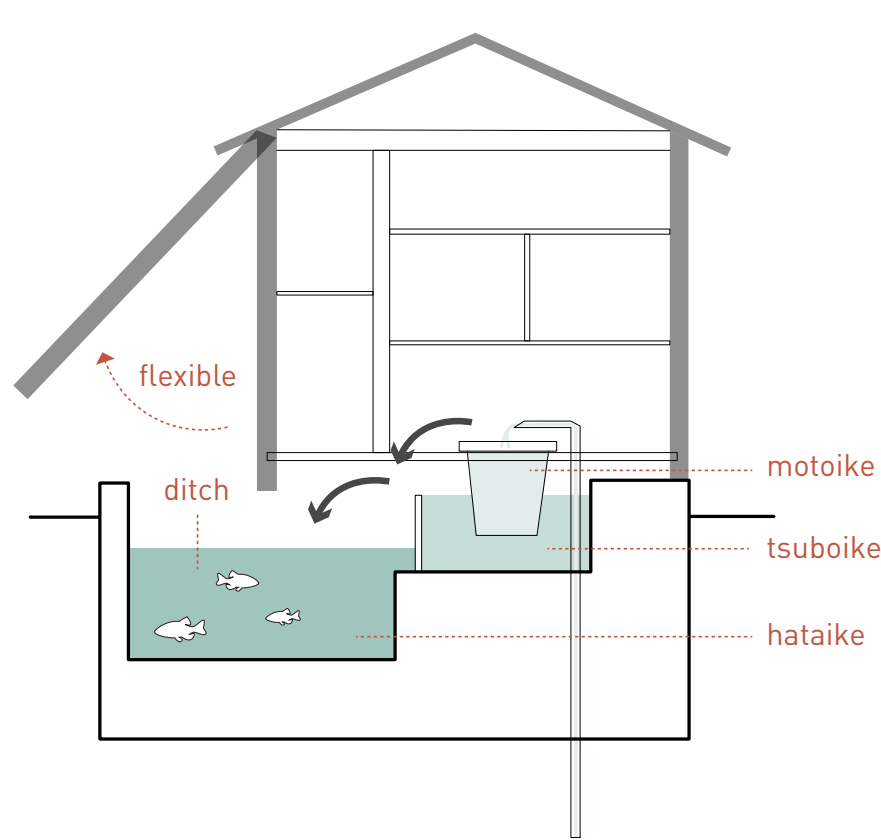


Traditional Balanced System

kabata spring water heritage

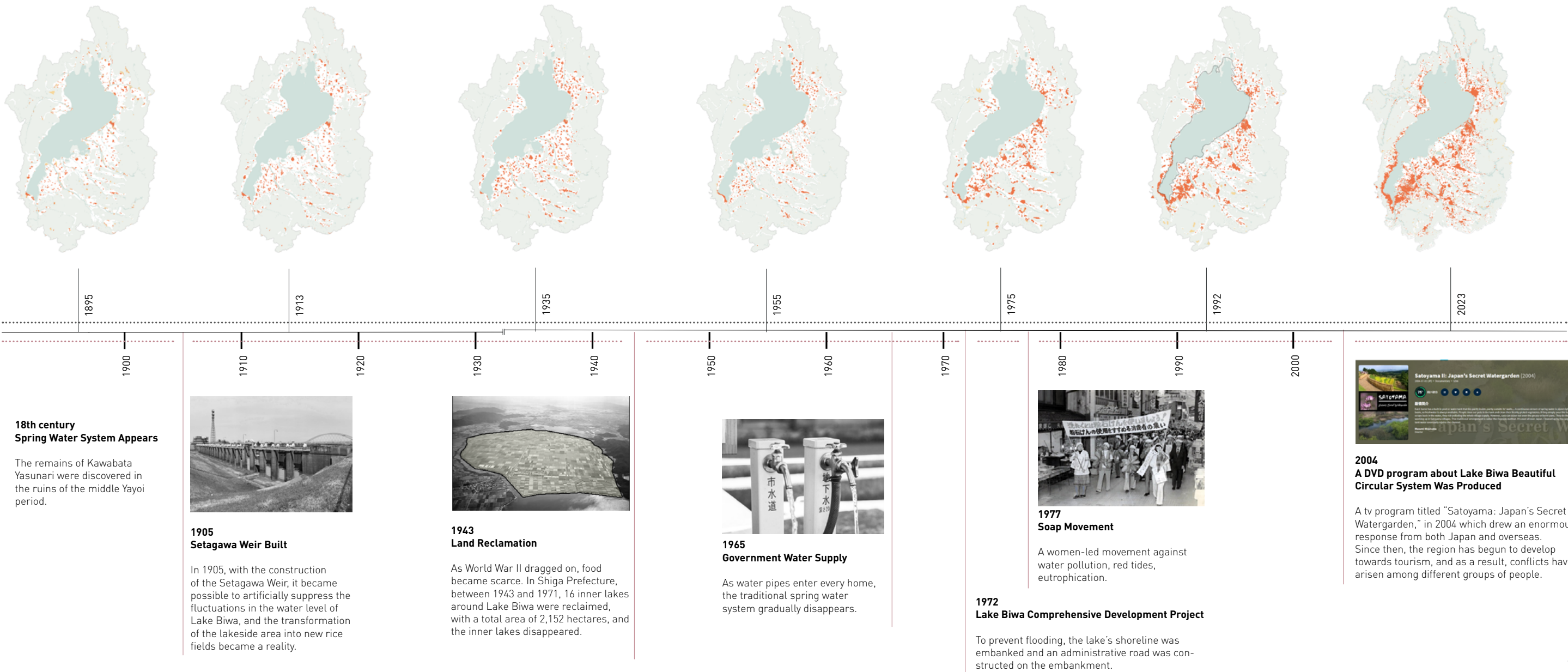


kabata water heritage



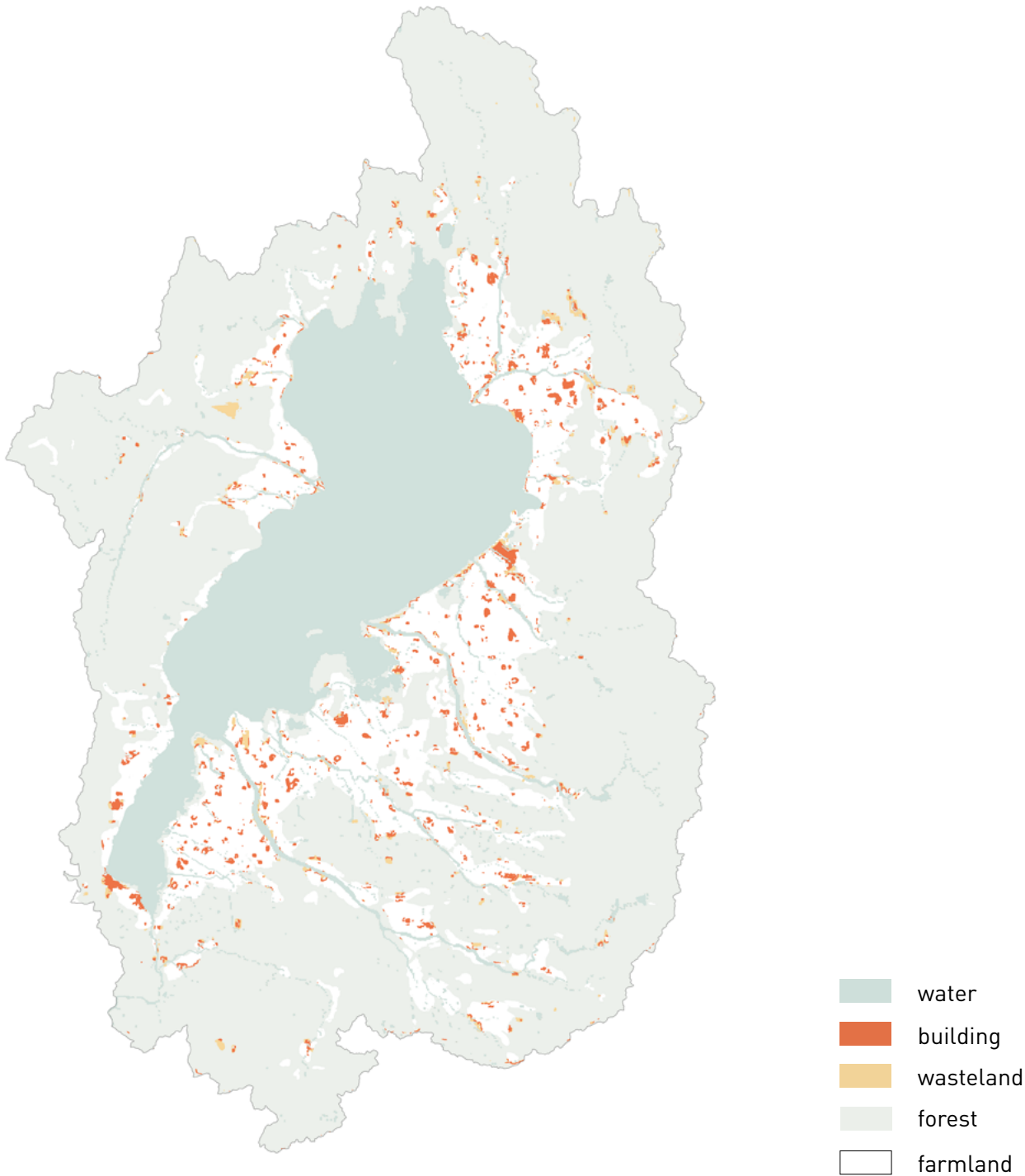
Is the beautiful water cycle still used around Lake Biwa?

Lake Biwa Region Timeline



Lake Biwa Region Timeline

land use map — 1895



Lake Biwa Region Timeline

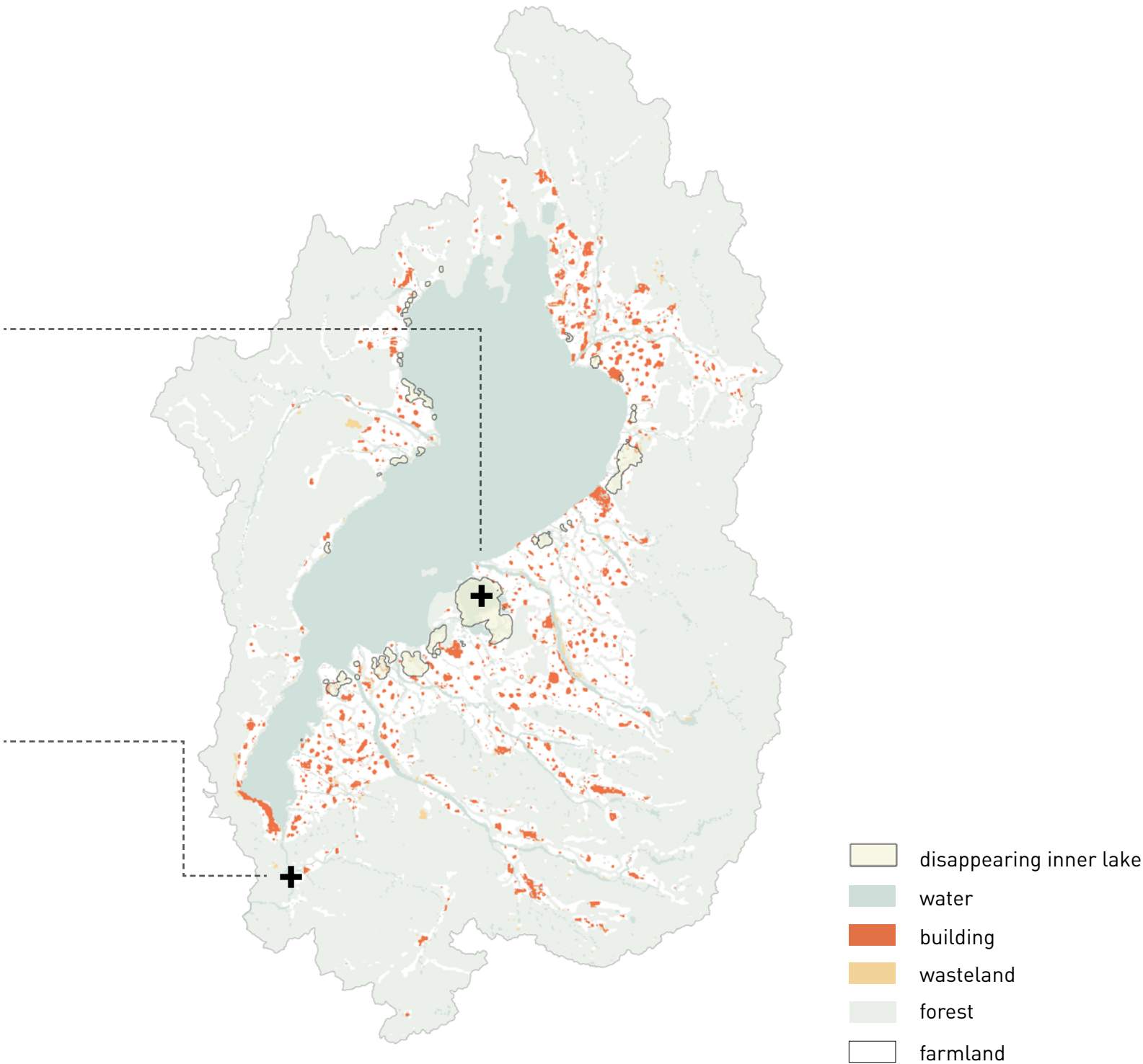
land use map — 1955



1905 Setagawa Weir Built



1943 Land Reclamation Begins



Lake Biwa Region Timeline

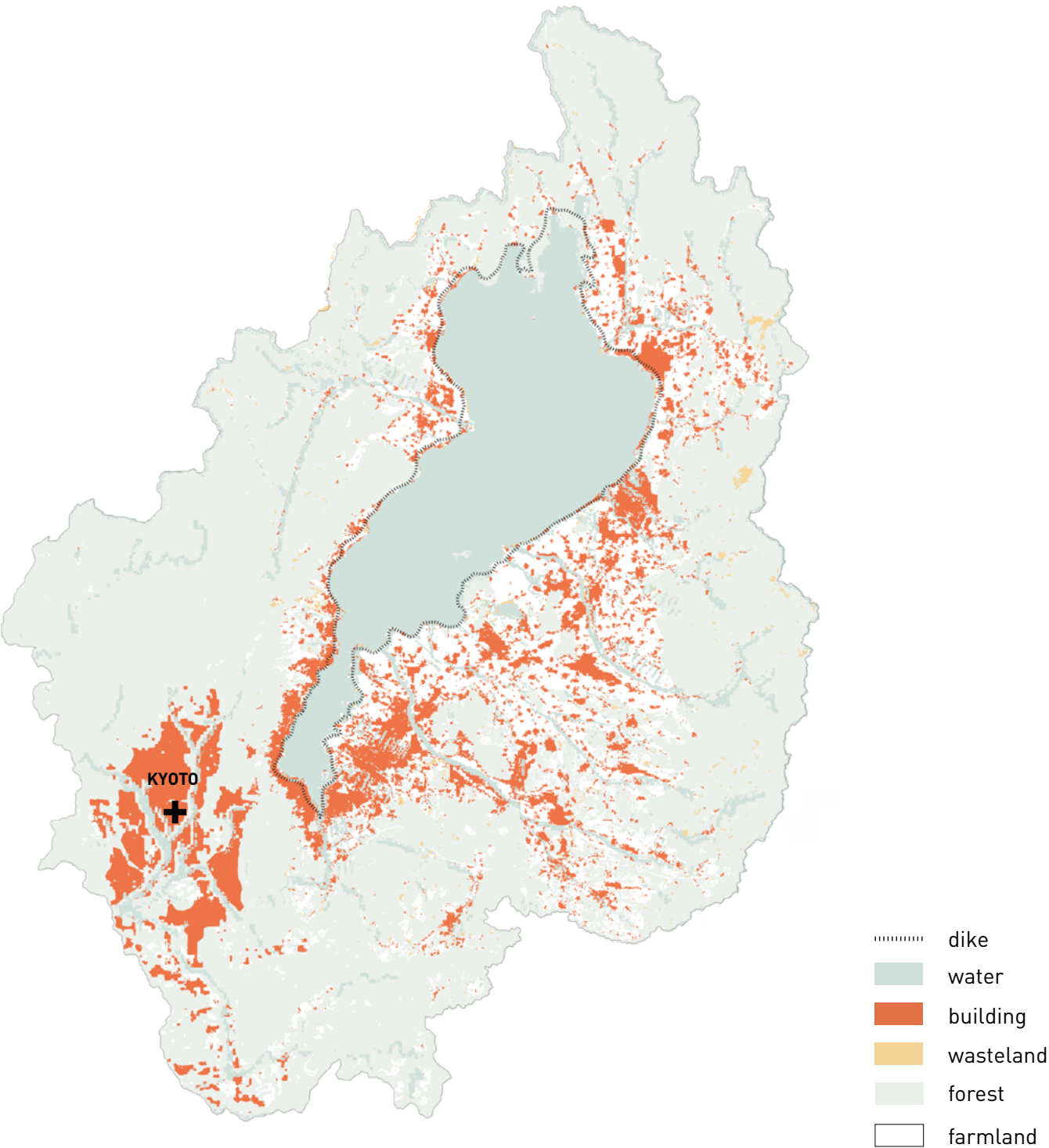
land use map — 2023



1965 Government Water Supply

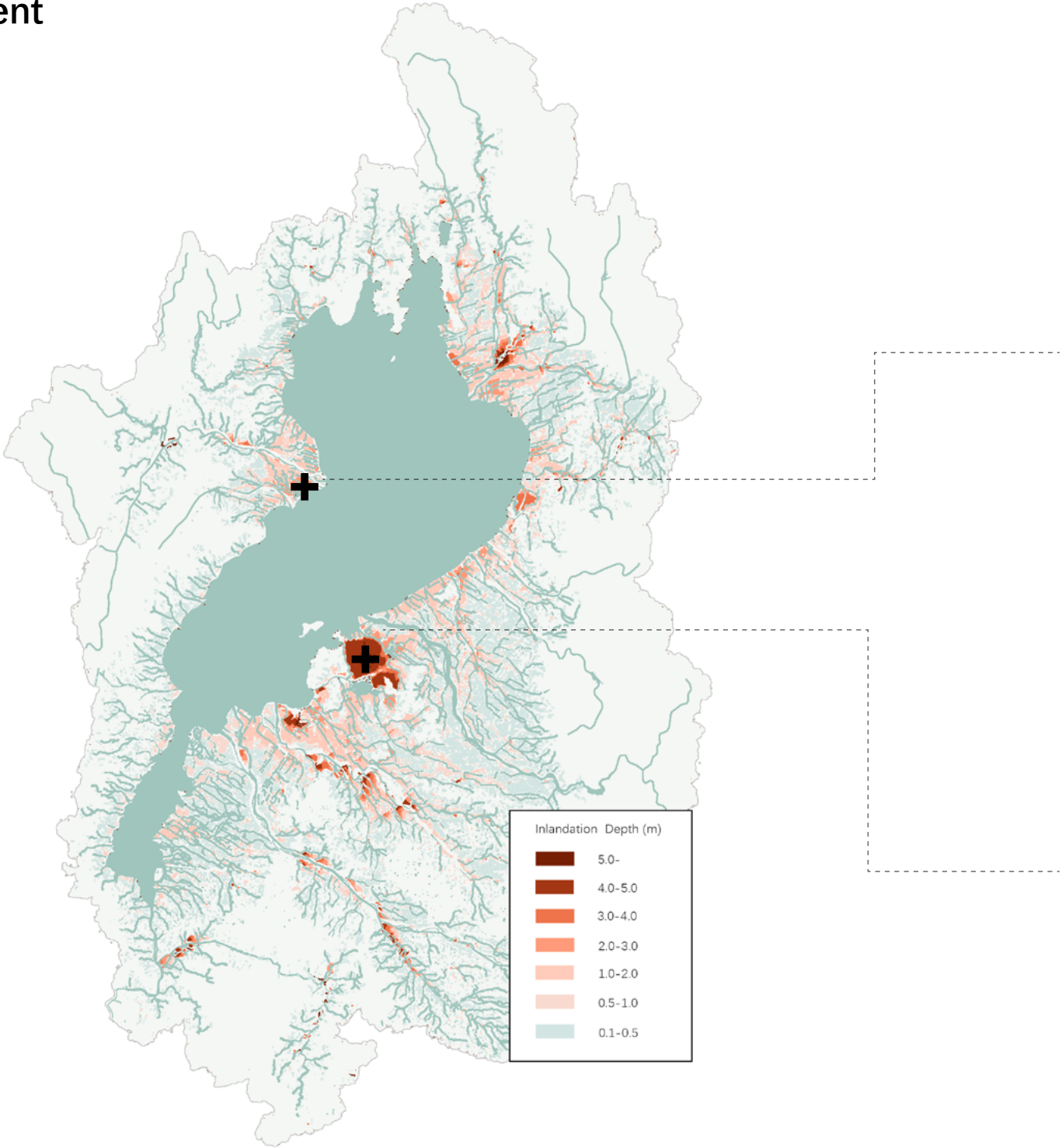


1972 Lake Biwa Comprehensive Development



Problem Statement

water safety



2013 Lake Biwa catastrophic flood

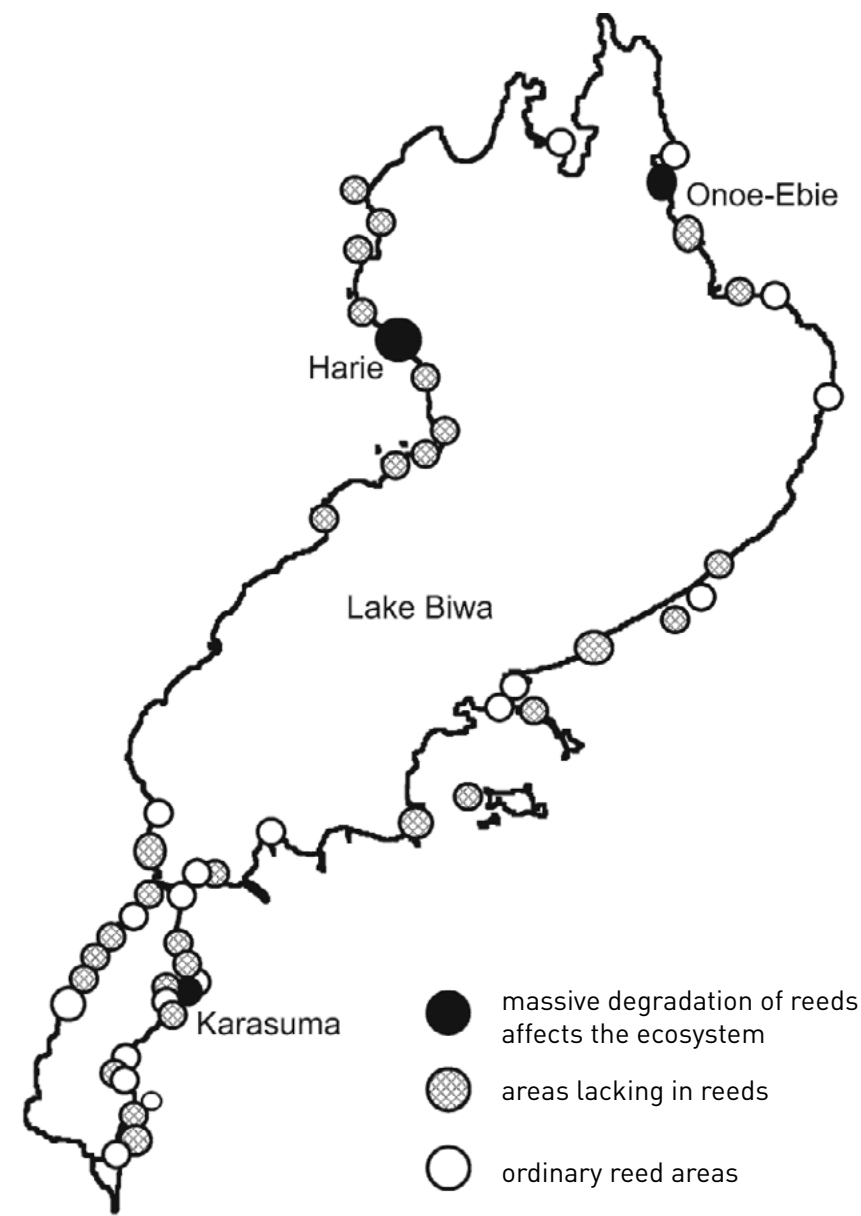


2013 Lake Biwa catastrophic flood

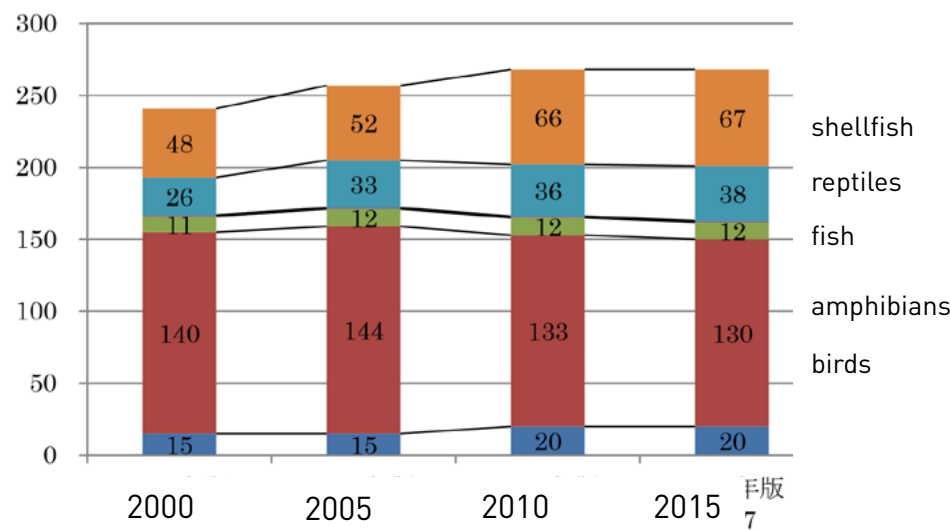
Problem Statement

ecological degradation

1. Current status of reeds on the lakeshore



2. Number of endangered animal species around lake biwa



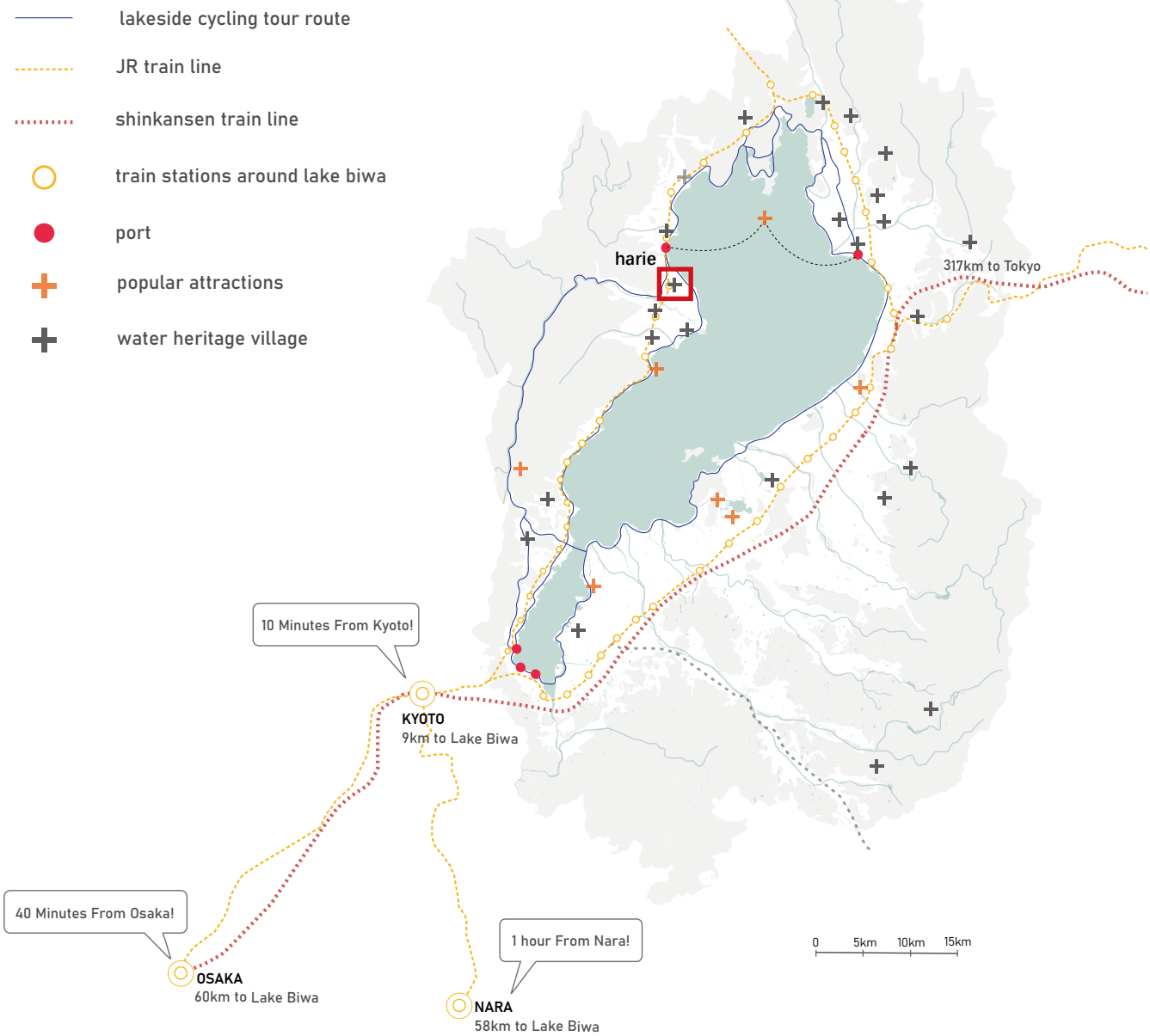
3. Lake biwa red tide



Problem Statement

influx of tourism

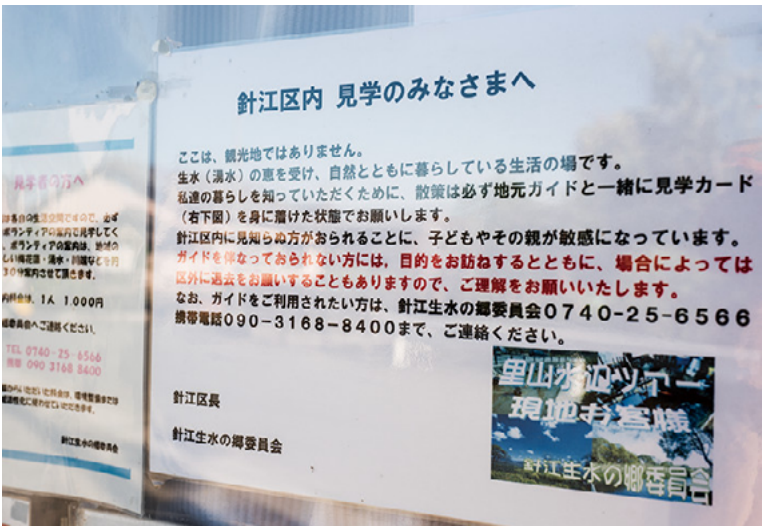
Convenient transportation



tourists in village



warning to tourists in harie village

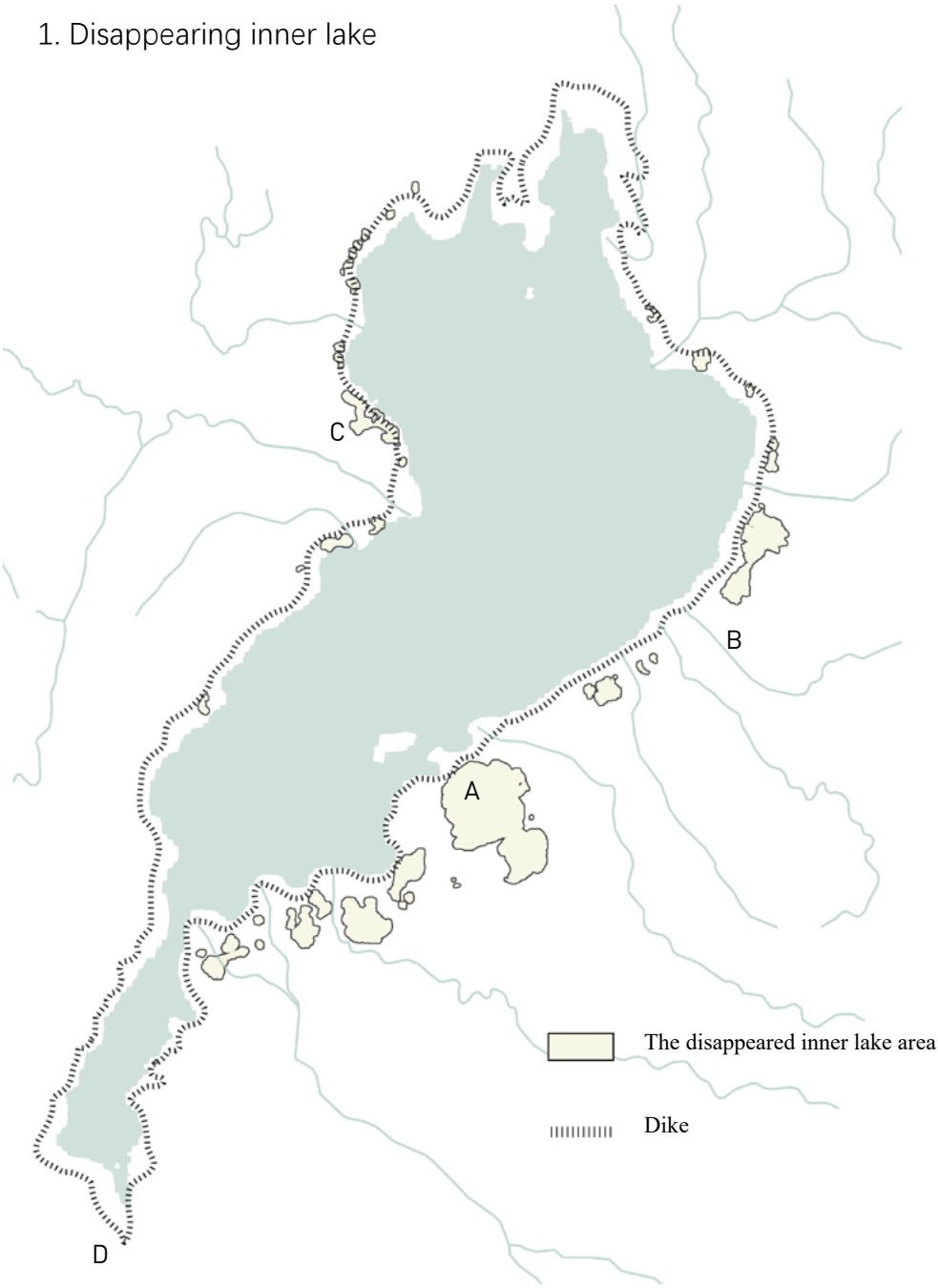


“Harie is a residential area, and not a tourist destination. When visiting, be sure to request a guide from the Harie village committee.”

Problem Statement

people water disconnect

1. Disappearing inner lake



2. Disappearing public activity



children were playing in the inner lake



public spring water intake



public spring water intake has been abandoned



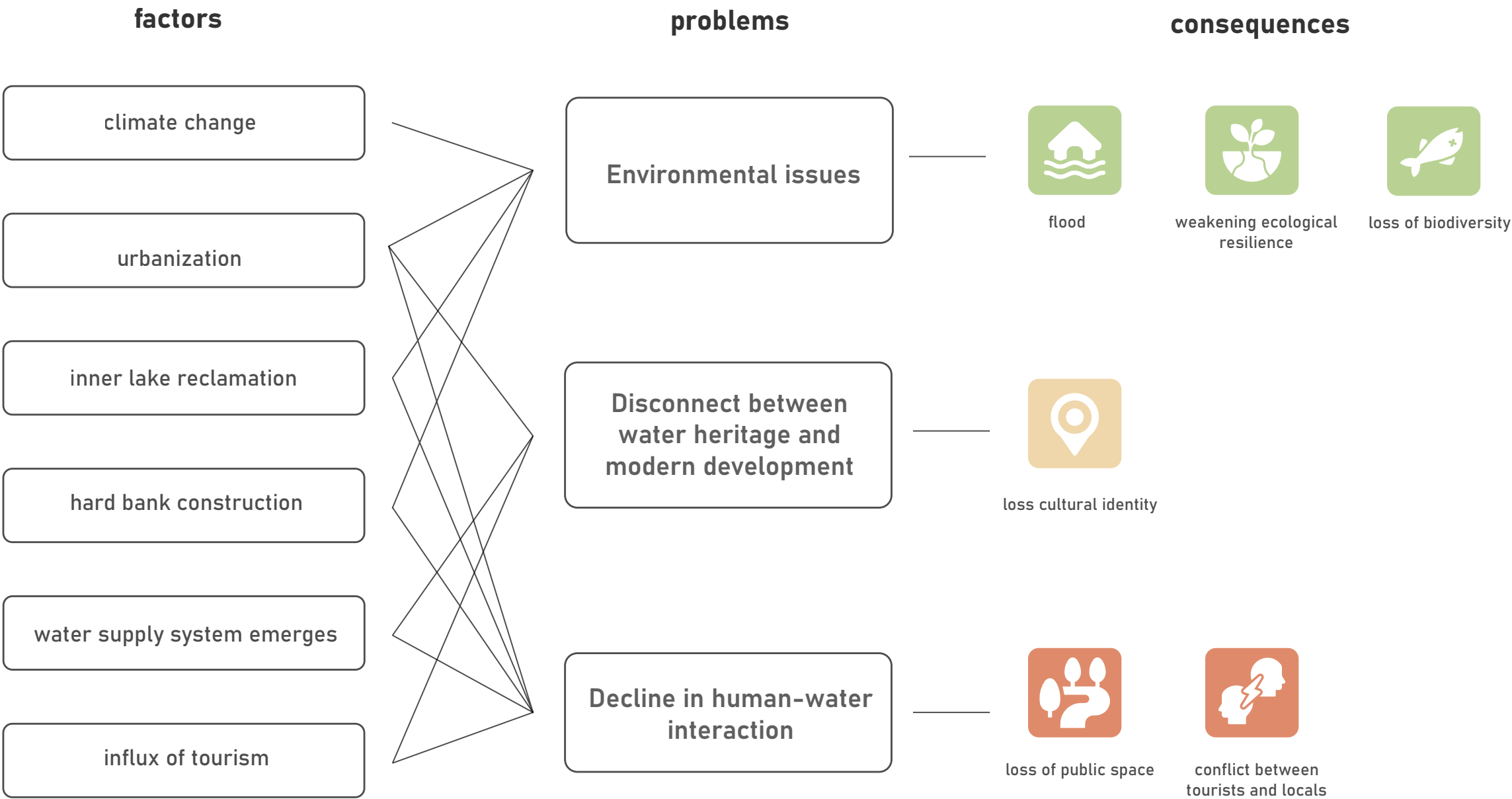
public water intake along the canal



marketplace along the riverbank

source: <https://www.pref.kyoto.jp/kankyo/rdb/eco/rs/2015rs06>.

Conclusion Of Problem Statement

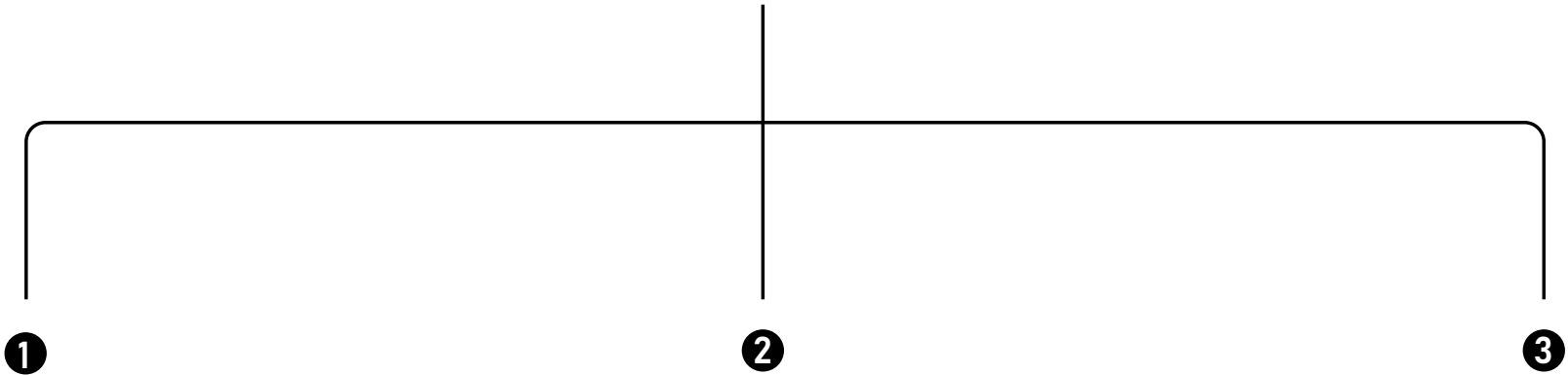


Research Question

" How can the water culture of the Lake Biwa region be transformed into a more public experiential resilient green-blue network landscape while maintaining its circular and heritage qualities? **"**

Research Question

How can the water culture of the Lake Biwa region be transformed into a more public experiential resilient green-blue network landscape while maintaining its circular and heritage qualities?



1
What water cultural values can be identified in the area? And what makes them valuable?

2
How can the water culture landscape be employed to reconstruct points of contact between humans and nature, while concurrently enhancing ecological resilience?

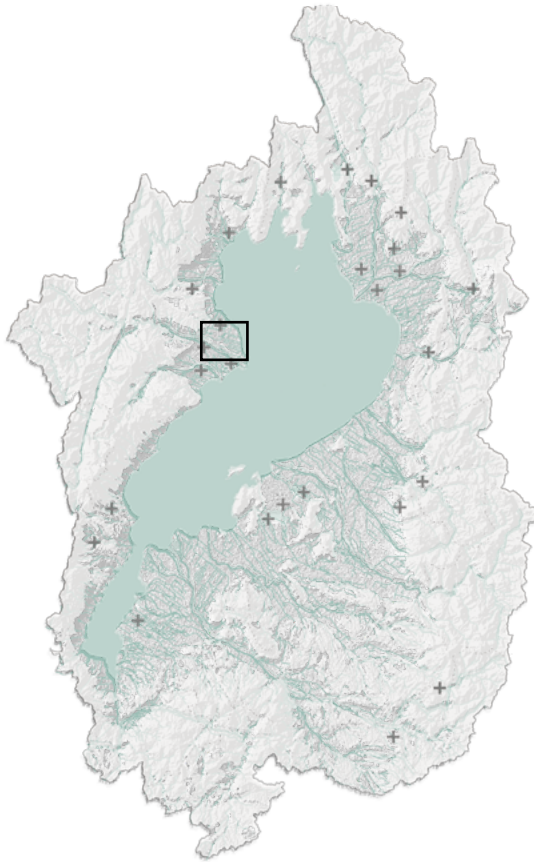
In capturing water usage spaces, architecture, lifestyle habits, etc., from traditional water systems, how can a singular water element (such as kabata) be seamlessly reintegrated into the urban structure and embraced by the community?

3
How can transitional spaces be created to ensure the privacy of residents, safeguarding their private domains while simultaneously showcasing traditional water culture to a broader audience?

PART II: Analysis

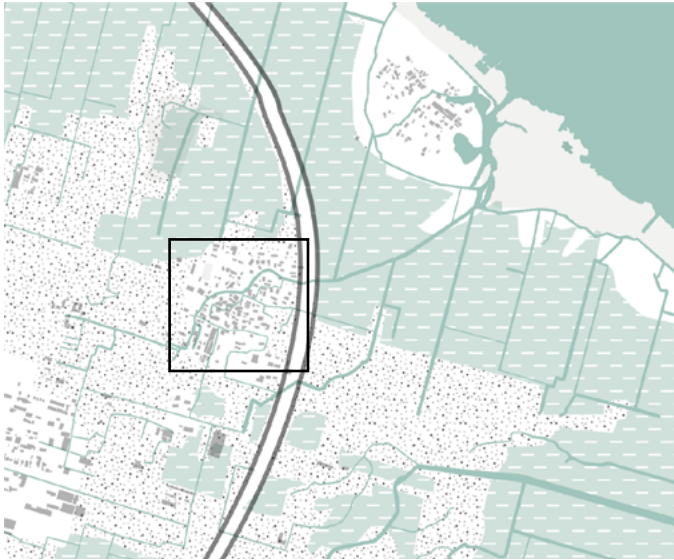
Scale Change

Lake Biwa



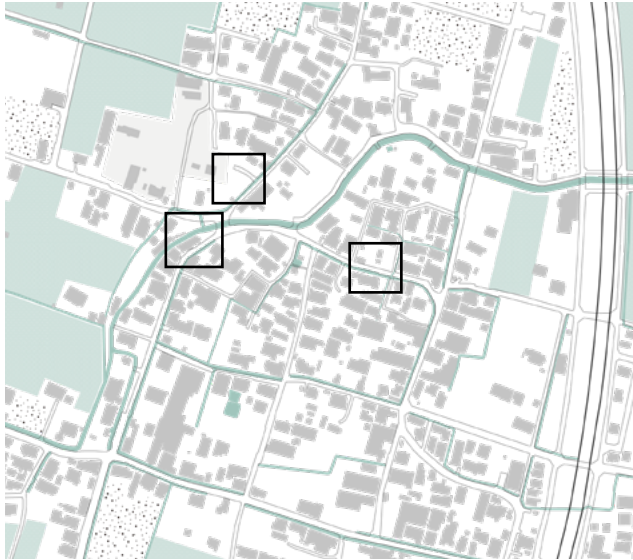
Regional Scale

Shinasahi Town



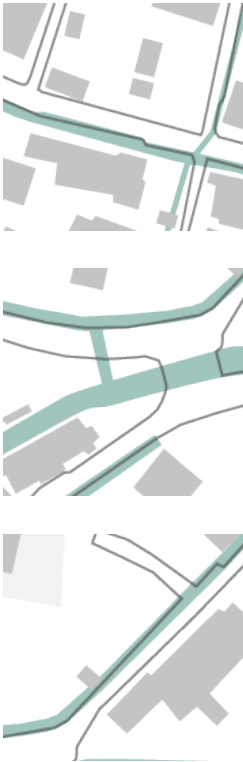
Large Scale
analysis | design

Haire Village



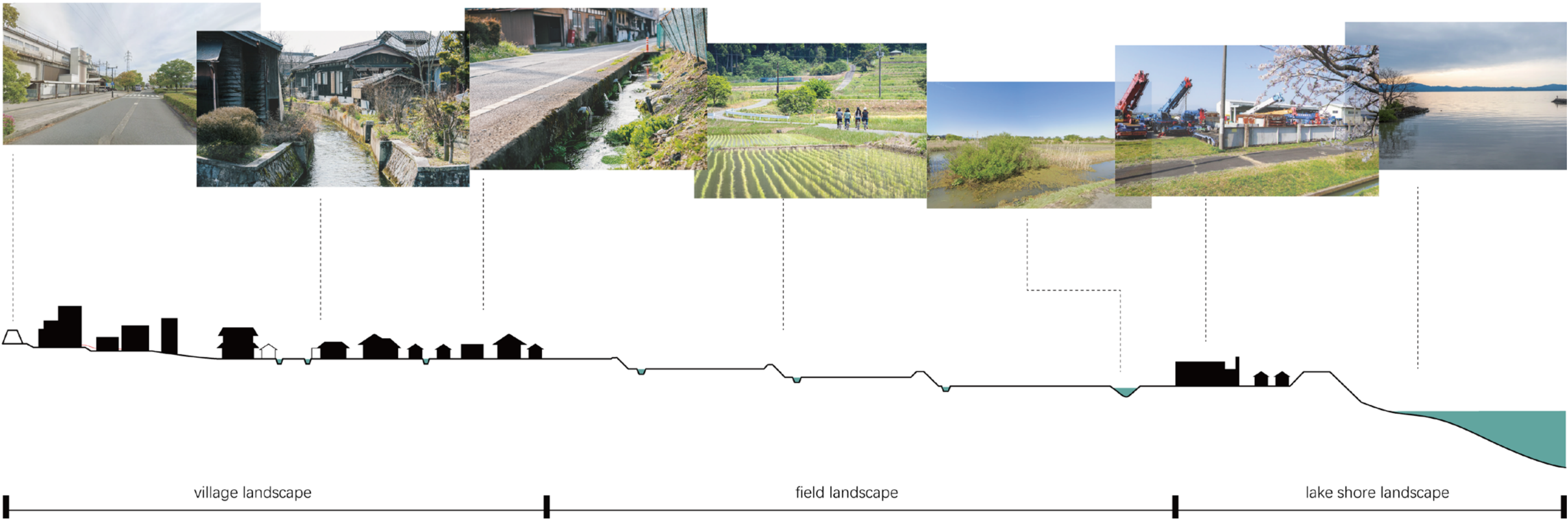
Middle Scale
analysis | design

Kabata System



Small Scale
design

Current Situation



Soil



Returning peat to wetlands?

current peat paddy field



Agricultural land use on peatlands inevitably causes ongoing land surface subsidence resulting in a reduction of productivity.



peat wetland



Reed products offered



biodiversity maintenance

Water System



Blue-Green Structure



urabn forest



wetland



green wasteland



source:<https://papersky.jp/en/shiga-lake-biwa/> | Google map

Land Use

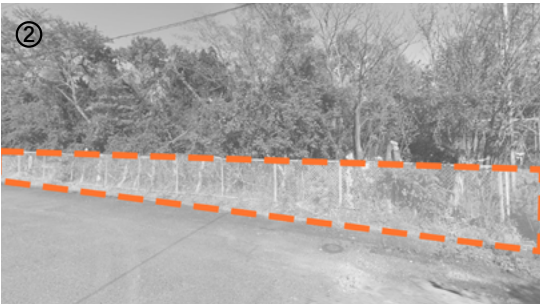
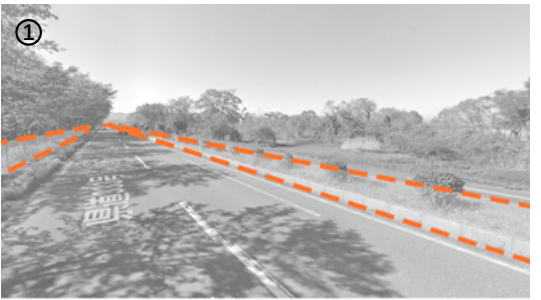


1. Wasteland could be turned into nice public green spaces.

2. Hard dikes block the movement of wildlife, which hurts biodiversity.

3. Factories by the lake are bad for the environment and mess up the natural connections in the ecosystem.

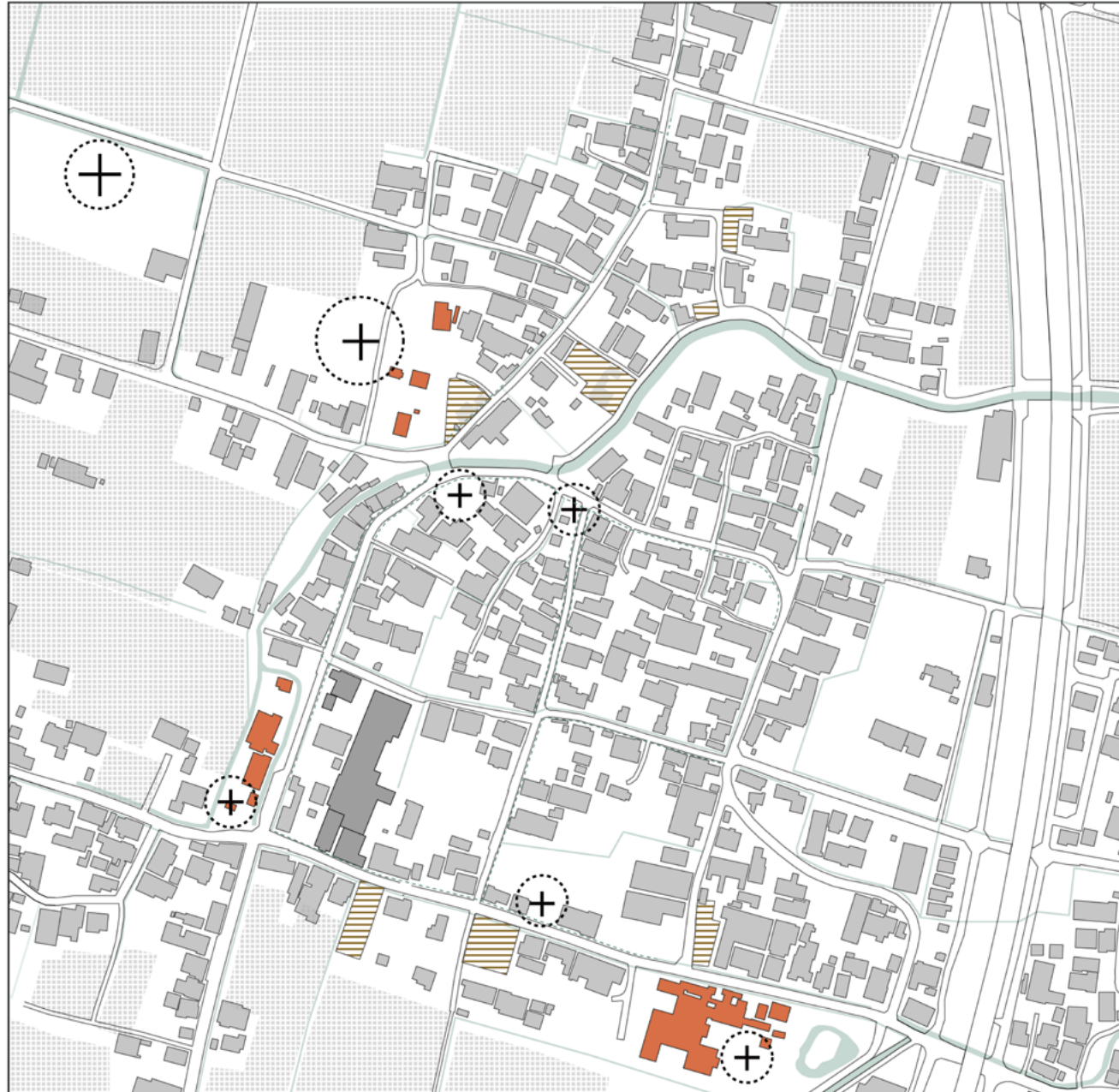
Public-Mobility Analysis



Medium Scale Analysis

Harie Village

Harie Mapping

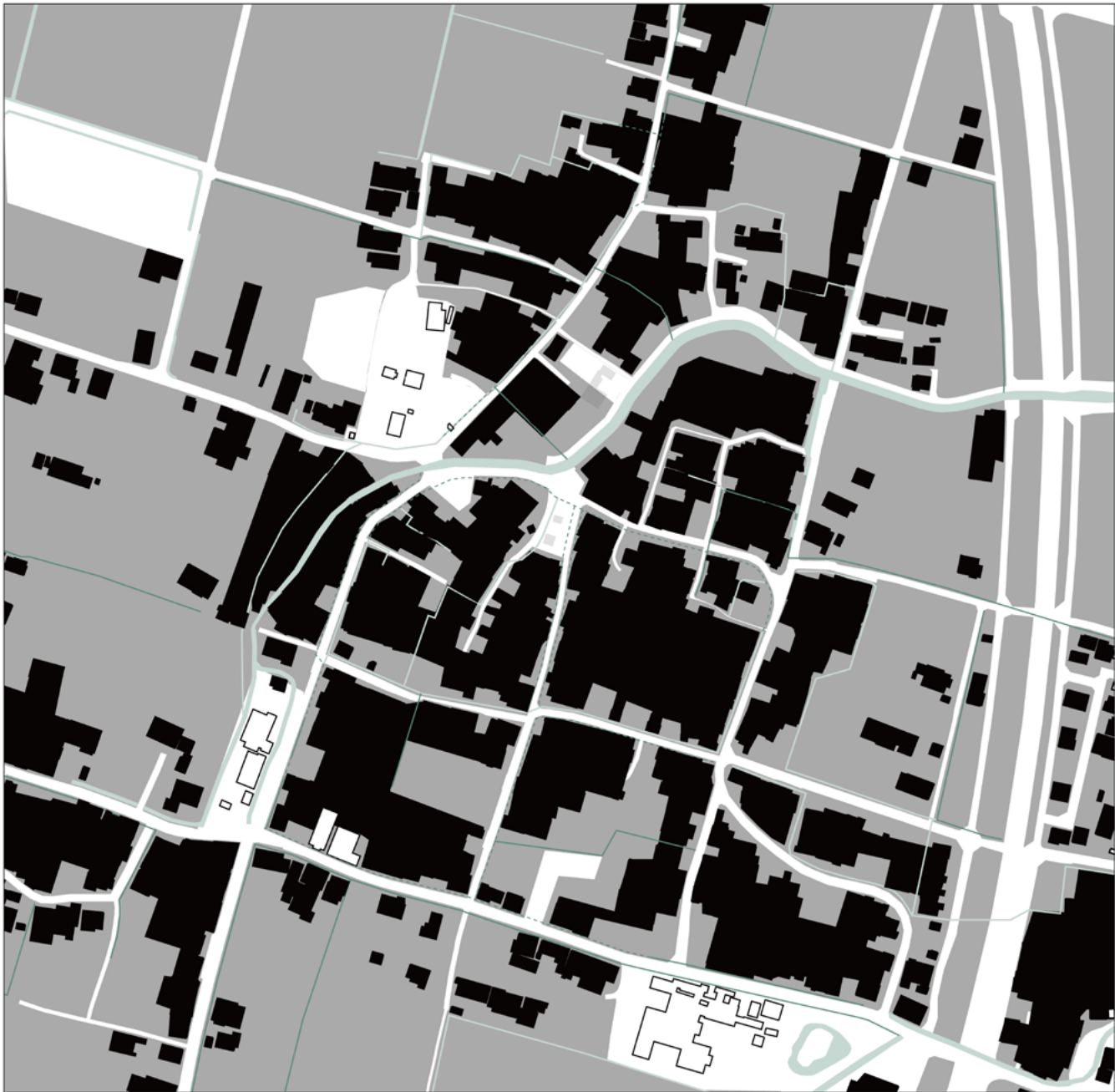


- ⊕ public space
- public heritage
- built
- industries
- abandoned land
- farmland

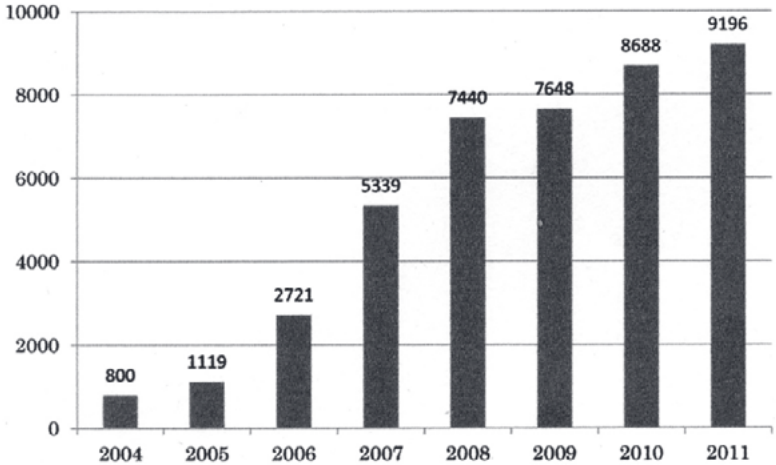


Religious public places

Spatial Analysis

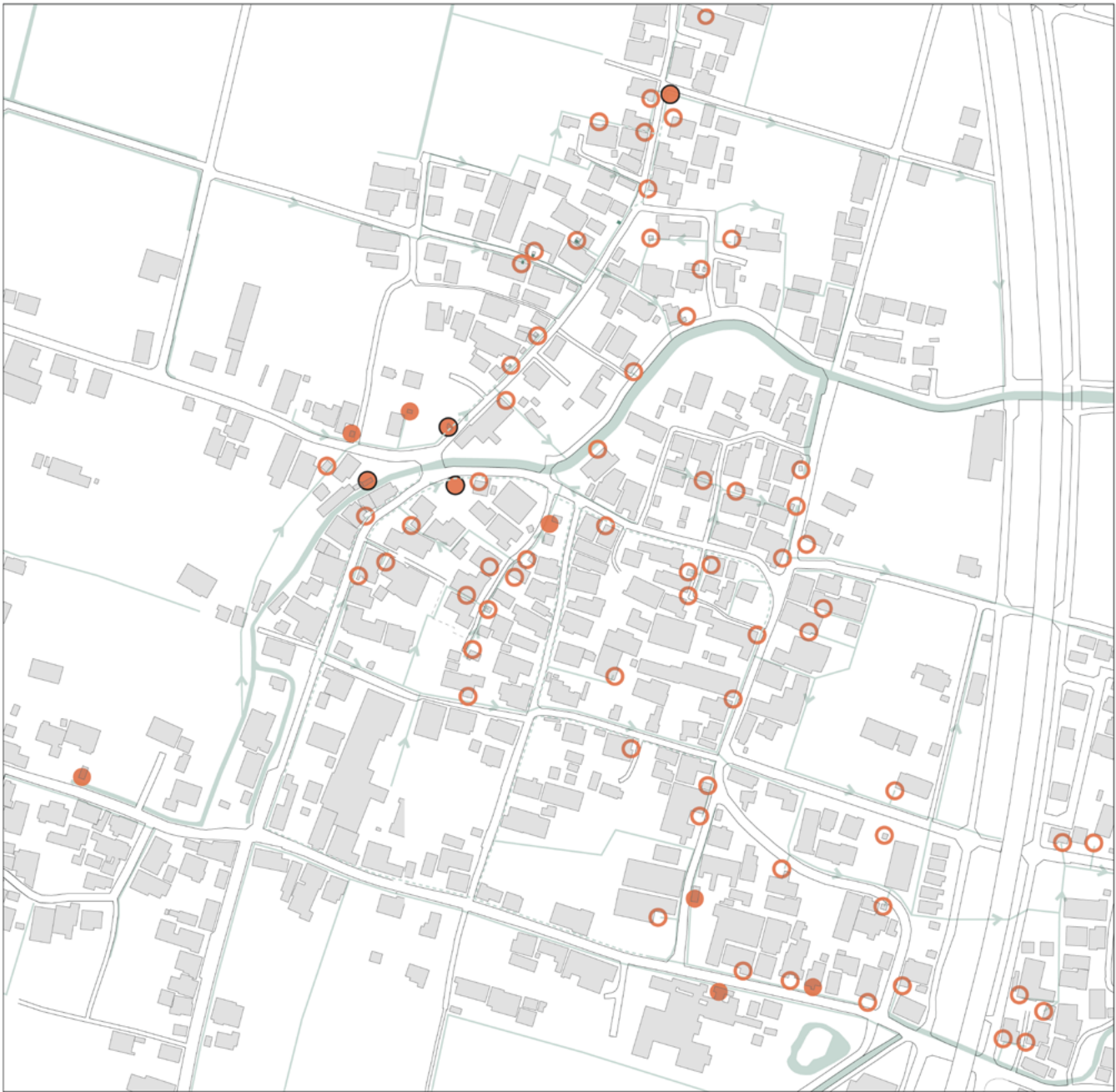


- private
- semi-public
- public

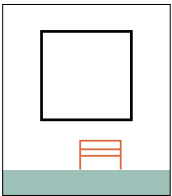


Number of tourists visiting harie village per year

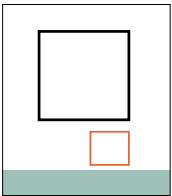
Kabata Typology



public kabata

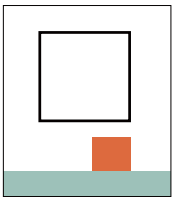
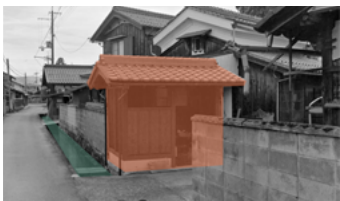


waterway type

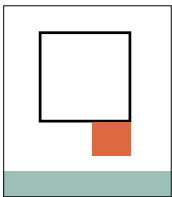


outdoor independent type

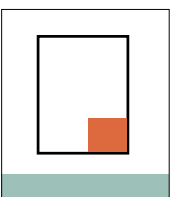
private kabata



independence within the house type

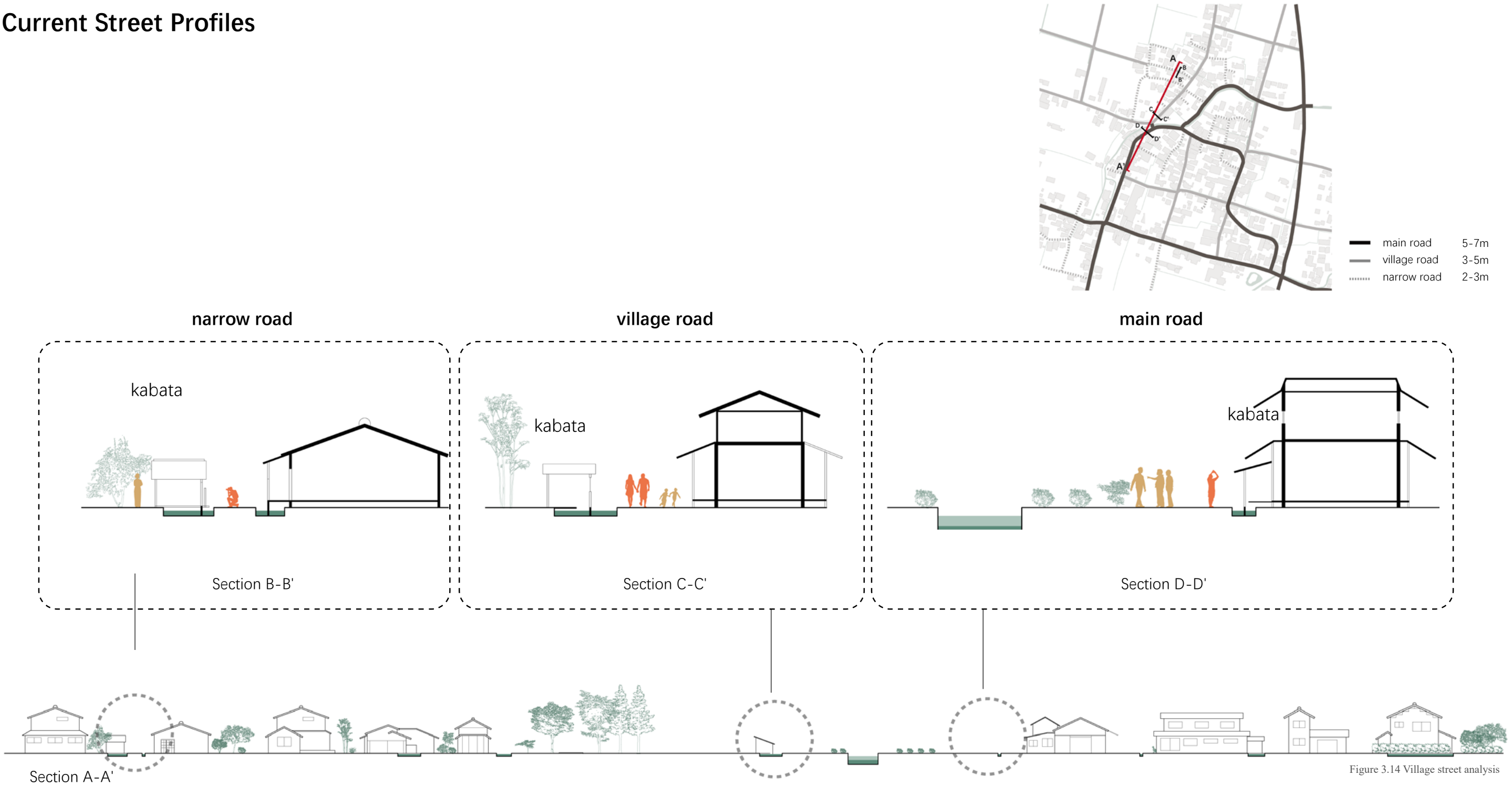


attached house type

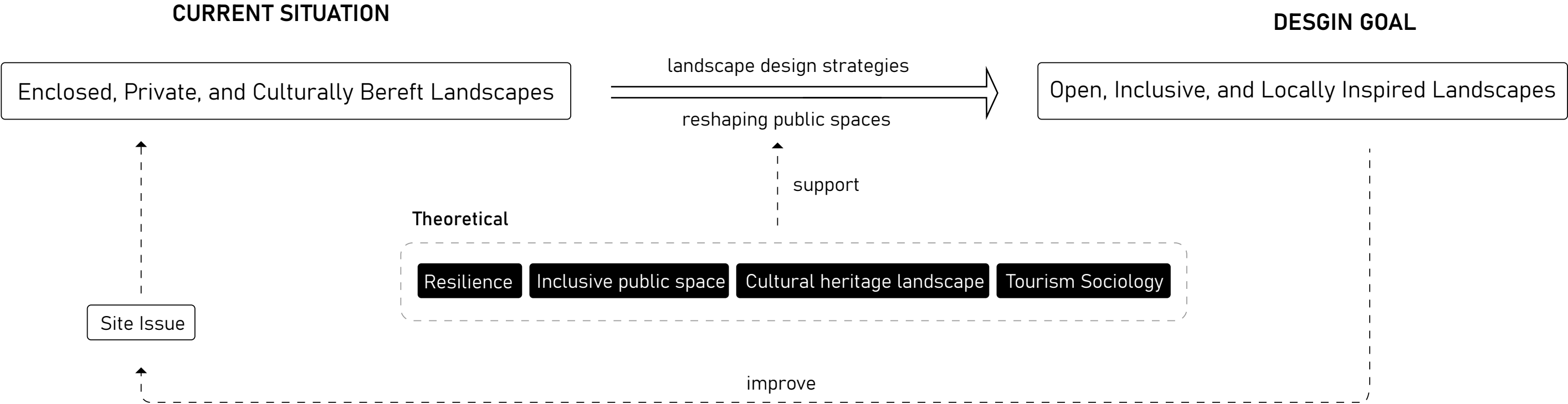


internal type

Current Street Profiles



Design Assignment



PART III: Design

Design Concept

Inclusive Public Space



Inclusive public spaces for fauna



create a robust blue-green network

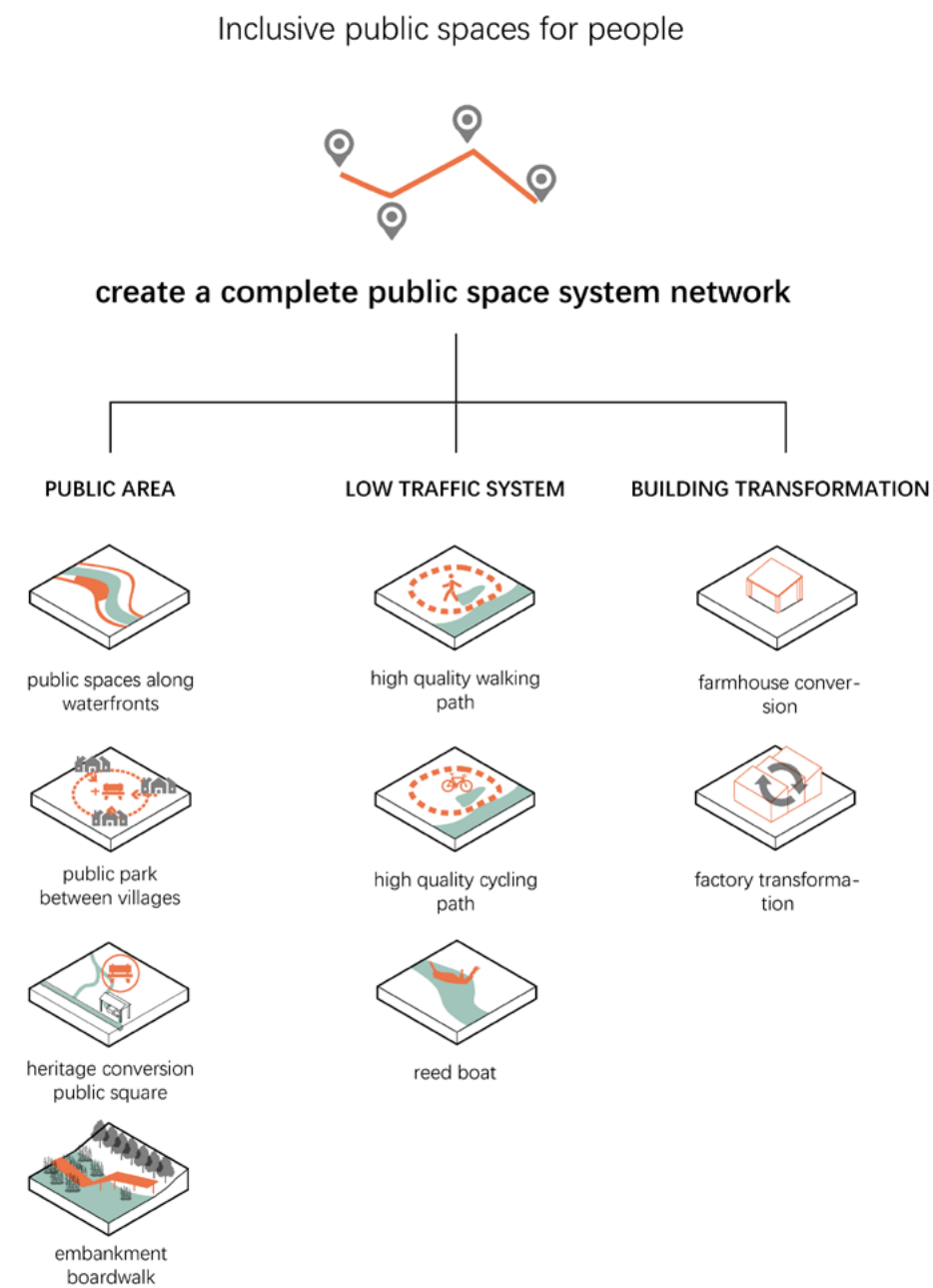
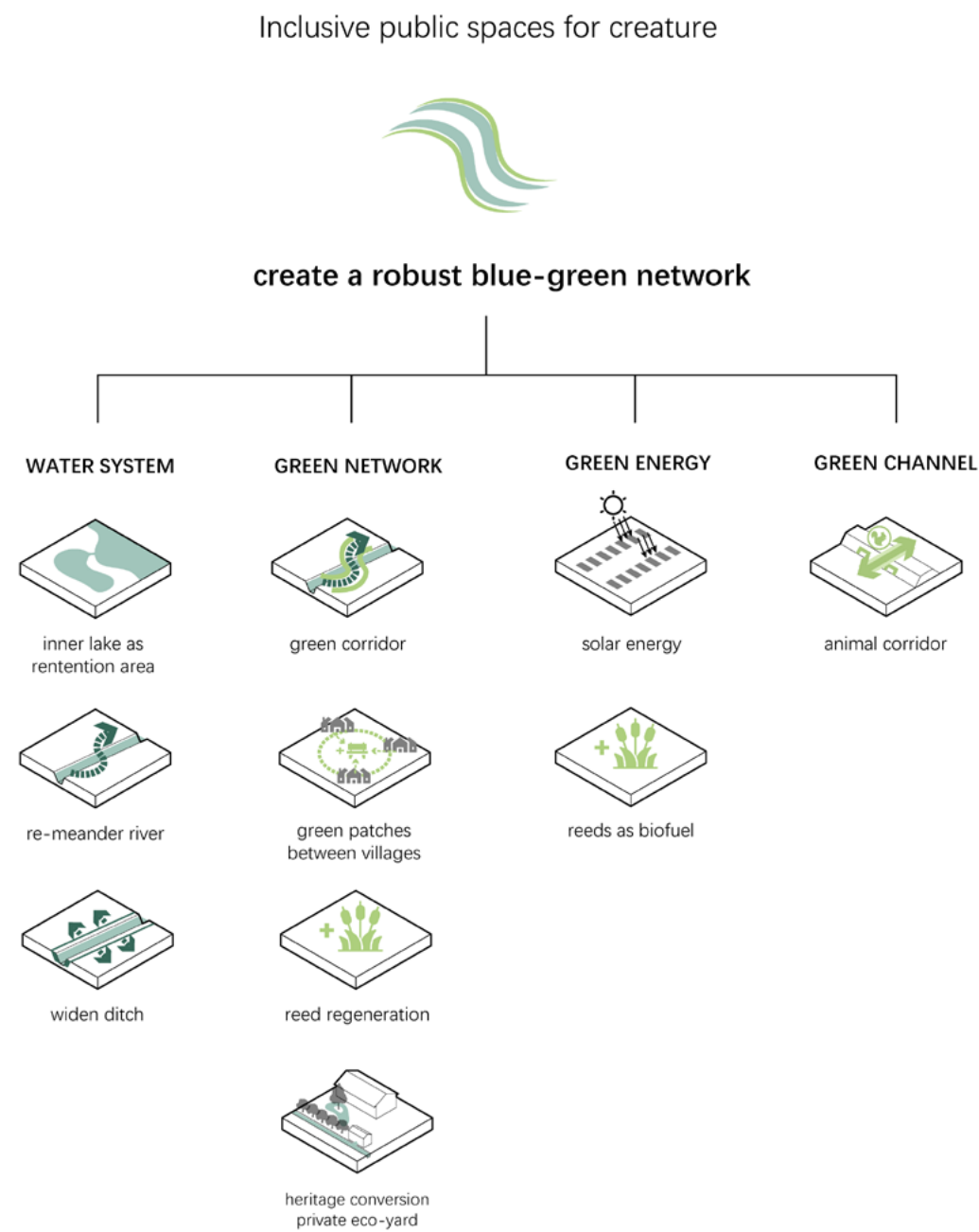


Inclusive public spaces for
different group of people



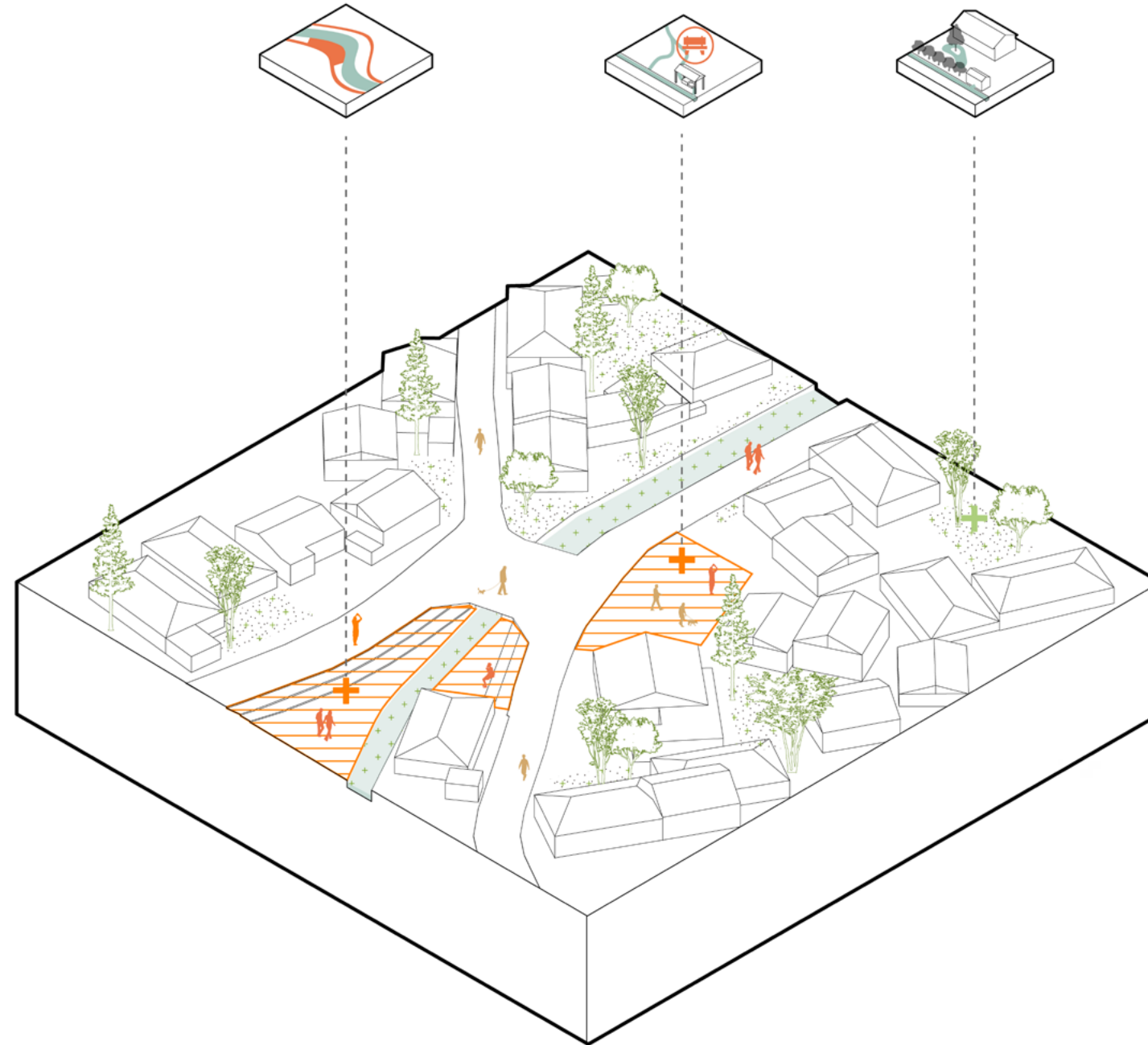
create a complete public space system network

Design Tool Box



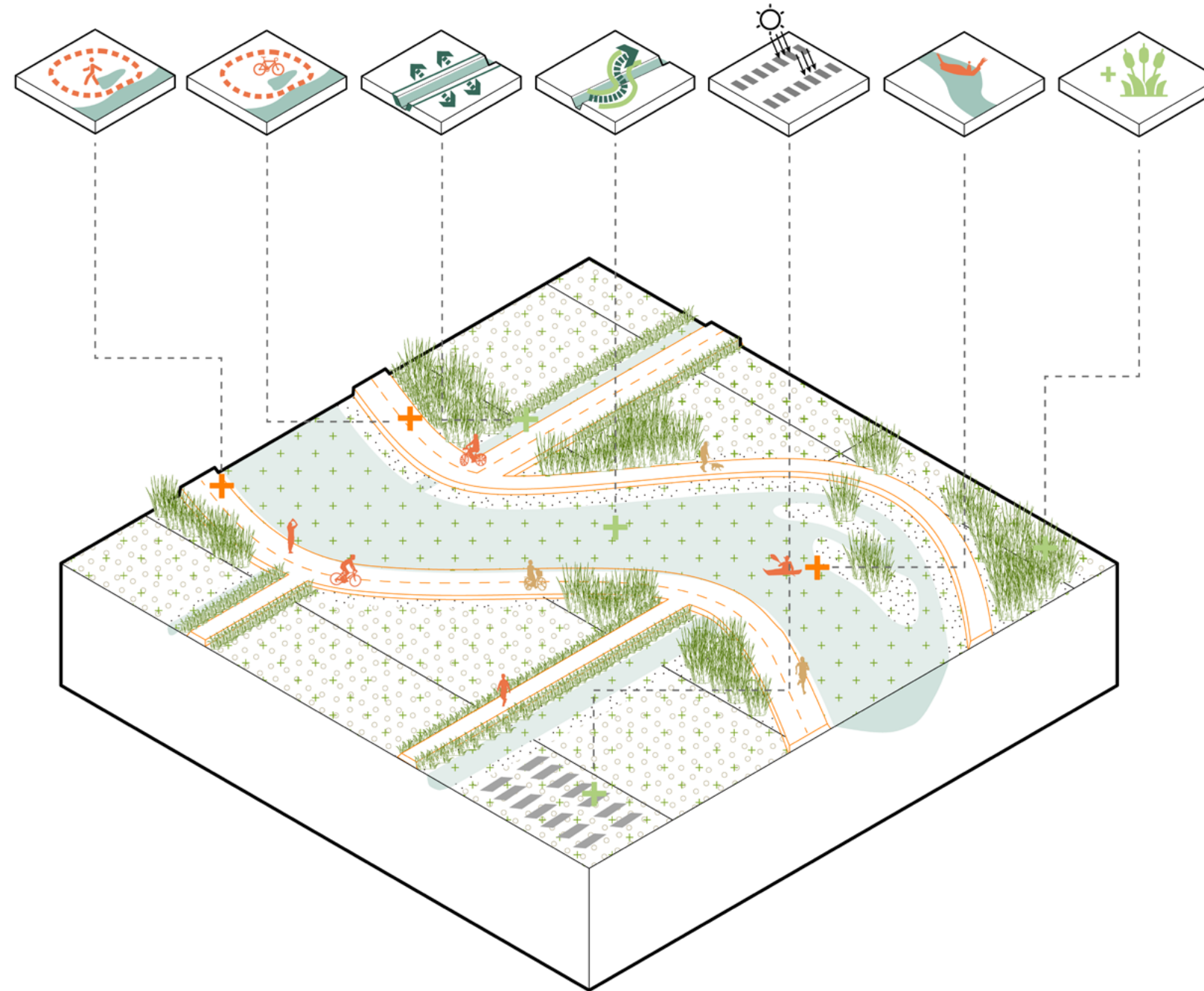
Design Principle

village landscape



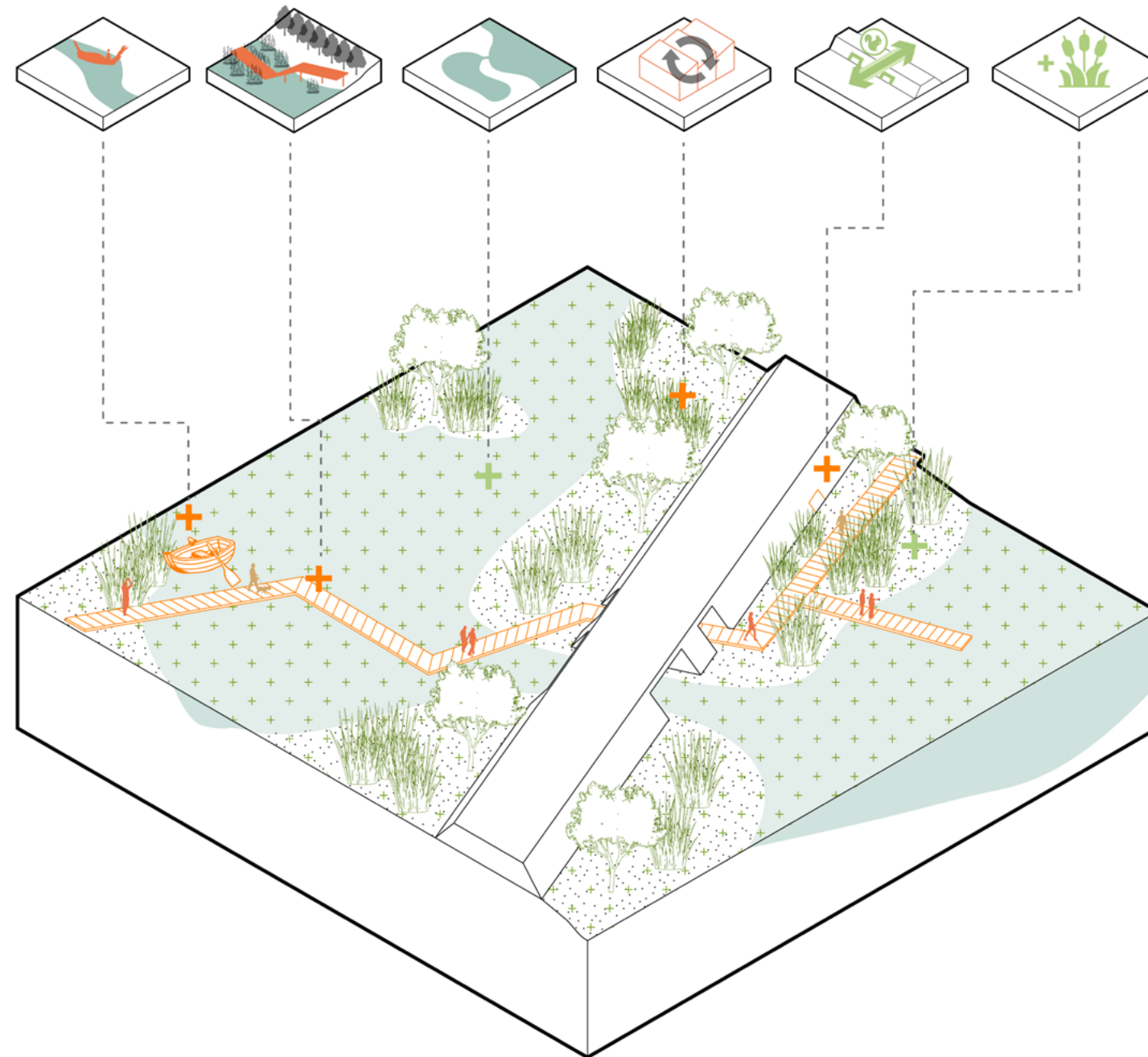
Design Principle

field landscape

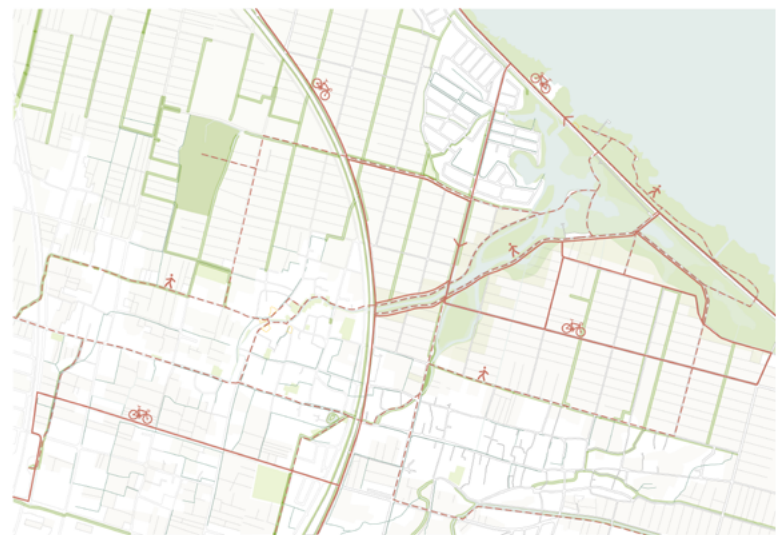


Design Principle

lake shore landscape



Large Scale Vision



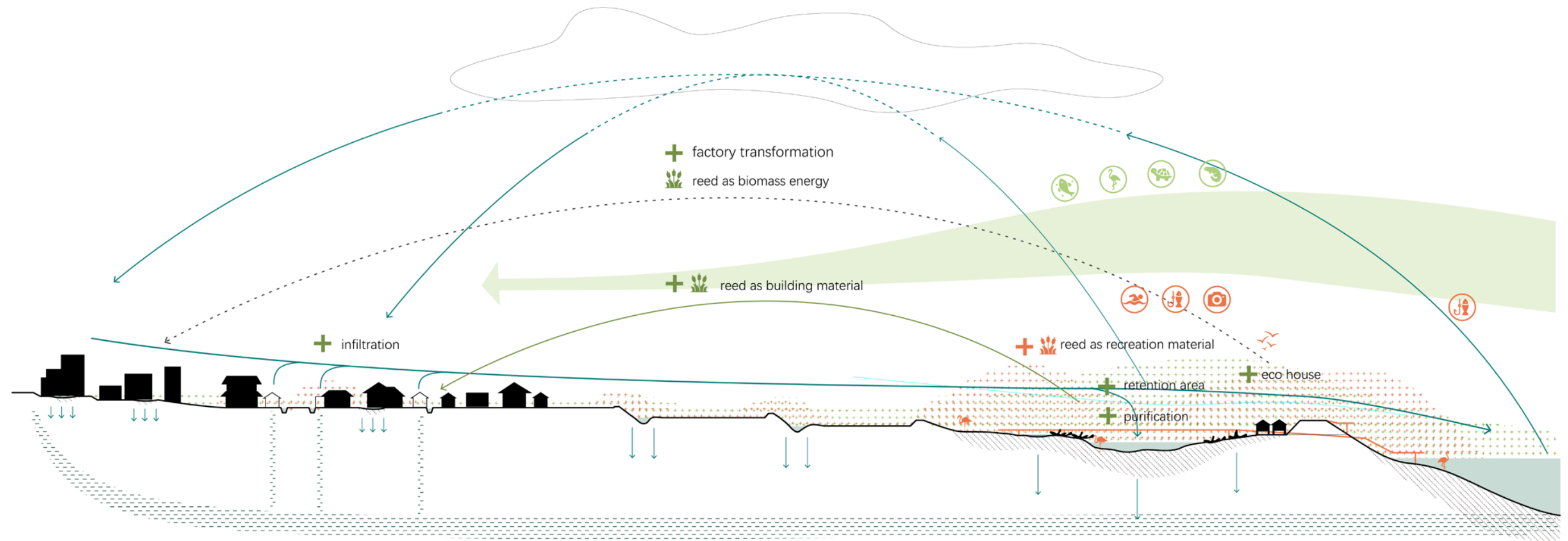
— cycling trail - - - hiking trail



water buffer zone transitional planting

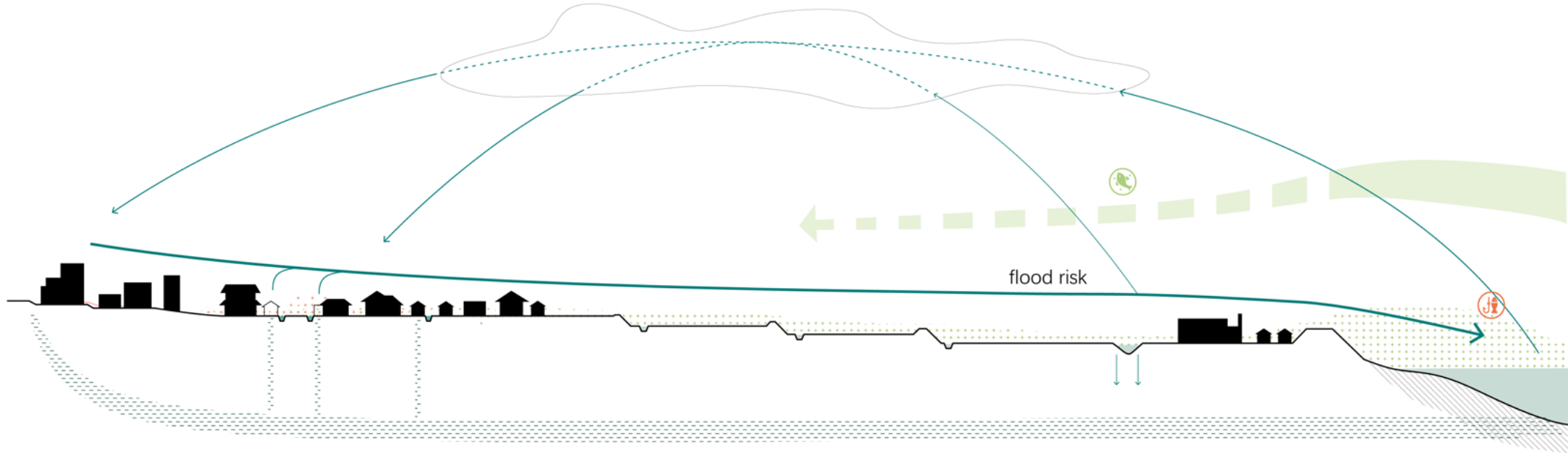


Large Scale Vision

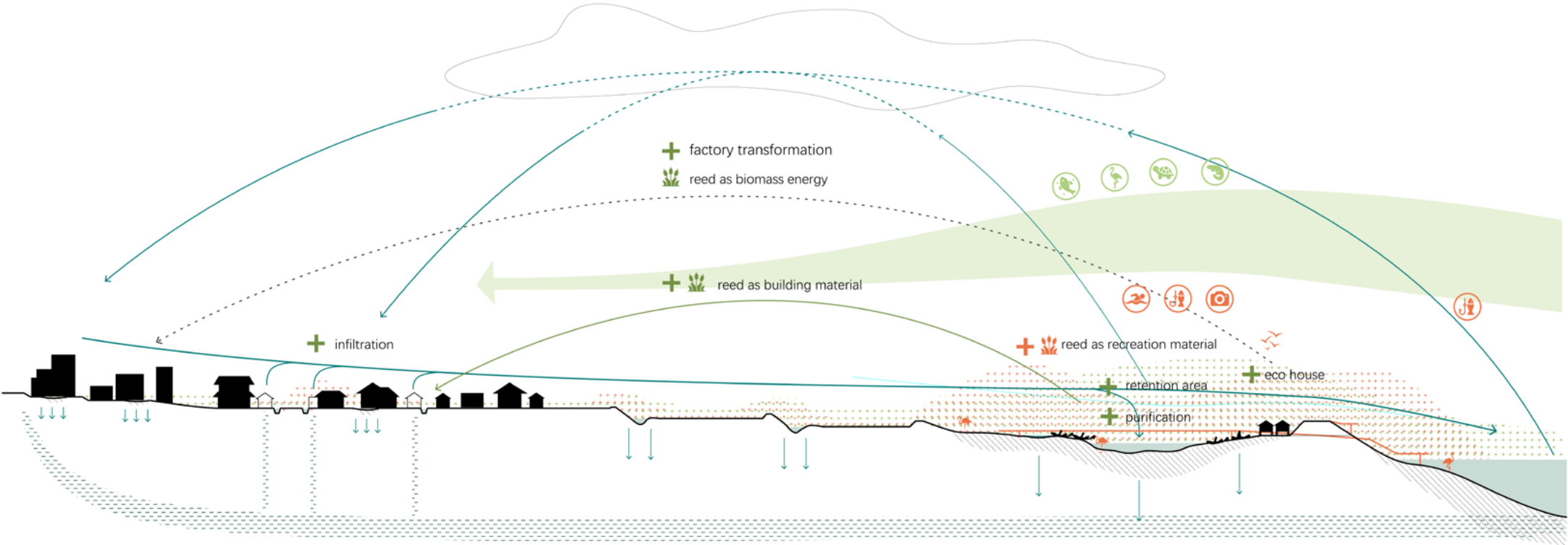


Before & After

Before



After



Design Exploration

zoom in to landscape








Village Landscape

harie village



Village Masterplan Proposal

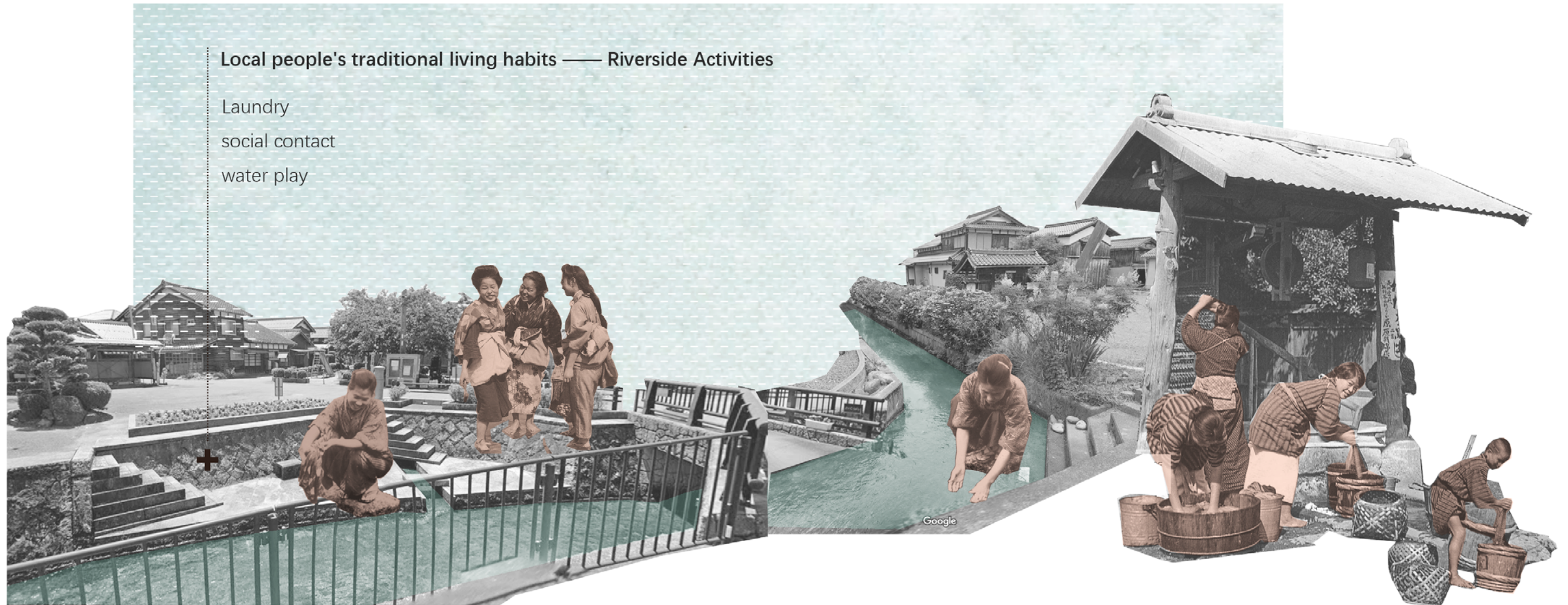


-  traditional temple
-  traditional shrine
-  public kabata
-  new public space
-  public space
-  eco-yard
-  eco-pond

zoom in areas



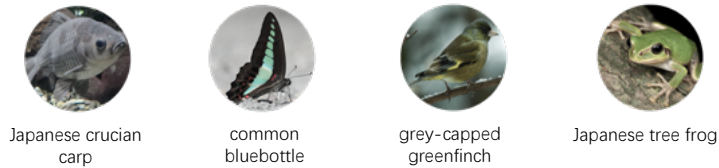
Village Design Language



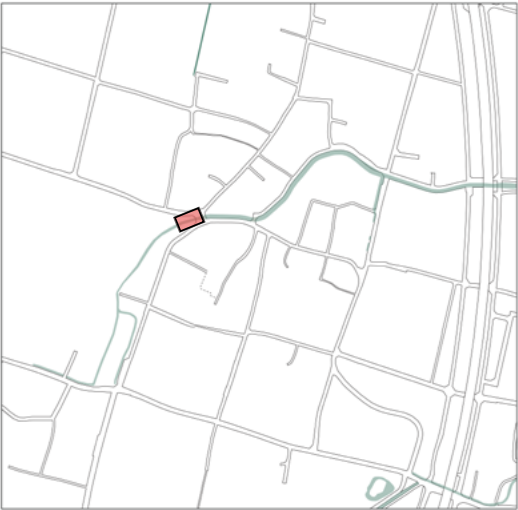
Conversion Of Kabata — Public Kabata

waterfront public plaza (zoom in A)

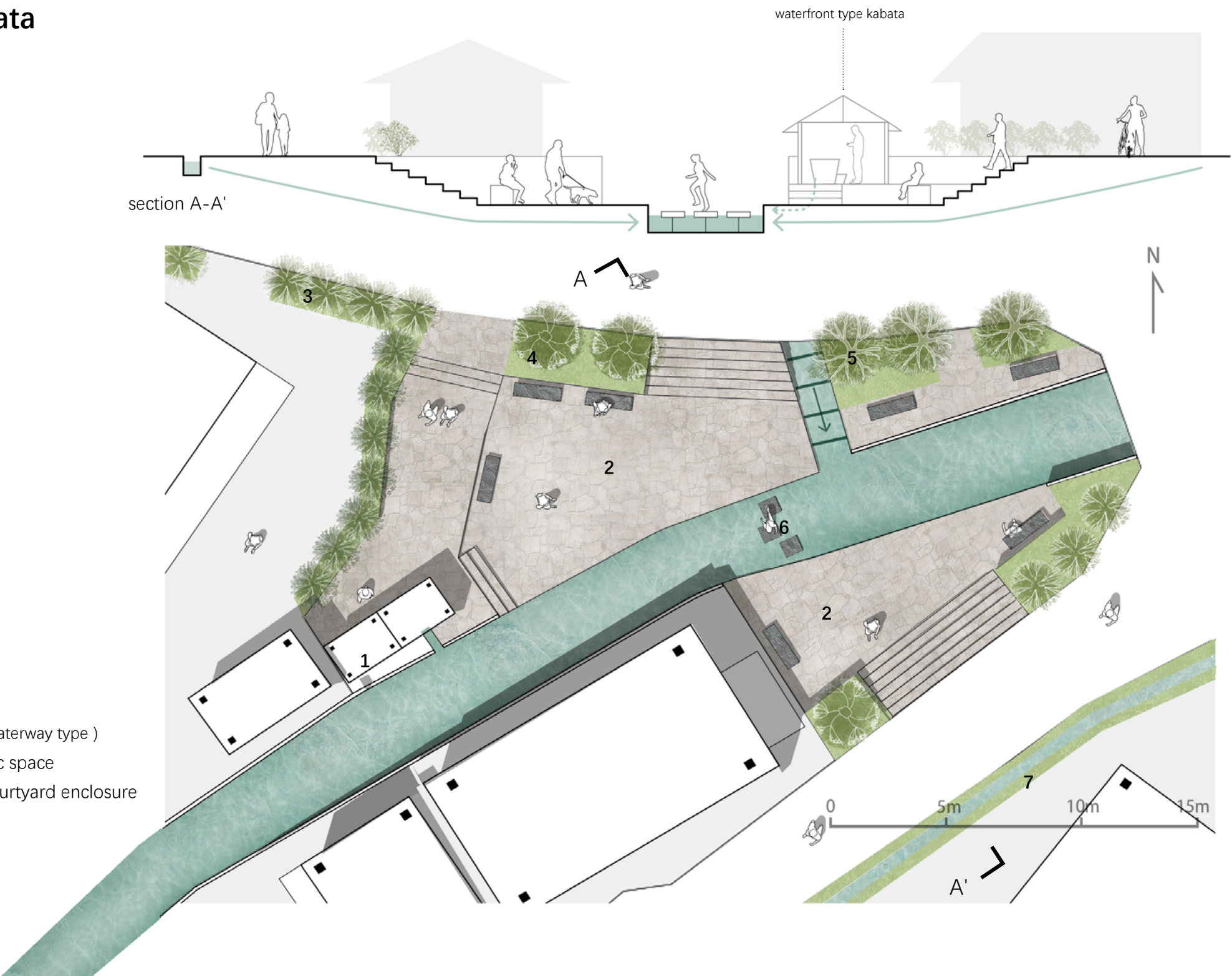
Fauna



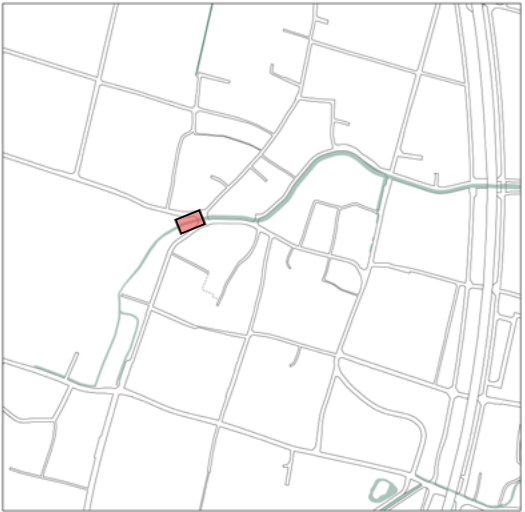
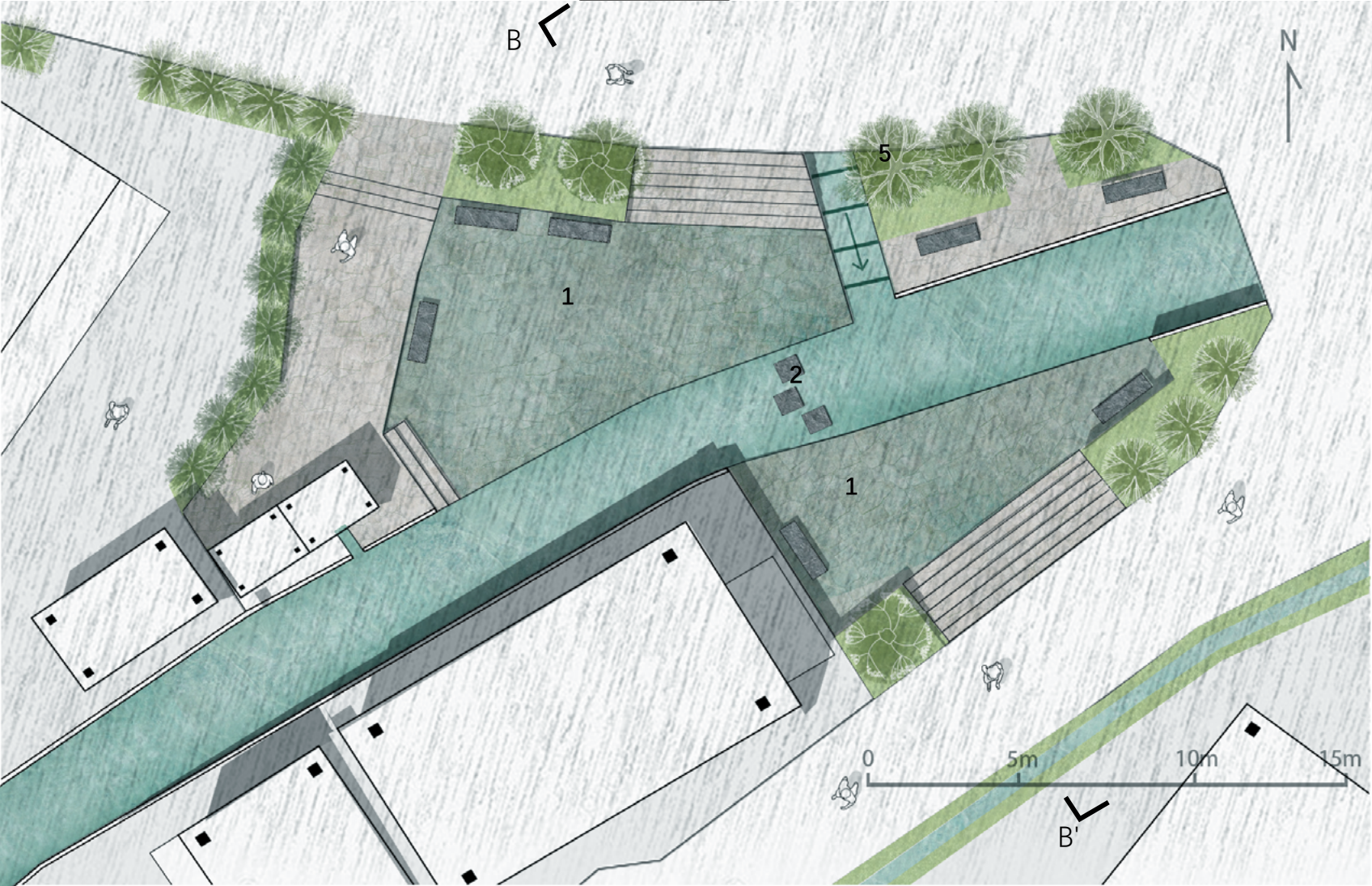
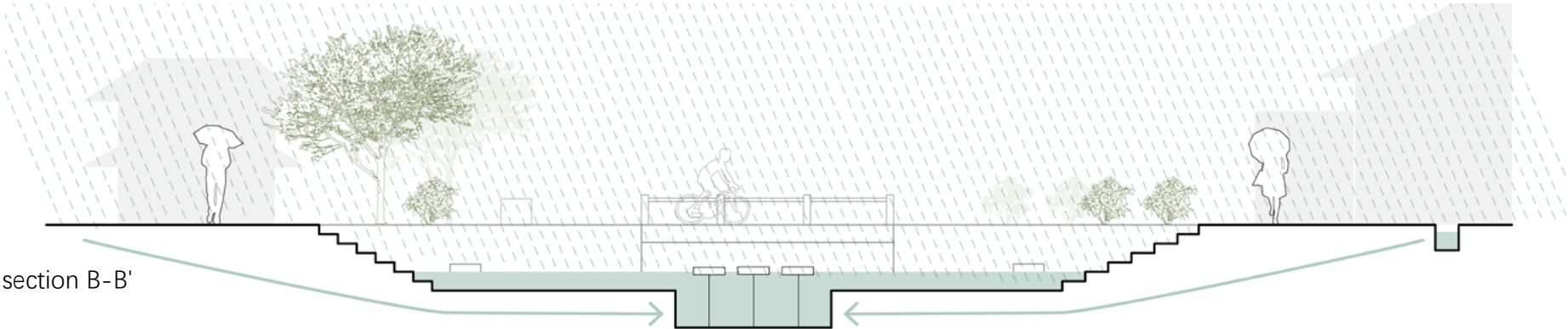
Flora



- 1 public kabata (waterway type)
- 2 waterfront public space
- 3 vegetation as courtyard enclosure
- 4 green soft edge
- 5 Japanese cherry
- 6 floating boards
- 7 green soft ditch



Conversion Of Kabata — Public Kabata
waterfront public plaza (zoom in A)



- 1 floodable space
- 2 floating boards

Conversion Of Kabata — Public Kabata

water plaza (zoom in B)

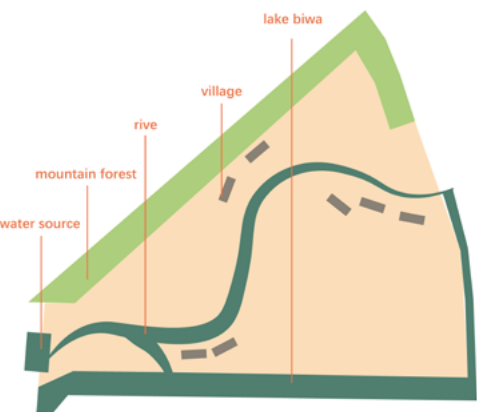
Fauna



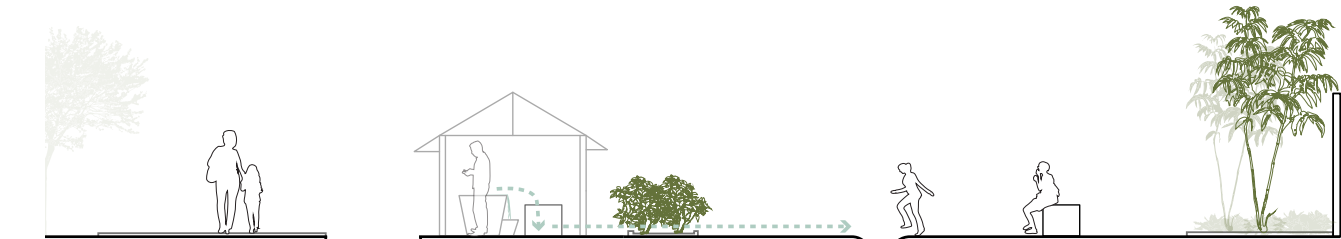
Flora



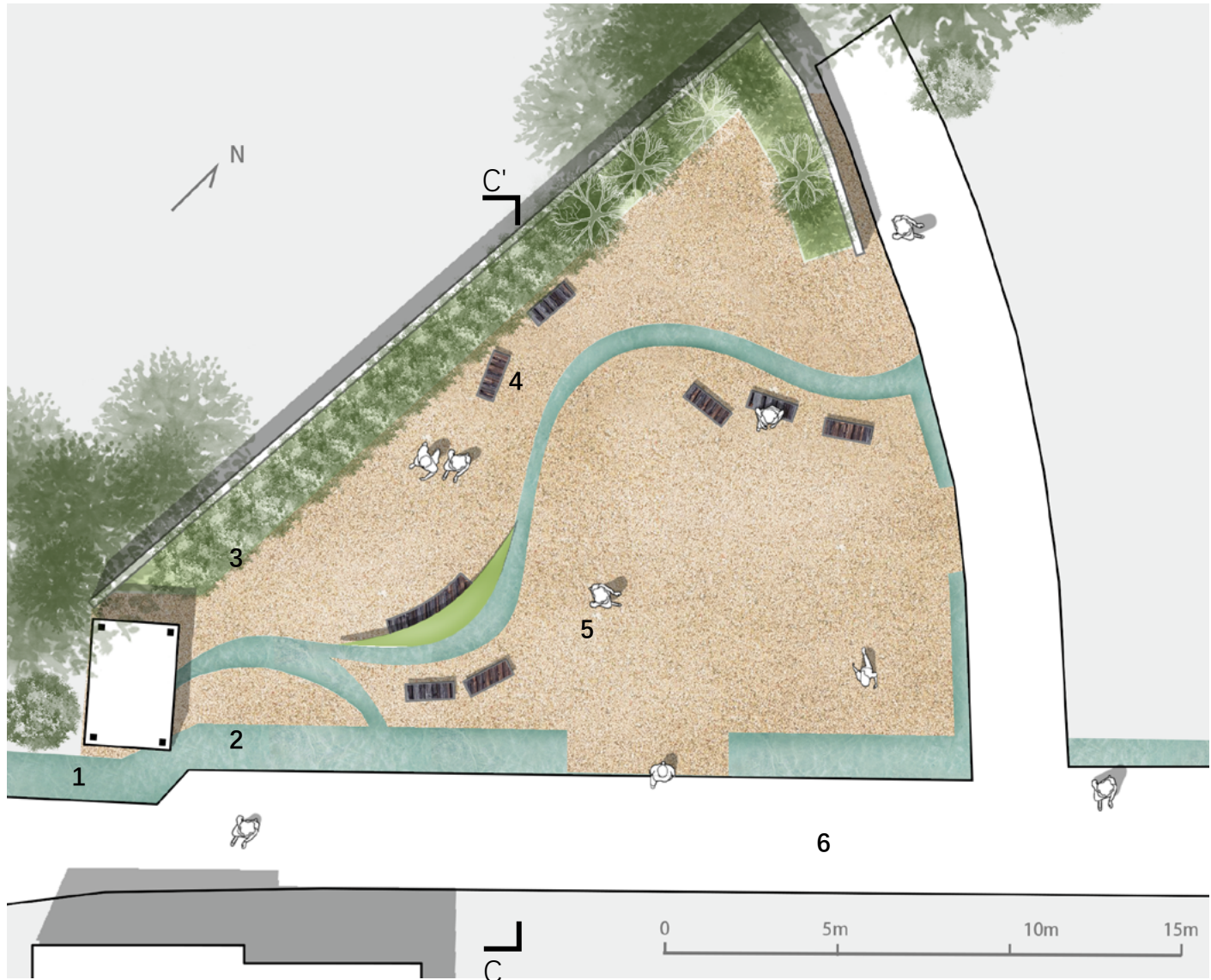
concept



material



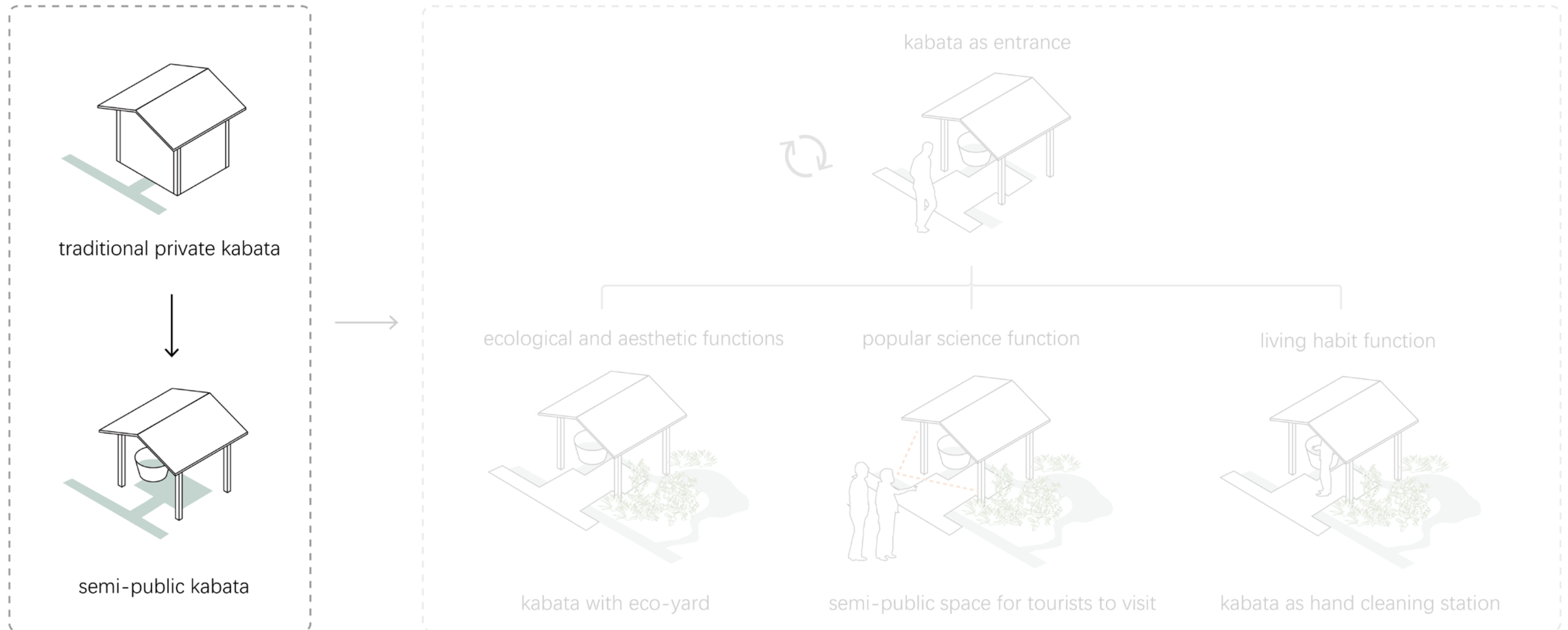
section C-C'



- 1 public kabata (outdoor independent type)
- 2 water play space
- 3 bamboo
- 4 bench
- 5 water plaza public space
- 6 open the ditch

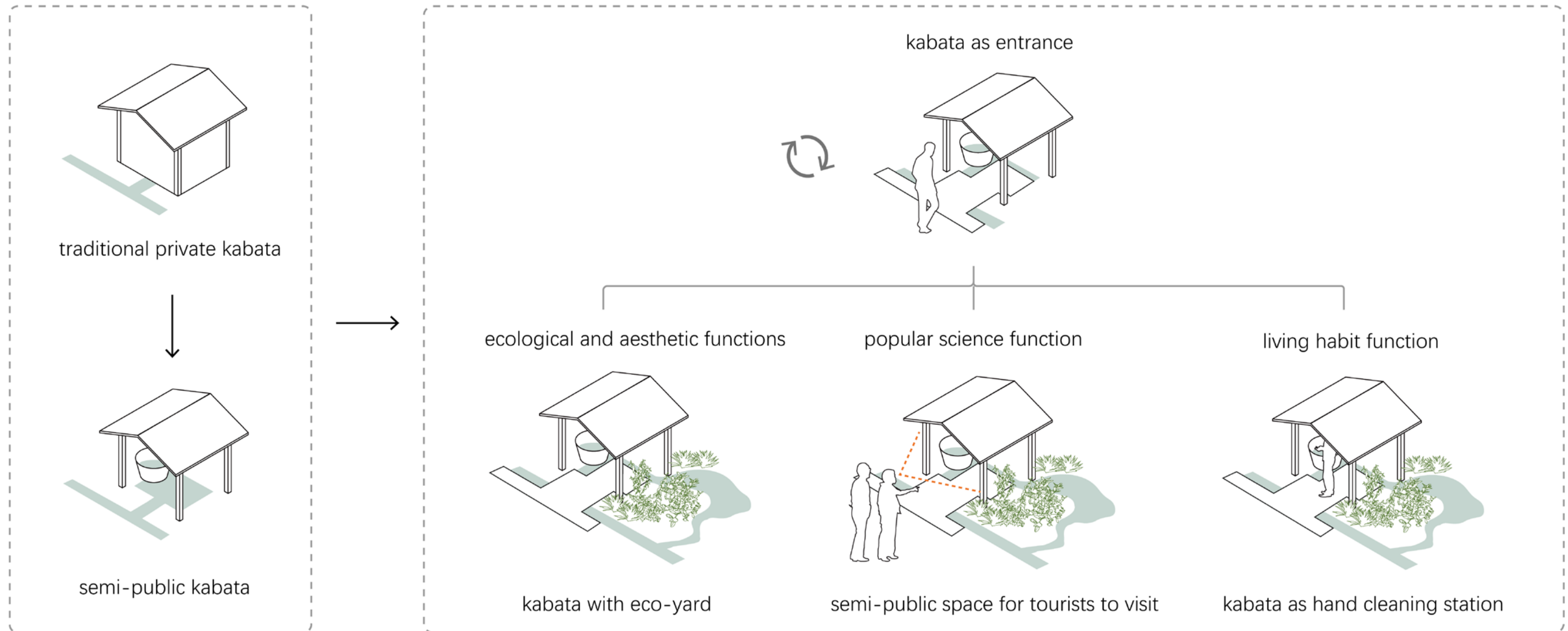
Conversion Of Kabata — Private Kabata

Step 1: Open up private kabata



Conversion Of Kabata — Private Kabata

Step 2: Add new function



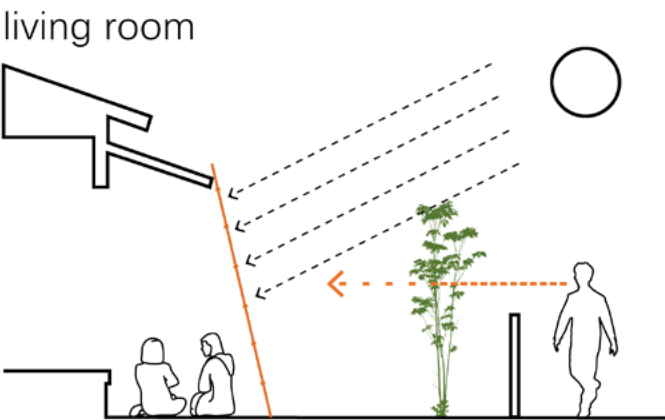
Conversion Of Kabata — Private Kabata

Step 3: Japanese screening devices combined with private Kabata garden

marsh reed screens



Degree of privacy : +++++

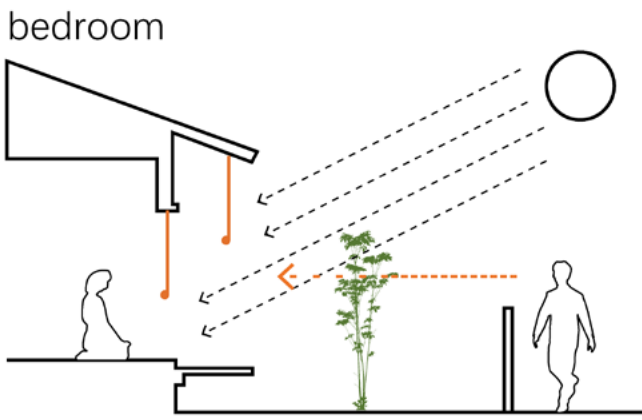


protect private space

bamboo screens



Degree of privacy : +++

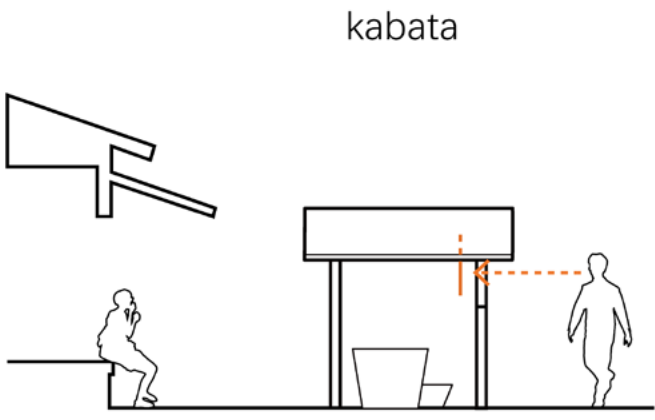


protect private space

split curtains



Degree of privacy : +



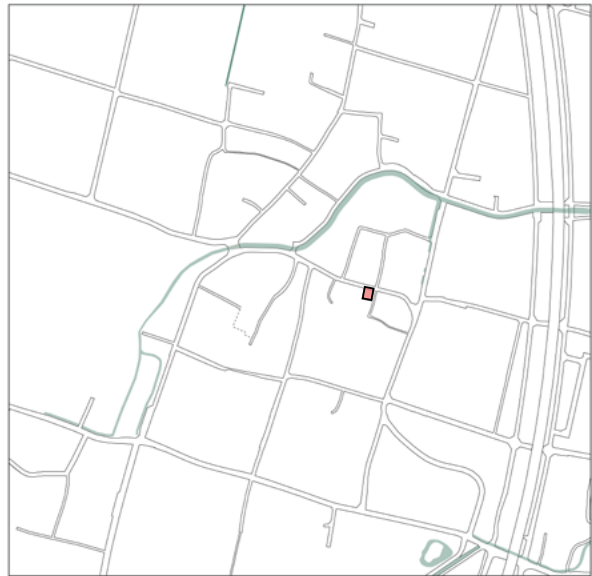
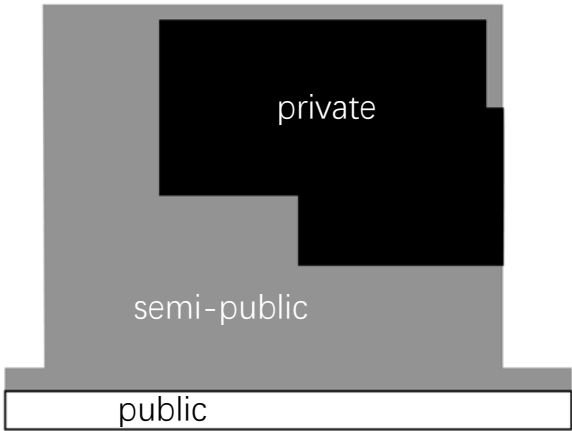
create entrance gray space

Conversion Of Kabata — Private Kabata

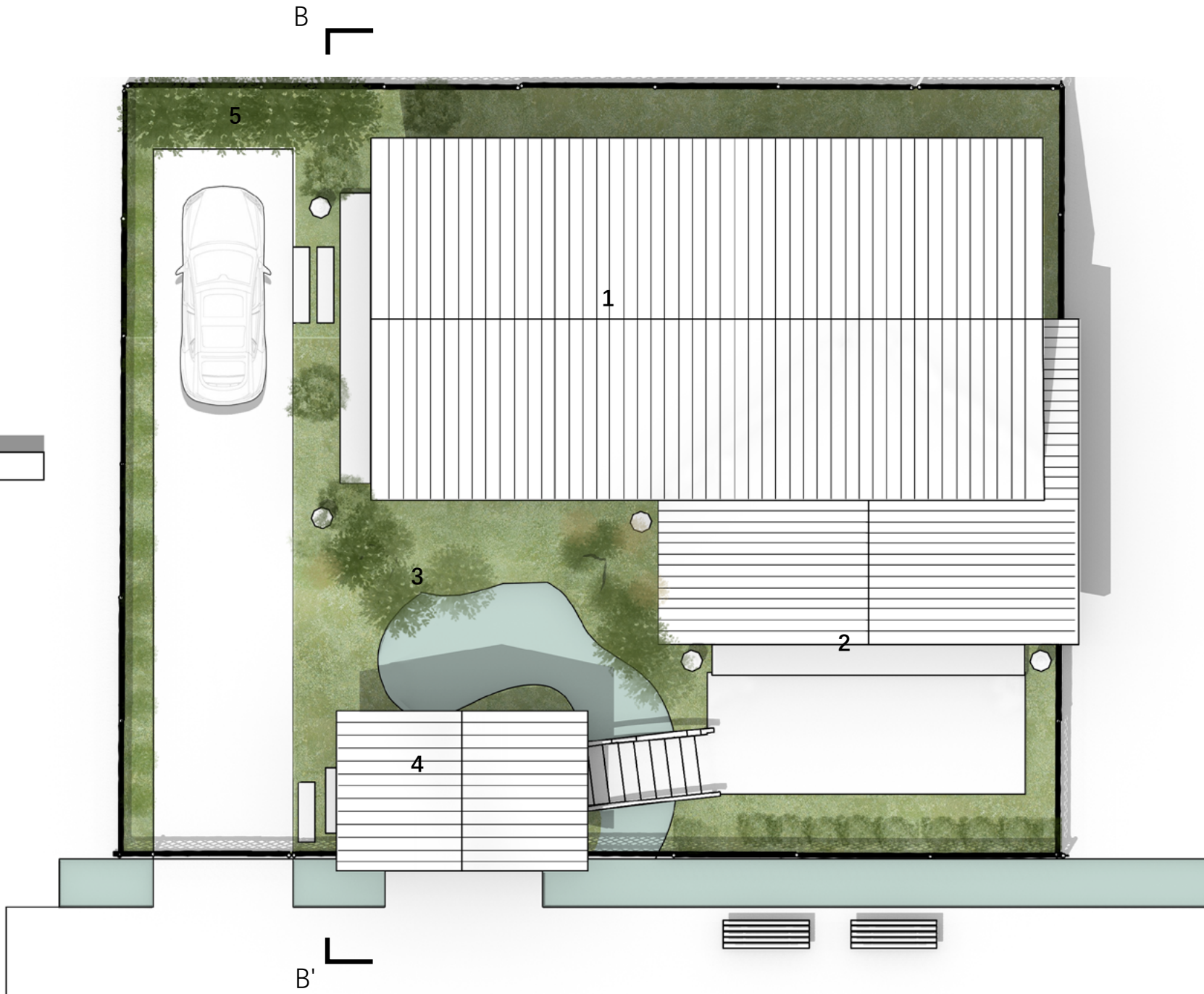
eco-yard (zoom in C)



current



- 1 main house
- 2 lobby
- 3 eco-yard
- 4 public kabata
- 5 bamboo



Flora



bamboo



yellow iris



Japanese maple

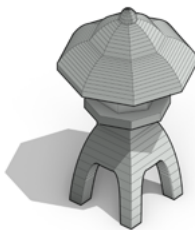


Japanese angelica tree

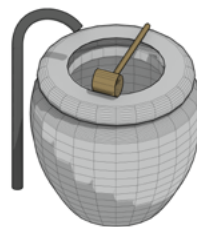


common henbit

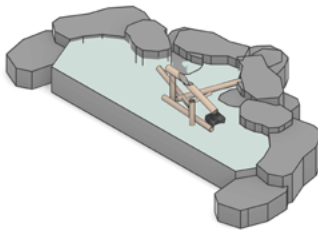
Landscape Elements



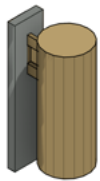
stone lantern



kabata — motoike



kabata — tsuboike



wodden light

Fauna



Japanese crucian carp



common bluebottle



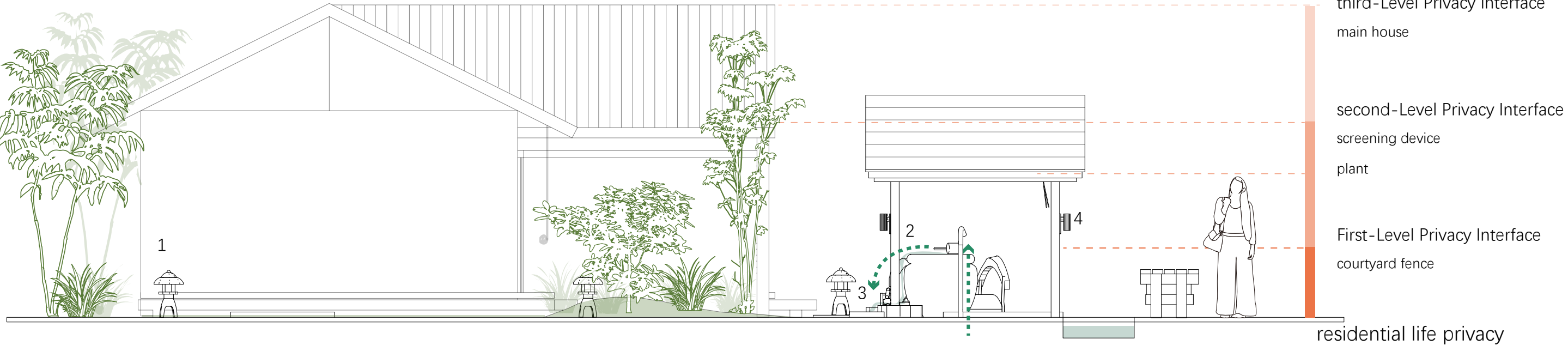
grey-capped greenfinch



white-tailed skimmer

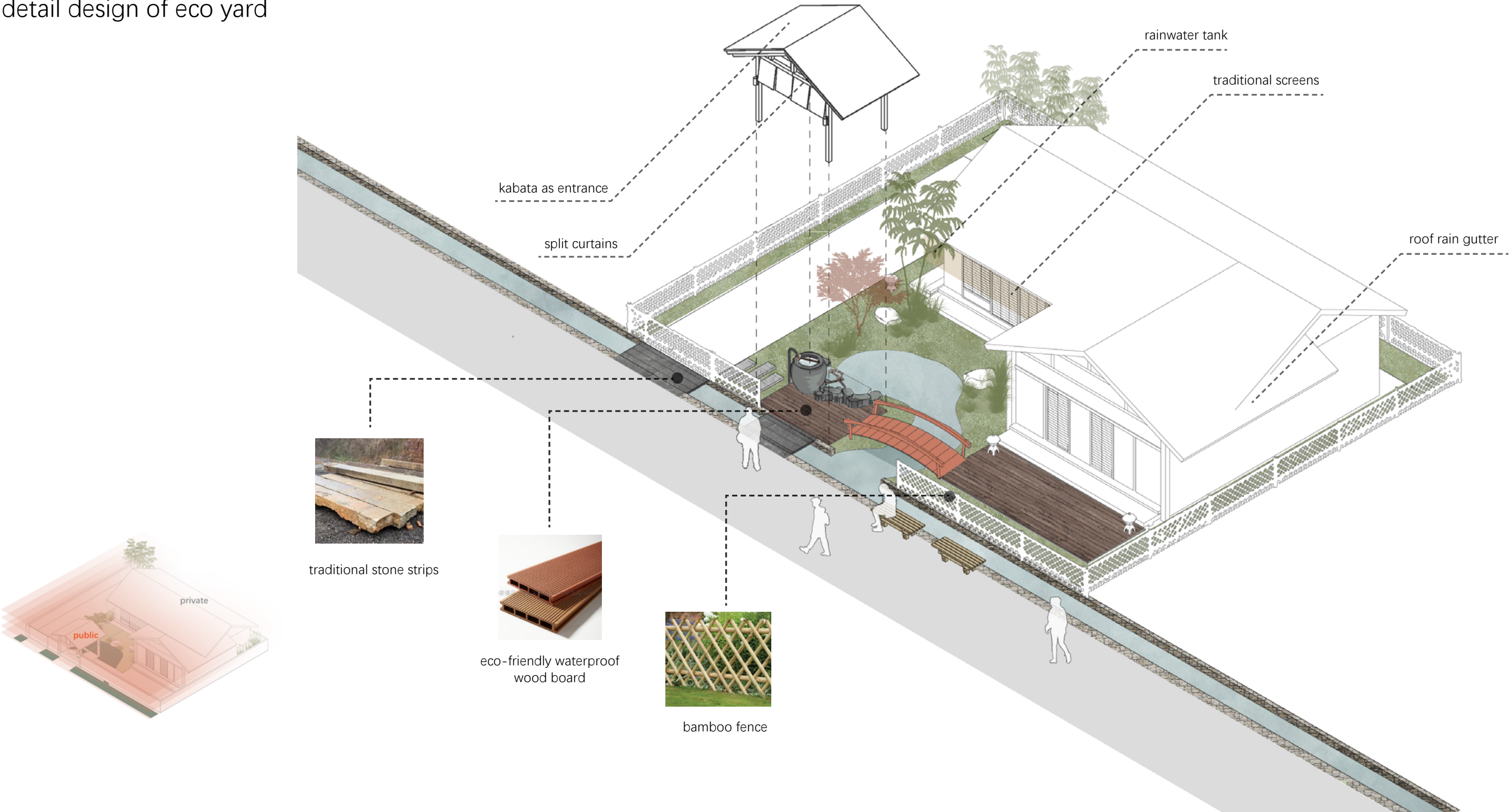
Conversion Of Kabata — Private Kabata
eco-yard (zoom in C)

Section B-B'

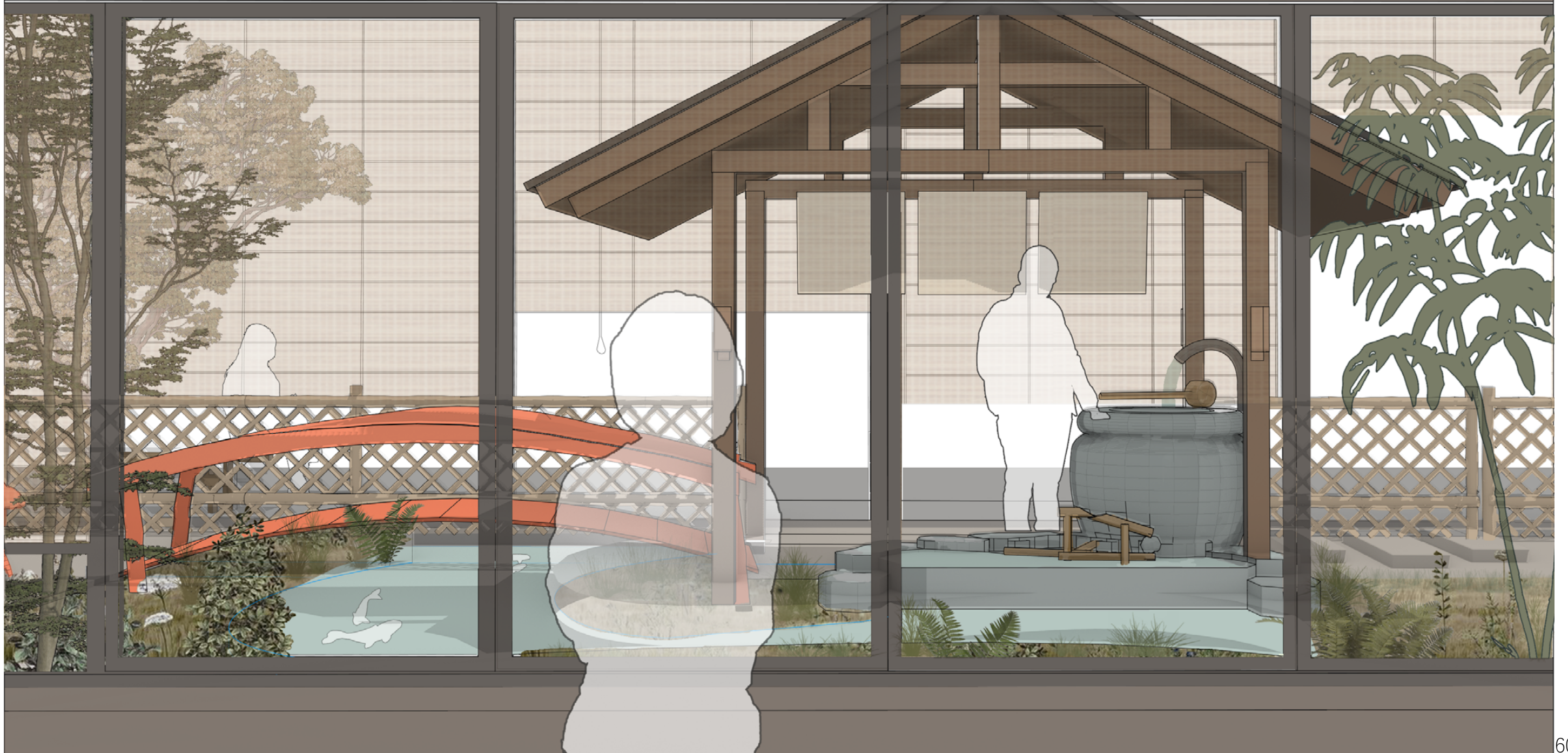


Conversion Of Kabata — Private Kabata

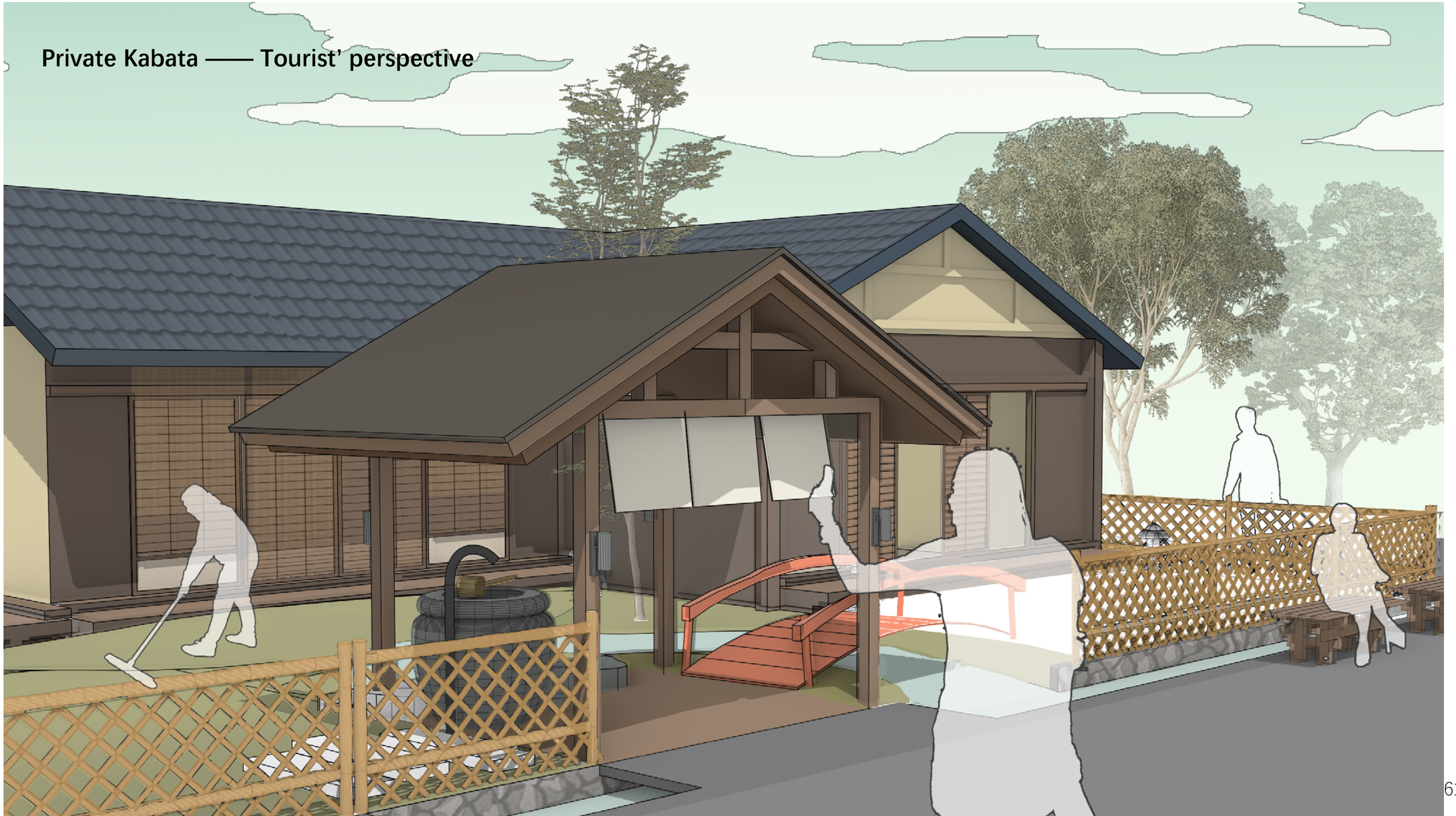
detail design of eco yard



Private Kabata — Residents' perspective



Private Kabata — Tourist' perspective



Village Routing

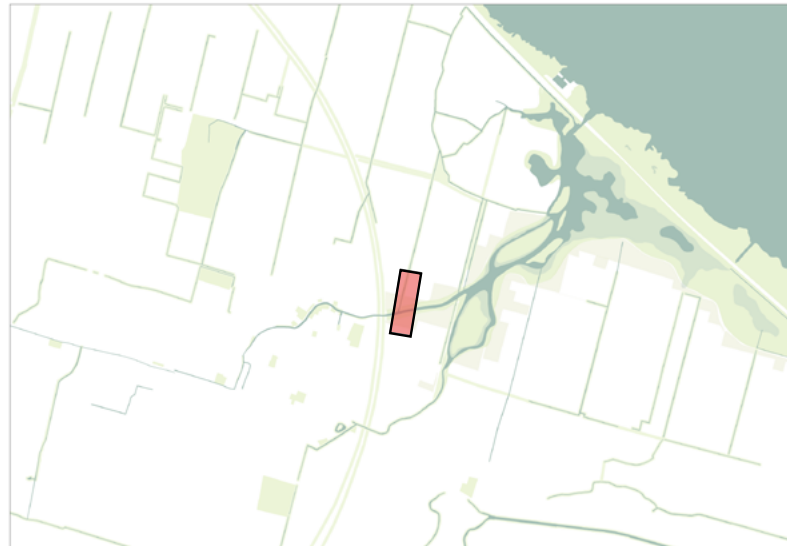


Quick tour route
(1-2 hours)

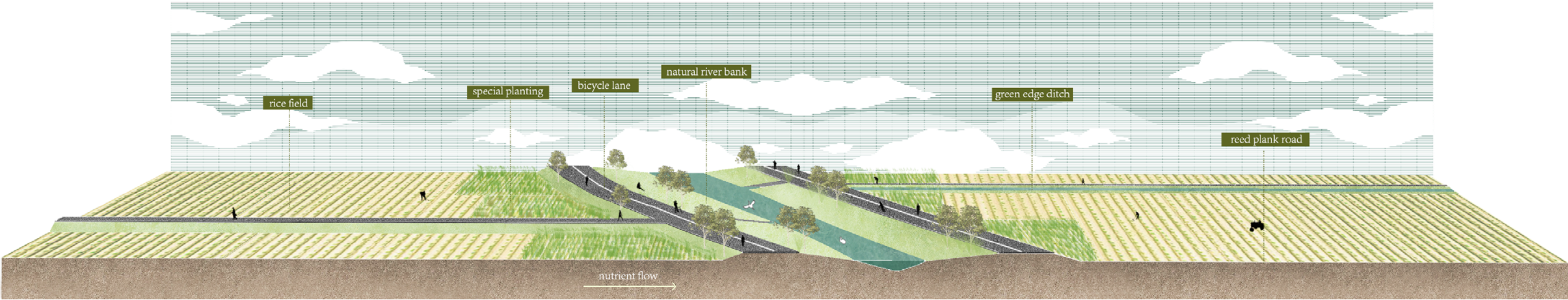


In-depth tour route
(half a day to a day)

Field Landscape



Lake Shore Landscapae Proposal



Fauna



japanese crucian carp



biwa trout



sweet fish



japanese tree frog



Mitsyama salamander



common bluebottle



grey-capped greenfinch



pond slider



white-tailed skimmer

Flora



rice



bermuda grass



yellow iris



reeds



vogongrass



sea bindweed



roundleaf chastetree

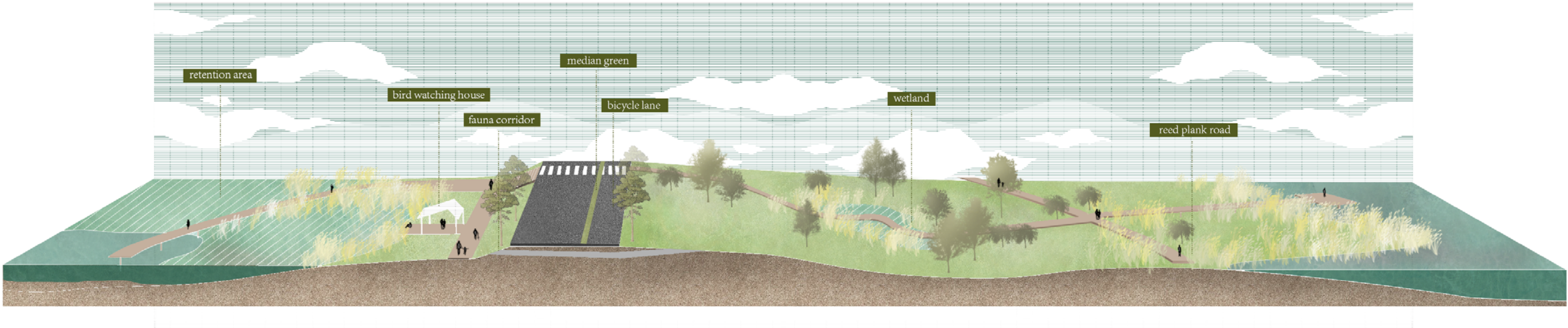


common henbit

Lake Shore Landscape



Lake Shore Landscapae Proposal



Fauna



black-headed gull



common kestrel



great crested grebe



mitsyama salamander



grey heron



tundra swan



tufted duck



pond slider



the alien american bullfrog

Flora



amur silvergrass



bermuda grass



rose-gold pussy willow



Reeds



cogongrass



sea bindweed



roundleaf chastetree

Process

current

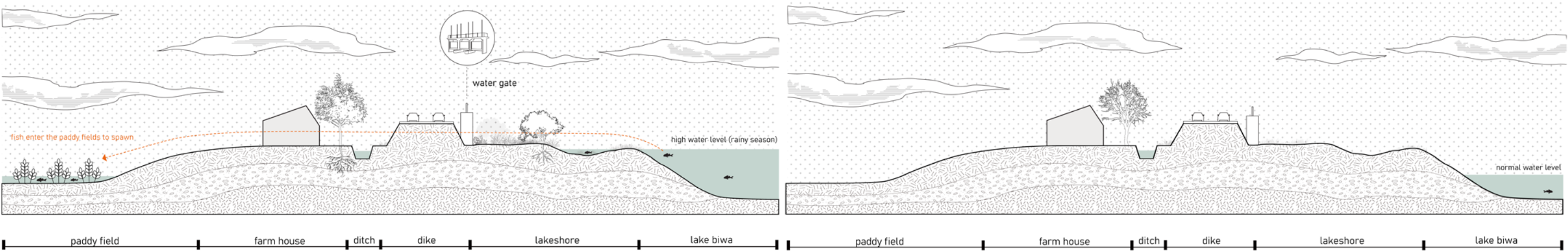
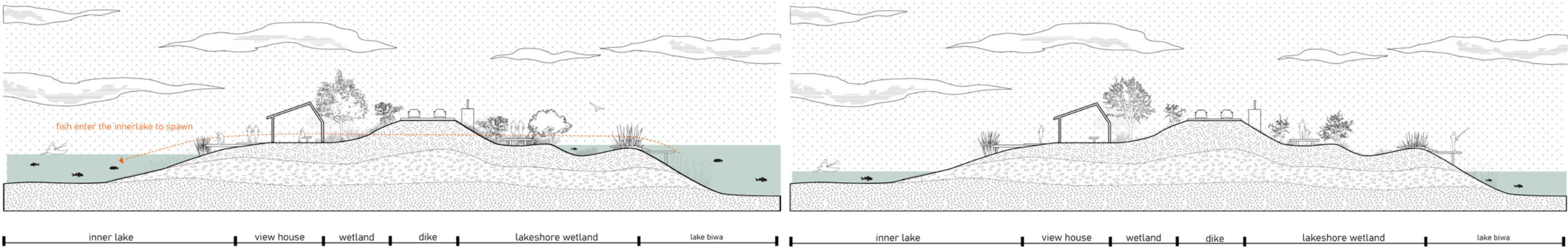


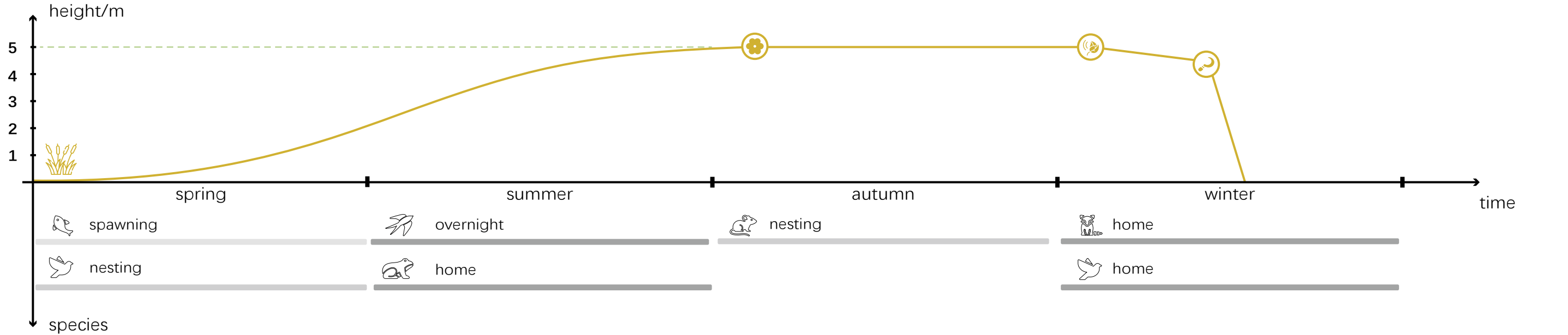
Figure 6.13 Lake shore landscape process

Process

0-1 year



Planting Cycle Chart



Process

5-10 year

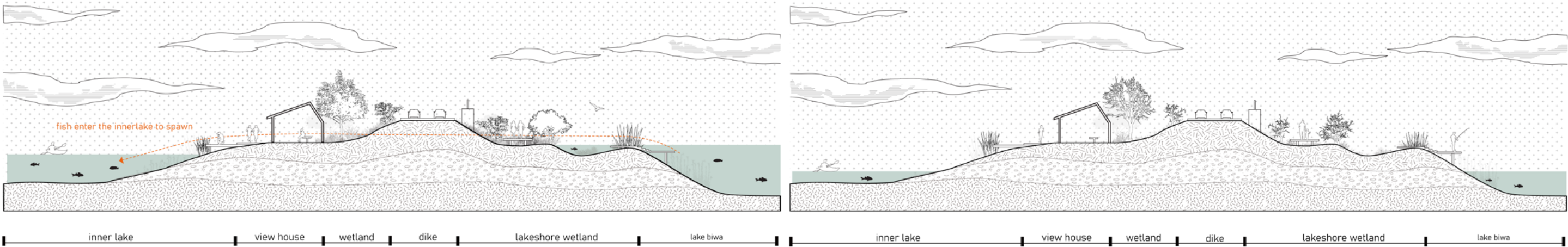


Figure 6.13 Lake shore landscape process

Planting Cycle Chart

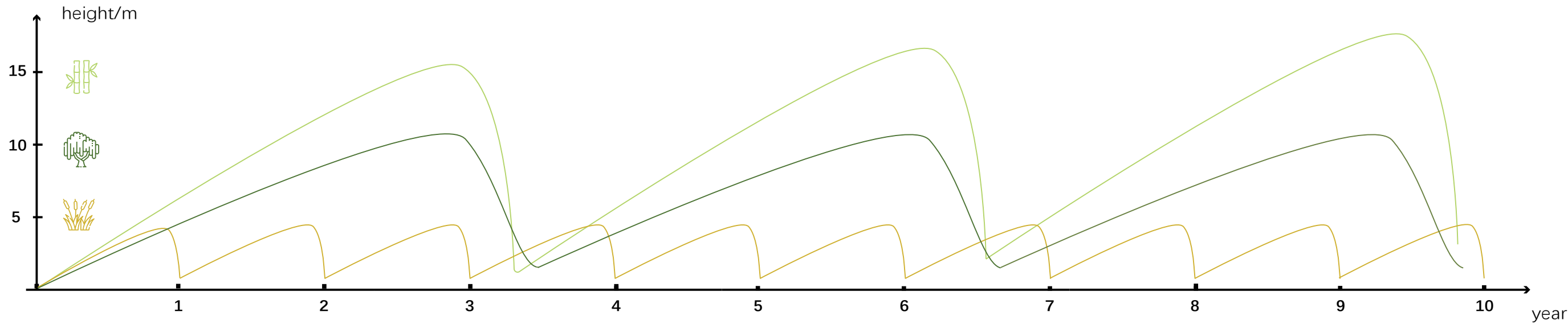


Figure 6.14 Lake shore landscape process

Overall Routing



Sequences 1

10:00 am



Sequences 2

1:00 pm



Sequences 3

3:00 pm

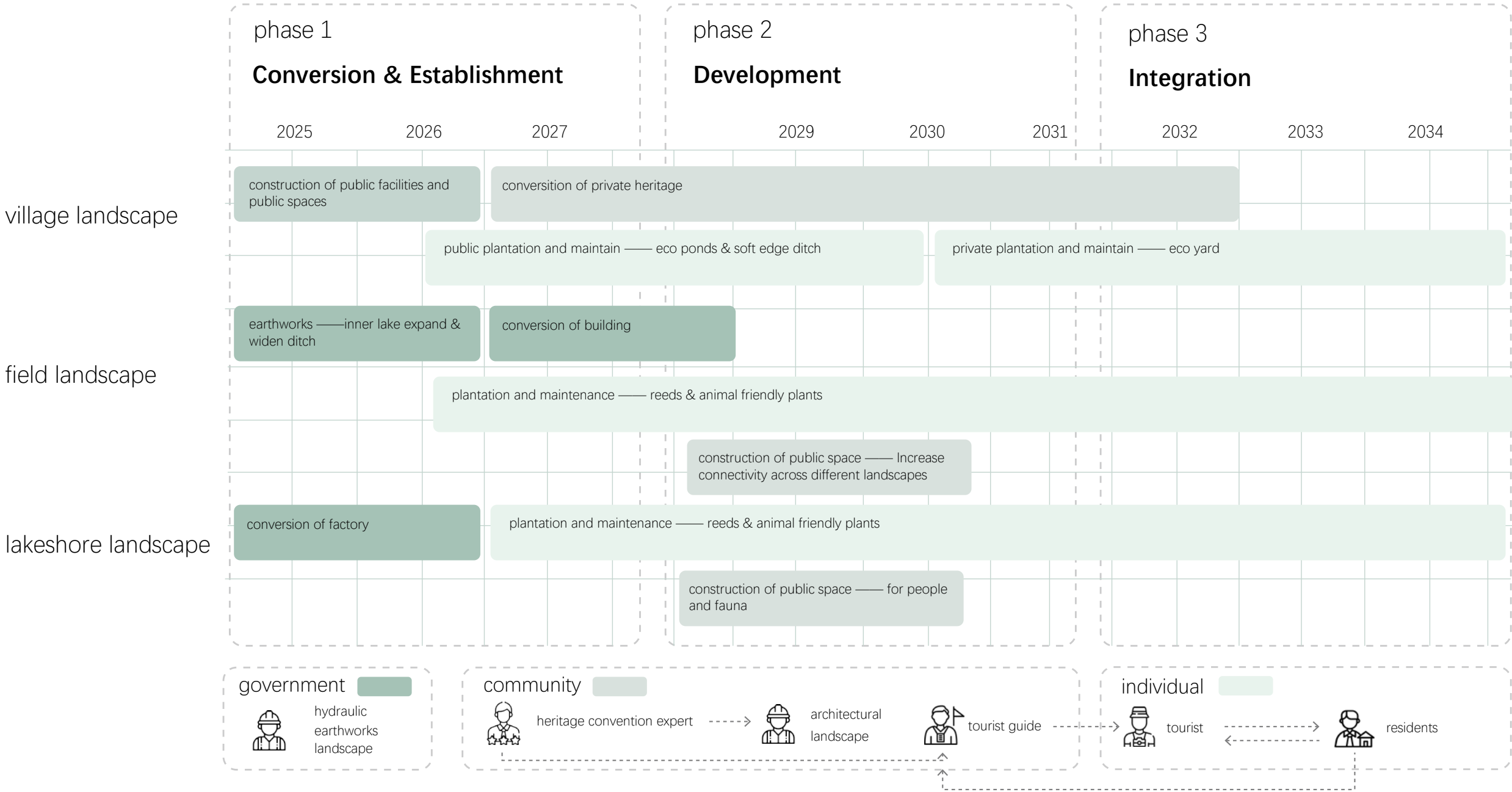


Sequences 4

5:00 pm

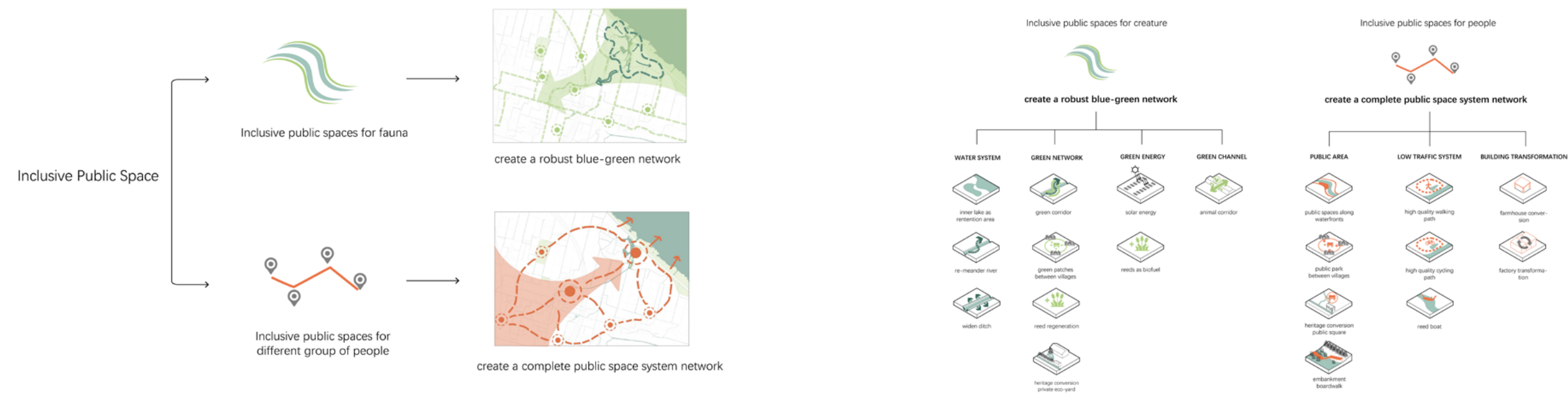


Implementation



Reflection

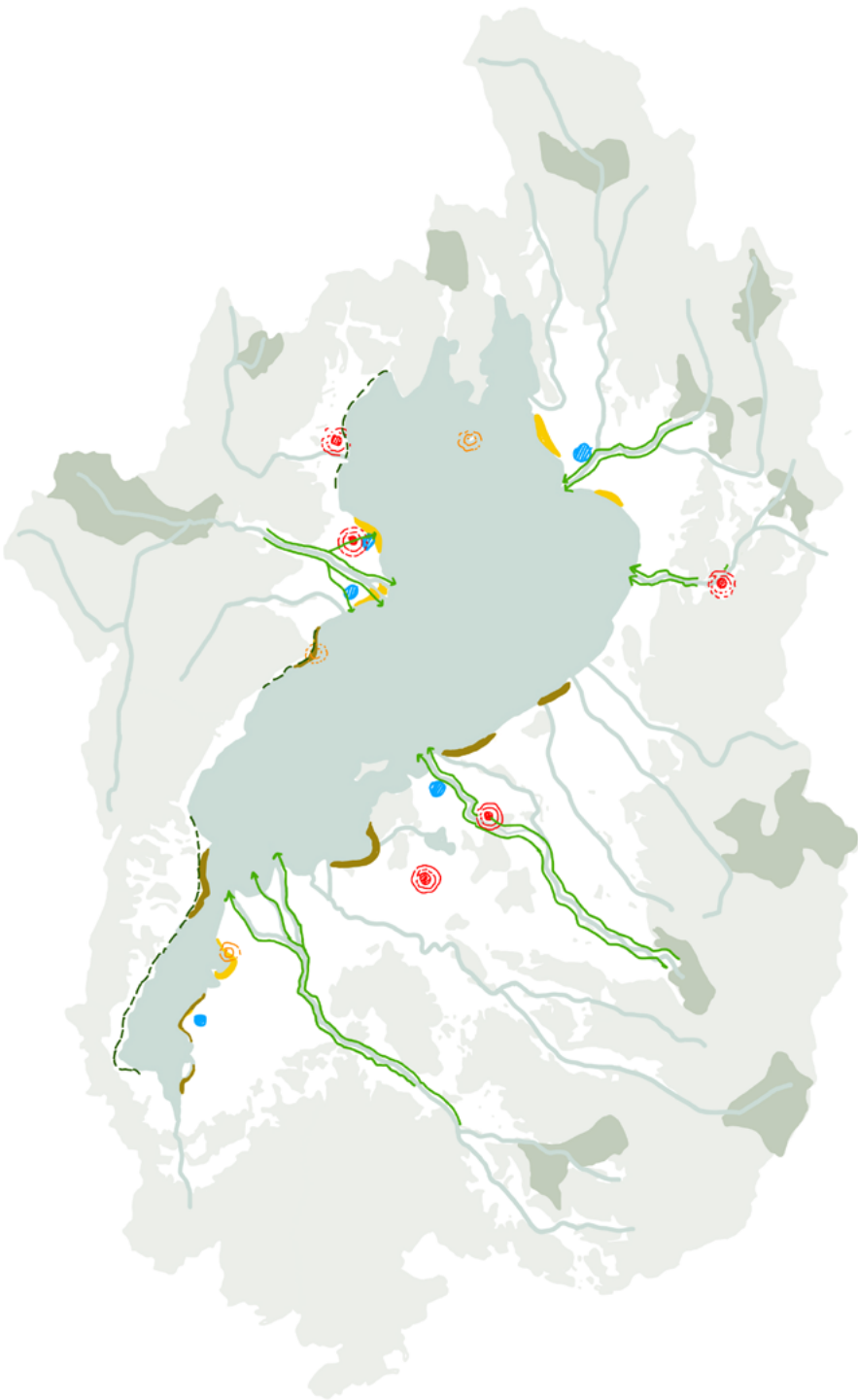
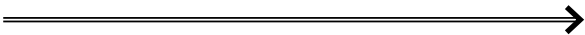
RQ: How can the water culture of the Lake Biwa region be transformed into a more public experiential resilient green-blue network landscape while maintaining its circular and heritage qualities?



Reflection



reflected in the entire Lake Biwa area



Thank You!



11/10/2020
Tiroko