

ABSTRACT

The natural gap in this area is huge, the land is sparsely populated, and the ecological environment is beautiful. However, there is less planning and design in the mountains, the block landscapes disconnected, and the road system is single.

My design attempts to identify the features and problems of landscapes with different heights, amplify people's perception of features and solve problems through design. The design of multiple transportation systems pierces each block. At the same time, tourists can also embark on a journey of vacation.

Site : Livigno, Italy

Time: Aug-Nov 2022

Type: Academic, Individual Work

In Between

Restoration and Enhancement of the valley



I BACKGROUND

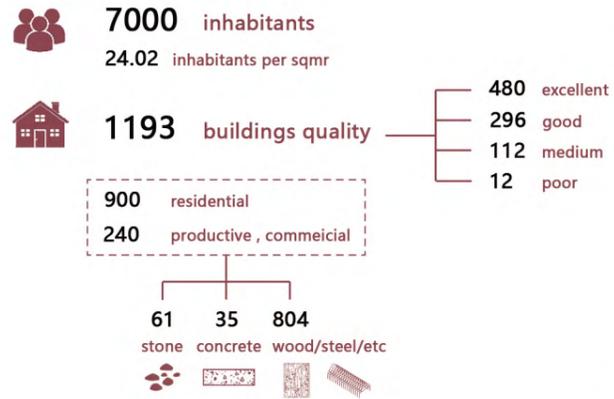
Livigno is situated in a valley stretching for 12 kilometres. Nestled between two mountain ranges, it descends gradually from 3000m to 1800m above sea level.

The name Livigno derives from the old word for avalanche, as the valley lies beneath the surface of the snow for several months of the year, surrounded by steep mountains. Over the centuries, the river Spohr has shaped the Livigno valley. The felling of trees and the diversion of the river have created a new image and changed the topography of the Livigno valley.

I DATA

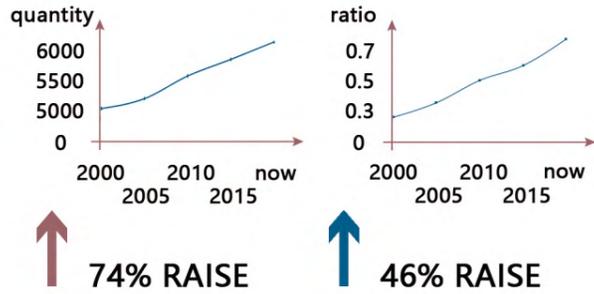
FUNDAMENTAL ANALYSIS

Routine analysis of local residents, number and size of houses.



RESIDENT POPULATION CHANGE

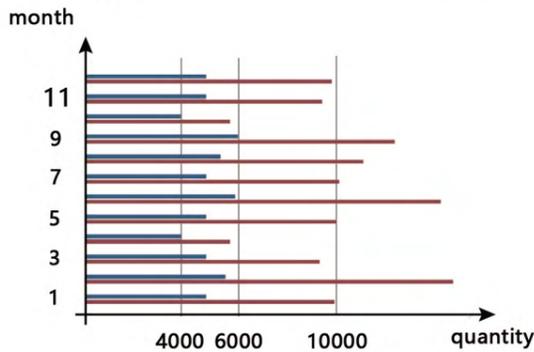
The number of permanent residents is also an important factor in measuring the composition of the population.



The number of local residents has been on the rise in recent years, which reflects the increase in the labor force and the development of the economy.

TOURIST AMOUNT DURING A YEAR

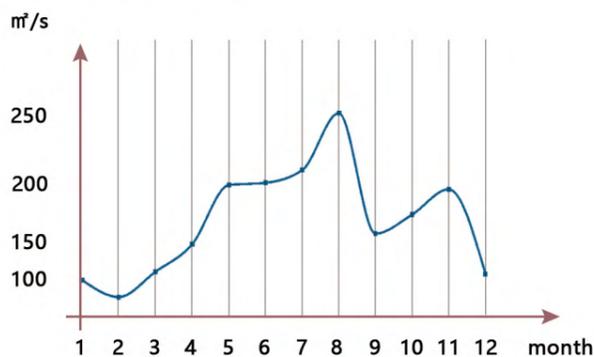
Tourism revenue is one of the local economic sources and the main object of the design.



The number of tourists is significantly higher than that of residents, especially in summers and winters.

RIVER FLOW

Analyze river flows to derive the possibility of developing tributaries

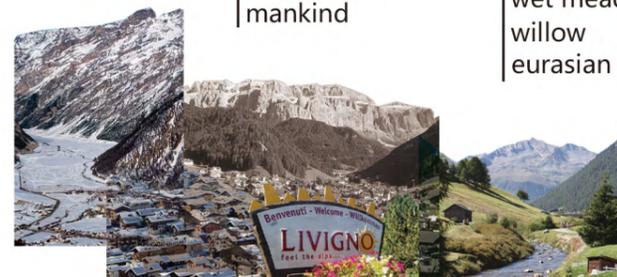


The annual flow changes and gaps of rivers are large, and even stop flowing in winter.

I SITE CONDITION

snow mountain

3439m
remote
bilberry
ibex (summer)



residential area

buildings
green fields
mankind

river

wetlands
wet meadow
willow
eurasian otter

farmland

1816m
houses
pastures
white birch

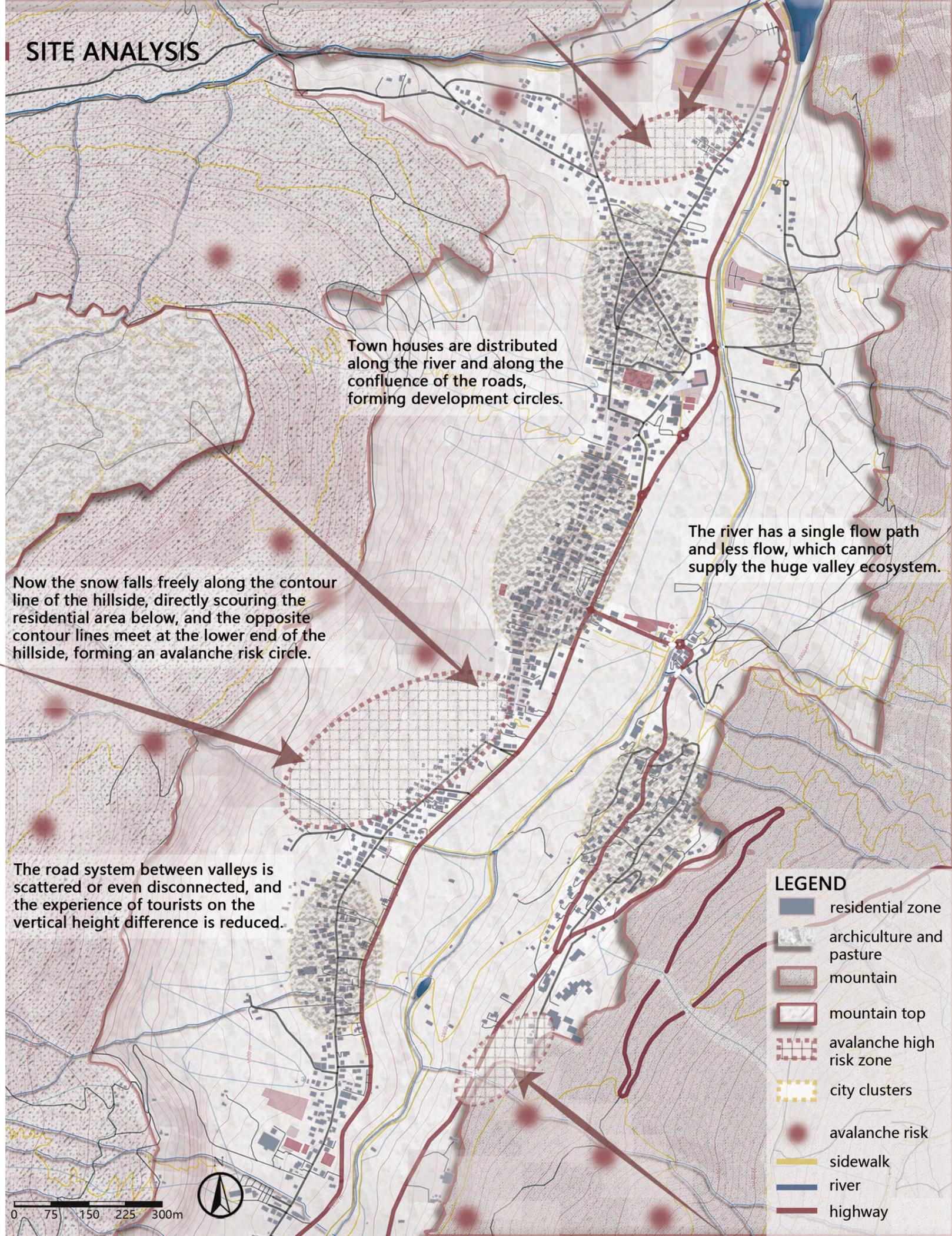


mountain

mountain bush
pine forest
ibex (winter)



I SITE ANALYSIS



Town houses are distributed along the river and along the confluence of the roads, forming development circles.

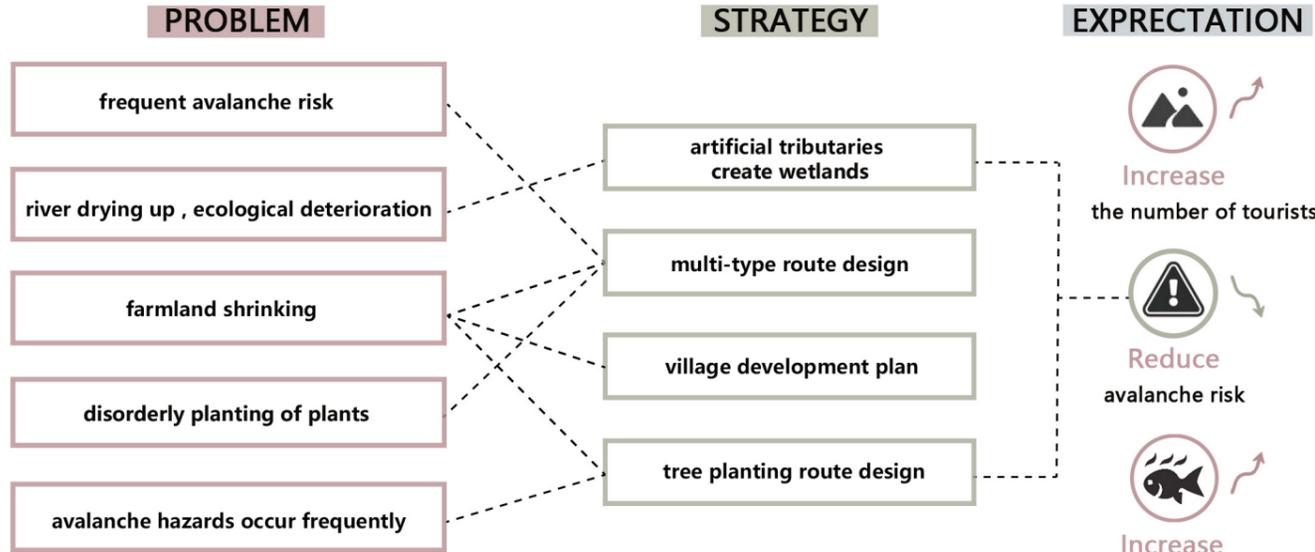
The river has a single flow path and less flow, which cannot supply the huge valley ecosystem.

Now the snow falls freely along the contour line of the hillside, directly scouring the residential area below, and the opposite contour lines meet at the lower end of the hillside, forming an avalanche risk circle.

The road system between valleys is scattered or even disconnected, and the experience of tourists on the vertical height difference is reduced.



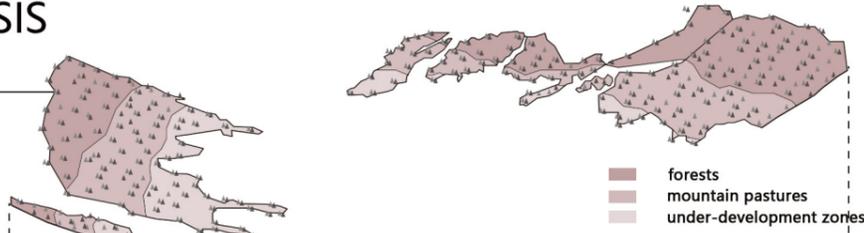
FRAMEWORK



SITE ANALYSIS

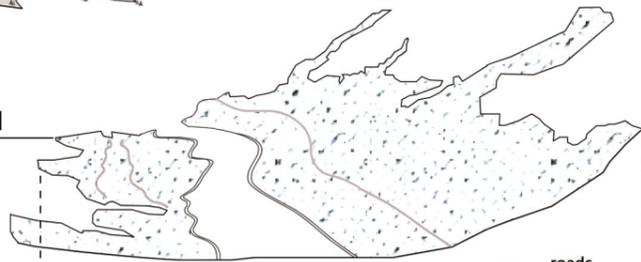
FORESTS

Vegetation is rich in vertical drop, but in a disordered state, it fails to play a protective role.



FARMLAND AND ROAD SYSTEM

The existing roads are all parallel to the river, lacking the connection perpendicular to the river and the connection with the mountain, and the landscape resources have not been utilized.



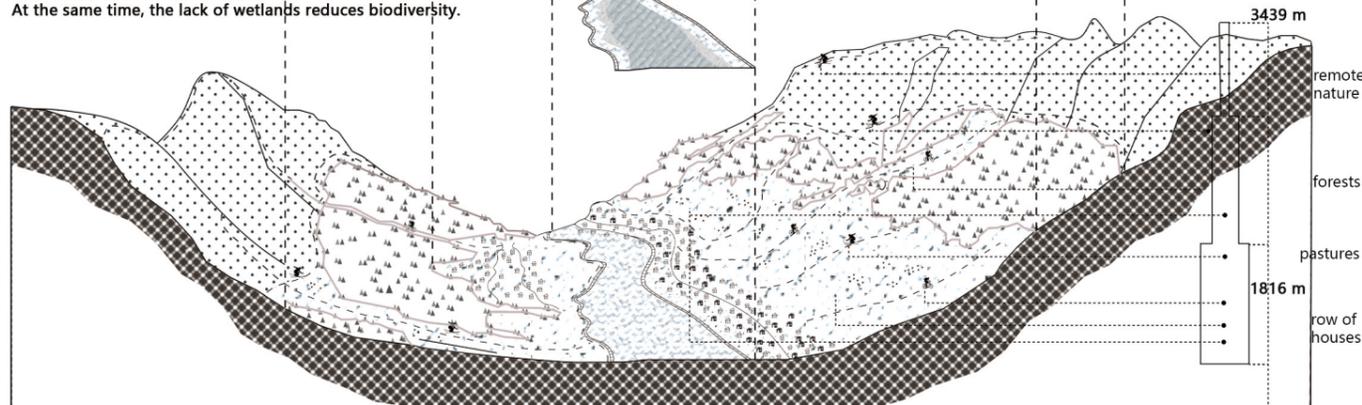
SETTLEMENT

The houses are built around the river, but some areas at risk of avalanches have no protection. And there is no reasonable planning of building attributes, resulting in confusion of functional areas.



RIVER

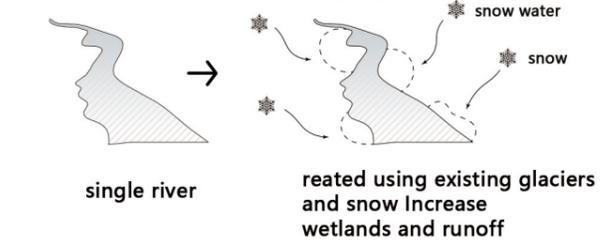
The single river cannot supply such a large site, and the dry season occurs frequently. At the same time, the lack of wetlands reduces biodiversity.



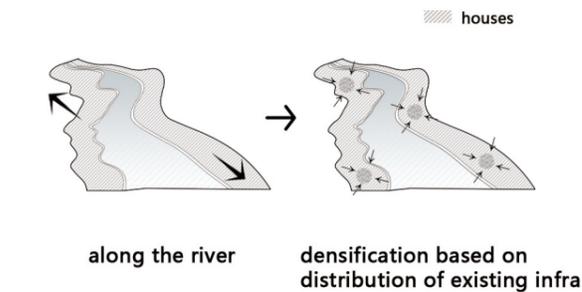
STRATEGY

CREATE WETLANDS

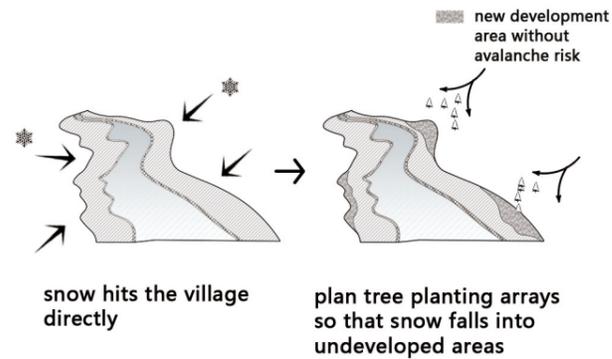
The river has a single shape, lacks runoff to conserve surrounding water and soil, and loses wetlands. By artificially adding tributaries, the design forms a wetland circle around the river, nourishing more flora and fauna, and enhancing the biodiversity along the river. In the future, the river flow will increase, and people will enter the event to achieve a coexistence scene.



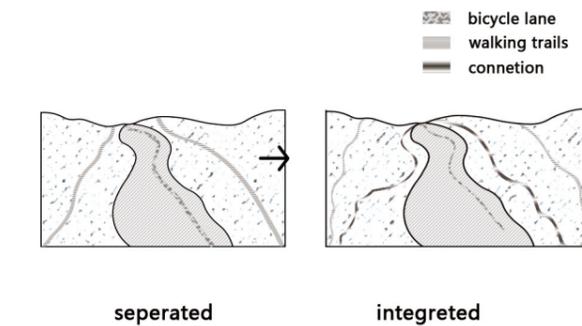
ADJUST THE VILLAGE STRUCTURE



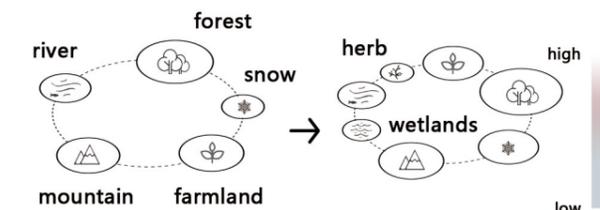
DEAL WITH AVALANCE RISK



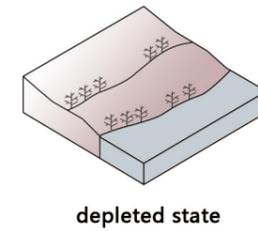
INTEGRATE ROAD SYSTEM



RICH ECOLOGICAL STRUCTURE

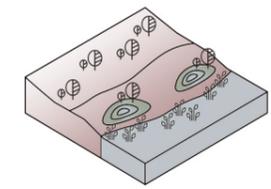


PART 1



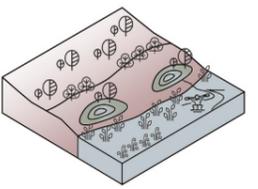
depleted state

PART 2



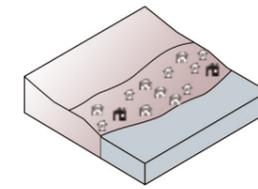
create wetlands and runoff

PART 3

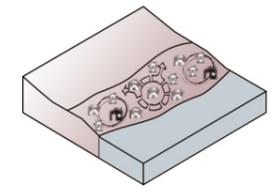


Introduce crowd activities

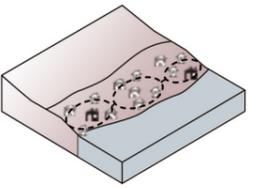
The existing village development is a linear development along the river with a high risk index. Based on the location of existing infrastructure and public buildings, densification is developed by design to form a core agglomeration circle.



disorderly development

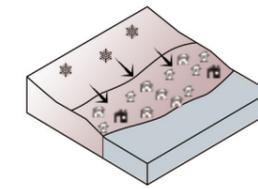


identify existing infra

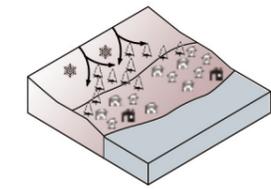


densification development

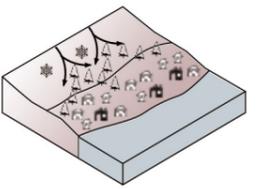
Frequent avalanche disasters have a huge impact on residential areas. The design hopes to protect farmland and buildings, and by planning planting tree arrays, the snow flow development scale is still shallow.



fully exposed

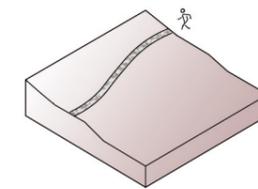


diversion of falling snow

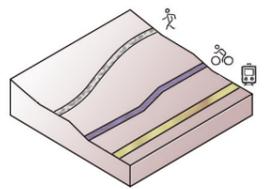


relocating the settlement at risk

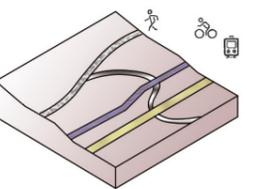
The current status of the road system is scattered and single, which wastes the rich natural landscape of the base. The design aims to augment the road system and enrich the overall touring experience.



single and scattered roads

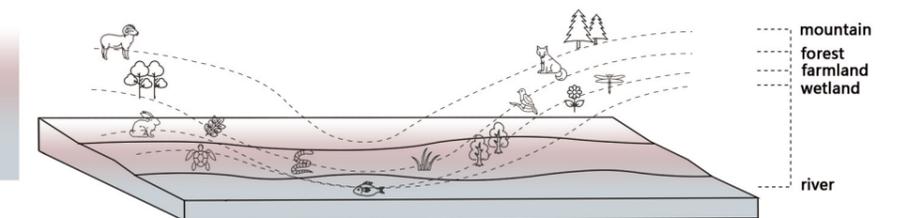


add road system



connection between systems

Due to various risks and frequent river stoppages, the species of animals and plants in this area are single and do not form a biological chain. Through the above design, the biological chain is perfected and a complete mountain ecosystem is formed.



OVERVIEW



WETLAND

- minimum height
below ground level
- river and bank
riparian ecosystem
- medium exposure
man partially placed
in nature



FARMLAND

- lower height
ground level
- river and farmland
living environment
- medium exposure
man partially placed
in nature



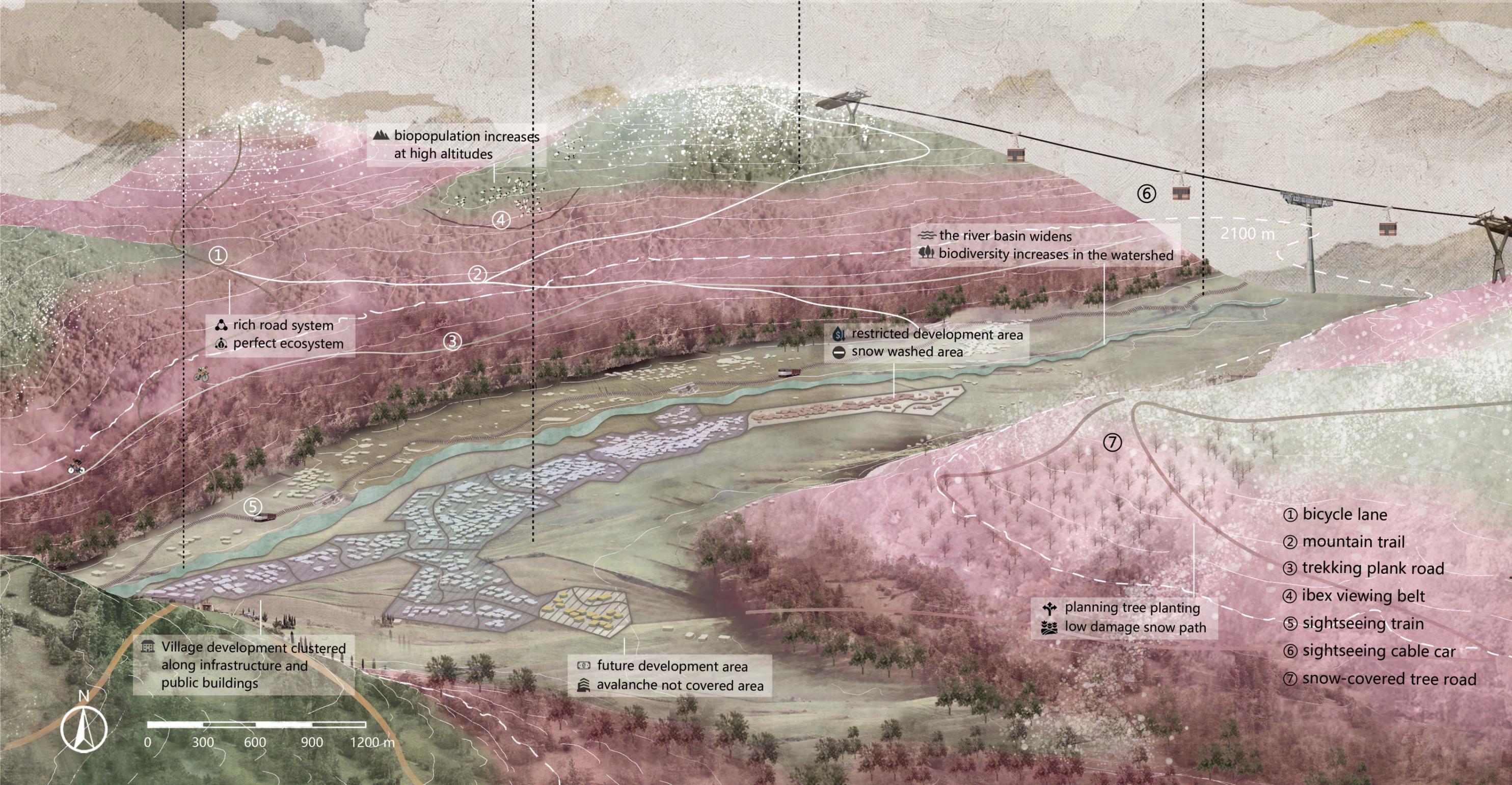
TRAIL

- higher height
mountain forest
- forest
living environment
- maximum exposure
humans are all placed in nature



FOREST VIEW

- maximum height
all landscapes
- mountain and forest
overview perspective
- minimum exposure
vehicles pass, people are
not directly placed in nature



▲ biopopulation increases at high altitudes

≈ the river basin widens
🌿 biodiversity increases in the watershed

🚲 rich road system
🌿 perfect ecosystem

🚰 restricted development area
❄️ snow washed area

🏠 Village development clustered along infrastructure and public buildings

🏗️ future development area
🏠 avalanche not covered area

🌳 planning tree planting
❄️ low damage snow path

- ① bicycle lane
- ② mountain trail
- ③ trekking plank road
- ④ ibex viewing belt
- ⑤ sightseeing train
- ⑥ sightseeing cable car
- ⑦ snow-covered tree road



I GENERAL OVERVIEW OF THE SYSTEM

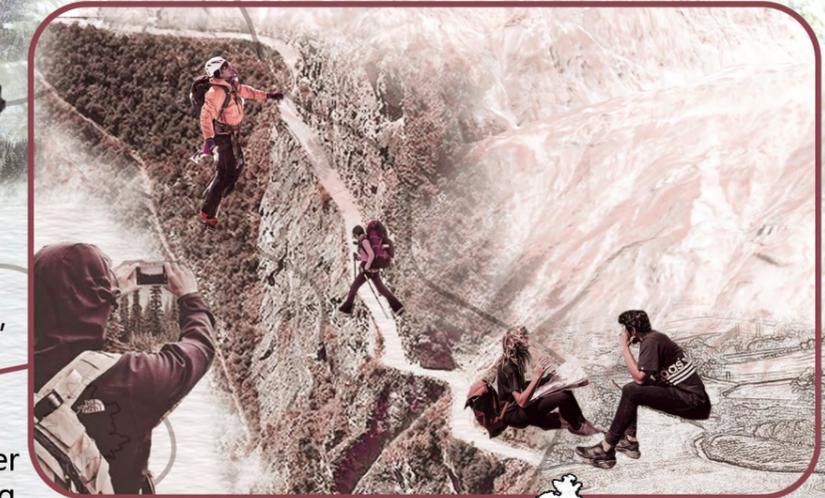
After the planning and design, the variability of the base's activities in the different characteristic landscapes has become more apparent.

System One Snowy mountain



Distance: furthest
Exposure: high
Activities: skiing, summiting, cable car tours
Future scenario: The site's original skiing activities are retained, and lift activities are planned in the mountains to facilitate connections to the mountains.

System two Mountain



Distance: farther
Exposure: highest
Activities: climbing, rock climbing, photography, watching upland mountain goats
Future scenario: mountain roads, vegetation, connections with other systems are well planned, framing the upland goat reserve.

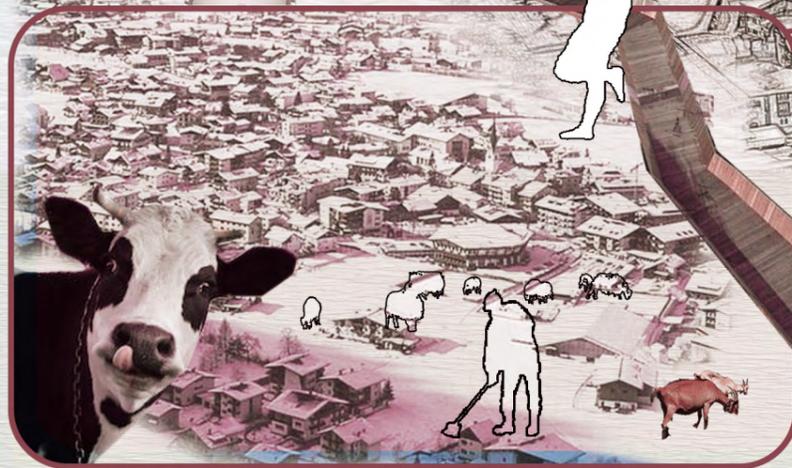
System three Plain



Distance: moderate
Exposure: moderate
Activities: tourist train, cycling
Future scenes: design of a scenic mini-train path through the base to allow visitors an overview of the scene.

Distance: nearest
Exposure: minimal
Activities: walks, farming experiences
Future scenario: urban densification development with reduced exposure.

System four Residential zone



Distance: closer
Exposure: moderate
Activities: swimming, shallow water frolicking, rafting
Future scenario: wider and more varied river, increased number of wetlands, improved biodiversity.

System five River

