



# Reactivating Traditional Villages

Towards a sustainable cultural landscape for Yuanyang  
County, China

Circular Water Story Lab  
First mentor: Dr. Inge Bobbink  
Second mentor: Willemijn Wilms Floet

2023.01.20  
Yuan Yuan | 5297230  
Landscape Architecture MSC

01

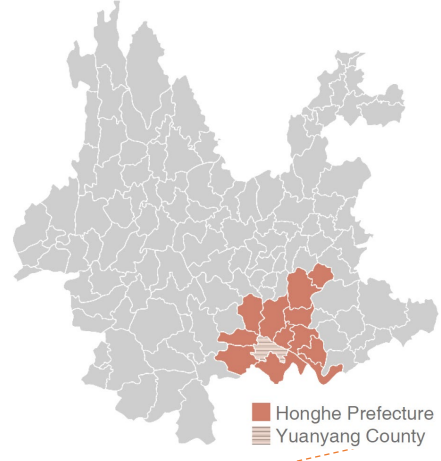
Where are the Terraced Fields?



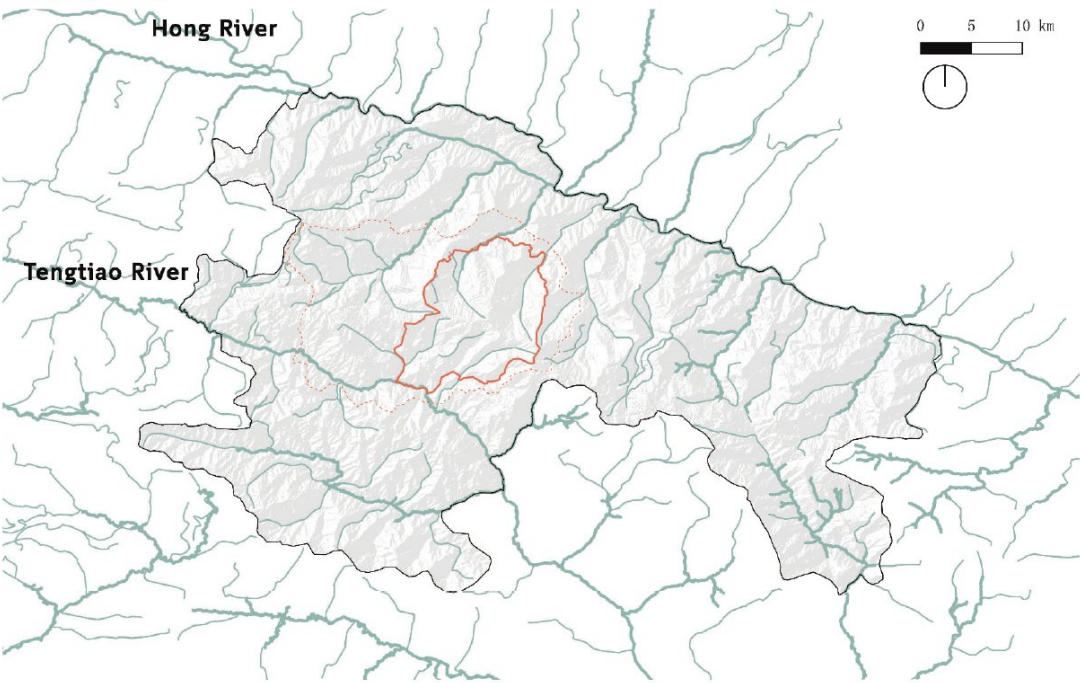
Country Scale  
China



Province Scale  
Yunnan Province

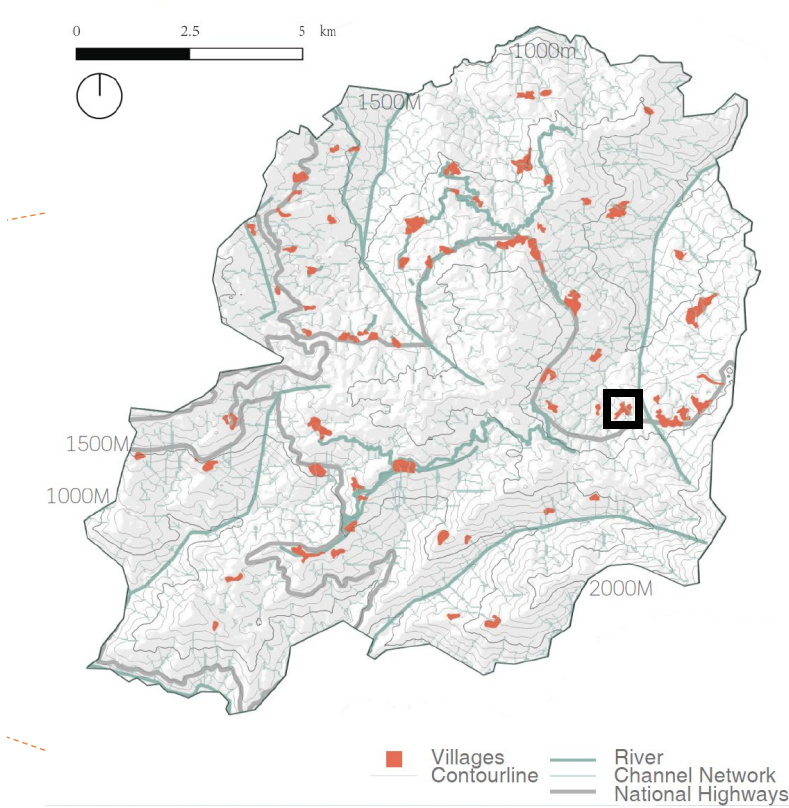


County Scale  
Yuanyang County

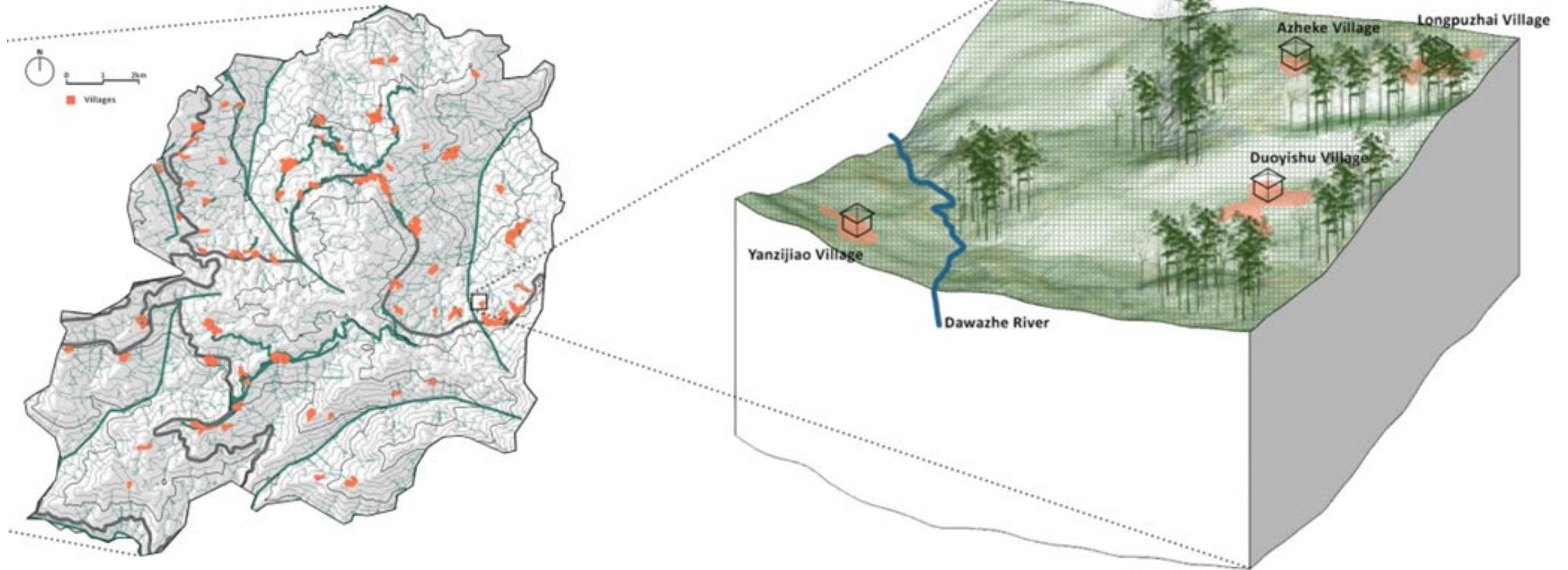


- River
- Terraces Heritage Area
- ... Buffer Zone

Heritage Scale  
Yuanyang Hani Rice Terraces



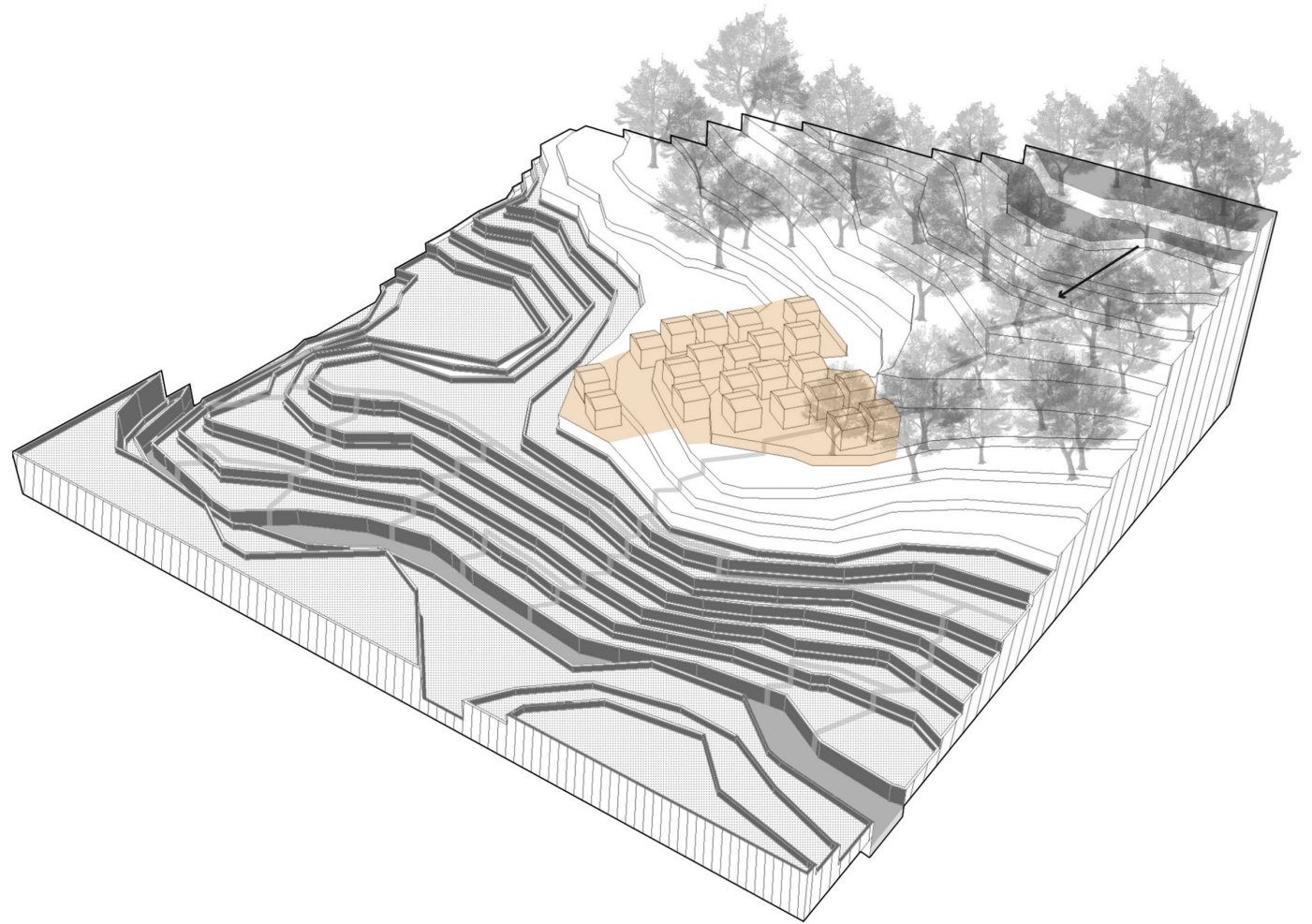
## Azheke Village



02

How Terraced Landscapes Are Formed?





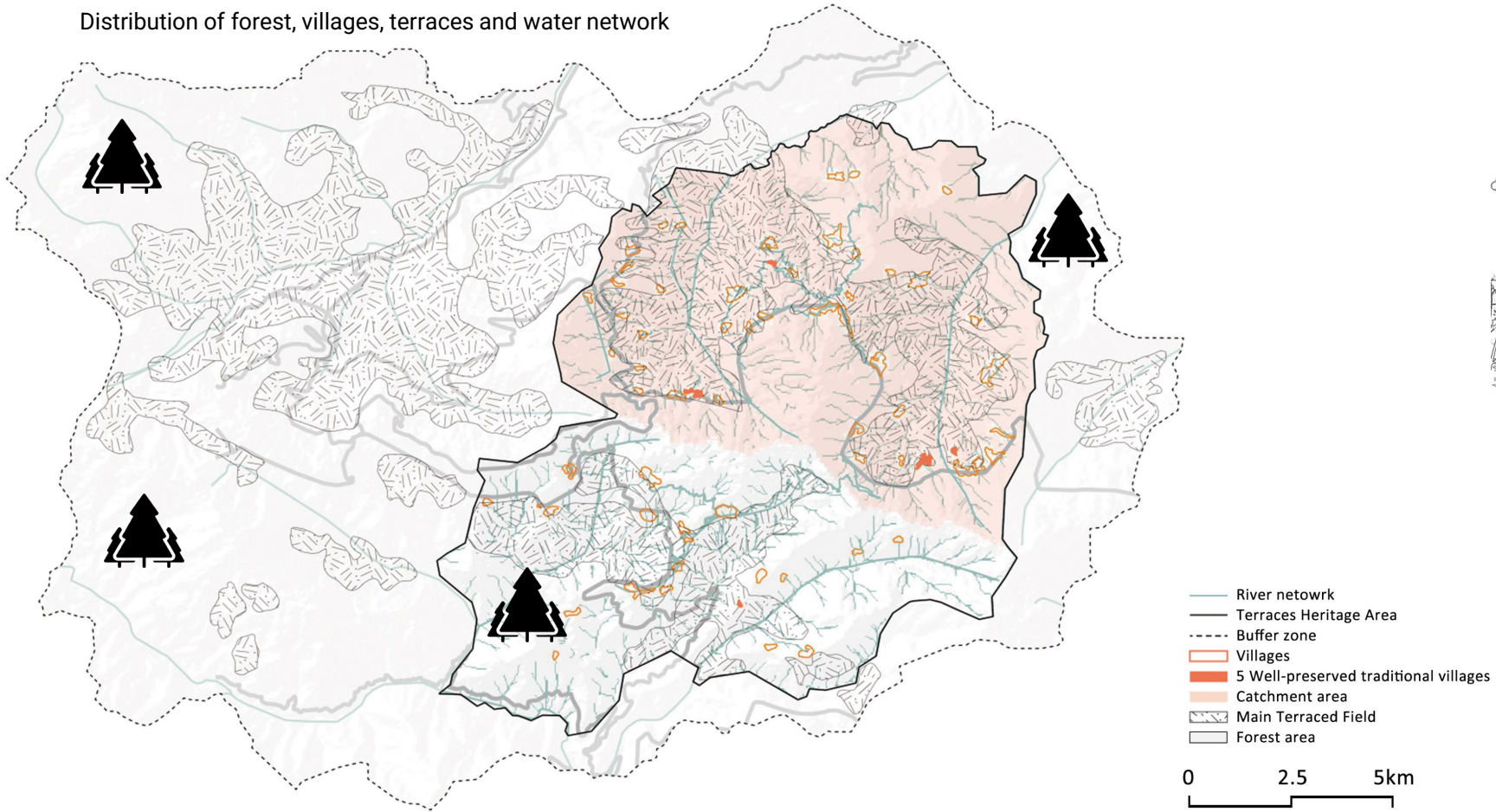
1300 years ago, a group of Hani people migrated here and cultivated farmland on **Ailao Mountain**.



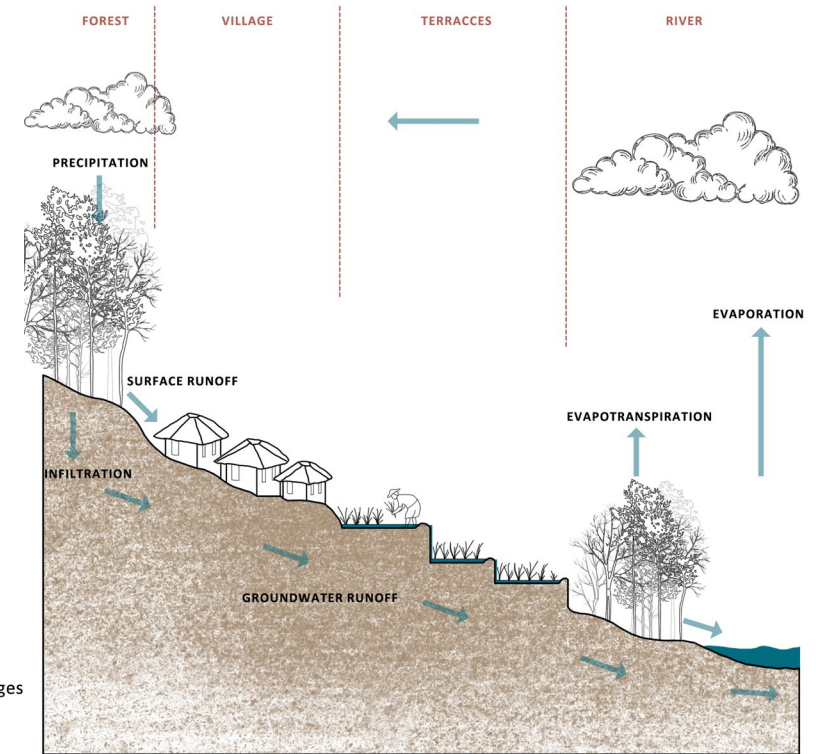
03

How does the water and ecology system work?

Distribution of forest, villages, terraces and water network



'Forest-Village-Terrace-River' ecological landscape



- 'Forest – Village – Terraces – River' System
- The forests act as a **catchment** for the rainfall and to recharge the village and terraces below.

04

Traditional relationship between nature and inhabitants





05

How is The Yuanyang Terraced Fields going Nowadays?

## How is The Yuanyang Terraced Fields going Nowadays?

### NATURAL CONDITIONS

**01**  
Extreme  
droughts in  
Yunnan  
Province

**02**  
Decreased  
water  
storage  
capacity of  
forests

### SOCIAL CONDITIONS

**03**  
Loss of  
rural  
population

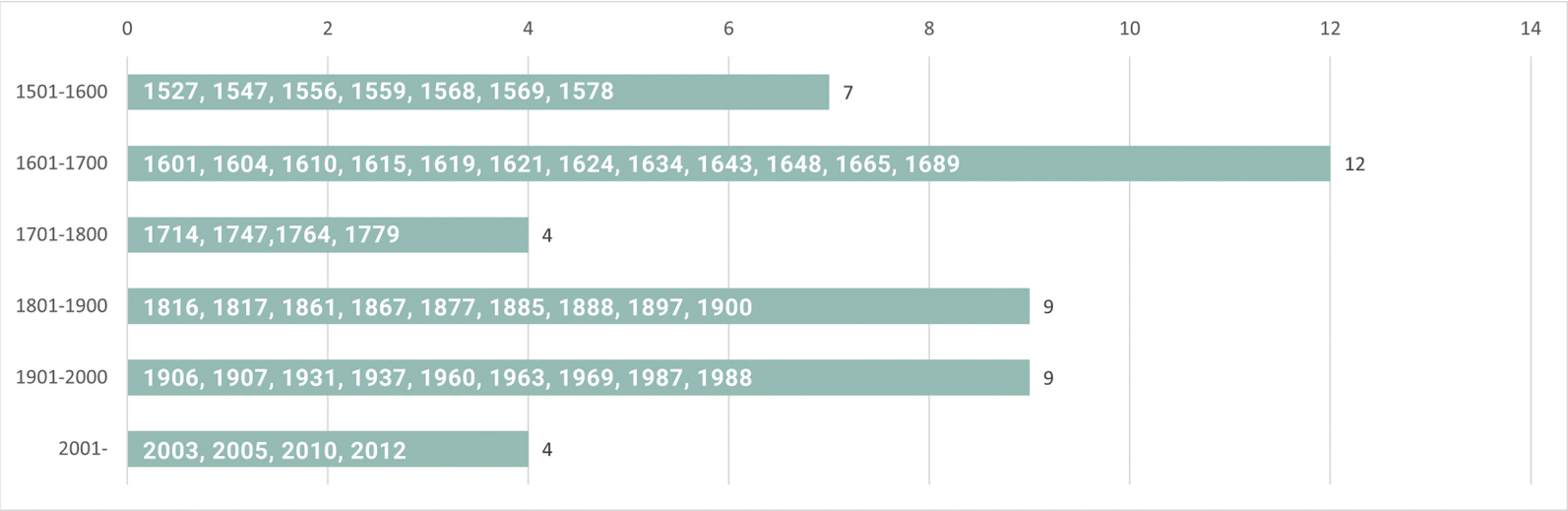
**04**  
Mess  
Tourism

# NATURAL CONDITIONS

## | Extreme droughts in Yunnan Province

- From 1500 to 1800, there were about 4 extreme droughts per 100 years.
- It increased to 7 in the 19th century and to 12 in the 20th century.
- There were about 4 to 12 extreme droughts per 100 years before 2000, however, **4 extreme droughts have already occurred in the last 20 years.**

Frequency of extreme drought event during the last five centuries in Yunnan Province, China.



Monthly rainfall in the 2009-2010 hydrological year and deviation from the normal year (mm).

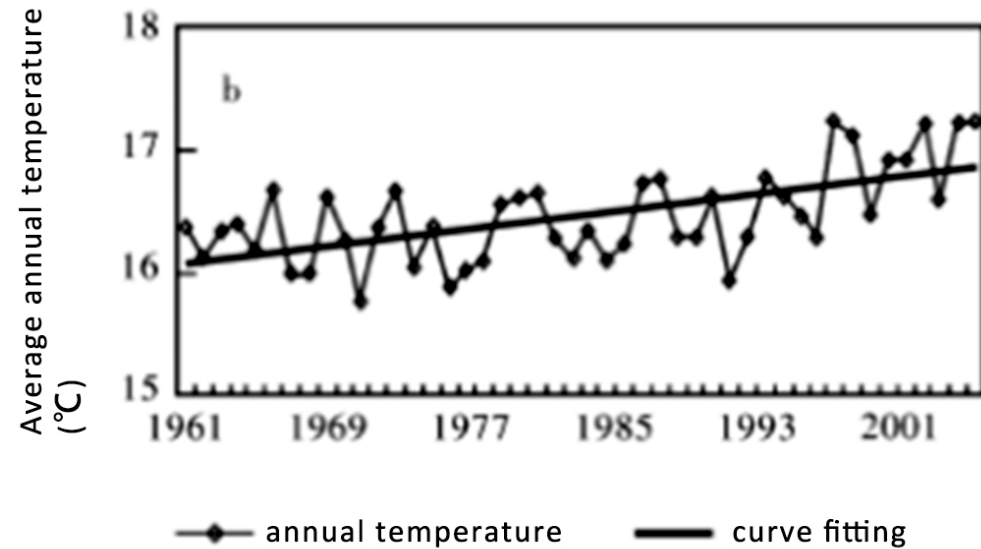
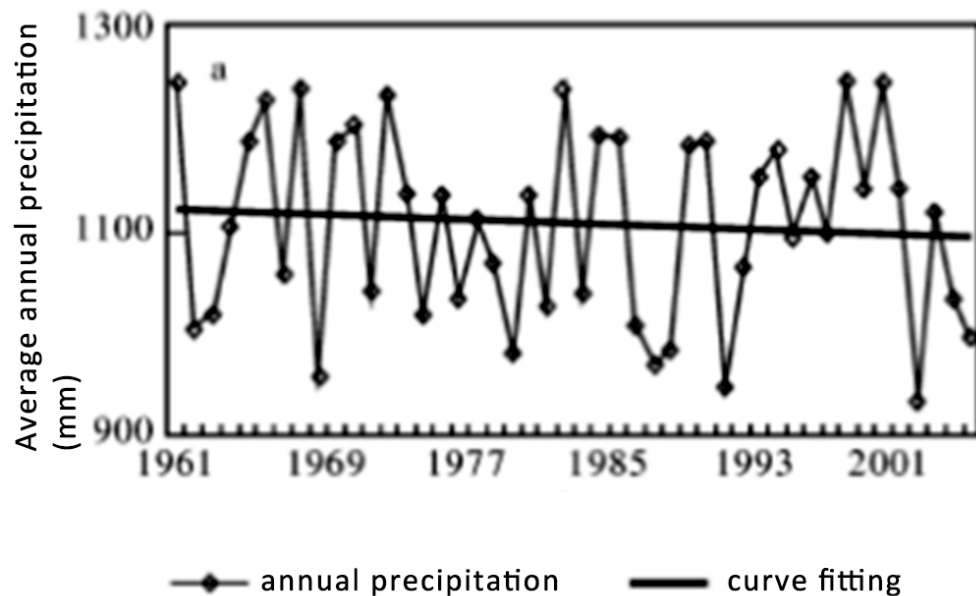
Month	7	8	9	10	11	12	1	2	3	4	5	6	Total
2009-2010 year	94.2	100.7	33.5	3.1	10.5	0.2	11.8	3	17.7	110.7	89	85.5	559.9
Normal year	164.4	124.6	64.1	69.3	41.9	19	26.5	19.2	35.9	79.7	130.4	143.9	918.9
Deviation(%)	-42.7	-19.2	-47.7	-95.5	-74.9	-98.9	-55.5	-84.4	-50.7	38.9	-31.7	-40.6	-42.7

Source: Resilience of the Hani Rice Terraces System to extreme drought

## NATURAL CONDITIONS

### | Extreme droughts in Yunnan Province

- With the change of climate, from 1961 to 2005 the **precipitation** in Yunnan Province **decreases** year by year, and the **temperature** **increases** gradually.
- the average annual precipitation of Yunnan province decreased from about 1120 mm to 1100 mm;
- the annual temperature increased from around 16°C to close 17°.
- From a wet and cold climate to a warm and dry climate





NATURAL CONDITIONS

| Decreased water storage capacity of forests

- The storage and discharge of water from the upland forest play a critical role in sustainable water management in the Hani Terraces System.
- the water storage capacity of forests decreased these years, because of the **decrease of forests land**.
- Area covered by forest:  
2010—70%  
2021—57.32%

Rainfall (10 <sup>5</sup> m <sup>3</sup> /km <sup>2</sup> /a)			
14			
Forest storage		Runoff	Others
4.2		7.5	2.3
Infiltration	Others		
2.8	1.4		

Water storage and supply function of the forests in the Hani Rice Terraces System.

## SOCIAL CONDITIONS

### | Loss of rural population

The migration of the rural population will lead to the risk of **extinction of minority cultures**.

- About **3 million migrant workers** in Yunnan Province.
- 'Hollow' village
- the scarcity of labor in agricultural production – abandoned terraces
- shock to the traditional culture

vacant houses



elderly living alone at home



## SOCIAL CONDITIONS

### | Mess Tourism

- Pollution damage to the original landscape, buildings and ways of living
- Increase of tourists



Crowded visitors on the mountain

It is urgent to carry out the **ecological** and **cultural protection** of Hani Terraces.



**NATURAL** and **SOCIAL** pressures —

Adapting this agricultural heritage to the future & Reactivating traditional villages

## **Challenge**

- **Instability of water resources**
- **Disappearance of culture**
  - **Defining tourism**

## RESEARCH STATEMENTS

### Main Research Question

How to make the existing Honghe Hani terrace landscape be **more climate adaptable** by strengthening its **cultural heritage**, and making the **community socially and economically** more vital by introducing a new model for **eco-friendly tourism**?

#### Sub question 1

How to integrate the elements of water management in Honghe Hani's traditional cultural landscape to solve the shortage of water? How to build a sustainable circular water system?

Instability of water resources

#### Sub question 2

What can we implement to make the rice terraces a more diverse landscape in terms of ecology, production and landscape architectural scenery by spatial design in order to make the heritage vibrant?

Disappearance of culture

#### Sub question 3

How to design an ecological and cultural tourism model in a heritage terraces area? How to reduce environmental pollution caused by tourism?

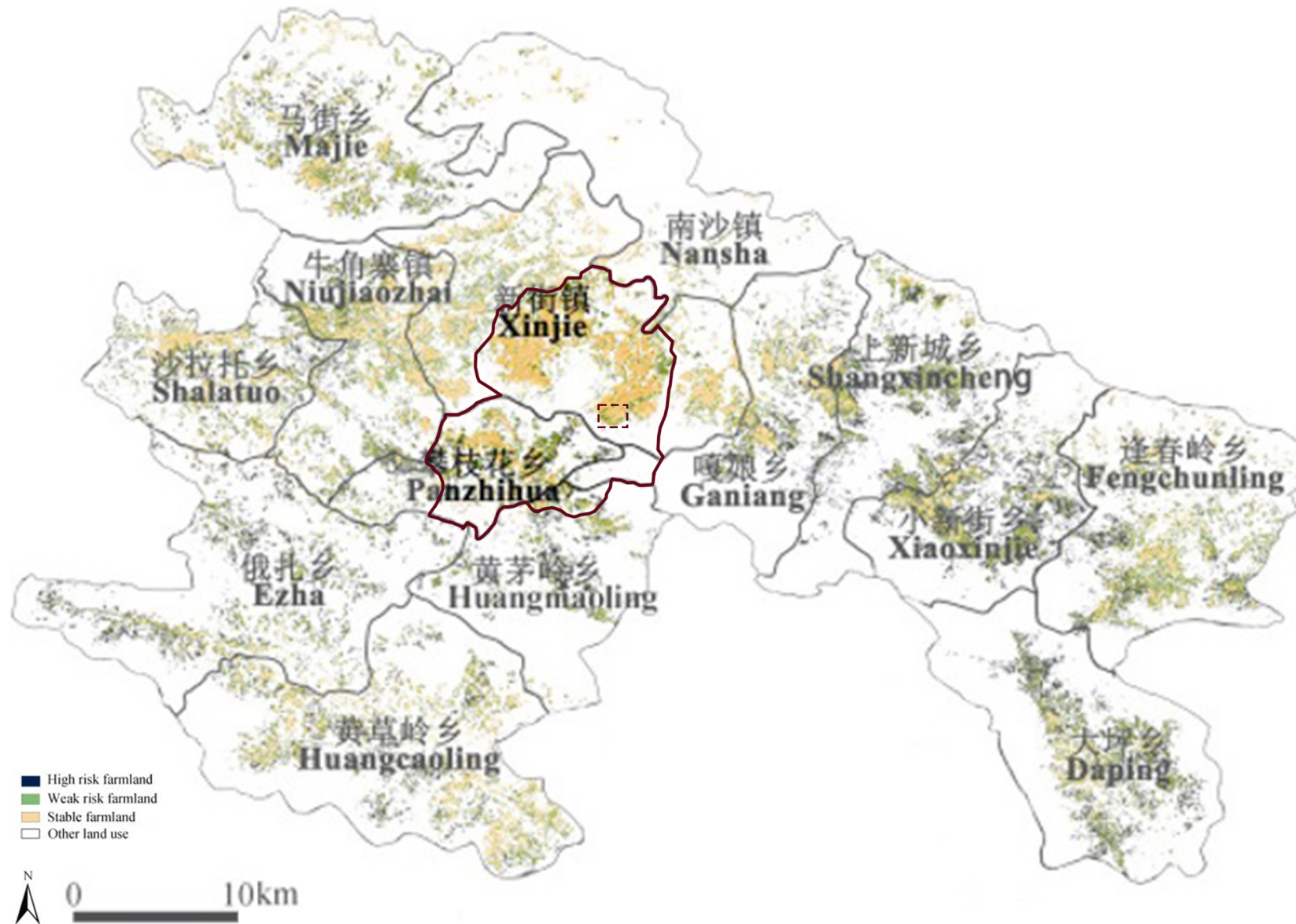
Defining tourism

06

## SITE ANALYSIS

Natural conditions | Cultural conditions | Tourism potential

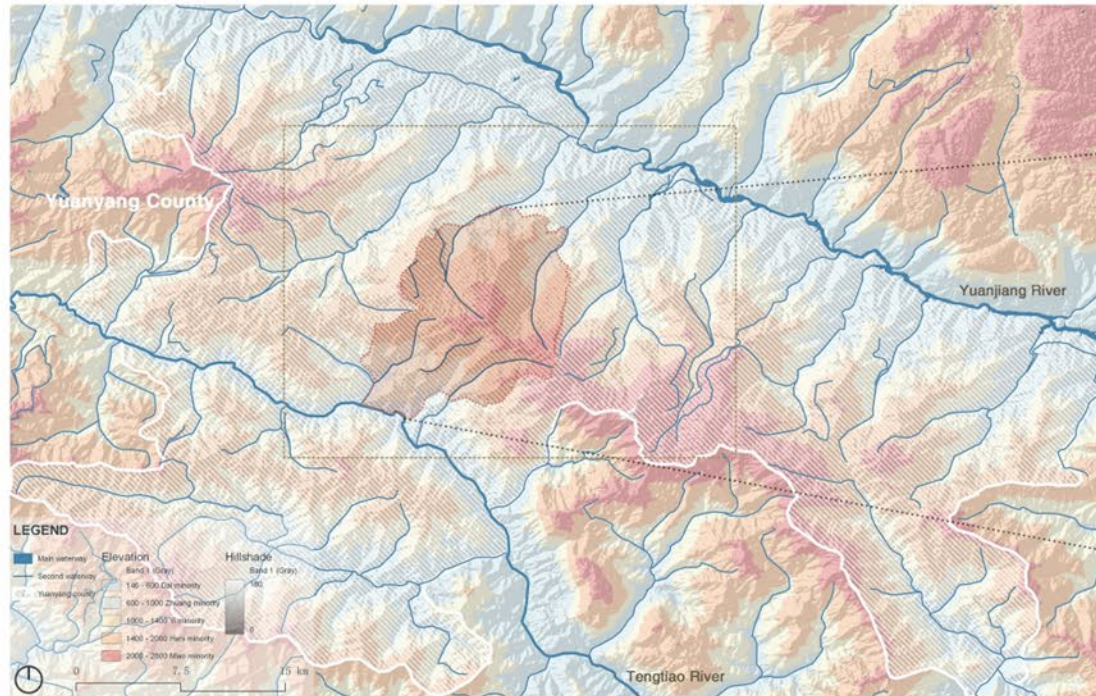
## | The terraces



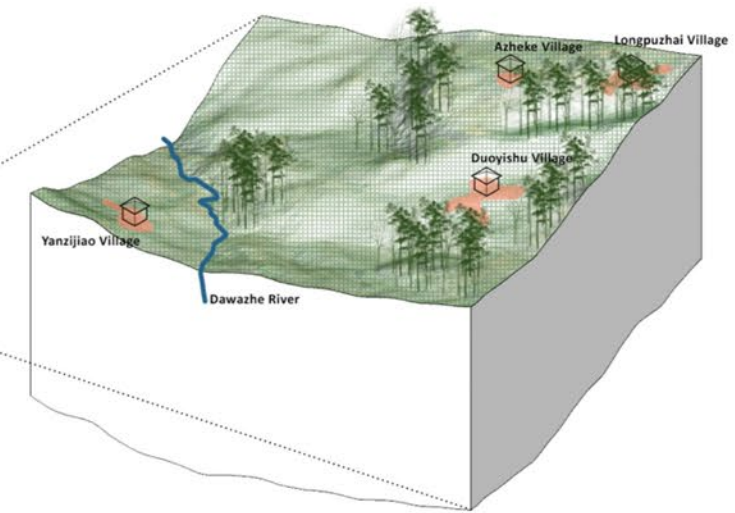
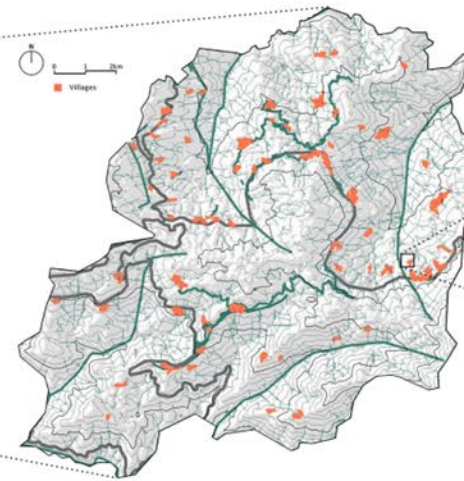
- Map of potential risk of abandoned farmland in Yuanyang County
- Cultivated land in Yuanyang County decreased by 84.16km<sup>2</sup> in recent 12 years.
- Azheke Village located in the weak-risk area, facing the risk of being abandoned.



## | Topography

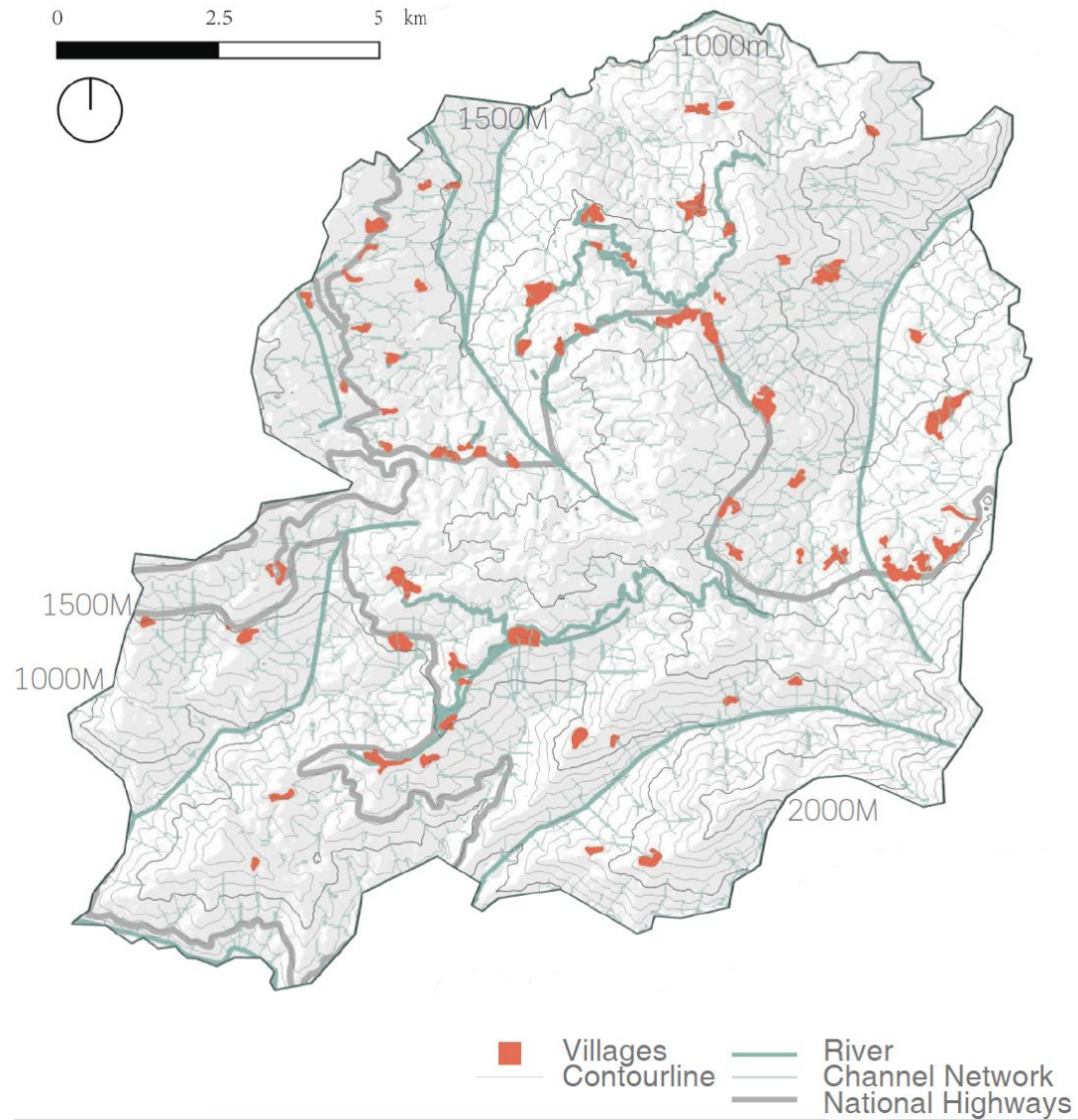


Yuanyang County



## | Topograthy

Heritage Scale  
Yuanyang Hani Rice Terraces

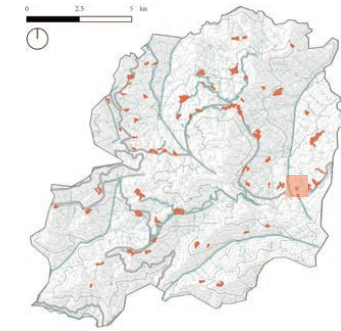
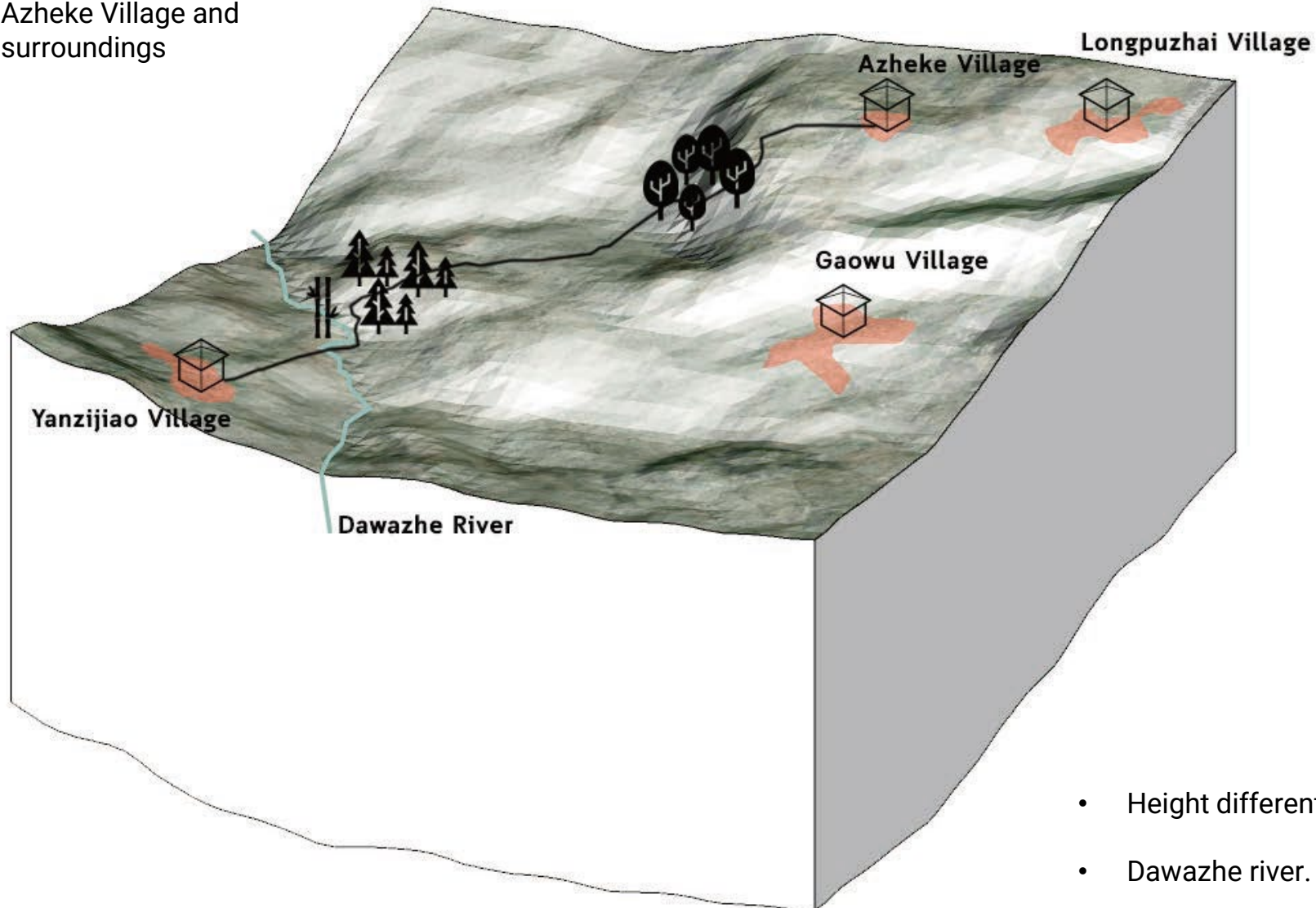


- high in the middle and low in the north and south
- 1500m
- Steep slope: 30 - 60



## | Topography

Azheke Village and surroundings

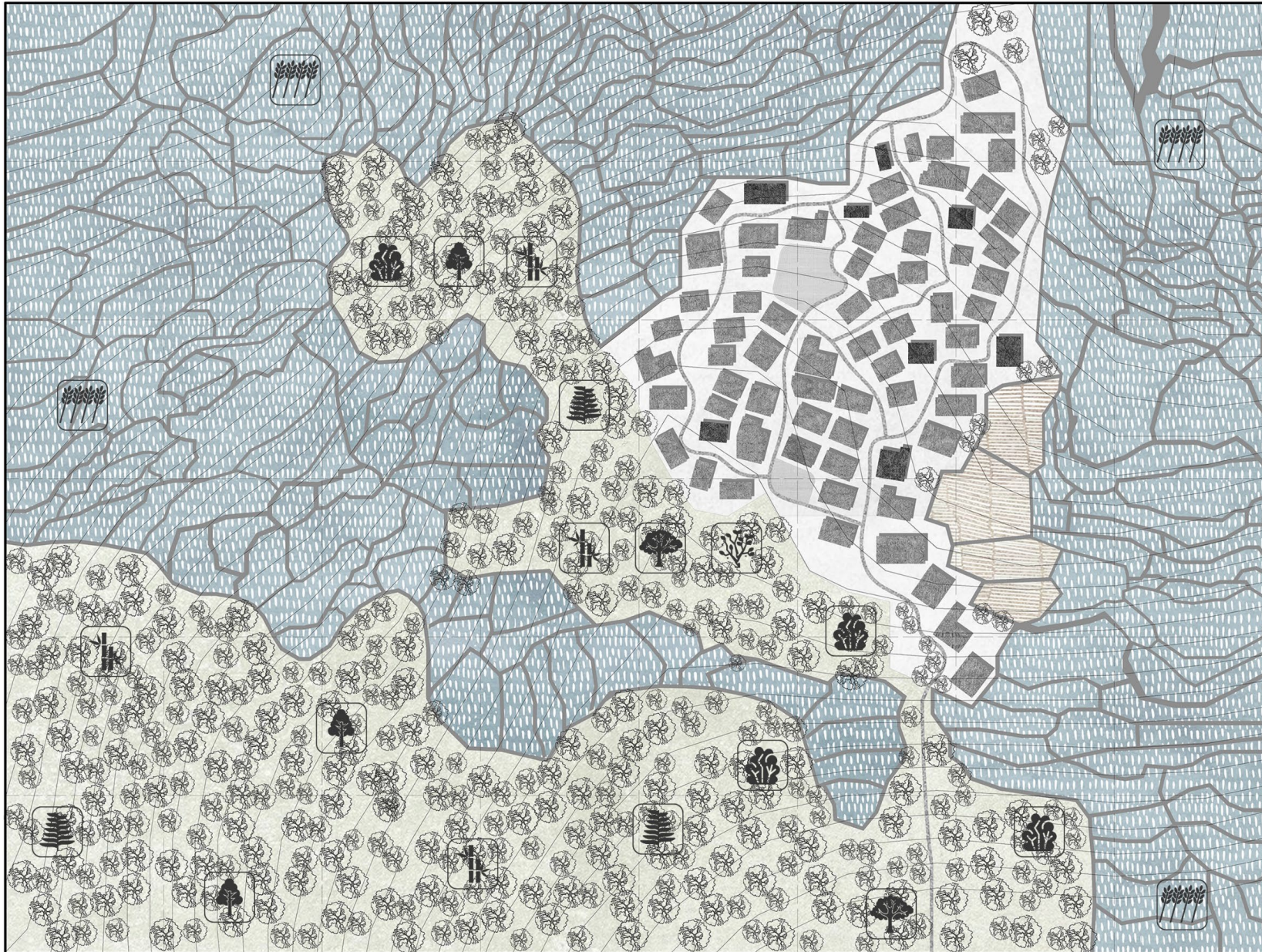


Honghe Hani Rice Terraces

- Height different is about 400m
- Dawazhe river.



## | The Plant species



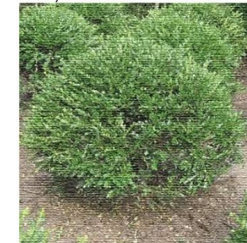
Red Rice  
*Oryza*



Chinese Magnolia  
*Manglietia hookeri*



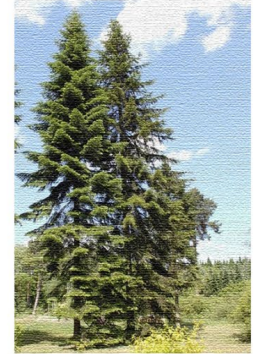
Holly  
*Ilex yunnanensis* Franch.



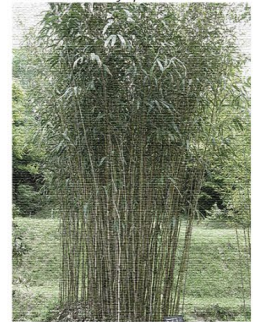
Chinese Maple  
*Alangium chinense*



Chinses Fir  
*Cunninghamia lanceolata*



Arrow Bamboo  
*Pseudosasa japonica*

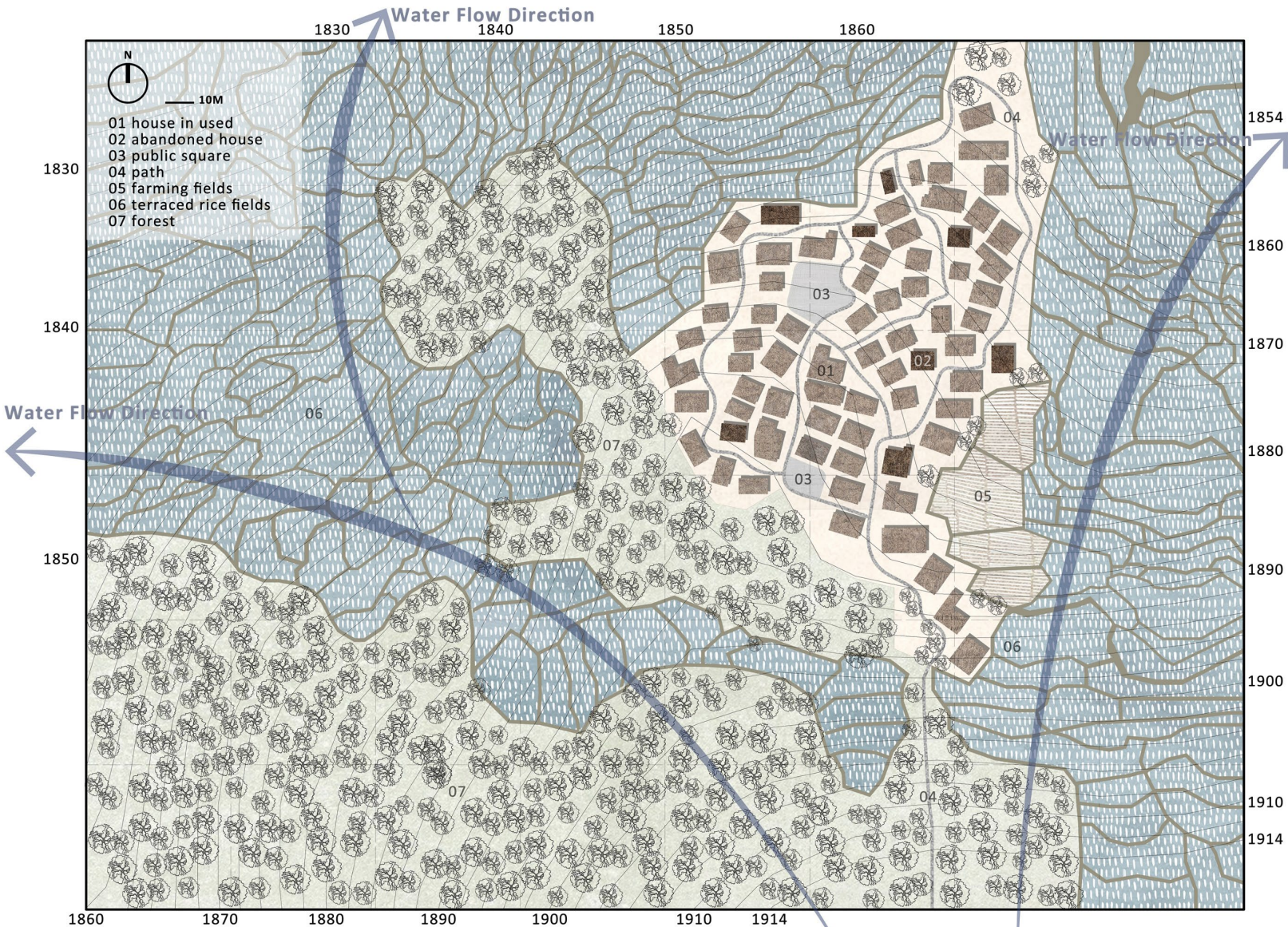


Nepalese alder  
*Alnus nepalensis*





## | Azheke Village \_ Masterplan related to waterflow

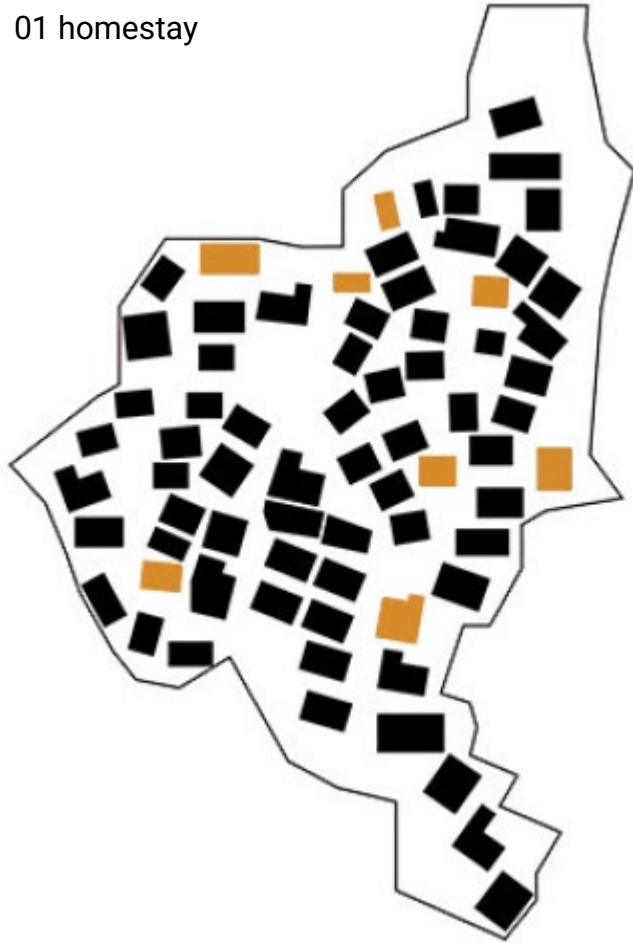


- Arrange along the contour line
- 56 houses in use
- 8 houses abandoned



## | Azheke Village \_ Existing situation of the Village

01 homestay

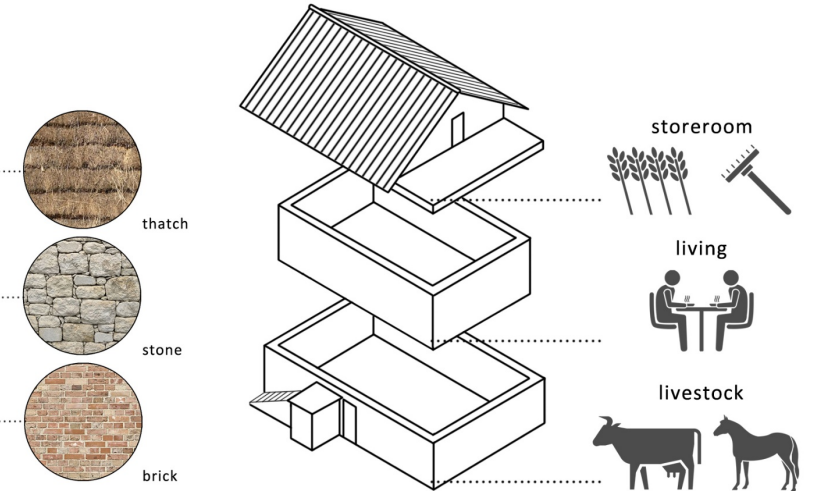
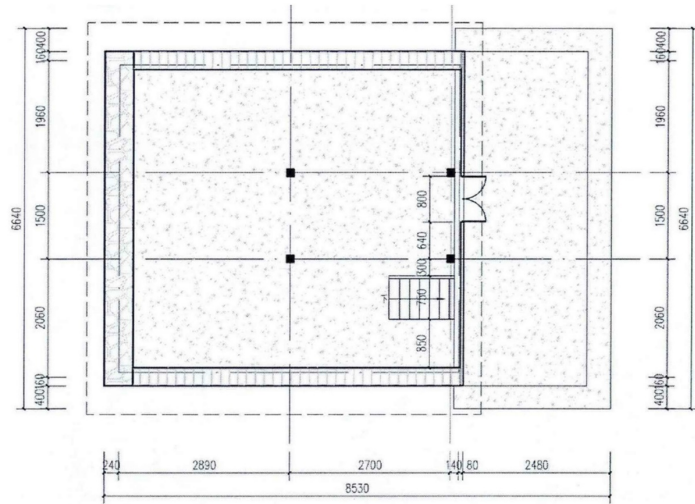


02 existing public squares

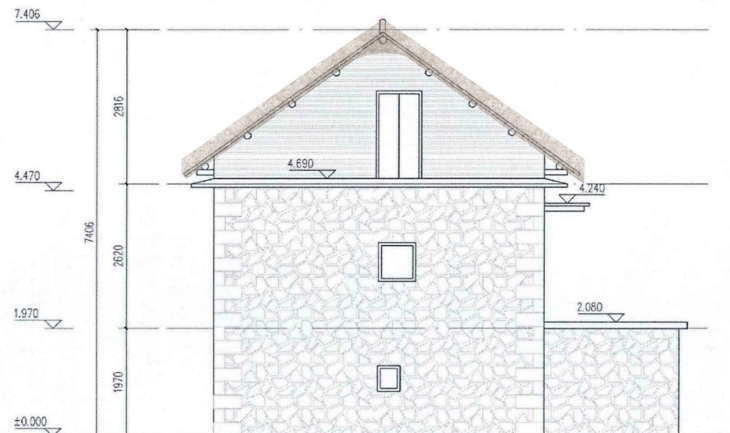


## | Azheke Village \_ Mushroom house

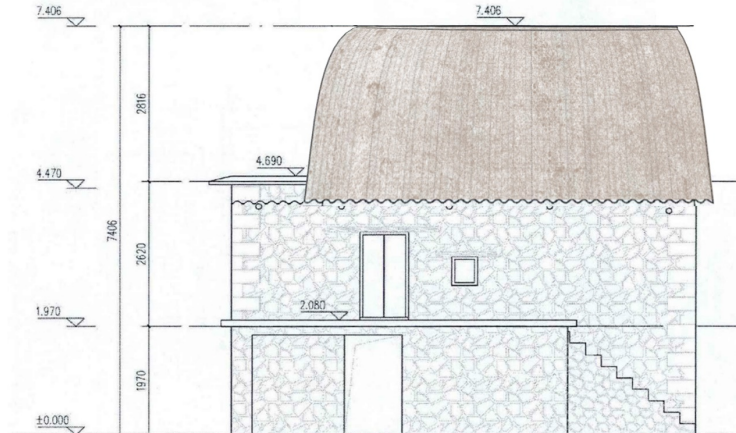
Top view



Left view



Front view



- Mainly made of thatch, stone, and brick
- Three floors with different function

## | Local residents

The Azheke village has a population of 479 people, including 267 males and 212 females. There are 287 labourers in the village, of which 60 are working outside.



**Zhuang, a migrant worker**

He said that the long-term **low income** made the young and middle-aged people in the village choose to go out to work. If they rely on traditional production and lifestyle, their family can only earn 500 euros a year and cannot get a better life. They are more concerned about how to raise their income than whether the village where they have lived for many years becomes a World Heritage Site.



**Lin, an old man living in a village**

He said that after most of the young people left, **the elderly and the women** in the family were in charge of farming. Few of the new generation of young people know how to repair ridges, and how to plough, sow, and harvest. At the same time, due to the reduction of the labour force, some terraced fields had to be abandoned, resulting in the collapse of the terraced ridge.

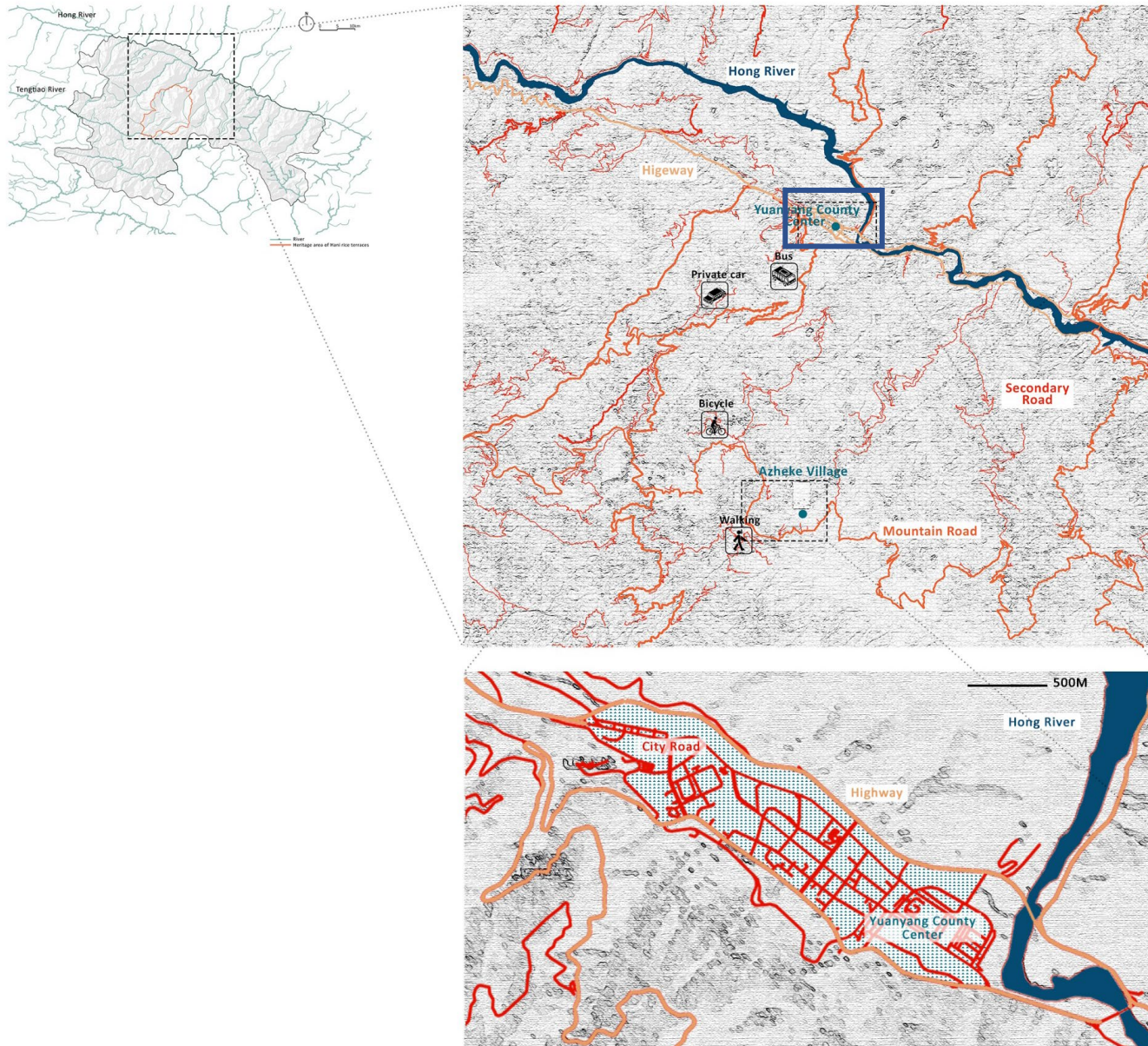


**Hua, a woman living in a village**

In addition to farming, she and other women also find time to weave fabrics, she said. On weekends, they would go to the market to sell the fabric for money. Every year some tourists visit the village, and she charges the tourists and acts as their tour guide. But sometimes tourists **disturb the villagers' lives** and leave garbage, which makes her very unhappy.



## | Traffic conditions analysis



mountain road



secondary road



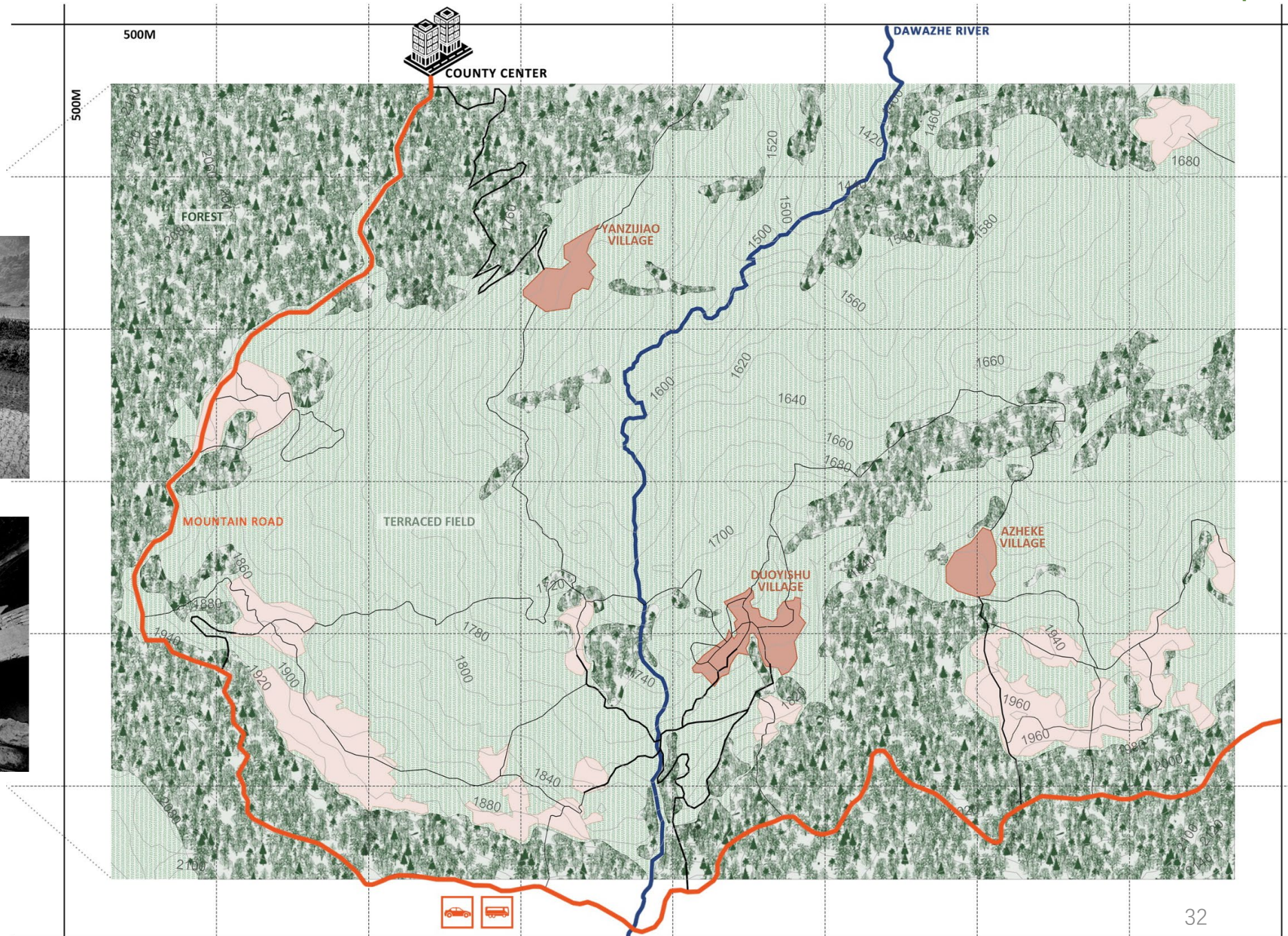


## | Traffic conditions analysis

path among terraced fields



path of Azheke village





## | Conclusion\_ Reactivating the Azheke Village

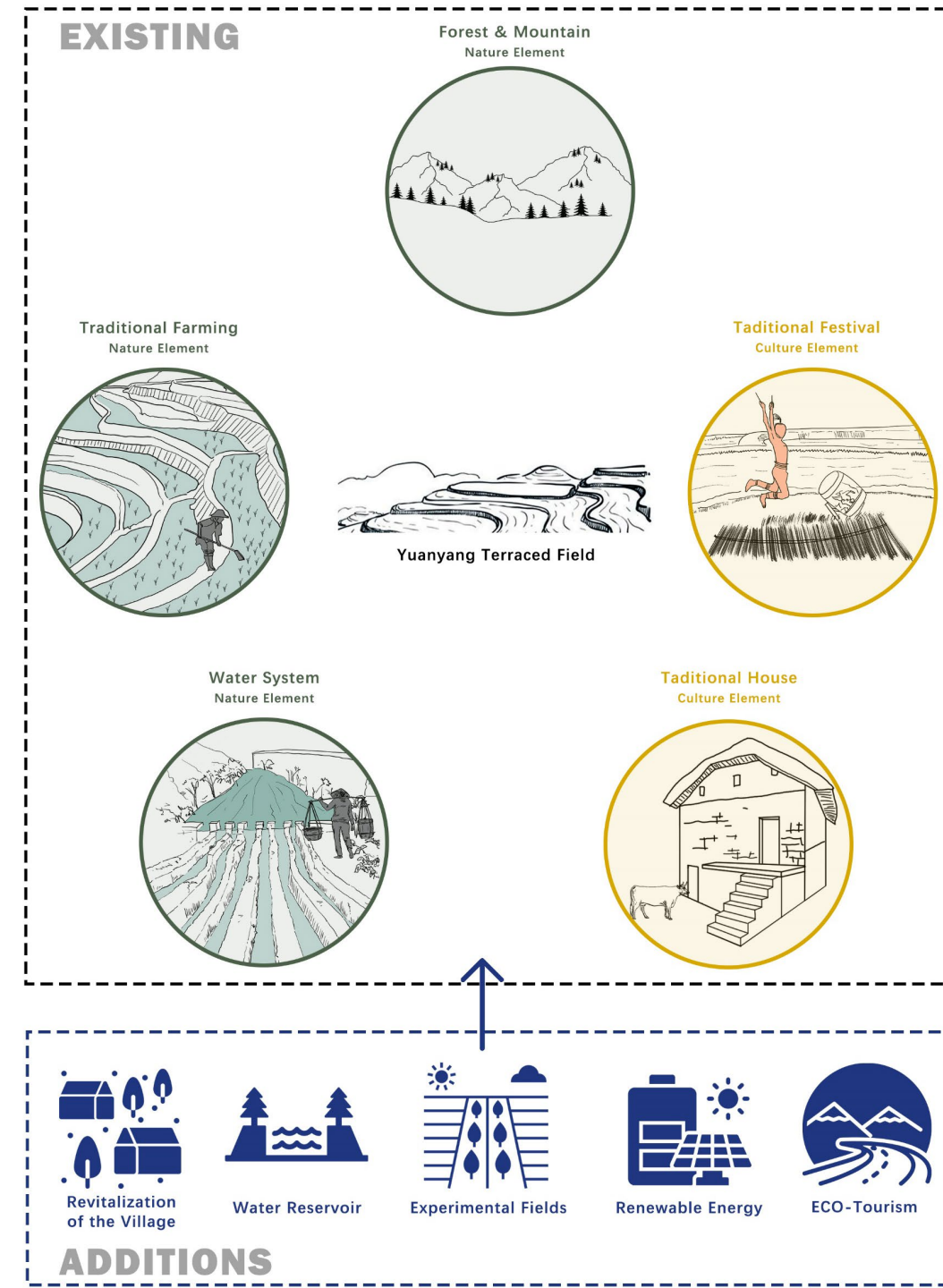
- Environmental
  - Increase the water storage capacity of the site.
  - Increase biodiversity.
- Social and cultural
  - Emphasize the natural and cultural landscape of the village
- Economy
  - eco-tourism

07

## CONCEPTUAL DESIGN

## | Design Concept

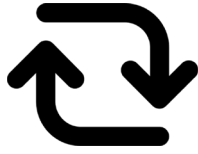
- Facing the current situation of villages gradually declining in Yuanyang County, this project takes the traditional Azheke Village as an example to discover its **potential** and try to **activate** the villages from three aspects: ecology, culture, and economy, so that they can better adapt to the development of the times, and become **sustainable**.



## | Design Principles



**Principle 1**  
Respect and preservation



**Principle 2**  
Innovation



**Principle 3**  
Preserve and renew cultural  
heritage



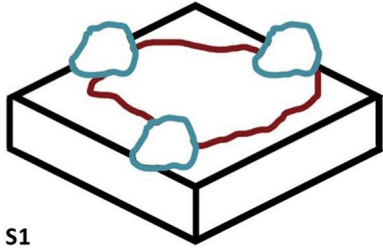
**Principle 4**  
Future proof ecology



**Principle 5**  
Strengthen atmospheres

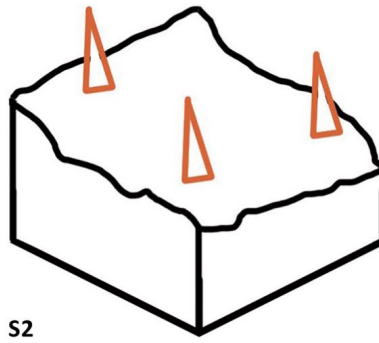


## | Design Strategy



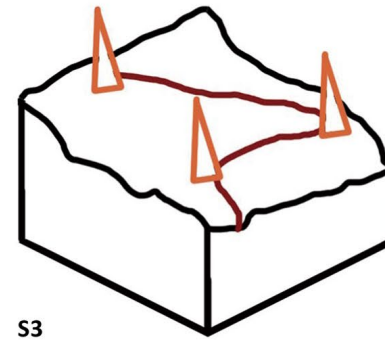
S1

Connecting isolated village (P5)



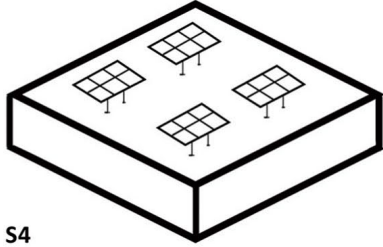
S2

Highlight the landscape with cultural & heritage identity (P1 & P3)



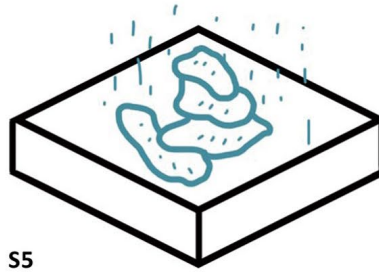
S3

Design tour routing based on the existing terrain (P1 & P3)



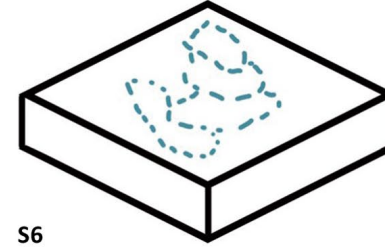
S4

Solar panel (P2)



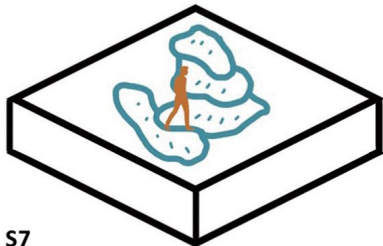
S5

Water Storage (P4)



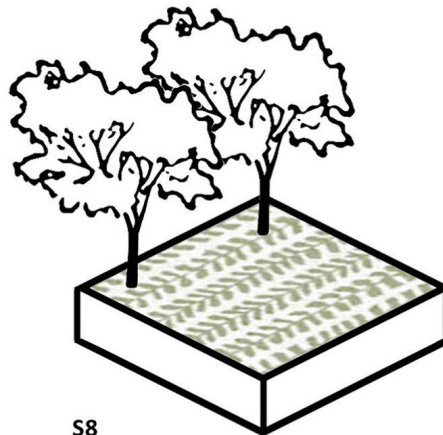
S6

Recreate the pattern of faded terraced field (P1 & P3)



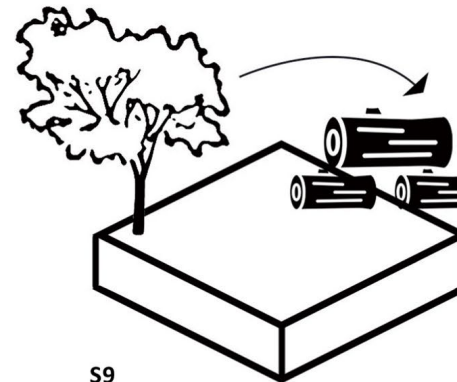
S7

Touring path experience (P5)



S8

Increase the Biodiversity (P4)



S9

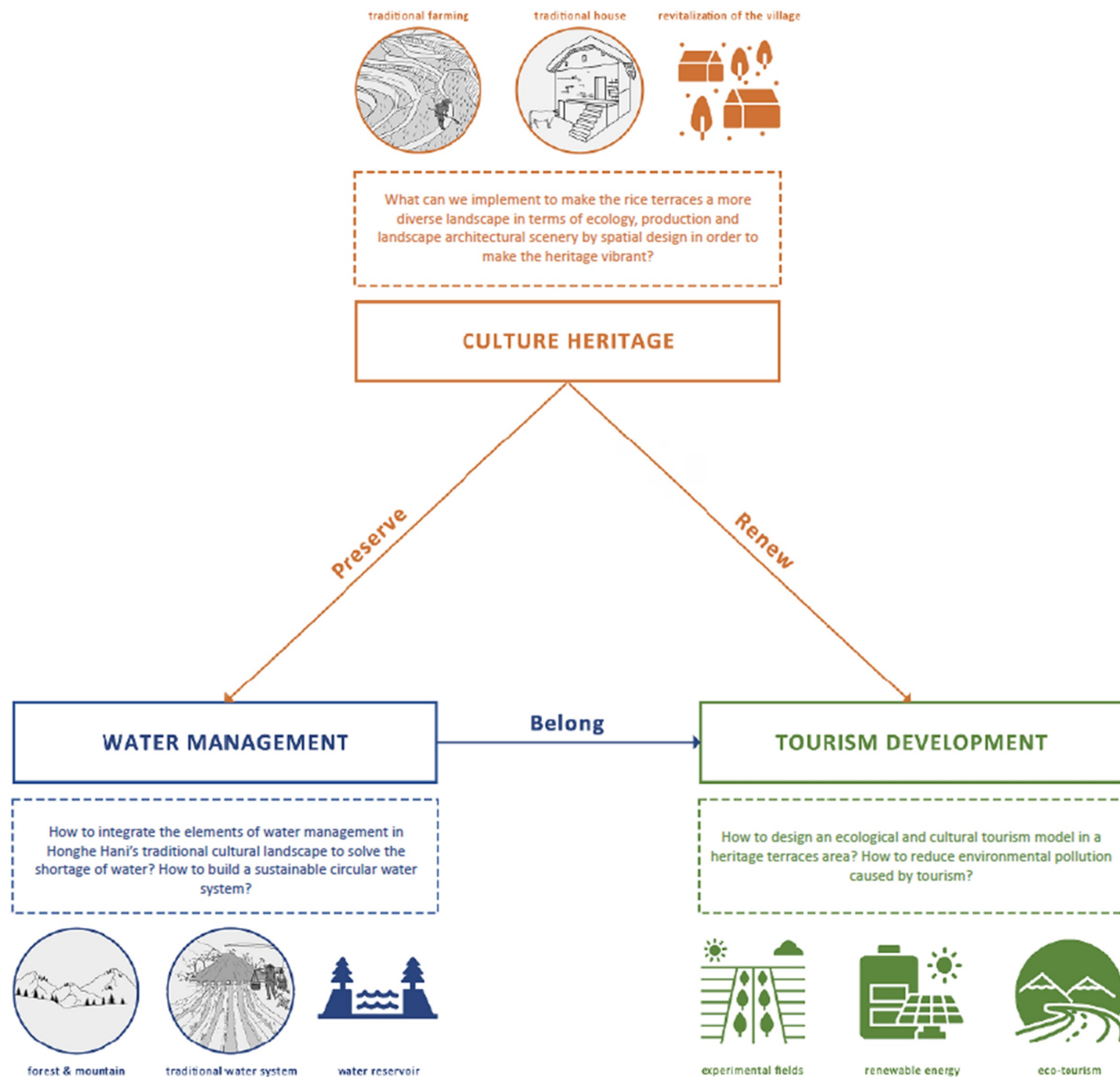
Local material (P1)

# 08

## DESIGN

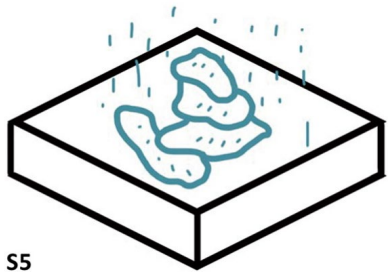
- 8.1 Design framework
- 8.2 Water management - water reservoir
- 8.3 Tourism plan - travel routes design
- 8.4 Timeline of construction

## | 8.1 Design Framework



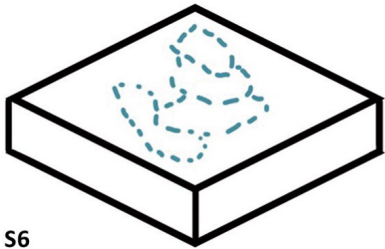


## | 8.2 Water management \_ water reservoir



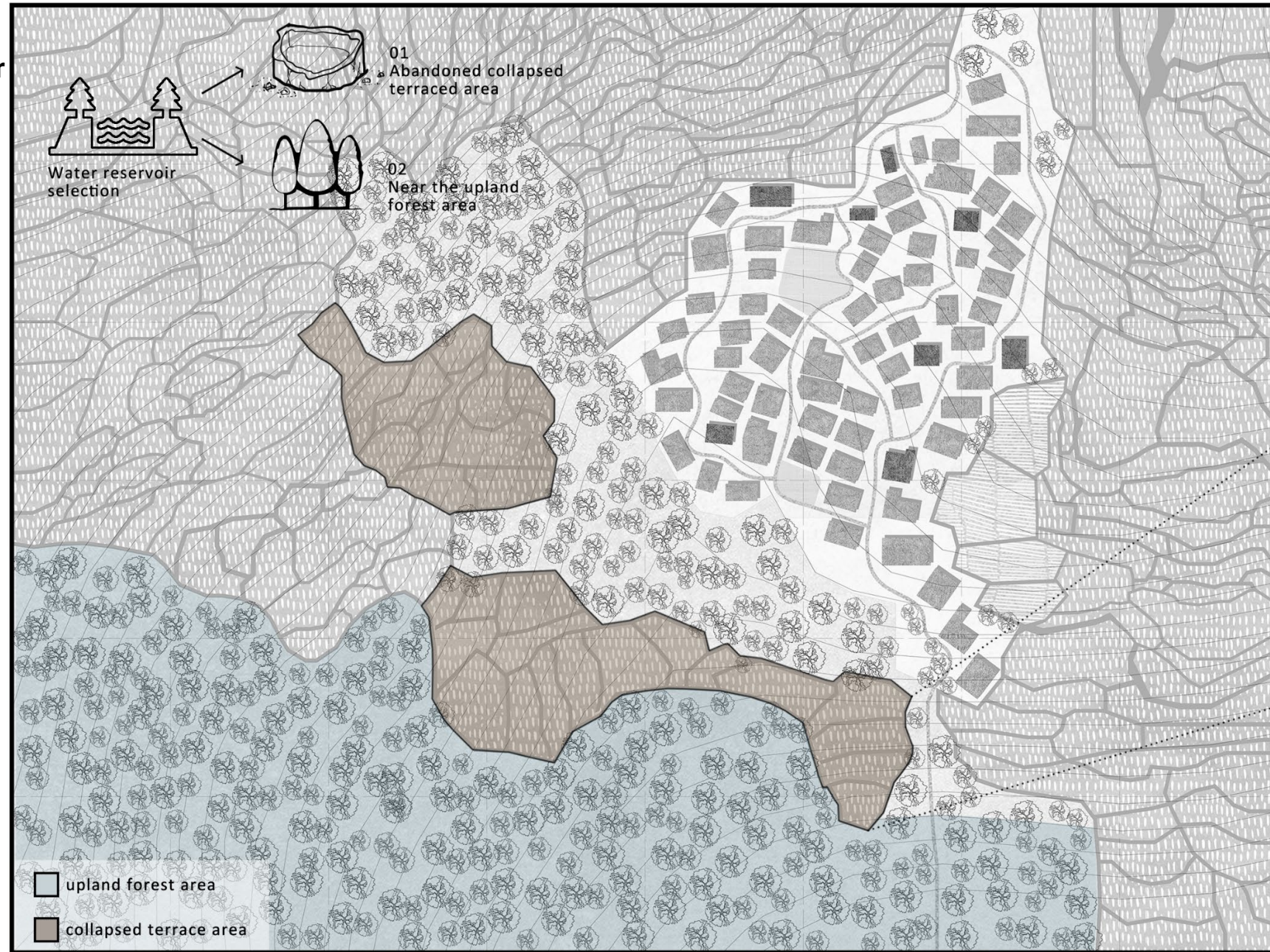
S5

Water Storage (P4)



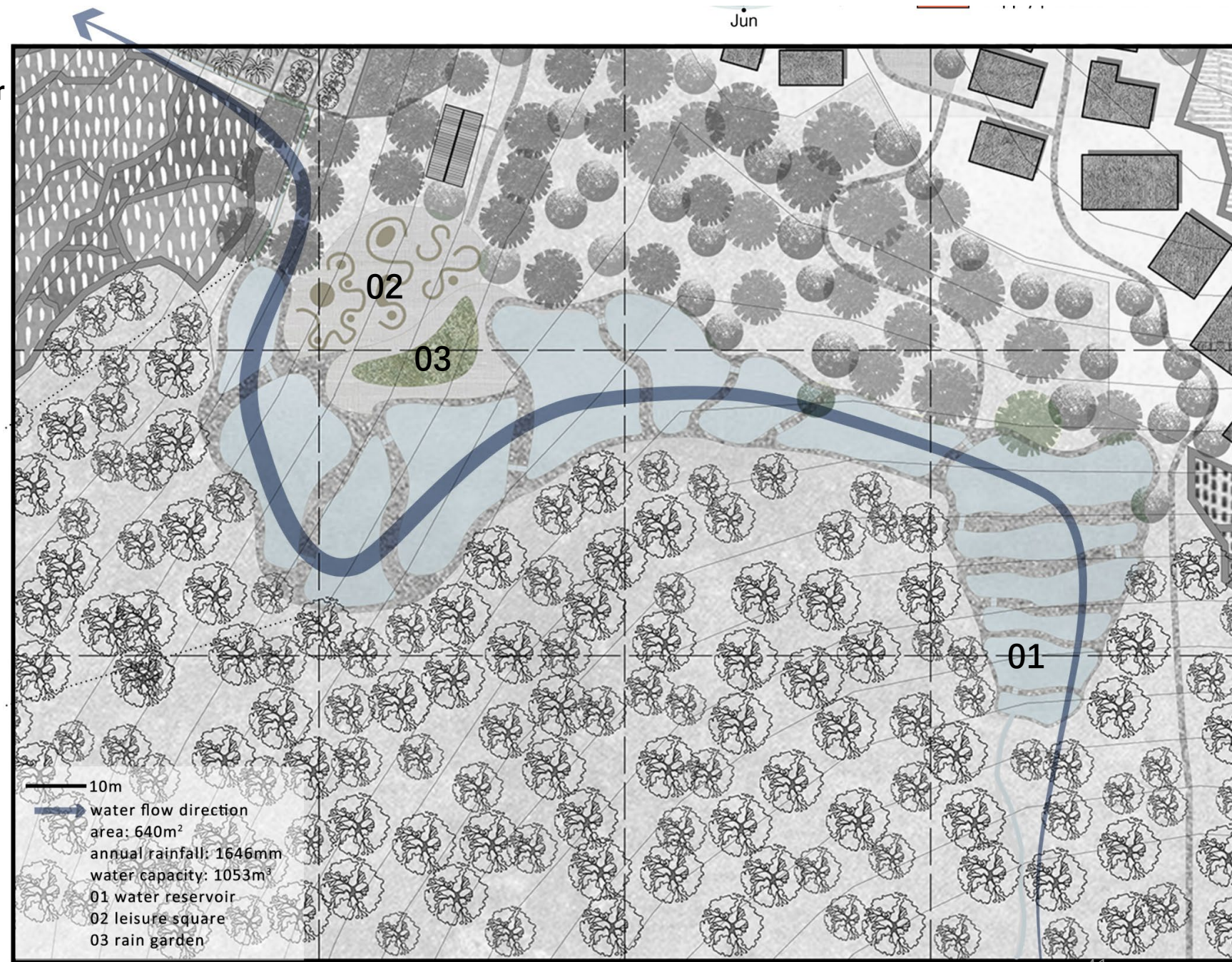
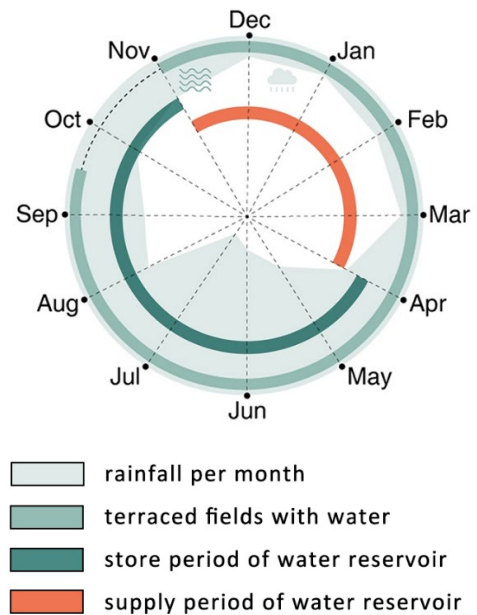
S6

Recreate the pattern of faded  
terraced field (P1 & P3)





## | 8.2 Water management \_ water reservoir





## **8.3 Tourism plan - travel routes design**

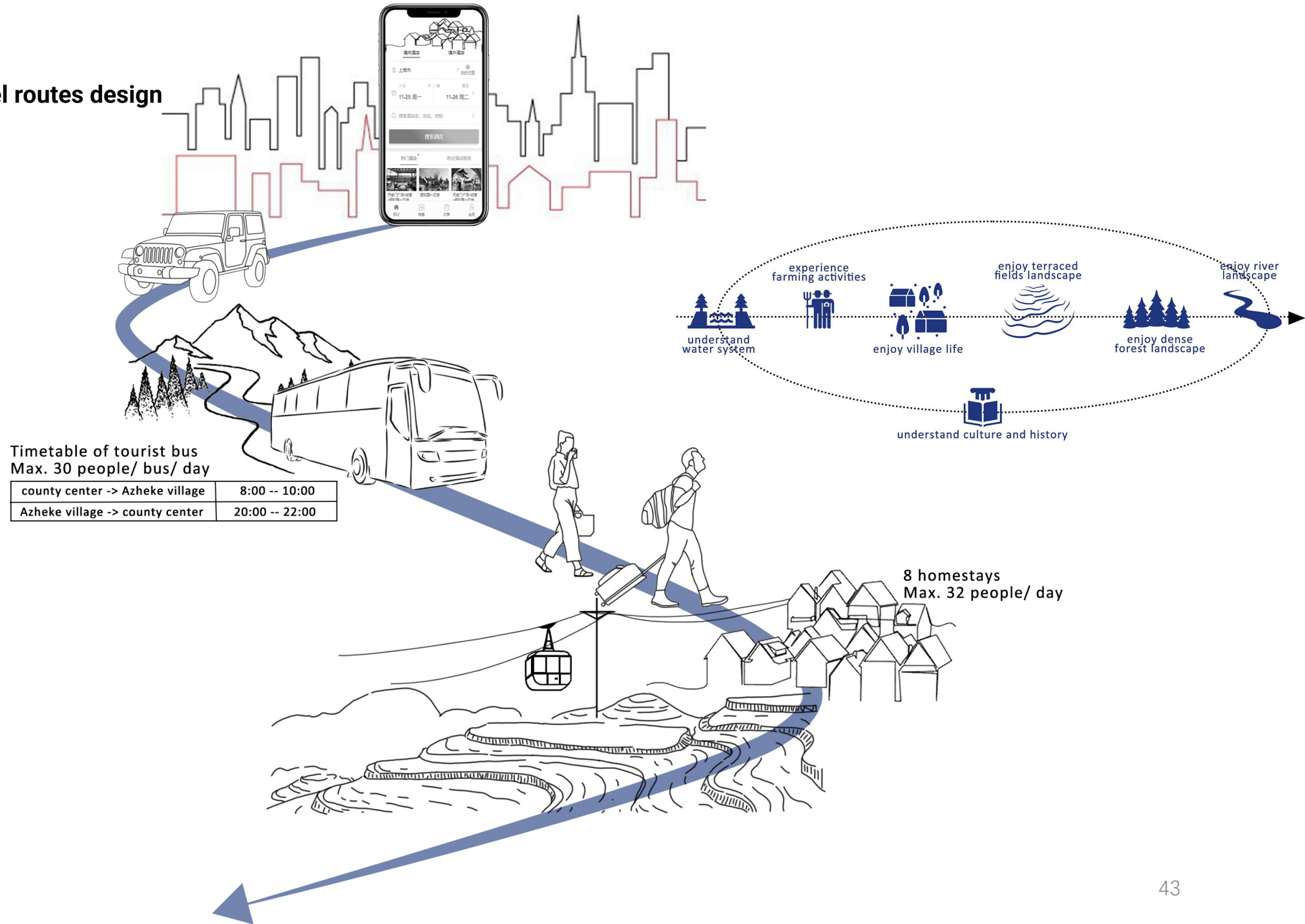
8.3.1 parking lot & entrance of Azheke village

8.3.2 long-distance hiking route - embracing the nature

8.3.3 cableway - viewing as bird

8.3.4 cultural route of Azheke village - living as Hani

| 8.3 Tourism plan - travel routes design





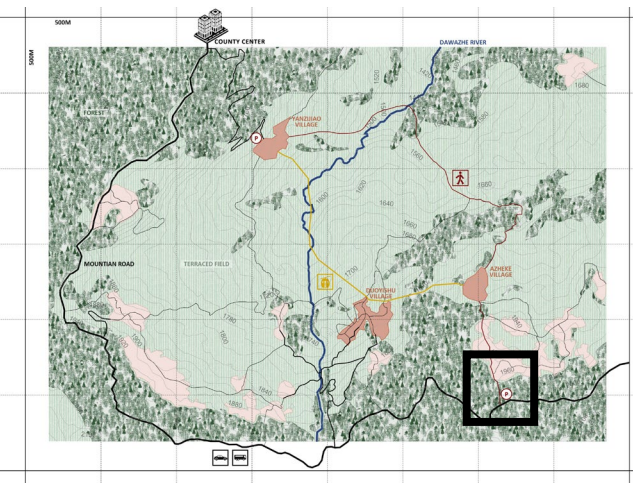
## 500M



44

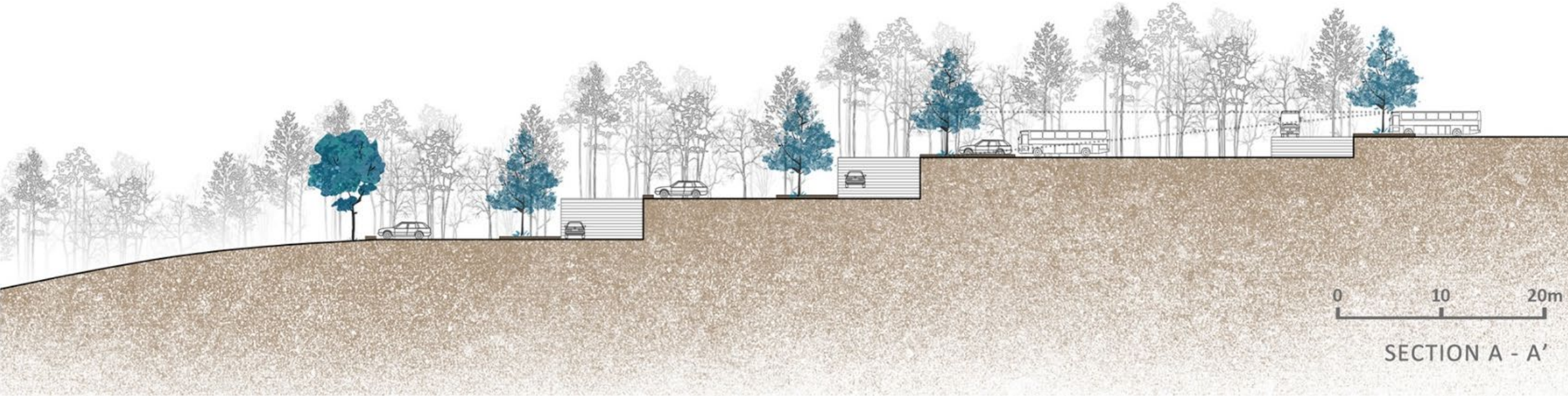


| 8.3.1 parking lot & entrance of Azheke village



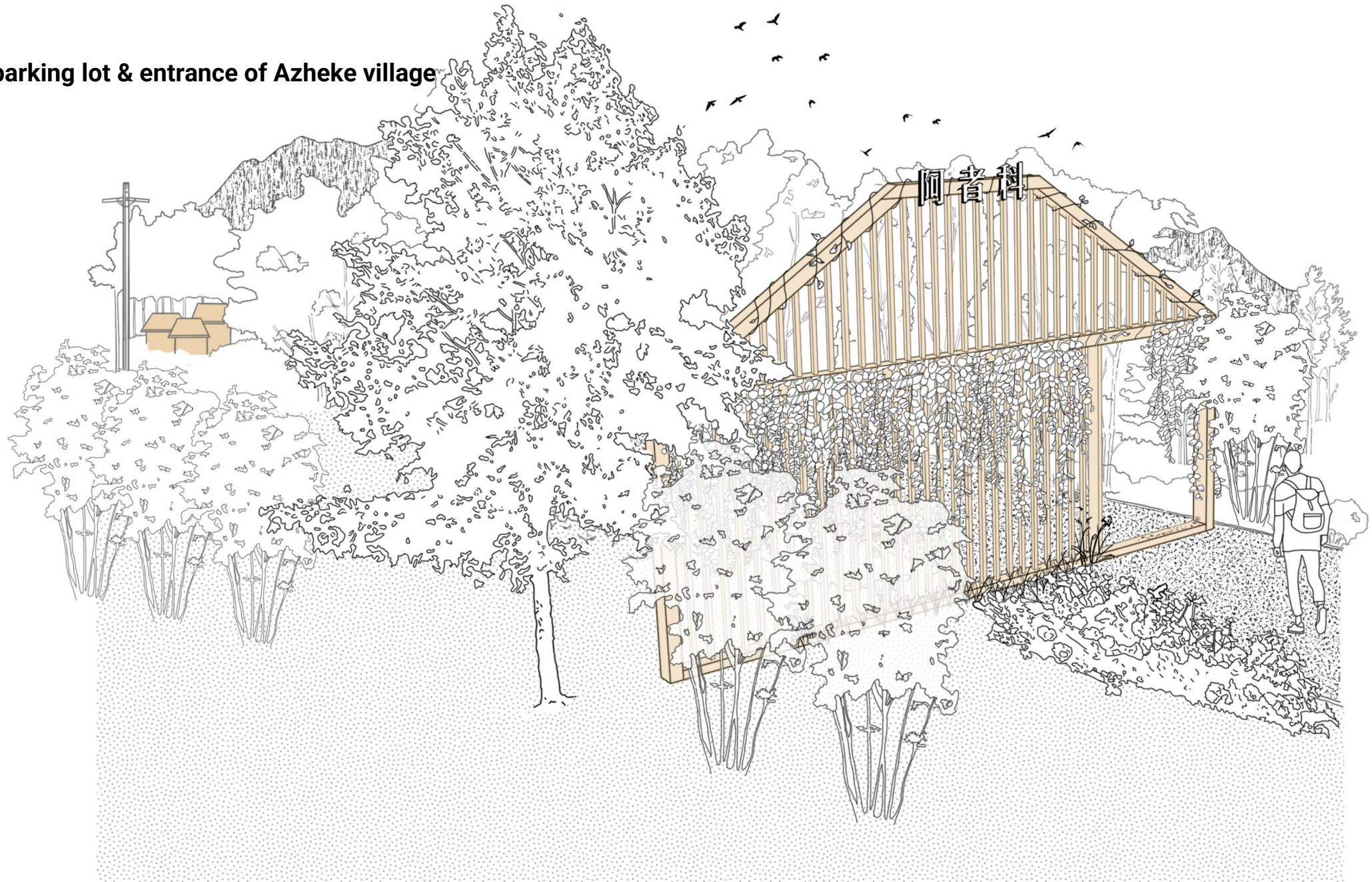


| 8.3.1 parking lot & entrance of Azheke village

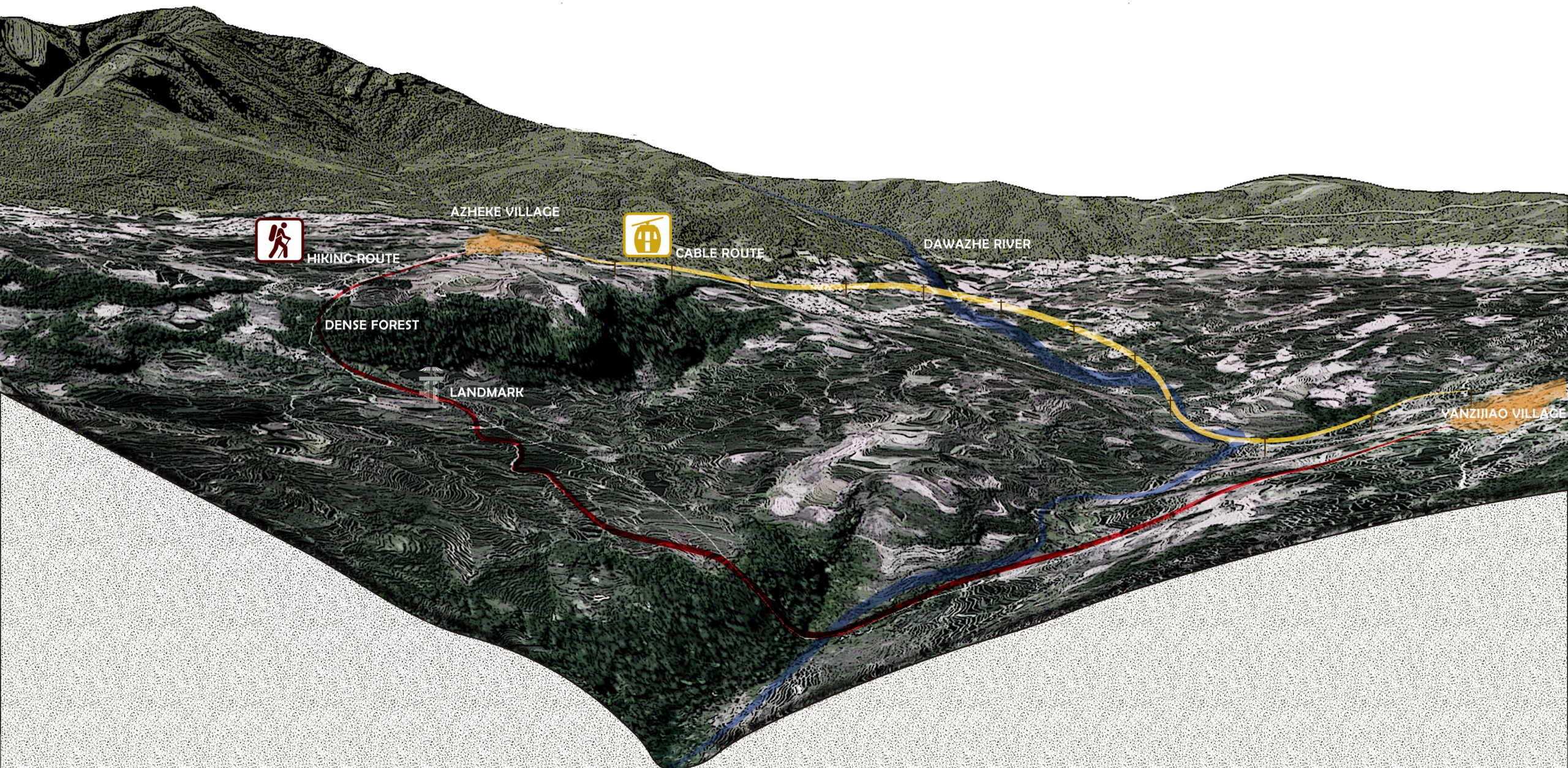




### | 8.3.1 parking lot & entrance of Azheke village







AZHEKE VILLAGE



HIKING ROUTE



CABLE ROUTE

DAWAZHE RIVER

DENSE FOREST

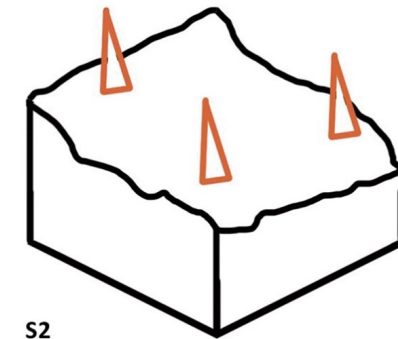
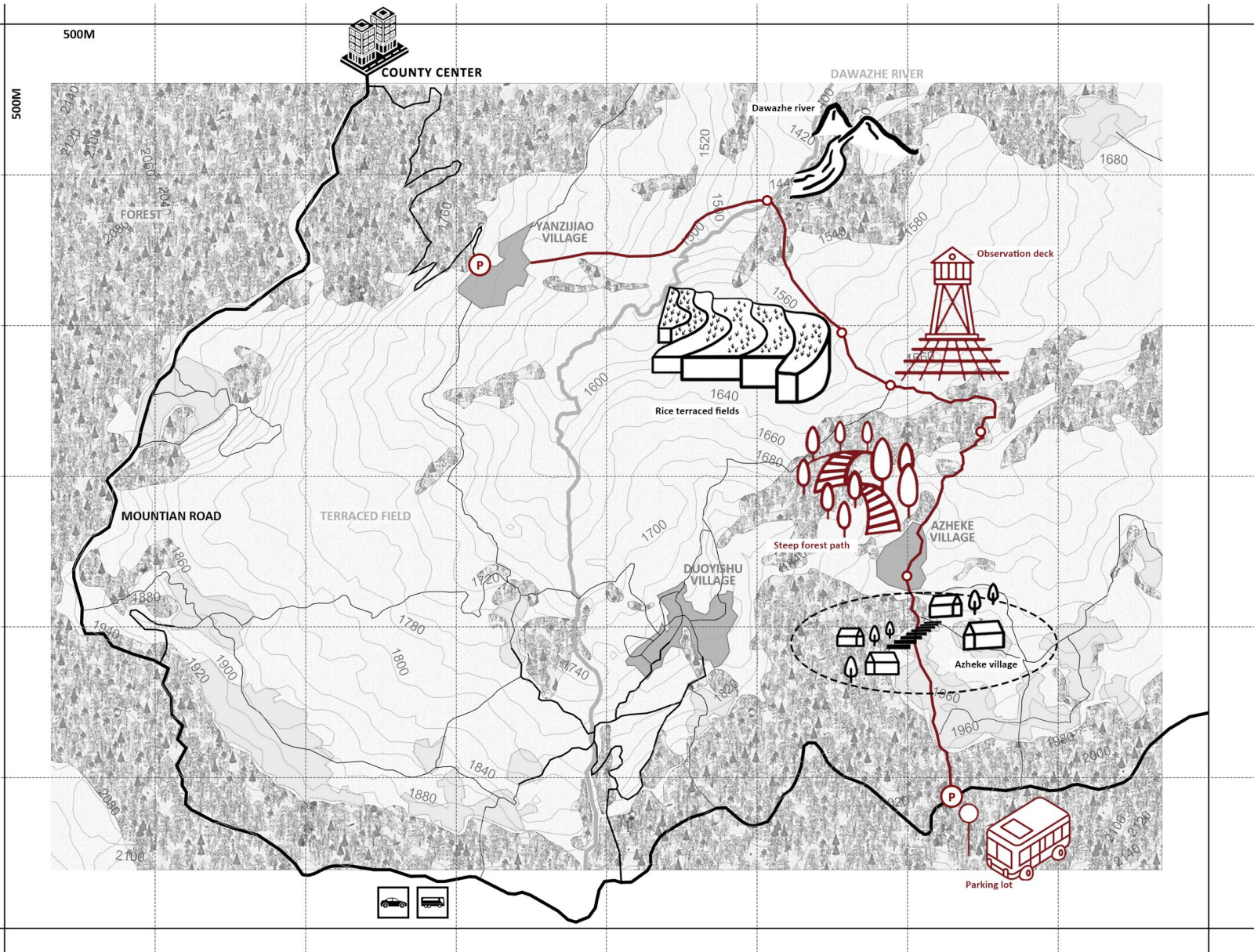


LANDMARK

YANZIJIAO VILLAGE

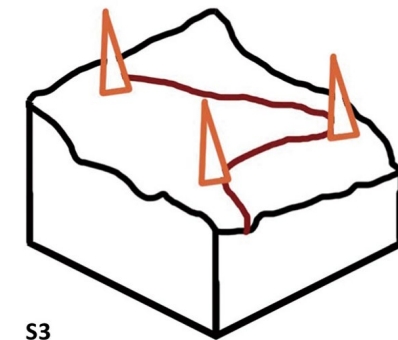


### | 8.3.2 long-distance hiking route - embracing the nature



S2

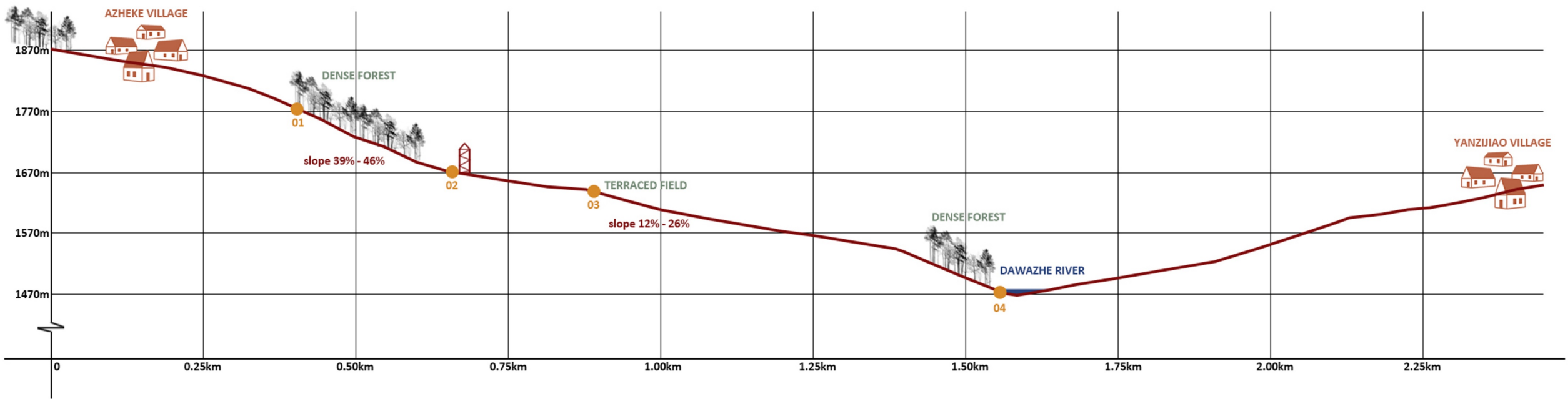
Highlight the landscape with cultural & heritage identity (P1 & P3)



S3

Design tour routing based on the existing terrain (P1 & P3)

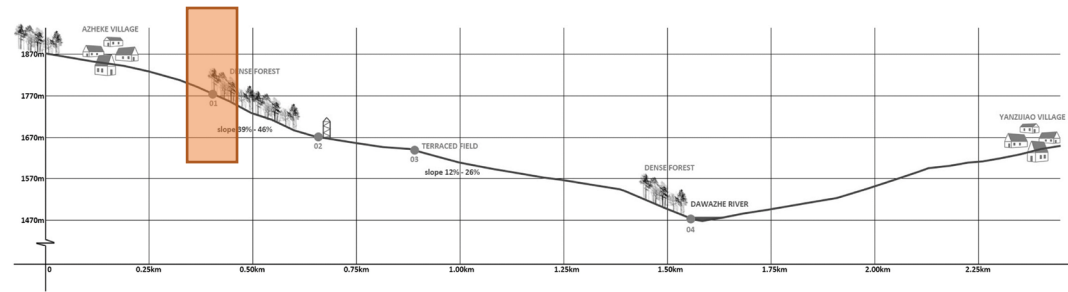
| 8.3.2 long-distance hiking route - embracing the nature





### | 8.3.2 long-distance hiking route - embracing the nature

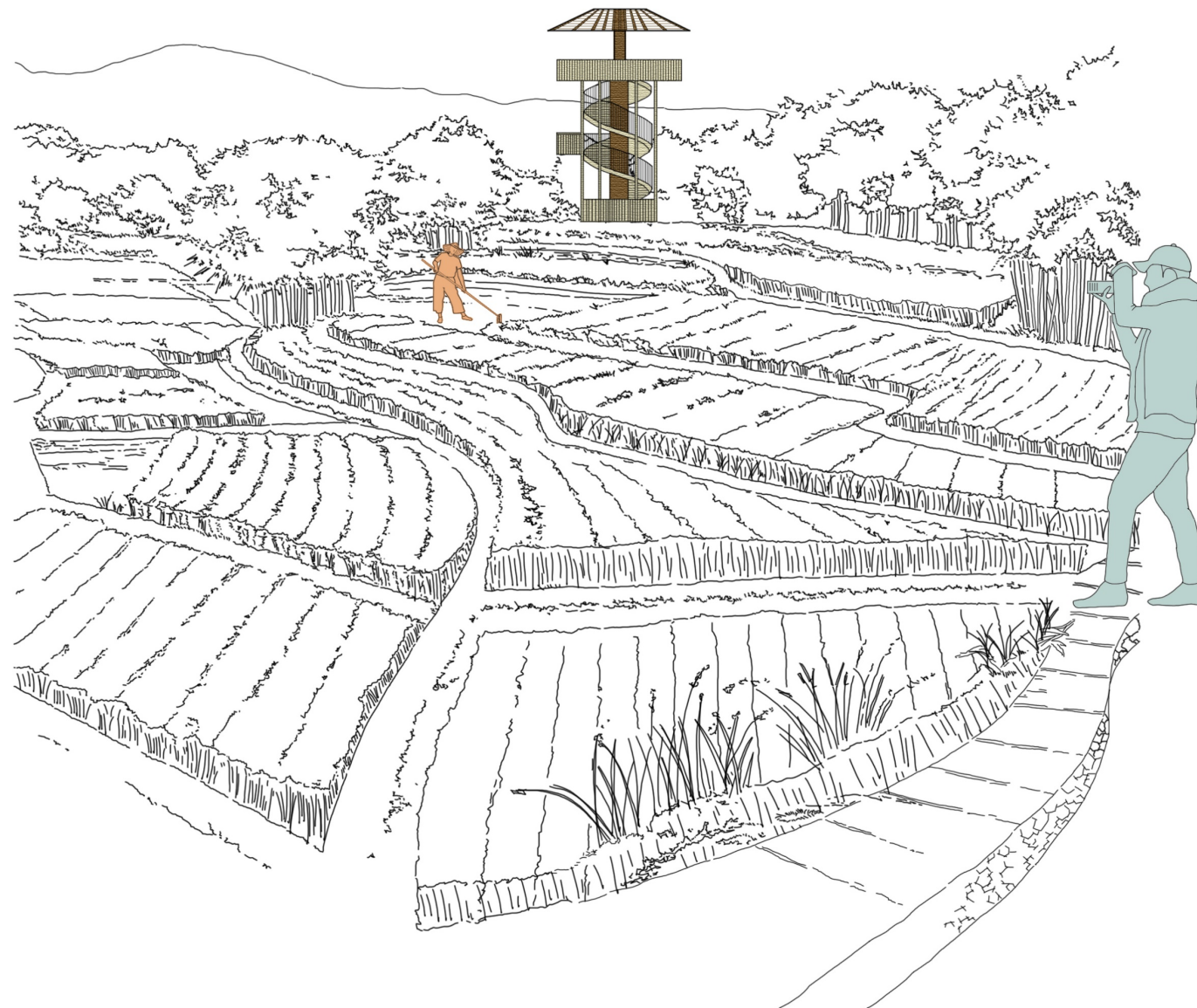
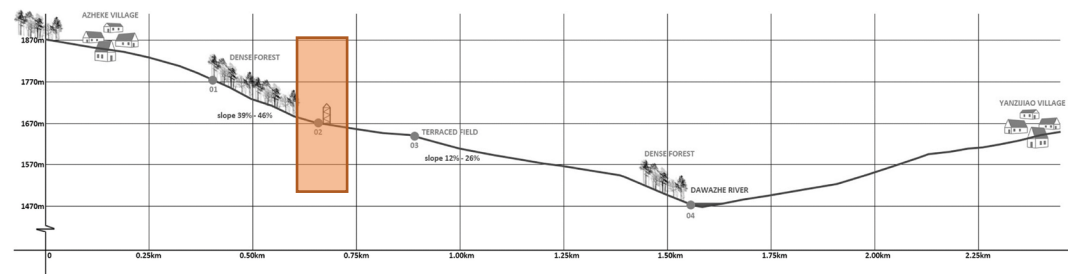
#### 01 Dense Forest & Steep slope





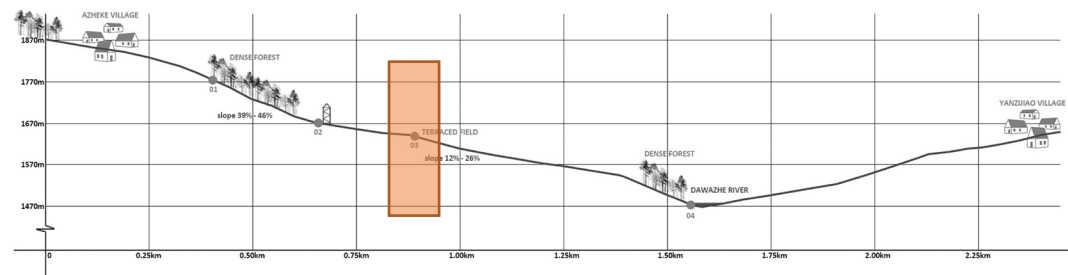
## | 8.3.2 long-distance hiking route - embracing the nature

### 02 Landmark



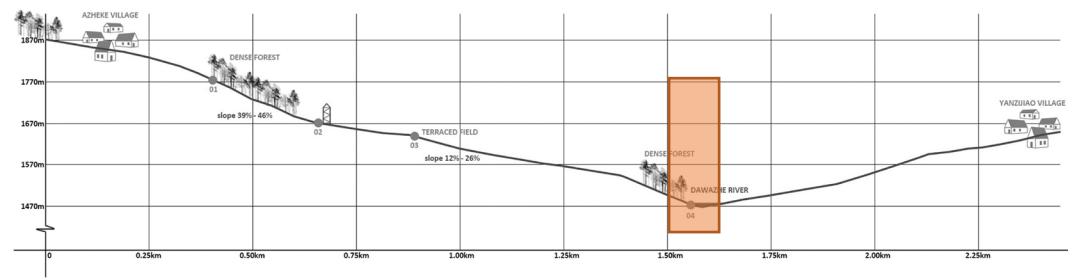
### | 8.3.2 long-distance hiking route - embracing the nature

#### 03 terraced fields



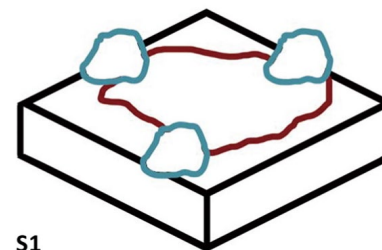
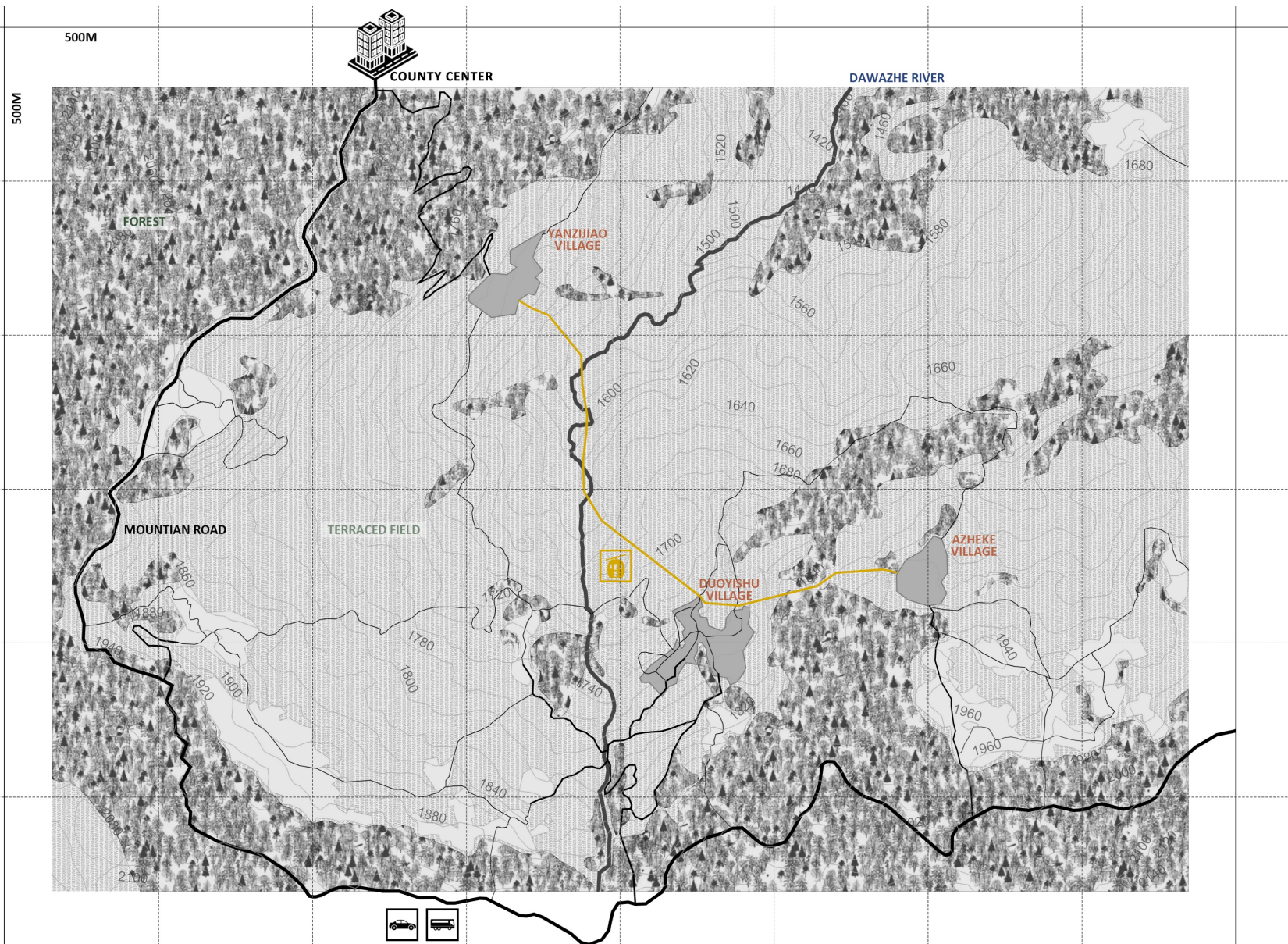
### | 7.3.2 long-distance hiking route - embracing the nature

#### 04 Dawazhe riverbank



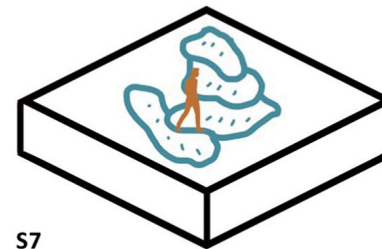


### | 8.3.3 Cableway - masterplan



**S1**

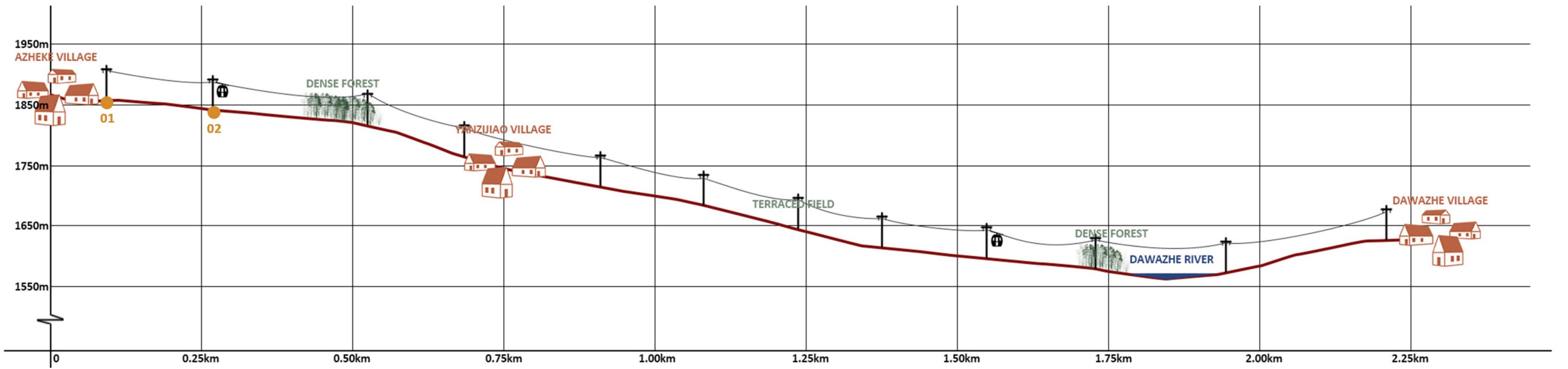
### Connecting isolated village (P5)



S7

Touring path experience (P5)

| 8.3.3 Cableway - section





## 01 Start station of cableway





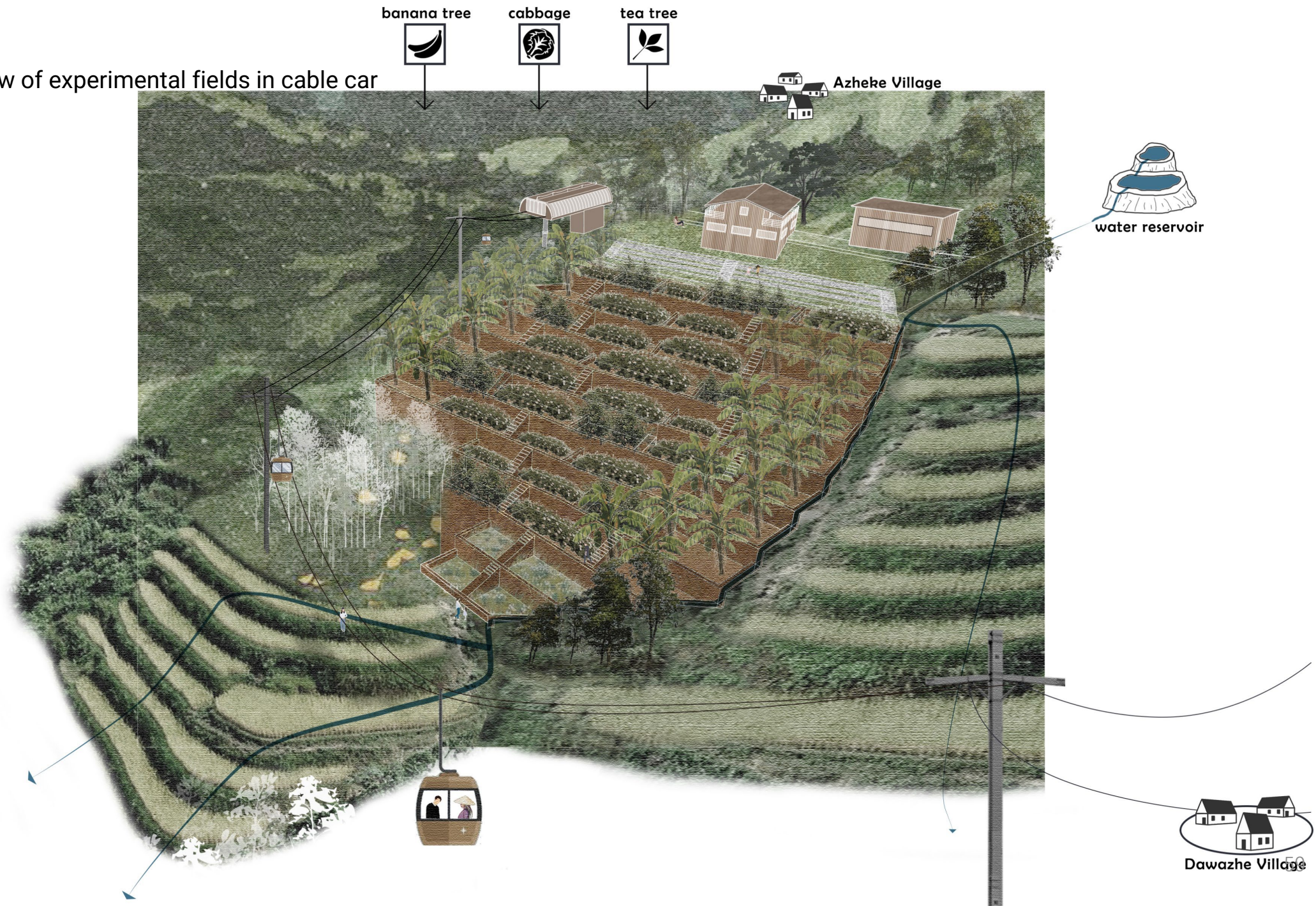
01 Start station of cableway - section



0 5 10M  
SECTION A - A'

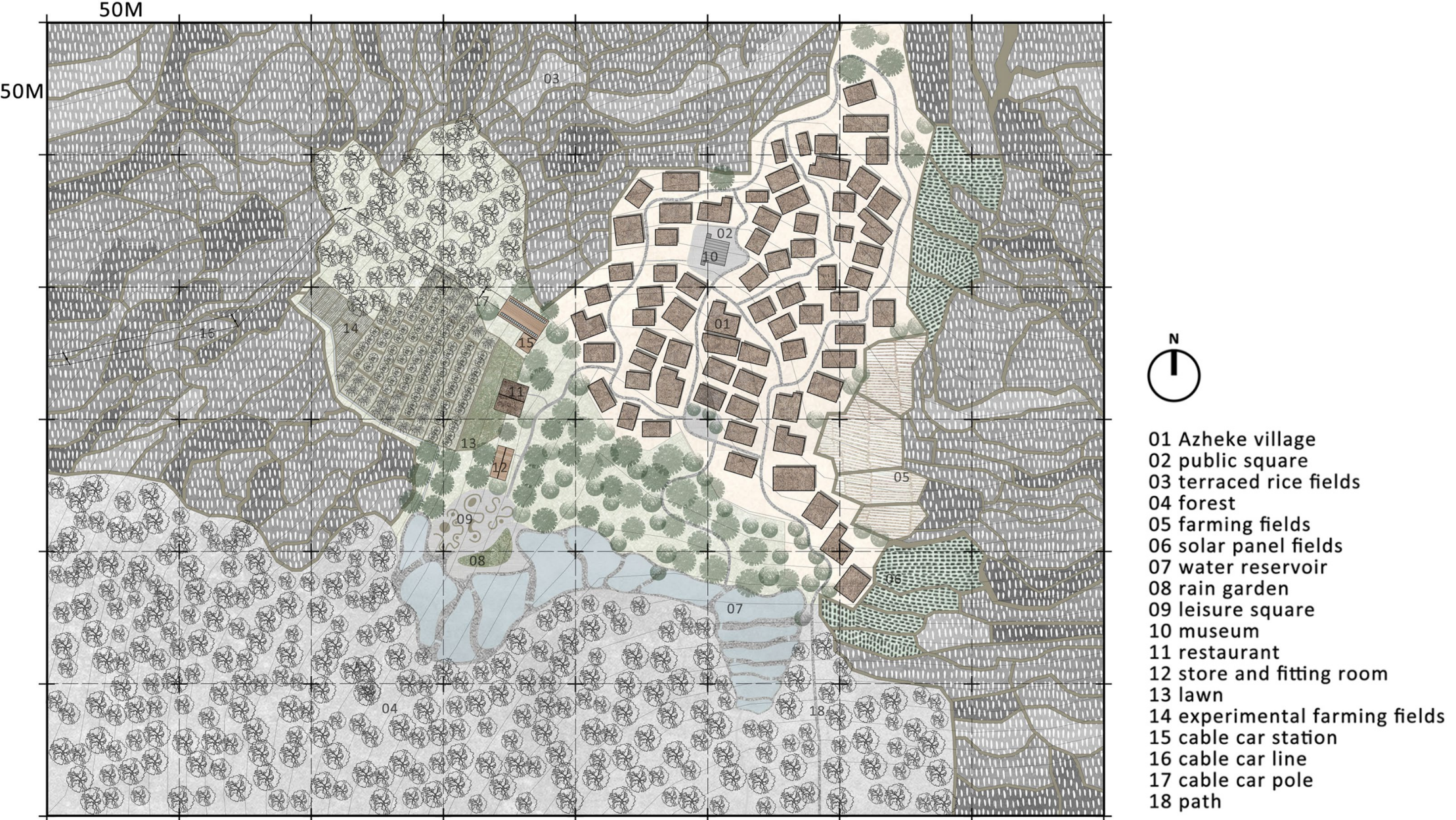


02 Aerial view of experimental fields in cable car





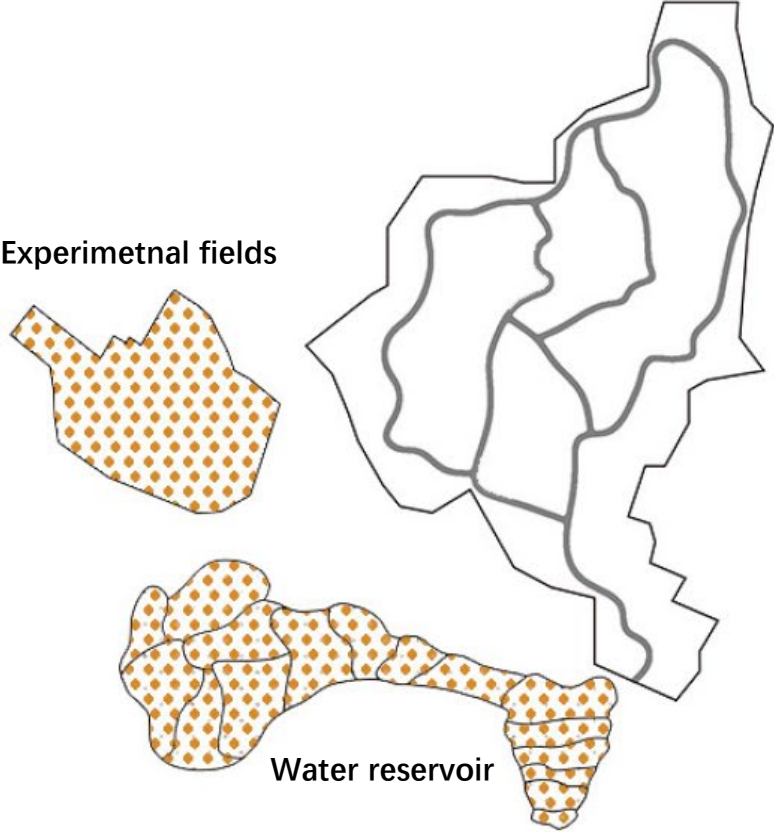
### | 8.3.3 Cultural route of Azheke village - living as Hani



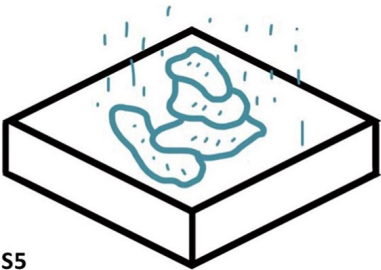
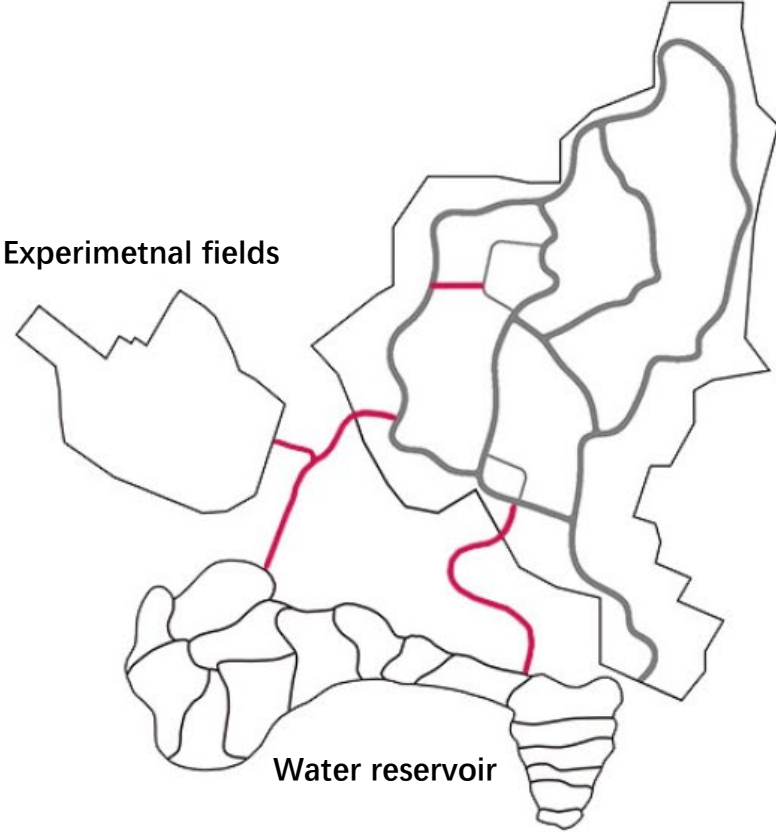


| 8.3.3 Cultural route of Azheke village - living as Hani

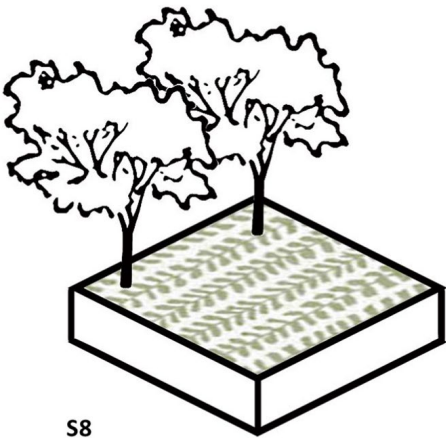
New added elements



New added path



S5  
Water Storage (P4)



S8  
Increase the Biodiversity (P4)

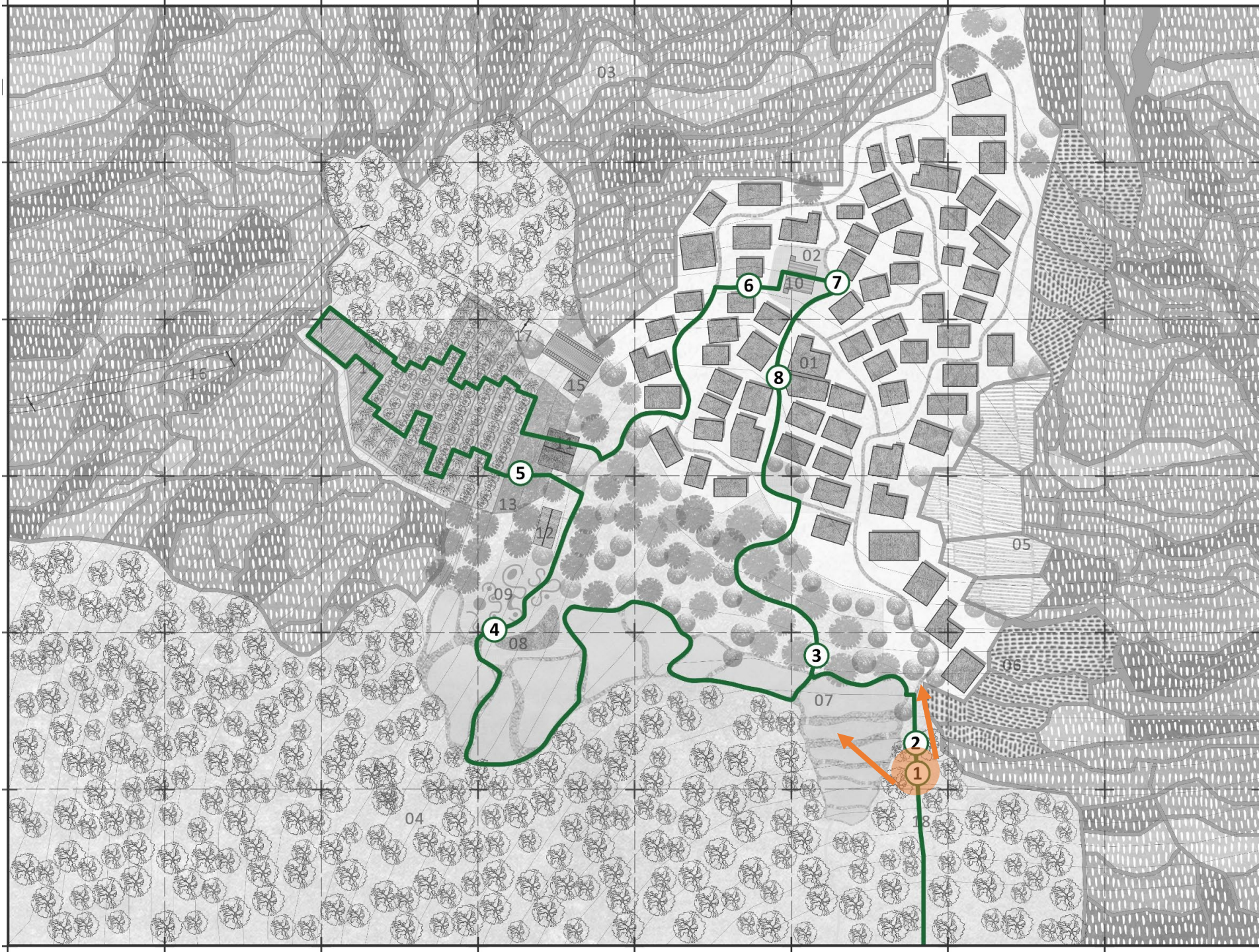


Cultural route of Azheke village - living as Hani



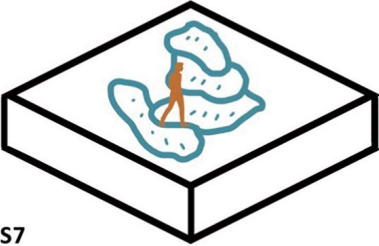
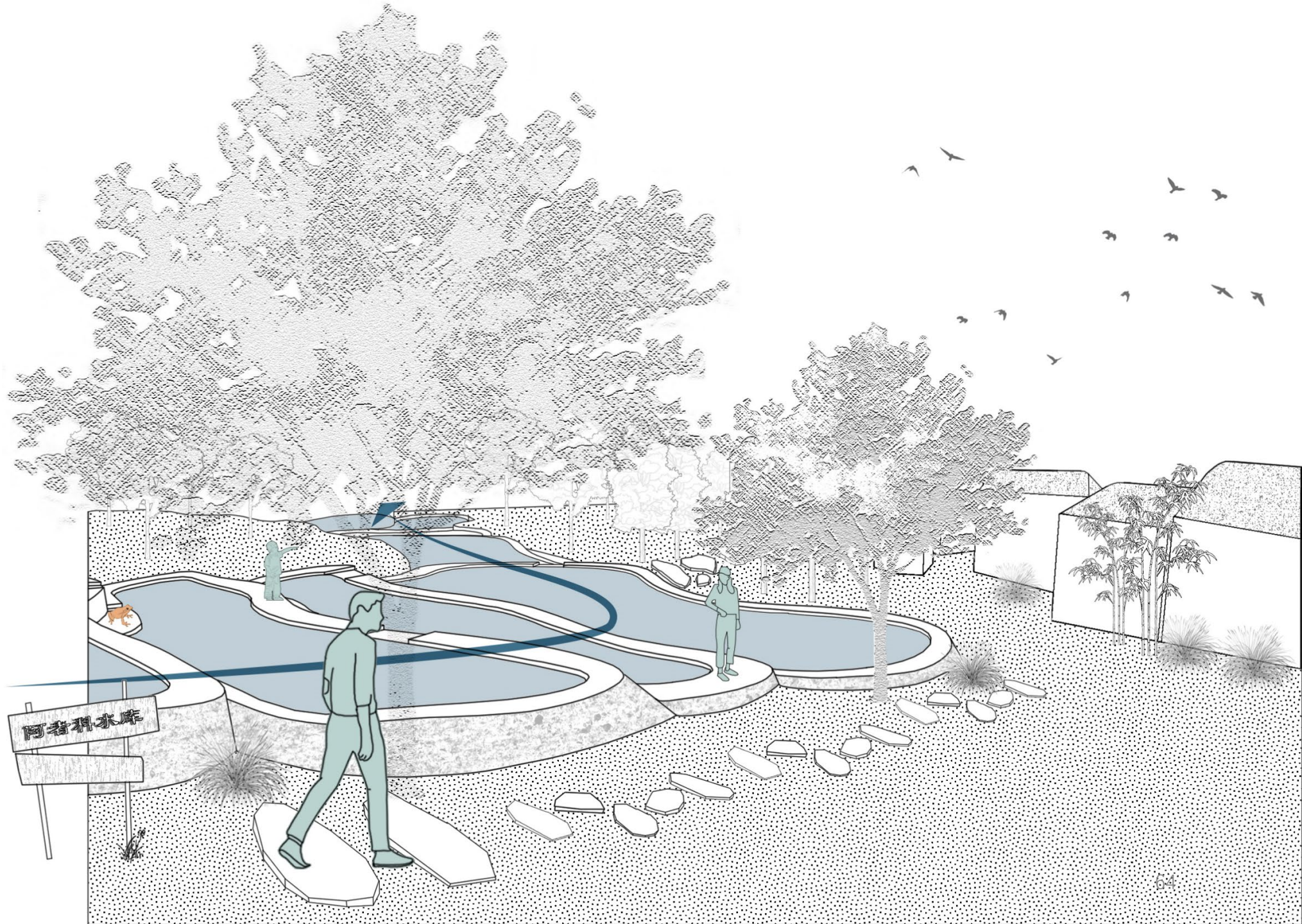


01 Water reservoir





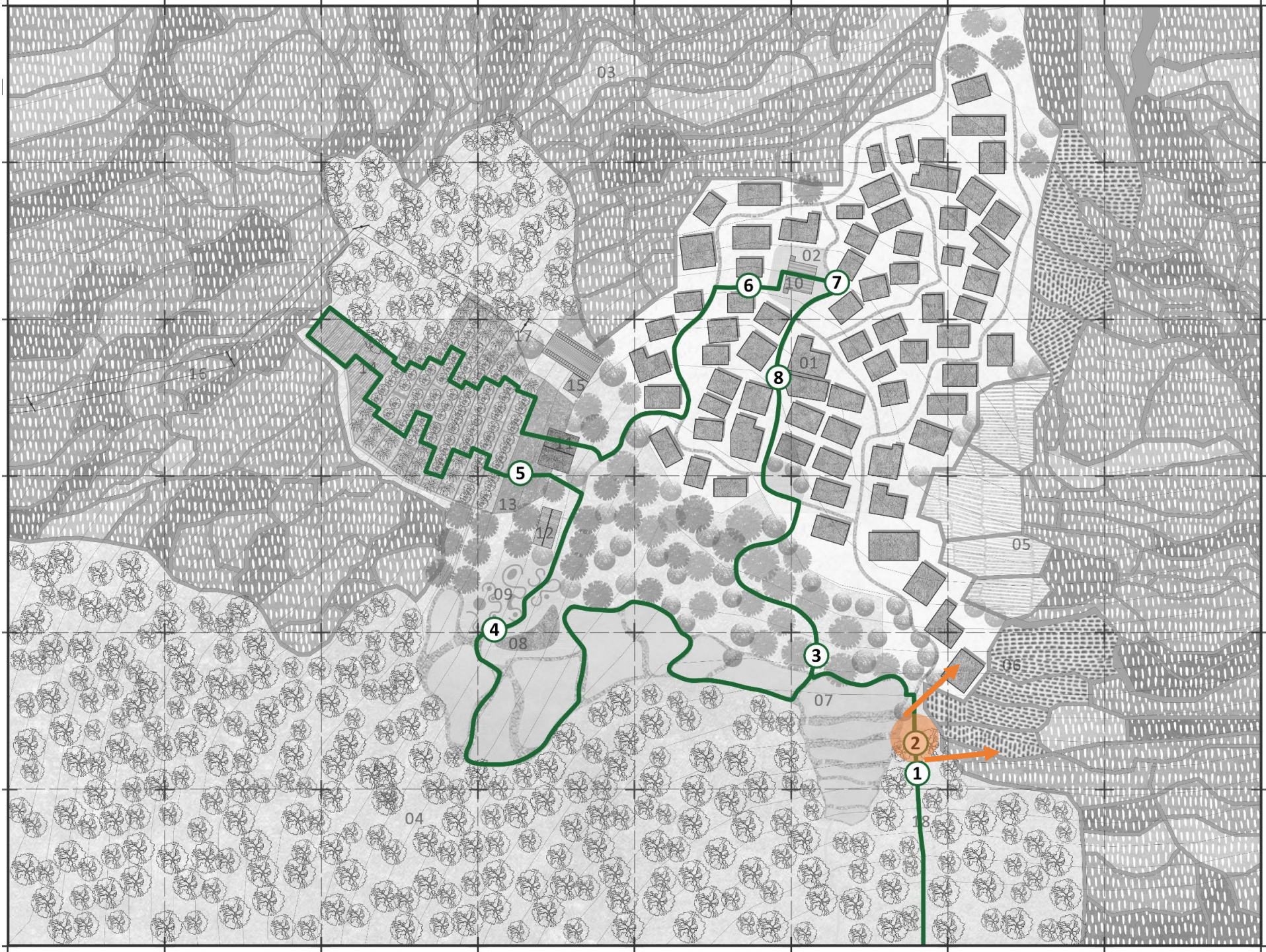
01 Water reservoir



S7  
Touring path experience (P5)



02 Solar panel fields





02 Solar panel fields

buffalo

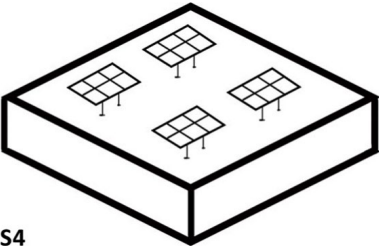
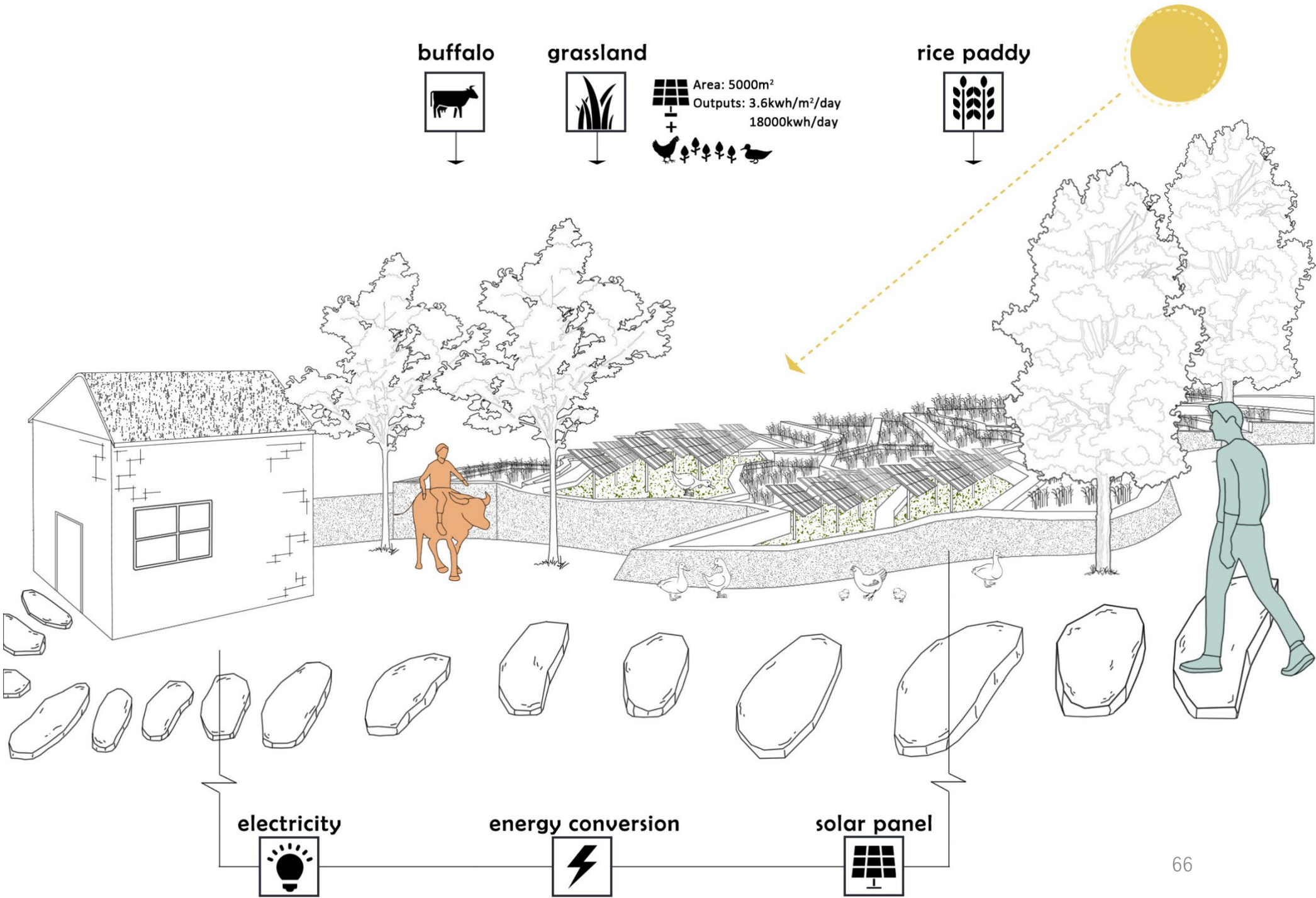


grassland



Area: 5000m<sup>2</sup>  
Outputs: 3.6kwh/m<sup>2</sup>/day  
18000kwh/day

rice paddy



S4  
Solar panel (P2)



03 forest path





03 forest path

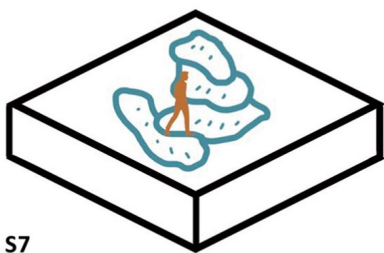
Maple Tree



Bamboo



Ginkgo Tree



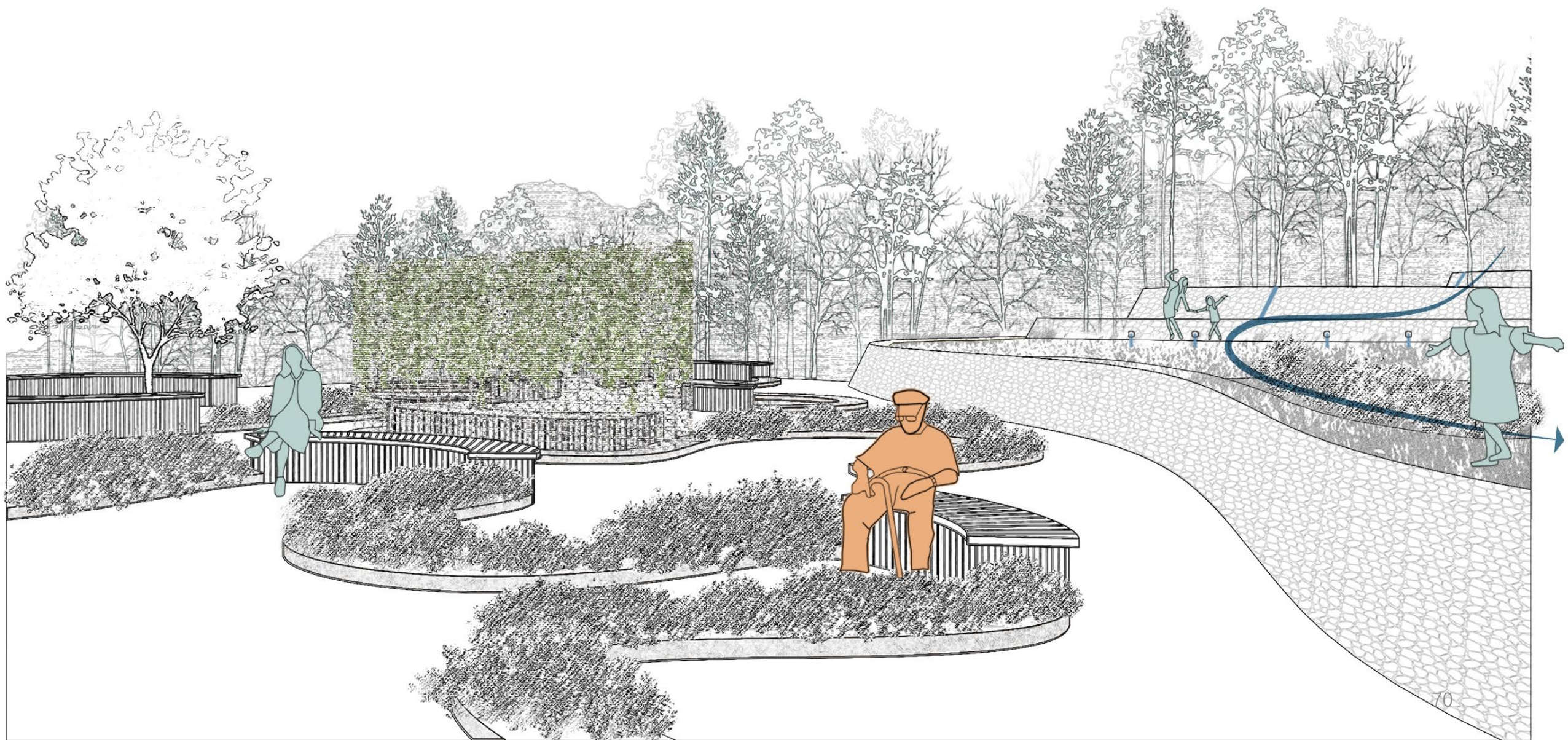


04 Leisure park



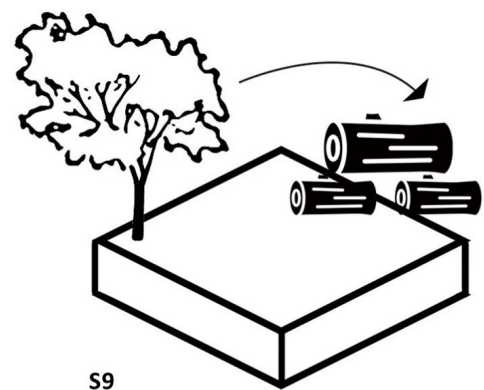


## 04 Leisure park





05 Restaurant & storage room



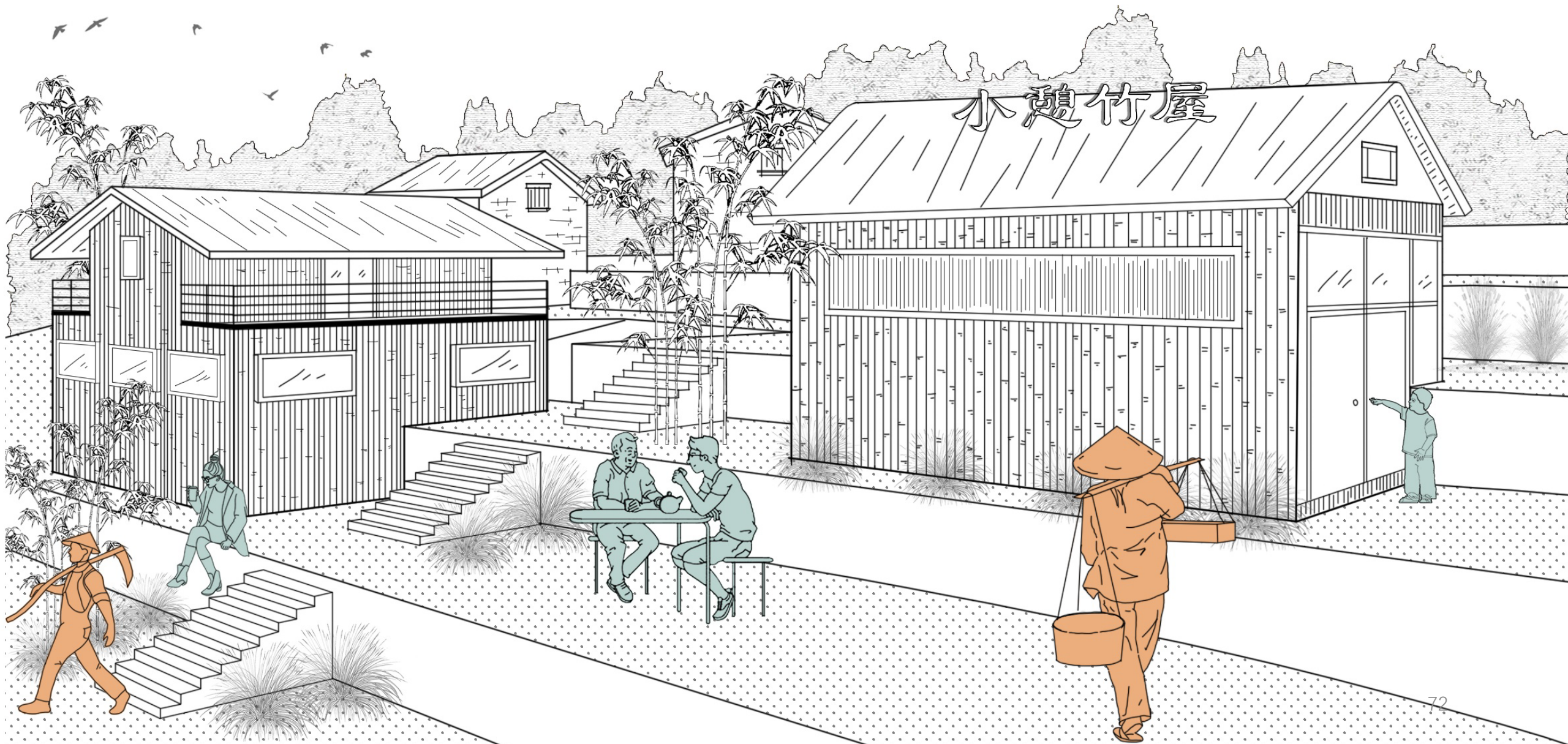
S9

Local material (P1)



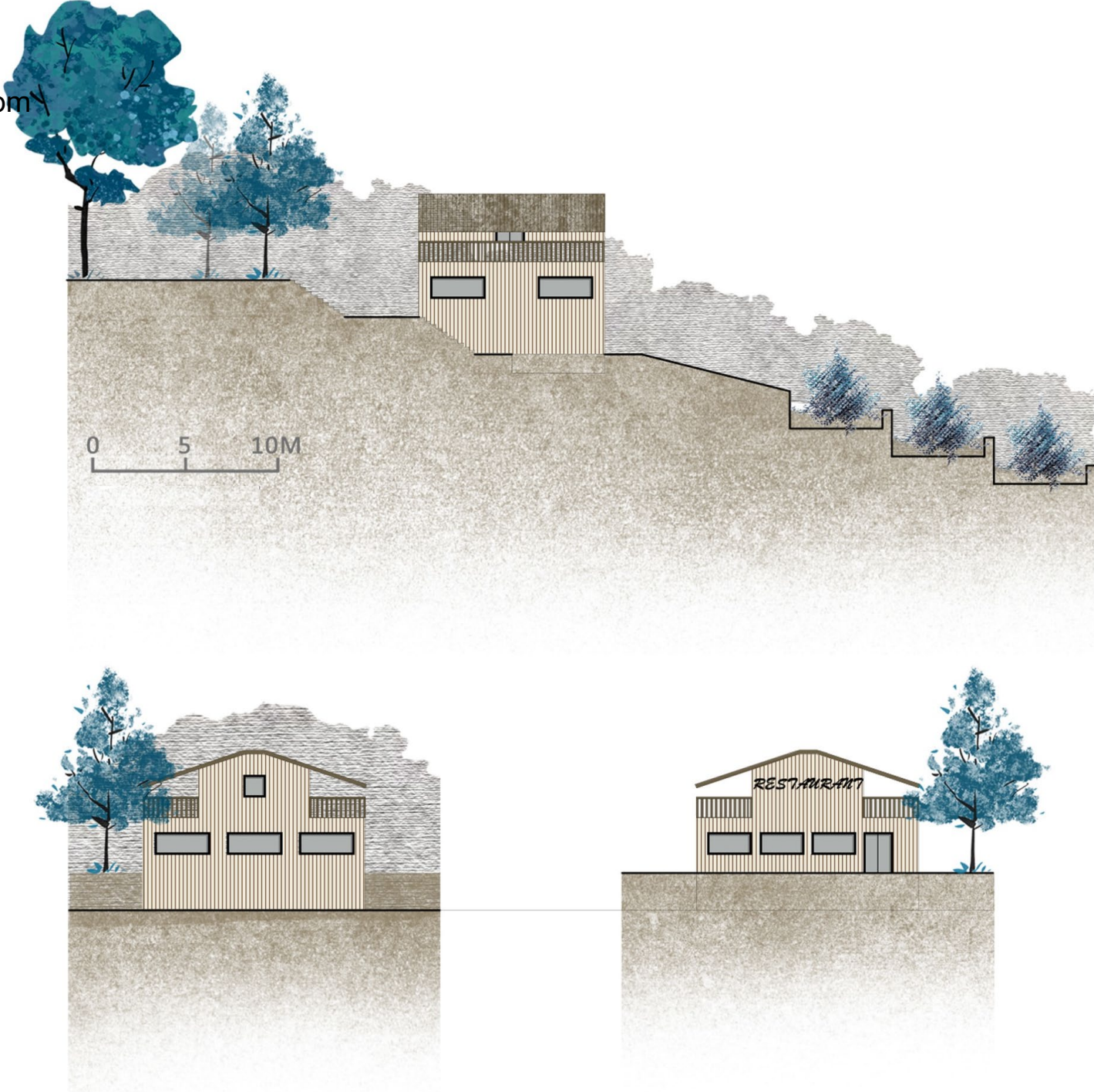


05 Restaurant & storage room



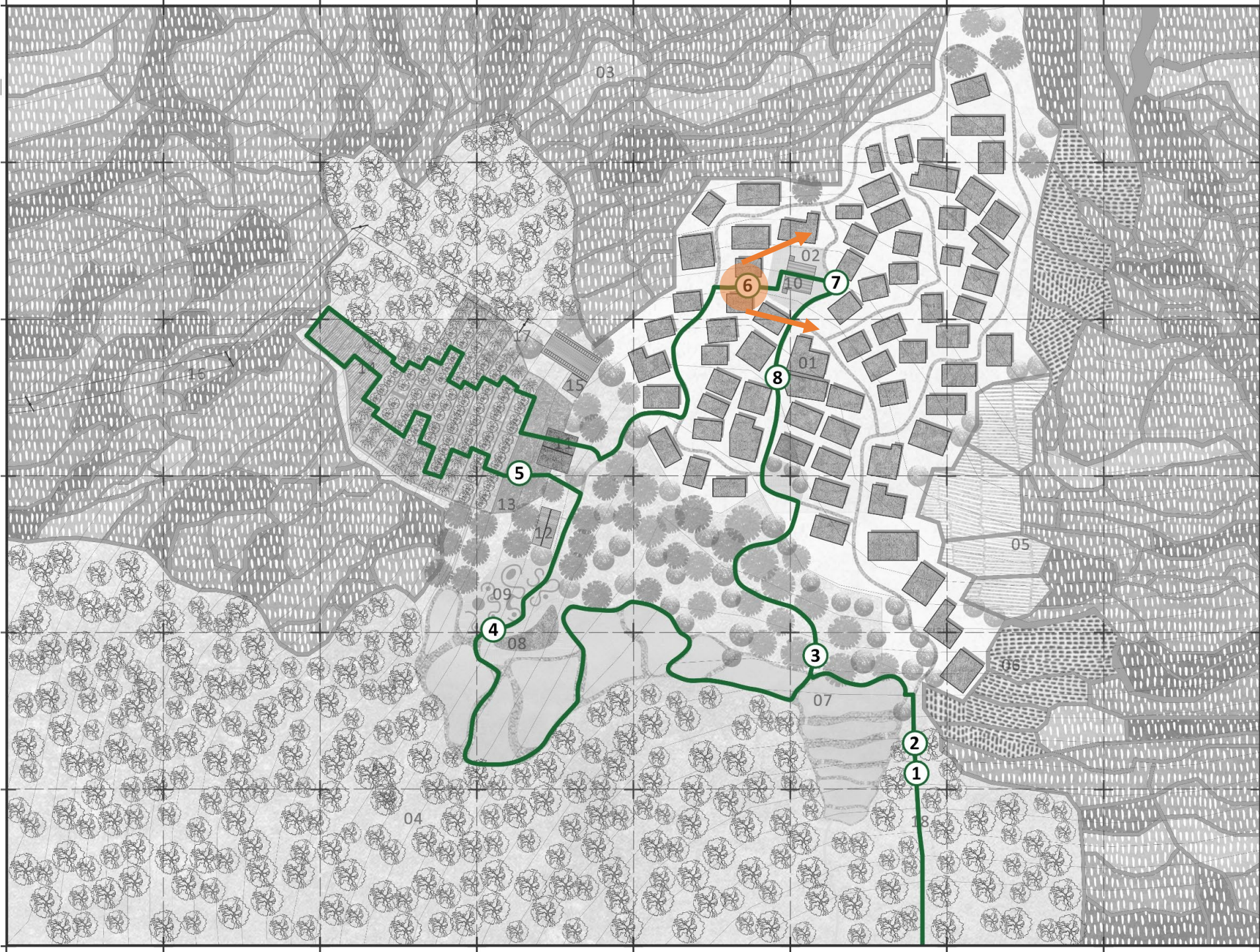


05 Restaurant & storage room



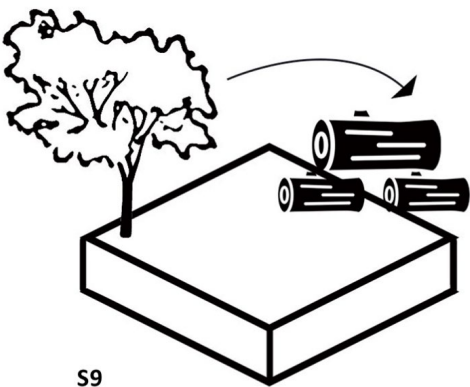
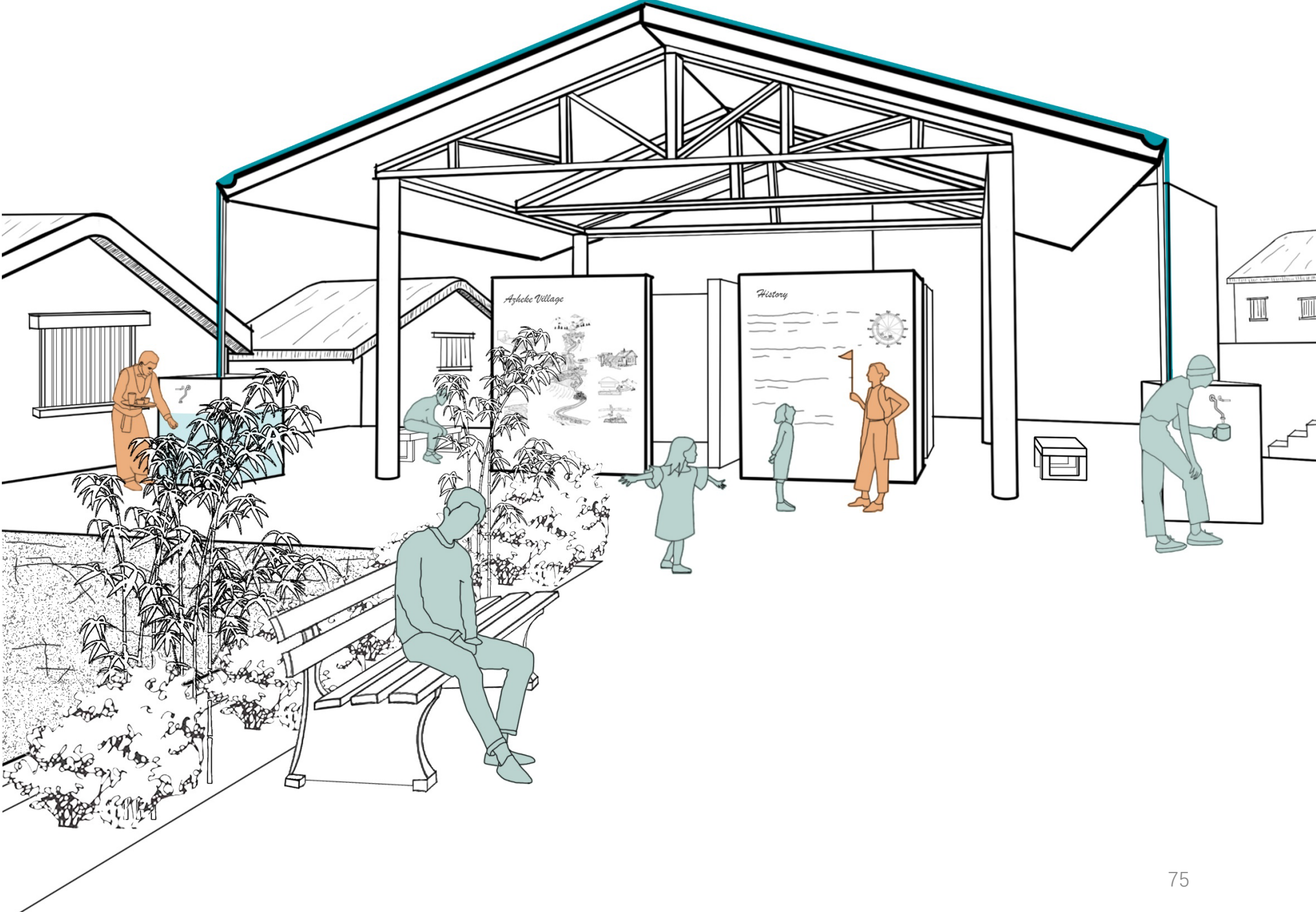


06 Rainwater tank





06 Rainwater tank

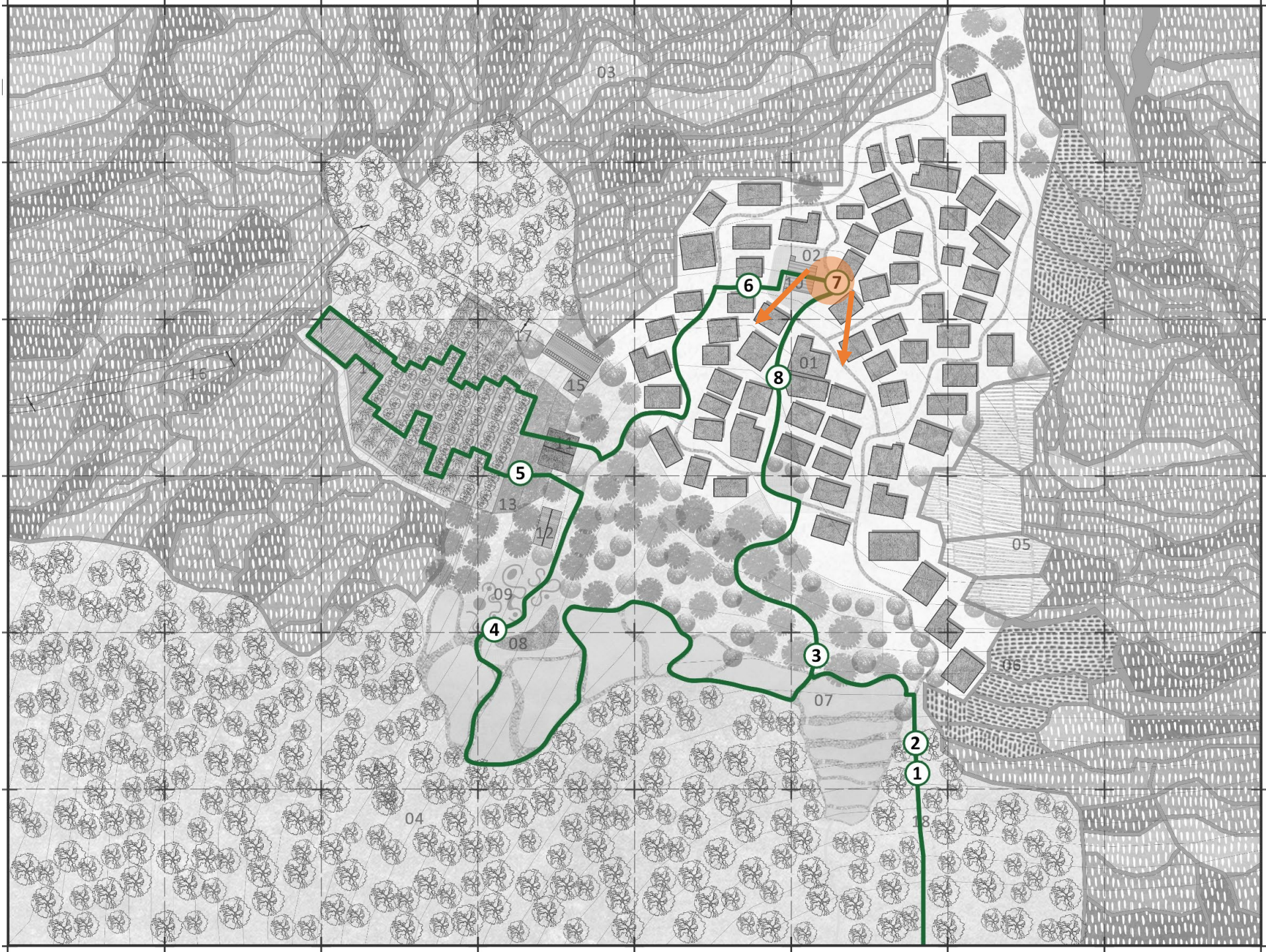


S9

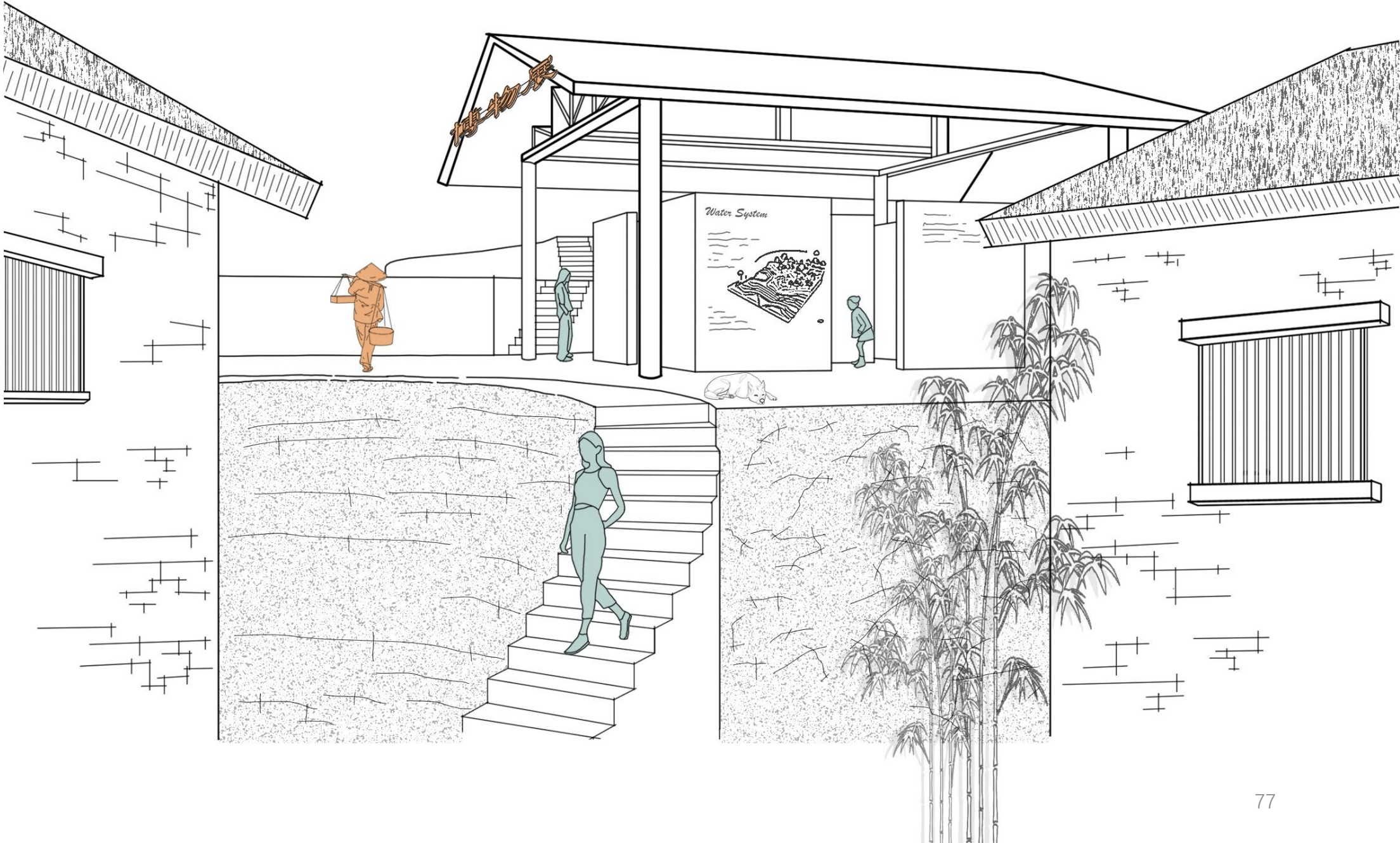
Local material (P1)



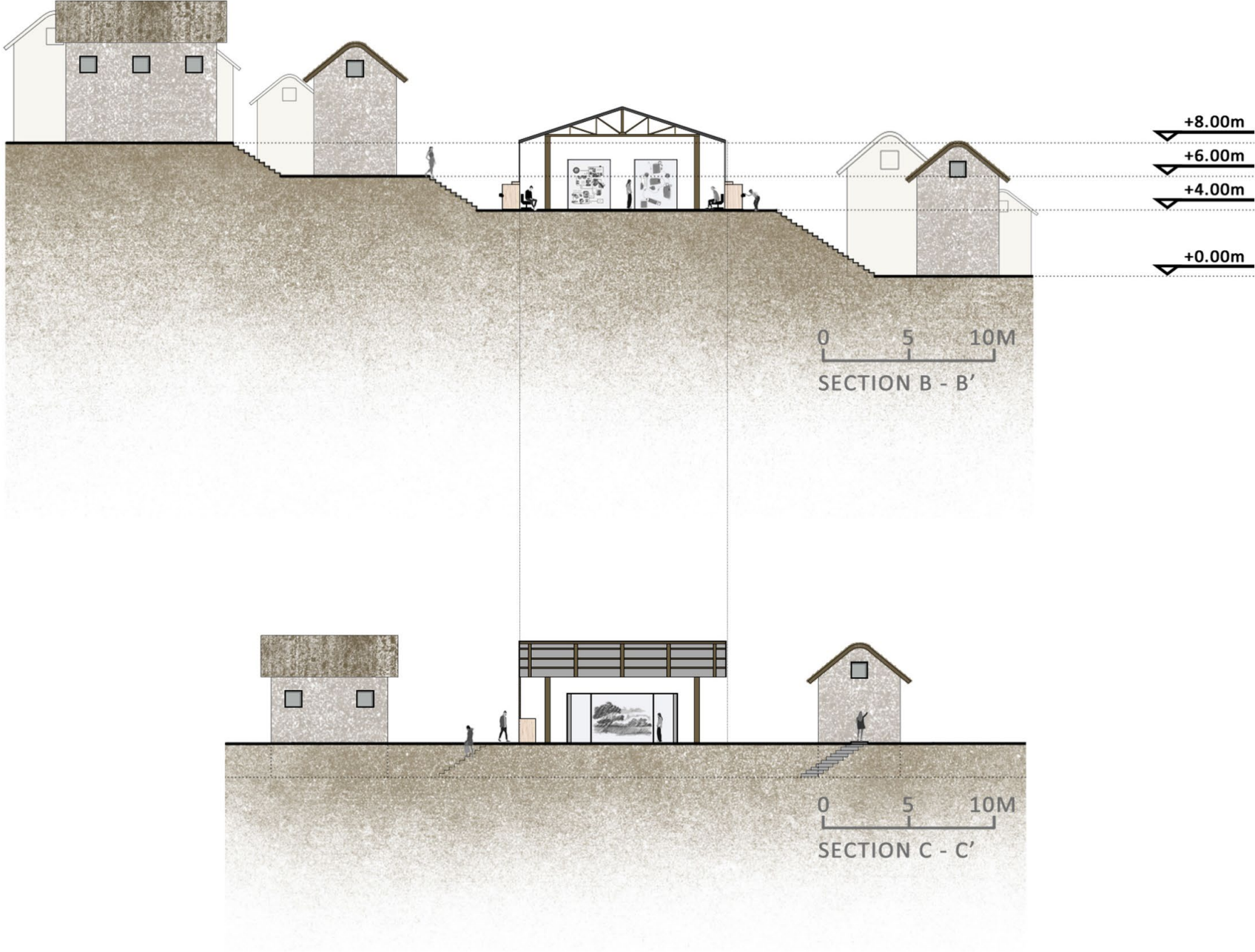
07 Museum







07 Museum





08 Signs in the Village

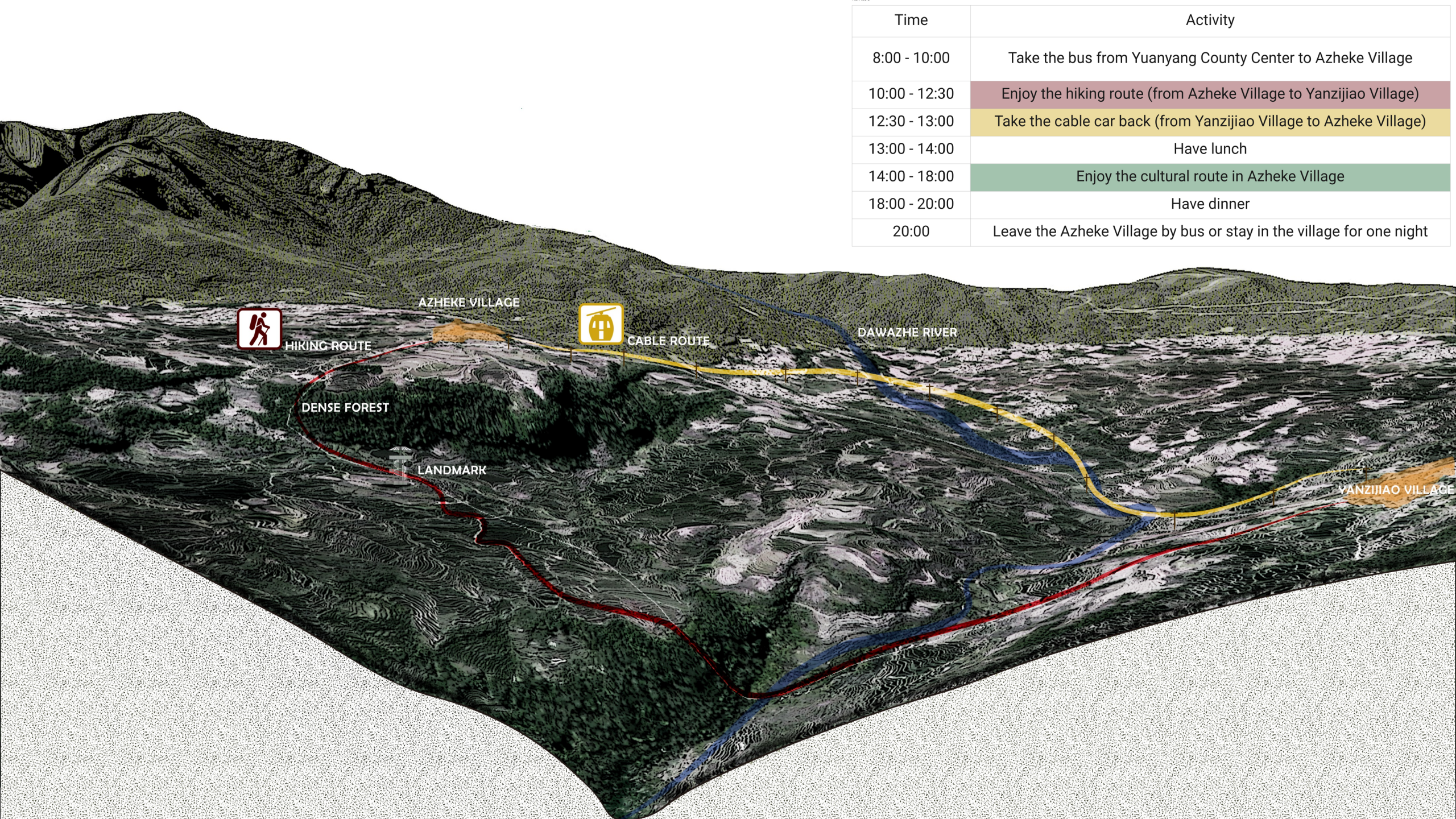




## 08 Signs in the Village







Time	Activity
8:00 - 10:00	Take the bus from Yuanyang County Center to Azheke Village
10:00 - 12:30	Enjoy the hiking route (from Azheke Village to Yanzijiao Village)
12:30 - 13:00	Take the cable car back (from Yanzijiao Village to Azheke Village)
13:00 - 14:00	Have lunch
14:00 - 18:00	Enjoy the cultural route in Azheke Village
18:00 - 20:00	Have dinner
20:00	Leave the Azheke Village by bus or stay in the village for one night



| 8.4 Timeline of construction





09

## CONCLUSION & REFLECTION

- What can we learn?
- What's the transferability of the project results?





Thank you