source:https://papersky.jp/en/shiga-lake-biwa

Living Water

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

Chenye Yang 5794722
Landscape Architecture MSC 2022

LIVING WATER

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

Graduation Project Report

Chenye Yang
5794722

First mentor
Inge Bobbink

Second mentor
Willemijn Wilms Floet

M. Sc. Landscape Architecture
Faculty of Architecture and the Built Environment
Delft University of Technology

TUDelft

CONTENT

Abstract

Lake Biwa in Japan stands as the nation's largest inland body of water, harboring over a thousand species of flora and fauna. In the past, the hydrological system of Lake Biwa operated seamlessly, with humans, animals, and plants interconnected by water, mutually influencing and sustaining each other, leading to ecological equilibrium.

However, over the past century, Japan has undergone significant transformations, including World War II, economic resurgence, and urbanization. The inner lake has been replaced by farmland, and rigid embankments have been constructed around it. These incremental changes have eroded the once robust system, with human development gradually exceeding the system's capacity. Presently, water no longer serves as a conduit between humans and nature; instead, it is perceived as a threat and a problem. Consequently, water heritage has been gradually abandoned due to its inability to meet contemporary lifestyle demands, obscuring the valuable and distinctive aspects of the land.

As a landscape architect, I am captivated by the former splendor of the site's system and lament the trend of its gradual disappearance. I aspire to reconstruct Lake Biwa's hydro-cultural heritage through landscape interventions, strengthening its distinctive characteristics while integrating new functionalities to create inclusive public spaces

CHAPTER 1.
INTRODUCTION

1.1 Context

1.1.1 fascination

Traditional Water System

Water has been the source of sustenance in nature since ancient times, upon which human populations have relied for their propagation and survival. Ancestral communities recognized the intrinsic value of every drop of water, coexisting with it and devising systems to protect and restore it to the fullest extent possible. These traditions not only reflect our cultural values but also, upon careful observation, offer solutions to contemporary challenges.

In Wuzhen Water Town, China, a tradition spanning millennia persists, where water serves as pathways and boats function as vehicles; in the Netherlands, polder water systems ensure the agricultural viability of low-lying areas. in Lake Biwa, Japan's largest inland lake, traditional water systems act as a nexus linking different scales and spatial dimensions, as well as bridging the gap between humanity and nature, a characteristic that captivates the imagination.

Figure1.1 Wuzhen Water Town, China
source:https://www.bannedbook.org/

Figure1.2 Polder Landscape, Netherlands
source: Cameron Hewitt

Figure1.3 Lake Biwa Water System, Japan
source:https://www.photolibrary.jp/

1.1.1 fascination

Lake BiwaWater Through Scales

Some of the rainfall from the surrounding mountains of Lake Biwa converges into rivers, while another portion seeps underground, forming springs that eventually join the rivers, irrigating farmlands, and subsequently flowing into the ancient basin that shapes Japan's largest freshwater lake. Some of these spring outlets are located within private residences, where individuals utilize and safeguard water, engaging in a dialogue with nature through water. With a sense of gratitude towards water, viewing it as sacred, people remain vigilant in their daily activities to avoid polluting downstream water sources.

Water serves as a connector of different scales and bridges the gap between private and public spaces. This living, flowing water is referred to by locals as "living water".

Figure1.4
source:https://www.1zoom.me/

Figure1.5
source:https://kamogawa35.exblog.jp/22516303/

Figure1.6
source:https://www.menehunephoto.net/

Figure1.7
source:https://followingthearrows.com/

1.1.2 location

Lake Biwa is located entirely within Shiga Prefecture,northeast of the former capital city of Kyoto. It is Japan's largest and oldest freshwater lake, with a history spanning over 4 million years.

Covering an area of approximately 670 km2 (260 sq mi), Lake Biwa receives contributions from small rivers descending from the surrounding mountains. Its primary discharge is through the Seta River, which later converges with the Katsura and Kizu rivers to form the Yodo River, ultimately emptying into the Seto Inland Sea at Osaka Bay.Functioning as a vital reservoir for the urban centers of Kyoto and Osaka, Lake Biwa also serves as a crucial water source for approximately 15 million residents in the Kansai region. Moreover, it serves as a significant breeding ground for freshwater fish species, including trout, and supports the pearl culture industry.
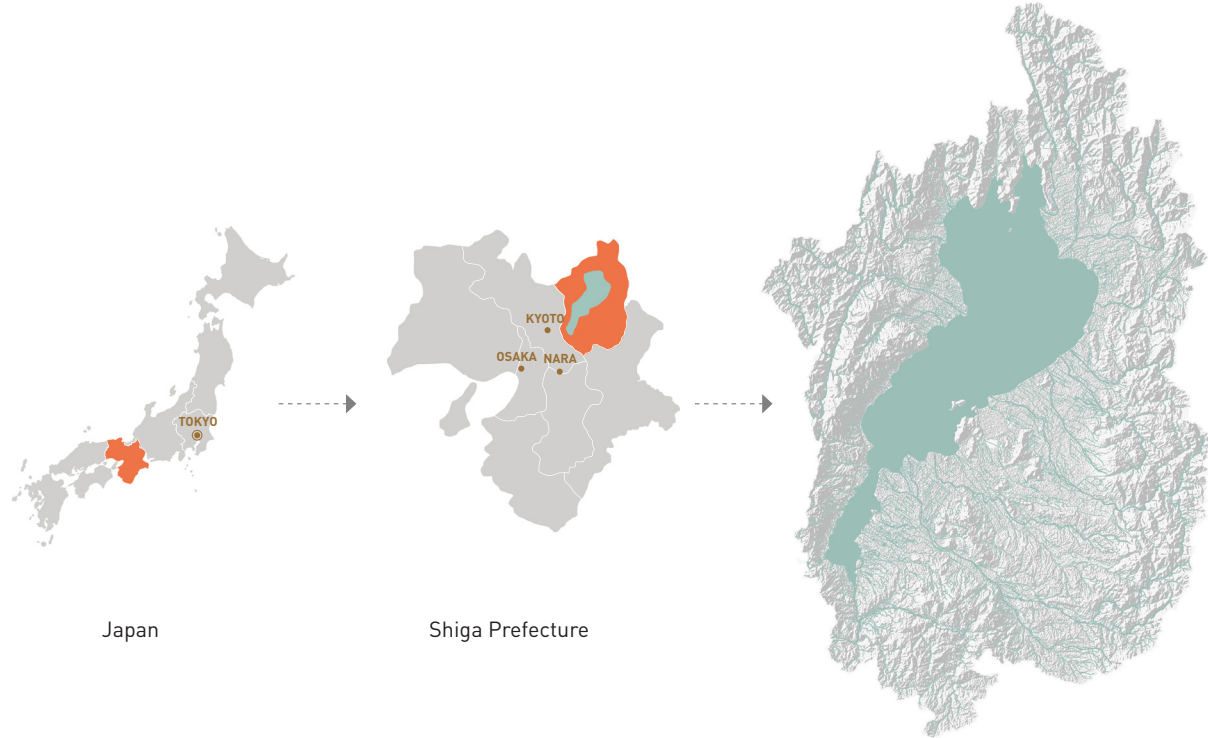

Japan

Shiga Prefecture

Lake Biwa Region

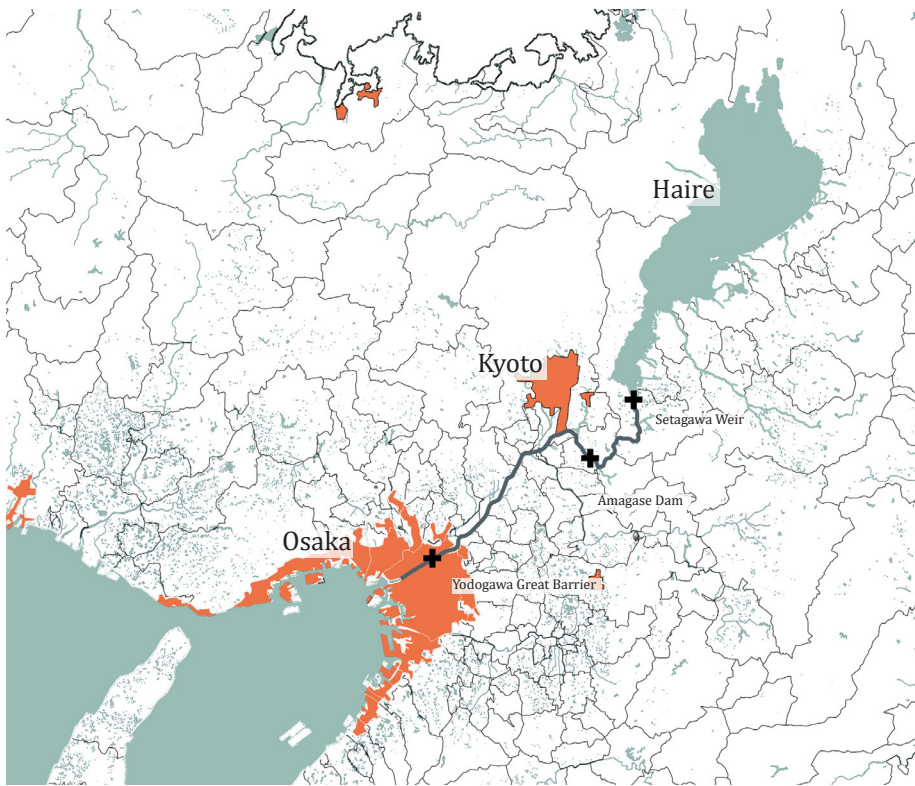Figure1.8 Location of lake biwa
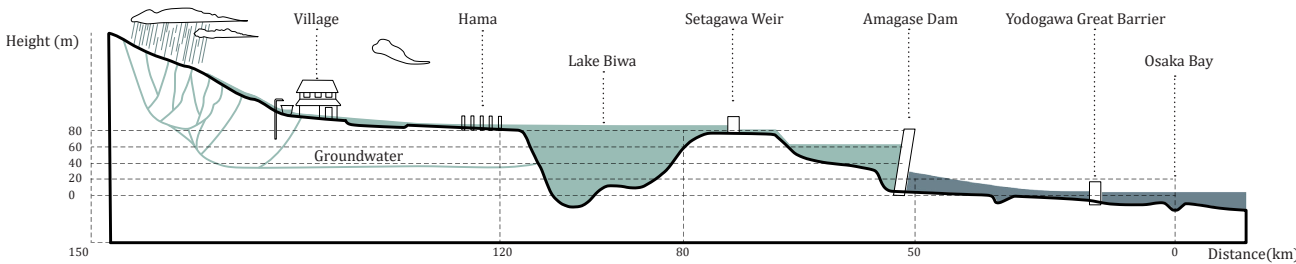

Figure1.9 Structure map of lake biwa basin

Figure1.10 Structure section of lake biwa basin

1.1.3 traditional water system

Biwa Lake to Land Integrated System

The Lake Biwa to Land Integrated System serves as the cornerstone of the traditional water system surrounding Lake Biwa. It encompasses five key components: the water source forests, water heritage villages, rice agriculture providing safe breeding grounds for lake fish, the inner lake serving as a retention area, and Lake Biwa itself. Water interconnects these elements, forming a cyclical water system through evapotranspiration and infiltration, thus achieving ecological equilibrium. Furthermore, various passive fishing methods, such as the "eri fishing method," have been developed, enabling the capture of migrating fish during agricultural activities. This integration of farming and fishing livelihoods enhances food self-sufficiency and promotes sustainable practices.

Legend:
- Water
- Forest
- Water source forest conservation area
- Rice paddies
- Crops (grow on land)
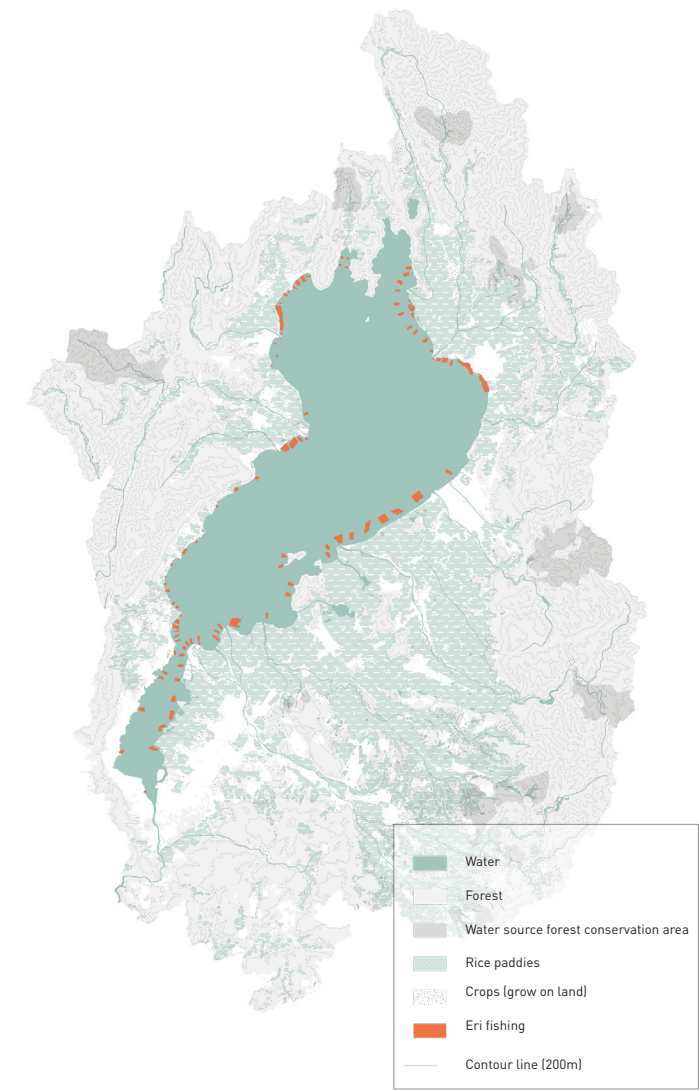- Eri fishing
- Contour line (200m)

Figure1.11 Biwa lake to land integrated system

There is a cycle in which humanity and nature respect each other. People honor nature's preservation, and in turn, nature provides the conditions necessary for human survival. The reeds and willow trees along the inner lake and lakeshore are used as materials for passive fishing and housing construction(figure 1.13 1.14). The sediment from the inner lake nourishes farmland, and the fields and waterways serve as habitats for juvenile fish to mature. This system has been in place for over a thousand years, promoting sustainable resource utilization within the freshwater ecosystem.

The vicinity of Lake Biwa nurtures various traditional customs associated with water. For example, there are practices such as "kabata," "kawato," and "kawaya" which channel river and spring water to village communities for daily use. These practices have been around for generations, representing the enduring rituals and cultural heritage intertwined with water. (Figure 1.12).
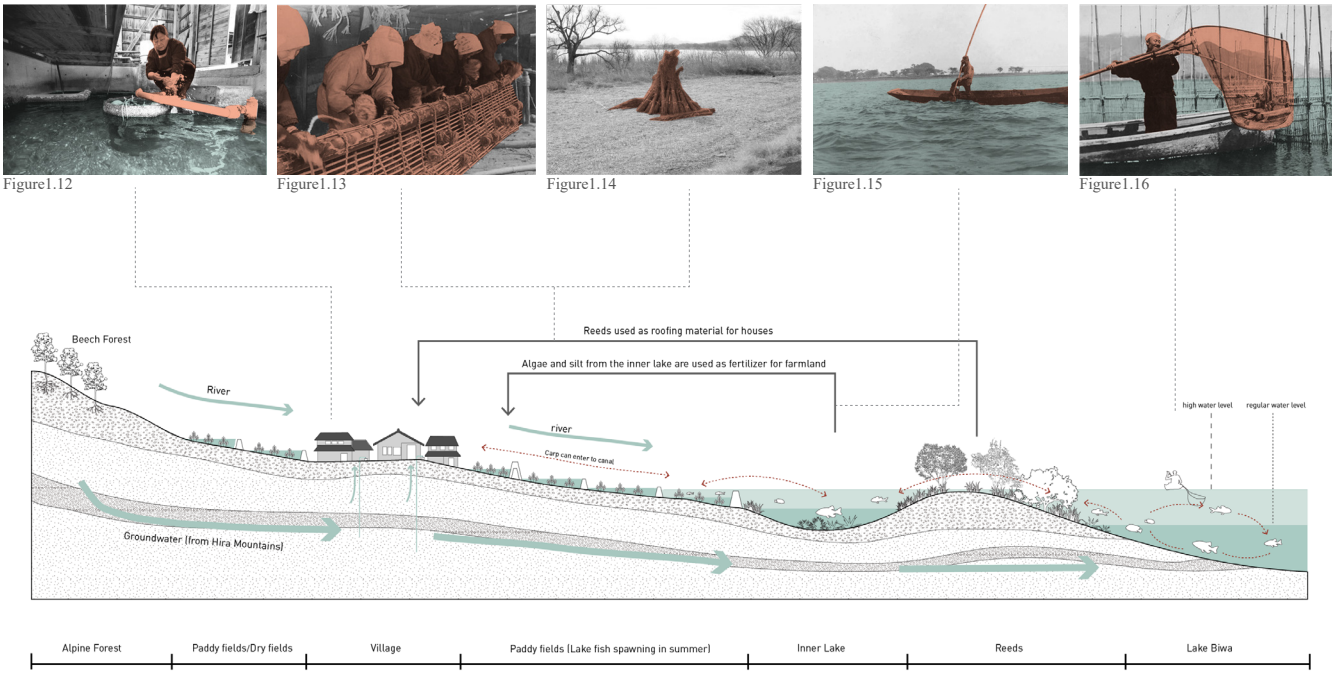

Figure1.12   Figure1.13   Figure1.14   Figure1.15   Figure1.16

Figure1.17 Biwa lake to land integrated system

1.1.3 traditional water system

Kabata Water Heritage

Figure1.18 Kabata water system
source:"Mainichi Japan--Shiga: Land of water"(2016.02)/"Water Culture No. 60--guardian of water"

Figure1.19 Kabata plan and section

A Kabata is a manmade series of pools whereby spring water is channeled into the home and used for daily life, which has been used in the area on the west side of Lake Biwa in the Shiga prefecture(Y.Kamitani,2011). Some Kabata are indoors and some are outdoors. This type of water circulation system constitute a unique ecosystem that has existed for over 300 years.

The "kabata" is typically situated within a wooden hut spanning two to four meters in length. Primarily functioning akin to a private gender-segregated kitchen annex, it is often adjunct to the main dwelling. However, there are also rare instances of communal "kabata," primarily serving residents within the compound lacking individual facilities. Within these structures, basins are excavated beneath ground level and constructed in concrete, integrated with the foundation.

Each Kabata consists of three parts, An area characterized by the emergence of spring water from subterranean aquifers is termed "Motoike," while a reservoir for storing water from the Motoike springs is referred to as "Tsuboike." The locale where water from Tsuboike is directed and where aquatic organisms such as carp are cultivated is designated as "Hataike" (refer to Figure xxx).

The water in the first pond, "Motoike," is considered the purest and is used for drinking and cooking purposes.

The second pond, "Tsuboike," is primarily utilized for washing and cooling vegetables. The third pond, "Hataike," is employed for cleansing large pots or other slightly soiled utensils(Y.Kamitani,2011). Within this pond, carp or other fish consume food residues instead of relying on detergents, ensuring that the water flowing into the watercourse remains clean.There is a pump of each house that draws spring water from the pond into the main house and uses it as water for daily use.

1.1.3 traditional water system

1890 — 1895 — 1900

1910 — 1913 — 1920

1930 — 1935 — 1940

1950 — 1955 — 1960

1970 — 1975 — 1980

1990 — 1992 — 2000

2023

**18th century
Spring Water System Appears**

The remains of Kawabata Yasunari were discovered in the ruins of the middle Yayoi period.

**1905
Setagawa Weir Built**

In 1905, with the construction of the Setagawa Weir, it became possible to artificially suppress the fluctuations in the water level of Lake Biwa, and the transformation of the lakeside area into new rice fields became a reality.

**1943
Land Reclamation**

As World War II dragged on, food became scarce. In Shiga Prefecture, between 1943 and 1971, 16 inner lakes around Lake Biwa were reclaimed, with a total area of 2,152 hectares, and the inner lakes disappeared.

**1965
Government Water Supply**

As water pipes enter every home, the traditional spring water system gradually disappears.

**1972
Lake Biwa Comprehensive Development Project**

To prevent flooding, the lake's shoreline was embanked and an administrative road was constructed on the embankment.

**1977
Soap Movement**

A women-led movement against water pollution, red tides, eutrophication.

**2004
A DVD program about Lake Biwa Beautiful Circular System Was Produced**

A tv program titled "Satoyama: Japan's Secret Watergarden," in 2004 which drew an enormous response from both Japan and overseas. Since then, the region has begun to develop towards tourism, and as a result, conflicts have arisen among different groups of people.

Figure1.20 Lake biwa development timeline
source:https://mainichi.jp/english/articles/ | https://ejatlas.org/conflict/red-tide-in-nanko-south-lake-of-lake-biwa

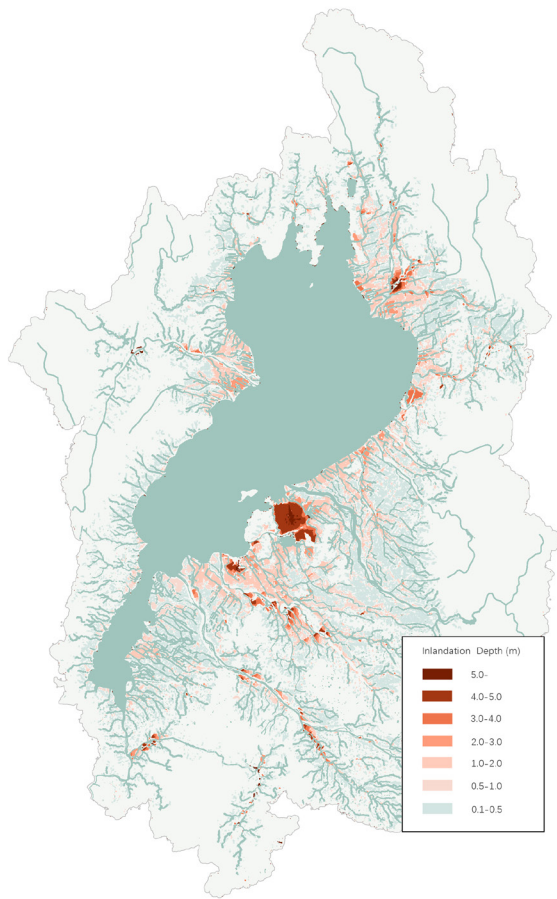# 1.2 Problem Statement

1.2.1 water safety

Figure1.21 Shiga Prefecture flood map
source: https://doi.org/10.1007/978-981-16-6791-6_4

In recent years, the frequency of extreme weather events caused by global warming has been on the rise. In Japan as well, we have experienced numerous unprecedented natural disasters such as large-scale typhoons and heavy rainfall. These disasters, often associated with abnormal weather patterns influenced by phenomena like El Niño, are indicative of the ocean's failure to regulate temperatures effectively (Takashima City Environmental Report,2022).

espite the presence of levees and dams to regulate water levels, the reclamation activities around Lake Biwa during the 20th century led to the disappearance of approximately 75% of its inner lake area, rendering it incapable of serving as a retention area for water storage. Furthermore, due to downstream urban centers such as Kyoto and Osaka, continuous discharge of water downstream is not feasible. This has resulted in the persistence of flood issues in areas adjacent to the main rivers of Lake Biwa.

Figure1.22 2013 Lake biwa catastrophic flood
source:https://www.biwako.info/biwako/277/

1.2.2 ecological degradation

massive degradation of reeds affects the ecosystem
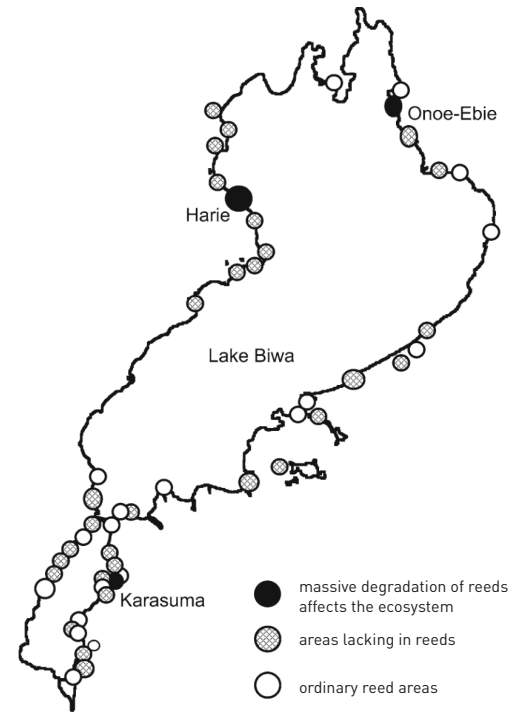
areas lacking in reeds

ordinary reed areas

Figure1.23 Current status of reeds on the lakeshore
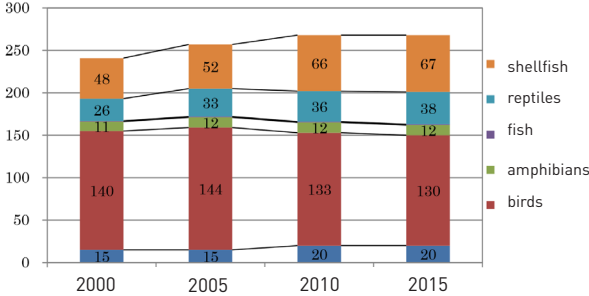source: M.Nishino 2012

Figure1.24 Number of endangered animal species aroung lake biwa
source: M.Nishino 2012

The rapid development of the 20th century, characterized by extensive land reclamation, urbanization, and urban sprawl, directly led to the widespread disappearance of water source forests and fields where aquatic life thrived. This expansion resulted in the significant reduction of reed beds, crucial for the survival of various species, leading to a severe decline in biodiversity and an increase in endangered animal species. Furthermore, while embankments serve the purpose of controlling water levels, they also act as barriers separating humans from nature. Consequently, the once-celebrated Lake Biwa to Land Integrated System lost its core value.

Figure1.24 Lake biwa red tide
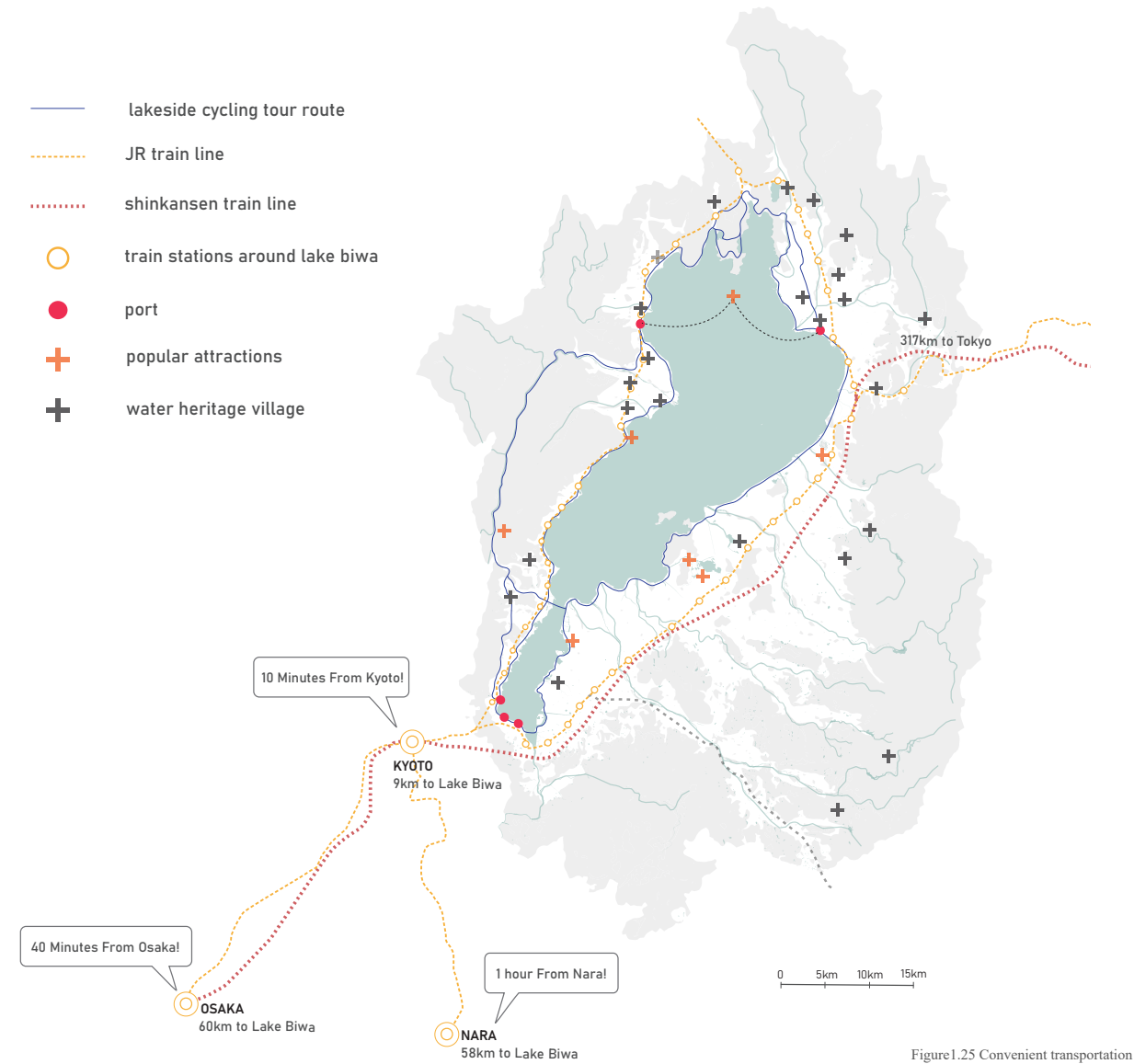source: M.Nishino 2012

1.2.3 influx of tourism

lakeside cycling tour route
JR train line
shinkansen train line
train stations around lake biwa
port
popular attractions
water heritage village

317km to Tokyo

10 Minutes From Kyoto!

KYOTO
9km to Lake Biwa

40 Minutes From Osaka!

1 hour From Nara!

OSAKA
60km to Lake Biwa

NARA
58km to Lake Biwa

0   5km   10km   15km

Figure1.25 Convenient transportation

Lake Biwa, Japan's largest inland lake, boasts abundant natural tourism resources. Its proximity to the major cities of Kyoto and Osaka provides convenient transportation(figure 1.25), offering significant tourism opportunities and allowing visitors to fully experience the hydroculture and water heritage of the villages along its shores. However, at the same time, community tourism, regarded as a "survival strategy" for rural areas in recent years (N. Ando, 2002), has reached an impasse in many villages surrounding Lake Biwa.

Harie village in Takashima City is the birthplace of the Kabata water heritage, attracting nearly ten thousand visitors annually. However, the villagers vehemently deny Harie's identity as a tourist destination, with the phrase "Harie is a residential area and not a tourist destination" prominently displayed on billboards throughout the village(figure 1.26). The Kabata water system is an integral part of residents' daily lives, and the influx of tourists disrupts their tranquility. In efforts to protect their privacy from intrusive tourists, some residents have even considered relinquishing the Kabata heritage. Nevertheless, the number of tourists continues to increase annually, exacerbating this vicious cycle.

The situation in Harie village is not an isolated case. Due to varying degrees of privatization trends observed in the water heritage of many villages surrounding Lake Biwa, this common issue not only significantly impacts the tourism development of these sites but also results in the gradual loss of their place identity amidst this privatization trend.
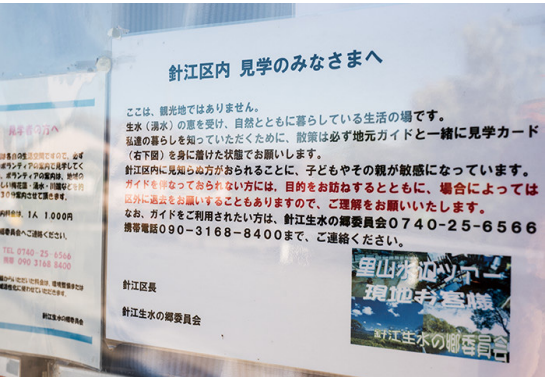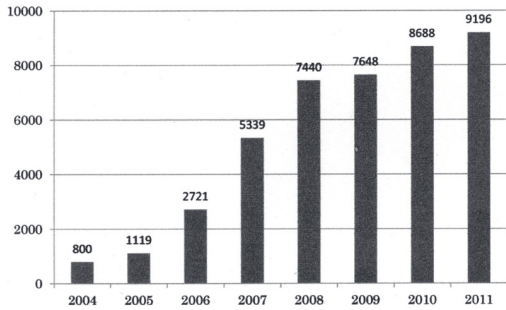

Figure1.26 Warning sign in harie village
source: https://www.mizu.gr.jp/kikanshi/no60/06.html

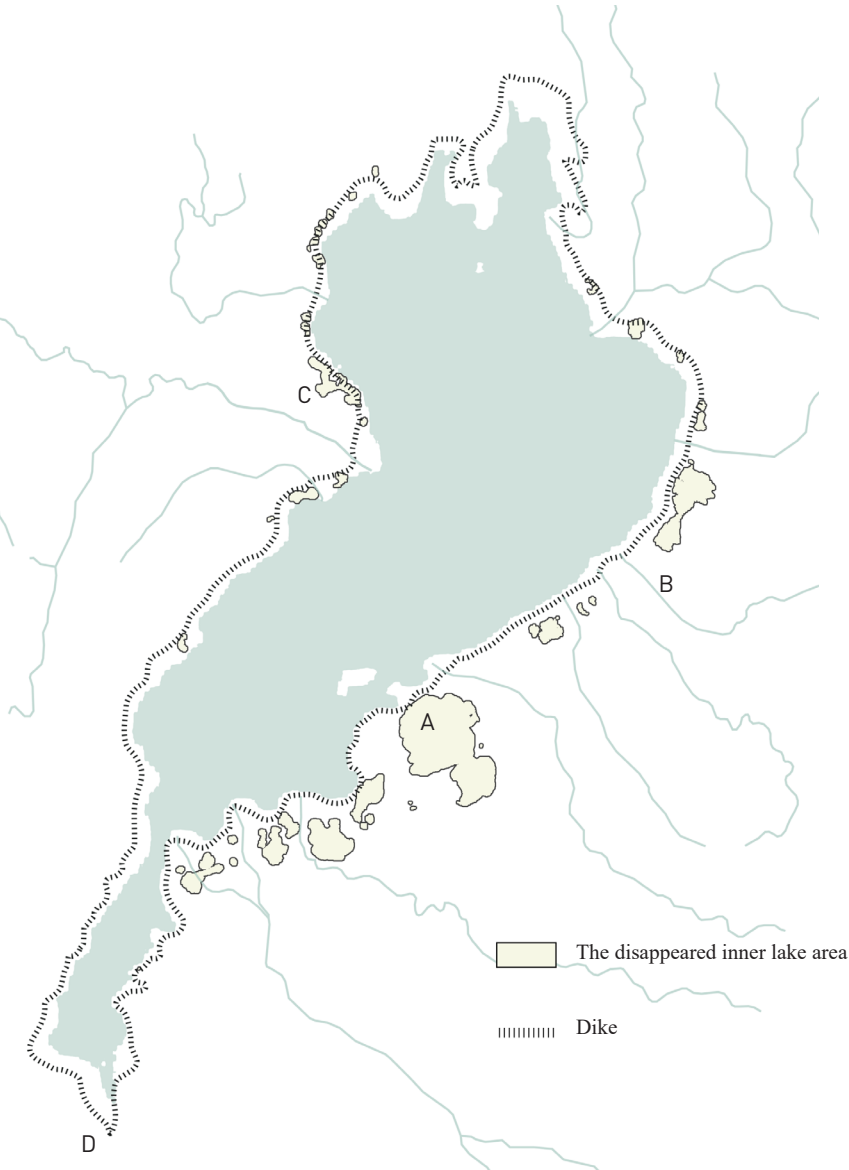Figure1.27 Number of tourists visiting harie village
source: Hiroe Kotani. (2018).

1.2.4 people water disconnect

children were playing in the inner lake

public spring water intake

public spring water intake has been abandoned

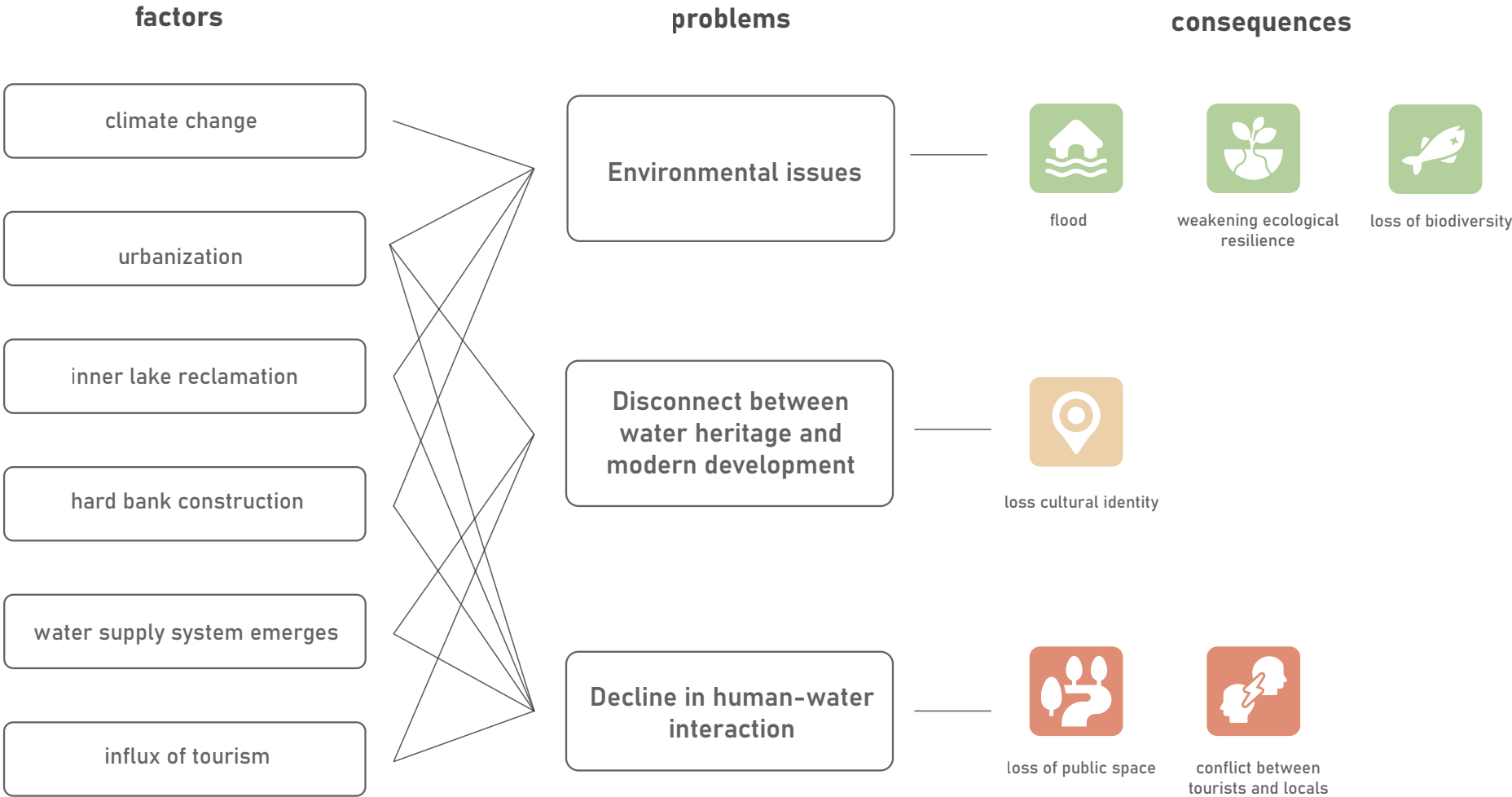public water intake along the canal

marketplace along the riverbank

Figure1.29 Comparing public spaces between the past and present
source: https://www.pref.kyoto.jp/kankyo/rdb/eco/rs/2015rs06.

Figure1.28 Map of the disappearing inner lake

The disappeared inner lake area

Dike

In the past, daily life in the vicinity of Lake Biwa was closely intertwined with water. Reed harvesting along the lakeshore was used to craft various everyday items, while fishing and children playing in the inner lake (Figure A), lively markets along village riversides (Figure D), and people chatting at public water sources (Figure C) were common occurrences.

However, with the process of urbanization, the construction of levees, the disappearance of the inner lake, and the advent of piped water supply, public spaces where people interacted with water have become increasingly scarce, and the barriers between people and nature have grown thicker. Children have lost places to play and splash in the water, and public water sources have gradually fallen into disuse as they are no longer needed, thus losing their value as spaces for social interaction. The entire area has become more closed-off and privatized, with the identity of these places gradually being swallowed up by this trend.

A notable aspect of Lake Biwa is its unique spring water culture, where many lakeside villages utilize mountain springs as their primary source of daily water supply, often integrating them into their homes (Figure C). This distinctive culture has not only served practical purposes but also provided educational value by imparting knowledge about water sources and conservation. However, many such heritage sites are now being abandoned (Figure E) or privatized due to their declining relevance in modern times.

1.2.5 conclusion of problem statement

factors

climate change

urbanization

inner lake reclamation

hard bank construction

water supply system emerges

influx of tourism

problems

Environmental issues

Disconnect between water heritage and modern development

Decline in human–water interaction

consequences

flood

weakening ecological resilience

loss of biodiversity

loss cultural identity

loss of public space

conflict between tourists and locals

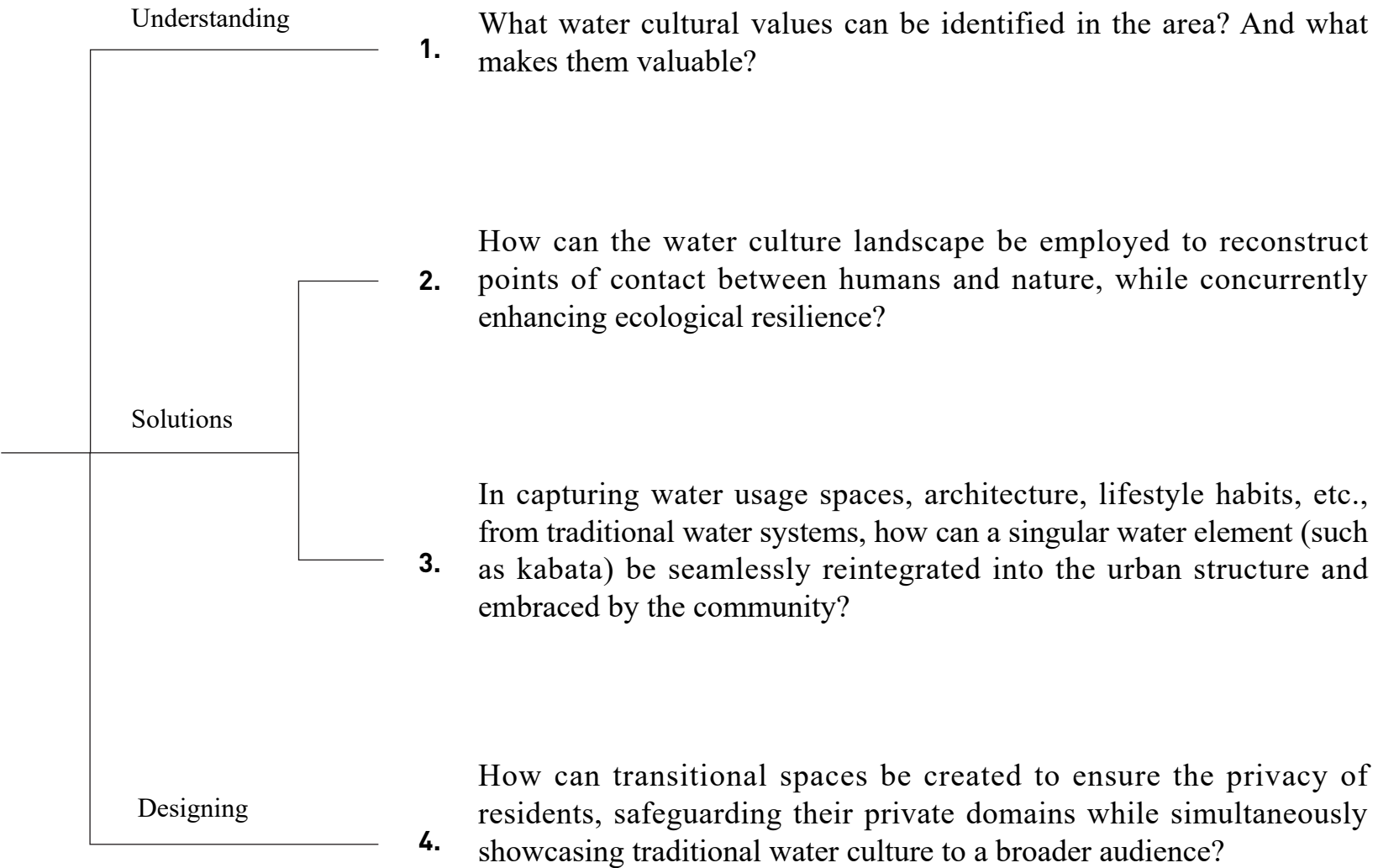Figure1.30 Causes and conclusions of the issue

Based on the research and problem statement outlined above, aligning the factors contributing to the issues with the respective problems will aid in formulating the next steps of design strategy.

The problems at the site can be summarized into three aspects: environmental degradation, mismatch between cultural heritage functions and contemporary urban demands, and scarcity of public spaces for human-water interaction. These three aspects directly result in a multitude of issues such as loss of biodiversity, flood threats, identity loss of the site, and conflicts between tourists and locals.

1.3 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? "

Understanding

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

Solutions

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

3. 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?

Designing

4. 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?

CHAPTER 2.
METHODOLOGY

2.1 Theoretical Framework

Resilience

Resilience is defined as the ability of a system to respond to changes or disturbances without changing its basic state (Walker and Salt, 2006).

In the face of various pressures such as urbanization trends, the challenge for landscape designers today lies in how to enhance resilience and maintain biodiversity in landscapes.

Inclusive Public Space

Historically, nature and the urban environment have been perceived as two opposing concepts. As a society, we often consider humans and our creations as separate from nature. Existing literature and practices indicate that inclusive public spaces are open, accessible, and comfortable for people of different populations and identities (Nadimpalli, 2018). Traditional discussions about inclusive public spaces have centered around humans. However, as landscape architects, a discipline focused on the interaction between humans and nature, it is important to recognize the diverse range of species inhabiting urban areas. Therefore, a truly inclusive public space must incorporate nature into its planning, design, and maintenance.

In my project, I broadly define inclusive public spaces as spaces that serve both humans and fauna, catering to a more-than-human audience. In these public spaces, fauna are not seen as passive or peripheral objects but are considered integral components that contribute to public life. Their presence and interactions are viewed as equally

significant, shaping the landscape. Fauna and humans interact within the same public space, and what was previously considered semi-public spaces, inaccessible to humans, have the potential to become public spaces for fauna activities, such as the symbiotic rice fields in the Lake Biwa region. Conversely, the narrower definition of inclusive public spaces refers to spaces where different human populations coexist, reflected in my site as a space where local residents and tourists overcome barriers and share a common public space. The broad and narrow definitions of inclusive public spaces will be reflected in the scale design of my project.

Figure 2.1 On More-than-human Public Space
source: https://www.ijurr.org

Cultural Heritage Landscape

If heritage is perceived and experienced solely through conservation, it becomes a static object. It needs to be made an active subject, which implies

life in heritage as well as new purposes and new life for abandoned heritage.(Šćitaroci,2019)

Transforming heritage into something that aligns with modern urban development and meets the needs of contemporary society while integrating it with the landscape is a challenge for landscape designers.

Tourism Sociology

The tourism industry is one where "local people can only be accepted without feeling oppressed when there is minimal difference between the lives of tourists and locals" (Miyamoto, 1975). Tourism sociologist Dean MacCannell describes a characteristic of modern tourism whereby tourists are no longer content with staged "pseudo-events" but seek genuine experiences by immersing themselves in the social life of the destination or at least peeking behind the scenes, even intruding into the living spaces of residents.

In recent years, the concept of tourism towns may offer a solution to the challenges posed by the "tourist gaze." "Tourism town development" literally means town development through tourism (Yasumura, 2006). According to sociologist Katsumi Yasumura, the essence of tourism town development can be summarized into two points: "endogeneity" and "sustainability." In other words, "endogeneity" refers to the development of tourism towns from

within, without relying on external resources (Tsurumi, 1996). Another term, "sustainability," refers to the goal of tourism town development. It is not solely focused on revitalizing the local economy but also on preserving and reconfiguring the "ecosystem" and culture of the town, aiming for a balance among the economic, natural, and socio-cultural structures of the town. The objective is to establish a sustainable local society for sustainable development (Yasumura, 2010). The emphasis is placed on town development "centered around local residents" .

2.2 Methodological Structure

method

Mapping:

Mapping is a method to define and represent the territory by bounding and visualizing(James Corner,1999).

Intended to gain a deeper understanding of the site's geology, hydrology, landscape, and other information, in order to logically infer the potential and possibilities of the site.Studying historical maps to derive new types of sustainable water use from the historical water systems. Additionally, using drawings to visualize the textual and data collected from literature, aiding in further analysis to formulate specific strategies. Most of the base map information for mapping in the report was created by the author using QGIS software, with data sourced from various databases including the Japan National Land Numerical Information website, Japan Geospatial Information Authority maps, Google Earth, OpenStreetMap, and the official website of Takashima City Government in Shiga Prefecture.

Literature Review:

Literature research allows for a better understanding of the historical and current state of the site, as well as insights into relevant interdisciplinary theories to advance design. In addition to landscape design literature, inclusive public spaces and tourism sociology also contribute to establishing an understanding of the research topic.

Through literature review and study, the impacts of Shiga Prefecture's development on the Lake Biwa water system and water heritage are compiled. By reviewing relevant policies and urban development plans in the Lake Biwa region, the background and potential directions of the project are understood. Interdisciplinary articles and papers on Japanese public spaces and tourism sociology are explored to identify the causes of site issues and propose appropriate strategies for design.

Multi-scale Networks:

Analysis and design both need to encompass various scales. Mapping at different scales can emphasize different research aspects, reflecting a holistic understanding of the system. This is essential for understanding the overall logic of the narrative.

Analyze and understand the site from regional scale(Lake Biwa), large scale (Shinasahicho, Takashima City) to medium scale (Haire Village),small scale (architectural scale). The design scale and strategy generation mainly focus on regional scale and village scale.

Section:

Cross-sections, by depicting changes in elements such as water, soil, terrain, and the role of biological activities within the system, contribute to a better understanding of the system's cycles.
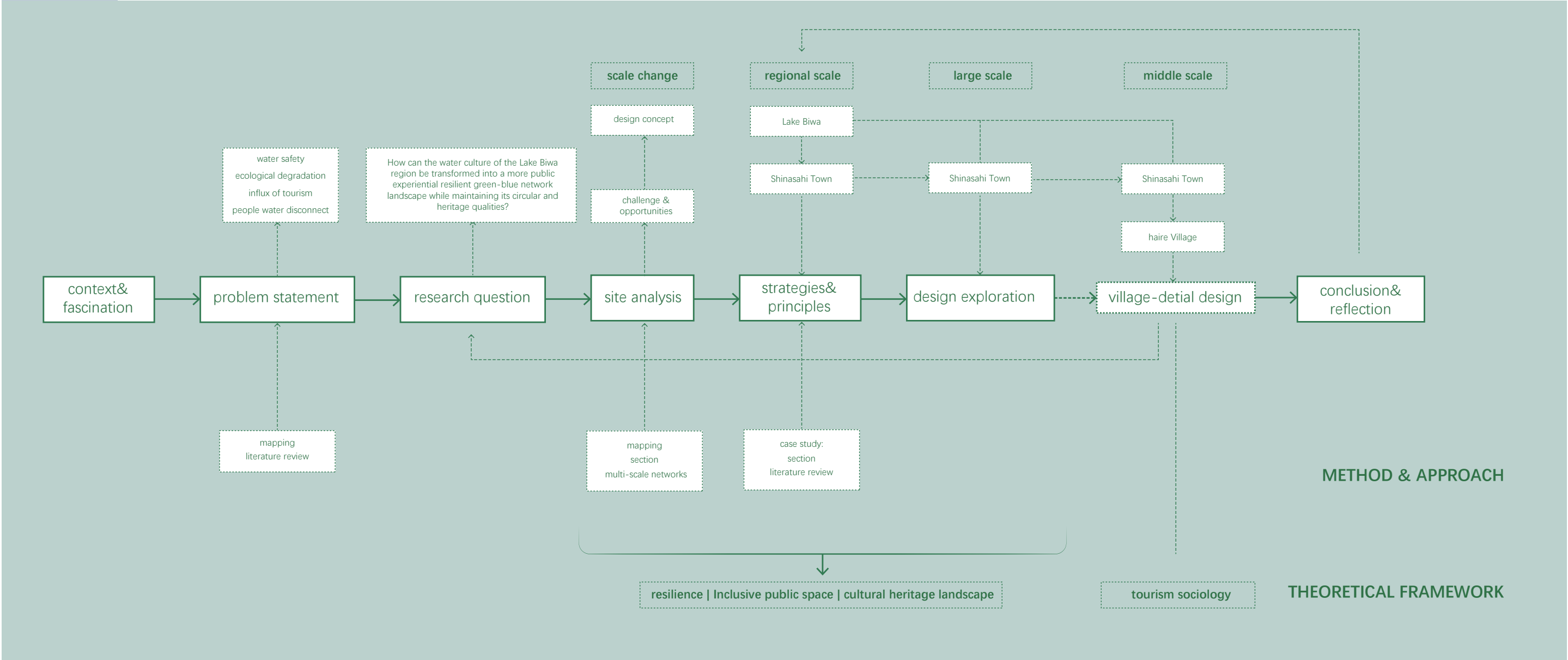
The water culture of Lake Biwa, explored in this article, has evolved from traditional water systems and showcases distinct regional traits. Furthermore, the private origins of spring water culture are intricately linked to the broader environmental context, traditional water systems (regional scale), street conditions and human activities (village scale), and building typologies (building scale) are all expressed through sections.

Case Study:

Case studies aim to learn from the design methods and strategies of similar projects in other contexts, providing inspiration for the current project.

The case study of this project is mainly related to the theories of resilient transitional landscapes and inclusive spaces, focusing on the public space culture in Japan. Through the study of cases, I can reflect on the degree of acceptance of private public spaces in Japanese culture.

2.2 Methodological Structure

scale change

regional scale

large scale

middle scale

design concept

Lake Biwa

water safety
ecological degradation
influx of tourism
people water disconnect

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?

challenge & opportunities

Shinasahi Town

Shinasahi Town

Shinasahi Town

haire Village

context& fascination

problem statement

research question

site analysis

strategies& principles

design exploration

village-detial design

conclusion& reflection

mapping
literature review

mapping
section
multi-scale networks

case study:
section
literature review

METHOD & APPROACH

resilience | Inclusive public space | cultural heritage landscape

tourism sociology

THEORETICAL FRAMEWORK

source：https://www.pexels.com/

CHAPTER 3.
SITE ANALYSIS

3.1 Scale Change

The site for the design is chosen in Shin-Asahi-cho, Takashima City, Shiga Prefecture, for the following specific reasons:

1. This area is the birthplace of Kabata water heritage, with several villages boasting perpetual water heritage, addressing the challenge of reintegrating water heritage into urban structures.

2. Through preliminary research and scale analysis of the lake, this area exhibits issues such as flood risks and ecological disruptions, serving as a focal point for various challenges. Targeted design studies in this area can provide insights for the entire site and other water heritage villages.

3. In preliminary research, this area emerged as one of the most severely privatized regions concerning water heritage, with ongoing conflicts between tourists and locals.

The landscape architects adopt a holistic approach, allowing insights gained from this site to inform strategies for other water heritage villages across the region.

The design will operate across three scales: large scale(Shin-Asahi-cho, Takashima City), Medium sclae (Haire Village), and small scale (Kabata structures). It will gradually address the research questions and sub-research questions.

Lake Biwa

Shinasahi Town

Haire Village

Kabata System

Regional Scale

Large Scale

analysis | design

Middle Scale

analysis | design

Small Scale

design

Figure 3.1 design scale

3.2 Regional Scale

landscape typology

The complex interplay between humans and nature has resulted in a rich tapestry of human landscapes, creating new ecosystems and habitats in urban, rural, and tribal areas. Landscape classification in design serves the purpose of distinguishing natural or semi-natural landscape models based on their physical, biological, or hydrological characteristics and providing sustainable strategies tailored to each model.

In the Lake Biwa region, landscapes can be classified into five categories: forest landscape, river landscape, field landscape, water heritage landscape, and lakeshore landscape. Forest and river landscapes are considered natural landscapes, while field and village landscapes are cultural landscapes, and lakeshore landscape falls under the category of semi-natural landscapes.

forset landscape   river landscape   field landscape   water village landscape   lake shore landscape

forest   field and river   water village   lake shore type

massive degradation of reeds
areas lacking in reeds
plant lake shore (sand and mud)
artificial lake shore
sandy lake shore
gravel lake shore
rocky lake shore
reef lake shore
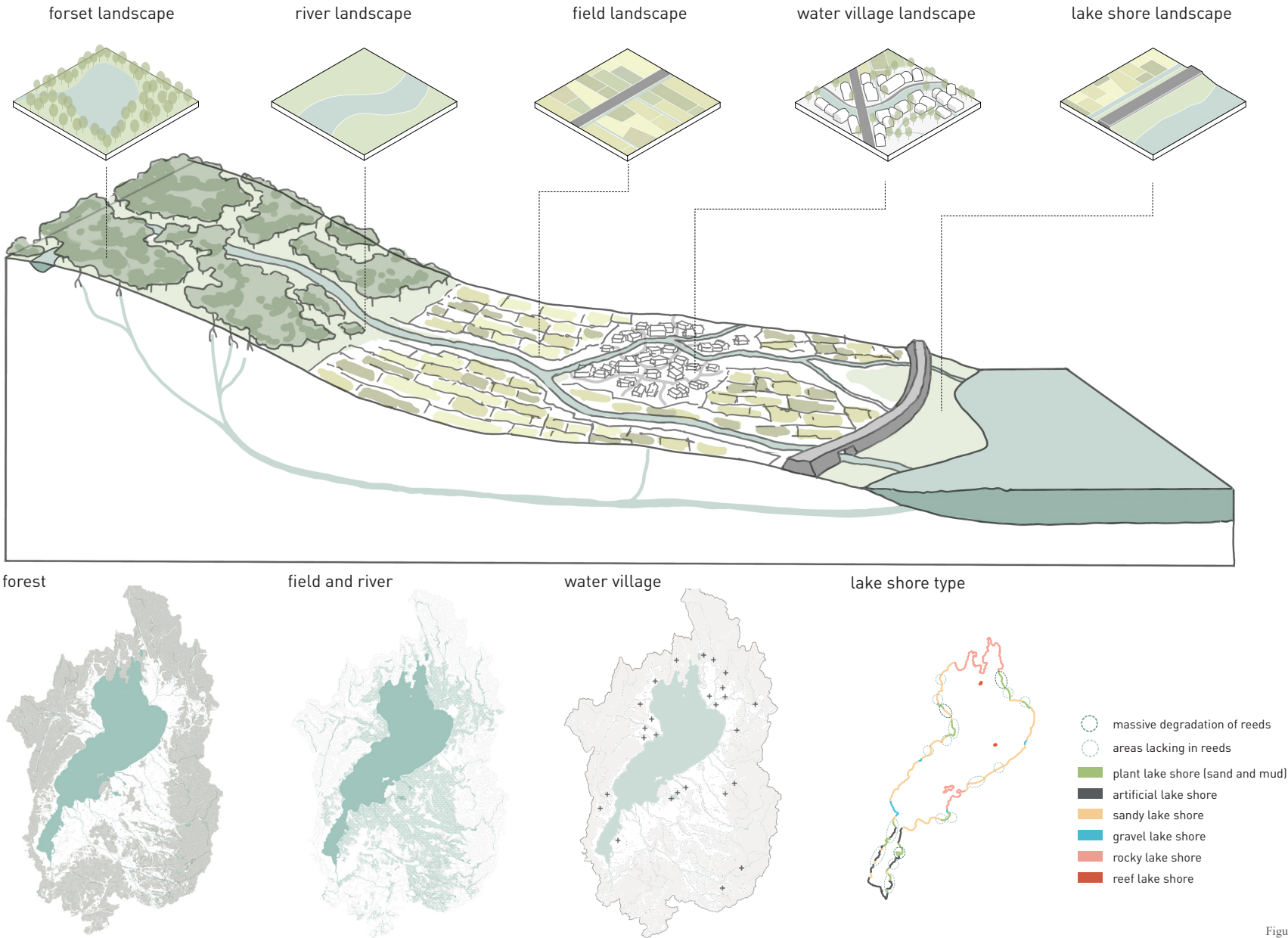
Figure 3.2 Landscape typology

3.3 Large Scale —— Shinasahi Town

current situation
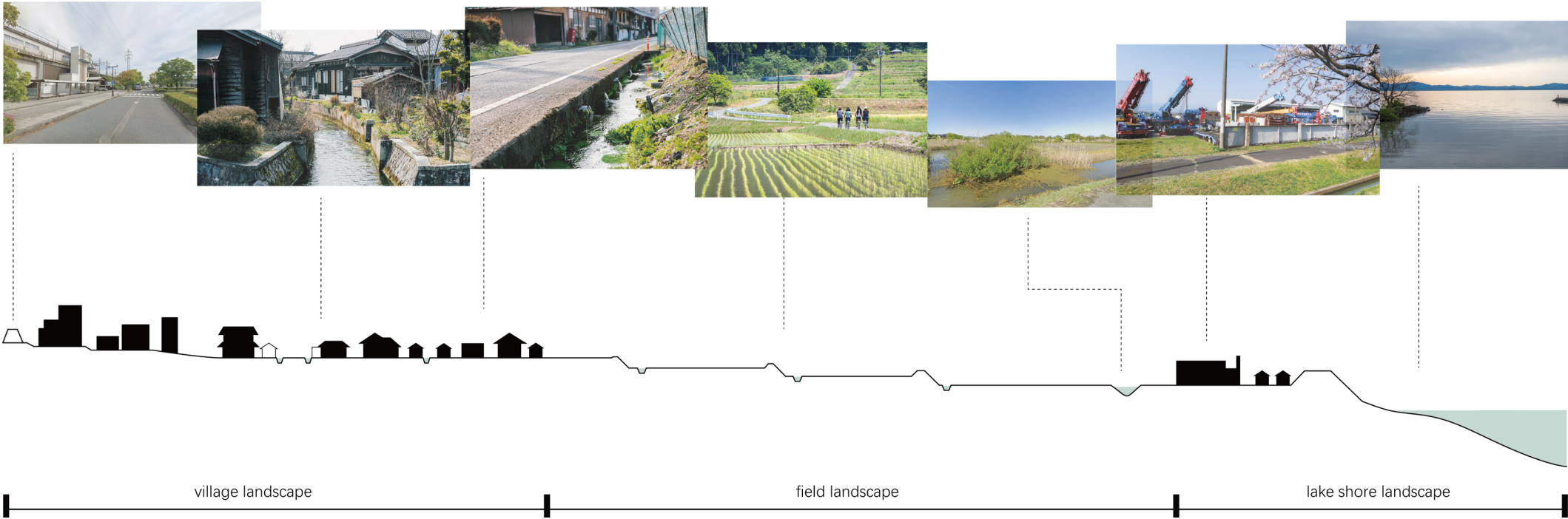
village landscape

field landscape

lake shore landscape

Figure 3.4 Regional landscape typology

This region can be roughly categorized into three landscape types: field landscape, village landscape, and lakeshore landscape. Figure 3.xx illustrates the current status of the area.

water dynamic

water entrance

water entrance

Spring water collects into river

main canal

water from mountains

main canal

current waterbody

historical waterbody

ditch water

0 5 10   20   30   40   500m
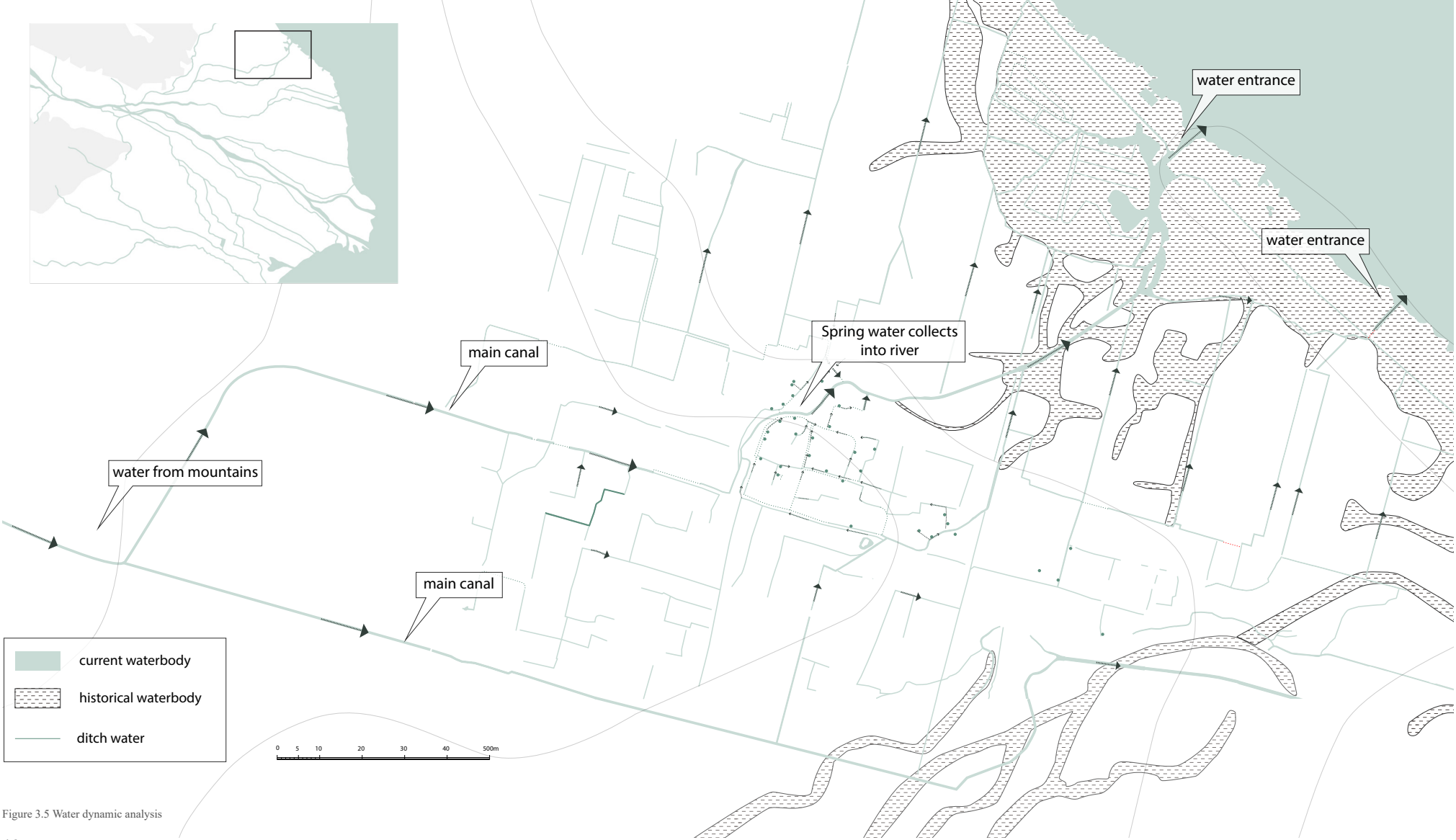
Figure 3.5 Water dynamic analysis

underground water

Rainwater collected in the mountains

canal

village

"kabata" from private house

farmland

paddy filed

Street ditch

Main waterway

Field ditch

rain water

rain water

Lake biwa
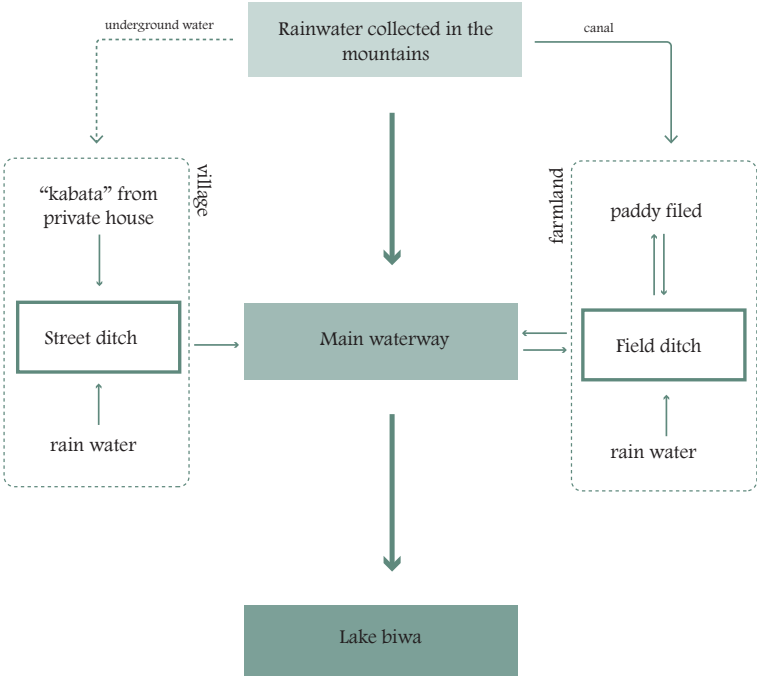
Figure 3.6 Systemetic water network

The water in this area mainly originates from mountain forests, where a portion of rainfall is stored in underground aquifers through the root systems of forest trees. This groundwater is then supplied for domestic use through spring systems. Some of this water is channeled into farmland, serving the dual purpose of purifying the fields and providing irrigation during the dry season. Another portion of water collects on road surfaces, forming streams and creeks. Some of this water is also channeled into farmland. Ultimately, both parts of the water flow into rivers and eventually into Lake Biwa.

Historically, there were many rivers and water bodies near Lake Biwa. However, due to current construction practices, only two rivers remain. During heavy rainfall seasons, there is a significant risk of flooding farmland and villages.

learn from traditional water system

After clarifying the operational dynamics of the site's water system, I conducted a comparative analysis of the historical and current overall systems and public space conditions, as illustrated in the diagram. The once inland lake wetland area has been transformed into industrial facilities and residential housing. This transformation has resulted in the loss of habitat for various animal species, such as lake fish, waterfowl, and pond turtles. Additionally, for humans, the loss of shared public spaces for aquatic activities and the increasing risk of flooding are notable challenges.

Drawing from past experiences with water systems and considering the current state of urban development, potential design directions for the future are proposed.

Current

flood risk
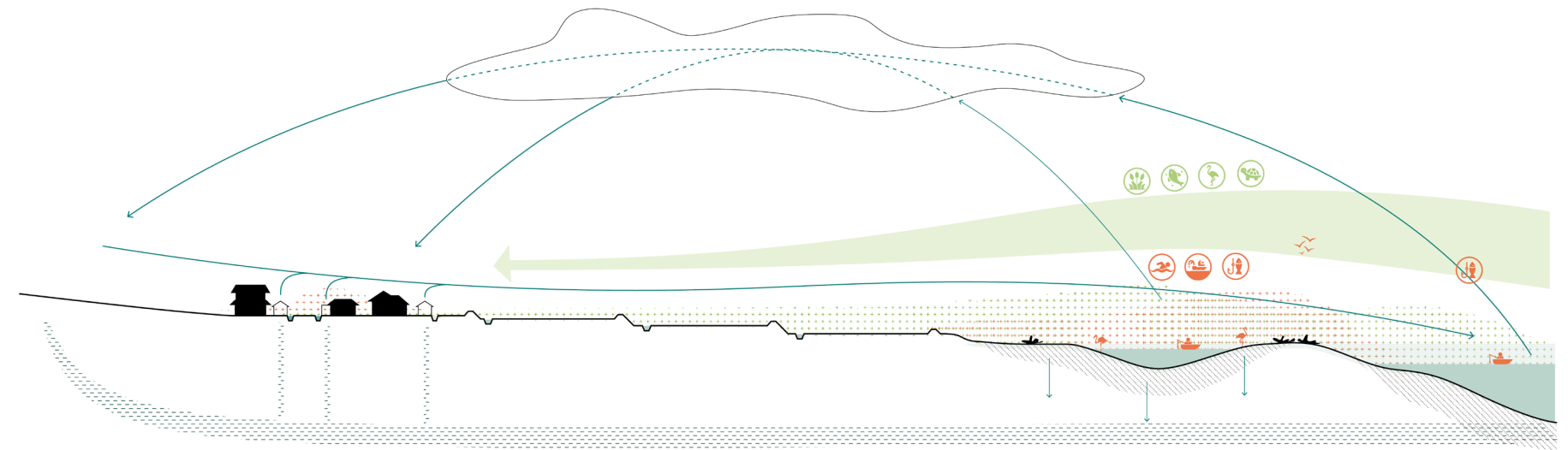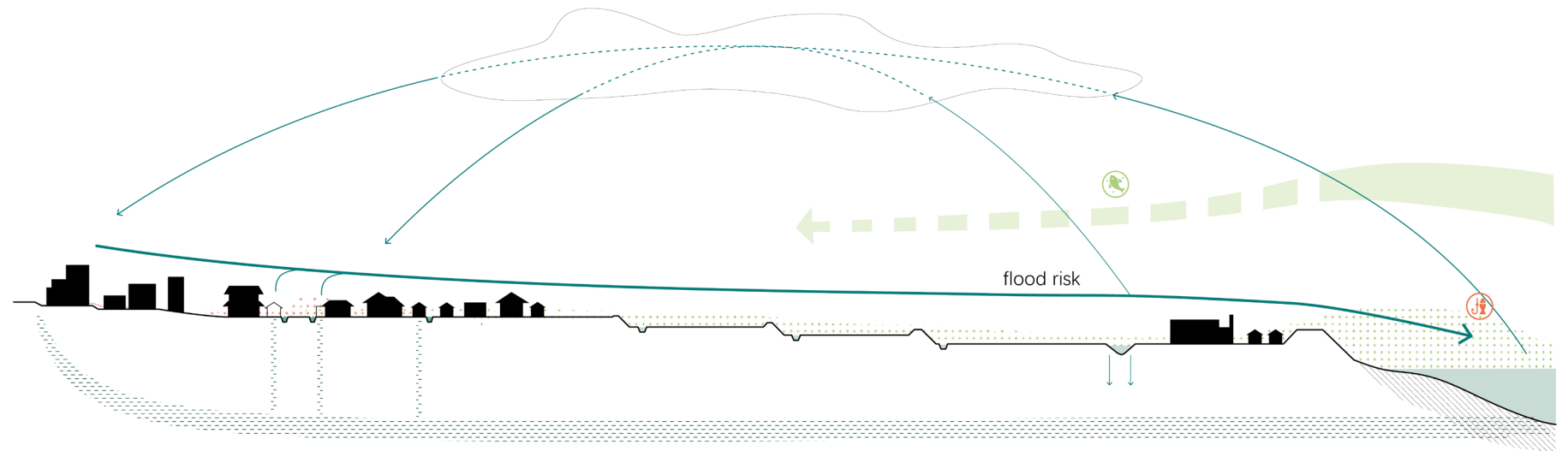
Figure 3.7 Current situation section

blue-green network status

Figure 3.8 Current green blue structure

Legend:
- dry field
- paddy field
- green wasteland
- wetland
- urban forest

urabn forest

wetland

green wasteland

Figure 3.9 Current situation section
source:https://papersky.jp/en/shiga-lake-biwa/ | Google map

The agricultural landscape in this region comprises dry fields and paddy fields, with the latter historically known as the fertile grounds for fish spawning in Lake Biwa, earning it the reputation of being a land of plenty. However, due to the construction of dikes and the expansion of paddy fields, more and more fish are forced to spawn along the lake's edge, making them vulnerable to predation by waterfowl, consequently leading to a decline in fish populations.

Currently, there is limited existing green space, primarily consisting of overgrown, wild green areas, with poor accessibility to inland and lakeside wetlands. Overall, there is minimal public green space available for human activity, lacking a cohesive green infrastructure to connect villages with the lakeshore, resulting in poor ecological benefits.

land use

Figure 3.10 Current land use map

Legend:
- dike
- village
- field
- wasteland
- wetland
- farmland house

1. Abandoned plots possess the potential for transformation into public green spaces.

2. Rigid dikes obstruct the migration of biological communities, thus impeding ecological diversity.

3. Lakeside factories exert negative ecological impacts, disrupting ecological connectivity.

soil

read soil

brown lowland soil

peat soil

gley soil

current peat paddy field

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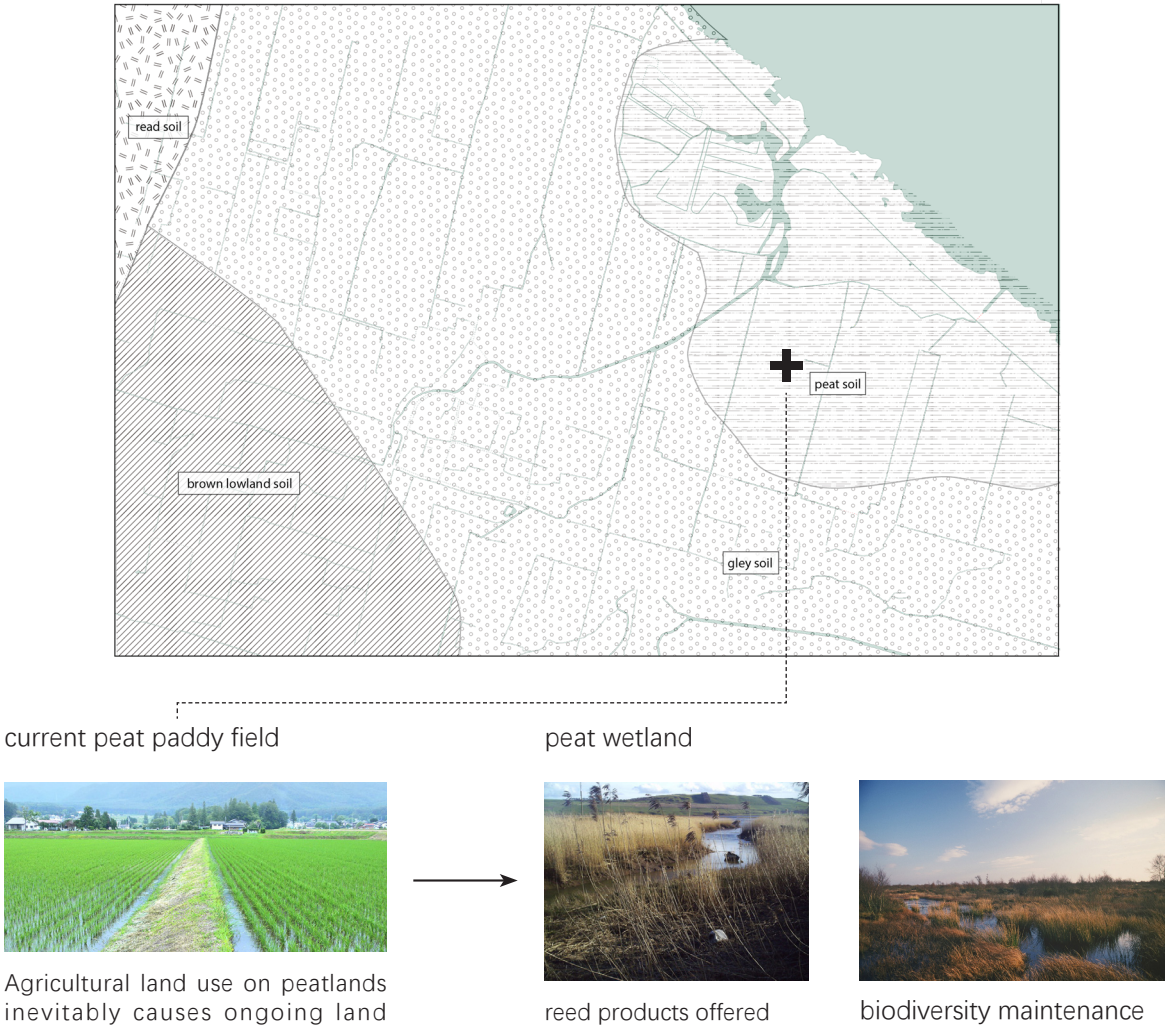
Agricultural land use on peatlands inevitably causes ongoing land surface subsidence resulting in a reduction of productivity.

reed products offered

biodiversity maintenance

Figure 3.11 Soil typology
source:https://zh.wikipedia.org/ | https://www.linkedin.com/posts/julian-ellis-brown-5b8871125

public-mobility analysis

Figure 3.12 Mobility & Public analysis
source:Google map

Legend:
— county road
— two-way road
···· one-way road
▮ potential public/ semi-public spaces
⭕ public space
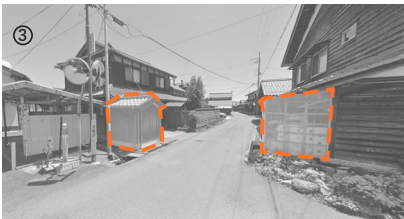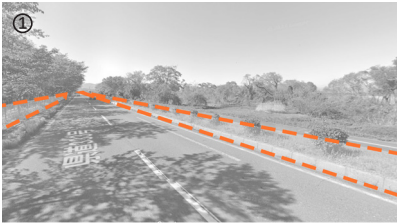
Analyzing the existing public spaces on the site, it's evident that most of them are religious sites such as shrines and temples. While these places hold certain heritage value, they are common throughout the entire Lake Biwa basin and do not stand out as unique attractions on the site. As Shin-Asahi Town attracts tens of thousands of visitors annually, these public spaces are clearly insufficient to accommodate such numbers. The influx of tourists into villages with water heritage (Photo 2) inevitably leads to conflicts with local residents who consider water resources as private assets.

Furthermore, as residents, apart from daily religious rituals, access to urban forests (Photo 3), inland lake landscapes (Photo 4), and Lake Biwa shoreline vistas (Photo 5) is restricted by fences or barriers. Although these spaces technically belong to the category of green public spaces, they are inaccessible to the public. Reopening these areas and adding public facilities not only alleviates the pressure of tourism on villages and provides activity spaces for people but also serves an ecological educational purpose.

Figure 3.13 Village landuse analysis

3.4 Medium Scale —— Haire Village

haire spatial analysis

- ⊕ public space
- 🟧 public heritage
- ▫ built
- ▪ industries
- ▤ abandoned land
- ▦ farmland
- ▪ private
- ▪ semi-public
- ▫ public

Figure 3.15 Religious public places
source:Google map

Figure 3.14 Public typology analysis

An analysis of the land space of Haire Village shows that the Hair River, as the main river, divides the relatively compact village pattern. Most of the public spaces in the village are ancillary spaces of shrines, temples and other religious places, and the public activity space is relatively barren. The village's famous kabata heritage is a private space, and the kabata that tourists can visit is very limited.

As a water heritage village visited by more than 10,000 tourists every year, Haire Village is extremely closed.

kabata typology
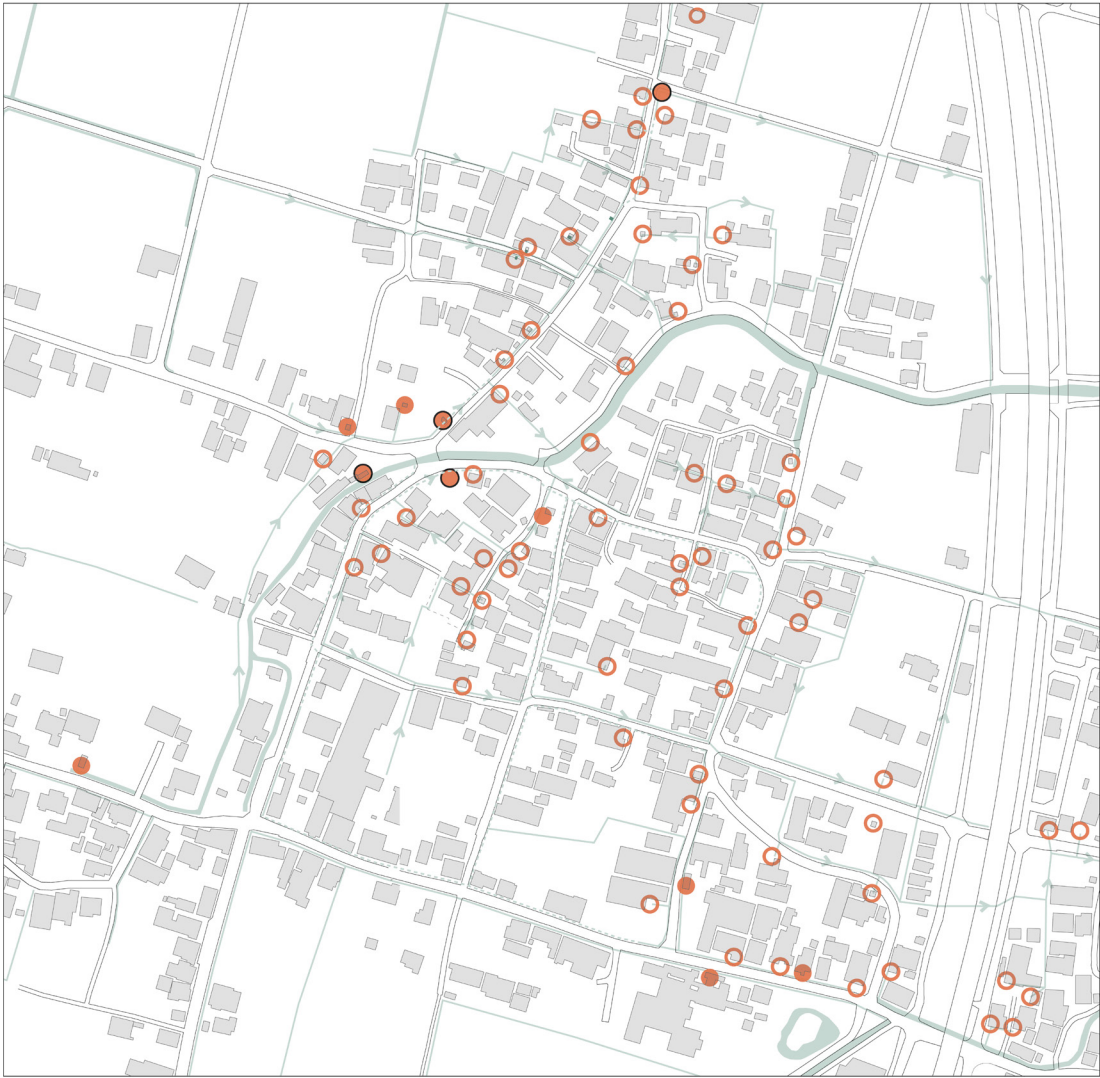
Figure 3.16 Water heritage kabata analysis
source:Google map

Legend:
- canal
- ditch
- invisible ditch
- ○ private kabata
- ● public kabata
- ⬤ public kabata (abandoned)
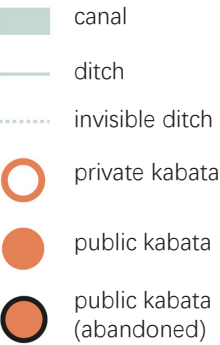
public kabata

waterway type
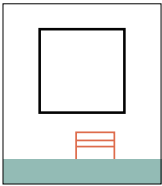
outdoor independent type
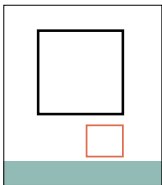
private kabata
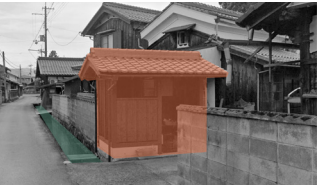
independence within the house type
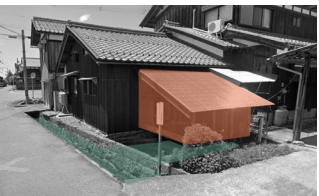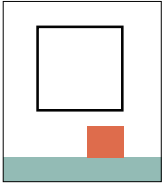
attached house typetype
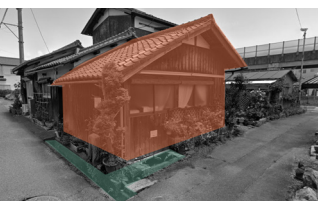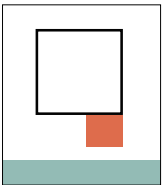
internal type
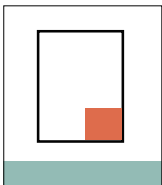
The Kabata heritage in Haire Village can be categorized into two main types: public Kabata and private Kabata.

public kabata:

1. Waterway type
This type of Kabata primarily serves villagers without Kabata facilities at home for water collection and usage. Historically, the riverside was a primary location where women gathered to wash clothes and socialize. However, with the introduction of government piped water supply, this type of Kabata has gradually disappeared. Currently, only one such Kabata remains in Haire Village.

2.Outdoor independent type
These types of Kabata were once attached to residences and were left behind when the original occupants moved away, most of which have been abandoned.

private kabata:

1.Independence within the house
The Kabata stands alone as a small house, connected to the main road's ditch.

2.Attached house typetype
The Kabata is connected to the main house and is typically situated at a distance from the main road's ditch.

3.internal type
The Kabata is annexed to the main house, making it the most enclosed space in terms of spatial arrangement.

haire street typology

The street profiles can be cataloged in three main typologies by function and width.
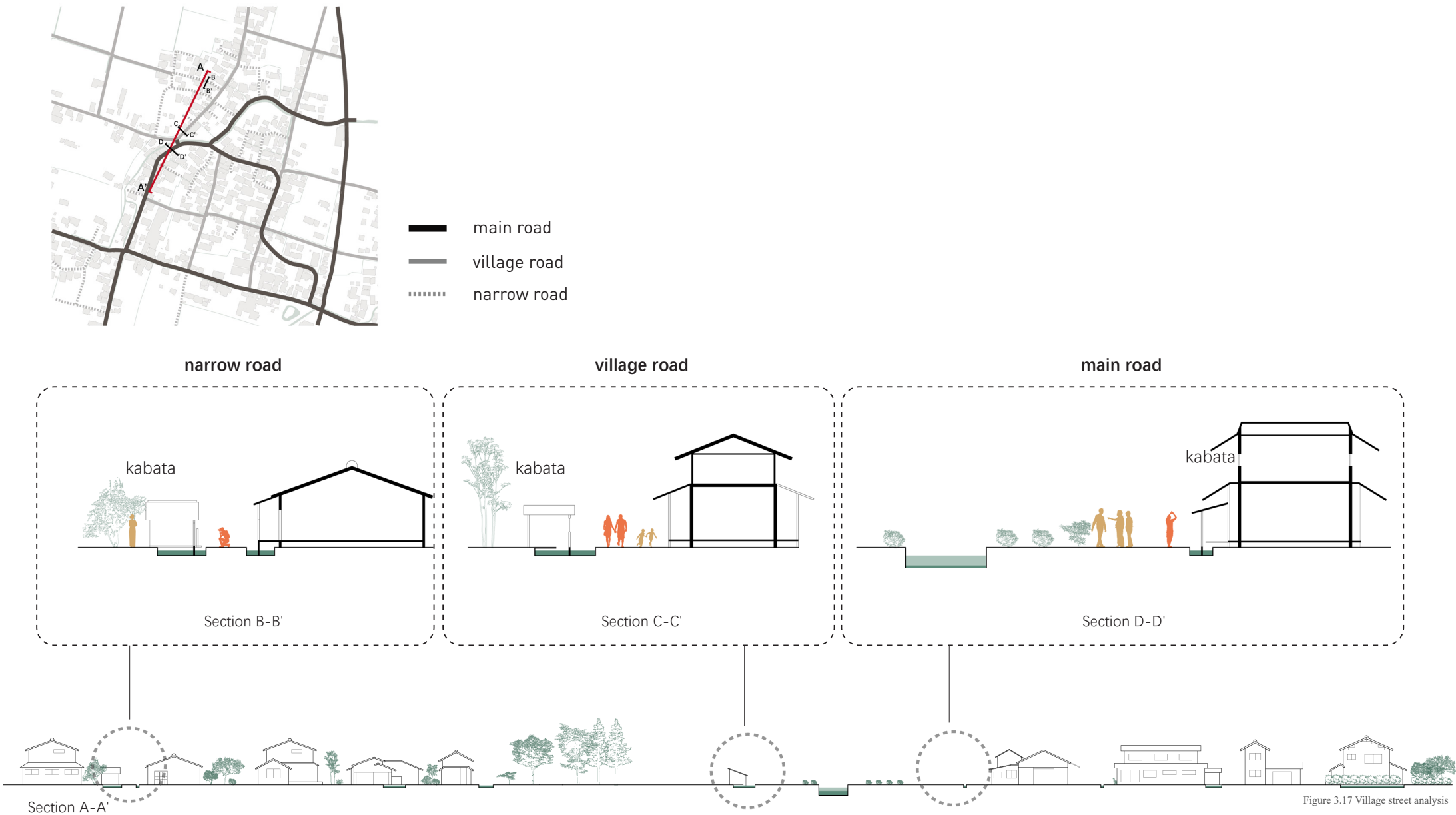
1. Main street profiles.

Main streets range in width from 5 to 7 meters and serve as the primary thoroughfares for the village. However, due to the absence of public parking spaces, vehicular traffic is minimal. In the evenings, the main streets along the riverbank transform into social hubs for local residents.

2. Village street profiles.

Village roads, with widths between 3 and 4 meters, typically feature ditches on either side. These ditches serve as channels for collecting spring water from kabata in various households, and during the summer, one can often spot fish swimming in them.

3. Narrow street profiles.

Narrow roads, generally ranging from 2 to 3 meters in width, may have ditches along their sides, although in some cases, the ditches are partially covered by the road surface due to the narrowness of the road.

main road
village road
narrow road

narrow road
kabata
Section B-B'

village road
kabata
Section C-C'

main road
kabata
Section D-D'

Section A-A'

Figure 3.17 Village street analysis

CHAPTER 4.
SITE OPPORTUNITIES

4.1 Policy Background

4.1.1 inner lake regeneration vision

Since ancient times, the inland lake has been an integral part of daily life for the surrounding communities. The water from the inland lake has been used for domestic and agricultural purposes, and the streams (waterways) centered around the inland lake have served as transportation routes. Additionally, the inland lake has played a crucial role as a spawning ground for local fish species (primarily carp) and as a breeding ground for fish fry and fingerlings. The aquatic plants and lake sediment from the inland lake have been utilized as fertilizers for land, making the inland lake a core component of the local social infrastructure. However, due to policies aimed at increasing food production during wartime and post-war periods, the inland lake was reclaimed and converted into farmland, resulting in the disappearance of approximately three-quarters of its total area over several decades. The functions that the inland lake once possessed have significantly declined. （Overall Vision for Innerlake Regeneration，2013）

In light of these considerations, the overarching vision for the revitalization of the inland lake is based on rediscovering its functional value and ensuring physical connections between Lake Biwa and the inland lake, as well as the entire watershed, including the upstream rice fields. Through these efforts, we aim to restore the original functions of the inland lake, revive the rich ecosystem originally associated with the pairing of the inland lake and Lake Biwa, and foster better relationships between the inland lake, Lake Biwa, and

the people. It seeks to achieve sustainable social growth by leveraging local resources and showcasing the pathways to achieving this goal.

Policies for restoring the functions of the inland lake will be guided by emphasizing three core values: 1. The value as a natural environment and ecosystem, 2. The value as a buffer zone between Lake Biwa and the inland lake, and 3. The value as a lifeline supporting human life. By restoring the inland lake, we will rejuvenate a diverse ecosystem, including native fish species and rare flora and fauna, bring people closer to the inland lake, and improve the relationship between Lake Biwa and the inland lake. Policies will utilize local resources to build relationships and contribute to social development.

Step 1: Rediscover Value
Step 2: Regenerate Functionality (Connecting Places)
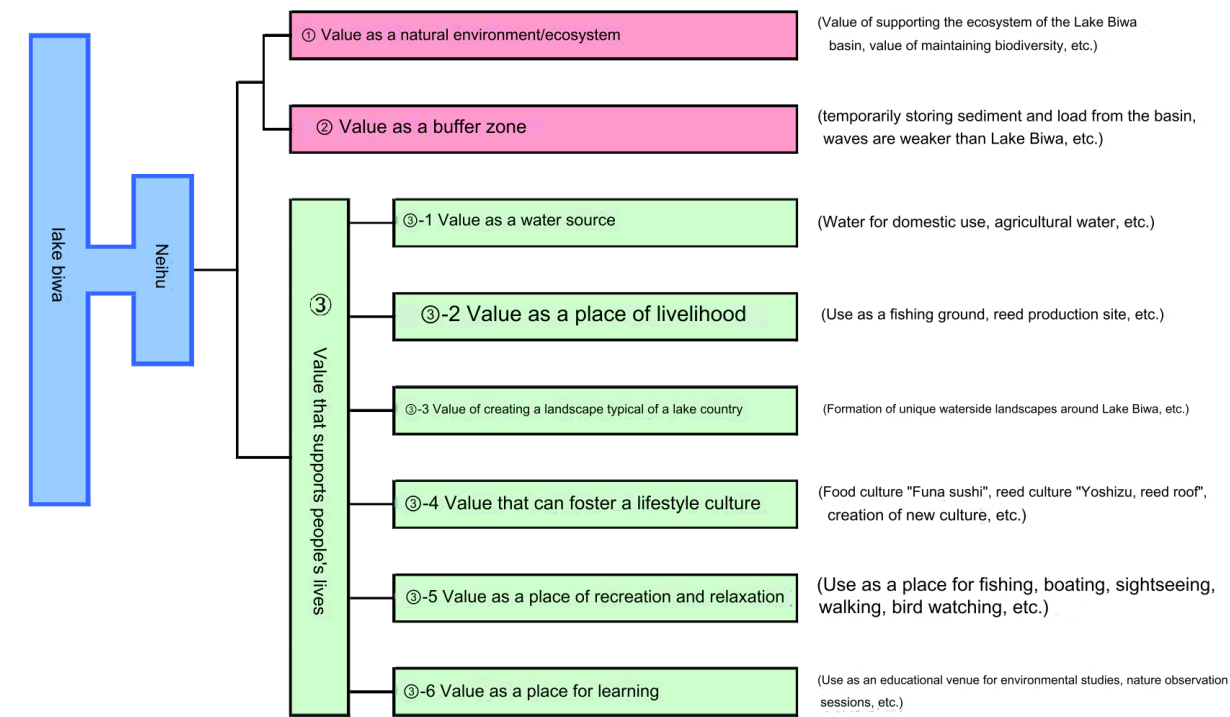Step 3: Manifest Results (Increased Value, Active Fish)
(by 2050)
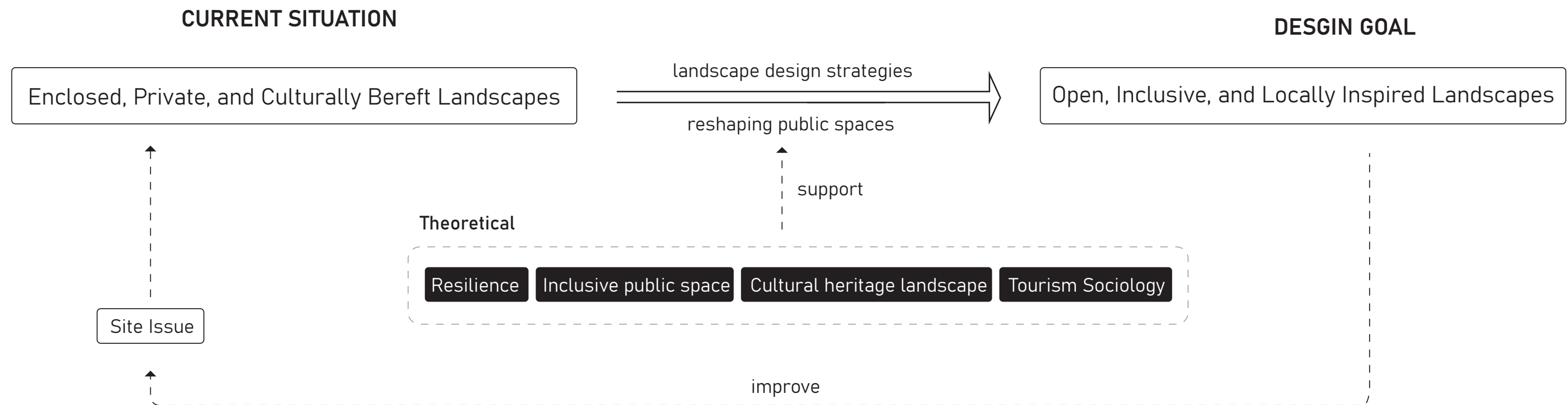

Figure 4.1 Inner lake value

4.2 Design Assignment

CURRENT SITUATION

DESGIN GOAL

Enclosed, Private, and Culturally Bereft Landscapes

landscape design strategies

reshaping public spaces

Open, Inclusive, and Locally Inspired Landscapes

support

Theoretical

Resilience — Inclusive public space — Cultural heritage landscape — Tourism Sociology

Site Issue

improve

Figure 4.2 Design assignment diagram

4.3 Case Study

Azenha do Mar

Azenha do Mar is a Portugues fishing village. it has beautiful landscape resources, it is also facing the problem of population decline and economic activity reduction. The project connects work production with relaxation by reimagining identities such as fishermen, farmers and tourists, giving them new dual identities, blurring the lines between locals and tourists creating new networks of economic activity and distributing public facilities throughout the town.
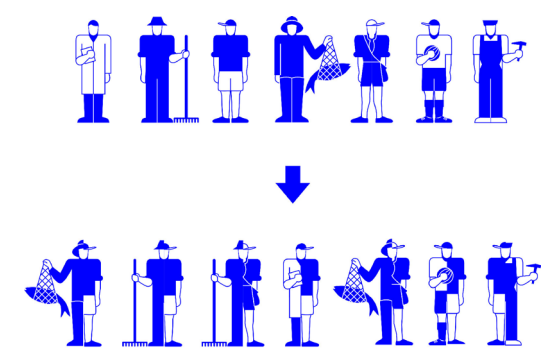
Figure4.3 Reimagine the new identities of villagers and tourists
source: https://areaoffice.gr/projects/amphibia

Besides, based on traditional housing types, new mixed housing is introduced to serve different groups of people.

This project demonstrates how to transform private resources into public resources and integrate local characteristics into new urban development through community engagement, town planning and innovative design.

Figure4.3 Reimagine the new identities of villagers and tourists
source: https://areaoffice.gr/projects/amphibia

CHAPTER 5.
STRATEGIES & PRINCIPLES

5.1 Design Concept

Based on site analysis and theoretical support, the design principles aim to create inclusive public spaces, mapping the site into two dimensions.

1. Inclusive Public Spaces for Fauna:

Establishing a robust blue-green network and designing a gradient landscape from urban areas to lakes, creating more green public spaces for various animal communities. Some of these spaces can also serve as semi-public or public areas for humans, fostering environments for interaction between people and nature.

2. Inclusive Public Spaces for Different Group of People:

Reopening lakeside green spaces to create attractive public space networks while alleviating tourism pressures on heritage villages.

Introducing heritage public spaces or semi-public spaces within villages to prevent excessive intrusion into residents' privacy by tourists, fostering harmonious spaces for coexistence between tourists and residents. This design dimension primarily manifests at the village scale.

Inclusive Public Space

Inclusive public spaces for fauna
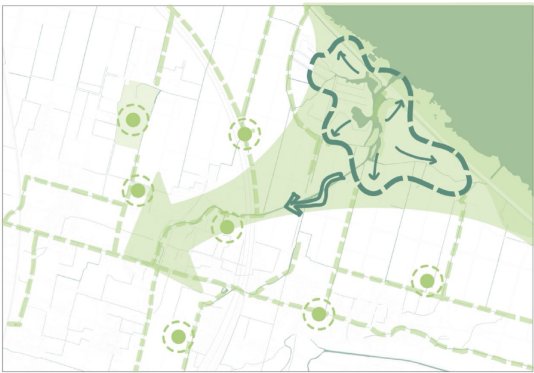
create a robust blue-green network

Inclusive public spaces for different group of people

create a complete public space system network

Figure 5.1 Design principle

5.2 Design Tool Box

Based on an analysis of the current site conditions, potential, policies, and case studies, I have formulated specific strategies aimed at creating inclusive spaces.

1. **Establish a resilient blue-green network:**
In developing the blue-green network, I categorize measures into four aspects: water systems, green networks, green energy, and wildlife corridors. These efforts are dedicated to enhancing overall ecological connectivity, promoting ecosystem balance, and increasing retention areas to mitigate flooding issues.

2. **Develop a comprehensive public space system network:**
For the construction of the public system network, I categorize measures into three aspects: public spaces, low-traffic systems, and building transformations. This initiative aims to create valuable public spaces, revitalize and connect traditional water heritage, emphasize site identity, and foster harmonious spaces for both visitors and residents.

This system establishes connections between villages, farmland, and lakeside landscapes, creating a comprehensive and inclusive public network comprising production spaces, residential areas, and ecological functions.

Inclusive public spaces for creature

create a robust blue-green network

WATER SYSTEM

inner lake as rentention area

re-meander river

widen ditch

GREEN NETWORK

green corridor

green patches between villages

reed regeneration

heritage conversion private eco-yard

GREEN ENERGY

solar energy

reeds as biofuel

GREEN CHANNEL

animal corridor
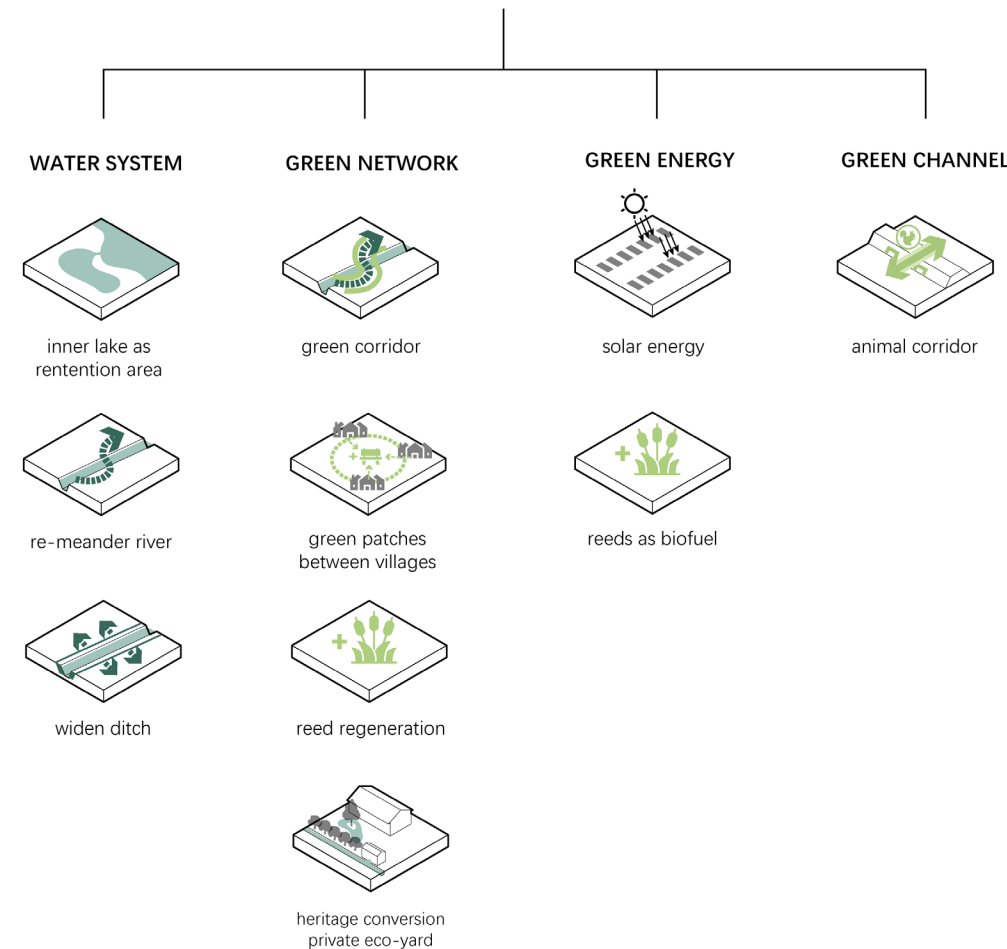
Inclusive public spaces for people

create a complete public space system network

PUBLIC AREA

public spaces along waterfronts

public park between villages

heritage conversion public square

embankment boardwalk

LOW TRAFFIC SYSTEM

high quality walking path

high quality cycling path

reed boat

BUILDING TRANSFORMATION

farmhouse conversion
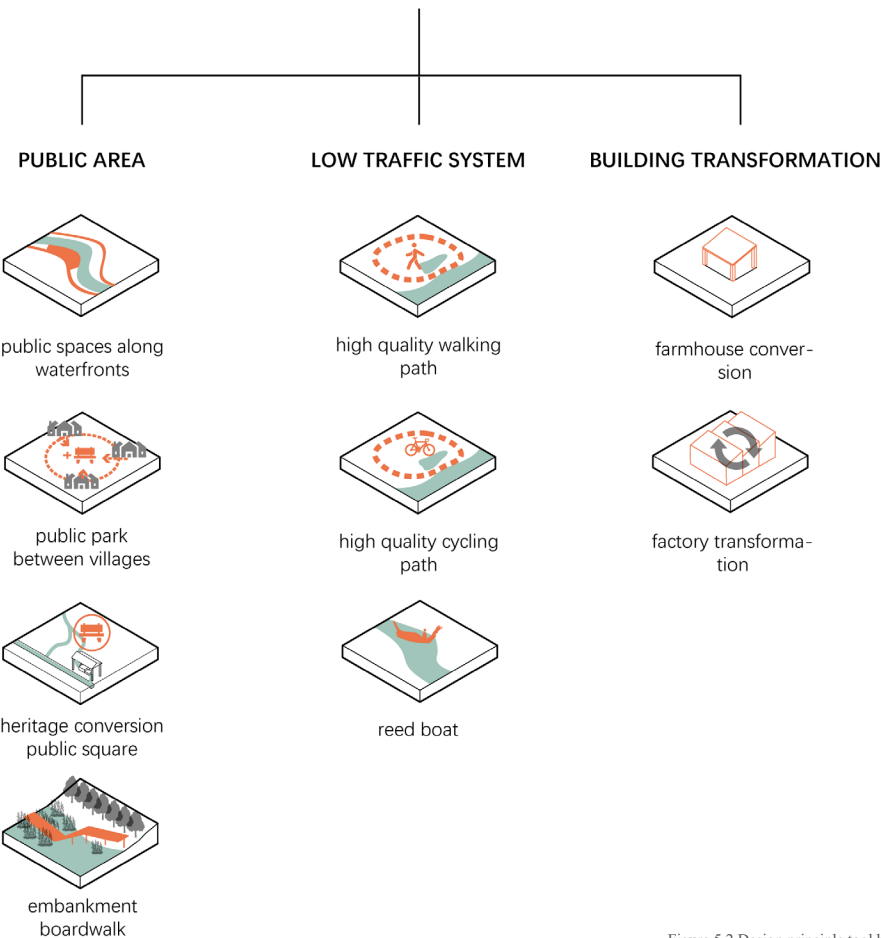
factory transformation

Figure 5.2 Design principle tool box
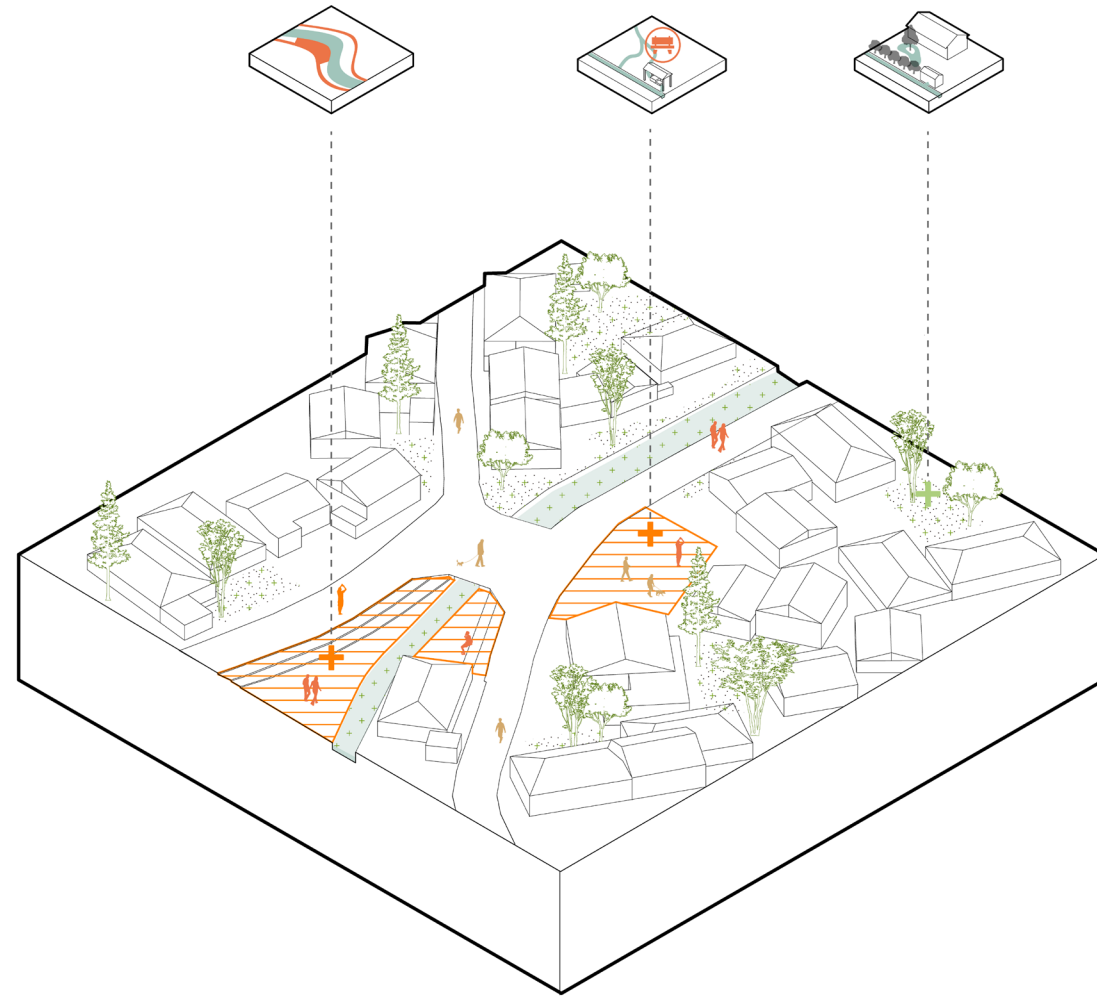
5.3 Design Strategy

village landscape

Figure 5.3 Village landscape strategy

Specific strategies are tailored to the landscape space types, considering which tools from the toolbox can be applied in this area, with the inclusion of plant configurations.

The water heritage villages in this area serve as residential quarters characterized by a kabata spring water system, predominantly featuring one to two-story traditional Japanese wooden structures with high density. Typically, a water channel runs through the center of the village, used to collect spring water within the village.

1. Creation of public spaces adjacent to the main water channel:In the village analysis, the communal activities associated with water are often overlooked, with roads frequently having significant elevation differences from water bodies, hindering direct human interaction with water. Opening up public spaces along the water's edge can infuse new vitality.

2. Conversion of abandoned public kabata systems into water squares:In the analysis, some abandoned

kabata spring water systems left behind by relocated houses can be repurposed into water square public spaces, imbuing them with new functions such as educational activities, thus alleviating the "tourist gaze."

3.Conversion of private water heritage into eco-yards: Spring water is utilized for supplying ponds, gardens, and eco-friendly vegetable patches. By opening up the kabata, transforming it into entryways or front areas of houses, and potentially activating the front yards, they can become semi-public gray spaces, blurring the boundaries between private and public realms.

field landscape
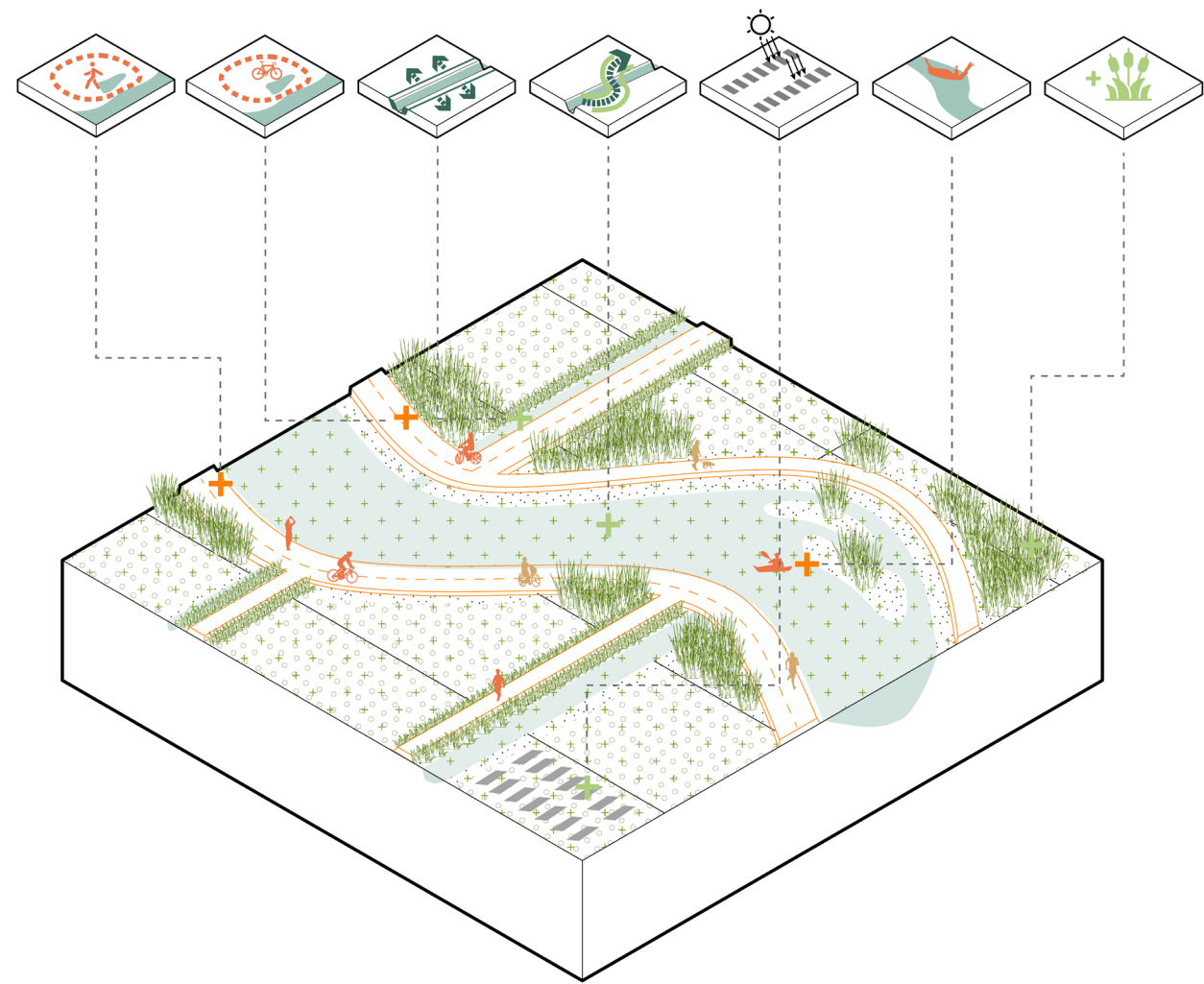
Figure 5.4 Field landscape strategy

The farmland consists of main river channels, channels, and fields, serving as conduits between residential and natural spaces.

1. Re-meandering the river and occupying these spaces to transform them into wetlands allow them to inundate and retain water, alleviating flood pressures. This transformation turns the river into a more resilient green corridor. Adding wildlife-friendly vegetation at the junctions of rivers, channels, and farmland serves as transitional zones. Additionally, new plantations between fields create new corridors for wildlife. This enhances biodiversity, bringing wildlife closer to villages and improving the landscape experience.

2. Some agricultural land is reclaimed from lakes, composed of peat soil, and located in flood-prone areas, often considered to have low productivity. The design involves converting some of these plots into peat wetlands to retain water and increase buffer zones along existing waterways.

3. Creating pedestrian and cycling routes turns the farmland into more public landscapes, imbuing them with educational significance.

lake shore landscape
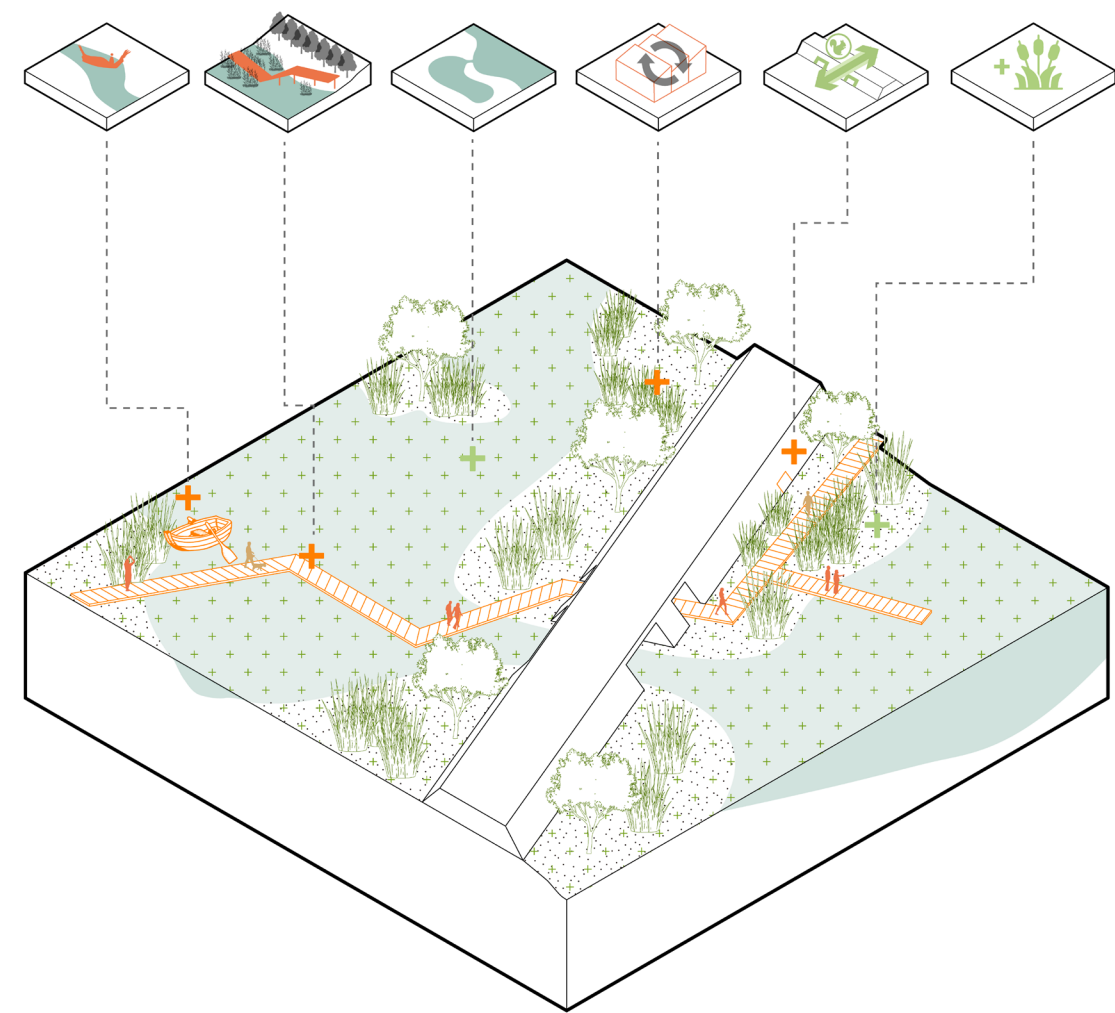
Figure 5.5 Lake shore landscape strategy

Lake shore landscape are considered to offer the highest ecological benefits and the most diverse landscape experiences.

1. Expanding the inner lake and planting reeds, among other flora, as transitional zones for amphibians, ensures environmental connectivity between paddy fields and the wetlands of the inner lake, thus conserving native species.

2. Constructing wildlife corridors ensures the connectivity of biological movement routes.

3. Boardwalks connecting the inner lake and lakefront areas open up and activate privatized landscapes, transforming them into valuable public spaces, providing points of contact between people and nature, and creating an inclusive public space.

4. Plant selection focuses on establishing plant communities that provide habitats for native animal populations, thus restoring the ecological chain and enhancing the landscape experience.

5.4 Large Scale Vision

—— cycling trail   - - - - hiking trail

water   buffer zone   transitional planting

Figure 5.6 Design vision

5.4 Large Scale Vision

factory transformation

reed as biomass energy

reed as building material

infiltration

reed as recreation material

eco house

retention area

purification
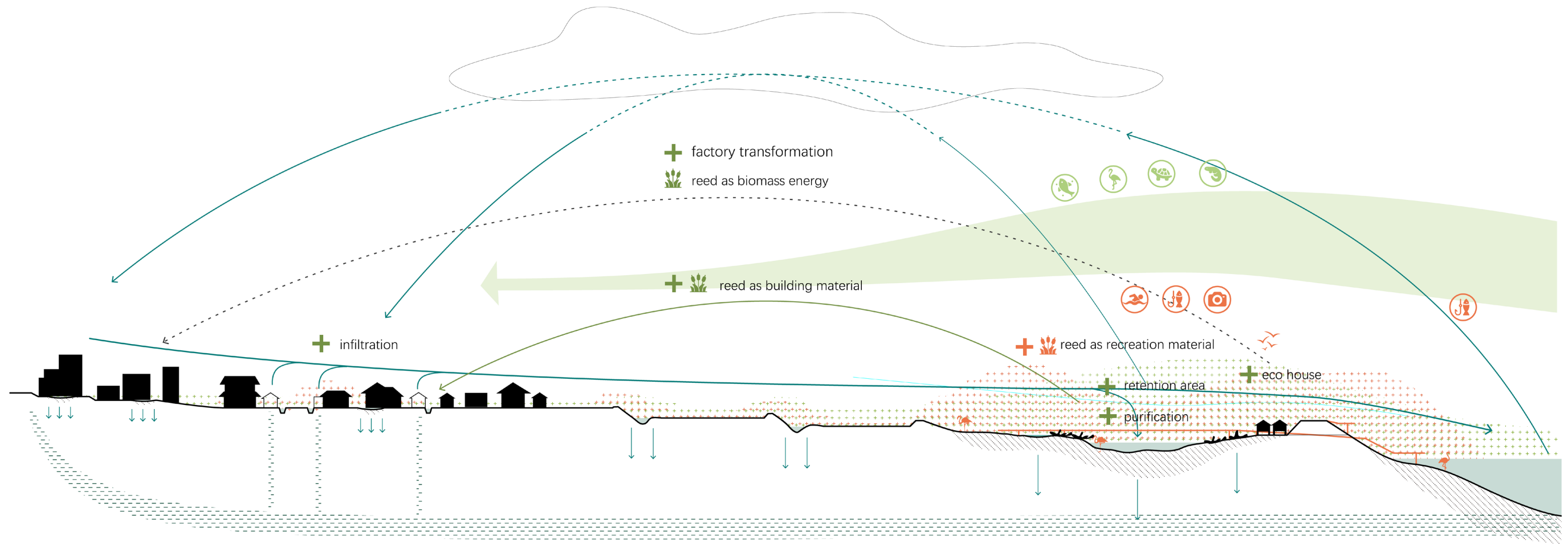
Figure 5.7 Design vision section

source:https://papersky.jp/en/shiga-lake-biwa/

Chapter 6:

DESIGN EXPLORATION

Figure 6.1 Village masterplan proposal

Legend

卍 traditional temple

⛩ traditional shrine

📍 public kabata
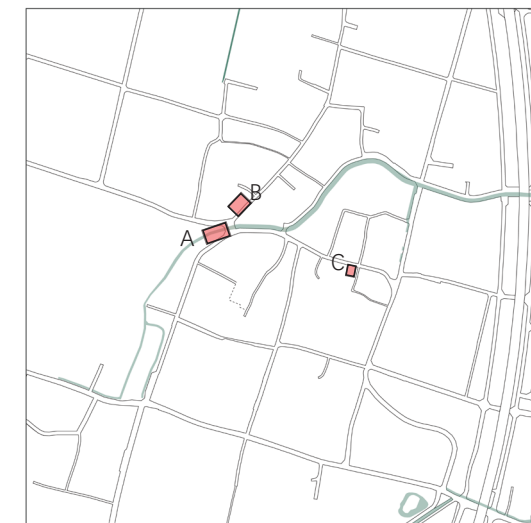
▦ new public space

▢ public space

▦ eco-yard

▨ eco-pond

6.1 Haire Village
6.1.1 village masterplan proposal

The masterplan proposal for Haire Village aims to enhance public space and ecological quality, transforming the enclosed, privatized Kabata heritage into attractive, valuable public and semi-public spaces, breaking down barriers between tourists and locals.

Increasing waterfront spaces on both sides of the village's central axis waterway, converting abandoned public Kabata into public water plazas, opening up unseen waterways, and utilizing them to connect heritage sites, guiding tourists and residents along different atmospheres.

Transforming private courtyards into eco-yards through Kabata renovation, based on Kabata's new functions, converting private Kabata connected to waterways into genkan-style entrances, creating traditional Japanese public spaces, maintaining the privacy of courtyards with traditional elements while showcasing local heritage to tourists, which also helps villagers maintain the heritage.

The eco-yard, bioretention ponds, and green waterways will combine to form a robust blue-green network, increasing sponge capacity, alleviating flood pressure, enhancing ecological value, and creating public spaces for fauna, such as carp in the waterways.

Figure 6.2 Zoom in areas

6.1.2 conversion of kabata

village design language

Local people's traditional living habits —— Riverside Activities
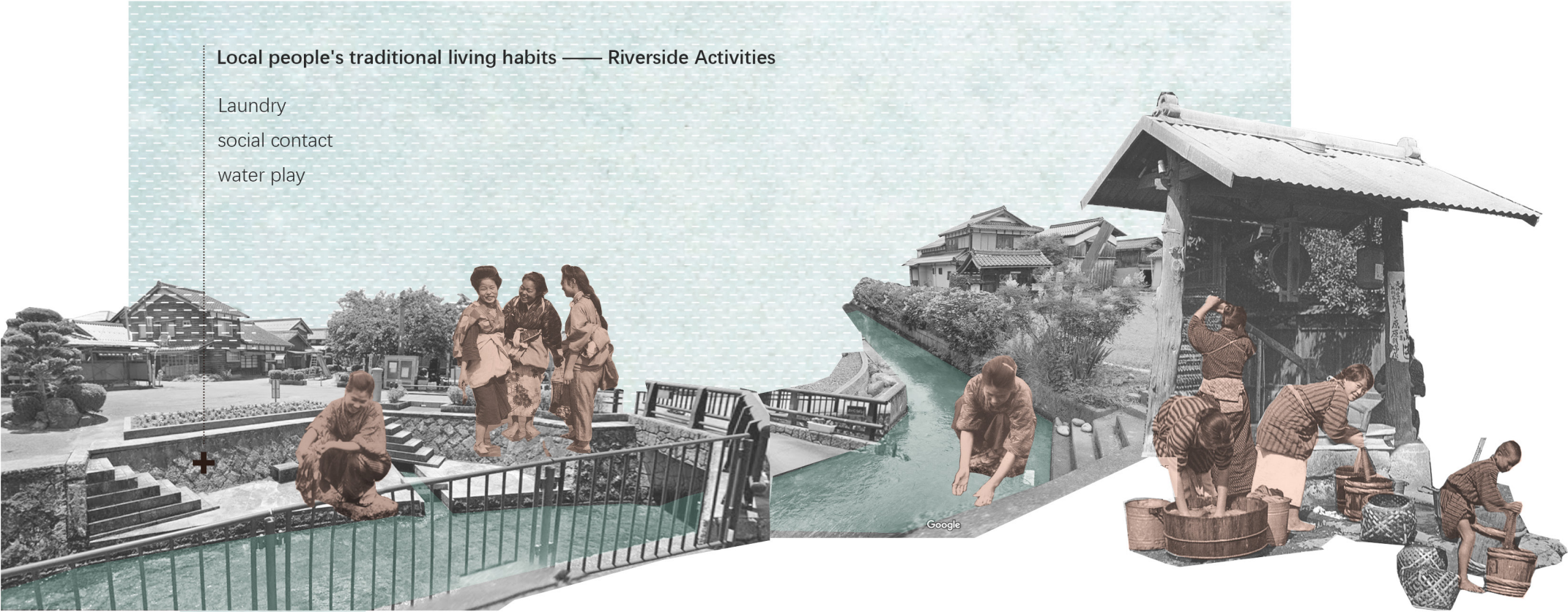
Laundry

social contact

water play

Figure 6.3 Village Design Language

In the past, private kabata met most of the domestic water needs of the residents of Harie Village. However, since these private kabata were often connected to ditches and farmlands, carp would inhabit these areas. Consequently, activities requiring wastewater discharge, such as laundry, could not be conducted in private kabata. To address this, platforms and public kabata were established along the main river to provide a space for residents to do their laundry. These riverside public spaces served not only as laundry areas but also as social hubs for women to converse and socialize.

Nowadays, this scene has disappeared due to the government's provision of piped water, leading to the abandonment of these riverside public spaces over time. I hope to revive this historical feature by reopening public kabata, using it as a design language. Even if people no longer perform daily laundry activities by the riverside, these spaces can still serve as platforms for water interaction and for showcasing kabata culture, providing a place for both tourists and residents to engage and connect.

6.1.2 conversion of kabata

waterfront public plaza (Zoom in A)

Fauna

Japanese crucian carp | common bluebottle | grey-capped greenfinch | Japanese tree frog

Flora

bamboo | Japanese cherry | Japanese camellia | Japanese maple

Japanese andromeda | Japanese angelica tree | common henbit | Chinese milkvetch

The zoom1 area of the village design is situated along the central watercourse of Haire Village, where villagers often gather for chats by the river. Taking this into consideration, I have opened up both sides of the watercourse, creating spacious stairs and platforms combined with public kabata as gathering spaces. Stepping stones in the watercourse add recreational value, allowing people to traverse through the river during the dry season. Green spaces are provided on both sides of the watercourse, featuring traditional Japanese cherry blossom trees and other plantings to enhance the ambiance and create a leisurely waterfront area for both locals and tourists to enjoy together.

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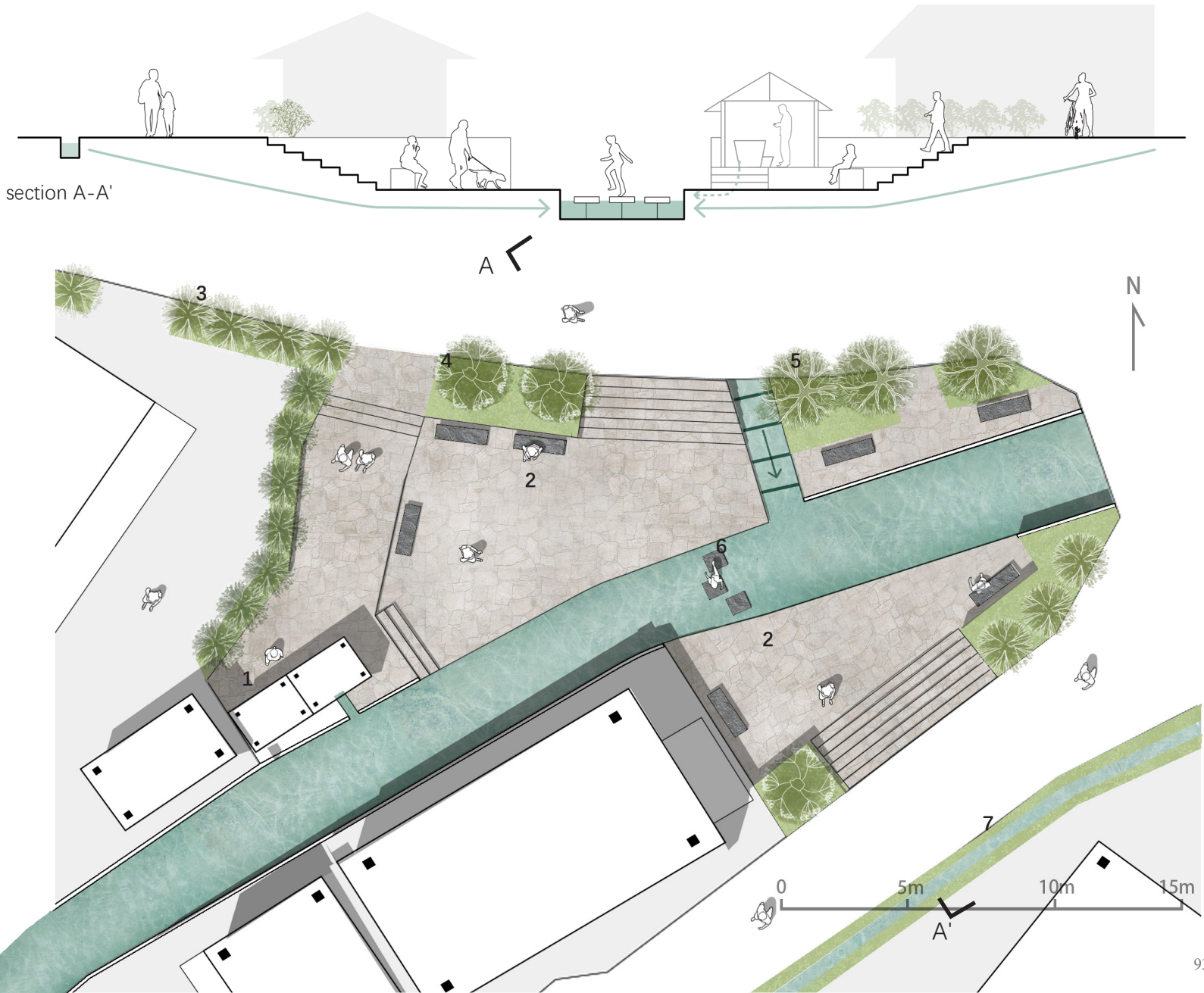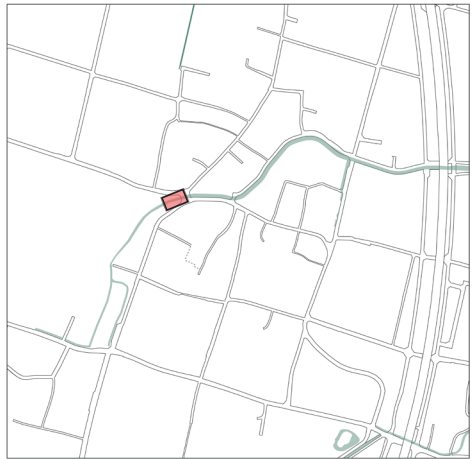5 Japanese cherry
6 floating stepping stones
7 green soft ditch

section A-A'

Figure 6.4 Zoom in A (Dry season)

waterfront public plaza (Zoom in A)

section A-A'

1 floodable space
2 floating stepping stones

During periods of heavy rainfall, waterfront public spaces may become inundated, facilitating water infiltration into green edges, consequently mitigating flood pressure on street
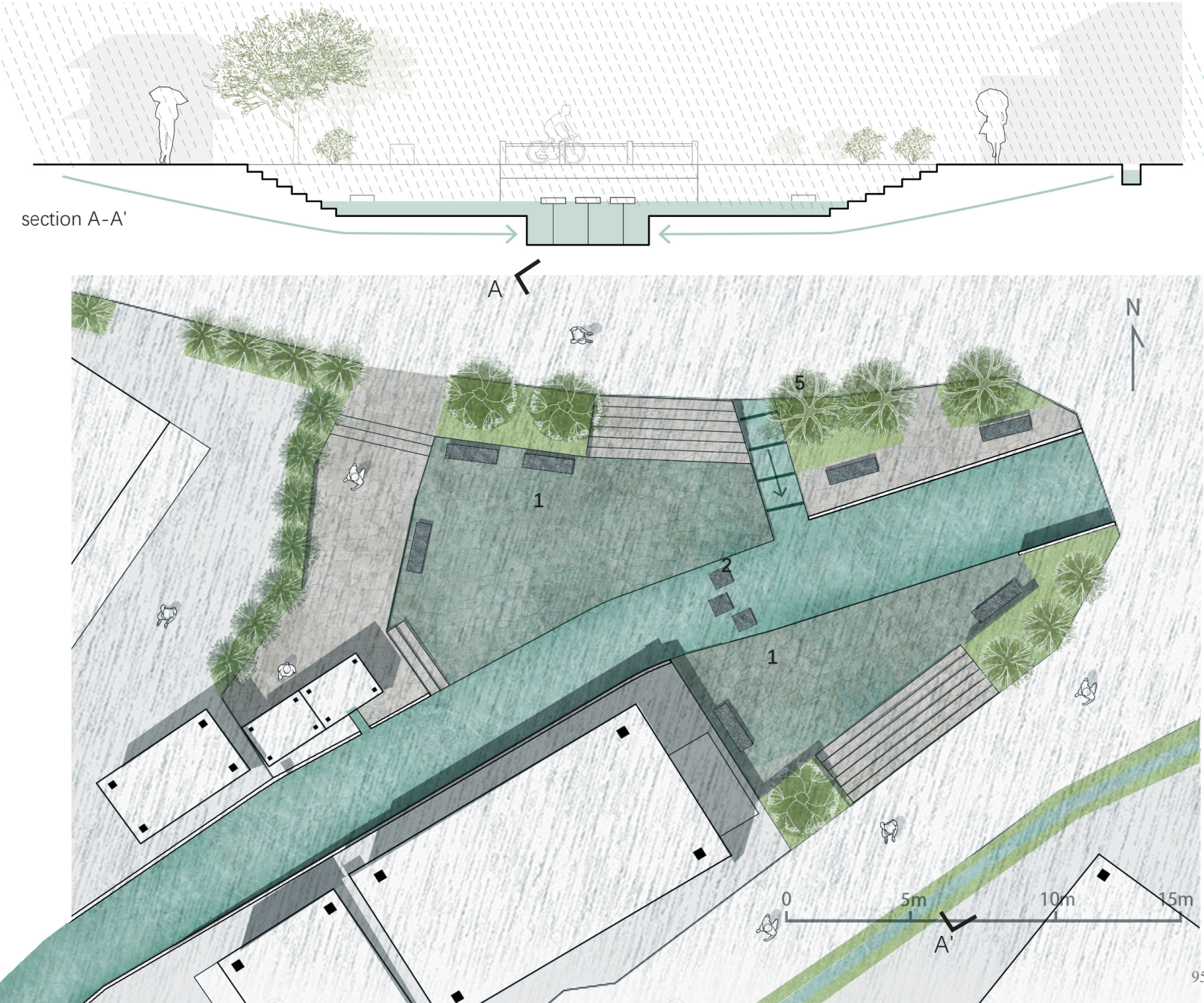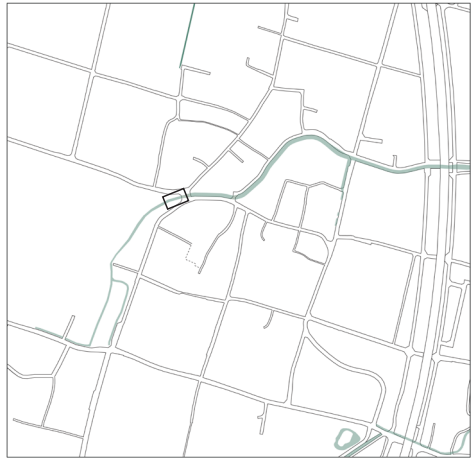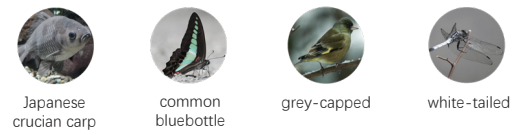

Figure 6.5 Zoom in A (Wet season)

6.1.2 conversion of kabata
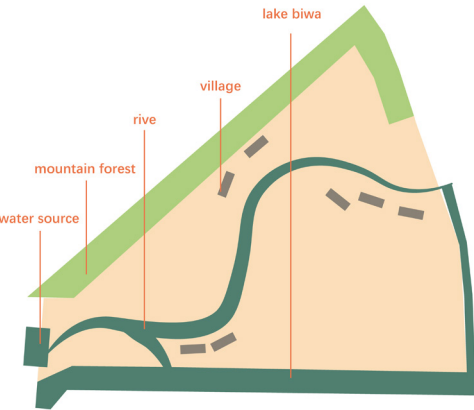
waterfront public plaza （zoom in B）

Fauna

Japanese crucian carp

common bluebottle

grey-capped

white-tailed

Flora

bamboo

yellow iris

Japanse walnoot

Japanese maple

Japanese andromeda

Japanese angelica tree

common henbit

Concept

lake biwa

village

rive

mountain forest

water source

Material

bench

ground

wooden

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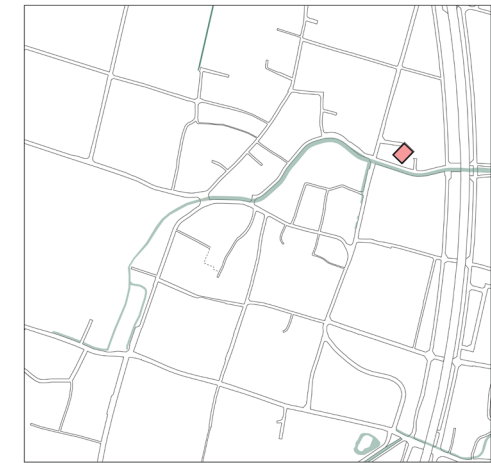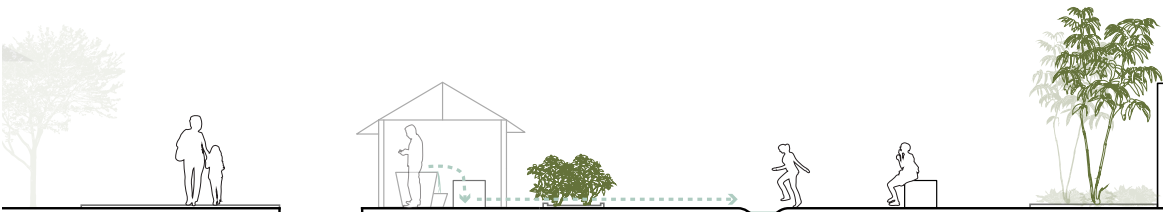
1 public kabata (outdoor independent type)
2 water play space
3 bamboo
4 bench
5 water plaza public space
6 open the ditch

section C-C'

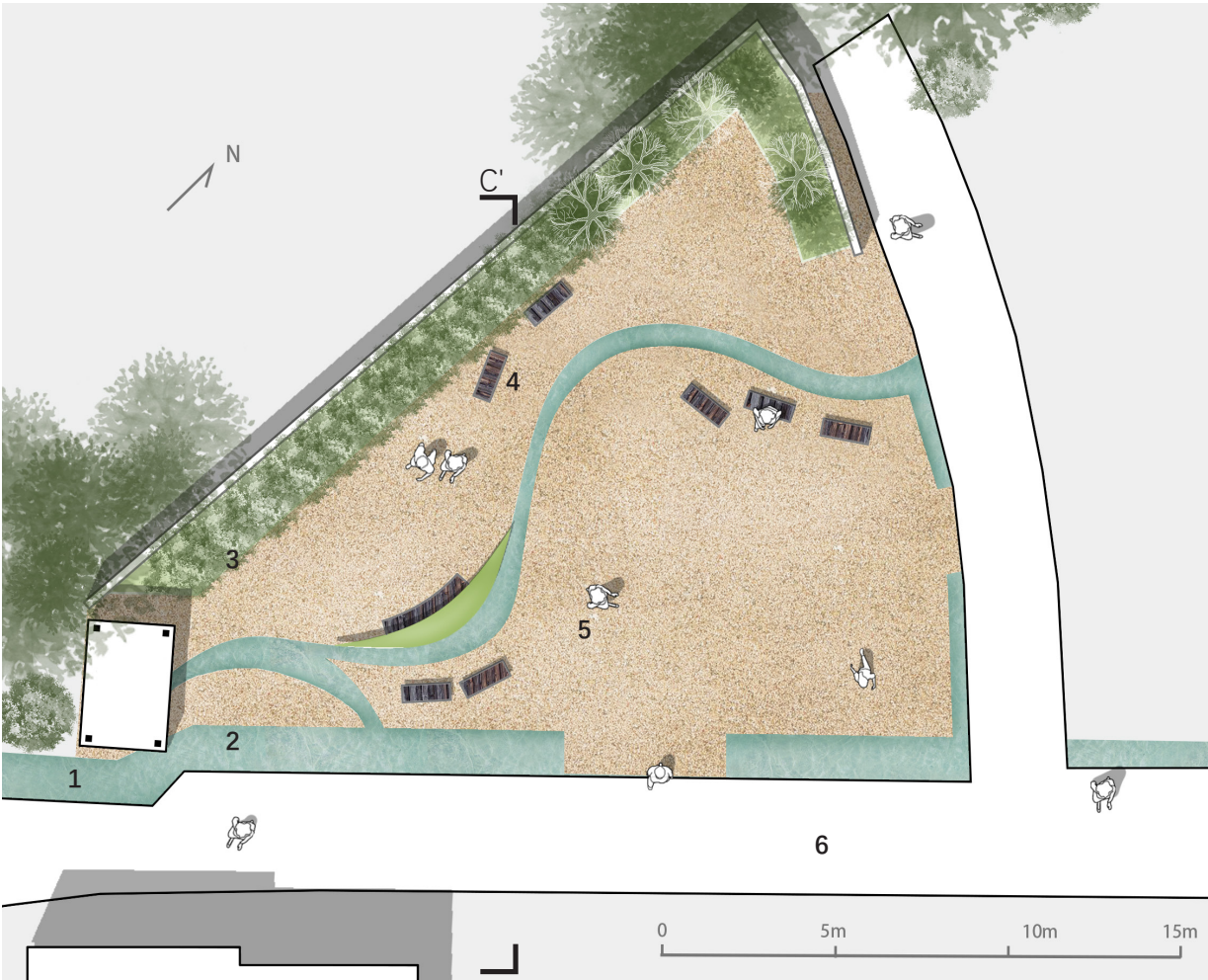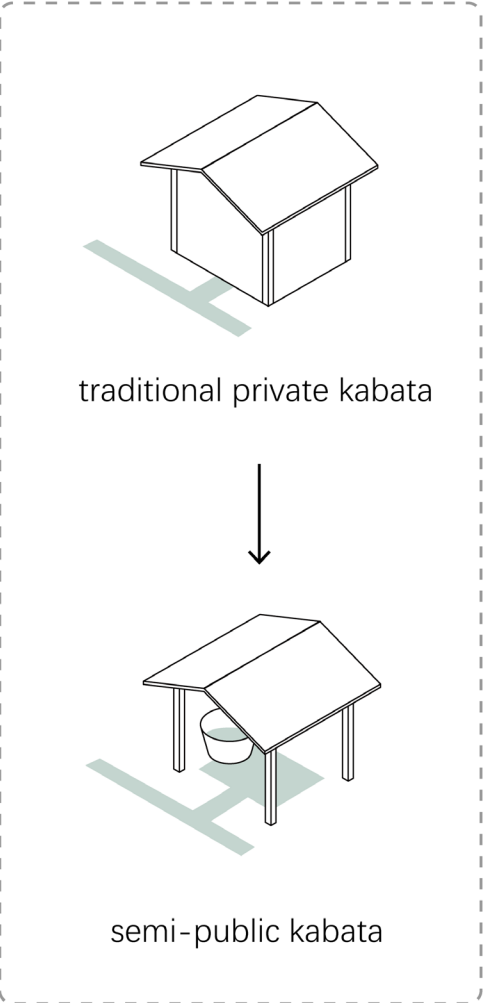N

C'

C

1
2
3
4
5
6

0   5m   10m   15m

Figure 6.6 Zoom in B

6.1.2 conversion of kabata

private kabata

Step 1: Open up private kabata

traditional private kabata

semi-public kabata

Step 2: Add new function

kabata as entrance

ecological and aesthetic functions

popular science function

living habit function

kabata with eco-yard

semi-public space for tourists to visit

kabata as hand cleaning station

Figure 6.7 Conversion of kabata

private kabata

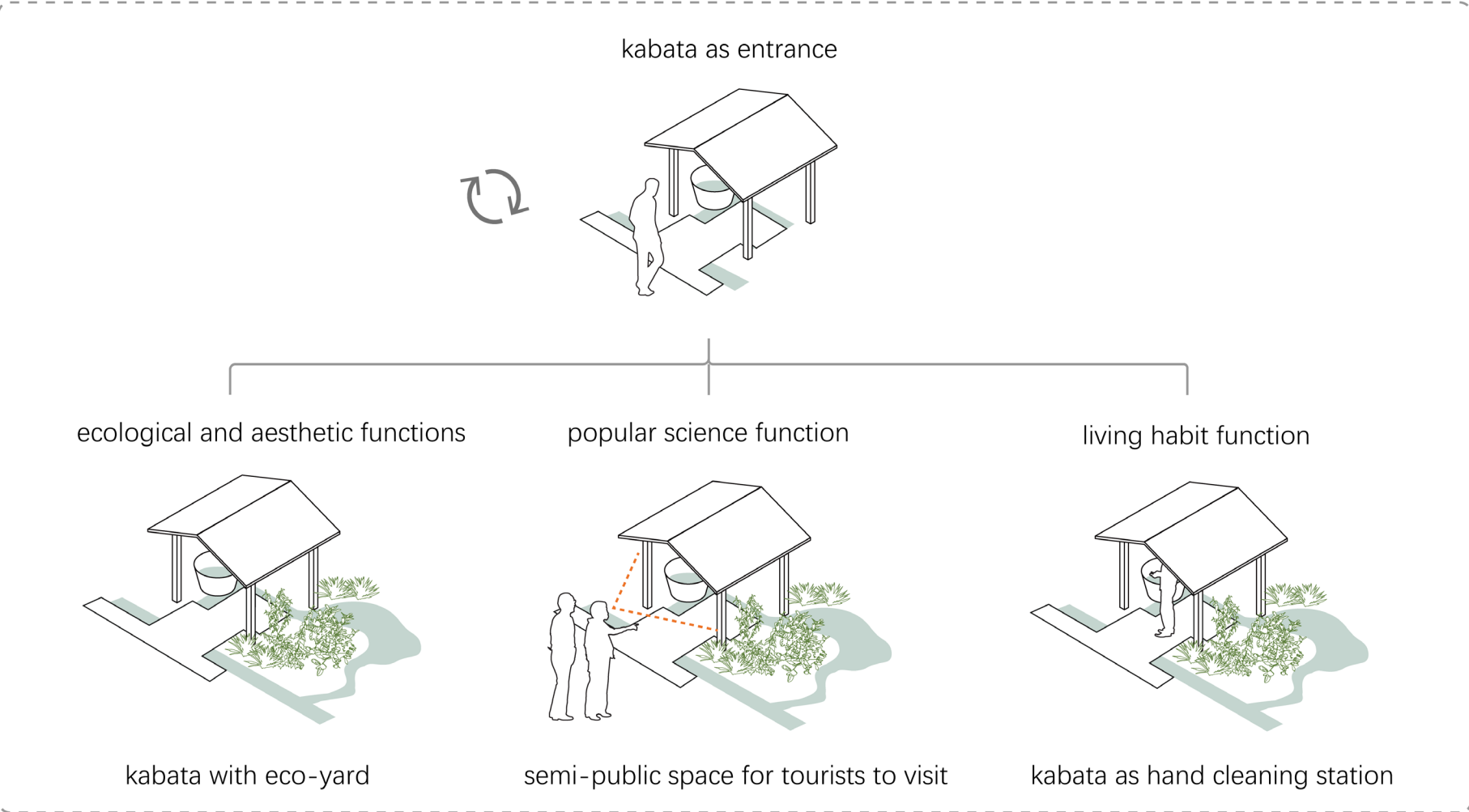## Step 3: Japanese screening devices combined with private Kabata garden
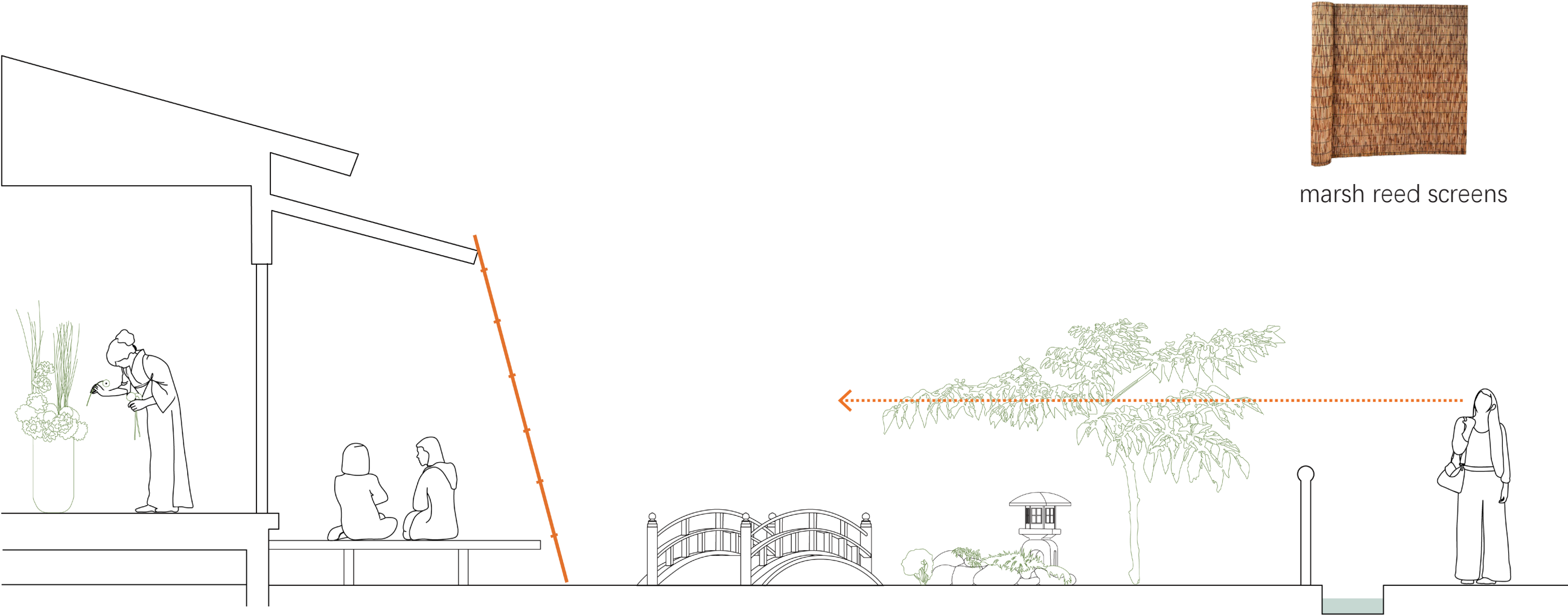
marsh reed screens

Figure 6.7 Conversion of kabata

private kabata

Step 3: Japanese screening devices combined with private Kabata garden
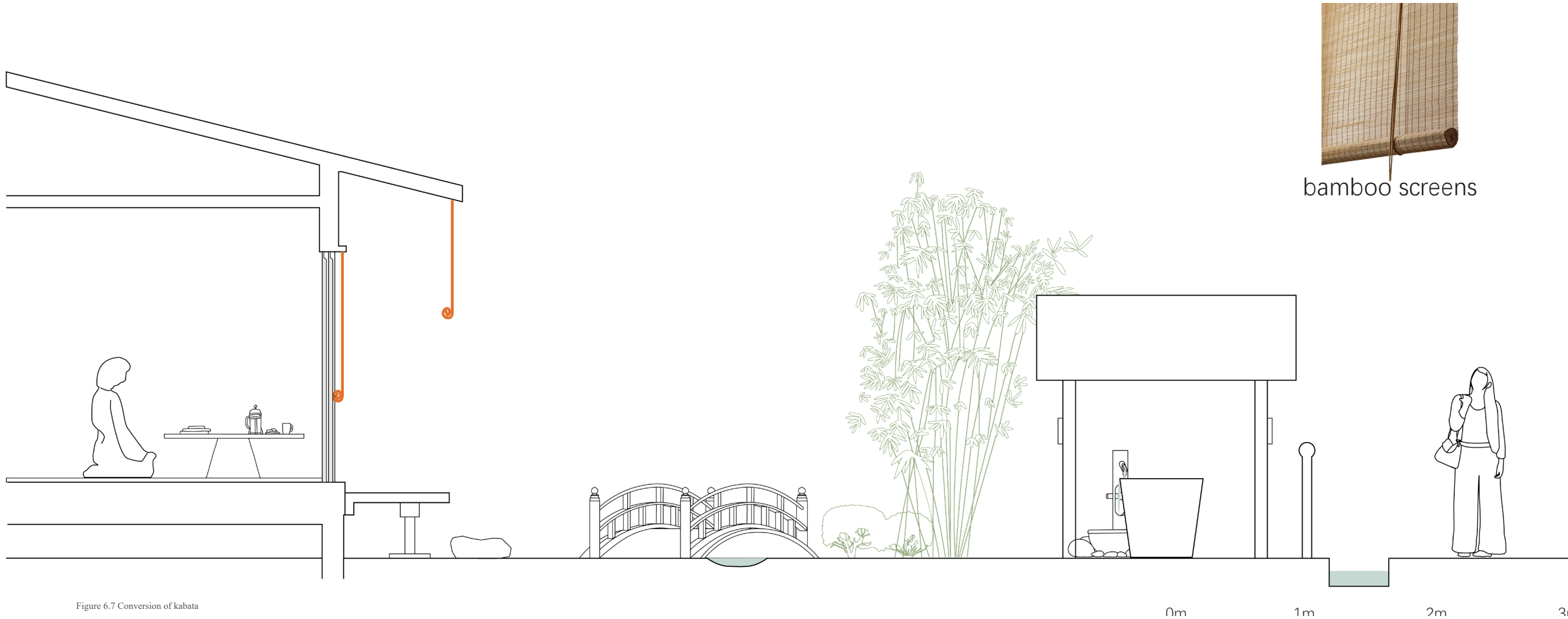
Degree of privacy : +++

bamboo screens
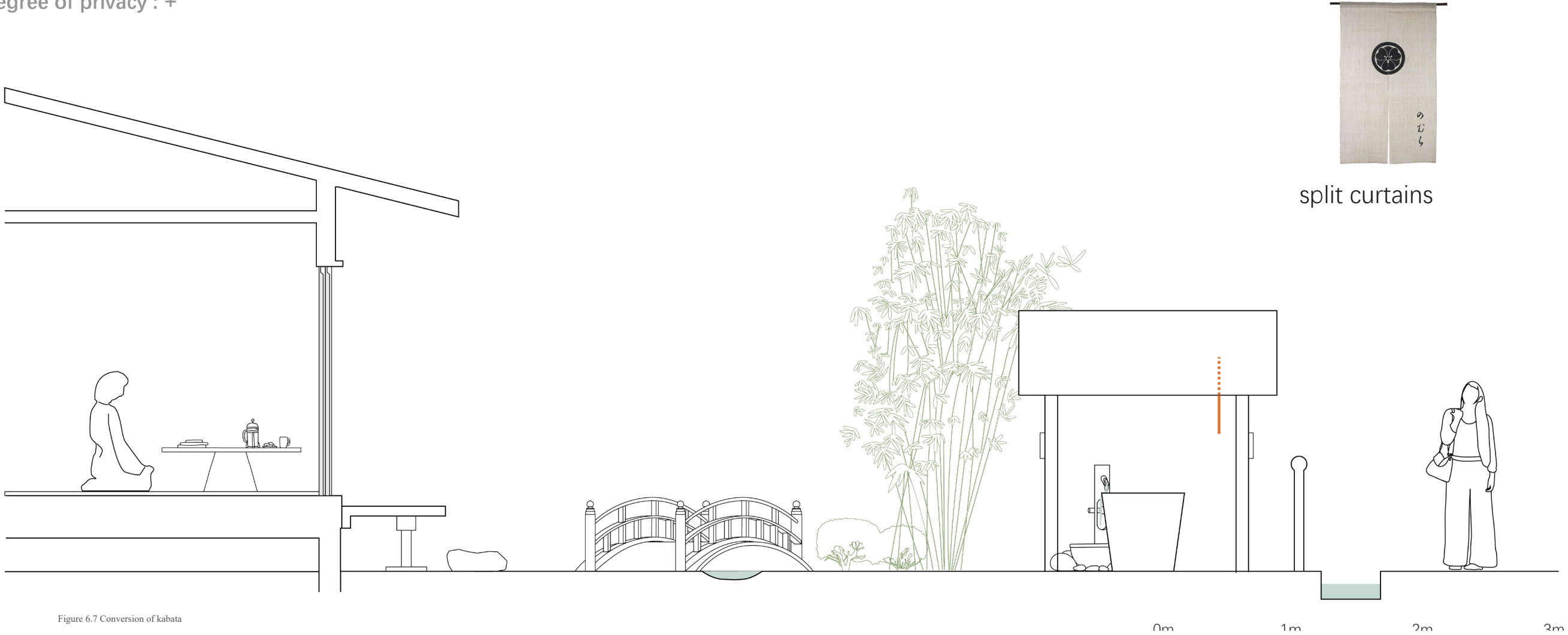
Figure 6.7 Conversion of kabata

0m   1m   2m   3m

private kabata

Step 3: Japanese screening devices combined with private Kabata garden

Degree of privacy : +

split curtains

Figure 6.7 Conversion of kabata

0m   1m   2m   3m

private kabata (eco-yard zoom in C)

Figure 6.8 Zoom in C current photo
souce: google map

Figure 6.9 Spatial analysis

As the birthplace of Kabata, the Haire village hosts approximately fifty extant Kabata, which persist in their exclusively private use. However, since the dawn of the 21st century, this figure has witnessed a noticeable decline. In order to preserve the invaluable heritage of Kabata, I propose to repurpose Kabata structures as liminal spaces, opening them to the public, while integrating them with traditional Japanese devices (Figure 6.6). Within Haire village, a specific private Kabata was selected for on-site experimental retrofitting, employing strategic interventions (Figure 6.7).
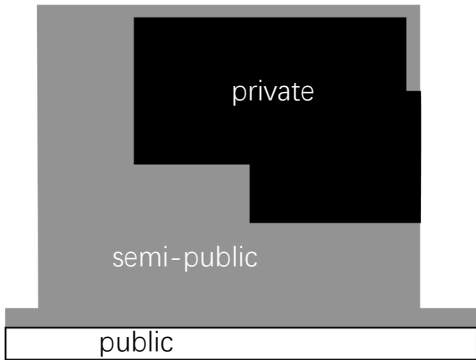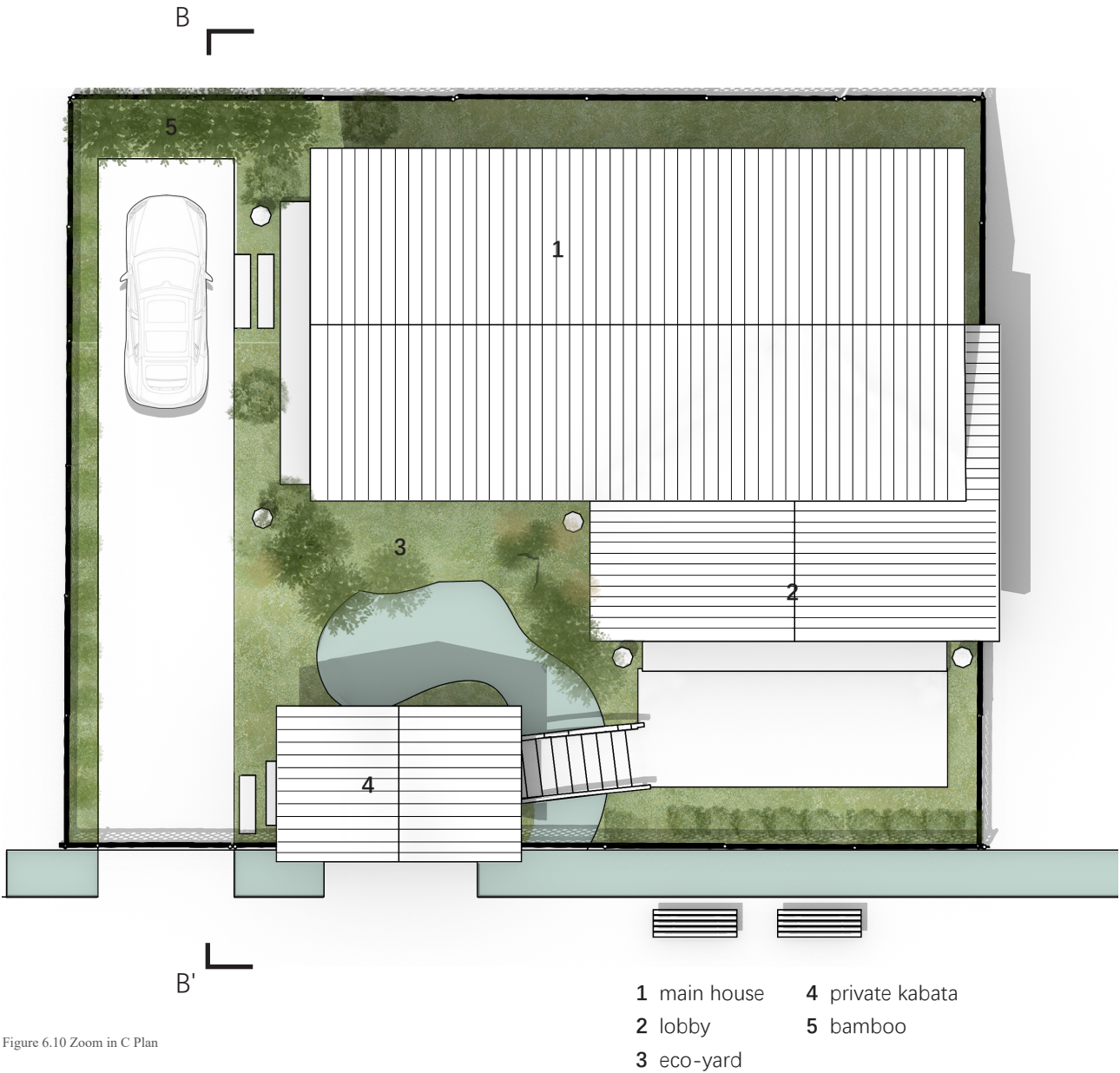

Figure 6.10 Zoom in C Plan

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

private kabata

Landscape Elements

1. stone lantern

2. kabata —— motoike

3. kabata —— tsuboike

wooden light
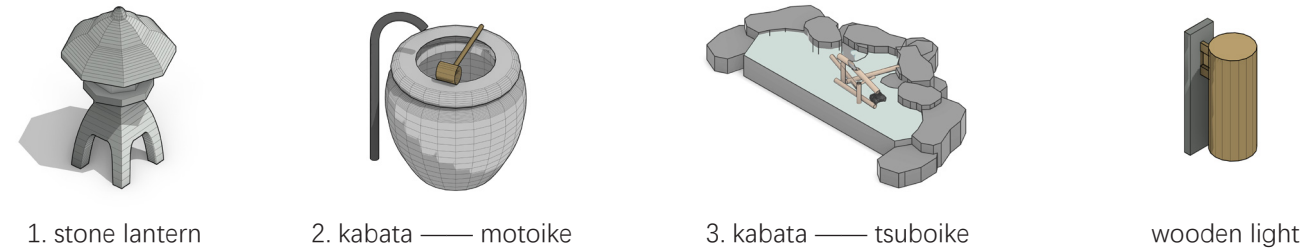
Figure 6.11 Detail Design

Section B-B'

Flora

bamboo

yellow iris

Japanese maple

Japanese angelica tree

common henbit

Fauna

Japanese crucian carp

common bluebottle

grey-capped greenfinch

white-tailed skimmer

third-Level Privacy Interface

main house

second-Level Privacy Interface

screening device

plant

First-Level Privacy Interface

courtyard fence

residential life privacy
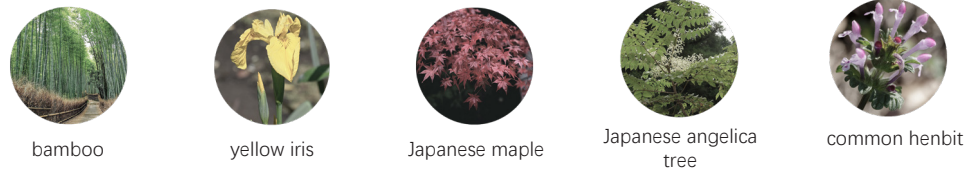
Figure 6.12 Zoom in C Section

private kabata

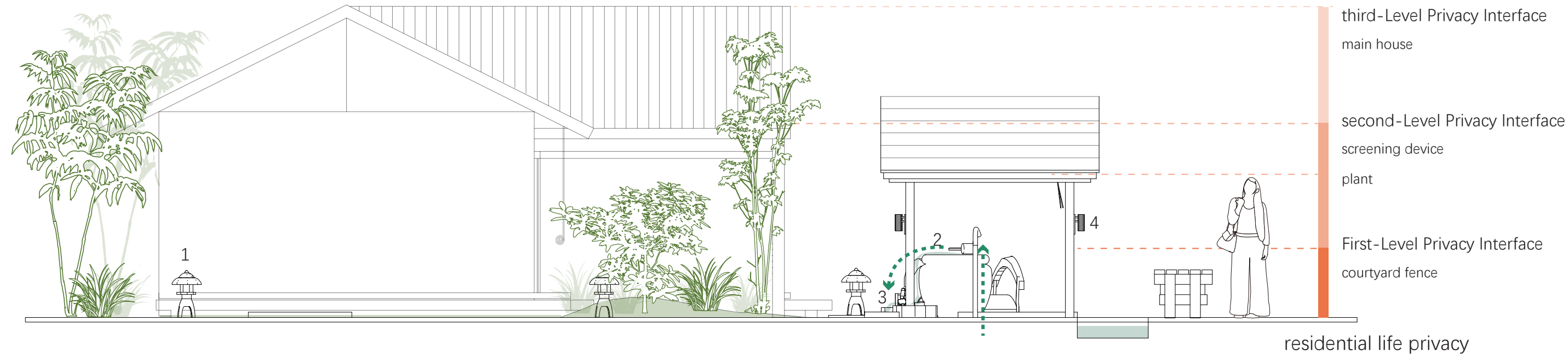Many courtyards in Haire Village have the potential to be transformed into more ecologically aesthetic spaces. Particularly, the perennial Kabata courtyards, with the functional aspect of their own kitchens being further diminished, stand to benefit from their positioning connecting waterways and roads. They hold great potential to be converted into semi-public entrance spaces, where water can be integrated with softer courtyard elements to form bio-retention ponds, creating small habitats within the yards.

1. Such an environment is highly conducive to carp, and traditional interactions with carp are expected to persist.

2. During the rainy season, eco-yards can alleviate flood pressure, as water from rain tanks can be filtered for clean usage like garden irrigation.

3. Courtyards, serving as semi-open areas, are delineated by walls and traditional Japanese devices for privacy, carefully designed to avoid encroaching on family privacy.

4. Courtyard gardens, visible to some extent to visitors, are better maintained, enhancing the overall living environment of the community.

rainwater tank

traditional screens

kabata as entrance

roof rain gutter

split curtains

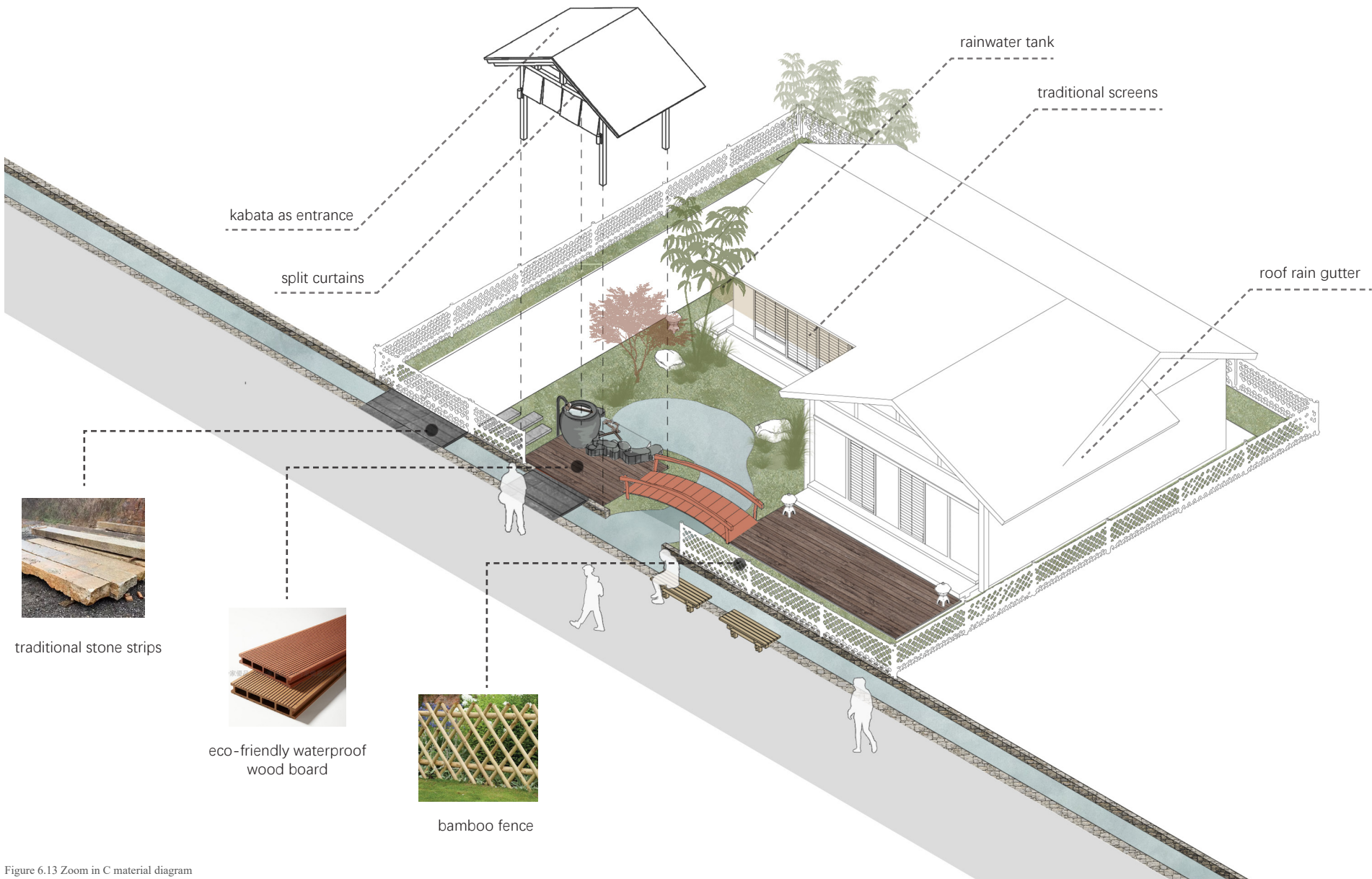traditional stone strips

eco-friendly waterproof wood board

bamboo fence

Figure 6.13 Zoom in C material diagram

residents' perspective
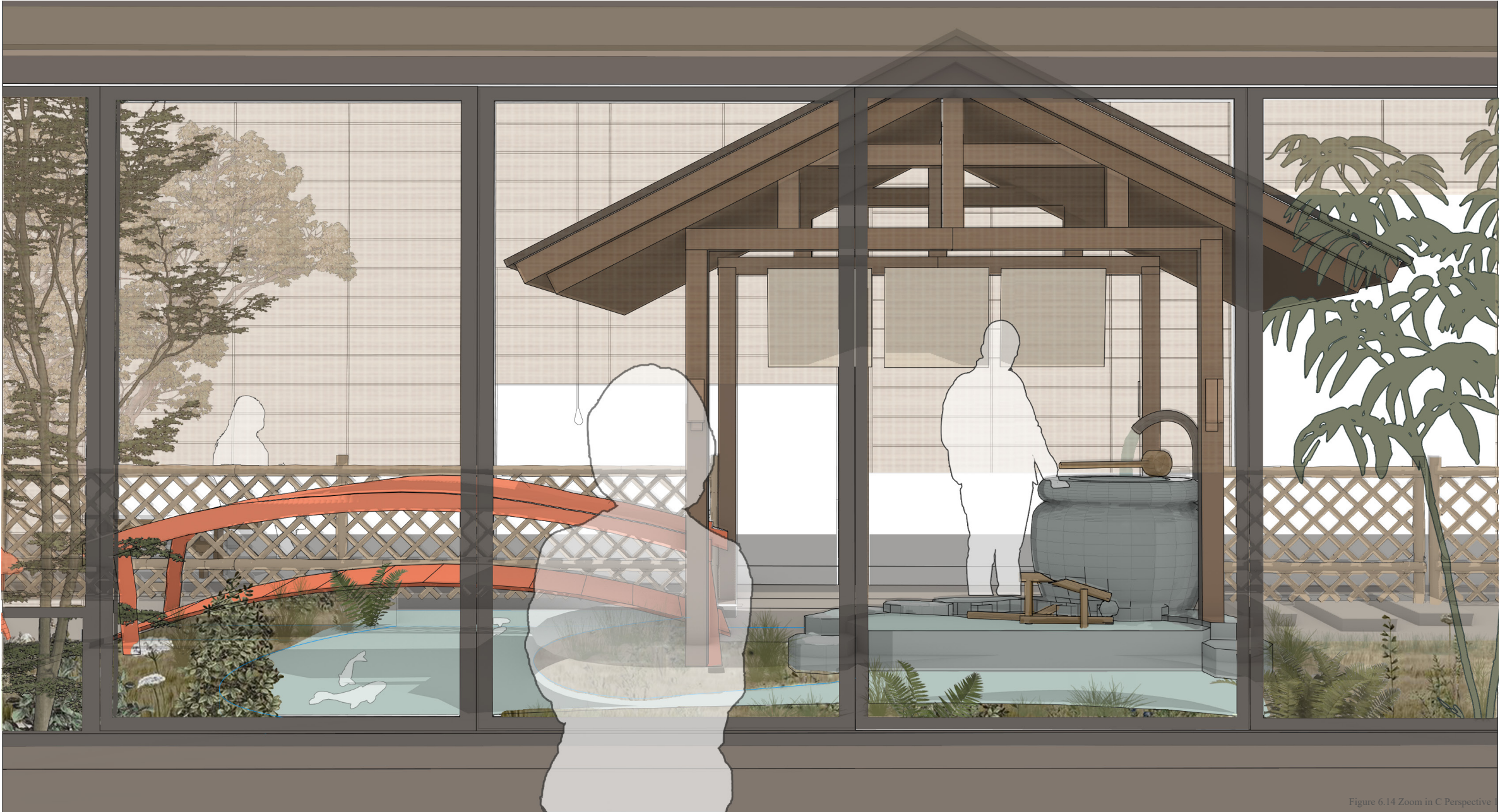
Figure 6.14 Zoom in C Perspective

tourist' perspective

Figure 6.15 Zoom in C Perspective 2

village routing

Quick tour route

(1-2 hours)

In-depth tour route

(half a day to a day)

Figure 6.16 Village routing map

6.2 Field Landscape

rice field

special planting

bicycle lane

natural river bank

green edge ditch
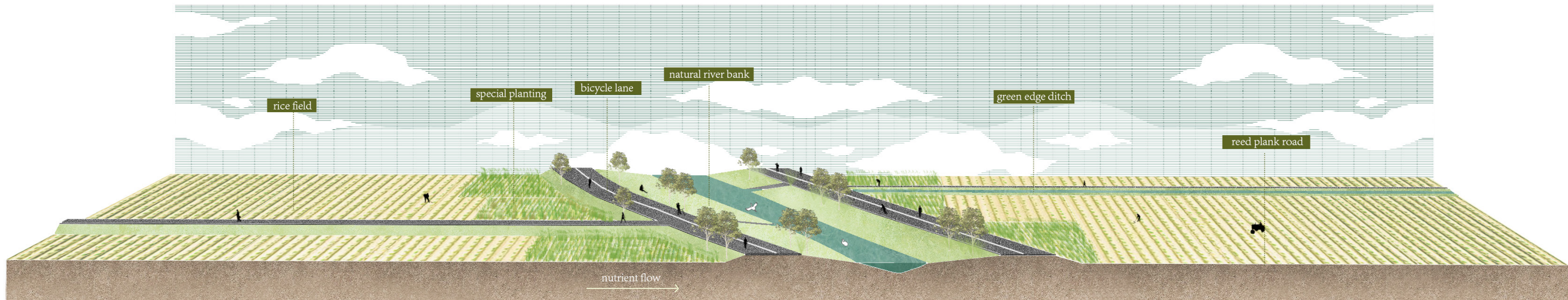
reed plank road

nutrient flow

Figure 6.17 Field landscape design

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
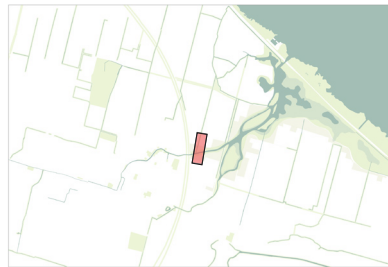
Figure 6.11 Field landscape design

6.3 Lake Shore Landscape

retention area

bird watching house

fauna corridor

median green

bicycle lane

wetland

reed plank road
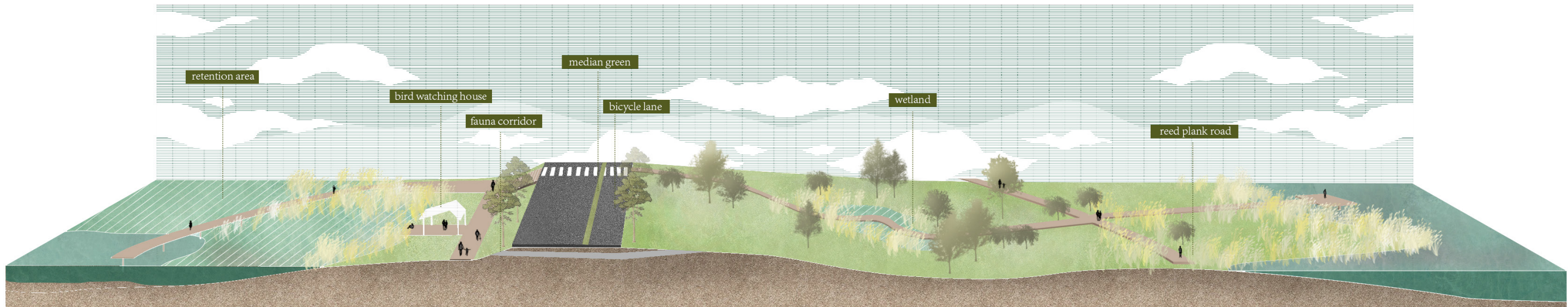
Figure 6.18 Lake shore landscape design

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

design process
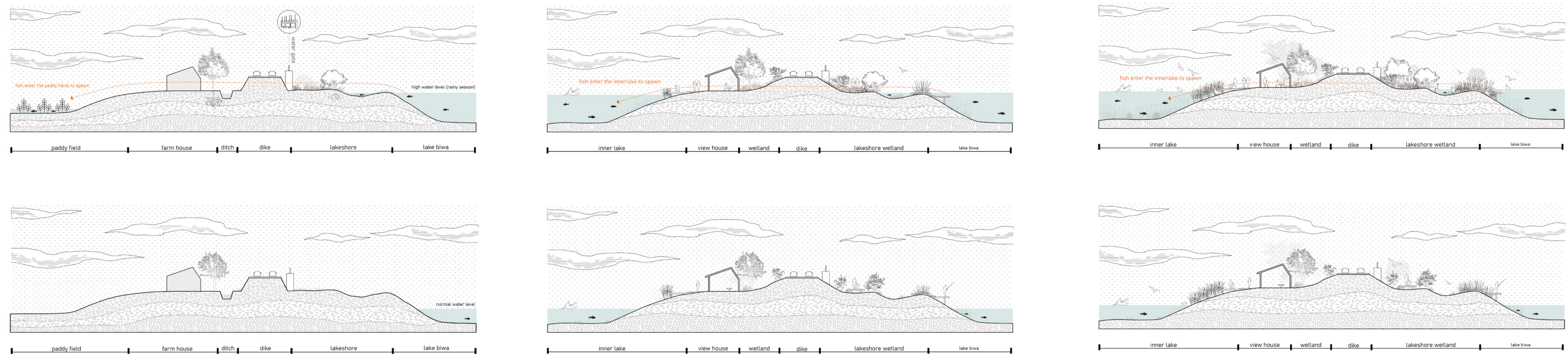
Figure 6.19 Lake shore landscape process

Planting Cycle diagram
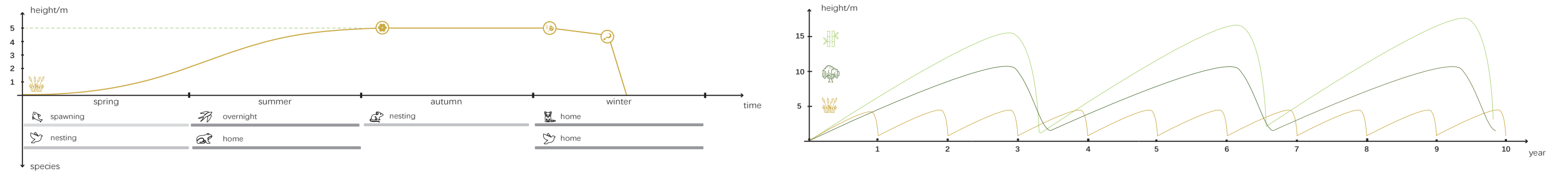
Figure 6.20 Planting cycle diagram

6.4 Routing

Zooming out from detailed design to a broader scale, I have planned a route for the site that connects various landscape types, allowing visitors to experience a diverse range of environments.

Sequence is a spatial design principle that refers to how the experience of a landscape changes as one moves through it.The project design encompasses four landscape sequences, each corresponding to different times of the day. This design simulates a typical autumn weekend when visitors explore Shinasahicho, Lake Biwa. The landscape effects are expressed using the artistic style of Japanese illustrations.
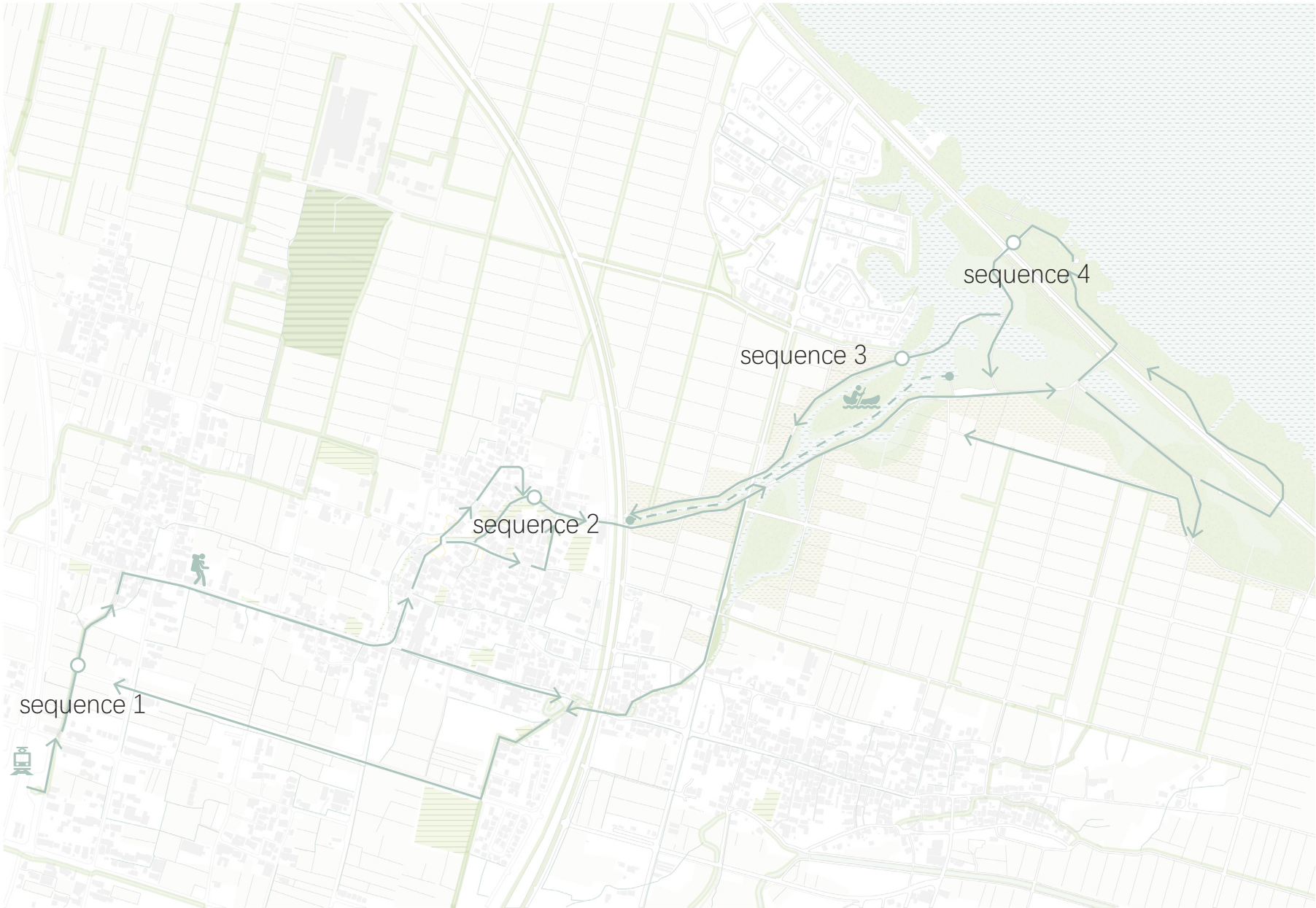
Figure 6.21 Large scale routing

6.5 Sequences

sequence 1 (time 10:00 am)

Figure 6.22 Sequence 1

sequence 2 (time 1:00 pm)

Figure 6.23 Sequence 2

sequence 3 (time 3:00 pm)

Figure 6.24 Sequence 3

sequence 4 (time 5:00 pm)

Figure 6.25 Sequence 4

Chapter 7:
CONCLUSIONS & REFLECTIONS

7.1 reflections

7.1 Reflections

implementation

phase 1

Conversion & Establishment

phase 2

Development

phase 3

Integration

2025   2026   2027   2029   2030   2031   2032   2033   2034

village landscape

construction of public facilities and public spaces

conversition of private heritage

public plantation and maintain —— eco ponds & soft edge ditch

private plantation and maintain —— eco yard

field landscape

earthworks ——inner lake expand & widen ditch

conversion of building

plantation and maintenance —— reeds & animal friendly plants

construction of public space —— Increase connectivity across different landscapes

lakeshore landscape

conversion of factory

plantation and maintenance —— reeds & animal friendly plants

construction of public space —— for people and fauna

government

community

individual

hydraulic earthworks landscape

heritage convention expert ----> architectural landscape

tourist guide ----> tourist <---- residents

7.1 Reflections

reflection for the research questions

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?

The main research objective of the graduation project is to reimagine the hydro-cultural heritage of Lake Biwa while maintaining and restoring the integrity of the overall landscape system.

Lake Biwa, as Japan's largest inland lake, serves as the habitat for myriad life forms, with its hydro-cultural genesis reflecting harmonious coexistence between humanity and nature. To revitalize and reintroduce the systemic values while enhancing public engagement, a comprehensive consideration of all stakeholders is imperative. Grounded in the principles of resilient landscapes, this endeavor entails a redefinition of public spaces, creating gradients among three landscape typologies: water heritage villages, agricultural landscapes, and lakeside vistas. Such an approach aims to foster the concept of integrating humans into nature and nature into urban spaces across various scales, thereby fostering inclusive public spaces conducive to harmonious cohabitation between humans and wildlife.

The design concept is facilitated through a universal toolkit, primarily bifurcated into human-centric and animal-centric public space systems. These systems are further enriched by the incorporation of elements and values from traditional heritage, such as the Kabata legacy as an ecological backyard and the revitalization of reopened canals.

The principal research inquiry is actualized through four sub-research questions, primarily focusing on a comprehensive understanding of site value, contemplating landscape-integrated solutions, and devising specific designs integrating heritage to more effectively achieve design objectives.

SQ1: What water cultural values can be identified in the area? And what makes them valuable?

Understanding

Through the study of the traditional water systems of Lake Biwa, the core essence of the site's hydro-cultural value lies in its "circularity." Water, acting as a binding agent, interconnects various scales and bridges the gap between humans and nature. Within this system, all flora and fauna circulate continuously, presenting a state of balance and harmony in the absence of external interventions.
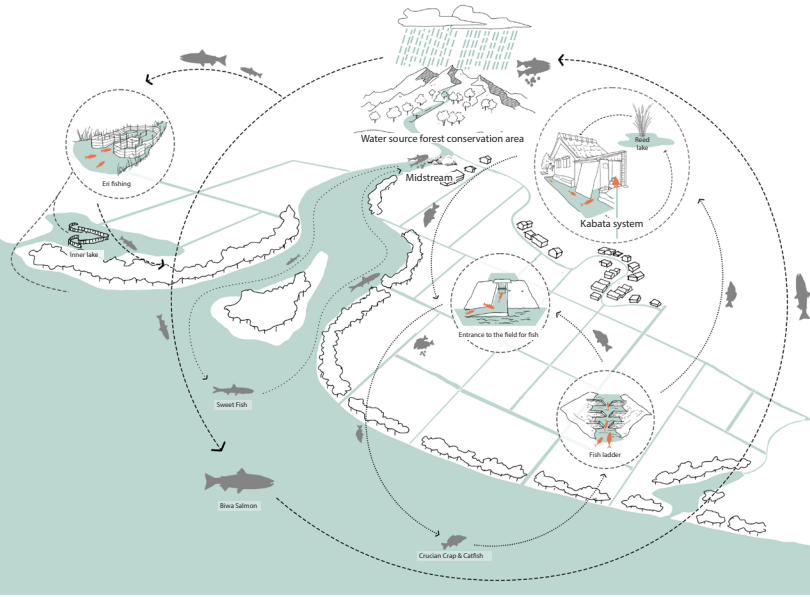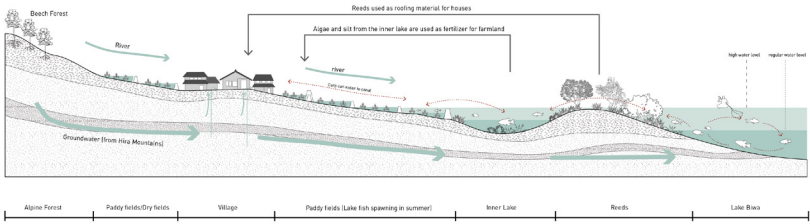
Solutions

SQ2: How can the water culture landscape be employed to reconstruct points of contact between humans and nature, while concurrently enhancing ecological resilience?

SQ3: 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?

SQ2 and SQ3 represent core aspects of the main research question's solution, both centering around the transformation of hydro-cultural elements, albeit with differing emphases.

SQ2 prioritizes the reconstruction of the overall system, manifested at a macro scale in design, aiming to establish more resilient and inclusive public spaces. This involves features such as meandering waterways, green channels, ecological backyards, and low-traffic systems.

On the other hand, SQ3 focuses on the specific transformation of human-related water heritage, exemplified by cases like Kabata. Given that the traditional function of private spring culture, such as Kabata, no longer aligns with contemporary needs, the aim is to repurpose its spatial form and integrate new functions. These may include features like ecological aesthetic education.
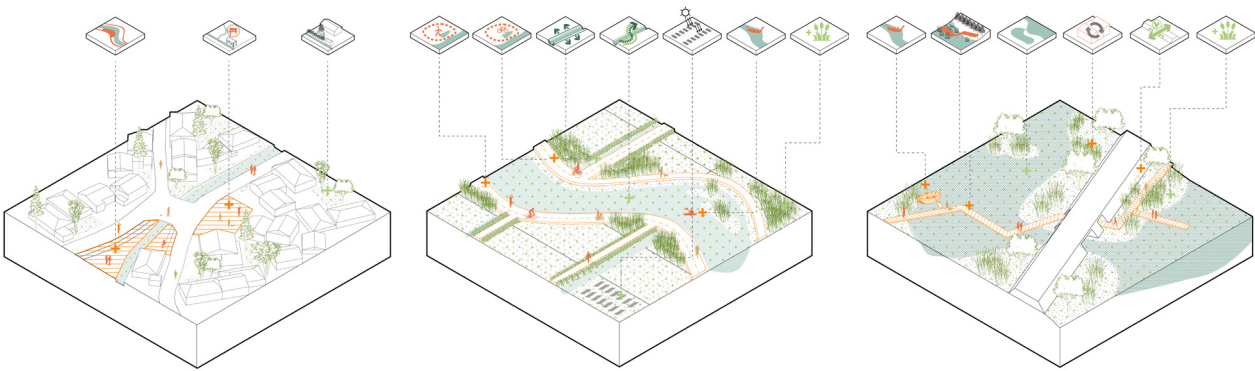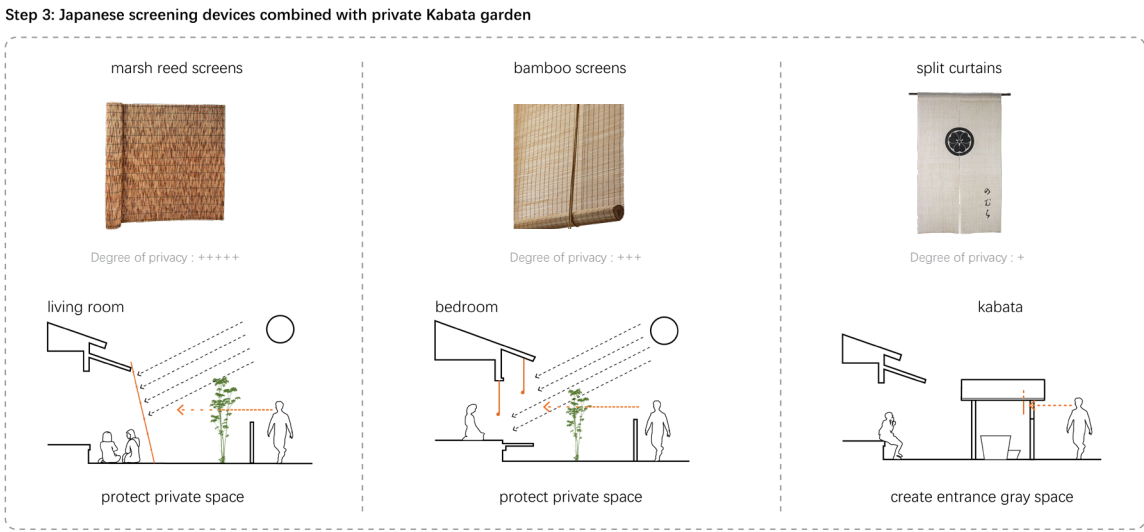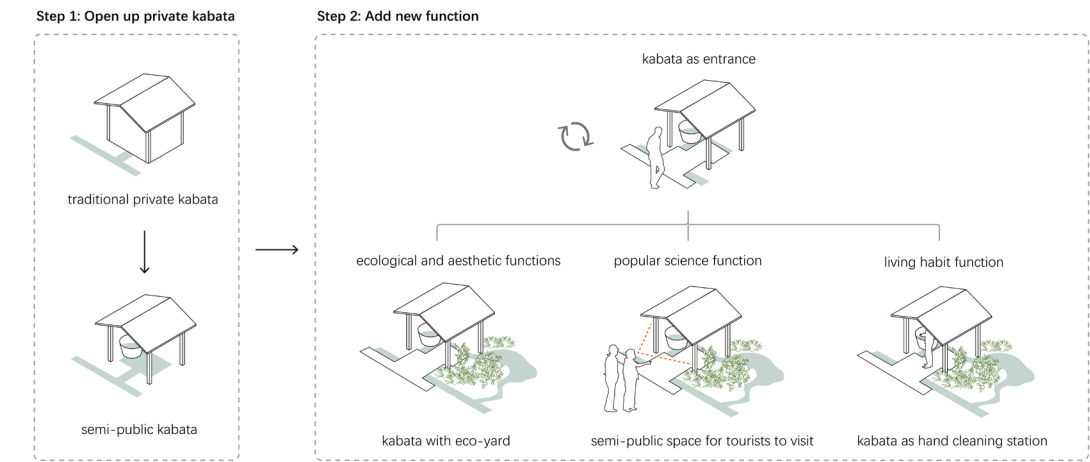
SQ4: How can transitional spaces be created to ensure the privacy of residents, safeguarding their private domains while simultaneously showcasing traditional water culture to a broader audience?

This question aims to address the issue of inclusivity within narrow public spaces, catering to diverse demographics. A significant dilemma in private water heritage villages is the tension between tourists and local residents, with design solutions primarily focusing on architectural interventions. In specific design instances, I employ strategies to transform private spaces into semi-public ones, leveraging traditional Japanese devices to reconcile the demands for privacy and heritage showcasing. By creating additional public spaces, the aim is to dismantle barriers between different groups, fostering inclusivity.

Step 1: Open up private kabata

traditional private kabata

semi-public kabata

Step 2: Add new function

kabata as entrance

ecological and aesthetic functions

popular science function

living habit function

kabata with eco-yard

semi-public space for tourists to visit

kabata as hand cleaning station

Step 3: Japanese screening devices combined with private Kabata garden

marsh reed screens

Degree of privacy : +++++

living room

protect private space

bamboo screens

Degree of privacy : +++

bedroom

protect private space

split curtains

Degree of privacy : +

kabata

create entrance gray space

reflection on aspects

What is the relation between your graduation topic, the lab topic, and your master track?

My graduation project is rooted in the examination of traditional water systems, with a focus on the transition of water elements and the aquatic heritage of Lake Biwa's surrounding villages from domestic to public domains. The design strategies employed in this project, operating across various scales, are articulated through landscape methodologies. The overarching goal is to amalgamate water heritage components to conceive top-tier spaces that deliver ecological advantages while redefining the nexus between humans and the natural environment.

What is the relevance of your graduation work in the larger social, professional, and scientific context?

In the context of social dynamics, the graduation project strives to use landscape architecture methodologies to reintegrate a unique water cultural heritage that is inconsistent with urban development into the social fabric. The aim is to demonstrate and promote understanding of valuable cultural aspects, contribute to the perpetuation of this heritage and enhance the residents' sense of identity. Furthermore, creating an interactive interface between individuals, nature and water can enhance ecological awareness and thus enhance the protection of this revered environment.

Within the professional and academic sphere, the graduation project aims to penetrate water cultural villages and align them with local policies to develop strategies for embedding cultural heritage into the urban framework. In addition, the project explores the interaction paradigm between tourism and traditional ecological culture.

Limitations

The design project is situated in Japan, and in the process of map construction, inaccuracies arose due to the lack of precise data from certain local authorities. Subsequent cross-referencing with Google Maps was undertaken to ascertain the final conclusions, albeit with a degree of imprecision.

While the overall design benefits from policy support, it still lacks engagement from stakeholders such as the Agricultural Bureau at a larger scale and community unions at the village level. Additionally, the implementation of architectural details necessitates the involvement of specific villagers. Consequently, the overall design carries a degree of subjectivity, and its feasibility remains contingent upon further assessment.

Reference

Tsuneichi Miyamoto. (1975). Tsuneichi Miyamoto's Works 18 Travel and Tourism.

安村克己 . (2006). 観光まちづくりの力学 : 観光と地域の社会学的研究 ..

安村克己 , & ヤスムラカツミ . (2010). 観光社会学における実践の可能性 - 持続可能な観光と観光まちづくりの研究を事例として . 奈良県立大学研究季報 , 20(3), 103-125.

地方都市における観光化に伴う「祭礼群」の再編成 -- 盛岡市の六つの祭礼の意味付けをめぐる葛藤とその解消

鶴見和子 . (1996). 内発的発展論の展開 .

Taki, K. (2022). Flood Management Policy in Shiga Prefecture, Japan: Implementation Approach of a Risk-Based Flood Management System at Catchment Scale.

Bengtsson, Janne, et al. "Reserves, resilience and dynamic landscapes." AMBIO: A Journal of the Human Environment 32.6 (2003): 389-396.

Iqbal, A. (2021). Inclusive, safe and resilient public spaces: Gateway to sustainable cities?.

Nadimpalli, S., Mateo-Babiano, I., Das, J. (2018). Putting the pieces together to create safe public spaces for all. The Conversation. R

丸茂悠 , & 菊地成朋 . (2006). 水郷柳川における堀割空間の状況と水路に関する施策の影響 . 日本建築学会計画系論文集 , 71(603), 1-7.

Yoshihiro K . (2012). The "Kabata", a System of Unique Water Utility Spaces in Japan

小谷裕枝 . (2018). 滋賀県安曇川沖積平野の条里制集落 . 針江地区の重要文化的景観 「水辺景観」 における景観の関係性の研究 .

藤井伸二 . (1994). 琵琶湖岸の植物 - 海岸植物と原野の植物 . 植物分類 , 地理 , 45(1), 45-66.

嘉田由紀子 , 岡田玲子 , 小坂育子 , 荒井紀子 , & 田中敏博 . (1999). 地域住民が調べる水文化の変遷—琵琶湖周辺でのコミュニティ水環境カルテの試み—. 環境技術 , 28(10), 691-697.