

Politecnico di Milano  
School of Architecture,  
Urban Planning and Construction Engineering  
Master of Science in Architecture and Urban Design

Supervisor: Professor Leonardo Belladelli  
Student: Aysegul Gungor | 961823

A.Y. 2022/2023

## LEARNING FROM MACCONAGO: New - Old Agro Chain Concept

# LEARNING FROM MACCONAGO:

New - Old Agro Chain Concept



**POLITECNICO**  
MILANO 1863

Aysegul Gungor

Politecnico di Milano  
School of Architecture,  
Urban Planning and Construction Engineering

A thesis submitted for the degree of  
Master of Science in Architecture and Urban Design

July 2023

Supervised by Professor Leonardo Belladelli

Table of Figures	pag. 9
Abstract	pag. 11
<b>Chapter 01. THE CONCEPT OF THE "ENDLESS CITY"</b>	pag. 12
Two Dimensions: Urban and Rural	pag. 14
Link "Zero Kilometer"	pag. 14
Hybridization: "RUrban"	pag. 15
Architecture and Rural-Land Interpretation in Europe	pag. 16
Synthesis of the Concept of "Endless City"	pag. 18
<b>Chapter 02. CITY IN BETWEEN "MILAN"</b>	pag. 20
Urban and Peri-Urban Agriculture in Milan	pag. 22
Urban Farms	pag. 23
Connection Strategy of the PGT in Between Urban and Rural	pag. 23
Expansion of Milan	pag. 26
Sustainable Development District	pag. 28
Composition of "Cascine di Milano"	pag. 32
Data of South-East Milan	pag. 34
Smart Land	pag. 34
Culture & Agrotourism	pag. 34
Agricultural Lands	pag. 36
Farmhouses	pag. 38
Typology of the Rural Architecture in Milan	pag. 40
<b>Chapter 03. CASE STUDIES IN SOUTH-EAST MILAN</b>	pag. 42
Case Study 1: Open Agri_Next_Agri_2017_2020	pag. 44
Case Study 2: AQST_Milano Metropoli Rurale	pag. 48
<b>Chapter 04. "CHAIN SYSTEM"</b>	pag. 50

Program of the Project	pag. 52		
Concept of the Chain System	pag. 54		
Synthesis of the Chain System	pag. 56		
Strategy	pag. 58		
Phase 1	pag. 58		
Phase 2	pag. 60		
<b>Chapter 05. "ECOLOGIC CORRIDOR"</b>	pag. 62		
Dialogue	pag. 64		
Road Organisation	pag. 66		
Proposal of Ecologic Corridor	pag. 74		
Masterplan	pag. 78		
<b>Chapter 06. AGRICULTURAL POINTS</b>	pag. 80		
Parco Agricolo Ticinello	pag. 82		
Cascina Campazzo	pag. 83		
Cascina Campazzino	pag. 88		
Via Selvanesco	pag. 90		
Cascina Gaggioli	pag. 91		
Via Vaiano Valle	pag. 94		
Cascina Nosedo	pag. 95		
Synthesis of Agricultural Points	pag. 98		
<b>Chapter 07. MACCONAGO</b>	pag. 100		
Points of Macconago	pag. 102		
Cascina Macconago	pag. 103		
Castello di Macconago	pag. 104		
Chapel San Carlo	pag. 105		
Lago Verde	pag. 106		
Morphology of Macconago	pag. 108		
		<b>Chapter 08. FOCAL POINTS OF MACCONAGO</b>	pag. 112
		Cascina Macconago	pag. 114
		Case Study	pag. 118
		Experimental Unit on Lago Verde	pag. 120
		<b>Chapter 09. "NEW-OLD"</b>	pag. 124
		Cascina Macconago: Sliding Building	pag. 126
		Building 1	pag. 128
		Agroforestry	pag. 136
		Piazzetta	pag. 138
		Building 2	pag. 140
		Masterplan	pag. 142
		Architectural Drawings	pag. 144
		Lago Verde: Building on the Lake	pag. 164
		Building 3	pag. 166
		Masterplan	pag. 172
		Architectural Drawings	pag. 174
		<b>Bibliography</b>	pag. 183
		<b>Sitography</b>	pag. 185
		<b>Acknowledgments</b>	pag. 186

<b>Fig 2.1</b> Chiaravalle, 1578 “Libro dei prati del Monastero di Chiaravalle”	pag. 31
<b>Fig 2.2</b> Vaiano Valle, Nosedo (Nosedo and San Giacomo), Grande, Merezzate and Cuccagna, 1888, Elaborazione PIM	pag. 31
<b>Fig 2.3</b> Character of the citizen, I.Stat	pag. 34
<b>Fig 2.4</b> Character of the Agricultural Land, I.Stat	pag. 36
<b>Fig 2.5</b> Character of the Agricultural Land, I.Stat	pag. 37
<b>Fig 2.6</b> Character of the Agricultural Land, I.Stat	pag. 37
<b>Fig 2.7</b> Character of the Farmhouse, I.Stat	pag. 38
<b>Fig 2.8</b> Character of the Farmer, I.Stat	pag. 39
<b>Fig 2.9</b> Character of the Farmer, I.Stat	pag. 39
<b>Fig 2.10</b> The example organization of the traditional farmhouse, Comune di Milano	pag. 41
<b>Fig 2.11</b> The example organization of the traditional farmhouse, Comune di Milano	pag. 41
<b>Fig 3.1</b> Cascina Nosedo & Area of Porto di Mare, Google Earth Photos	pag. 45
<b>Fig 3.2</b> Comparison of the Plot Countries, Mater Aliment Urbes	pag. 46
<b>Fig 6.1</b> Typological scheme of the traditional Lombardy roof structure, “Architetture Tecnica”, Caleca Luigi, 2004	pag. 87
<b>Fig 7.1</b> Aerial photo of Cascina Macconago, Google Earth Photos	pag. 103
<b>Fig 7.2</b> Palazzo Castello di Macconago, Comune di Milano	pag. 104
<b>Fig. 7.3</b> Palazzo Castello di Macconago, Comune di Milano	pag. 104
<b>Fig. 7.4</b> Chapel “San Carlo”, Comune di Milano	pag. 105
<b>Fig 7.5</b> Lago Verde, Mirko Bozzato	pag. 106
<b>Fig 7.6</b> Lago Verde, Simona Fasullo	pag. 106
<b>Fig 8.1</b> The system of the aquaponics, Robert Stanley	pag. 120
<b>Fig 8.2</b> The traditional aquamarine culture	pag. 122
<b>Fig 8.3</b> The traditional aquamarine culture	pag. 122

\* All other illustrations in the book were designed by the thesis author.

This thesis, it is aimed to revitalize the Macconago which is a district of Milan city, and the farmhouse which is located in this region, and to establish a link between two dimensions which are urban and rural to make invisible the thresholds. The "Cascina Macconago" is a farmhouse with a high architectural value, located in the south of the city of Milan, on the lakeside with natural context, within the agricultural lands, surrounded by historical and cultural buildings such as a "Church San Carlo" and "Palazzo di Macconago". With the data learned from Macconago, it is determined that this region has rich resources such as lands, and water channels for agriculture. In addition, other farmhouses are located in south-east Milan, and agricultural lands, and projects in the region were analyzed for the Macconago farmhouse to design a new project according to the sense of place. Additively to the design of the Macconago farmhouse, a large path covering the south of Milan has been designed, including existing projects such as "Open Agri" and "Mater Alimenta Urbes", which are currently being worked on, and other farmhouses which were designed by adaptive reuse methods. This path has several entrance gates that are in contact with the urban and are in different positions from each other, and it proceeds uninterruptedly. The design of the path aimed to create a corridor that is sustainable, ecological, and compatible with the context, includes afforested bicycle and walking paths and is highly restricted from vehicle traffic.

The design of the Macconago farmhouse has been enhanced from the same point of view with the purpose of the other elements which is included in the corridor in this thesis. In this way, an agricultural chain concept which is located in the south of Milan was created. The architectural design process of the Macconago farmhouse has been improved in a sustainable and self-sufficient design aspect. In addition, a hybrid design was formed by intermingling new and old data to revive the memory. The utilization of these new and old elements is interlocked and embodied with methods such as recreating the structures of the traditional farmhouse and building typologies of the Milan Lombardy farmhouse and tying the original building materials that are still useable materials of the buildings and new sustainable materials together. Moreover, images that contribute the visual memory made a relationship with past and present with this sense of design.

As a result, when this study is summarized on both urbanistic and architectural aspects, it is an agricultural chain system alloying new data with old data that is coherent with the rural context, serves not only the rural area and habitants of this area but also urban area and foreigners by respecting to nature and memory.

Chapter 01.  
THE CONCEPT OF THE "ENDLESS CITY"

01

## Two Dimensions: Urban and Rural

There must be a blurred threshold and border between two defined areas which are urban and rural. These two areas should be considered symbiotic habitats and should be in communication with each other. These two regions should support and feed each other economically, socially, culturally, and environmentally. When this coordination is established, the concept of an "endless city"<sup>1</sup> will have been reached and the borders will have disappeared. These two dimensions which are rural and urban territories can be re-imagined such a different balance in terms of social, economic, and environmental. To explain, these territories share their resources and opportunities for sustainable development of the city. Based on this, the current situation of the urban and rural areas should be analyzed and local solutions should be produced accordingly.

To produce local solutions, the characteristics of the rural area should be examined in detail and the connection strategy to be established with the urban should be created according to these data. At the same time, the user identity should be analyzed. A strong link must be established between people, communities, or societies and environmental factors and their backgrounds. In line with these data, the dynamics and revival of solutions will be designed. The big challenge here is that physical, symbolic, memorial, and technical solutions work correctly with each other. If we consider the triangle of producer consumer market in the economic connection strategy among local solutions, the potential of agricultural

areas in local solutions draws attention.

### Link " Zero Kilometer"

Zero-kilometer production is a system that aims to establish a direct connection between producers and consumers. One of the most important parts of this system is "urban farming". These farms can be considered an important heritage. The reuse of abandoned farmhouses which is located in rural territories, the revitalization of the lost agricultural culture in the city, the transportation of local products from these regions to the urban and the establishment of the networks of this system are among the design and technical strategies that serve to create a sustainable city. Thus, an integrated city plan emerges where borders disappear.

In this aspect, agriculture is a fundamental resource for the urban and the system of the zero kilometer to design endless cities. The agriurban projects contain social constructions which are public and private between farmers, local communities, and authorities. Moreover, rural areas have a productive landscape, buildings, and settlements to produce a scenario that is contemporary, sustainable, and self-built aspects. While the rural is nourishing the urban area such as the residential area which is related to selected agriurban territories, the local situations like natural and cultural dynamics which are climatic, mechanical, biological, and daily life habits must be considered.

### Hybridization: "RUrban"

"Cities have never stopped rebuilding themselves through torment and turmoil or grasping territory beyond urban objectives or brutalization"<sup>2</sup>

Production is linked to tangible data. The subject of production depends on the trio - object/raw material - tool. When exemplified by agriculture, primitive human beings could not dig the soil with their hands, so they discovered the plow, and domesticated the animal as a human could not use the plow. Modern human beings have replaced animal and natural forces with machines to increase productivity. While the machines contributed positively to the acceleration of the process, on the other hand, they caused a main problem. While the machines were operating, energy isolation could not be achieved and energy loss occurred and they started to cause environmental damage.

The primitive human being was still a part of the natural balance while they were using their bodily power or making use of animals and nature. Production could only be made as much as the natural cycle needed and allowed, and consumption was as much as the need cycle. The balance between production and consumption was maintained. Thanks to modern human-machine power, consumption, and production have lost their balance. It began to disrupt the sustainable ecosystem. When the ecosystem is considered like urban aspects, making a strong relationship between rural and urban is needed to keep the urban habitat sustainable and ecologic.

The data of the transformation and interconnection process is redefining urban and rural territories. Fundamental urban materials and needs must be redesigned with suitable aims such as agricultural parks, garden rooftops, shared gardens, water supply, recycling, production units, worker habitats, energy isolations, efficient land areas... These aims created a new concept about the urban and rural districts.

According to the approach of Sennett, the new urban theory is "urban without an outside"<sup>3</sup>. To explain, the new definition between urban and rural areas is "urbanity" which embraced new forms and functions instead of the transition area. The hybridization process goals reach the idea of "cityness" (Sennett, 2007). The place of agriculture in the border regions of this scale is of great importance. With agricultural fields serving two different purposes, both economical and sociocultural balances are established. We can define these agricultural areas as commercial and non-commercial. In order to blur these borders, non-commercial agricultural areas can be used as social areas, which can revive the memories of people who have forgotten to relate to nature and the wild, educational units can be found there, while agricultural areas used for commercial purposes feed the city in terms of products and food, it allows local areas to gain economic strength. At the same time, abandoned and dysfunctional areas are used at the urban scale and serve the citizens.

1. Bonomi A., Abruzzese A. (2004), *La città infinita*, Bruno Mondadori.

2. Marx K. (1857), *Contribution à la critique de l'économie politique*. Paris : Éditions sociales, 1972.

3. Brenner N. (2013), *Towards a Study of Planetary Urbanization*, Jovis Verlage



### Architecture and Rural-Land Interpretation in Europe:

#### The Concept of Rural Architecture in Europe:

- rural has a high-quality environment with a richness of history, memory, identity
- architecture which in rural can create social, cultural, economic, and technological innovation

The perception of the contemporary city is homogeneous distribution, linked, and large space which includes city and rural landscape instead of fragmented space. With the concept of the contemporary city, the ancient city borders started to disappear and turn into web fabric. A contemporary architectural culture which is in Europe focuses the new terms such as "rurban" and "eco-village" to connect rural and urban areas.

South of Milan, North Pavia Province, "basso Pavese" can be examples of this process. In these areas, the activities are related to offices, hospitality, exhibition centers, universities, and research centers that can be found in rural land. These kinds of projects aim to strengthen the rural environmental, landscape, and architectural heritage. Therefore, looking at the possible architectural image which are structures in the village and farm buildings supports the idea of revitalizing the rural place and incorporating the strategy. The farm buildings represent cultural, symbolic value, and active heritage. They can be renewed in a systemic way with the agricultural lands.

There are crises in the rural areas which especially in Europe such as :

- aging of population
- abandonment
- decay of the buildings which are in the small town
- pollution
- lack of infrastructure and service
- shortage of job opportunities.

#### The Strategic Approaches and Goals to make Rural Architectural Intensification in Europe:

- improving the agricultural and forestry sector:

European cities have a great potential about agriculture, forestry and food-processing fields. The agri-food sector should be contributed in terms of knowledge, transfer, modernisation, innovation and quality aspects.

- improving the environment and countryside:

To protect and strengthen the natural sources and landscapes in the rural areas, the biodiversity and the preservation of nature value of farming should be contributed and traditional agricultural methods should be supported with technologic improvements. The elements which are water and climate change should be considered.

- improving the quality of life in rural areas and encouraging diversification of the rural economy:

The employment opportunities should be promoted and the existing building capacity, organisations and materials should be promoted. In addition, the attractive activities should be located.

#### The Possible Treatment in the Agricultural Lands:

##### Agricultural Treatments:

- organic farming: to promote agricultural production process with a sustainable methods and environmental point of view
- to promote local food production units
- to design new greenhouses
- to design new stables and aquariums

##### Environmental Treatments:

- to add small service buildings
- to design natural pathways, parking areas, bicycle and pedestrian routes
- to avoid building expansion in agricultural areas
- to respect the environmental and natural image, the character of the territory
- to protect waterways and to prevent water pollution
- soil conversation: no designing new roads
- to create small ecological networks between urban and sub-urban
- short chain spaces: to make connection between the industrial units, agrifood, environment, cultural and touristic places

#### Technologic Innovation Treatments:

- clean energy: to encourage the existing structures in terms of biomass, heat pumps, photovoltaic panels, solar systems, wind power, etc.
- multiservice and function spaces: to add new function business, education, tourism, commercial spaces, healthcare, sport activities, etc.
- rainwater recovery: to collect the rainwater and to use collecting water in air-conditioning, watering, washing, sanitation, etc.

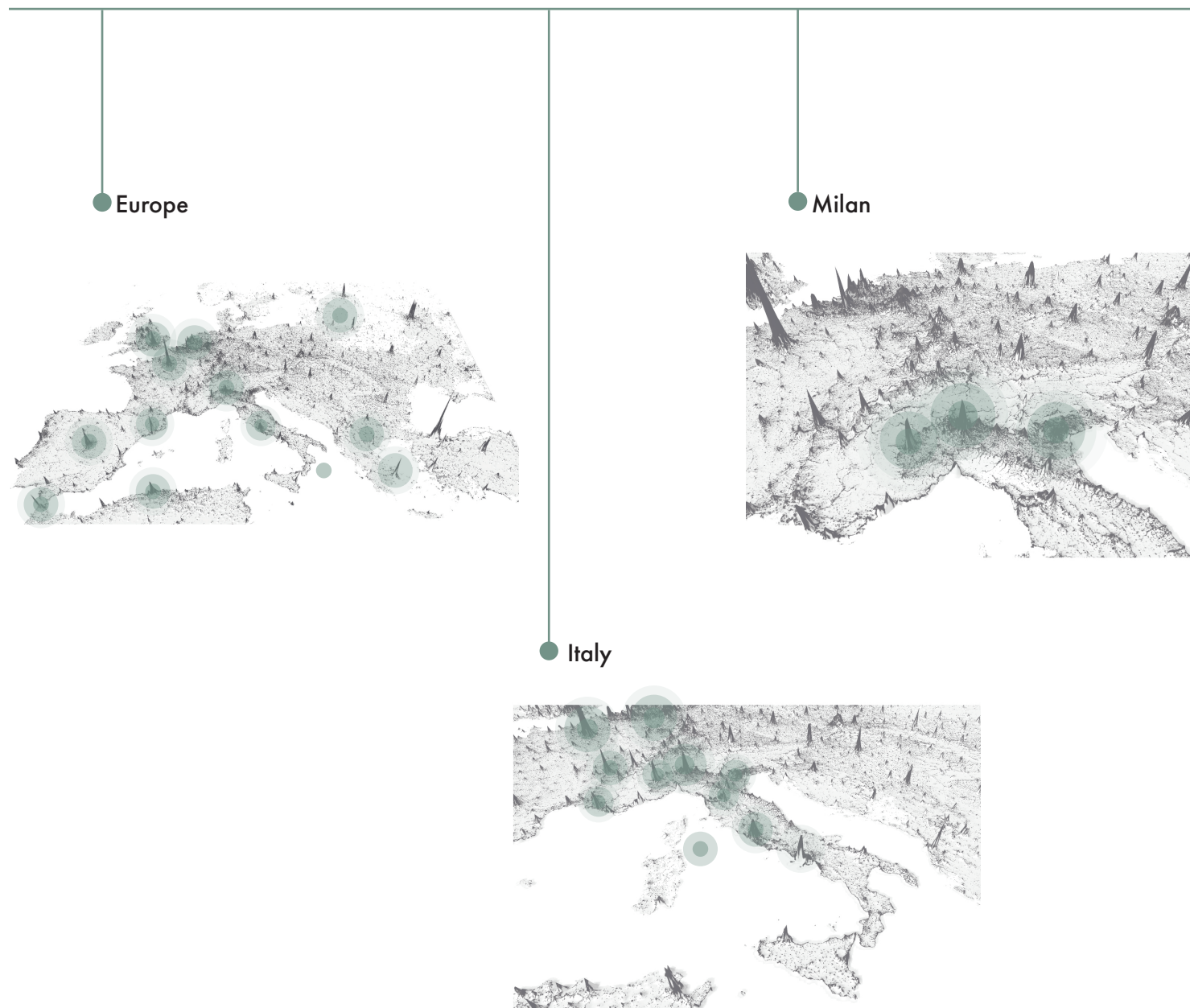
#### Architectural Treatments:

- to encourage sustainable architecture with saving resources and avoiding pollution in all stage
- to support to use raw, recycled and local material in construction process
- form follows climate: to pay attention correct orientation, thermal insulation, proper ventilation, etc.
- to avoid wasting power: use intelligent lighting systems
- to design eco-compatible structures: to conserve "soil", "water", "energy"

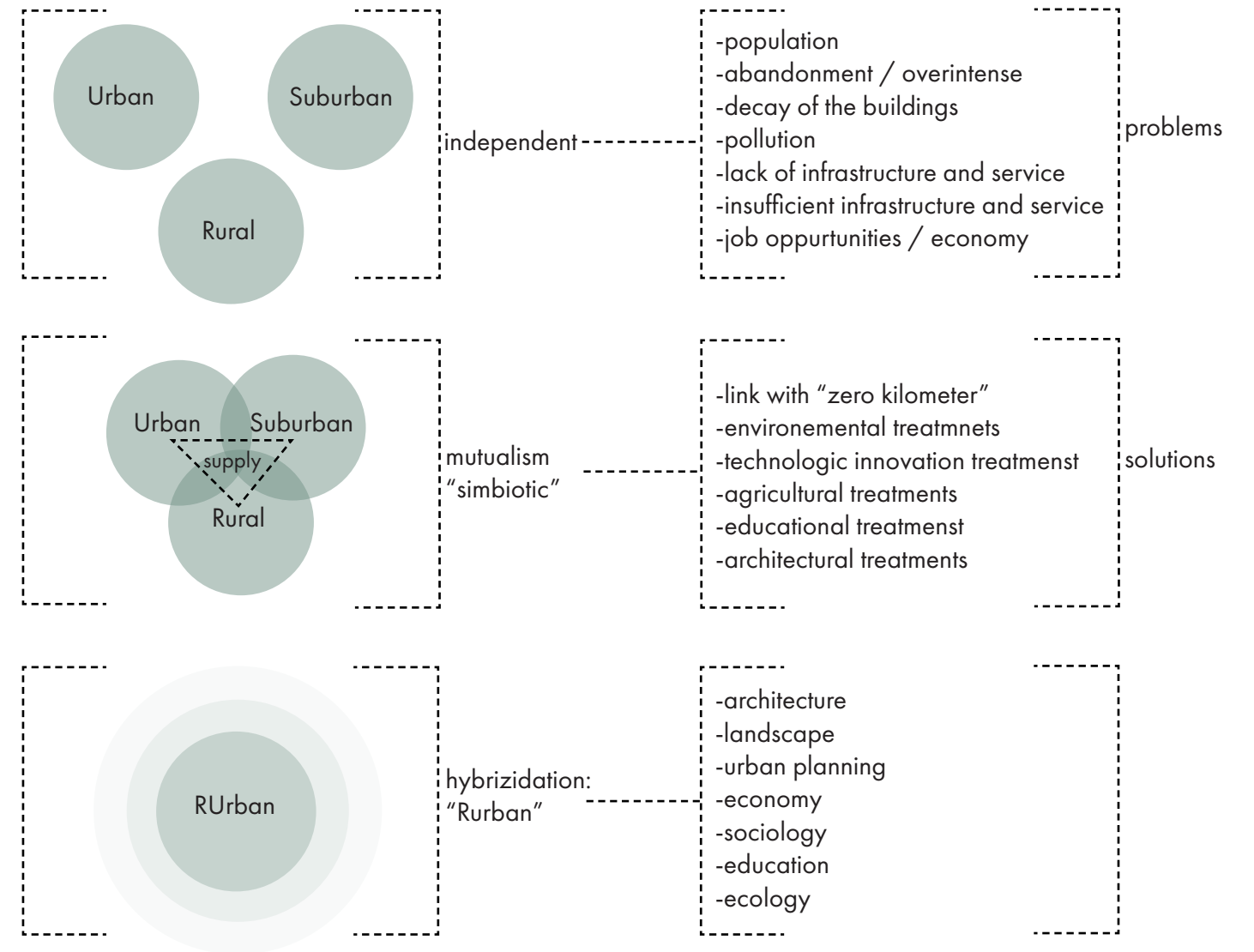
#### Multi-disciplinary Approach:

- Architecture
- Landscape
- Urban Planning
- Economy
- Sociology
- Ecology

Two Dimensions: Urban and Rural



Synthesis of the concept of "Endless City"



Chapter 02.  
CITY IN BETWEEN "MILAN"

02

### City in Between: Milan

The city of Milan is a compact city and it is surrounded by countryside. The Latin name of Milan is "Mediolanum" which means "city in between". This name is coming from the geographical position of Milan. Milan is between the river basins of Ticino, Sveso, Olona, Lambro and Adda river and also between valley of Po and Alps. The result of the nature, agriculture in and around the urban territory developed. Milan had always strong relationship with rural areas. The central city could economically benefit from the rural activities of the suburbis, and in turn, the countryside could take advantages from the close proximity of the emancipated Urbis.

The morphology of the urban and the rural has the same until the nineteenth century. After the nineteenth century, the city center started to enlarge and occupy agricultural areas which are located surround of Milan. The state of being "in between condition"<sup>1</sup> is easily read in the borders of Milan.

The administrative boundaries of Milano Municipality are enclosed with agricultural areas. The expansion of the agricultural lands is equal to about 4000 ha. The PRG'80 already recognized that many agricultural areas can be used for different function which is urban and territorial parks. Most of the agricultural Milanese areas are located in the Parco Agricola Sud Milano, and according to the regulations of the Territorial Coordination Plan, most of the agricultural lands where are located extended over the territory of 60 municipalities in the southern arc of the metro-

politan area. In the PGT and the Plan, the southern arc is considered a central point for the environmental and sustainable project. The decisions in PGT aim to relaunch the concept of "agriculture in the city" which means designing productive peri-urban agricultural places with multifunctional aspects for servicing the community which inhabits there.

Agricultural areas that will be in contact with the first urban belt within the Milan Municipality administrative region have been determined and these areas have been accepted as the "agricultural urban belt". Investments in this area are privileged because they are strategically located, which will connect with the city core. In other words, they are areas that have been subordinated to the urban fabric of the city, whose economic and productive vitality is still felt, and where public actions recognize and they are more supported.

#### Urban and Peri-Urban Agriculture in Milan:

Milan agriculture and the opportunities can be developed. The innovative design which is related to making a connection between urban and peri-urban areas like farmland can be made with regeneration and adaptive reuse strategies. The innovative design aims to design self-sustainable and built structures in the selected region, creating its eco-system and revitalizing the abandoned region in terms of infrastructures and structures in its local context. For this reason, the first aim is to search peri-urban farmland place in the border of Milan and analyze the local actions and the tissue of the region.

In this context, the agricultural areas which are stuck on the boarder of the city can be revitalized, renovated of the environmental scale with architectural elements and can be supplied in terms of products, local markets, education buildings, or new sectors which are connected to the city center of Milan. Because of this reason, the district south of Milan is considered a suitable region to develop.

#### Urban Farms:

The structure of the urban farms can be built vertically such as tall constructions with light materials. It is a suitable form for vegetables, fruits, flowers, etc., but horizontal farms can be preferred instead of vertical farms for animals. The urban farms contain complex units which are animal welfare, organic farming spaces, a recycled water system, a place for public access, gardens for products, storage buildings, etc. The scenario for blurring the border between urban and rural territories is turning farmland into natural agriurban common places which are forests, public gardens, parks.

#### Connection Strategy of the PGT in between Urban and Rural:

The railway belt is looking for an urban barrier in the city. The first aim is to transform the railway system into a green corridor to destroy the perception of the threshold. While destroying this perception, the transforming railway yards and their extensions into points for use and connection of the center and per-

iferia are used. After this strategy, the new belt which can be called an agricultural corridor in the peri-urban area occurred.

Peri-urban agricultural areas which are located on the direct edge of the municipality of Milan have more direct communication with the city core. These types of lands have specific roles such as the need to respond to public and greenery needs by keeping functional agricultural origins with quality landscape design and supporting the economic activity in Milan.

While establishing a new connection, the historical heritage is protected, and the abandoned agricultural facilities which are located on these specific lands are reused by designing public use units and giving access to citizens within agricultural and environmental contexts. PCU is formed which means urban belt plans to contact the urban margins by applying these kinds of strategies.

● **Urban Barrier:** extensions of the railway yards to make a connection between center and periferia



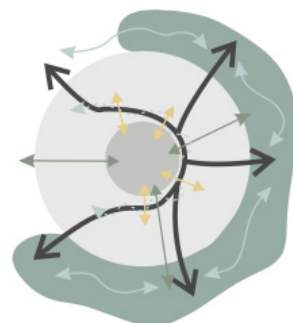
● **First Urban Belts:** using the path of the railway as a green corridor



● **Multifunction Spaces:** reusing the abandoned railways by giving new function and creating new spots

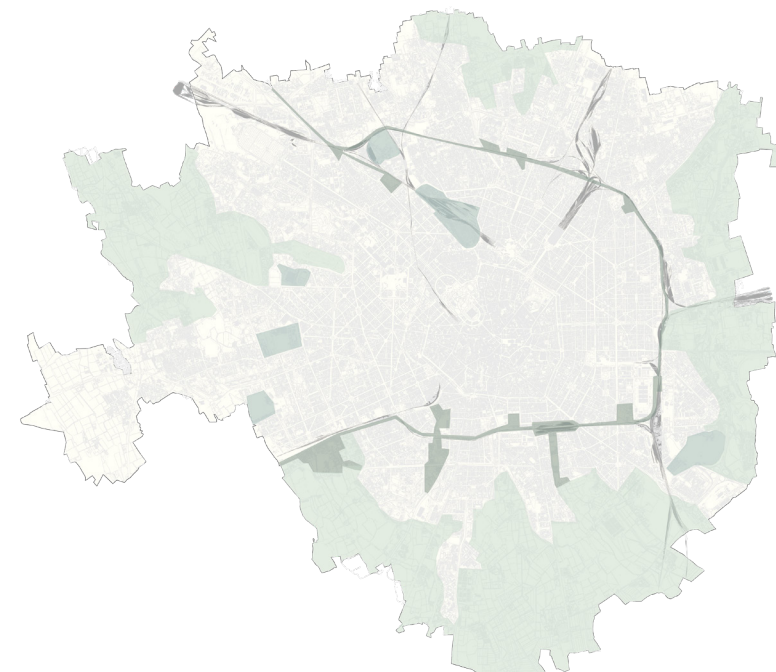


● **Inclusive City:** there are four levels which are derived from strategy of the PGT to achieve a more inclusive city



- Historic Center/ Preferia
- Historic Center/ Metropolitan Park
- Green Space Connections
- Urban / Rural /Neighborhousds

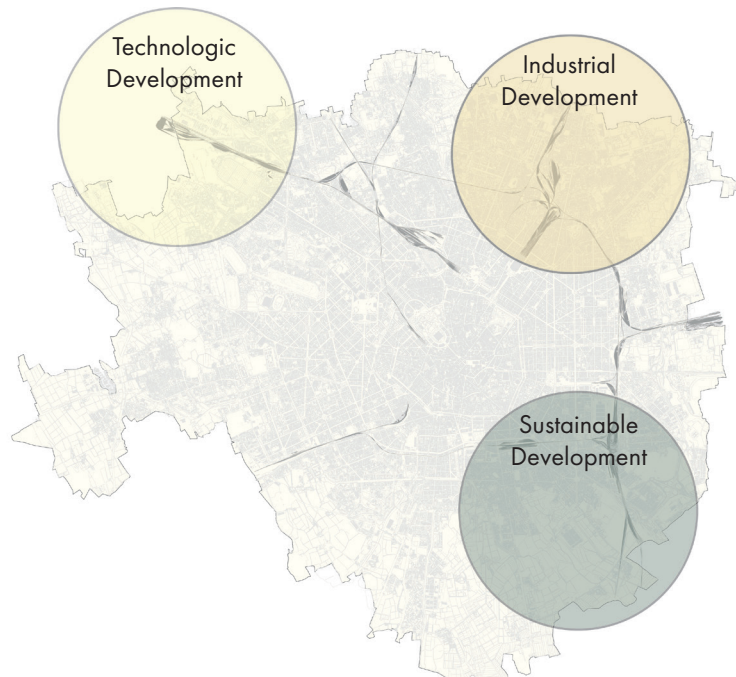
● **Urban Belts Plan**



**First Urban Belt:** the railway yard, which surrounds the core of Milan, forms a border for the city core. In line with the objectives of the strategic plan of PGT 2030, it has been transformed into a green corridor, enabling users to be active on this axis, and it is aimed to eliminate such a threshold effect.

**Second Urban Belt:** agricultural lands located within the borders of Milan Municipality and surrounding the borders were requested to be integrated into the city, and for this reason, the idea of connecting this belt to the first belt was put forward, for this purpose it was aimed to establish a connection between the city and rural areas.

● The Development Districts of Milan



**Technologic Development:**

- North - West of Milan: growth for technological advancement with fair shows, EXPO, and more recently the scientific technopolis MIND.

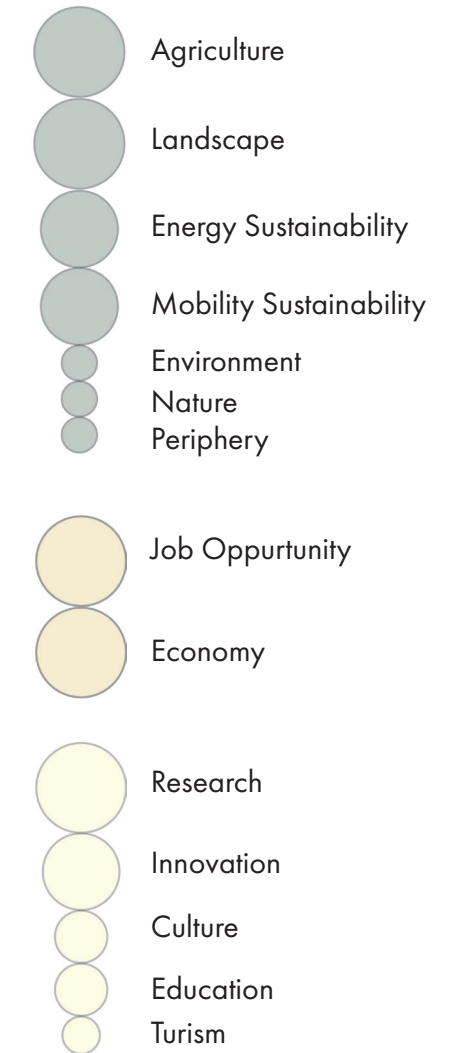
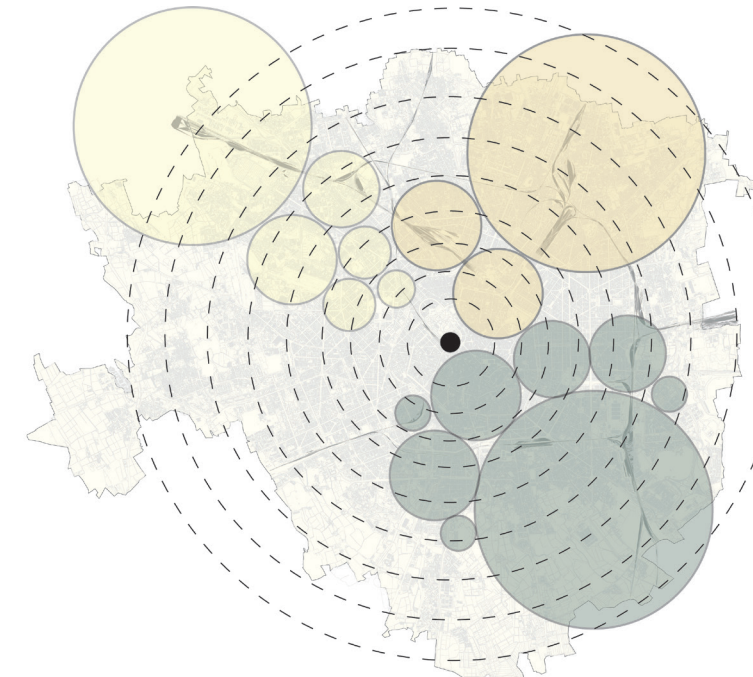
**Industrial Development:**

- North - East of Milan: industrial growth as well as growth to meet the growing population needs of nearby municipalities.

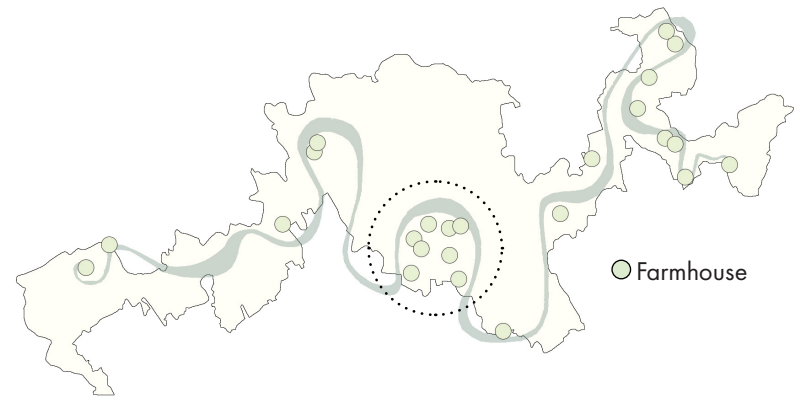
**Sustainable Development:**

- South - East of Milan: growth concerning its rural and natural environment which can be key points of its future urban vision.

● The Main Elements for Inclusive City



● Expansion of Urban and Peri-Urban Agricultural District

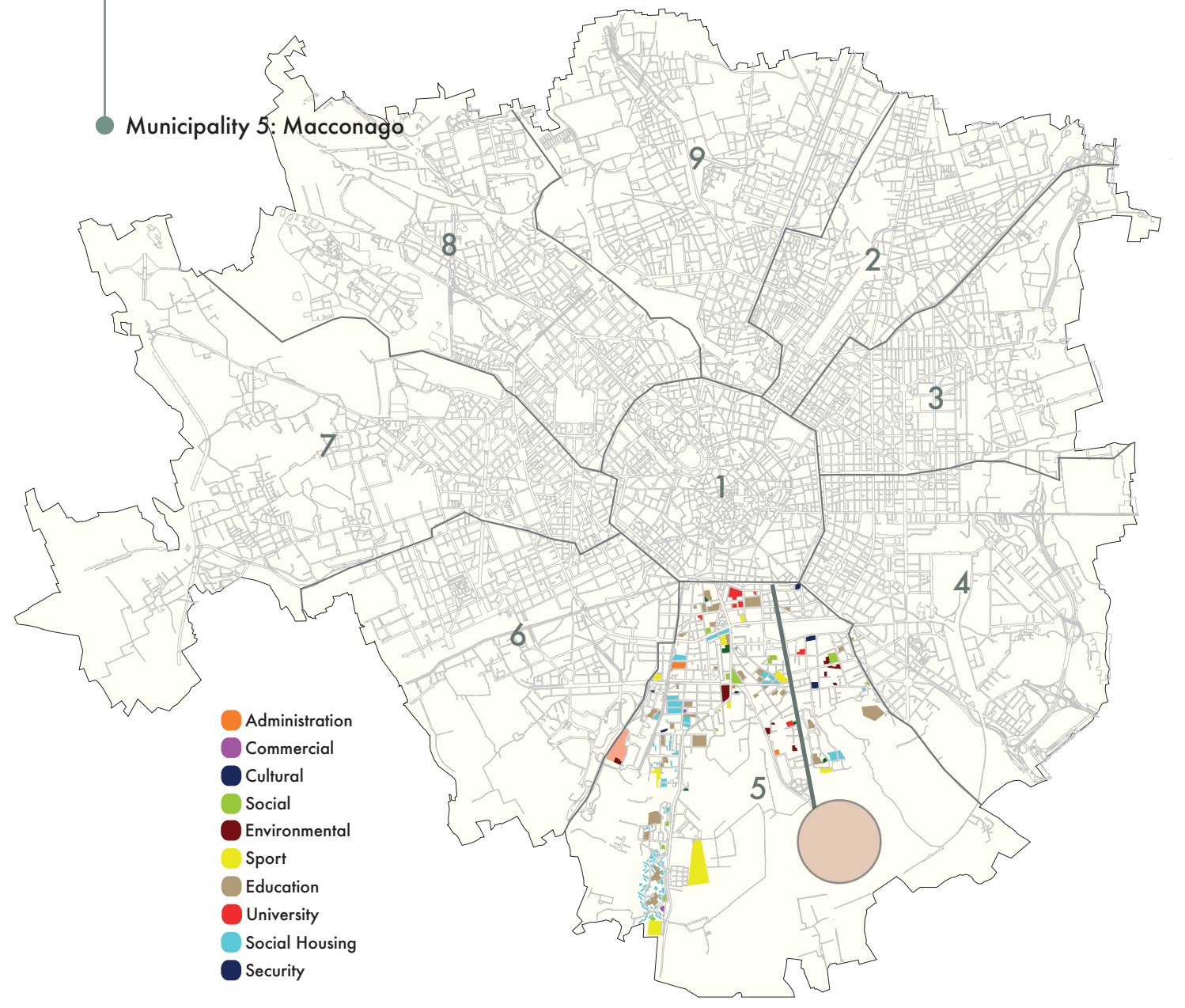


Sustainable Development: South - East Milano

**Municipality 5:**

Agricultural lands on the Milan municipal border and active or projected farmhouses on these lands are marked. It has been determined that farmhouses with this feature are concentrated in the south of Milan. When these works in the south of Milan were investigated, it was understood that most of them were within the scope of municipality 5.

● Municipality 5: Macconago



### Activities of the Municipality of Milan:

In 1961 the Municipalities of the Milan Metropolitan Area decided to unite themselves for the construction of the Milan Intercommunal Plan. The relationship between the urban and the rural has always been at the center of Cento Studi PIM's activities and has survived to the present day. Examples of these activities are the establishment of the South Milan Agricultural Park and the North Milan Park.

Following the Milan Intercommunal Plan's decisions, new studies were started with Expo 2015. The transformation of the farmhouses is one of the main elements of the grand Universal Exhibition project "Feeding the Planet, Energy for Life", which Milan's municipal farms will host in Milan. The reconstruction of Milan farmhouses can be considered the first concrete example of the Expo. The aim of the innovation in Cascine di Milano, Expo 2015 is the creation of sustainable cycles of production, transformation, and direct sale of agricultural products in the farmhouses and their opening to the public through the inclusion of new functions which are residential, commercial, touristic, educational, cultural and park service are encouraged. During the Expo 2015 process, the Municipality of Milan and Expo Company decided to allow renovation of the existing abandoned farmhouses for creating a relationship between the city and agriculture. The other projects like Open Agri and Mater Alimenta Urbes are started to following and the represent of this idea. With this change process, the farmhouses of Milan will assume the complementary role of "connection municipalities".

### Farmhouses in the city: "Cascine di Milano"

Most of the farmhouses are located in agricultural areas, but a small amount of them are located in the city after the expansion of Milan. Their location is considered an important strategic resource for the meet the need of the city. In addition, their locations and values can be useful for the reuse project. These kinds of places promote cultural communication between the city and the countryside. The project of the "Expo 2015", "Open Agri\_Next Agri Project", "Mater Alimenta Urbes" represent positive activities for revitalizing agricultural lands which is related to the environment, sustainability, food, culture, history, and architectural aspects.

### The Fundamental Survey of Farmhouses and Agricultural Lands in Municipality 5 of Milano:

The fifty-eight farmhouses which are located on the municipality border are surveyed in terms of the situation of the existing structures, ongoing projects, character of the facilities, etc. Some of these farmhouses are well preserved, while others are ruins, abandoned. Fourteen of these farmhouses are private and family-run farms. Some of the rest ones have innovative projects which are combined with agricultural activities and commercial, educational, social, and cultural functions while the others are abandoned. According to the survey, most of them are in a cluster morphology and are located near the waterways and the agricultural parks.

### The main three elements for agricultural territorial areas in the municipality of Milano 5:

- economical activities
- social and cultural activities
- waterways

The importance of the economical and social-cultural elements can be read in the old maps of the Chiaravalle rural territory. When the map of 1578 is examined, the farmhouses which are located on the "road to Nosedo" which is "Roman Road" was established near the monastery are understood. It demonstrates that farmhouse facilities need to make a strong relationship with the community in economic, social, and cultural aspects.

The importance of waterways can be read on old maps of Vaiano Valle, Nosedo (Nosedo and San Giacomo), Grande, Merezzate, and Cuccagna farmsteads and farmlands. When the maps of 1888 are examined, agricultural lands and farmhouses are encountered that follow the roads, canals, rivers, fountains, irrigation ditches, etc.



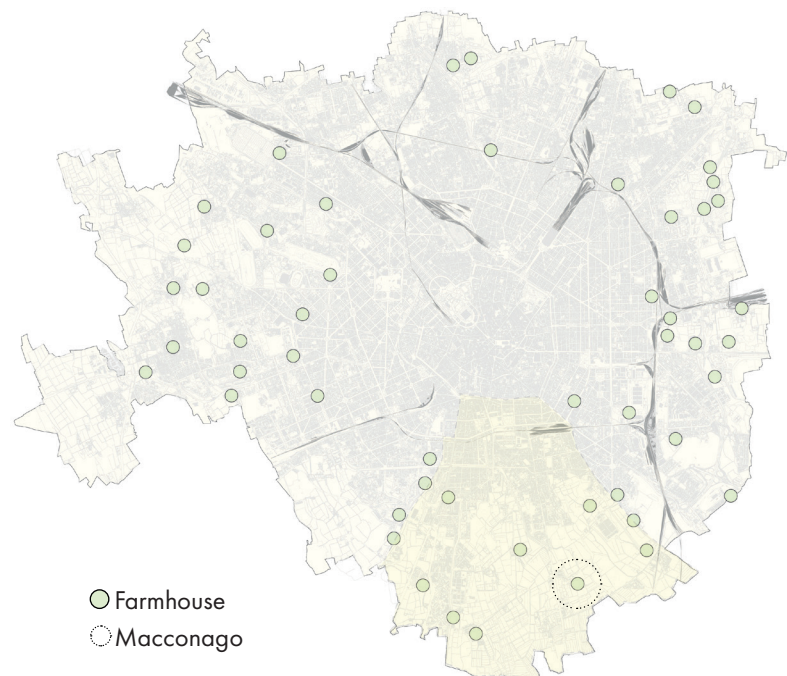
Fig. 2.1: Chiaravalle, 1578



Fig. 2.2: Vaiano Valle, Nosedo (Nosedo and San Giacomo), Grande, Merezzate and Cuccagna, 1888



● Composition of the Farmhouses in the Municipality of Milan



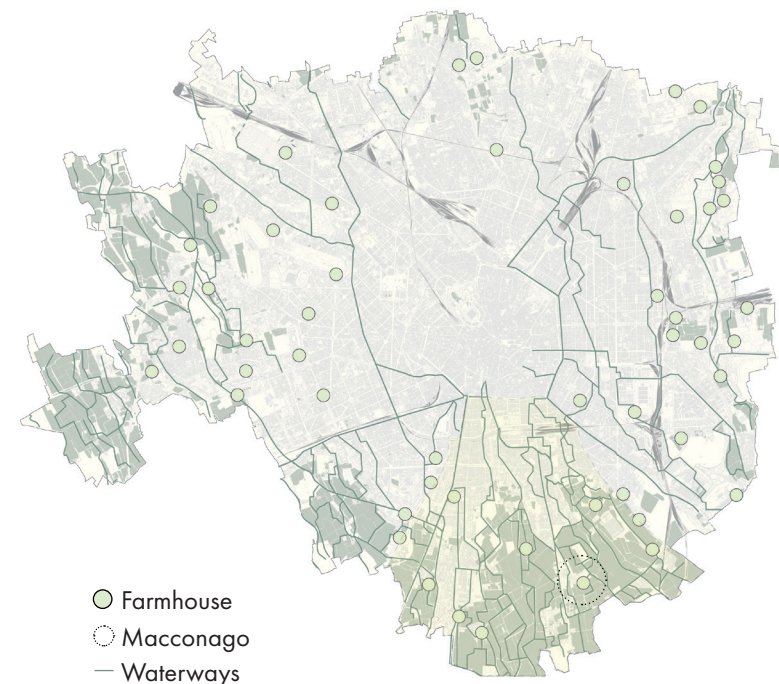
The Settlement System:

In general, it is seen that some of the farmhouses are completely incorporated into the city. Many farmhouses mark boundaries between green spaces and residential areas. We can say that only a few farmhouses are far from the urban phenomenon, and some of them are located within Milan South Park, while others are located in the agricultural context. In addition, accommodation units and university faculties are also in the center of the city, as well as being concentrated around southern parks such as Lambro and Forlanini, and their potential to be in contact with farmhouses in some way draws attention.

The Environmental Landscape System and Historical Architectural Heritage:

Green areas and agricultural lands where farmhouses are located attract attention. A minimum of the farmhouses, especially those in the Vettabbia park, are in direct contact with the arable land. Other farmhouses adjoining or surrounded by green spaces are located within urban parks. At the same time, waterways began to show their importance when interpreting the contexts of farmhouses intertwined with agricultural lands. In the south the importance of the Lambro river is visible, in the west, the waterway affected area for the Expo attracts attention and is fed from Olona.

● Composition of the Farmhouses Along to Waterways



The Water System:

Many small but very intense waterways can be seen in the south of Milan. From Ticinello to Vettabbia, instead of a single river, there is a dense network of waterways that capillary and evenly weave and nourish the region. The Lambro river is a water source located on the municipal area border and following along the border and has great potential for use in agricultural areas. But today it needs improvement. There are also new projects for the Vettabbia park area. The Nosedo sewage treatment zone plays an important role in the revitalization of farmhouses.

PGT

Opportunities of the Agricultural Lands:

Smart Land:

It is the name of the project that aims to realize smart cities by creating and planning strategies that will outline urban renewal projects and programs. Milan's South-East smart land is to become a cultural zone where people can share their past such as disappearing agricultural activities and interact with each other by taking advantage of the environment.

Parco Agricolo Sud can be a case study for this program. A chain can be created by rehabilitating the suburbs in these regions and connecting with the Milan core.



Agriculture



Multiculture



Sustainable



Mobility

Culture & Agrotourism:

The PGT of Milan 2030 observed the growing population and the different cultures mix through the instrument of NIL (Local Identity Cores) which allows to understand the social and cultural dynamics within the local district boundaries.

Milan carries an important cultural mix legacy: the 20% of its inhabitants are foreigners and their distribution shows how relevant is the topic of local politics aiming to enhance the living spaces quality, social relations and local identity, improving the sense of belonging in the communities.

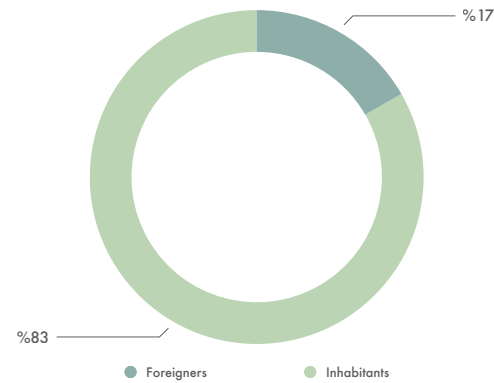
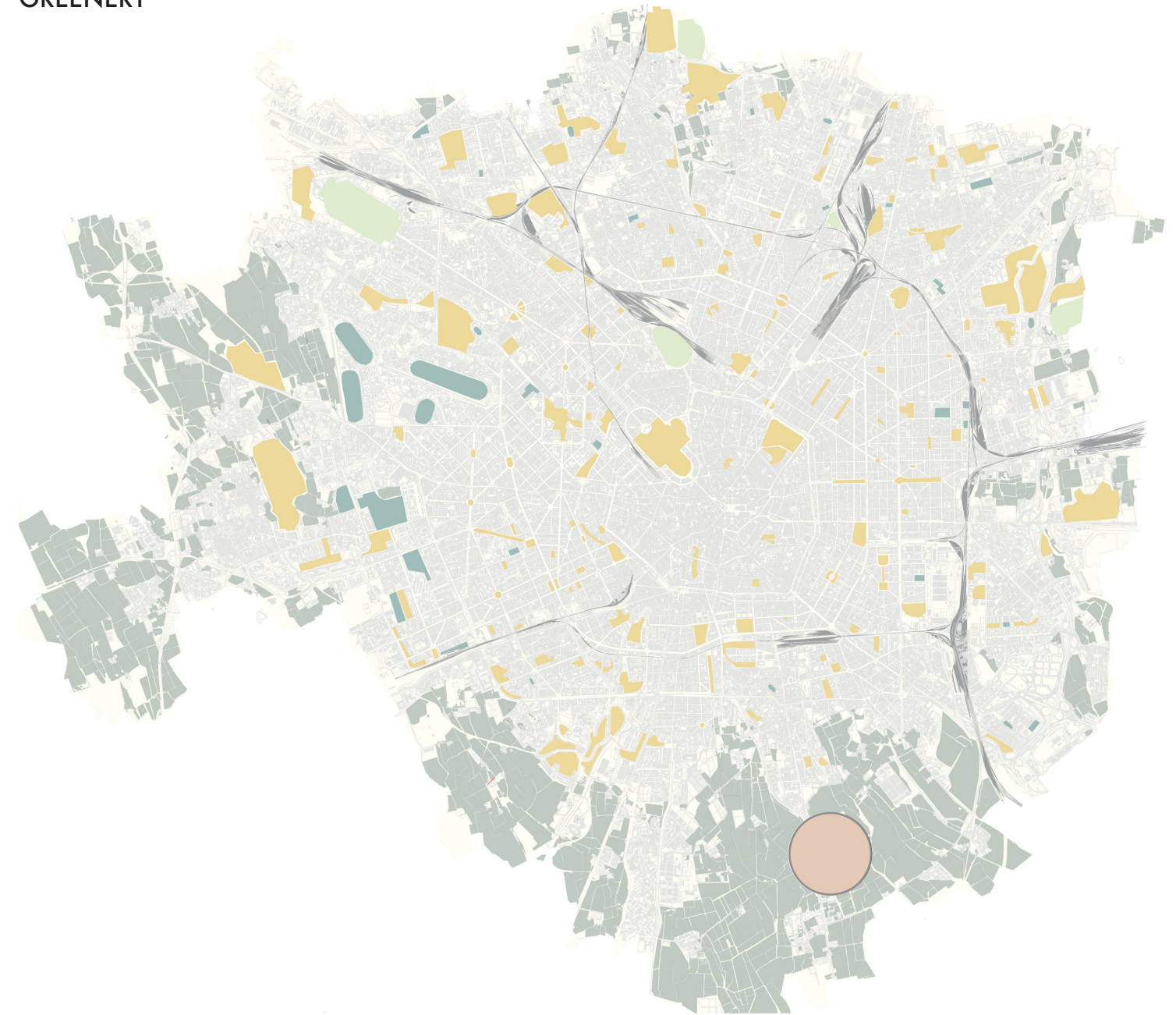


Fig 2.3 : Character of the citizen

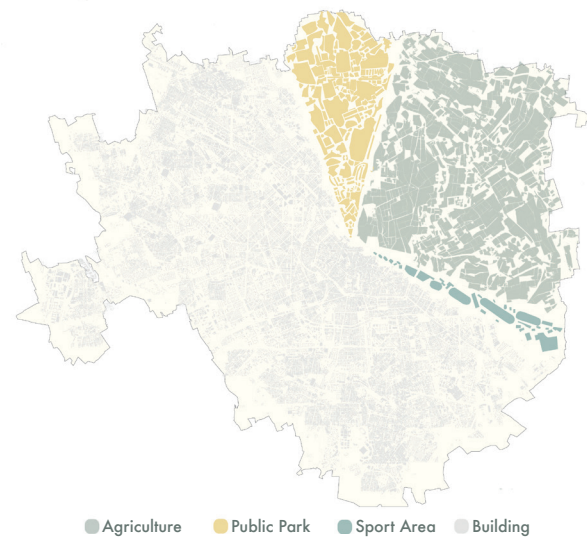
GREENERY



**Agricultural Potential:**

As a result of this analysis, a high rate of structure texture is seen in the Milan region. When the green area texture was examined, it was determined that the proportion of agricultural fields was high and it remained at the border of the city, and the ratio of green areas associated with a citizen was low.

As a result of the analysis, solutions such as increasing the scale of green areas which are entegreted with city, increasing their number, and supporting them with different functions were considered. The idea of strengthening the relationship between the agricultural areas and the city core has been proposed.



**The Character of the Agricultural Land of the Municipality of Milan:**

After the research, this potential of agricultural lands has been deeply investigated and the properties of these agricultural lands have been analyzed. Istat (Istituto Nazionale di Statistica) data were used to reach the numerical data of agricultural lands. First of all, it was investigated whether these areas can be used and processed.

As a result of these data, it has been determined that 94% of the agricultural lands located on the municipality of Milan border are utilized agricultural area, while the other 6% are not suitable for the cultivation of agricultural products and activities.

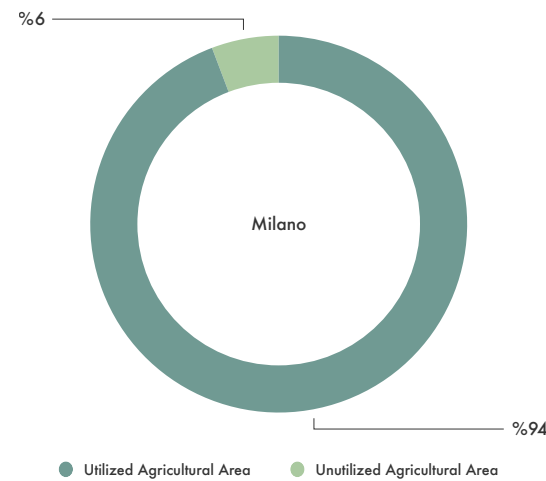


Fig 2.4 : Character of the Agricultural Land

**The Character of the Utilized Agricultural Land of the Municipality of Milan:**

It has been investigated for what purpose these utilized agricultural lands are used and for which products they are suitable.

As a result of the data obtained, it has been determined that 89% of utilized agricultural lands are arable and suitable for growing crops. 8% of the lands are permanent lands where animals are grazed such as grasslands, pastures, meadows, etc. The remaining three 1% slices were found to be used as vineyards, wine-related crops, and kitchen gardens.

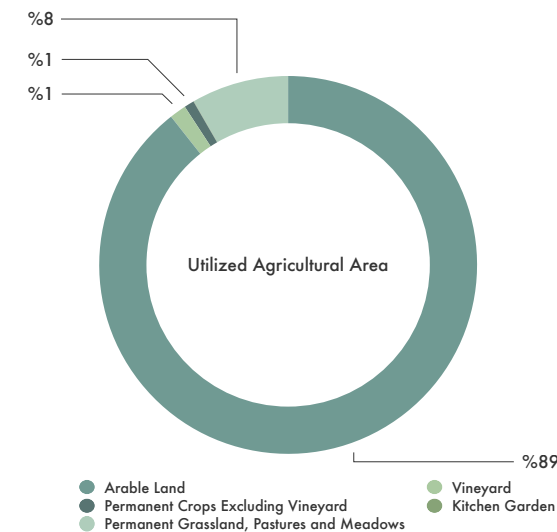


Fig 2.5 : Character of the Agricultural Land

**The Character of the Arable Land of the Municipality of Milan:**

The arable lands were examined in detail, and as a result, it was determined that the cultivation of cereal products is of high importance. However, the effect of animal husbandry on agricultural lands was also observed. The proportion of land used as pasture for animals comes right after cereal production. Therefore, the next step of the research was to examine the farmhouses built on agricultural lands and to identify their activities. In addition, industrial crops also occupy a significant place. Other than that, the rate of products such as vegetables and flowers is very low.

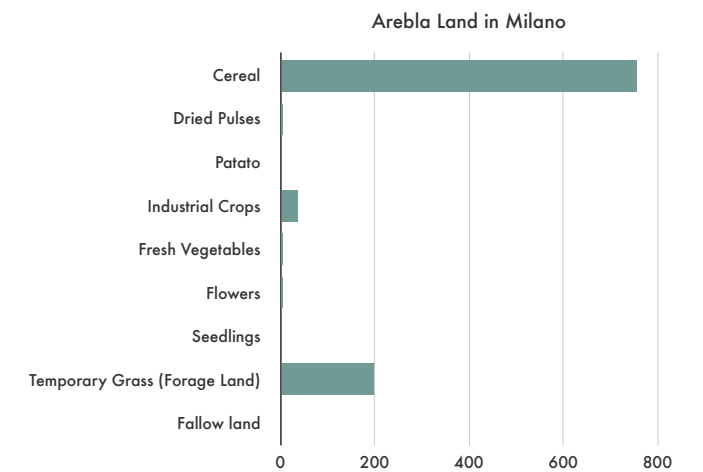


Fig 2.6 : Character of the Agricultural Land

**The Opportunities of the Farmhouses in Milan:**

After the research of agricultural lands and all their potential for new proposals, the research of farmhouses in the agricultural lands was done. The functions of these farmhouses, as well as the historical, architectural, and cultural values, were used.

In addition, working principles of farmhouses, and characteristics of employees and users are important criteria. The following summarizes what potential farmhouses have for use today:

- to have great potential to create a solution and meet the need of the thousands of citizens who today live in also difficult live conditions.
- to have an ancient history of a community is a social and cultural attractive point in economical aspects.
- to have optimum spaces for temporary residential needs such as students, researchers, patients, etc.
- to have great potential to make a relationship between urban and rural territories.

**The Character of the Farm of the Municipality of Milan:**

Farmhouses differ from each other in terms of the activities they host. Farms have a variety of functions such as crop production and livestock. It was understood that 65% of Milan farmhouses only host crop production and processing, 29% of both crop and livestock are done together, and 5% only serve the units related to livestock.

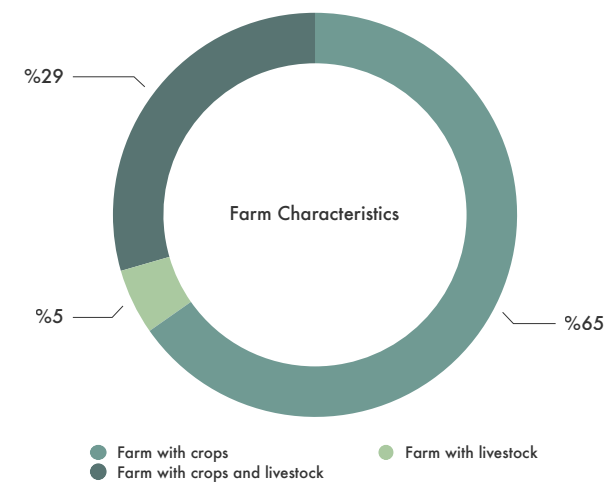


Fig 2.7 : Character of the Farmhouse

**The Character of the Farmer in the Municipality of Milan:**

The data on the average age and education level of the farmers in the farmhouses were consulted. As it can be understood from here, it has been determined that the average age of the farmers is quite high and their education level is at the primary school level and they have not received any special education in the field of agriculture.

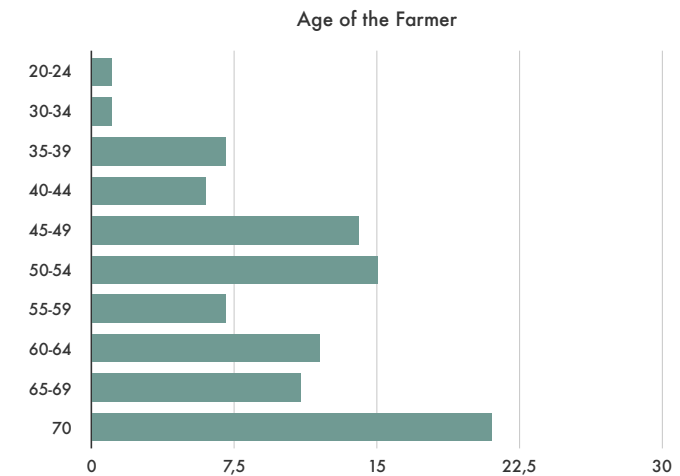


Fig 2.8 : Character of the Farmer

Based on these data, while arable agricultural lands and the farmhouses on them have potential in many respects, some aspects need improvement. User profiles should also be supported while seeking to create technological, ecological, and sustainable lands and structures.

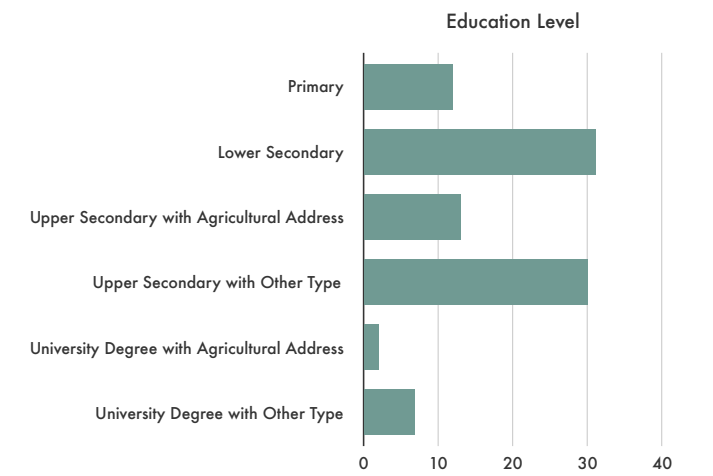


Fig 2.9 : Character of the Farmer

**The Agricultural Land in Lombardy :**

The Po Valley agricultural area can traditionally be divided into three geographical zones: the mountains, the dry plains, and the irrigated lowlands. The main production and exports which are cheeses, rice, and cereals are derived from low-altitude territories.

**The Term of Farmhouse “La Cascina” :**

The term “la Cascina” derives from medieval Latin. The origin of term of the cascina is coming in northern Italy in Lombardy Region. In addition, it is considered that the term can have a connection with the word “caseus” which means cheese. Because the definition of the farmhouse is a place where the cows are kept and grazed and where butter and cheese are produced according to the vocabulary of the Academic della Crusca of 1741. The current definition of cascina (farmhouse), on the other hand, designates a type of agricultural settlement consisting of a complex of distinct buildings (houses, stables, barns, rooms for the manufacture of cheese and butter, various warehouses), gathered around a large courtyard.

**The Organism of Cascina in Lombardy:**

Cascina which is in Lombardy Region meets the need in terms of the production aspects of those who live in the territory and also it has the quality to export the products to neighbors. The Lombardy farmhouses represented a significant model of agricultural settlement not only Italian context but also outside of the Italian context. To explain, English Industrial Revolu-

tion reached the Po Valley district with the concept of “capitalism in the countryside”. In this aspect, the ratio of expansion or construction of the production units and stables is more than the ratio of the laborers’ houses. Because at the end of the seventeenth century, the production and market are more significant than the life of a farmer and a community. Until the first decade of the eighteenth century, vineyards are more important than the production of forage, cereal crops, and rice. After the first decade of the eighteenth century, the importance of forage, cereal crops, and rice was understood and the number of vineyards started to decrease. Therefore, this new development caused a new organization of the buildings on the farm, and the typology of the farm as we see it nowadays was defined the between 1770 and 1780.

**The Morphology of Cascina in Lombardy:**

The morphology of cascina is closed-courtyard in general. There are two main purposes to constructing a closed system. One of them is to avoid rural thefts and the other one is to control all operations and working times and keep all movements inside of the farm. From the eighteenth century, the farmhouse was designed according to this model. After the second half of the nineteenth century, the morphology of the farmhouse changed a bit because of the decrease in the number of crimes and thefts and the design of the farmhouse started to communicate with the outside.

**Cascina in Milano: from past to the present**

There is evidence of farmhouses in the Milanese countryside or even in the city, and the ruins of barns made of perishable materials such as clay and straw can be seen. The characteristic of the agricultural land in Milan is related to the geologic features of the territory. To illustrate, the north part of Milan has more dry plains than the south part of Milan. Thanks to the water sources the southern part of Milan’s agricultural lands looks greater and more homogeneous order than north part of Milan. Nowadays, most of the farmhouses are located in a radial pattern on the boundaries of the Municipality of Milan. In Milan there are 58 farmhouses owned by the municipality. They still represent agricultural architecture in terms of historical, cultural, and environmental value. Some of them still are used for agricultural activity while others have already abandoned. However, these abandoned farmhouses give a chance to apply reuse projects which are related to social and cultural aspects.

**The essential organization of the traditional farmhouses:**

The organization of the traditional farmhouses is including a house for employees and tenants, cottages, and units for the production process. The house for workers is constructed with a simple design, narrow and elongated plan without decorative elements. Each family unit has a fireplace on the ground floor and two juxtaposed windows on the upper and ground floors. These units are located along the elongated plans and each of them is between 20-

30 square meters. They are equipped with a cooked stove and water tank. There is a difference between a worker’s house and an owner’s house. The owner’s house is located in a position that allows controlling all movements in the farm and is designed with more decorative architectural elements and has a loggia under the porch of the courtyard. The farmhouse has a pantry, laundry, and room for making bread and it should be located close to the owner’s house. The characteristic in the forage agricultural areas is the dairy structures are located according to the rules which are the west part of the farm is related to mil production while north part is related to cheese production.

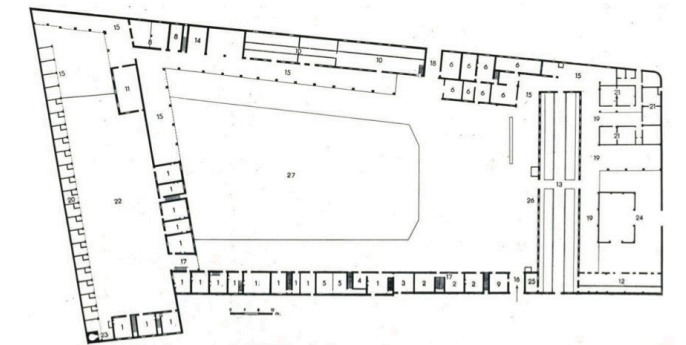


Figure 2.10: The example organization of the traditional farmhouse

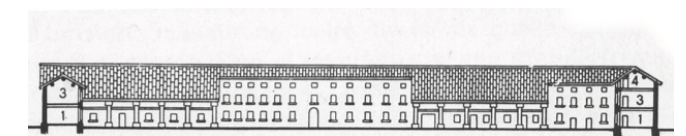


Figure 2.11: The example organization of the traditional farmhouse

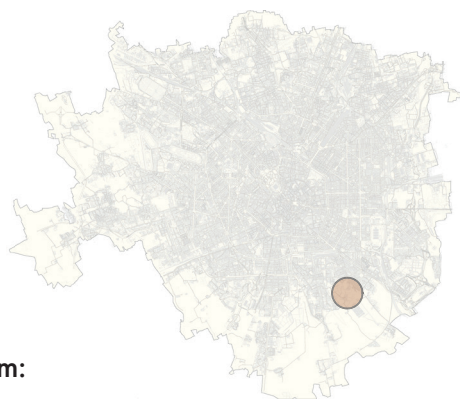
Chapter 03.  
CASE STUDIES IN SOUTH-EAST MILAN

03

## 1\_Open Agri\_Next\_Agri\_2017\_2020:

### Location:

Cascina Nosedo, Porto di Mare



### Aim:

- to supply chain food production
- to design an innovation model for peri-urban agriculture
- to establish an improved agricultural system
- to protect the landscape
- to create social inclusion
- to find a technologic system for agriculture

### Numbers:

**28,6 % :**

youth unemployment rate between 15 and 24 years old in the Municipality of Milan.

**17,6 % :**

NEET( not in education, employment, or training) between 15 and 29 years old in the Province of Milan. (data 2014)

**27,8 km<sup>2</sup> :**

agriculture land in the Municipality of Milan.

**20% :**

agri-food products marketed locally at EU level.

**4,996,745.52 Euros**

total ERDF budget granted.

### Info:

In 2015 the Municipality of Milan adopted its food policy to develop sustainable food systems to deliver healthy and accessible food to all protect biodiversity and fight against food waste. It promoted the Milan Urban Food Policy Pact through which 132 cities from all over the world committed to making urban food systems more inclusive, resilient, safe, and diverse. Porto di Mare is defined as the "urban fringe": a transition zone between the consolidated part of the city and the agricultural lands. To make real a series of selected partners have been engaged in using in the best possible way a publicly owned 30 hectares plot of land surrounding the south Milan Parco Sud boundaries. This project was planned between 31.10.2016 - 30.04.2020, but because of the covid 19, it was delayed and granted by UIA Secretariat 12 months extension.

### Strategies:

- educational and training environment
- local and city wide economy
- social and recreational
- environmental production and agriculture
- resilient territorial development

### Proposals:

- to promote development projects involving SMES (small-medium enterprises)
- to promote green transport for food
- urban regeneration

- to design prototype for peri-urban agriculture
- to establish kitchen fab-lab
- to design hydroponic system

### Phases:

- Section 1: State of Play
- Section 2 : Upscaling & Knowledge Transfer
- Section 3: Sustainability
- Section 4: Conclusion

### Section 1: State of Play

Socio - economic perspective:

- to find a solution to unemployment
- to supply an environment of economic activity
- to increase the number of the healthy and educated inhabitants
- to revitalize the loss of the identity
- to transform an ancient farmhouse into an innovation hub

Sustainability perspective:

- to form biodiversity
- to regenerate ecosystem

Concept of the sustainable agriculture:

- "Symbiotic Farming"
- Master Plan "18 progetti X 30 ettari"

According to the Lombardy Region Rural Development Plan, the master plan for 30 hectares around Milano Porto Verde was designed in collaboration with UniMi and PoliMi. 30.000 euros budget will be

used for hedges and rows and 30.000 euros will be used Vettabia Canal wooded buffer in the masterplan, and Cascina Nosedo will be refurbished.



Fig 3.1: Cascina Nosedo & Area of Porto di Mare

### 2030 Vision in Porto di Mare:

The area of Porto di Mare is a vast area located on the border of the urban system. It is the threshold space between the city and the South Agricultural Park. According to the municipal management program, the aim of the regeneration is creating new public services and spaces, creating cultural and environmental spaces near the South Agricultural Park, designing low density building and sport activities.

### Section 2: Upscaling & Knowledge Transfer

Collaboration: Next Agri & Open Agri

3 European medium-sized cities:

- Portugal
- Netherlands
- Bulgaria

**Aim:**

The NextAgri project, the Investment Plan, helped cities to analyze the local context and to design local action toward future investments in the periurban agriculture sector.

**Info:**

Three different cities which have different climate types, ecoregions, and approaches have been chosen to land use for agriculture. The project aims to create a module and transfer it according to the local contexts. The main question is: How this kind of approach may be replicated elsewhere? It was an opportunity to present the innovative design experiences of urban and peri-urban in the participating European cities and for the Milan case, to share the important results of the actions of the project “Mater Alimentata Urbes”, an Integrated Area Plan promoted by the Food Policy of Milan and financed by Development Rural Plan of the Lombardy Region.

Country	Portugal	Netherlands	Bulgaria
Name	Vila Nova de Gaia	Almere	Stara Zagora
Population	300.245	215.773	135.000
Area (km2)	168.46	248.77	190.46
Climate type/ Ecoregion	Climate: Mediterranean climate with a strong Atlantic Influence, Eco region: Cantabrian mixed forests	Maritime climate	Transitional continental climate
Type of land use within city	Residential / Commercial & Services / Industrial / Agricultural	Semi residential / Agricultural / Forest / Inland water	Residential / Commercial / Agricultural
Main economic activity	Tertiary Sector	Retail / Healthcare and welfare / Consultancy and research	Energy & mining sector / Agriculture / Construction / Food industry
Migrant population %	%3,2	%43,8	Almost none
Young people population %	13, 4%	%37,8	%23

Fig 3.2: Comparison of the Plot Countries

**Numbers:**

The Milan context is characterized by the presence of Milan Parco Agricolo Sud, DAM (Milan Agriculture District) with 30 companies, 1500 hectares, 14 municipal farmhouses, and 19 private farmhouses, 11 agriculture markets on public land, and 19 on private land, 3 agricultural parks: Parco delle Cave, della Vettabbia, and del Ticinello.

**Section 3: Sustainability**

The decision of the innovation hub should be implemented until 2037.

**Water Utilization:**

- wastewater treatment plant
- watercycle

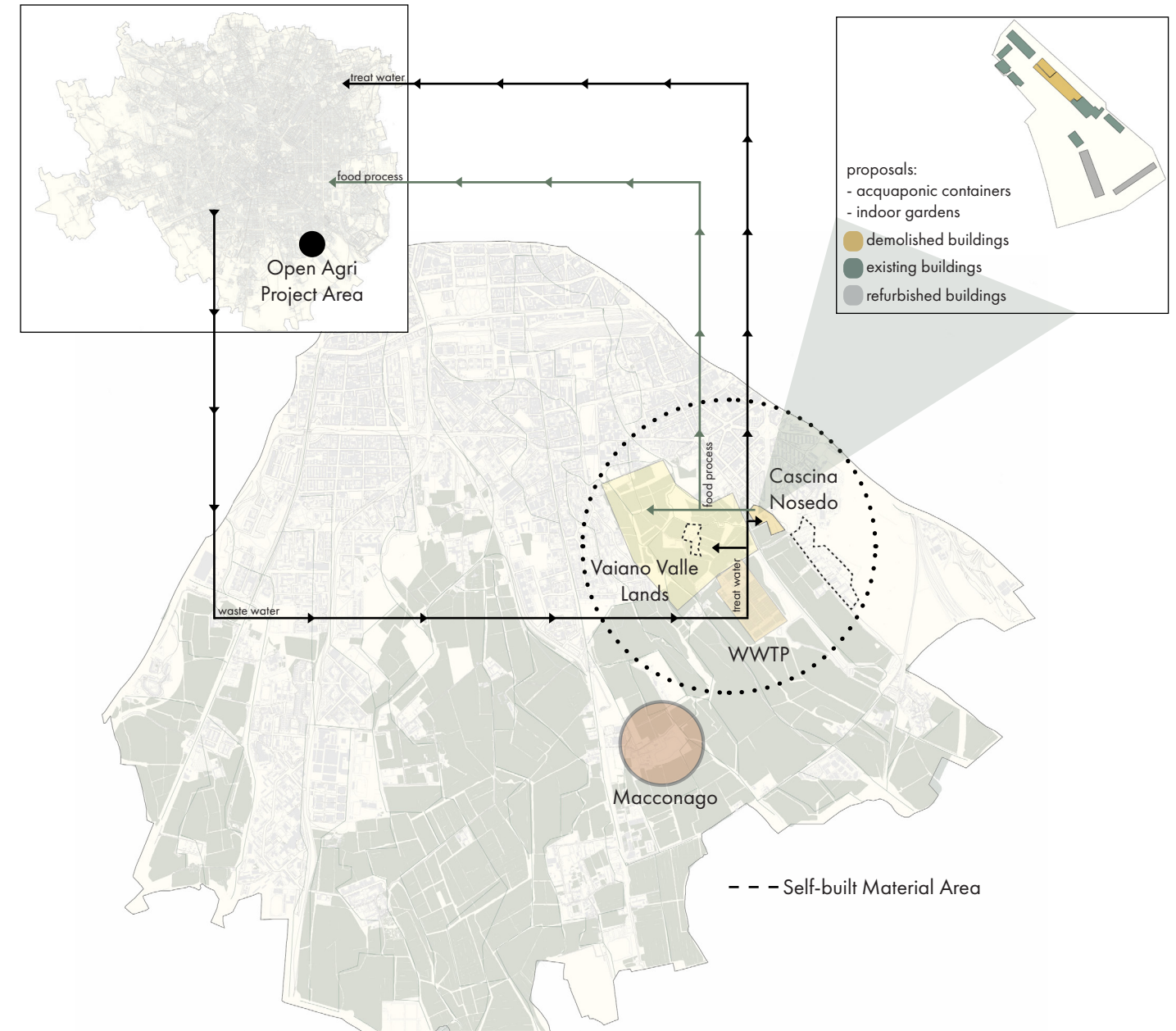
**Info:**

OpenAgri hub involves the Waste-Water Treatment Plant near the Cascina, the lands of Vaiano Valle, and all the buildings included in the Cascina (about 4000 m2). These three pivotal elements have the potential to form urban metabolism.

**Section 4: Conclusion**

**Project phases:**

- Phase 1: 31 projects requesting 100 hectares of land
- Phase 2: 13 projects requesting 60 hectares of land
- Phase 3: 13 projects using 33 hectares of land





## 2\_AQST( Framework Agreement for Territorial Development)\_Milano Metropoli Rurale

### Aim until Action Plan 2020:

- to integrate rural system
- to design multifunctional agriculture
- to provide of services( ecosystem/ cultural/ social)
- to make relationships between urban and rural
- to strenght of short supply chains

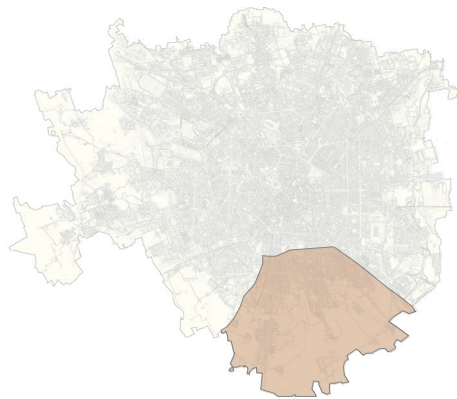
### Numbers:

Total value of budget:

- 82.1 million euros
- 40.4 million euros were allocated in the 202 Action Plan.

### “Mater Alimenta Urbes”:

**Locations:** Cascina Campazzo, Cascina Gaggioli, Coop. Agricola Sociale Agrivis, Soc. Agr. Ronchetto delle Rane, Podere Ronchetto, Cascina Caldera, Soc. Agr. Arioli and Cascina Corte del Proverbio/ Linterno (Apicoltura Veca)



### Aim:

- to restructure environments for teaching and hospitality activities
- to modernize machinery
- to plant hedges and field rows
- to construct irrigation systems
- to invest in product processing
- to conversate with the company about new supply chains.

### Info:

A project for short supply chains in Milan. DAM and Milano Ristorazione launched 12 months - of experimentation to supply rice for the year 2016. The experimentation aims to produce 180 tons of rice per year and gain 300.000 euros from the rice per year. After the results of the experimentation Milano Ristorazione published a list of nineteen local supply chains such as fresh pasta, gnocchi, potatoes, zucchini, chickpeas, and lentils. The same method's implementation of the rice was considered for these local products.

### Locations:

Cascina Campazzo:

A laboratory has been established for the production of yogurt. Rural buildings have been restored with a design that includes cold rooms and technical rooms. Landscape studies were carried out for legumes and chickpea planting was started.

### Cascina Gaggioli:

Investments were made in biodiversity conservation and the reconstruction of the agricultural landscape, as well as in the protection of crops. He carried out a comprehensive project in the region with the restoration of fences.

### Coop. Agricola Sociale Agrivis:

It established a structure for the storage and processing of the products collected in the field and started the organic certification process. Six cold tunnels were built.

### Soc. Agr. Arioli:

In particular, it is aimed to grow barley and spelt organically.

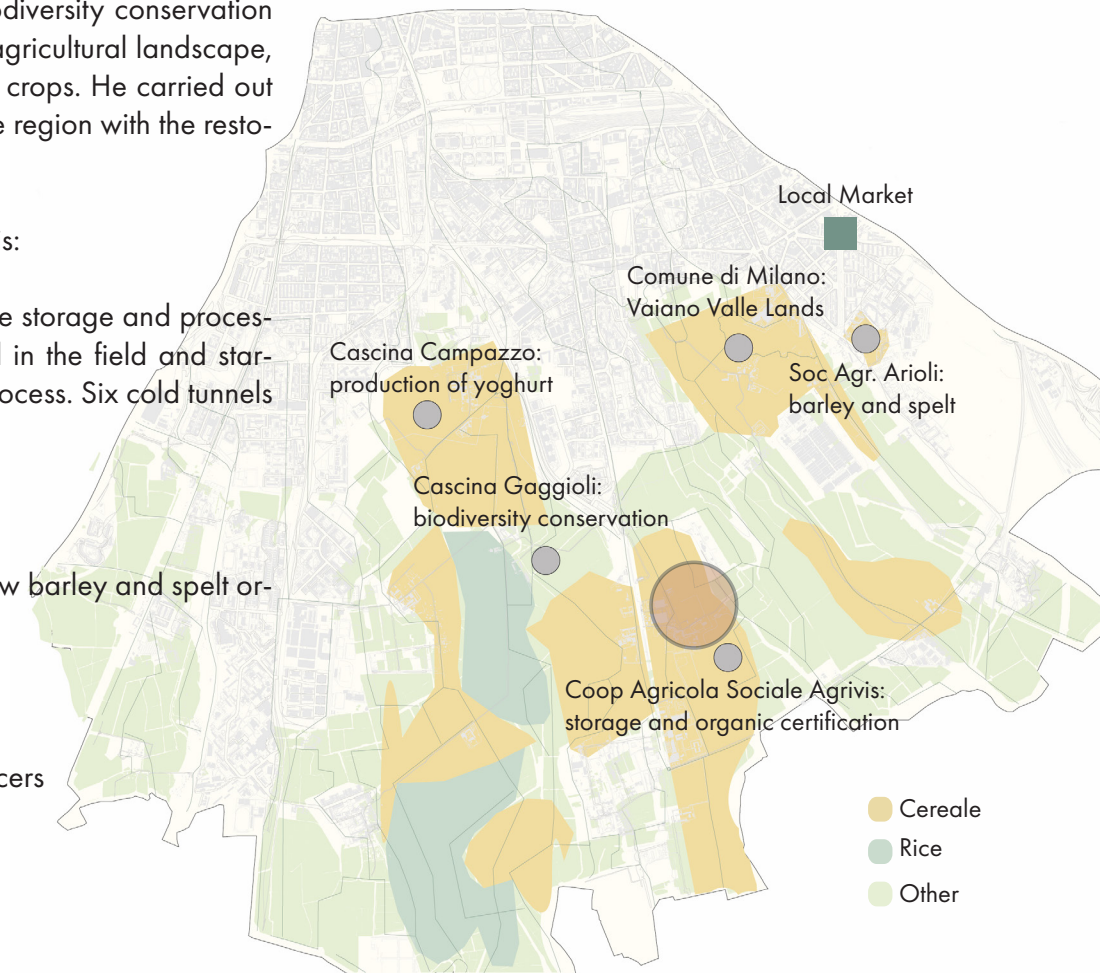
### Local Market:

Consortium of 80 local producers

### “Rurbance Project”

### Aim:

- to upgrade and enhance local peculiarities, in a view to sustainable development in order to reverse abandonment and typical fragmentation of peri urban areas.



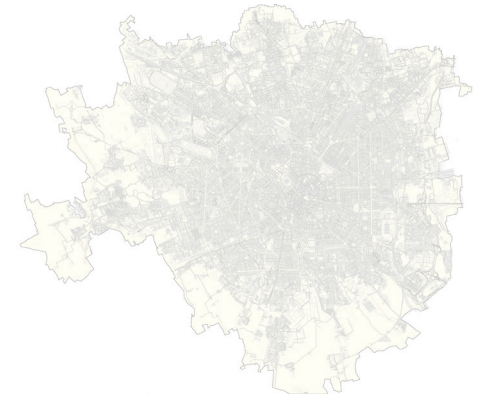
Chapter 04.  
"CHAIN SYSTEM"

04

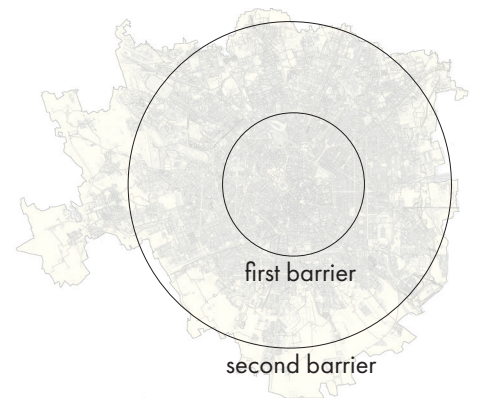
ANALYSIS OF PROJECT SITE

PROPOSAL

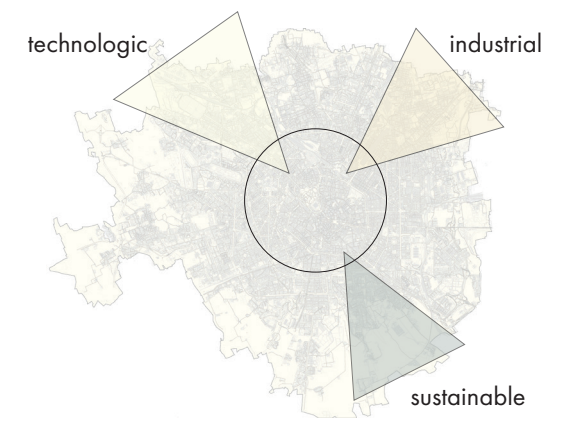
- Aim: "ENDLESS & INCLUSIVE CITY"
- Case: Milan



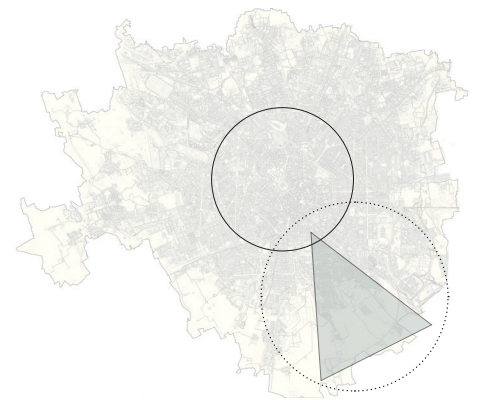
Problem of Milan:  
-need connection



- Useful Data of Milan:  
-Expansion of Milan:  
to break the threshold concept



- Determining of the Project Site:  
-to create a sustainable solution to make a connection



● Opportunities

● Problems

● Solutions

● Proposals

- Farmland:

greenery  
products  
economic value  
agroturism

-using traditional  
methods

- agricultural production units:  
techonologic and sustainable  
design

- Farmhouse:

culture  
history  
artifact  
collective memory

- abandoned  
- loss of memory

- to revitalize  
- refurbishment  
- adaptive reuse

- Job Oppotunity:

farmers  
researchers  
students

- lack of education

- education units which are re-  
lated to agriculture

- Case Studies:

Open Agri:  
-production of seeds  
Watertreatment  
Agrivis:  
-storage  
Mater Alimenta Urbes:  
-dairy products  
-biodersersity

- no connection  
- no food produc-  
tion

- making a connection  
- food products: vegetables  
fish

experimental  
farm

new function:  
production  
research  
education  
hosting

chain  
system

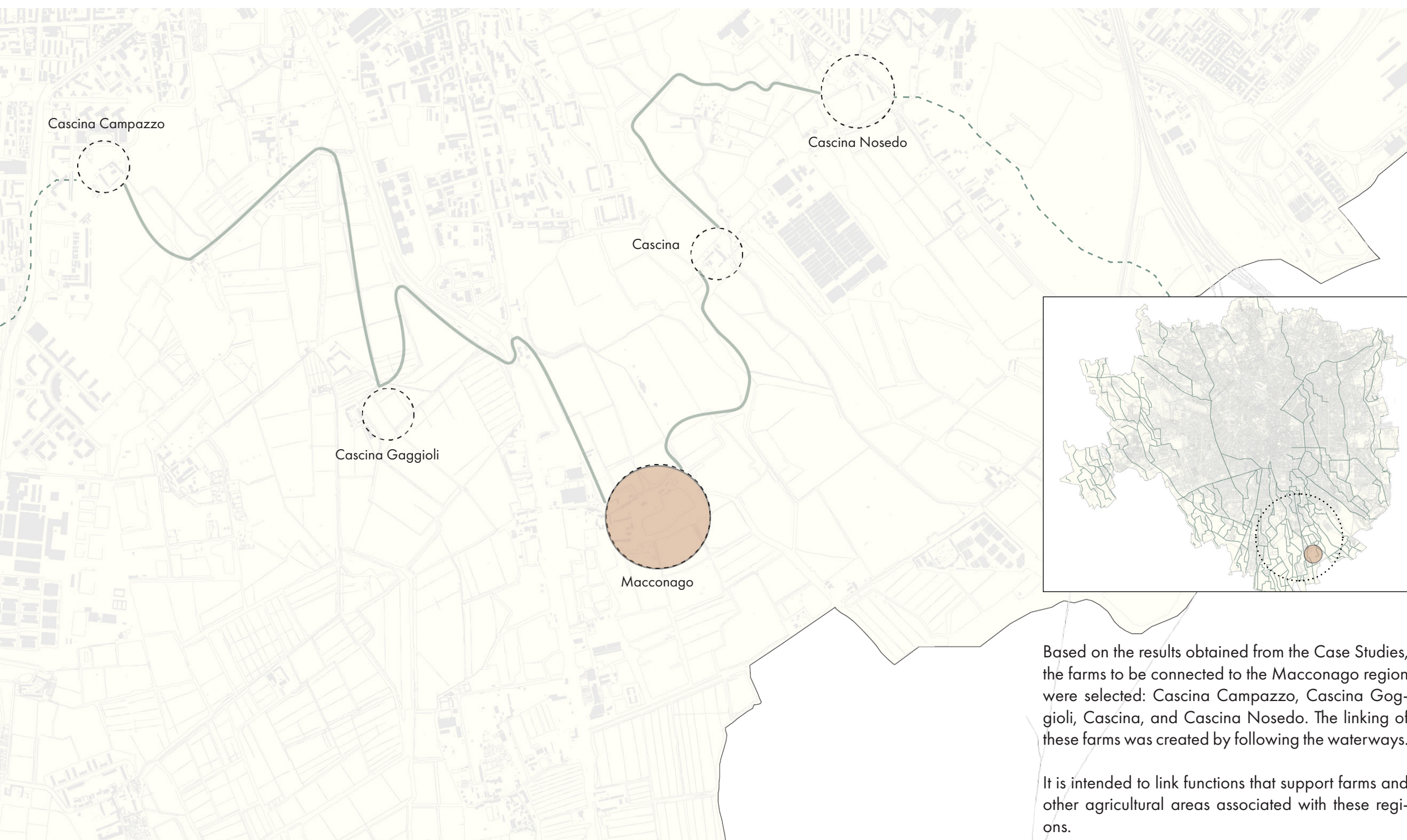
**Concept of the Chain System: "following the waterways"**

The organization of settlements in southern Milan was for centuries designed almost exclusively for agricultural activities. In the past, the area was organized by clusters of buildings evenly dispersed in the countryside. These building ensembles are mostly farmhouses with courtyards. These farms are connected to each other by small roads that run along the waterways.

The three large monastic complexes Chiaravalle, Mirasole and Viboldone represented the main centers for both agricultural activities and trade. The Macconago region is included in the Chiaravalle network.

These farm groups symbolize small urban communities in the southern part of Milan that date almost entirely back to Roman times, becoming a reference point for commercial exchanges throughout their interconnected system.

After the industrial development in Milan, a period of construction booms, agricultural activities, and agricultural structures lost their importance. By making use of all these data, it is aimed to revitalize the interconnected farms that remain in the memories and whose traces we can still read, but which have lost their value and even abandoned today, and to create a community within themselves and to project a mutually dependent system on an urban scale.

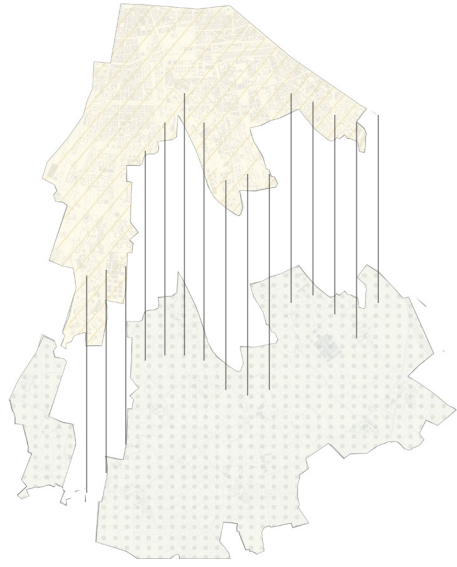


Based on the results obtained from the Case Studies, the farms to be connected to the Macconago region were selected: Cascina Campazzo, Cascina Gaggioli, Cascina, and Cascina Nosedo. The linking of these farms was created by following the waterways.

It is intended to link functions that support farms and other agricultural areas associated with these regions.

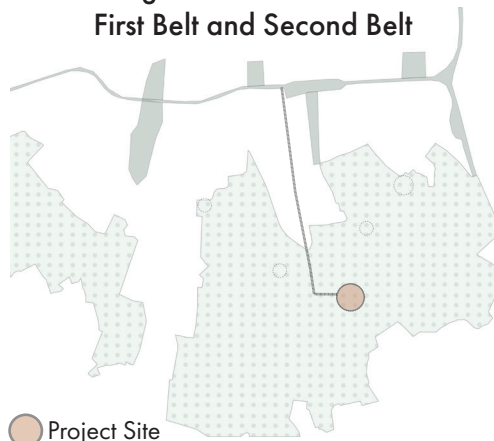
PROPOSAL

Integration: Urban and Rural



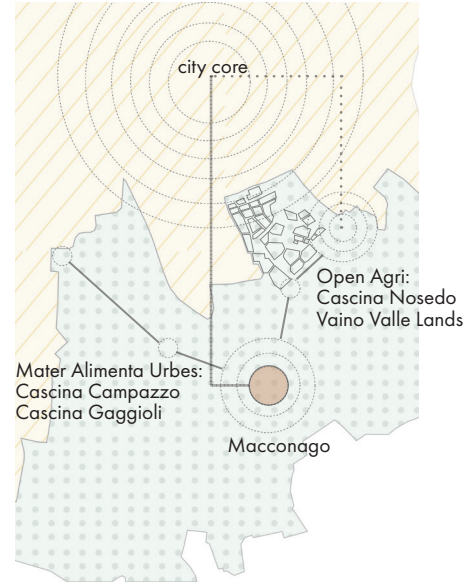
Urban  
Rural

Integration: First Belt and Second Belt



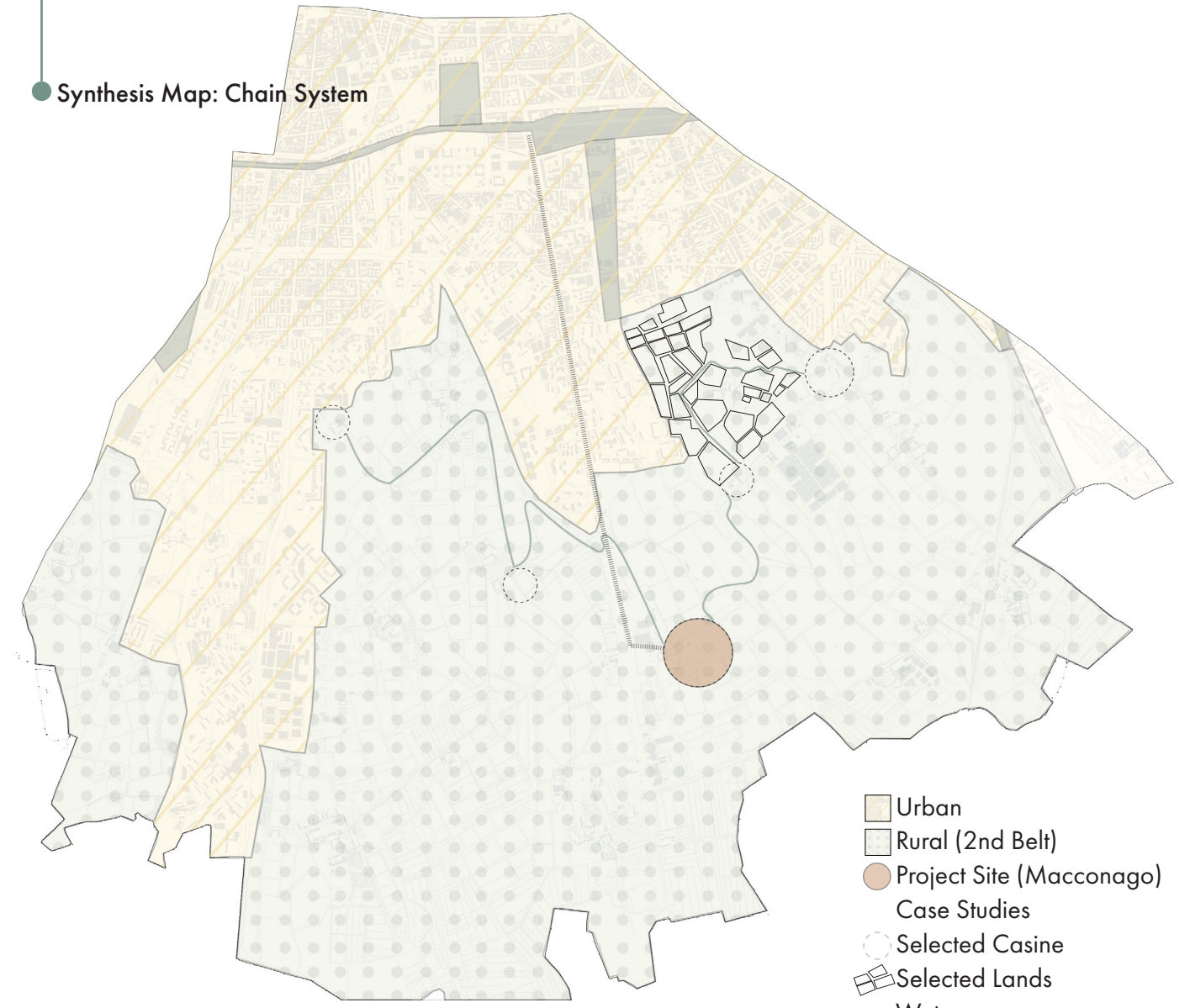
Project Site  
Case Studies  
First Belt  
Second Belt

Integration: Chain System Project Site and Case Studies



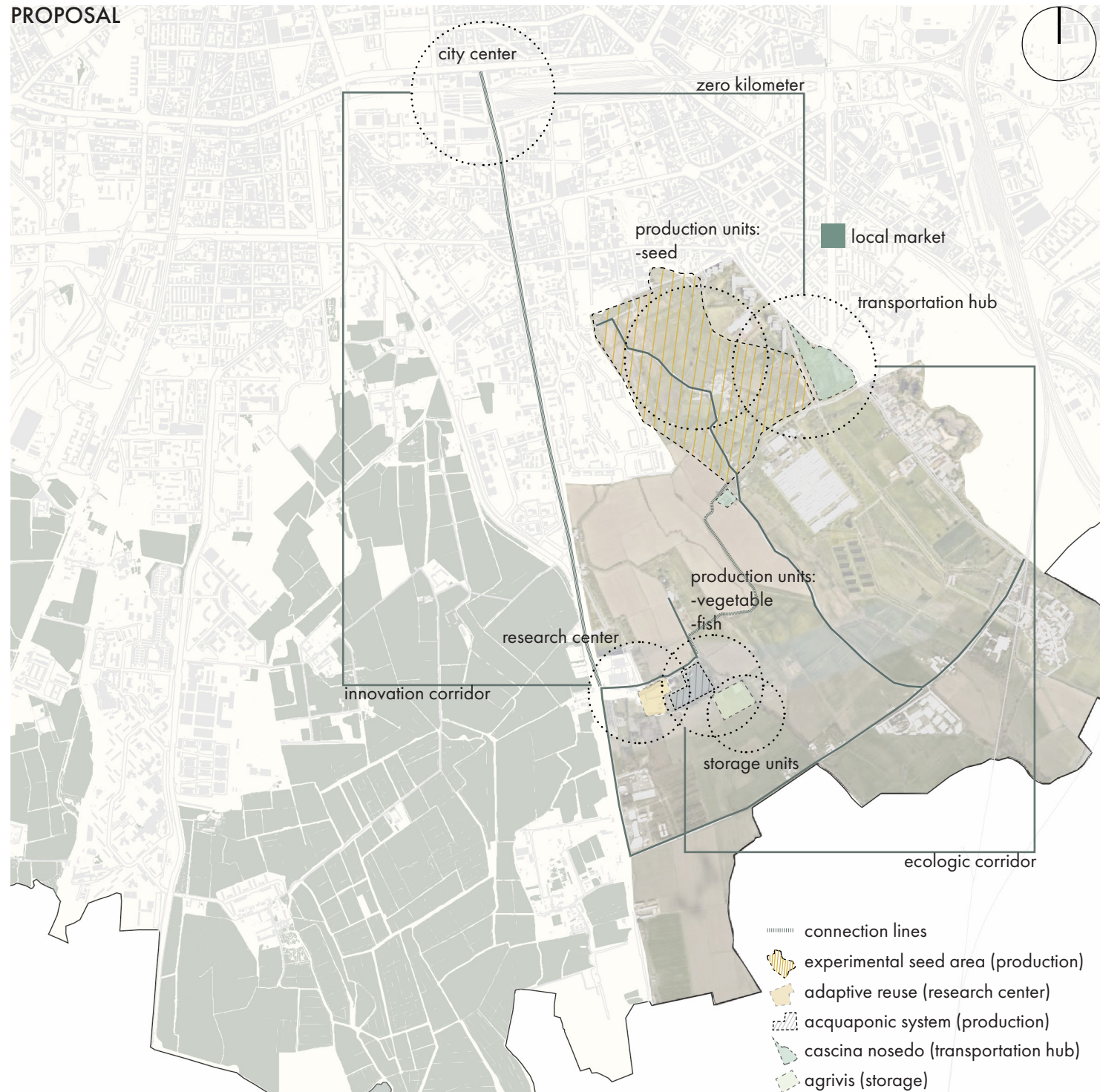
— integration of citizens  
- - - integration of products  
— integration of farmhouses

Synthesis Map: Chain System



Urban  
Rural (2nd Belt)  
Project Site (Macconago)  
Case Studies  
Selected Casine  
Selected Lands  
Waterways

PROPOSAL



3 main elements for chain system:

- **transportation hub (zero kilometer):** to create an environmentally friendly transportation center, in communication with the city center and with a zero kilometer approach, and to pump basic needs such as food and water to the city center.

Phase 1:

Macro Scale: concept of the chain system

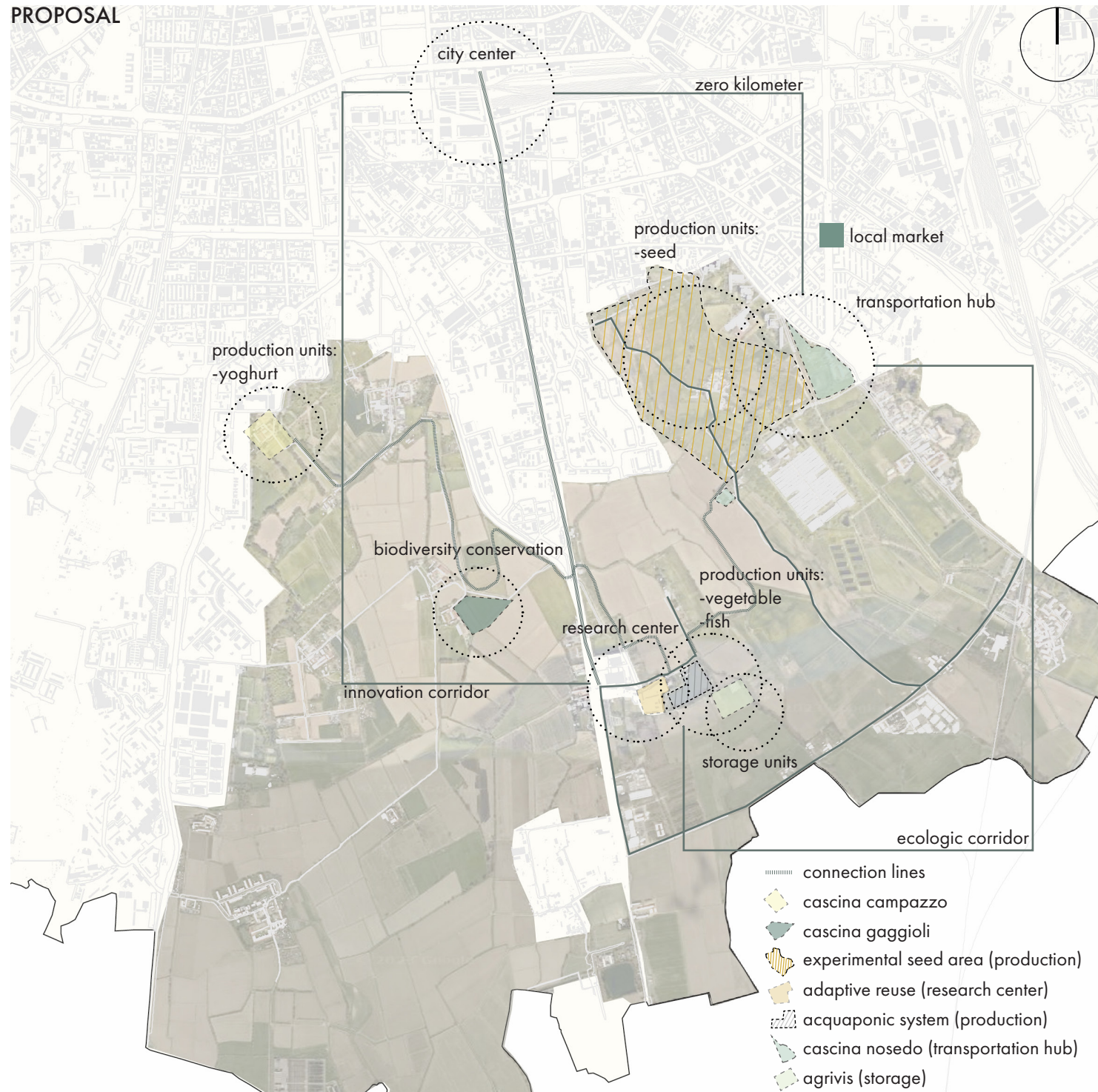
In order to remove the visible boundaries between urban and rural areas of Milan, it is aimed to integrate to nowadays include agricultural lands which stuck between urban and rural areas in the south of the city and to integrate them with existing active projects. For this purpose, the Macconago region was found suitable for the new design. Macconago has features that can form a central point in many ways. These features can be given as examples for the location of the region, the presence of structures in the region that previously served as agricultural functions, the lake suitable for production, and cultural elements such as churches and castles.

At the same time, Macconago is at a key point in current sustainable projects. The new elements and strategies designed for this area are designed to meet the needs of the citizens for food, water, and research, and are made to revive the memories of farming that are about to be erased from memories.

- **ecologic corridor (entegratation):** these corridors follow the waterway tracks and form an environmentally friendly transportation network between farms. This corridor can be considered as a tree-lined walking route as well as a road where products are transported. These corridors will be repeated under the same strategy according to the location of the farms and waterways that will be associated with each phase of the project.

- **innovation corridor:** this corridor is the direct connection point from the city center to Macconago region. This line was decided after the results of the transportation and land use analysis. It has been understood that this network is surrounded by many educational structures as well as being a direct connection line to reach Macconago from city center. It constitutes a baseline used by researchers, educators, and citizens interested in the production and research units to be designed in the Macconago area.

PROPOSAL



Phase 2:

Macro Scale: concept of the ecologic corridor

Farmhouses obtained from case studies were added to the chain system created and the chain was expanded. It was determined that the chain extends along southern Milan and as a result, it was decided that the main line that will form the chain should be an ecologic corridor.

Each farmhouse located on the ecological corridor line of this chain system has its architectural value and also important functions for the users. Although these farmhouses were agricultural points, they were also included in the present day with new functions. These functions can be gathered under headings such as accommodation, food and beverage, entertainment and service sector, and education.

While determining the main line, connecting the farmhouses with water channels and dirt roads, afforestation on this corridor line, and keeping this corridor away from vehicle traffic as much as possible have become the main decisions.

Chapter 05.  
"ECOLOGIC CORRIDOR"

05



PROPOSAL  
conceptual



**Municipality 5: Creating a Dialogue Between Farmhouses**

It is aimed to establish a dialogue between the farmhouses in this region. The farmhouses that will be associated with the design district Macconago and from the case study data are marked on the map.

The morphological structures and functions of these farmhouses were examined.

CURRENT SITUATION

road



Municipality 5: Road Organisation

Important cultural structures and farmhouses among the agricultural areas in Municipality 5 are highlighted on the map. In addition, the existing main vehicle roads, intermediate vehicle roads, dirt roads, and pedestrian roads in agricultural areas are shown. At the same time, local cycle routes are expressed on the diagrammatic map.

These existing ways have been analyzed to be used for these selected structures to relate to each other and to be in dialogue. It is aimed to evaluate and improve the current status of these roads. The possibilities and threats they pose for the project are examined. It was decided to include these roads in the project and to make necessary additions to these roads. Thus, it is aimed to create an uninterrupted, ecological corridor.

## OPPORTUNITIES

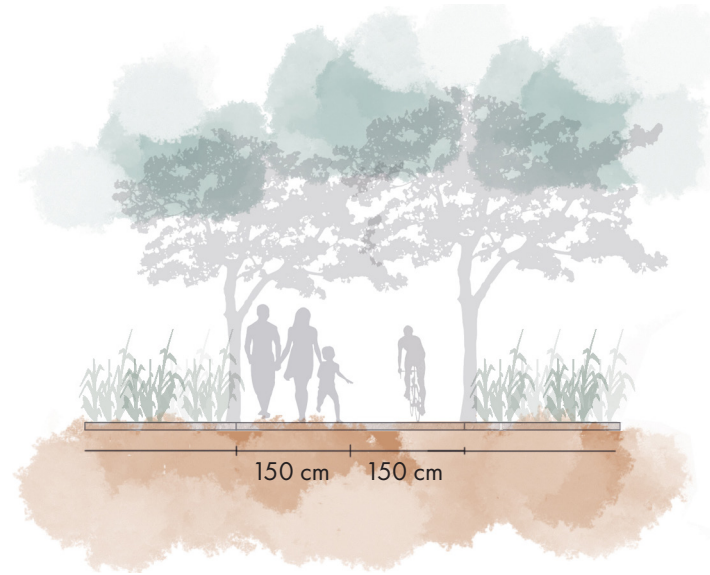
road

### ● Park: cycling & pedestrian

#### 1. Parco Ticinello:

section 1 scale: 1/100

existing road composition



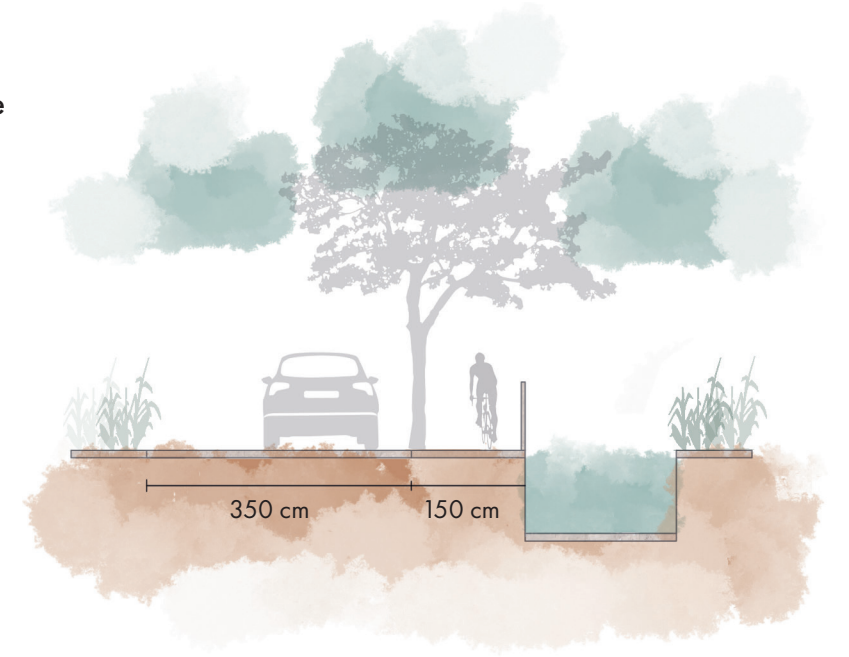
The park consists of walking paths located on agricultural lands. The existing rows of trees define the boundaries of these walking paths. It was decided to extend this tree array design along the potential ecological corridor line.

### ● Municipality Road Composition: vehicle

#### 2. Via Campazzino:

section 2 scale: 1/100

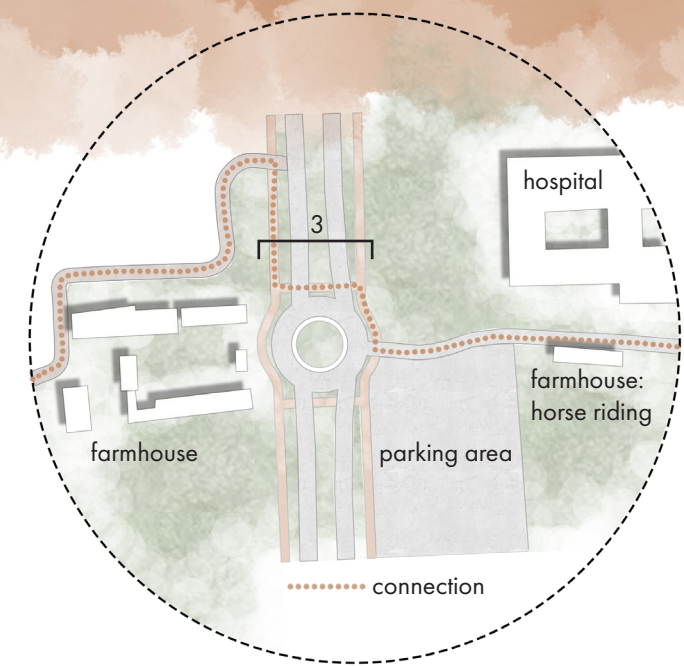
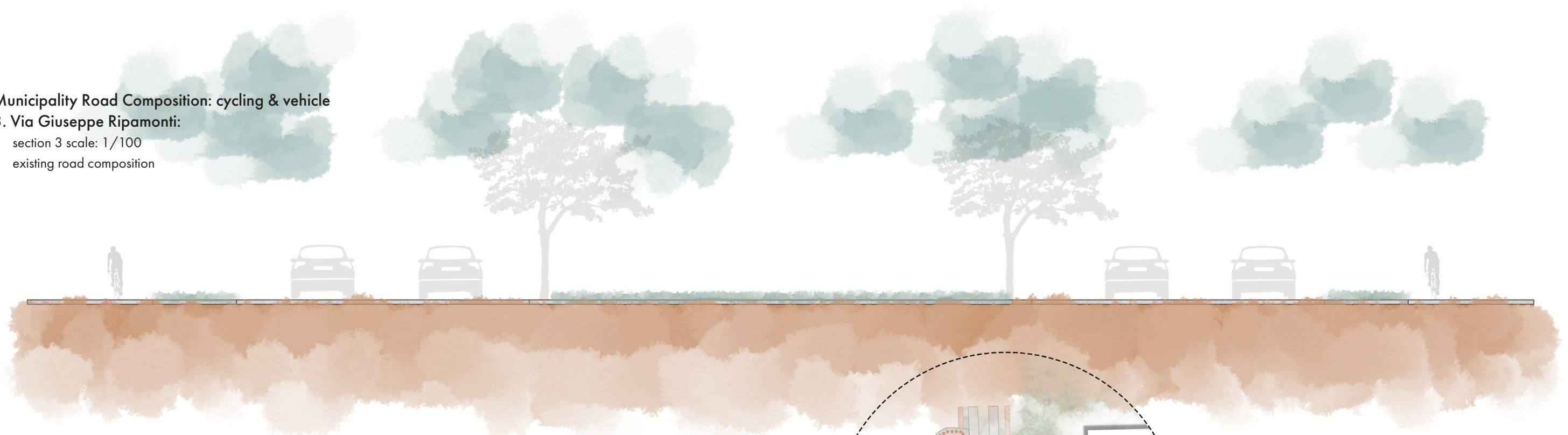
proposal of road composition



This road is a dirt road suitable for vehicle use only, which is directly connected to the city and intended to serve the agricultural lands and farmhouses which are located in sud-Milan. Using the relationship of this road with the park, farmhouses, and farmland, a pedestrian and cycling path design has been added to this road. The border of the pedestrian road with the vehicle road is provided by trees. A timber railing was designed at the border with the existing water canal.

OPPORTUNITIES  
road

● Municipality Road Composition: cycling & vehicle  
3. Via Giuseppe Ripamonti:  
section 3 scale: 1/100  
existing road composition



This road is the main vehicle road that comes directly from Milan city center and connects with other cities. There is a bicycle path line determined by the municipality on the main vehicle road. A green barrier is used to divide the arrival and departure boundary of the main vehicle road. This barrier is one of the future municipal projects targeted to be used as a tramway line in the future.

## THREATS

road

### ● Via Macconago

existing road composition



#### Problems:

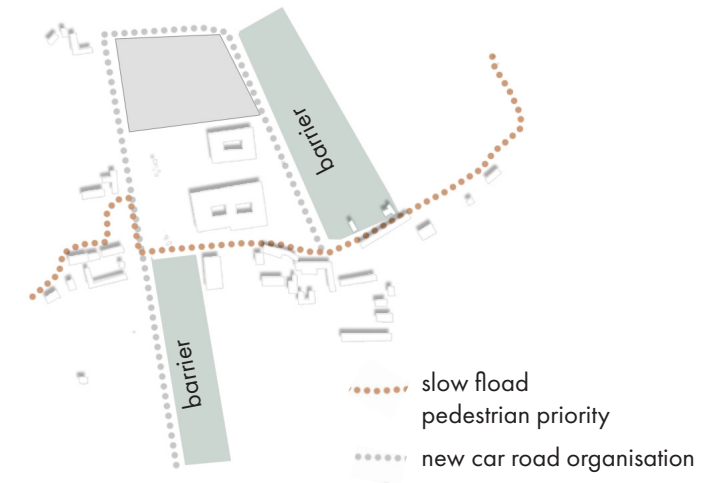
- parking area
- traffic
- visual conflict (scale) between the existing building

The Via Macconago area has a natural context within farmland. Several problems that do not fit this context have been identified.

The most important of these is the parking area of the vehicles and the traffic problem they create. The other main problem is the oncology hospital, which is incompatible with the environment. The building scale of this hospital is inconsistent with other buildings in the surrounding area.

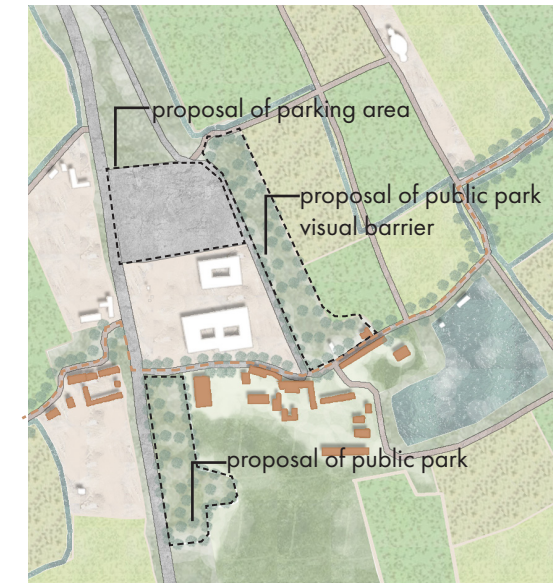
#### Solutions:

- new parking area
- public park
- visual barrier
- change the composition of the road







### ● Via Macconago

proposal of road composition



PROPOSAL  
macro scale



-  ecologic corridor composition  
slow flow
-  proposal of public park
-  proposal of car parking
-  additional road

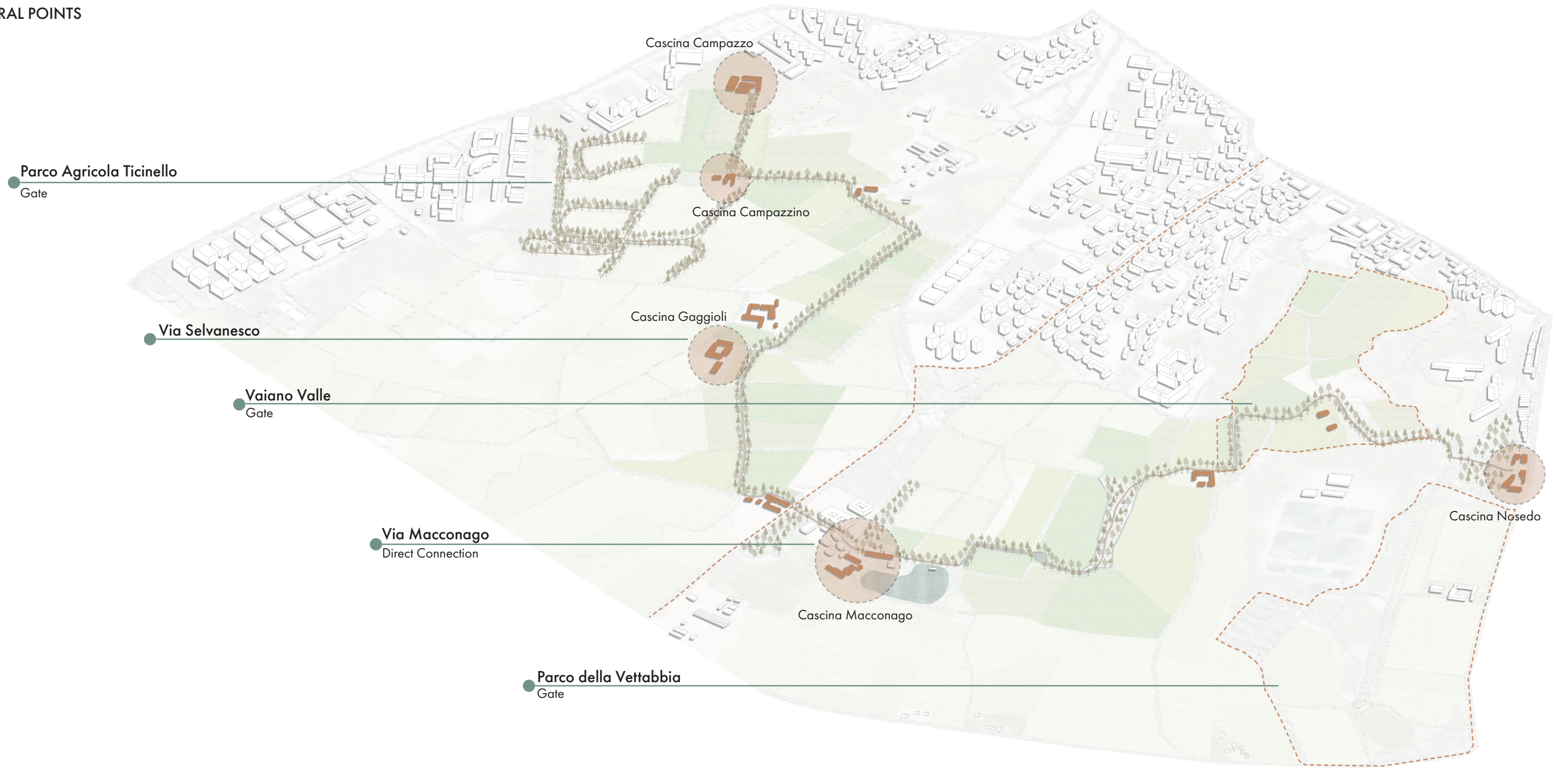
**Municipality 5: Creating a Dialogue Between Farmhouses with Ecologic Corridor**

By evaluating the dirt roads between the agricultural lands, additional roads were designed for these dirt roads and an uninterrupted ecological corridor was created. This corridor is aimed to have a slow flow feature. Pedestrian and bicycle priority has been considered as much as possible. The features of the existing roads and afforestation continue along the entire corridor. It is aimed to design unused green areas between agricultural lands as public parks.

In addition, existing projects which are Parco del Ticinello, Vaiano Valle, and Parco della Vettabia to this corridor and being in contact with these projects ensures an uninterrupted agricultural network in the south.

At the same time, there are structures such as churches and castles with socio-cultural values on this corridor. Thus, this corridor serves the understanding of agro-tourism.

AGRICULTURAL POINTS







Chapter 06.  
" AGRICULTURAL POINTS "

06

● Parco Agricolo Ticinello

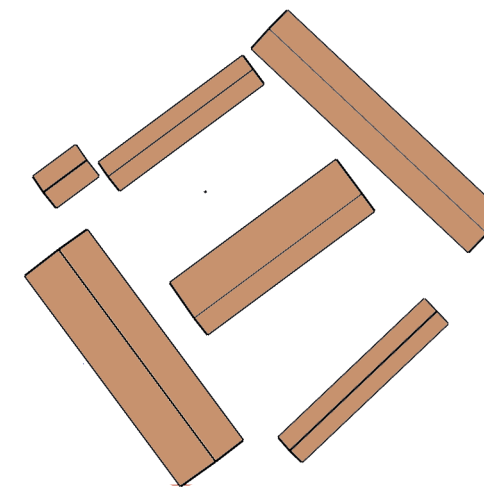


Ticinello Agricultural Park covers a total area of approximately 87.70 hectares. It is located within the 5th municipality district. The area is surrounded by urban areas in the west and north direction and rural areas in the east. It represents that in the expanding context of the city south of Milan, agricultural activities can still be resumed.

In addition to the raisins planted in the park, it also owns the Cascina Campazzo and Cascina Campazzino farmhouses. These structures are monumental 18th and 19th century structures. Cascina Campazzo can be shown as one of the entrance gates of the park and agricultural areas in south of Milan.

● 1. Cascina Campazzo

Architectural Plan



- traditional closed courtyard plan: "multiple courtyard"
- function: farmyard with livestock

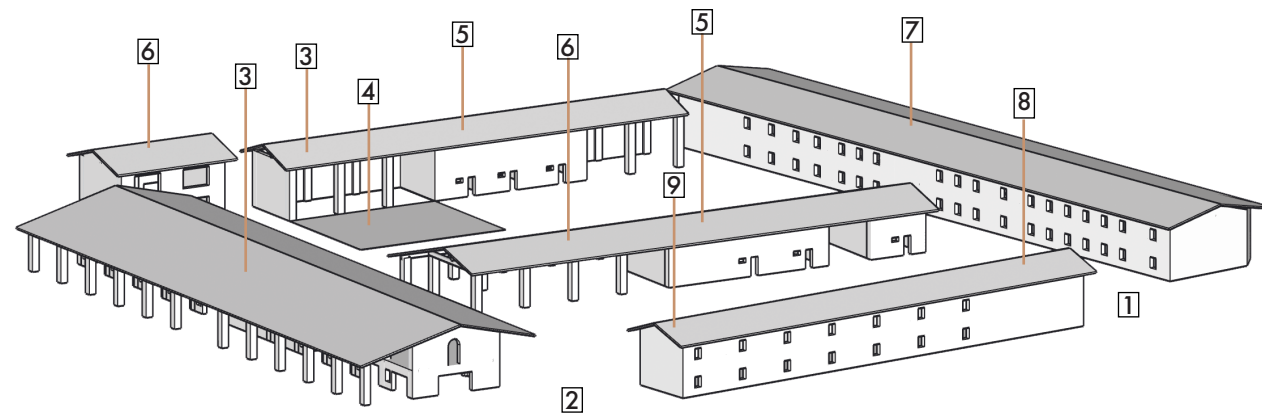
Cascina Campazzo is located at the entrance to the Ticinello Agricultural Park. It is a typical Lombard farmhouse with a closed courtyard, with all the architectural elements that compose it arranged around a central farmyard.

Inside the farmhouse can host dozens of families lived there the houses of the "salaried workers", the wood-burning oven, and the small church (the oratory of Sant'Ignazio di Antiochia which is dating back to the 18th century. Therefore, the Cascina was a small self-sufficient world.

The Falappi Family has lived here since 1952 and manages the farm which grows fodder to feed the 130 dairy cattle present. In the farmhouse, agricultural machinery can be found under the portico, the mechanized milking room, and the raw milk vending machine.

Since 14 August 2014, Cascina Campazzo has become the property of the Municipality of Milan, and since December 2015 the last lot of areas of the Ticinello Park has also become public.

● Typology of the Cascina Campazzo



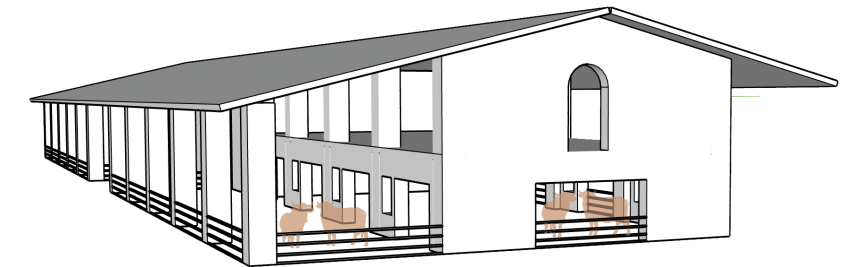
- 1 main entrance
- 2 secondary entrance
- 3 stable
- 4 animals corral
- 5 storage
- 6 open air storage
- 7 housing
- 8 church
- 9 sleeping | storage room

● Building Typology: Stable

2 floors:  
max height: 6.20m

Semi Open Area: 1100 m<sup>2</sup>  
- animals  
- fodder

Closed Area: 320 m<sup>2</sup>  
- core



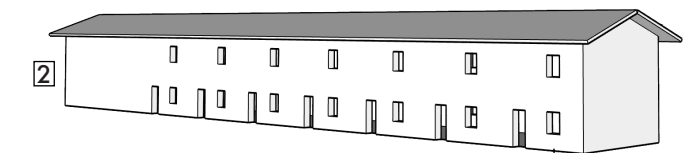
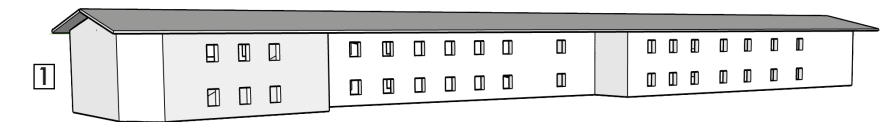
● Building Typology: Housing

2 floors:  
max height: 6.20m

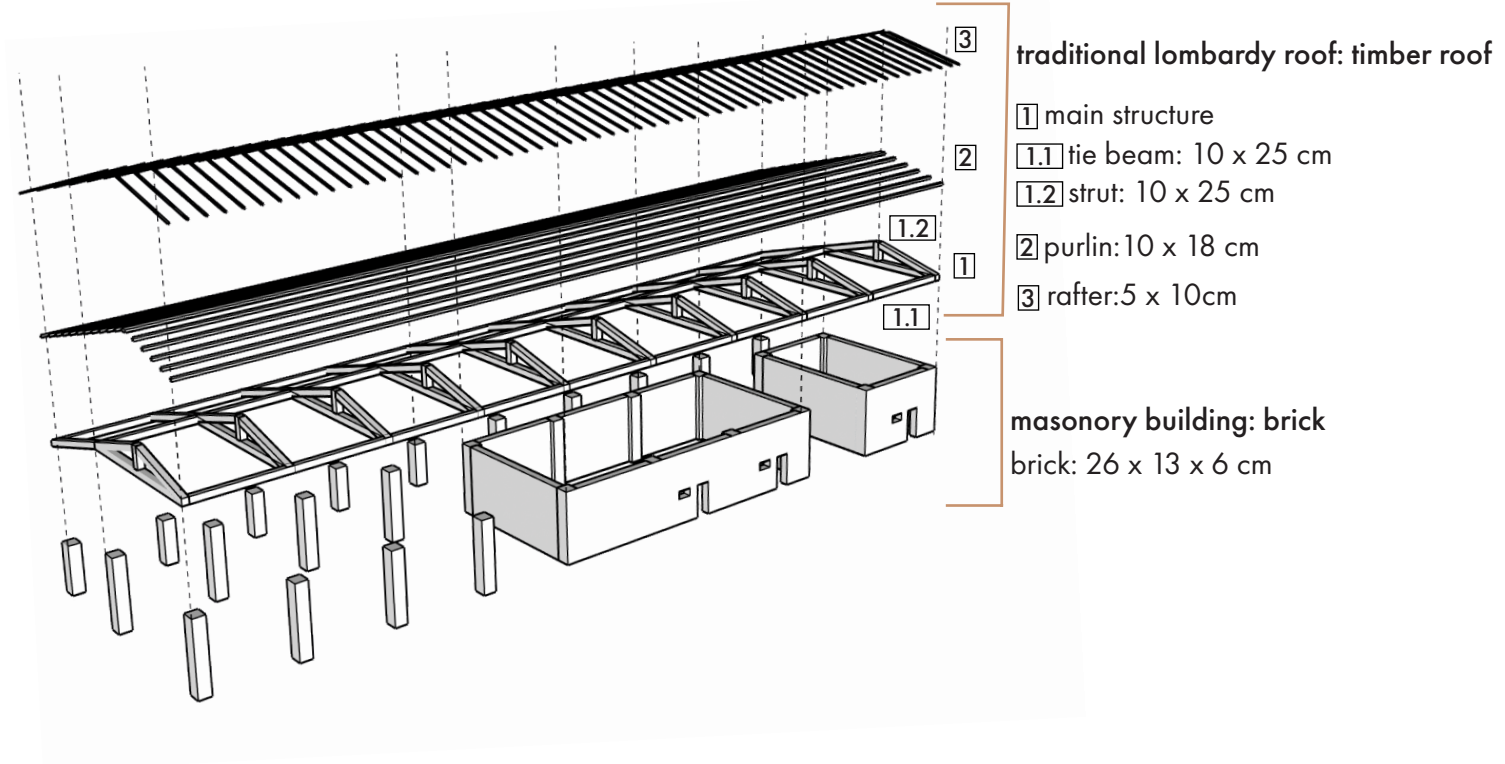
Closed Area:

building 1: 2200 m<sup>2</sup>  
- housing unit  
- family house

building 2: 560 m<sup>2</sup>  
- sleeping room | storage



● Structure of the Cascina Campazzo Building



● Structure of the Roof

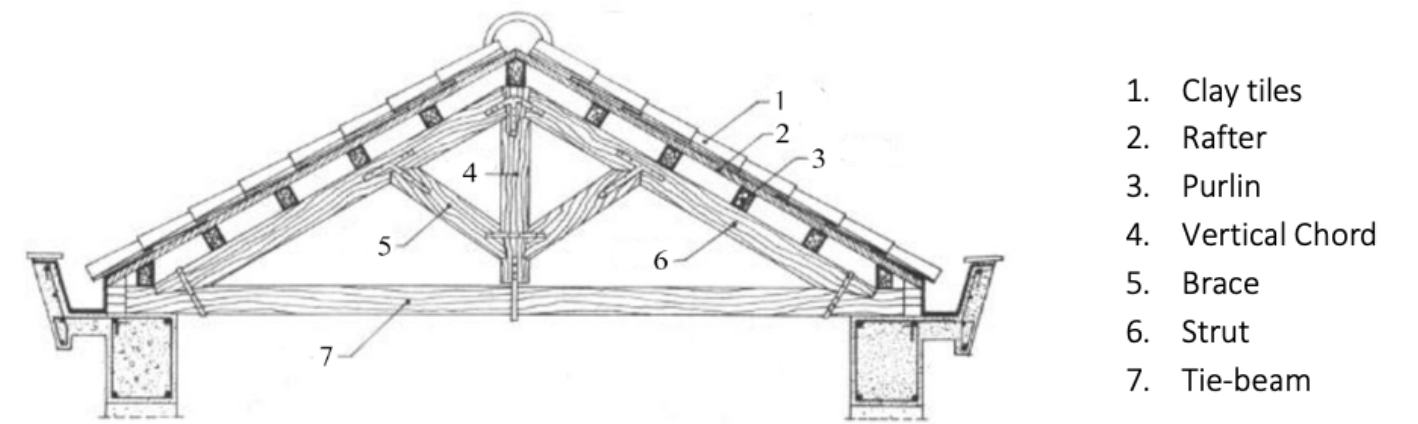
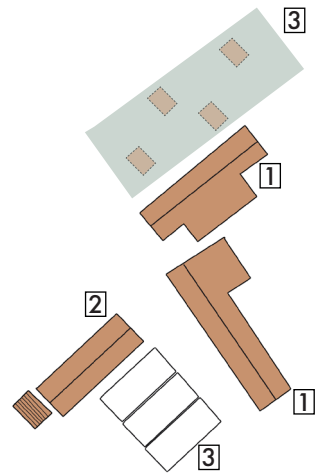


Fig 6.1: Typological scheme of the traditional Lombardy roof structure

● 2. Cascina Campazzino

Architectural Plan



- breaking the traditional plans: agregation of the building in different stages.

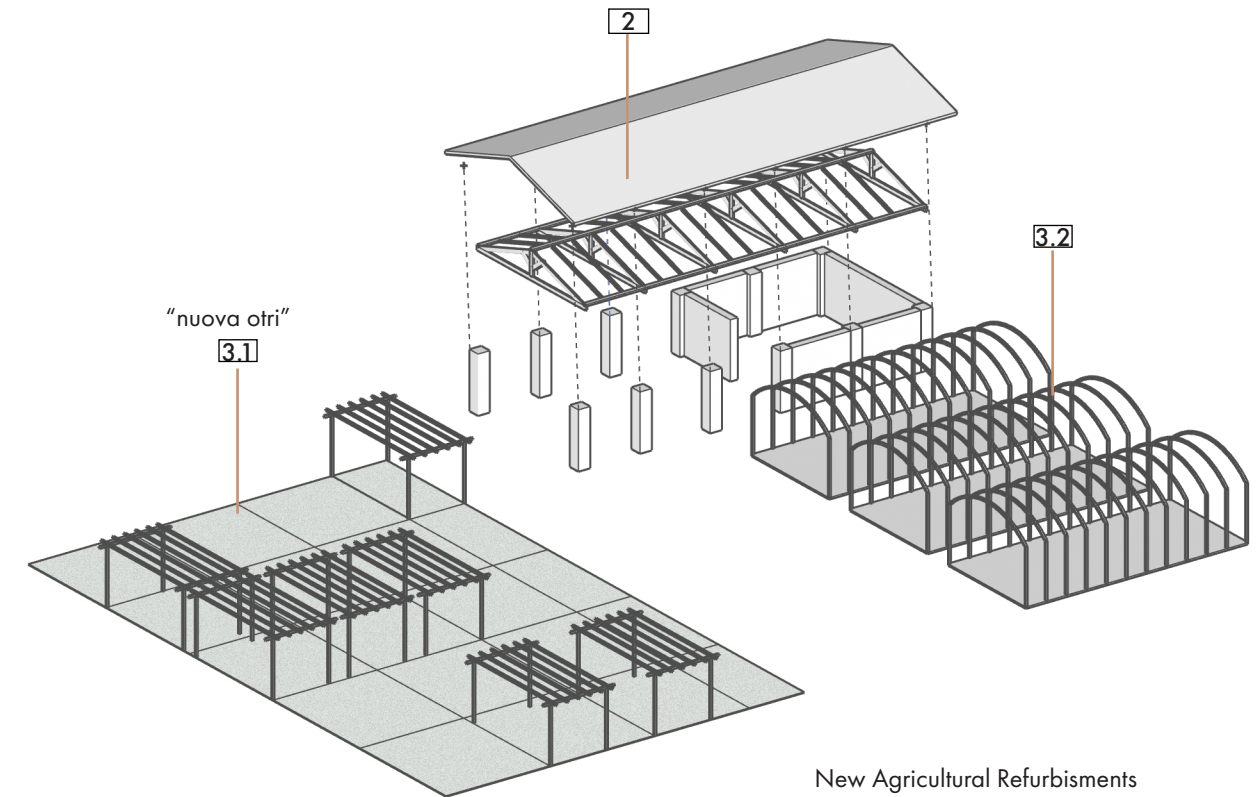
- 1 abandoned buildings
- 2 refurbishment
- 3 new design

Cascina Campazzino is located in the green area between Chiesa Rossa and Selvanesco. Together with other properties which is including several farm-houses scattered around the suburbs, it entered the tender with which the municipality of Milan collected expressions of interest to carry out social activities. Then the Campazzino, together with other lots, was put on the tender to collect the actual offers, which were presented by 24 February 2022. According to the environmental defense committee, however, it would be necessary to recover the farmhouse to carry out collective and public activities such as environmental teaching pedagogy for schools, the development of knowledge of rural Milan, organic agricultural practices, and public use of the park.

Enhancement of Cascina Campazzino:

In addition to an overall reorganization of the areas, the project envisages the creation of new urban gardens and an educational area consisting of a multifunctional portico, educational greenhouses, and an artificial tank for the creation of a nursery for aquatic plants. With this intervention, the green areas around the Cascina Campazzino will therefore be enhanced to develop, once the whole building complex has been restored to its function, a multifunctional accommodation center of public interest.

● Innovation in the Cascina Campazzino



New Agricultural Refurbishments

- 2 "portico":
  - multifunctional public area
- 3.1 "nuova otri":
  - urban garden (vegetables)
  - prototype structures for vegetables to supply light and shadow
- 3.2 "green house":
  - aquatic plants

● Via Selvanesco



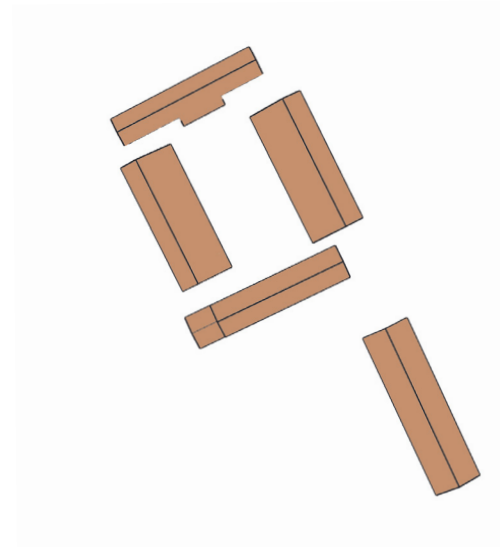
The agricultural vocation of the area which is Selvanesco is older. The Selvanesco area was already cultivated and inhabited in the 1200s.

The lands were then owned by the Torriani who is lords of Milan, who had the Ticinello canal built, still used today for this purpose, to make the crops profitable.

The Cascina Gaggioli is located in the Via Selvanesco area which is in Parco Agricolo Sud Milano.

● 1. Cascina Gaggioli

Architettura Plan



- Traditional courtyard which is surrounding with buildings that creates the central courtyard. Although additional new building, still is possible to recognize the structure of the traditional court.

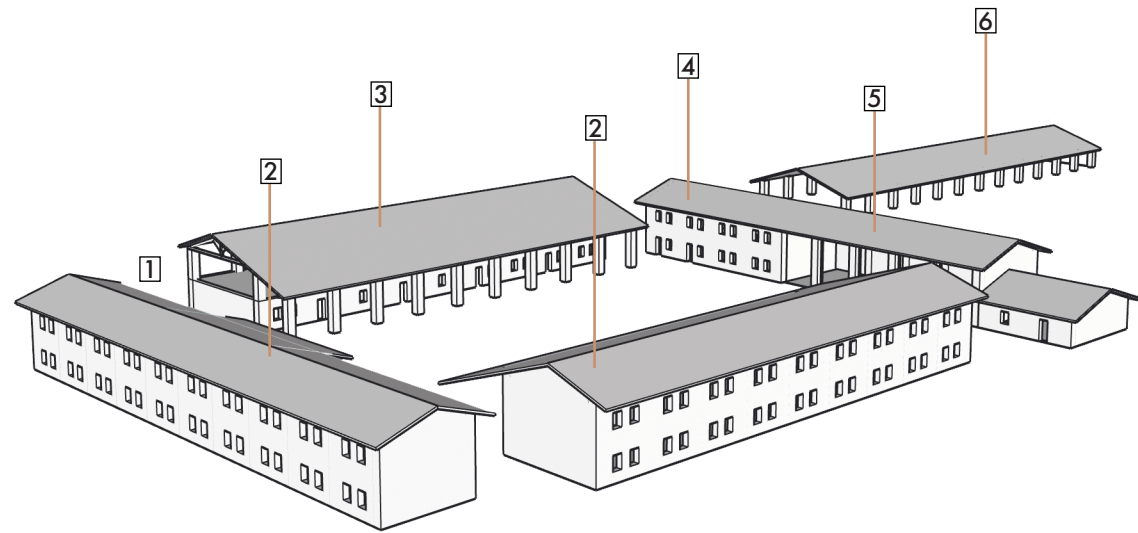
- function: multifunction farmyard
- agroturism: hospitality
- farmyard with livestock
- local market

Cascina Gaggioli cultivates and produces following the principles of certified organic agriculture, respecting the environment and the consumer.

The farmhouse has the typical square courtyard structure, where houses and service buildings overlook the farmyard. The facilities in their current form date back to around the mid 1800s, as evidenced by the dates engraved on some granite artifacts that formed the water intakes for the numerous water meadows.

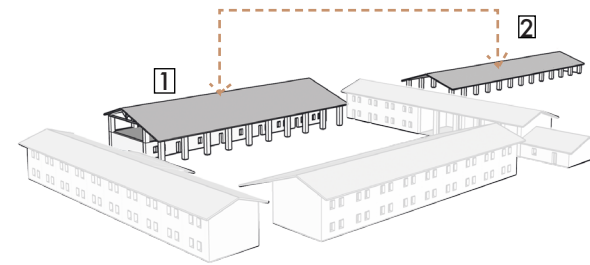
The property covers an area of about 60 hectares immersed in the South Milan Agricultural Park. Rice and cereals are grown here and Limousine breed cattle are raised. The old stable has been renovated and transformed into a hospitality facility.

● Typology of the Cascina Gaggioli

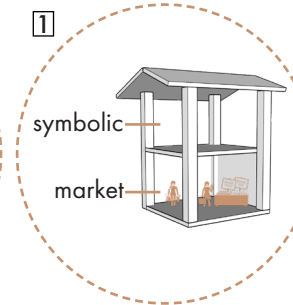
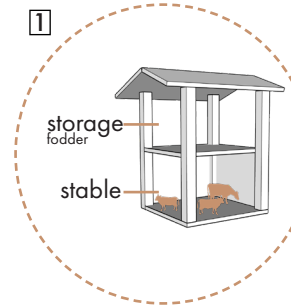


- 1 main entrance
- 2 hospitality
- 3 local market
- 4 administration
- 5 car parking
- 6 stable

● New Function

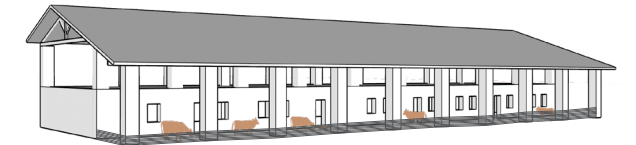


- 1 refurbishment: giving a new function
- 2 additional new building to meet to needs of the previous function



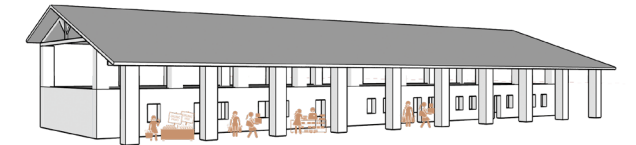
As Built:

- 1 stable

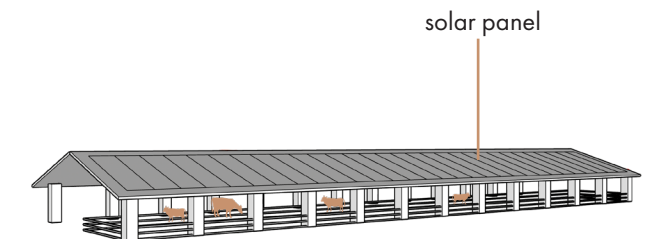


As Found:

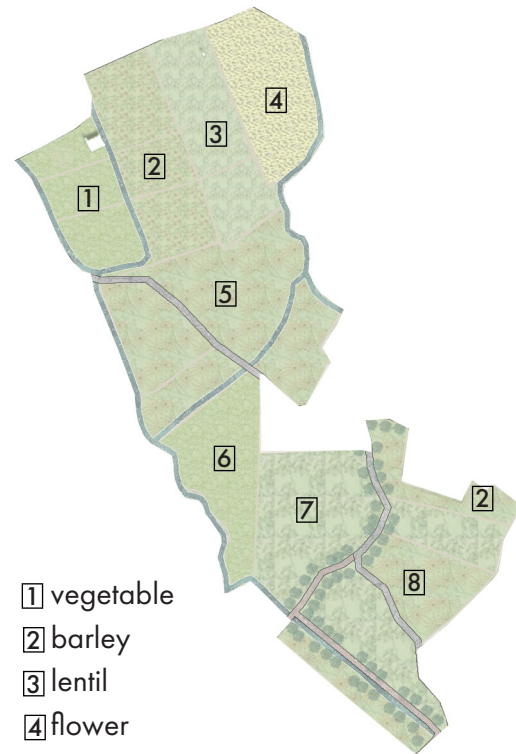
- 1 local market



- 2 stable



● Vaiano Valle



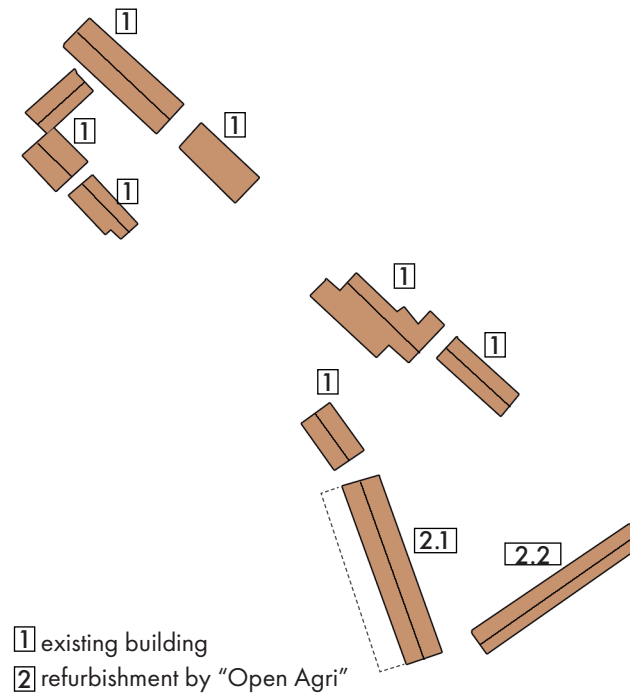
- 1 vegetable
- 2 barley
- 3 lentil
- 4 flower
- 5 herb
- 6 agroforestry
- 7 spelt
- 8 chickpea

Works were carried out within the scope of the Open Agri project on an agricultural area of approximately 30 hectares in Vaiano Valle. Despite the many critical situations of current abuse, abandonment, environmental degradation, and lack of water for irrigation purposes, an innovative agri-food project has been integrated into this area.

Within the framework of the UIA-OpenAgri project, these lands are expected to host agricultural initiatives that adopt innovative, sustainable, short, and participatory food chains: 'AgriPorto' grows legumes and grains together, 'Birra per ilCorvetto' grows barley 'City\_organic\_delivery' can grow vegetables for brewing, 'Narrare il pane' will grow ground vegetable raw material for baking, 'Zappada' will grow vegetables, 'Sinergie AgriCulturali in Vettabbia' will aim to establish a regenerative agroforestry system.

● Cascina Nosedo

Architectural Plan



- 1 existing building
- 2 refurbishment by "Open Agri"

- function: multifunction farmyard (ongoing project)
- multifunction spaces: co-working, training
- laboratories for artisanal activities
- social-hub for socio-cultural activities

The project includes positioning the functions previewed within the framework of the UIA project within the Cascina Nosedo structures. To do this, the most suitable of the existing buildings need to be individualized and refurbished along with the arrangement of the open outer zones within Cascina Nosedo.

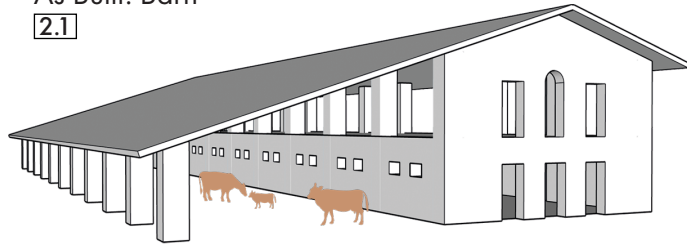
Refurbishment by "Open Agri": the architectural project involves several of the two buildings

- general arrangement of the open spaces inside the farmhouse organization
- demolition of the existing wall, made of bricks and mortar for building 2.1 and concrete blocks and mortar for building 2.2
- removal of the most damaged parts of the roofs, keeping the principal wooden structure that seems to be in good conditions
- digging operation around the buildings for the foundation's waterproof sealing

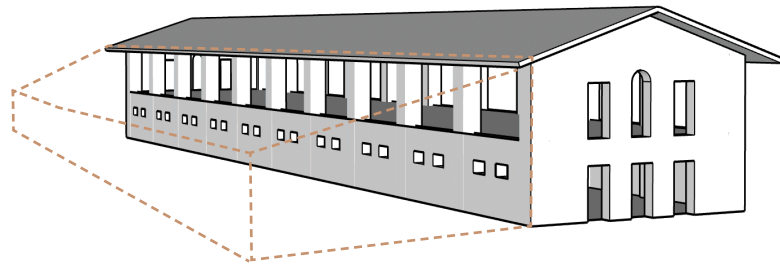


● Refurbishment by Open Agri in Cascina Nosedo

As Built: Barn  
2.1



As Found: Off Campus Polimi  
2.1



----- demolished

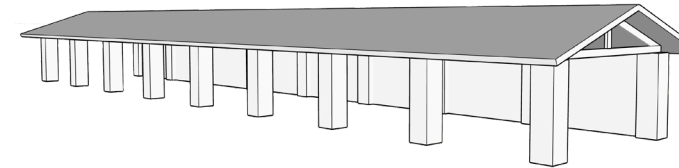
Within the scope of the Open Agri project, two structures on the farm were renovated. One of them was previously used as a stable and now serves the University of Politecnico di Milano which is Off Campus.

Off Campus Cascina Nosedo is located in Milan, in Via San Dionigi, at the entrance to the Parco Agricolo Sud Milano, between the Corvetto district and the Chiaravalle abbey and will host various types of activities: from planning activities involving students of the Polytechnic, through educational workshops, internships and degree theses to research on the themes of the peri-urban context, the landscape, the agri-food supply chains and the circular economy.

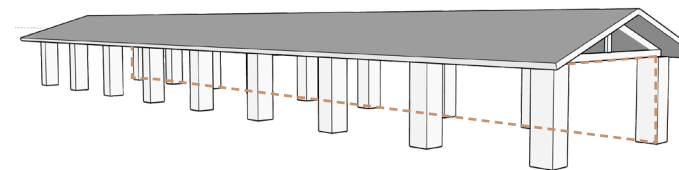
The farmhouse will also be home to projects with local subjects and service design activities for the area, linked to food and the reuse of waste, with a view to promoting sustainable practices. The space will also host Piùlento, a spin-off of the Politecnico di Milano active in the field of slow mobility.

● Refurbishment by Open Agri in Cascina Nosedo

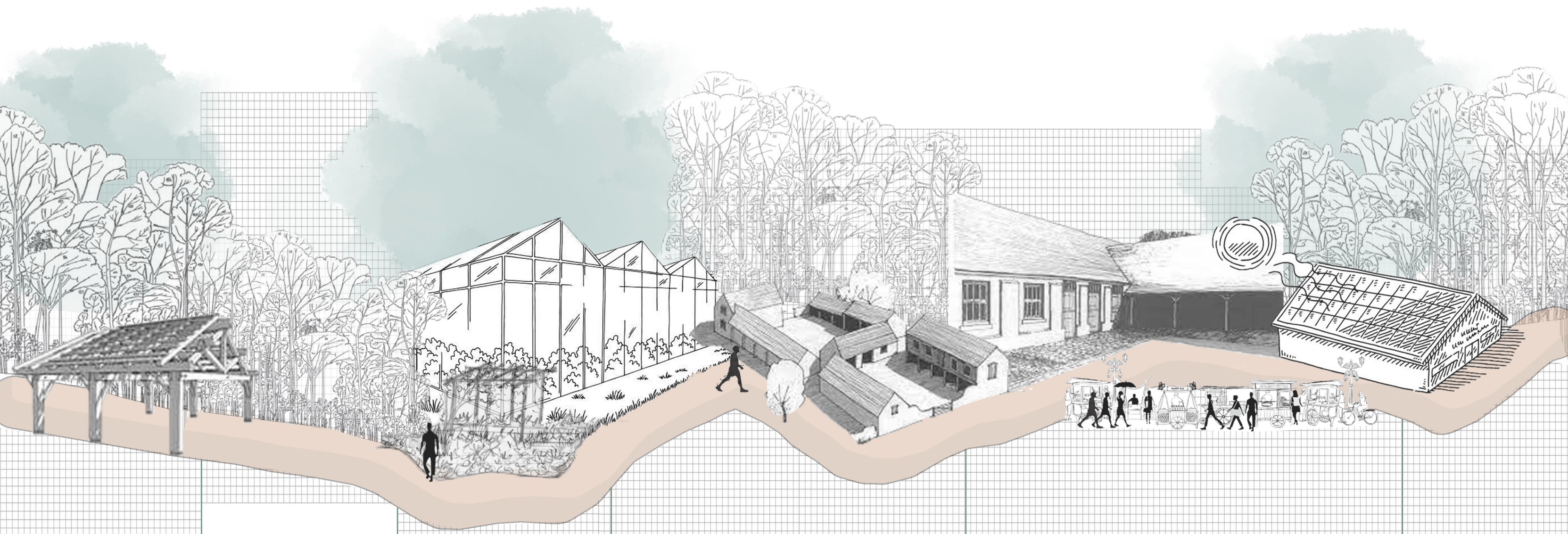
As Built: Open Air Storage  
2.2



As Found: Off Campus Polimi  
2.2



----- demolished



● Cascina Campazzo  
- roof structure  
- building typology  
- inner courtyard

● Cascina Campazzino  
- kitchen garden  
- shelter  
- public space

● Cascina Gaggioli  
- multifunction  
- solar panel

● Vaiano Valle  
- agroforestry  
- organic agriculture

● Cascina Nosedo  
- co-working

Chapter 07.  
MACCONAGO

07

● Macconago



- 1 Piazzetta
- 2 Farmhouse "Macconago"
- 3 Palazzo Castello
- 4 Chapel "San Carlo"
- 5 Lake "Lago Verde"

Macconago is a "rural" village, accessible from Via Ripamonti Avenue directly connected with Milan city center, and an old road formed by a thin strip of asphalt that starts in front of the Brandezzate farmhouse, cuts through the area's farmland and ends near them. It is located among large fields planted with grain.

Continuing over Macconago, historical architectural structures are encountered, firstly the first farmhouse named Macconaghino has a slight deterioration. A little further on opens the small square of Macconago, which now has the connotation of "public space" and has instead become a messy warehouse of agricultural tools and supplies. This "Piazzetta" opens up to a new area: Macconago, the farmhouse that was formerly used for cattle breeding, is in an advanced state of disrepair.

At the edges of the fields of the farmhouses, the Palazzo Castello di Macconago, the chapel dedicated to San Carlo, typical of which the edges of the roof are closed by the Ghibelline battlements, emerges.

Historical architectural elements in the borders of Macconago are surrounded by nature. In addition to agricultural lands, it is home to the Lago Verde, which is an important lake for the region.

● Macconago Farmhouse "Cascina Macconago"



Fig 7.1: aerial photo of Cascina Macconago

- 1 Piazzetta
- 2 Farmhouse "Macconago"

In the Lombardy farmhouse typology, the combination of barns, stables, and accommodation units forms the ancient core. Farmhouses are a building community notable for their large courtyards with rural buildings that, in ancient times, had the task of uniting members of the patron noble family with members of working wage families. In a farmhouse, there may be about a hundred people forming a community with communal living rules that tend to minimize the need for outside contact.

The rhythm of life which is in the farmhouse was regulated by the rhythm of the bell of the church, and at sunset, the great entrance door was closed. In its heydays, Cascina Macconago had 42 hectares of agricultural fertile land and was home to a variety of private services. Cascina Macconago, which is not used nowadays, is in a state of severe deterioration and need of rehabilitation.

### ● Palazzo Castello di Macconago



Fig. 7.2: Palazzo Castello di Macconago



Fig. 7.3: Palazzo Castello di Macconago

The Palazzo Castello has an imposing architectural design with thick walls with Ghibelline battlements. Although it is difficult to determine the exact date of construction, when the historical trace is followed, it is predicted that it was built between 1330 and 1340. This building has the characteristics of a palace fortress. It belongs to the Pusterla family, which had the property of being preserved during that period and is seen as one of the small gates of the city of Milan. There is an underground passage leading to Chiaravalle Abbey, where traces of it are still visible. The location of the towers is designed to face outward against possible external threats, not Milan.

Although its original function was the residence of the nobility, it was later transformed into a farmhouse, and today it has been restored and hosts seminars, congresses, press conferences, auctions, fashion shows, and various other cultural and commercial events.

### ● Chapel "San Carlo"



Fig. 7.4: Chapel "San Carlo"

The church was dedicated to San Carlo from the second half of the seventeenth century, it was built by the Mazenta brothers on the will of their father Guido. It was completed by Archdeacon Monsignor Malatesta.

The architectural plan of San Carlo Church is based on a single rectangle, and it has a facade design covered with a triangular pediment. There is a bell tower with a large window design.

Although the building is still standing today, it is in severe deterioration. The bricks of the church have crumbled, the protective plaster of the walls has lost its visibility, and the roof structure is close to losing its load-bearing properties.

## ● Lake "Lago Verde"



Fig 7.5: Lago Verde



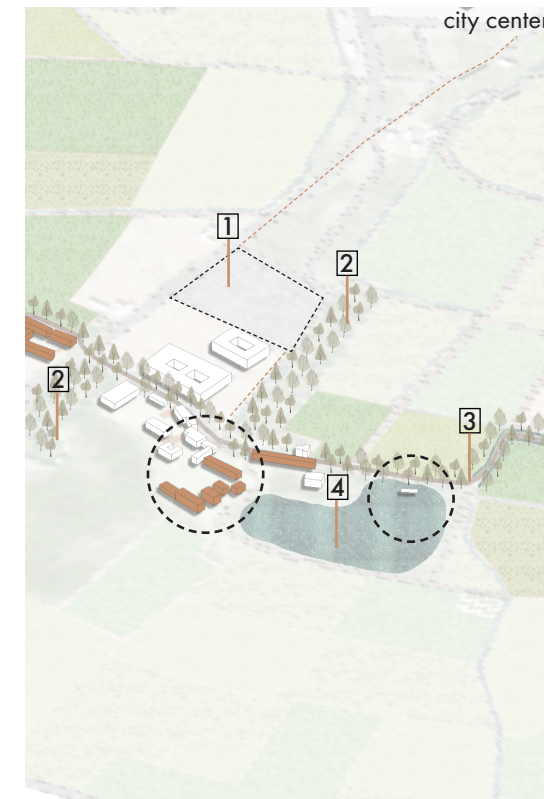
Fig 7.6: Lago Verde

A strong natural element of the Macconago region is the lake which is called "Lago Verde". Today, this lake is used for sport fishing. Lombardy and especially the areas south of Milan have always been rich in water sources throughout history. It is surrounded by rivers, lakes, and water canals that have been fertile for humans since ancient times and made the area habitable.

The monks of the period built their monasteries where the water sources spontaneously rose to the surface, so settlements were formed in the monasteries such as Morimondo, Mirasole, Chiaravalle, Viboldone, and agriculture and livestock farming culture spread in these regions. These centers are the main centers that support the development of agriculture. Many of these lakes and springs have dried up as the years pass and the underground waters are used more and more for the use of the city. However, Lago Verde is still one of the rare lakes that have not lost its visibility in Milan.

## ● Focal Points of Macconago

dialogue with urbanistic strategy



① car parking

② visual barrier

③ ecologic corridor

④ lake

--- car road

○ focal point

Within the selected Macconago region, the points to be revitalized were determined. One of them is the Macconago farmhouse and the other is the remains of the building on the lake.

The design to be made in the Macconago farmhouse will be added to the ecological corridor designed on a large scale and will become one of the agricultural points on this line. At the same time, it will work in a common language with the regulations made in the region.

The remains of buildings, which are underwater in the lake and very close to the ecological corridor border, attracted attention. The adaptation of this building remains to the present has become another subject of the project. In this design process, it has been taken to work on common ground with the farmhouse and the ecological corridor.

## ● Building



When the building and land morphologies are examined. It is understood that the land surface area is mostly dominant in the region compared to the building surface area. The area is surrounded by large agricultural lands. Existing structures mostly consist of farmhouses. It is noteworthy that these farmhouses have been adapted to the present day. The re-adapted farmhouses in the region now serve as a nursing home and a riding club.

## ● Land

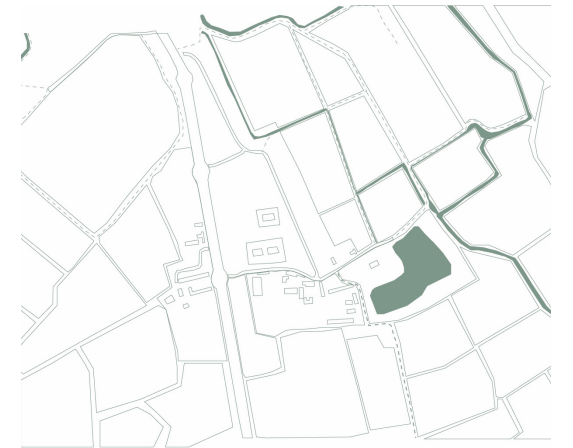


## ● Road

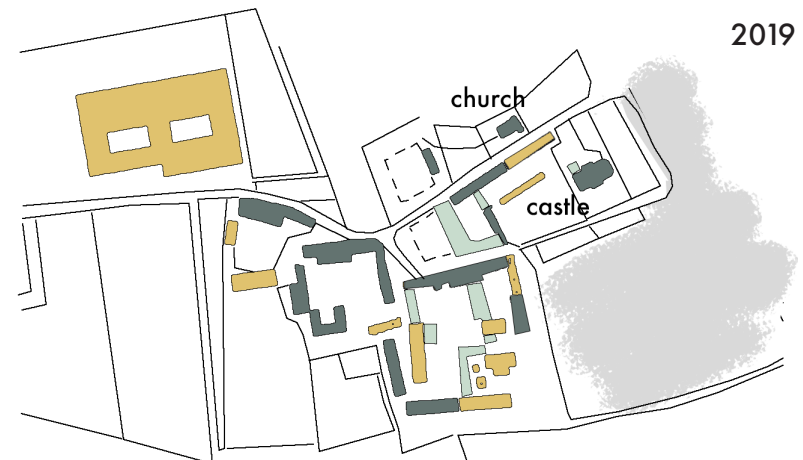
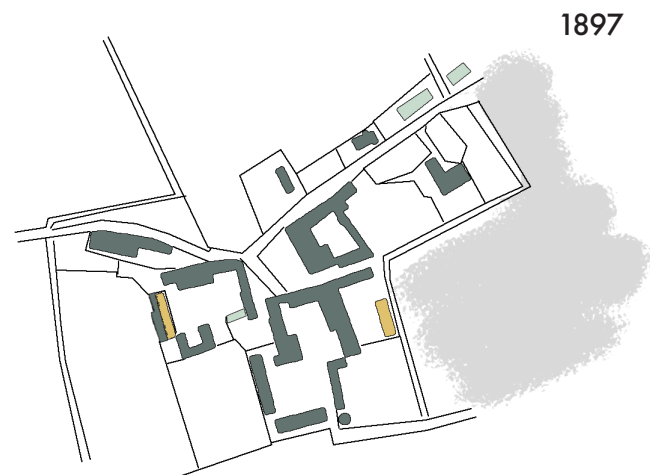
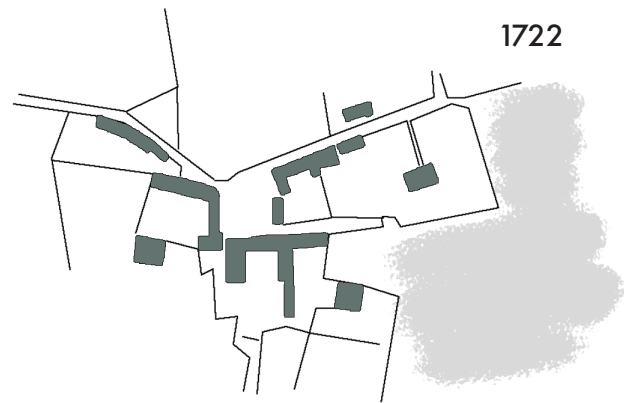


When the road and water analysis are analyzed together, it is understood that all roads other than the mainline which is coming from the city center spread over the area as a capillary, and these roads have duties such as feeding the agricultural lands. It is noteworthy that these roads are positioned to follow the agricultural land borders and especially the water channels.

## ● Water

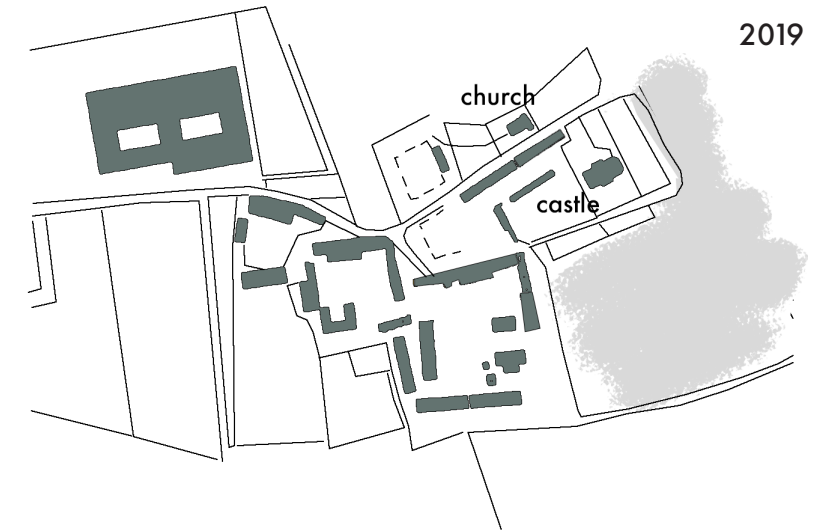
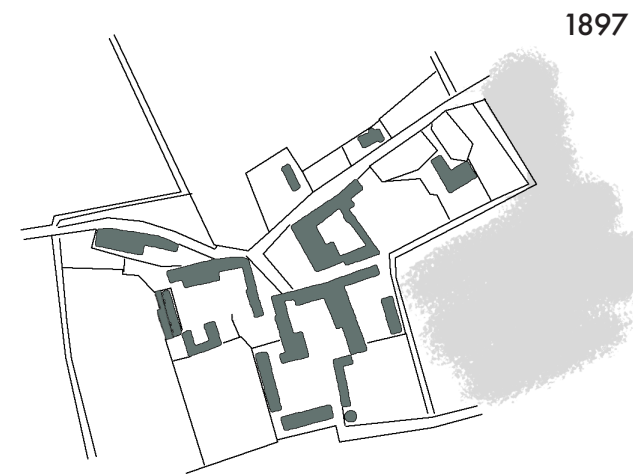
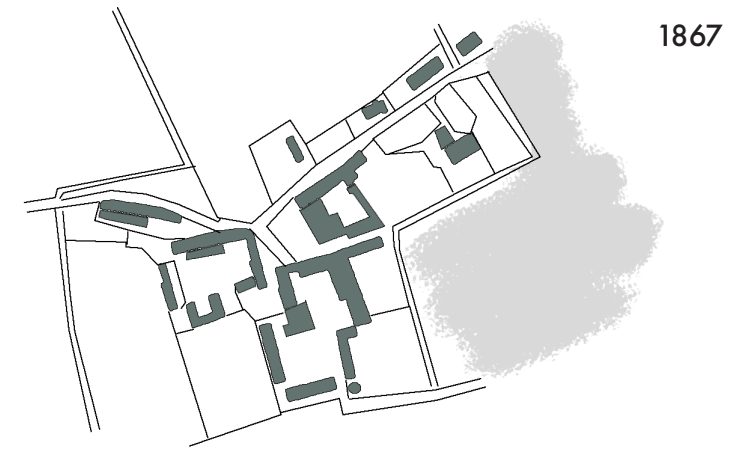
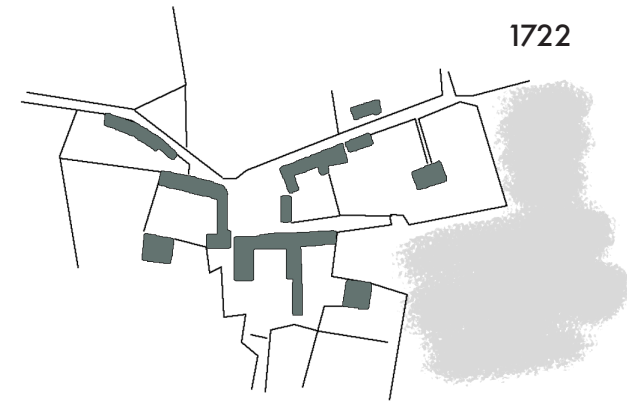


● Historical Sequences



- existing building
- new building according to the previous period
- demolished building according to the previous period

● Morphologic Sequences

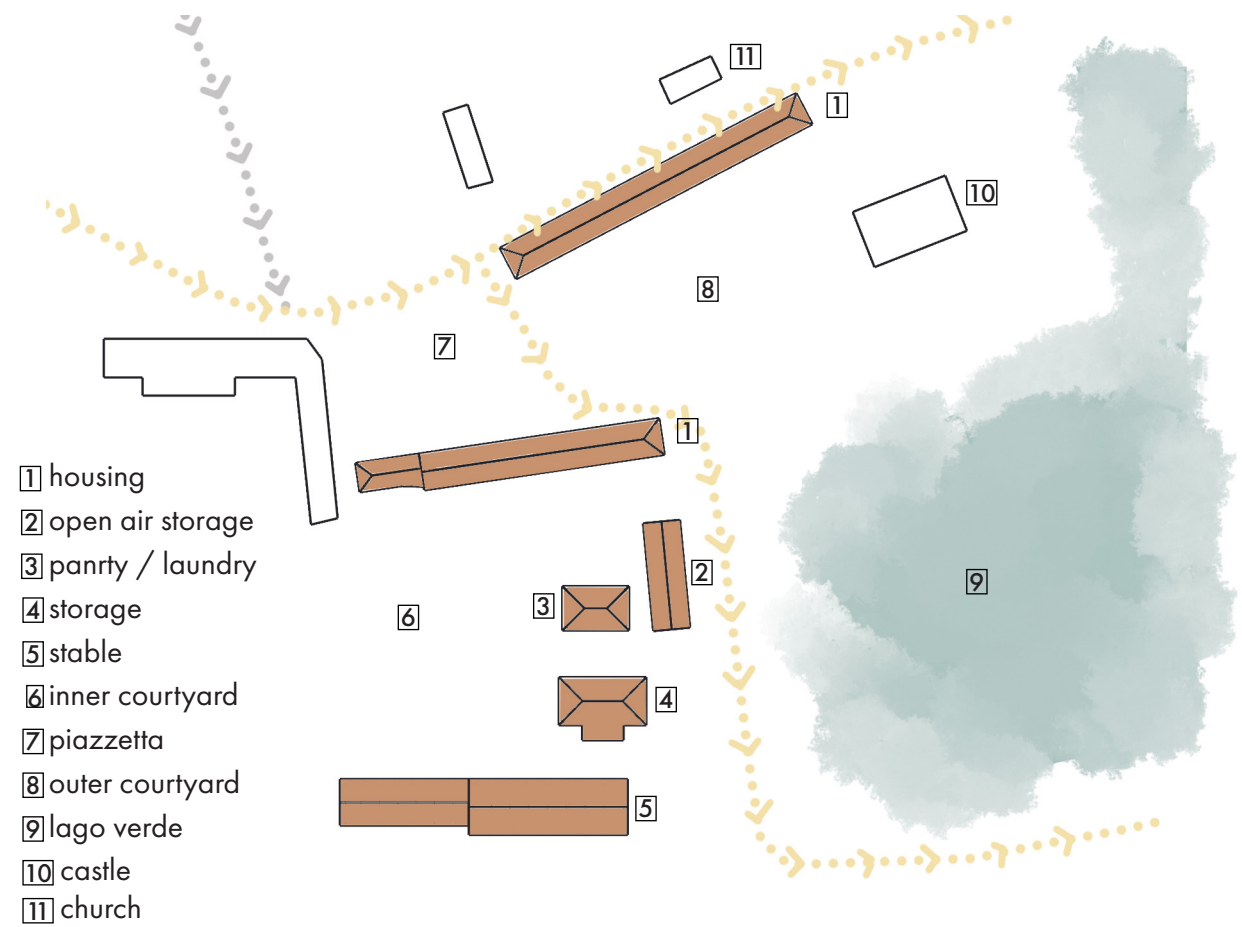




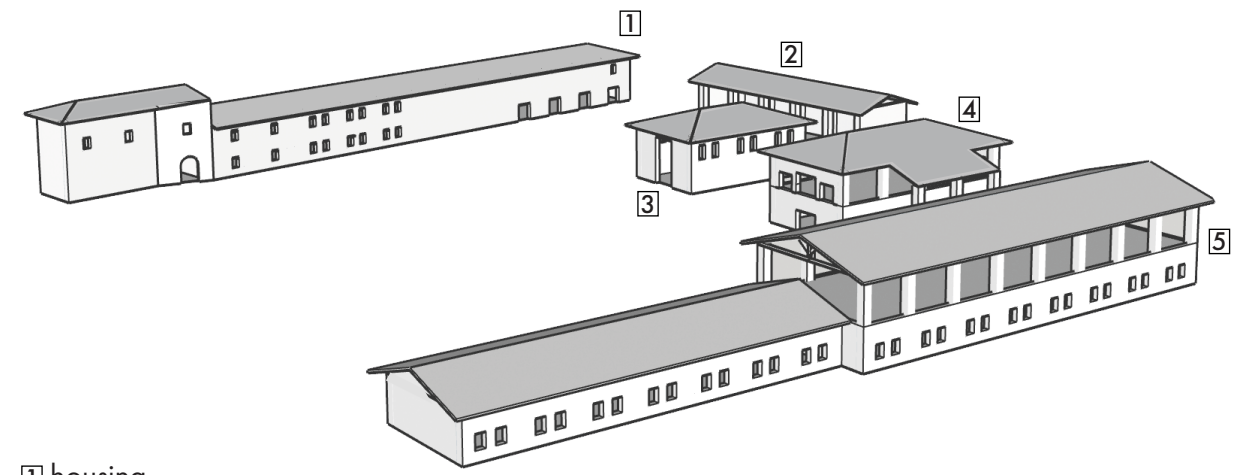
Chapter 08.  
" FOCAL POINTS OF MACCONAGO "  
 Cascina Macconago & Lago Verde

08

● Cascina Macconago  
Architectural Plan: existing



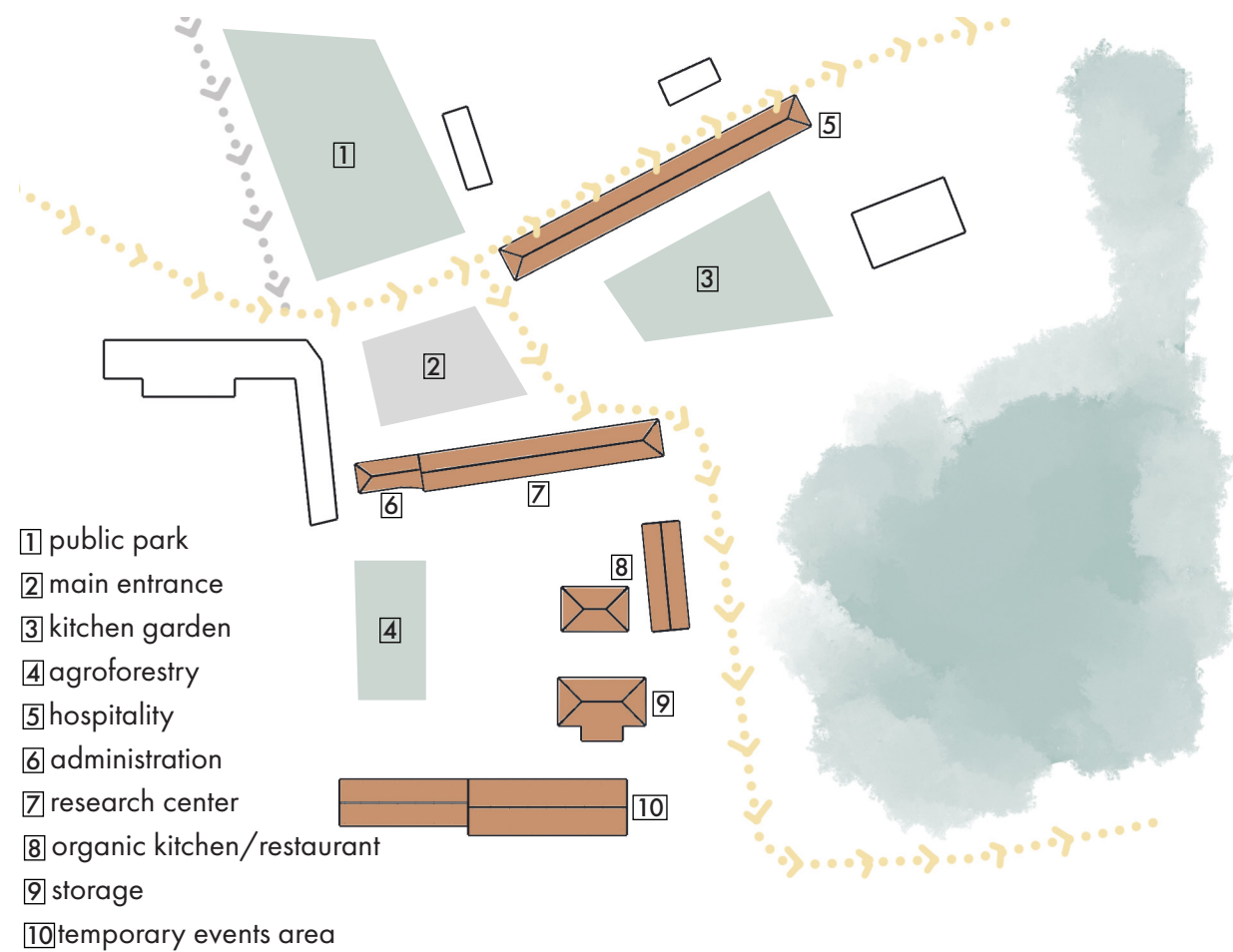
● Typology of the Cascina Macconago  
Organisation of the building as built



- 1 housing
- 2 open air storage
- 3 pantry / laundry / bread room
- 4 storage
- 5 stable

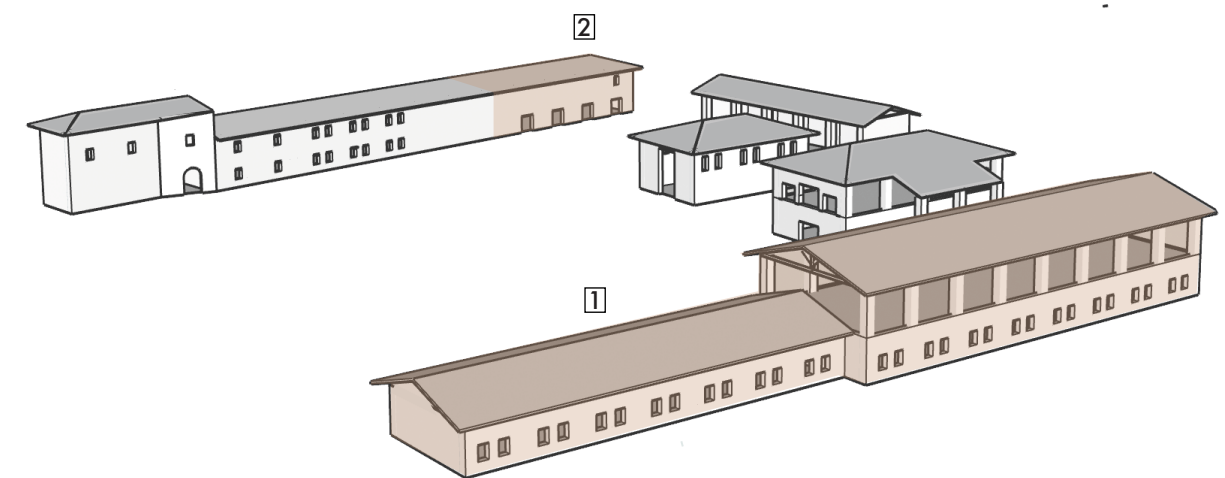
● **Functional Diagram**

Proposal



● **Focal Buildings**

Organisation of the building as built



**building 1 typology:**  
 function: stable (animal & fodder)  
 structure:  
 wall: brick masonry  
 roof: "tetto alla Lombardia su capriate"  
 floors: 2  
 max height: 980 cm  
 area: semi open area 480m<sup>2</sup>  
 closed area 480m<sup>2</sup>



**building 2 typology:**  
 function: housing units  
 structure:  
 wall: brick masonry  
 roof: "tetto alla lombardia su pareti trasversali"  
 floors: 2  
 max height: 760 cm



### 1\_Smart Floating Farms Concept Ponders Agriculture in a World of 9.1 Billion

**The Modular System of the Floating Farms:**  
 Javier Ponce, 19 May 2015, Forward Thinking Architecture

**Aim:**

The smart floating farms is combined with the photovoltaics, solar farming areas, hydroponics-green growing, existing racks, controlled fish farming and it technologies in order to reduce food pressure all systems are 100% compatible and able to be integrated in other replicable modular system.

three storey systems: aquaculture, hydroponics, photovoltaic panels

- first level: aquaculture

full-closed system to the outdoors and fish farming operation is applied in this storey. Storage, processing center, nursery, packaging, and shipping areas are located in the first level. It is a designed grid-based plan taking a reference to traditional fishing farm architecture plans.

- second level: hydroponics

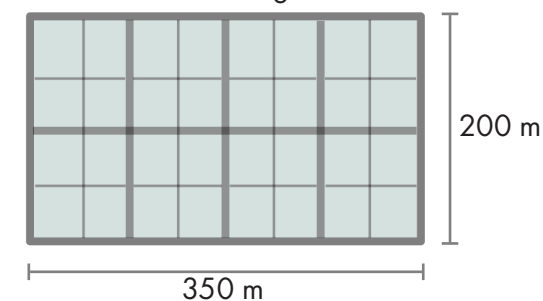
the hydroponic system is placed above fish farming. This system does not need soil, it uses nutrient water instead of soil to produce plants and the aeroponic walls are designed for holding the needs of plants. Thus, agriculture was made with technological architectural developments without the need for land.

- third level (roof top): photovoltaic

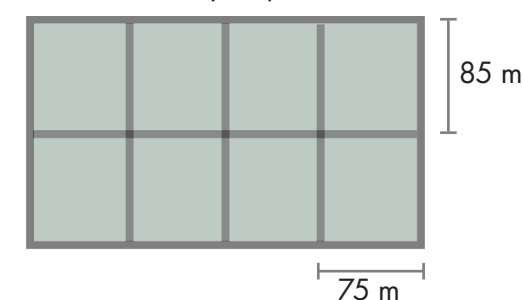
it is designed to power a variety of fans, misting, microclimate controls, and irrigation tools and collect for future needs.

**Diagram of the Layers:**

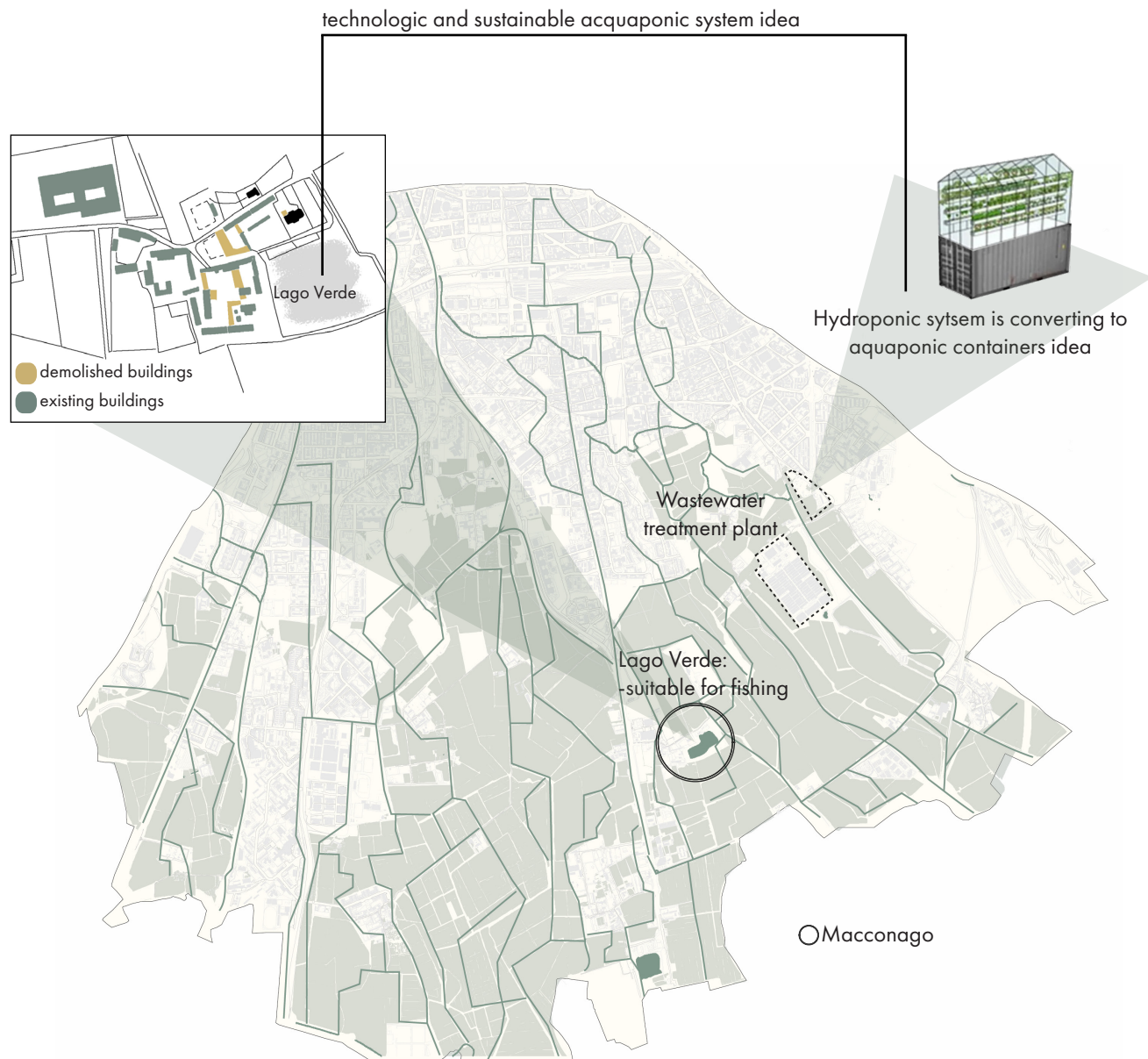
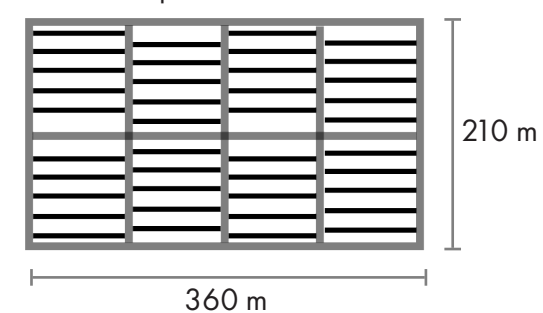
first level: fish farming



second level: hydroponics



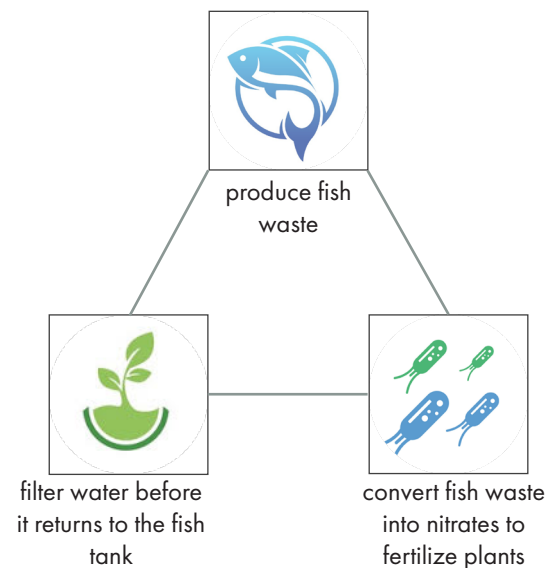
third level: photovoltaics



**Aquaponic System:**

Aquaponics is a unique and sustainable method of food production that combines aquaculture which is fish farming with hydroponics which is aquatic plant growing. In this system, wastes produced by fish are broken down by beneficial bacteria and converted into nutrients needed by plants. Plants also filter the water, which then returns to the fish. This is a self-contained circulation system that uses 90% less water than conventional farming and can produce fish and vegetables in a small area.

aquaculture: raising aquatic animals  
 hydroponics: growing plants without soil  
 aquaponics: the dual system that supports each other with mutual efficiency



**Benefits of the aquaponic system:**

- sustainability
- high yield
- fresh nutritious produce
- reduce water usage
- easy to maintain
- educational

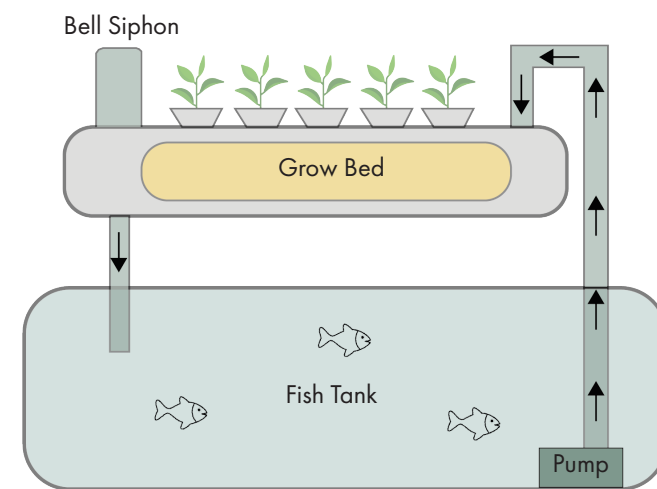
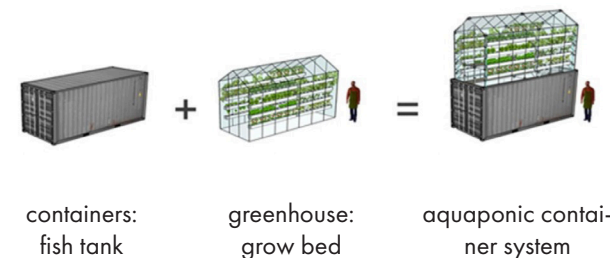


Fig 8.1: The system of the aquaponics

**Proposal of the converting of the hydroponic system to aquaponic containers system: (shipping)**



**Proposal of the converting of the aquaponic container systems to sustainable aquaponic farm technology:**

With the increasing population density day by day, the needs will continue to increase. Especially the need for food will increase at the same rate. At this point, the lands for agriculture may also be insufficient at some point. Therefore, new technological solutions should be considered. At this point, technological, self-sufficient, environmentally sensitive, sustainable smart architectural designs come into play as a major role.

**Major elements for technological design part:**

- food
- water
- energy efficiency / self- built system

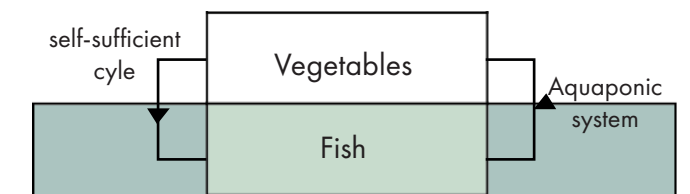
**Aim:**

to use the existing water in Lago Verde to feed fish to transform the water for plants and create a cycle and collect water thanks to the new design of the technological farm to transform the water to clean and treat water for the community. It should be replicable project for the other suitable place and community.

- sustainable production of food (aquaponic system)
- treatment water
- environmental building

**Proposal Aquaponic System for Lago Verde:**

2 main parts:

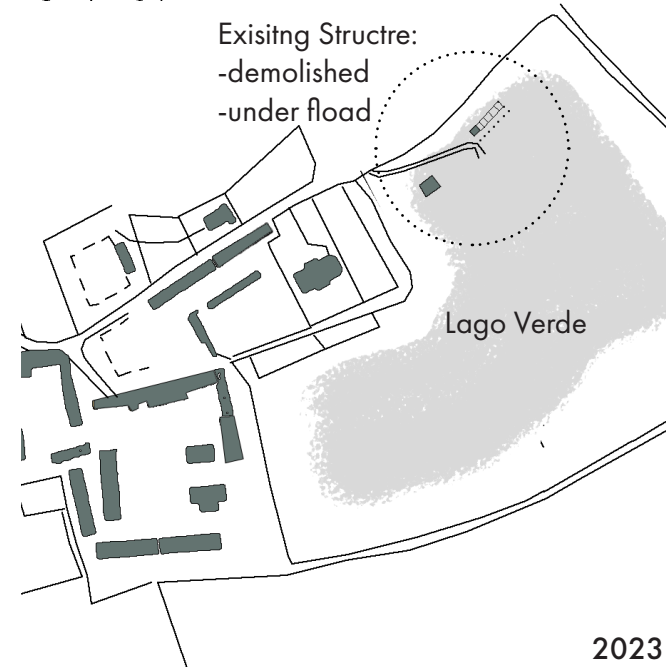
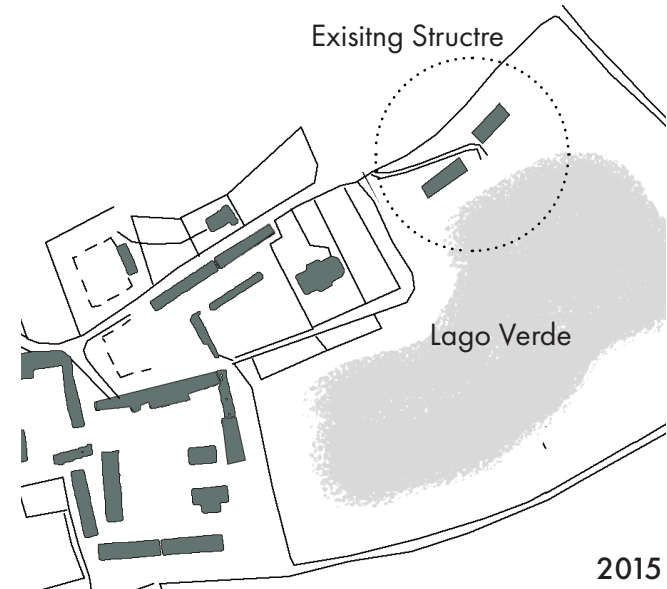


**Concept of the self-built and self-sufficient farm units:**

The possible location of the experimental technological and sustainable building which has aquaponic system to be designed on Lago Verde was considered. Since the depth of the lake is not suitable for floating volumes, it was desired to benefit from the change process of the lake within the framework of the self-built feature, which is the design decision of the building.

To explain, there is a previous construction on the northern road border of Lago Verde. The lake has been expanded over time and the existing structures have become idle and abandoned. It has been proposed to design this experimental technological and sustainable farm system by utilizing the materials and building boundaries of these existing structures.

Transformation of Lago Verde:



Concept of the self-sufficient community on Lago Verde:

Aquaculture has been in existence since at least 500 BC. However, only since the mid-20th century has it assumed importance in terms of the environmental aspects. Its production since it began to grow in the 1960s. It can be designed hybrid system which is combined with aquaculture and hydroponic system like aquaponic system. The traditional aquamarine culture structural desing is gridal system.

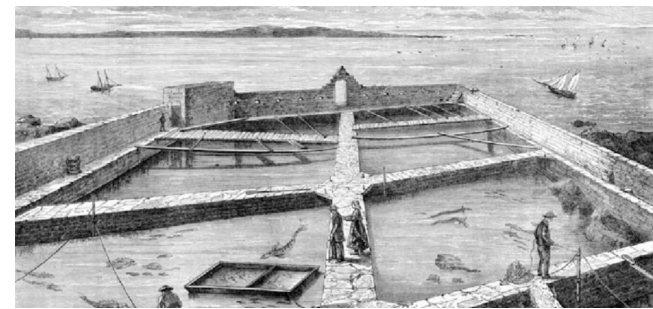
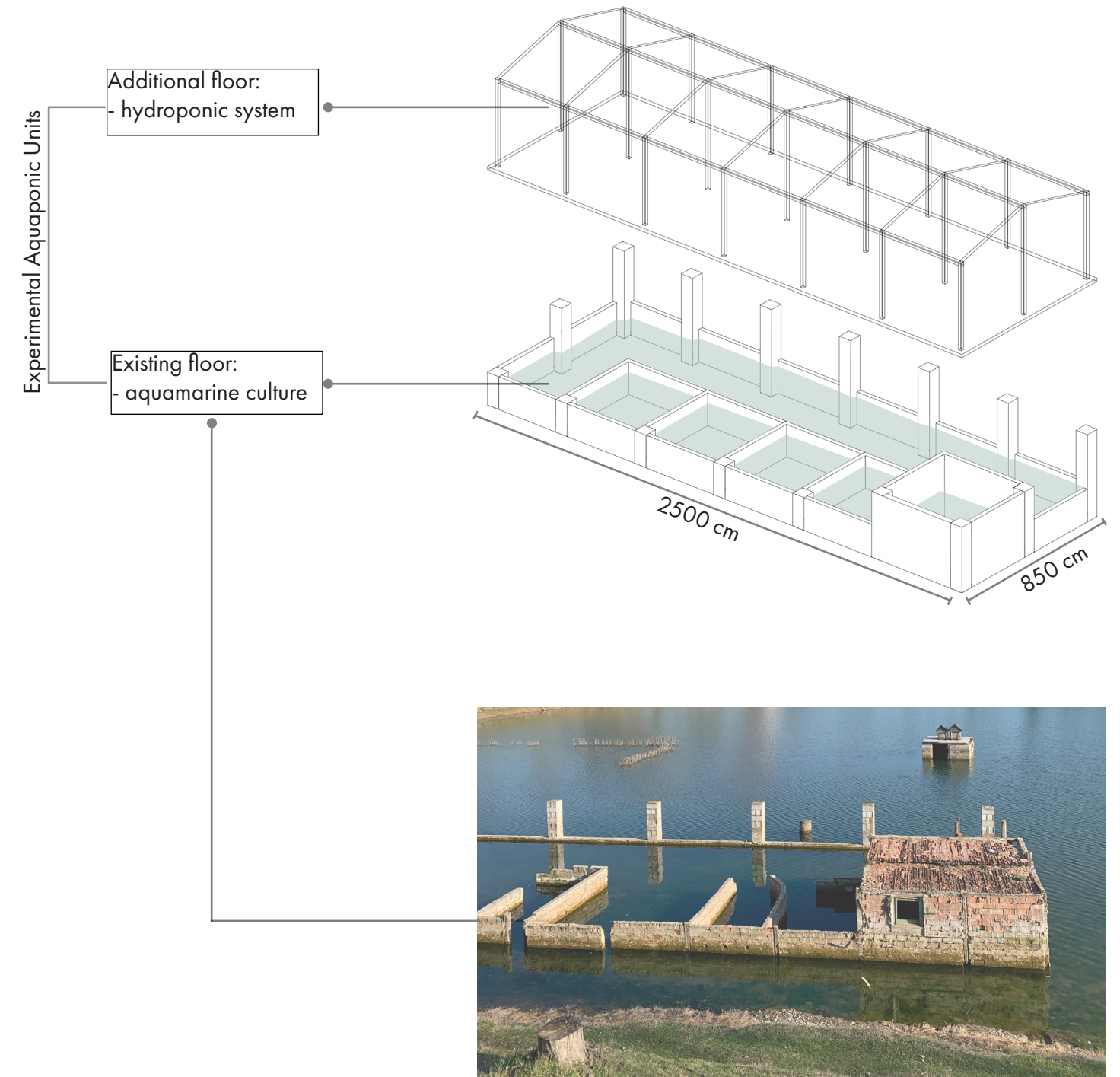


Fig 8.2: The traditional aquamarine culture



Figure 8.3: The traditional aquamarine culture

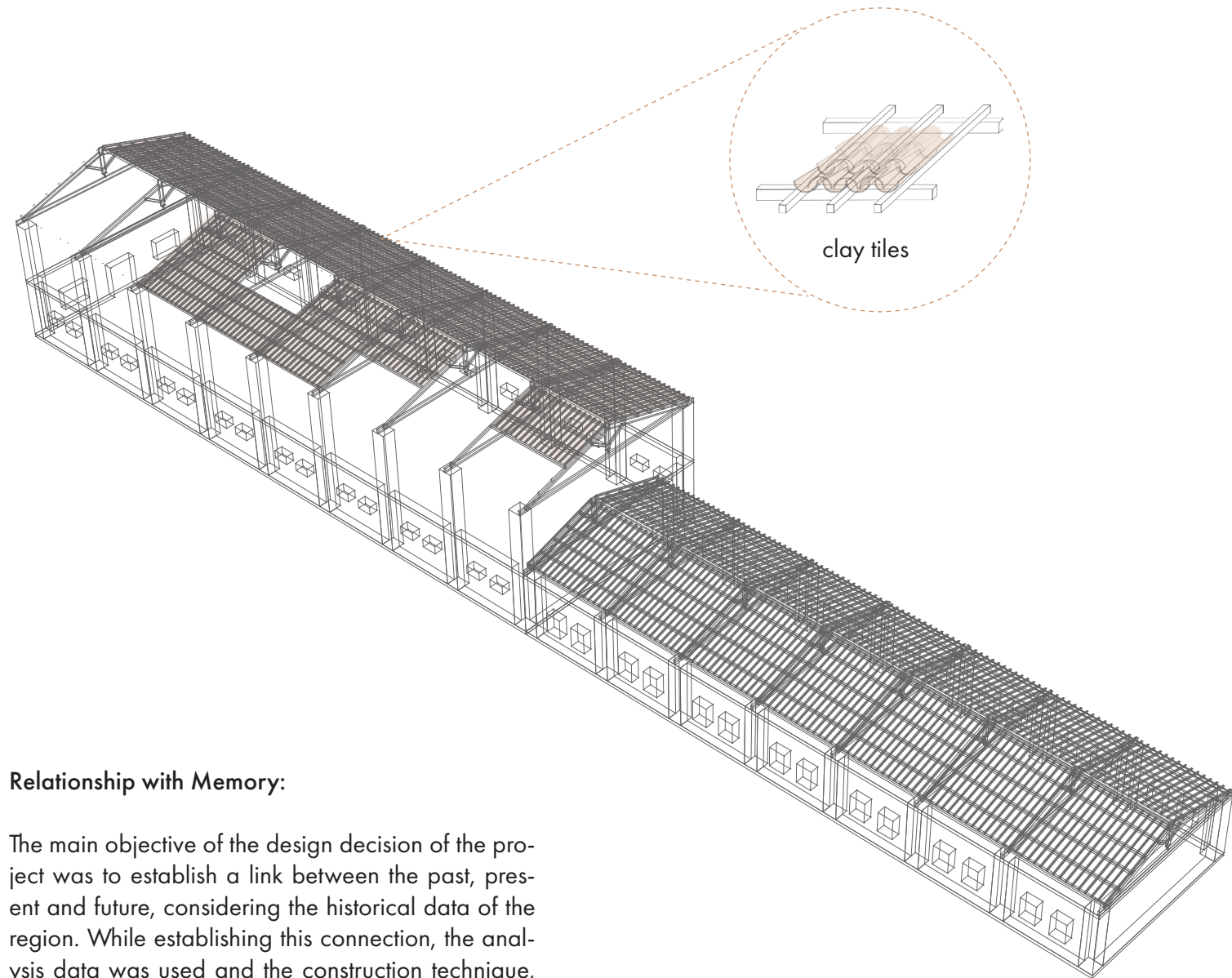


Chapter 09.  
" NEW-OLD "

09

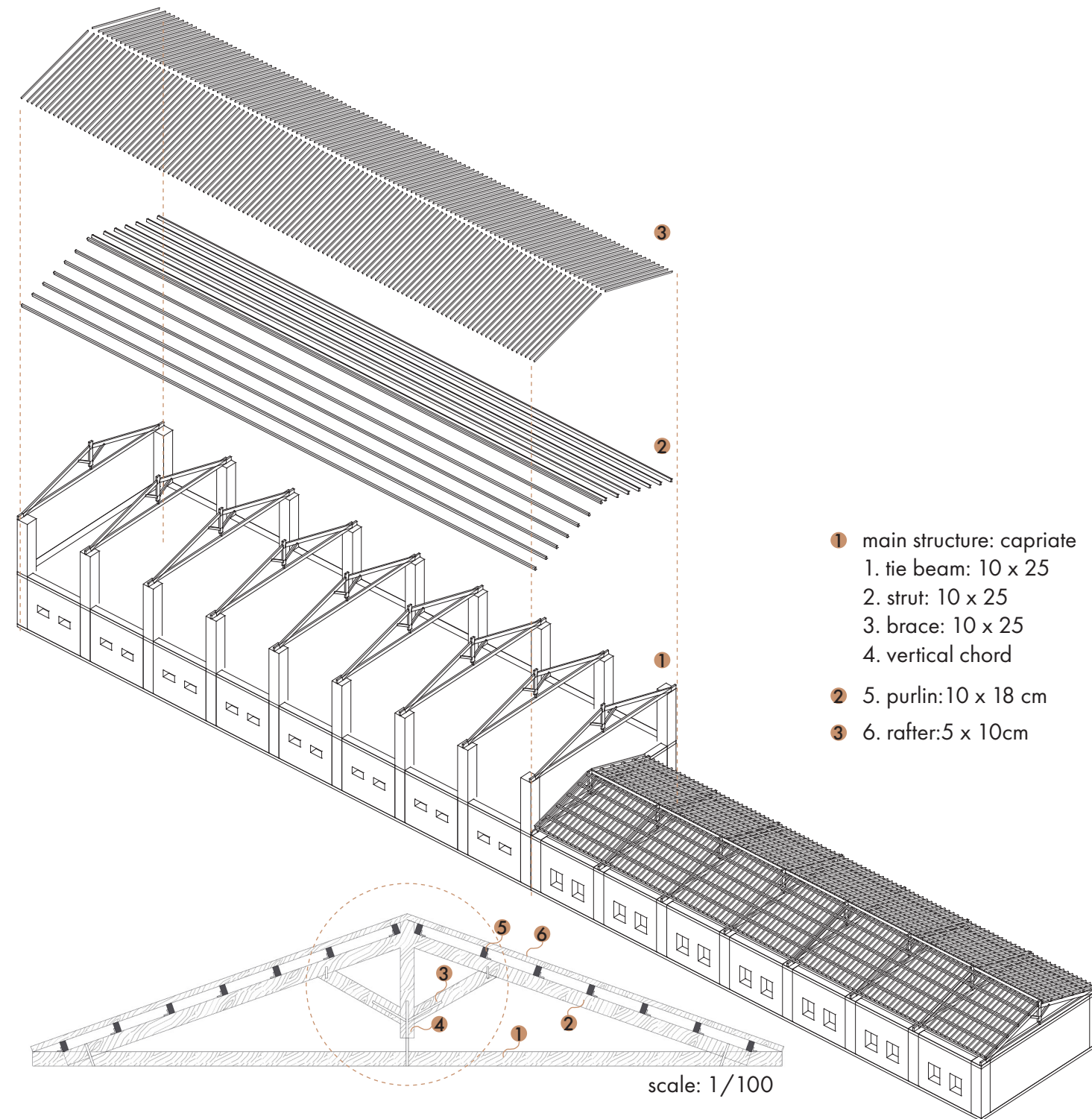
" Cascina Macconago: Sliding Building "





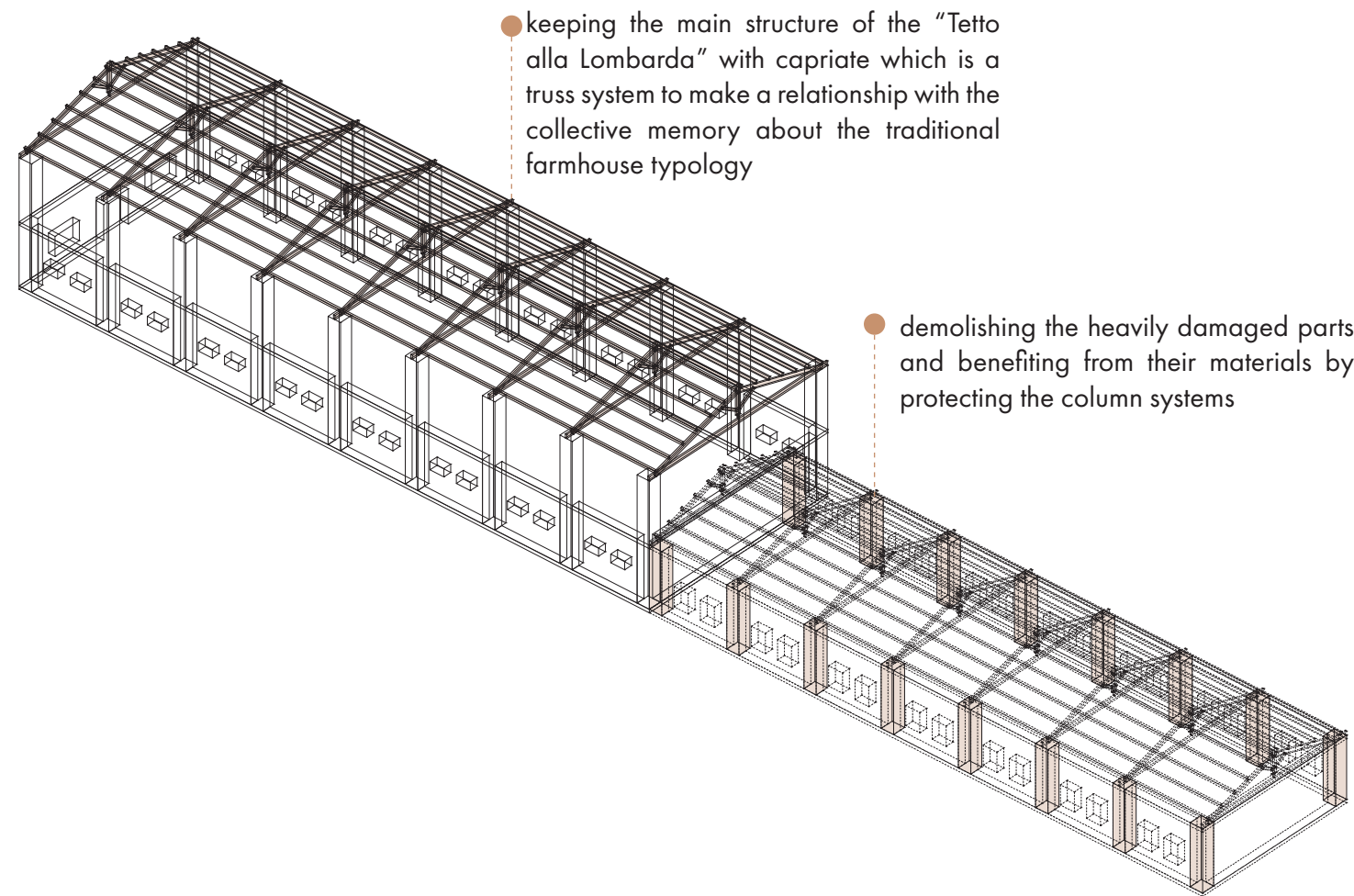
**Relationship with Memory:**

The main objective of the design decision of the project was to establish a link between the past, present and future, considering the historical data of the region. While establishing this connection, the analysis data was used and the construction technique, material, and facade design were chosen as three main elements in line with the results obtained. It is aimed to relive these elements in the project, to create a visual connection in memories, and to invite users to a journey between the past, present, and future.



- 1 main structure: capriate
  - 1. tie beam: 10 x 25
  - 2. strut: 10 x 25
  - 3. brace: 10 x 25
  - 4. vertical chord
- 2 5. purlin: 10 x 18 cm
- 3 6. rafter: 5 x 10cm

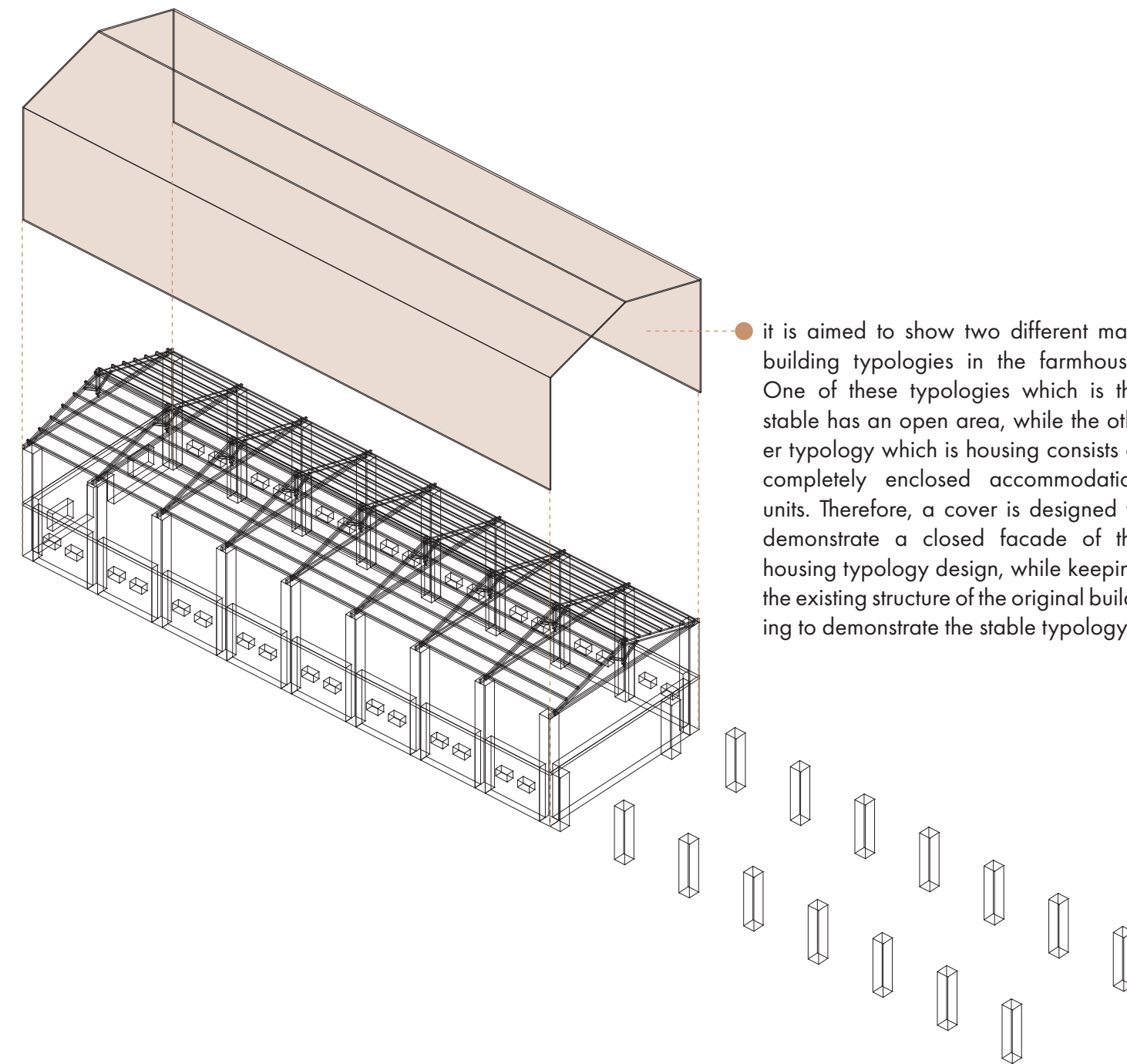
scale: 1/100



● keeping the main structure of the "Tetto alla Lombarda" with capriate which is a truss system to make a relationship with the collective memory about the traditional farmhouse typology

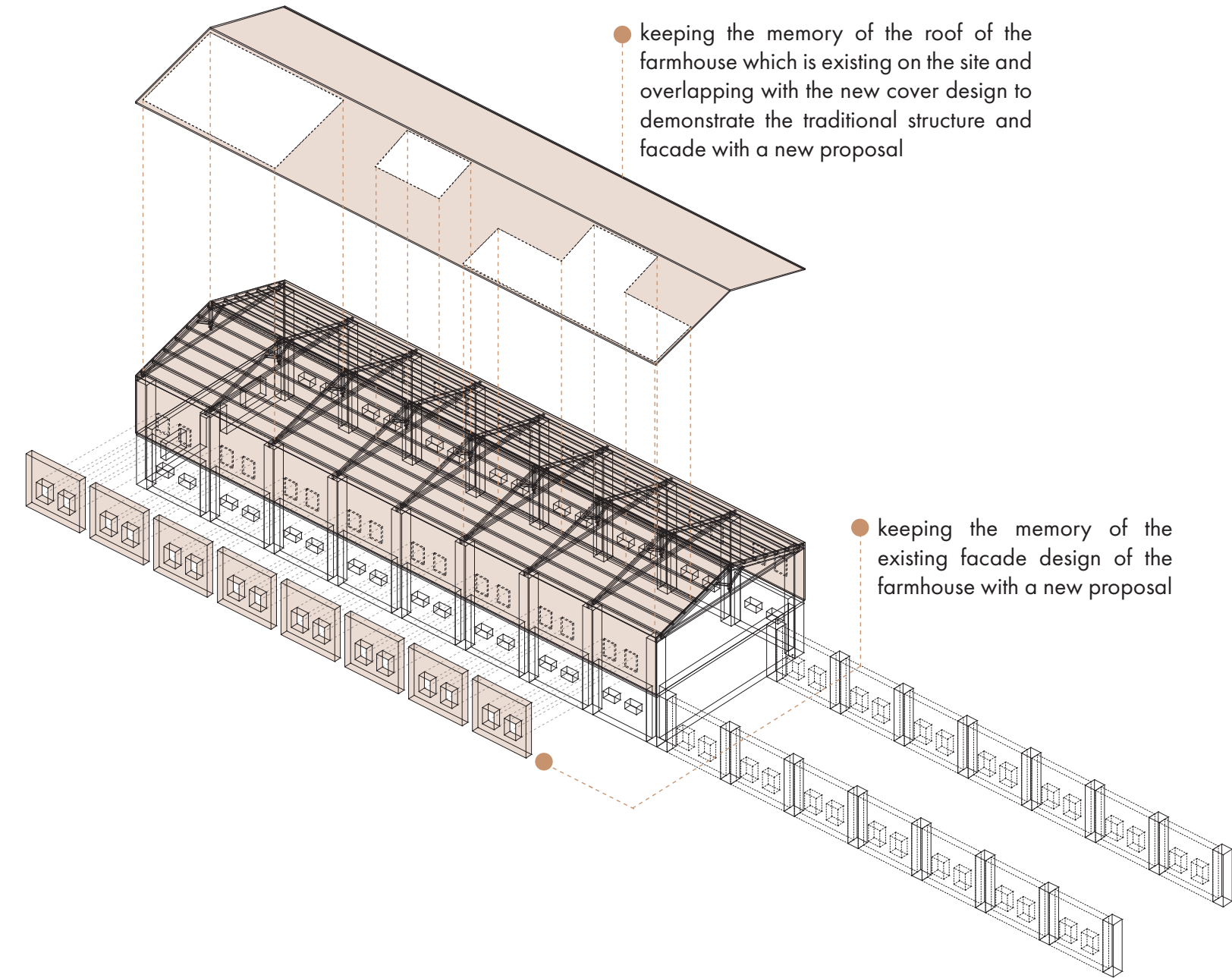
● demolishing the heavily damaged parts and benefiting from their materials by protecting the column systems

COVER

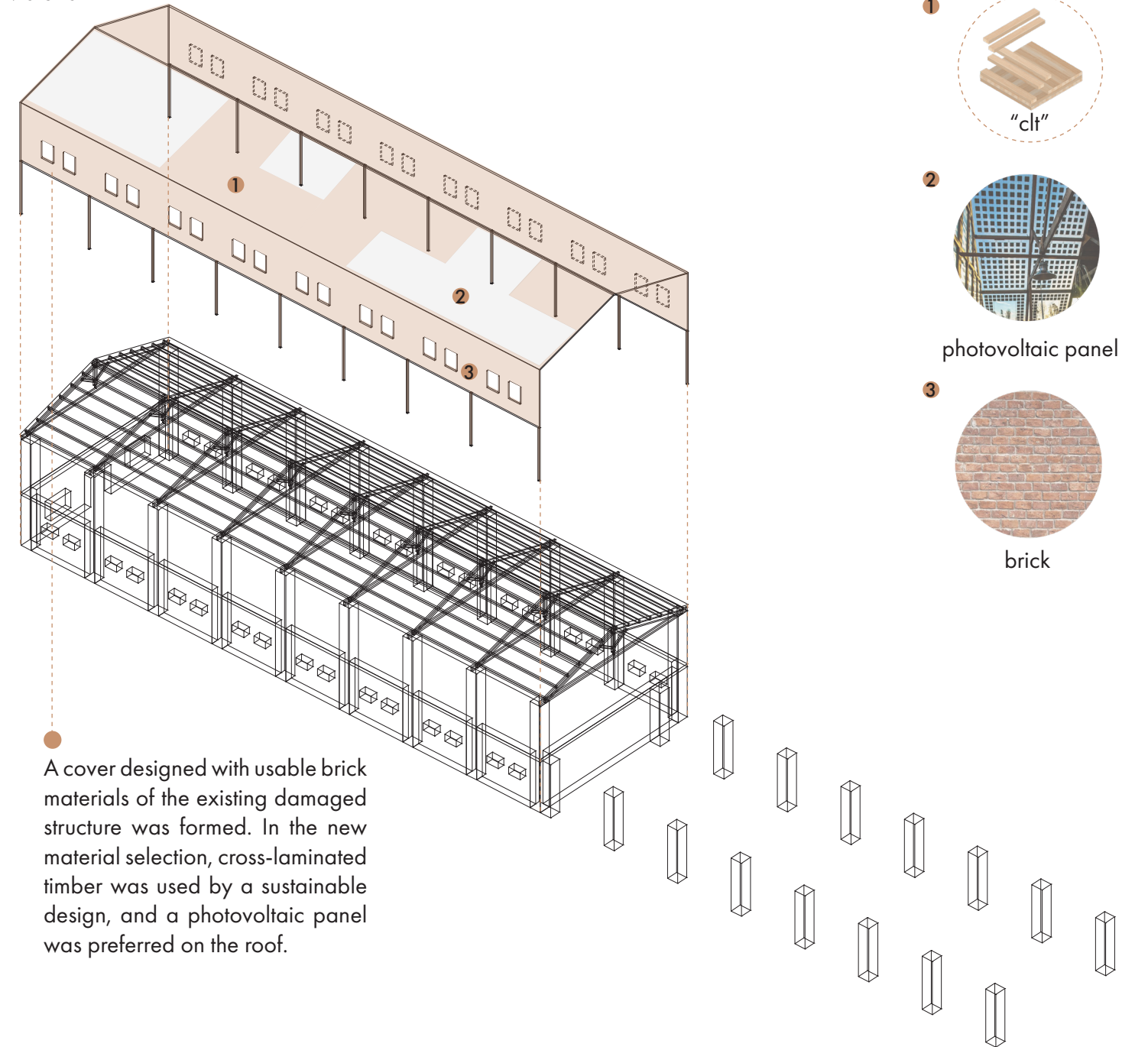


● it is aimed to show two different main building typologies in the farmhouse. One of these typologies which is the stable has an open area, while the other typology which is housing consists of completely enclosed accommodation units. Therefore, a cover is designed to demonstrate a closed facade of the housing typology design, while keeping the existing structure of the original building to demonstrate the stable typology.

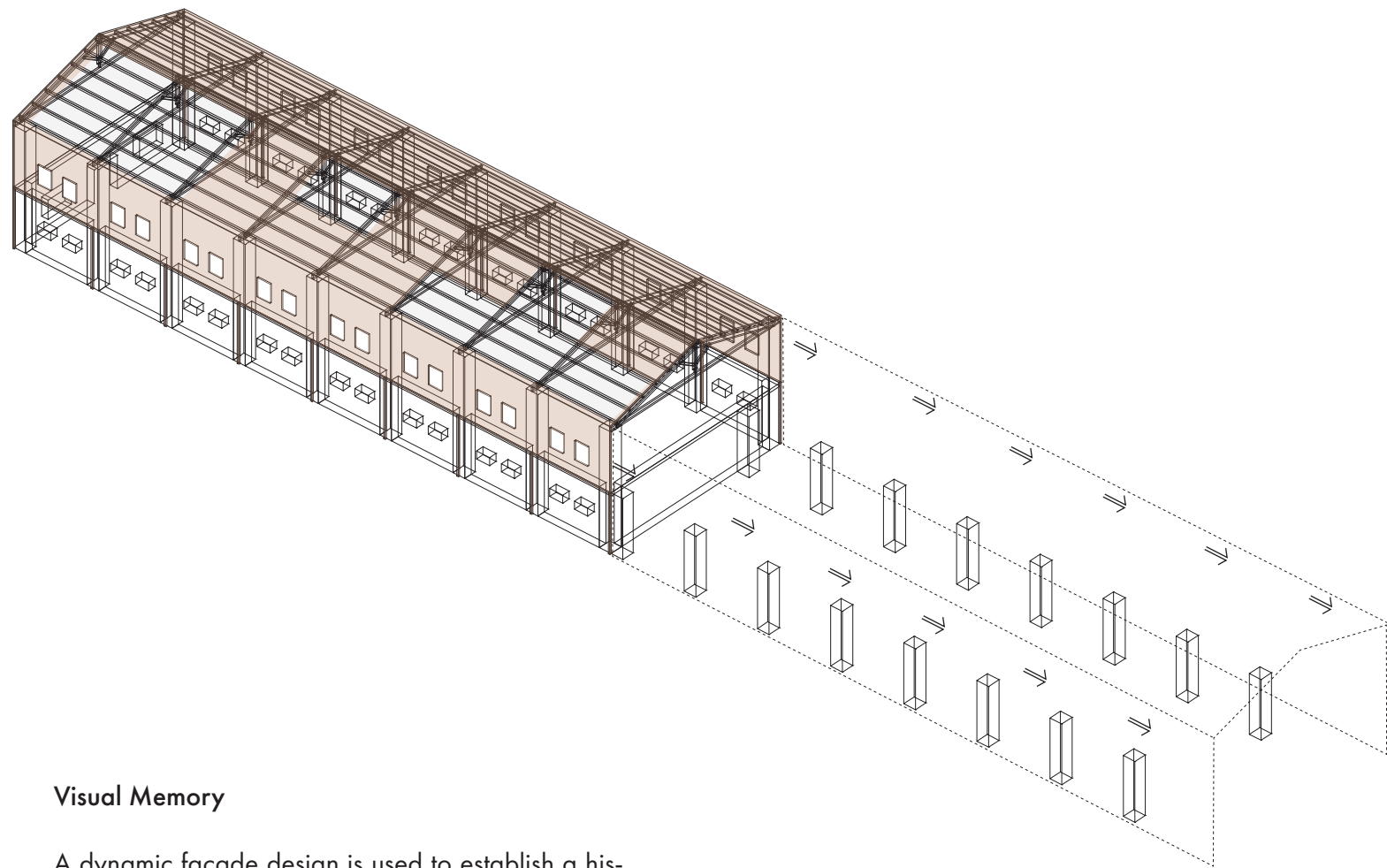
DIALOGUE  
Subtract



DIALOGUE  
Material

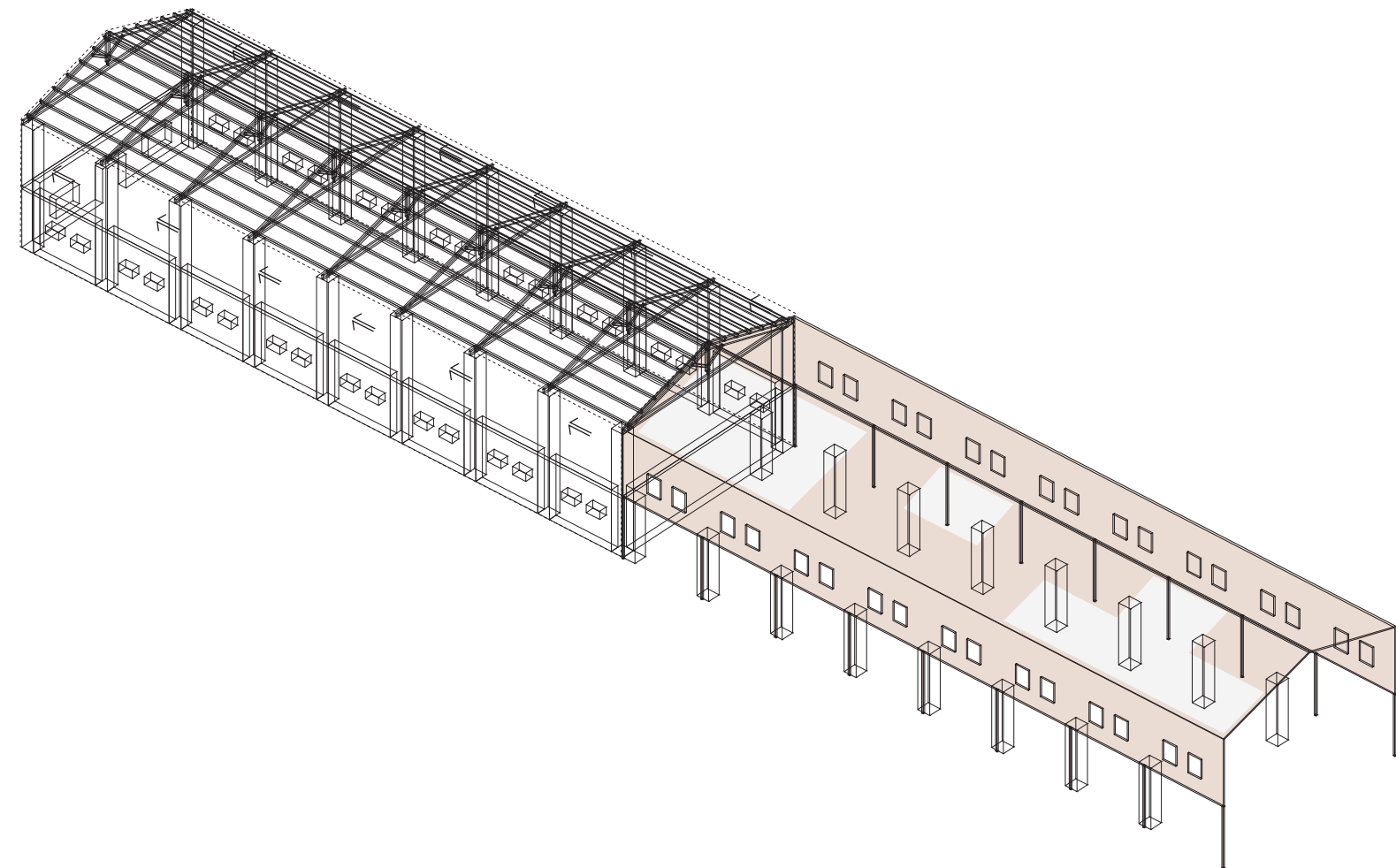


DIALOGUE  
Sliding Facade



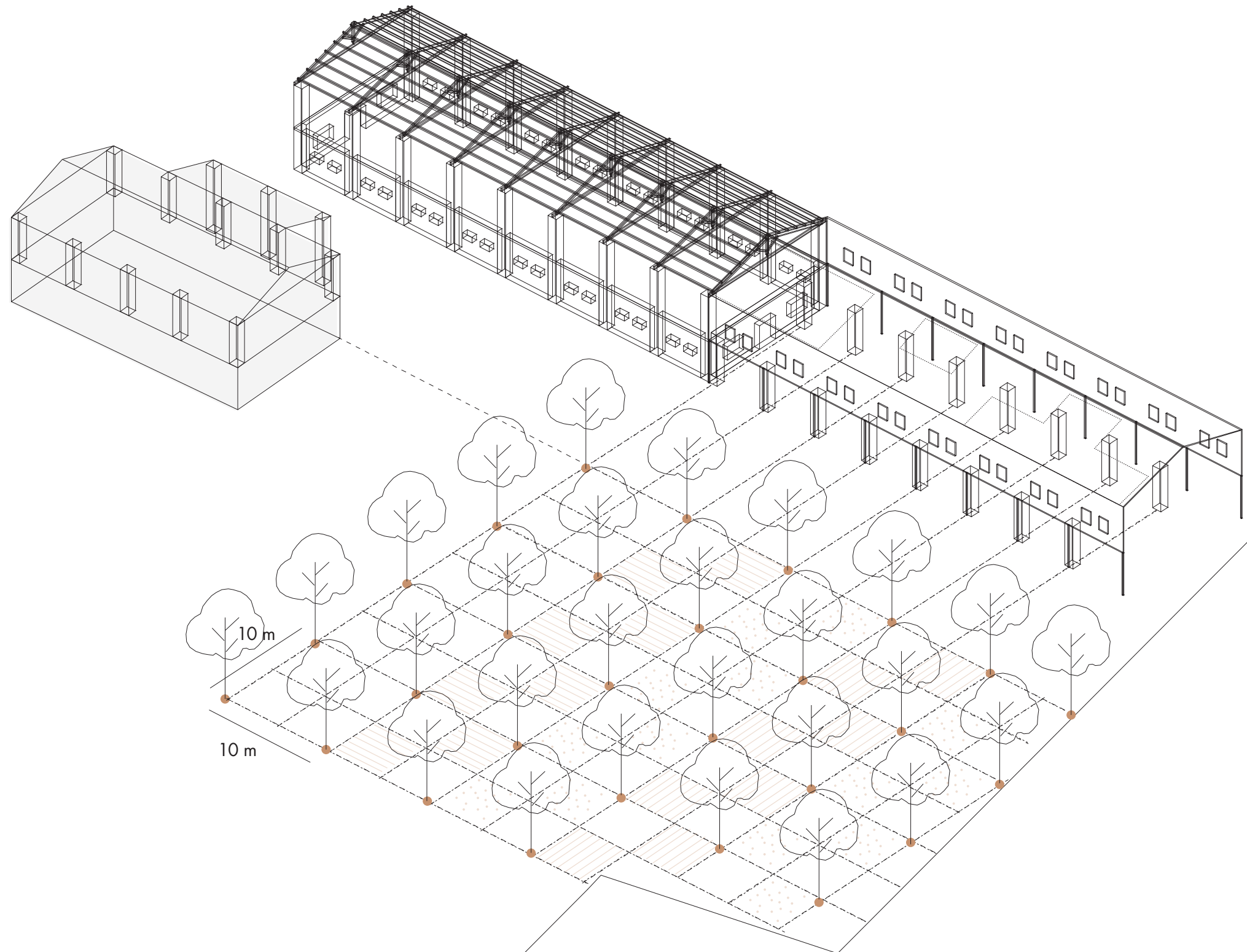
Visual Memory

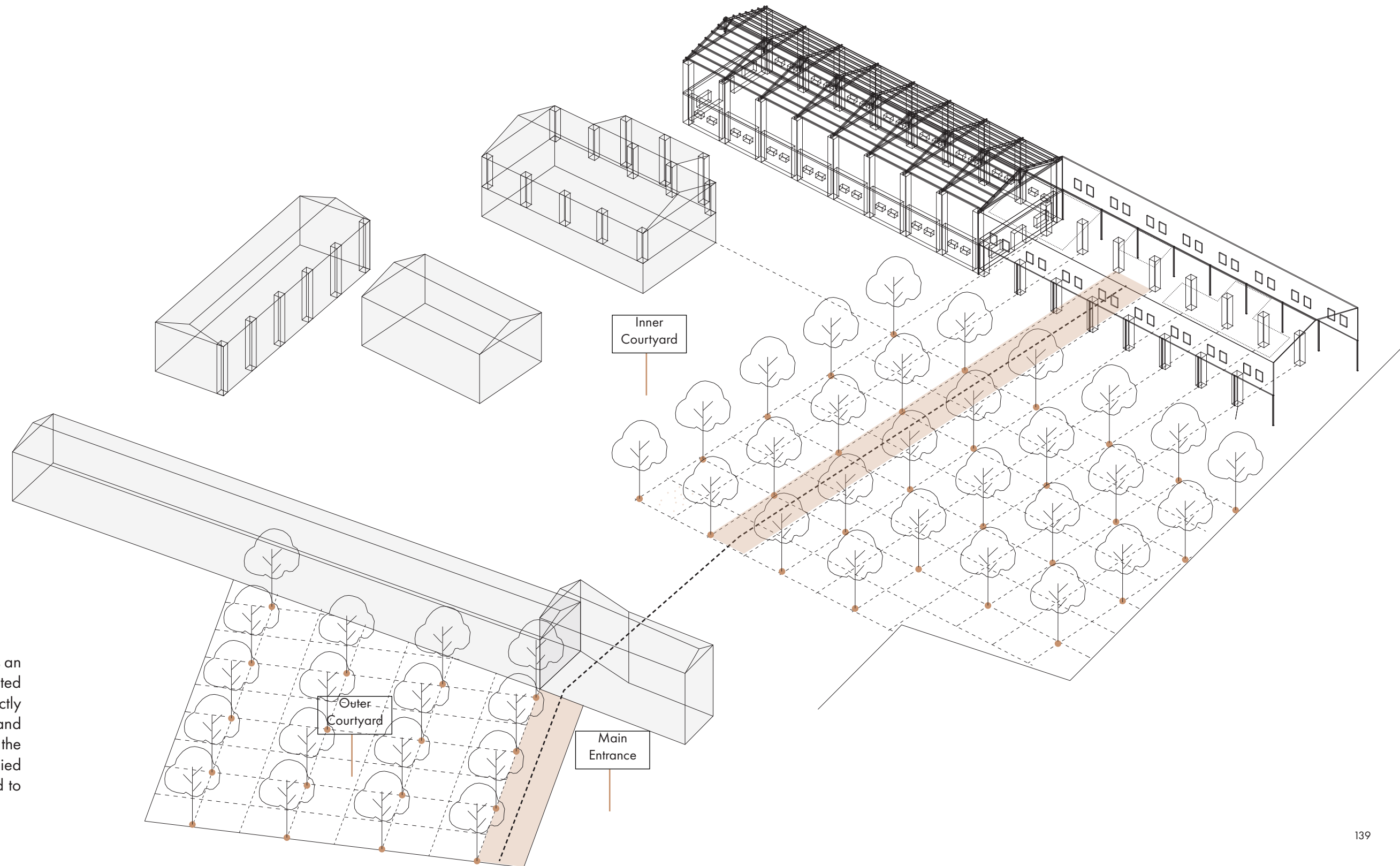
A dynamic facade design is used to establish a historical and traditional visual connection. This façade design always serves and evokes memory in terms of both the openings which are traditional farmhouse typology of the housing and stable and the materials which are traditional brick.



**Agroforestry:**

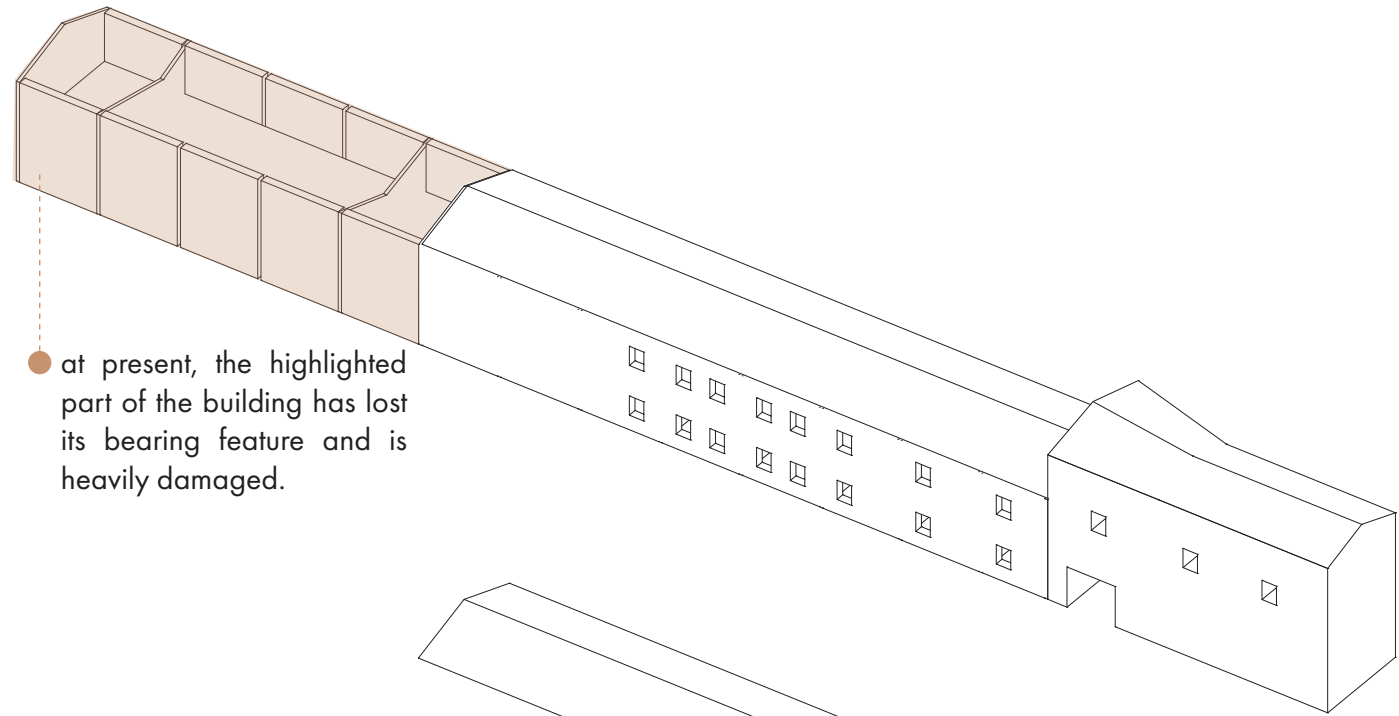
A grid system was created in the closed courtyard of the farmhouse by following the column axes of the building, of which all parts were destroyed, except for the load-bearing columns. This grid system provides suitable conditions for agroforestry. Trees are placed at the intersection points of these vertical and horizontal axes at the intersection every 10 meters. The distance of 10 meters between both trees was evaluated by planting agricultural products. Thus, in this designed landscape unit, it has been ensured that the users are involved in agricultural activities. At the same time, suitable trees which are fruit trees and softwood trees were selected for agroforestry. In this way, fruit trees and the products in the planting area will be able to be obtained, while wood can be obtained from softwood trees and used in the production of wooden products. This landscape design also benefits and becomes a part of a sustainable and self-sustaining system.



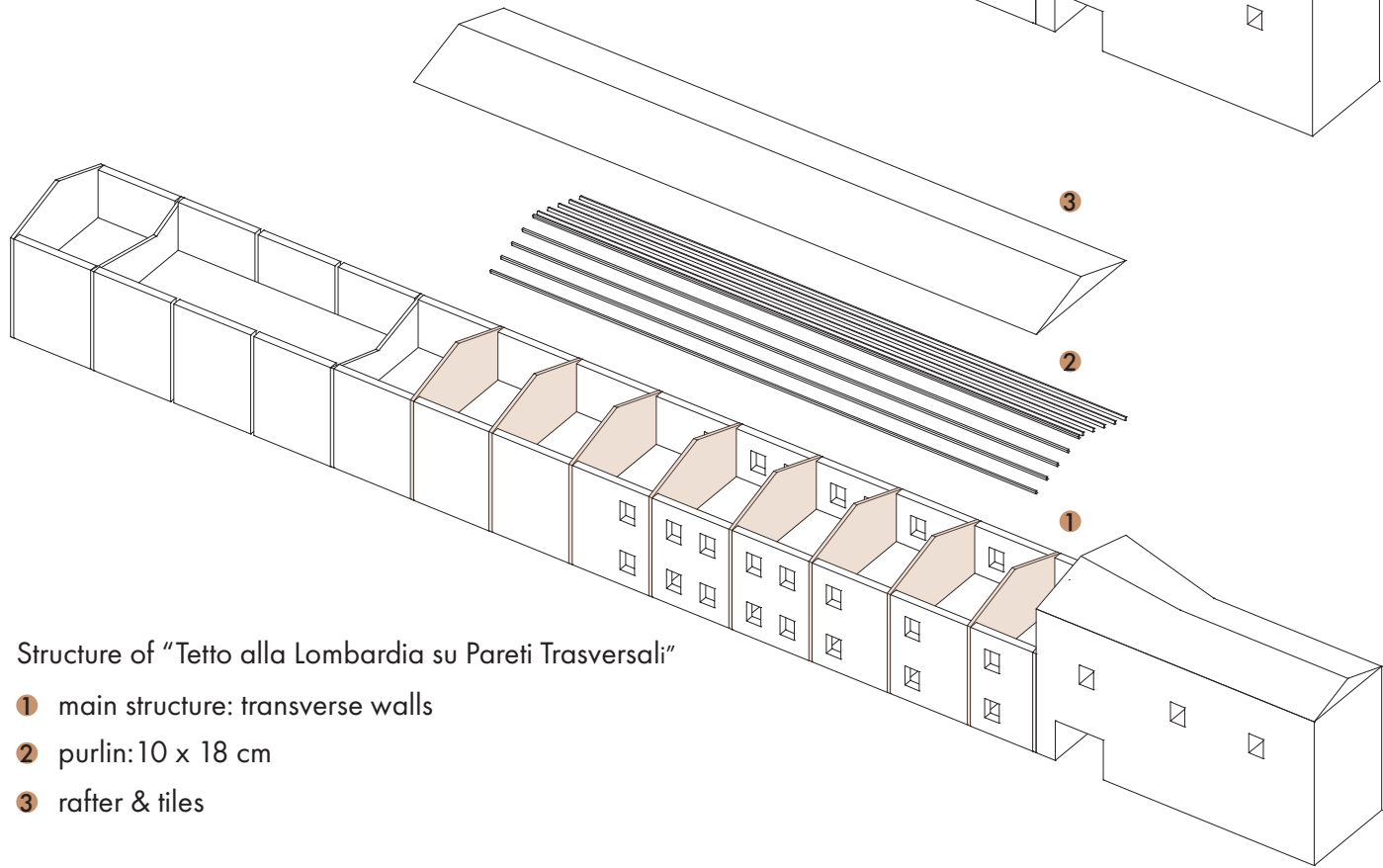


### Relationship with Memory of "Piazzetta":

When the farm served its original function, there is an open courtyard which is called a "Piazzetta" located in front of the farm entrance. This courtyard is directly related to the church, castle, and farm entrance and hosted important events in history. For this reason, the idea of grid axis and afforestation has been applied here as well to bring this courtyard revitalize and to be in contact with the proposed public park.

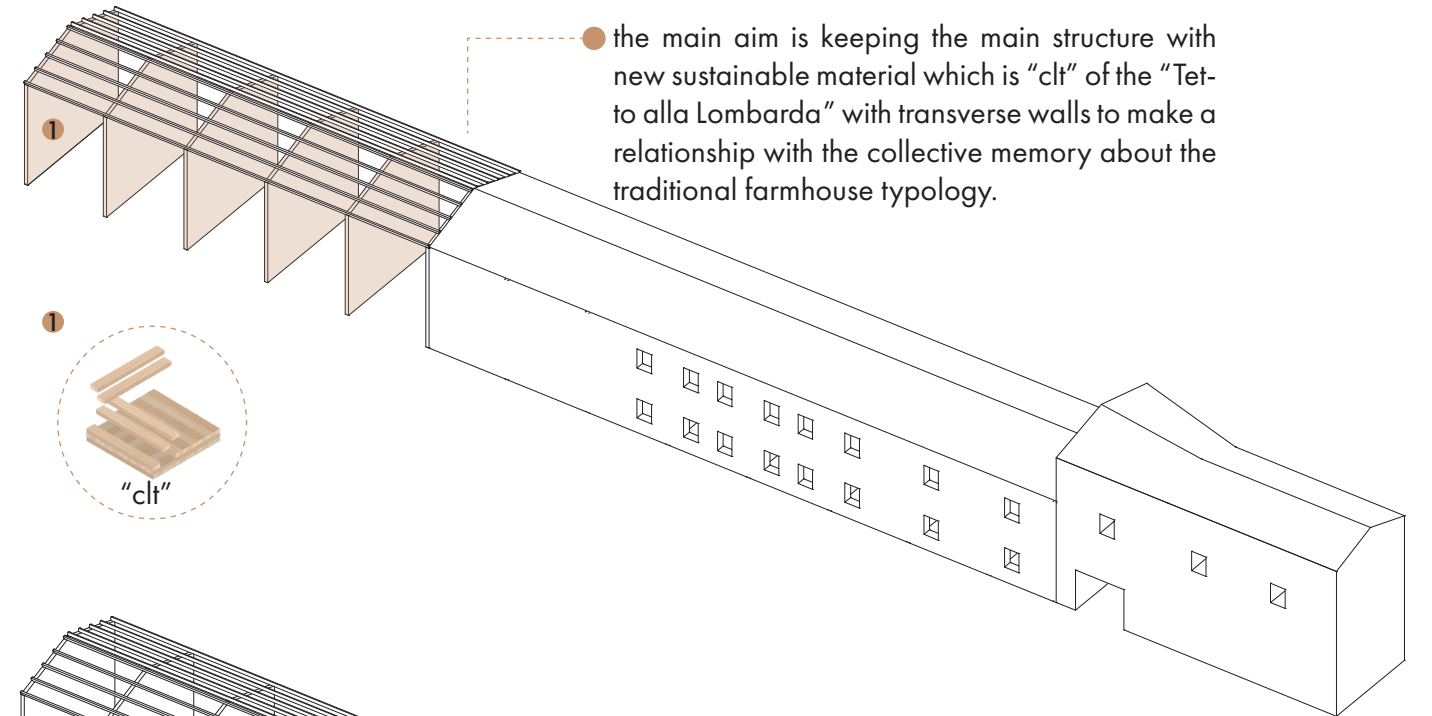


● at present, the highlighted part of the building has lost its bearing feature and is heavily damaged.

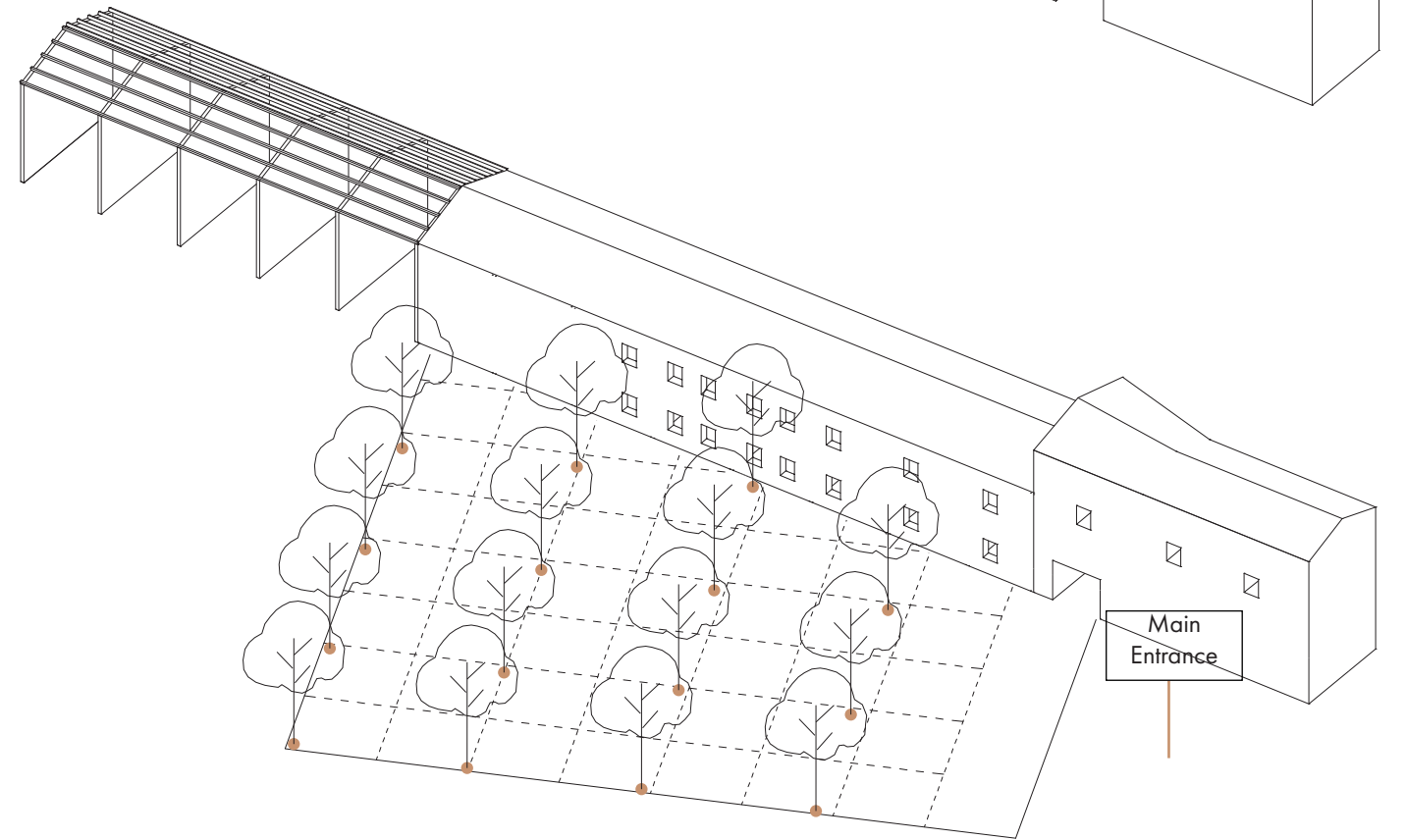


Structure of "Tetto alla Lombardia su Pareti Trasversali"

- ❶ main structure: transverse walls
- ❷ purlin: 10 x 18 cm
- ❸ rafter & tiles



● the main aim is keeping the main structure with new sustainable material which is "clt" of the "Tetto alla Lombardia" with transverse walls to make a relationship with the collective memory about the traditional farmhouse typology.





6

6

5

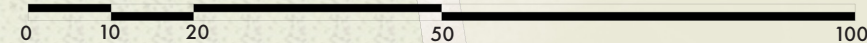
5

4

2

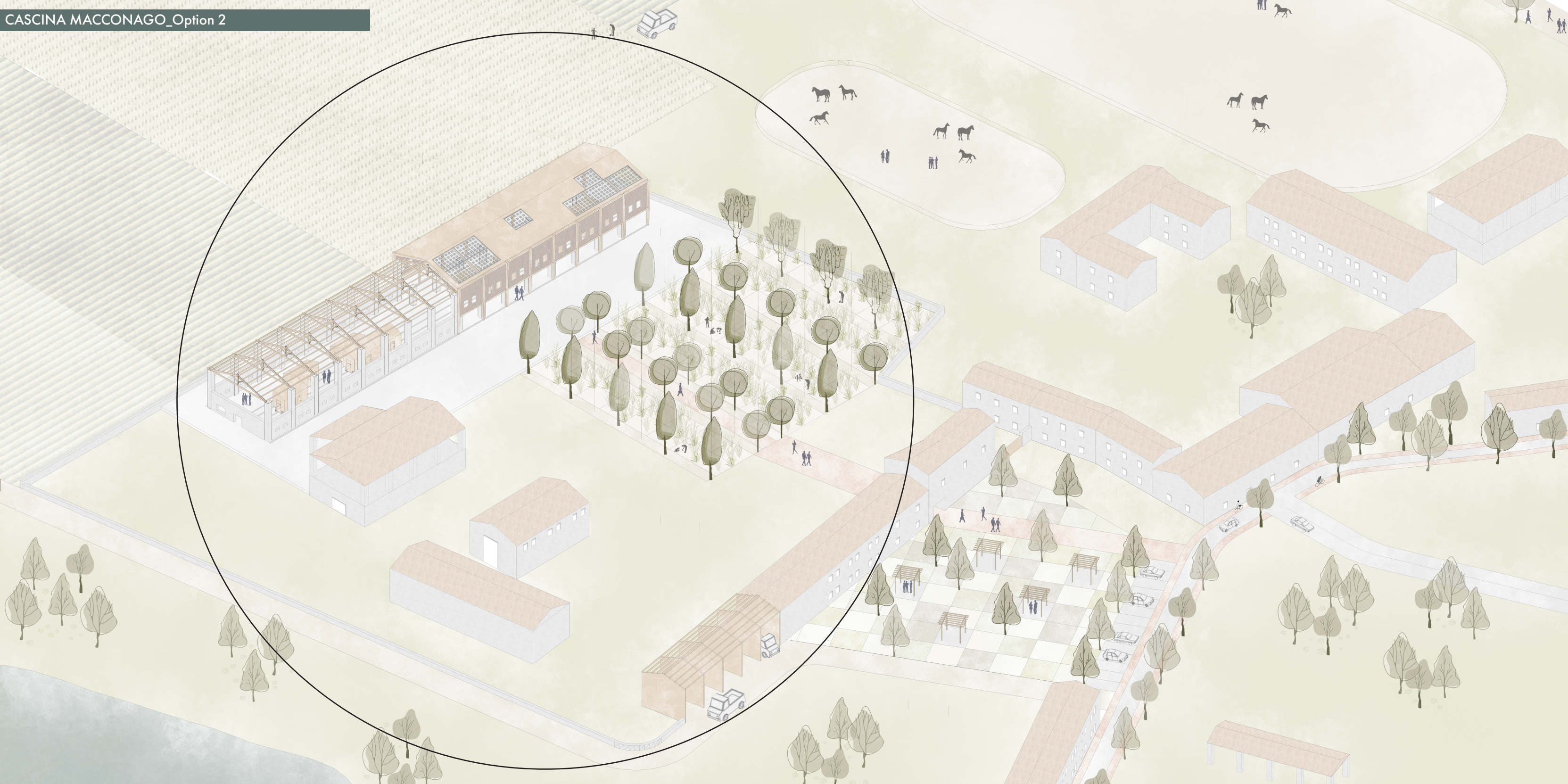
7

- 1 Building 1
- 2 Building 2
- 3 Agroforestry
- 4 Piazzetta
- 5 Ecologic Corridor
- 6 Public Park
- 7 Lago Verde



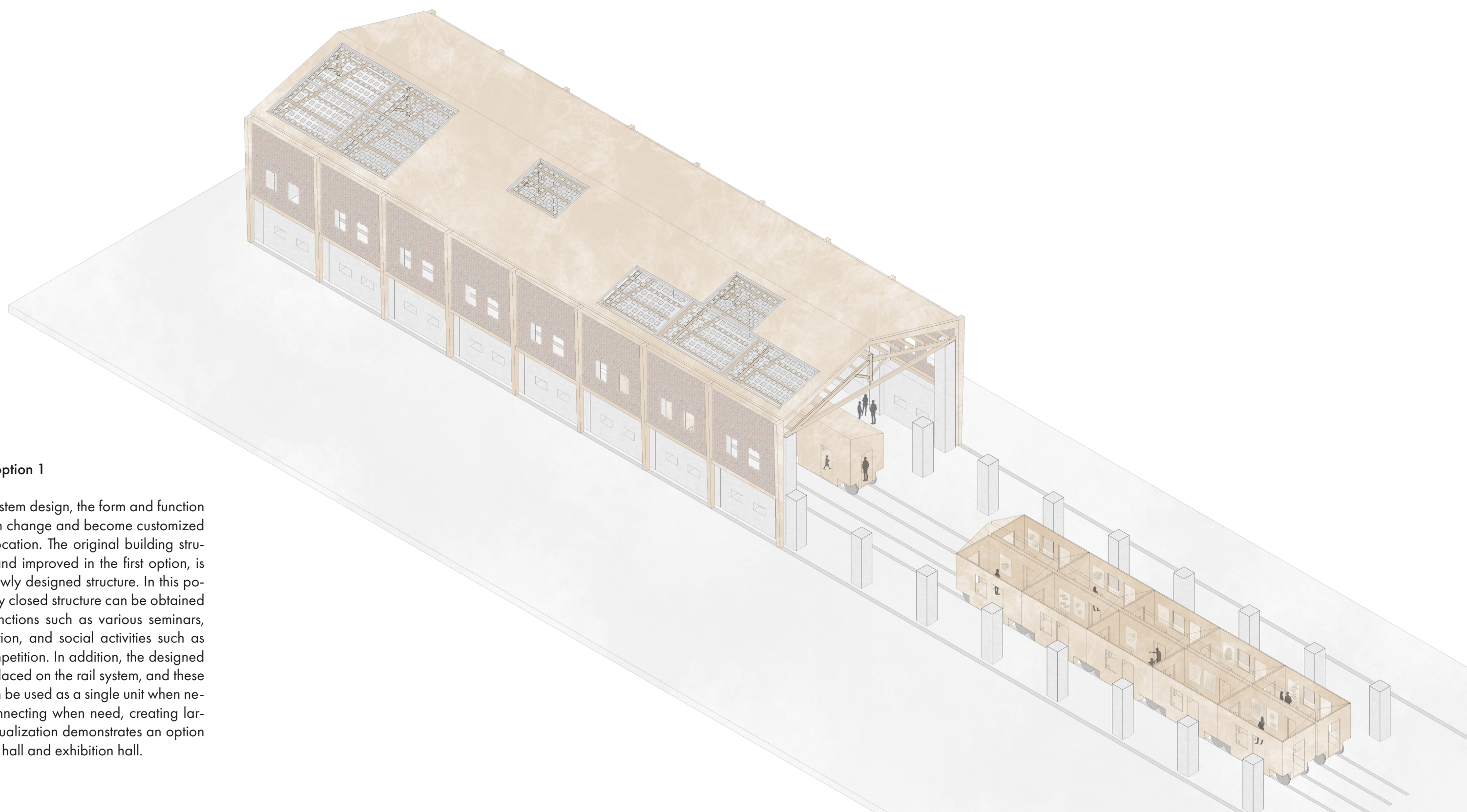


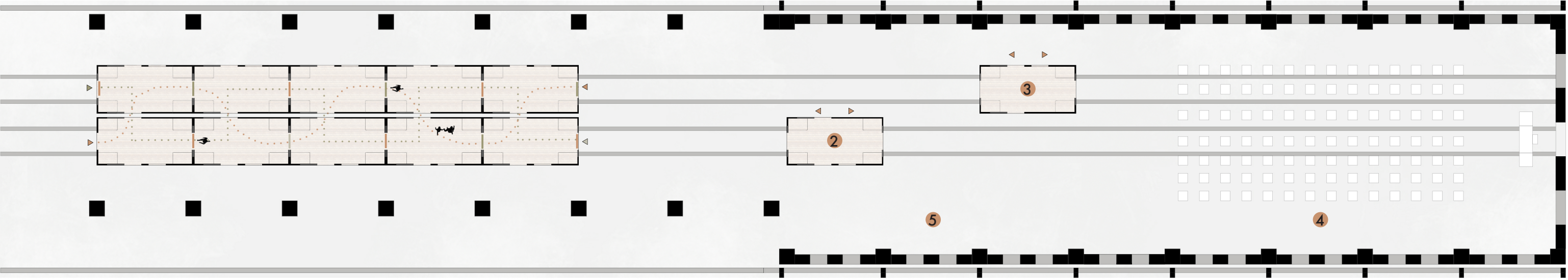
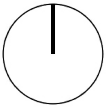




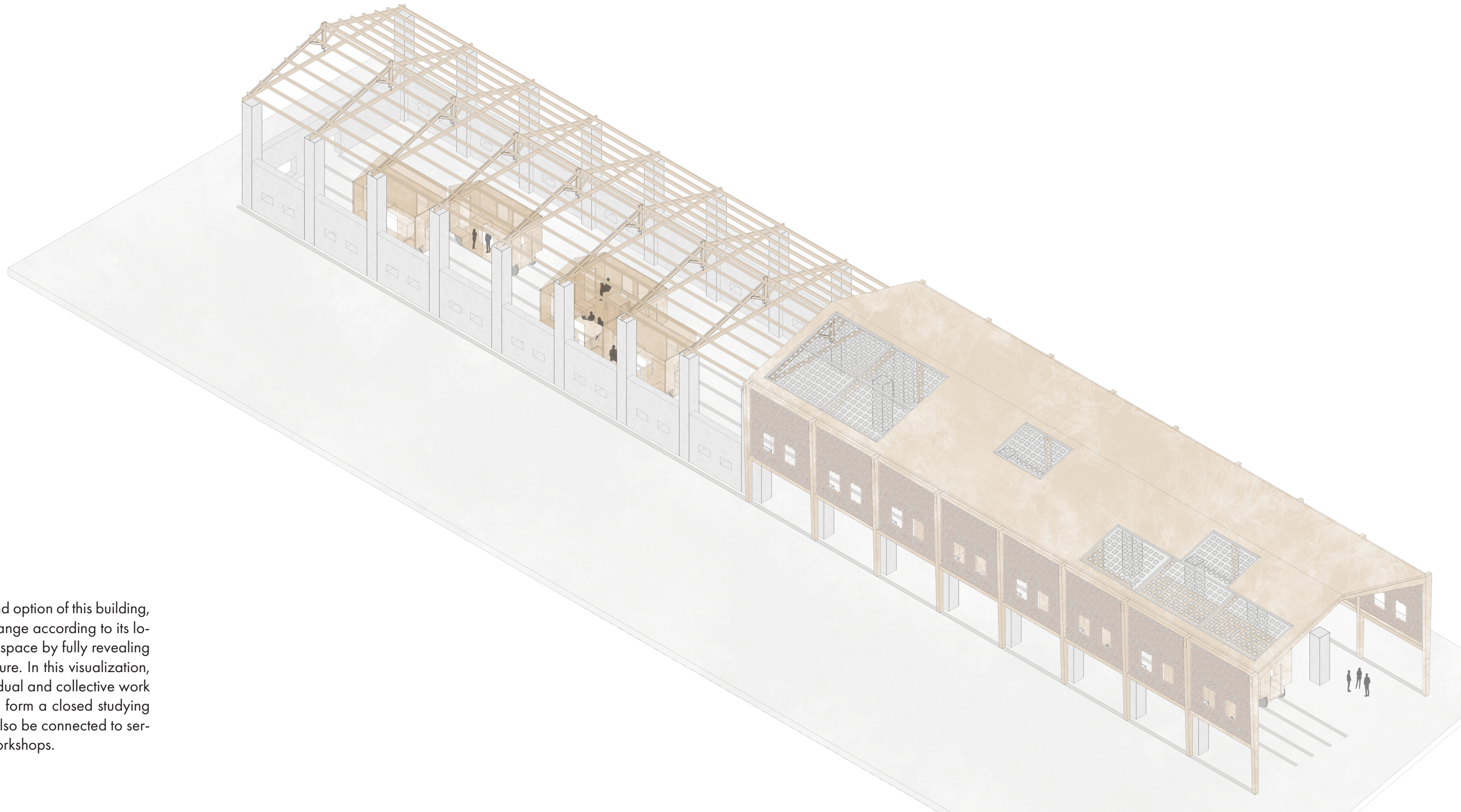
### Sliding Building: option 1

With the sliding system design, the form and function of the building can change and become customized according to its location. The original building structure, preserved and improved in the first option, is covered by the newly designed structure. In this position, a completely closed structure can be obtained and can serve functions such as various seminars, invitations, education, and social activities such as concerts, and competition. In addition, the designed wagon units are placed on the rail system, and these designed units can be used as a single unit when necessary, while connecting when need, creating large spaces. The visualization demonstrates an option used as a seminar hall and exhibition hall.



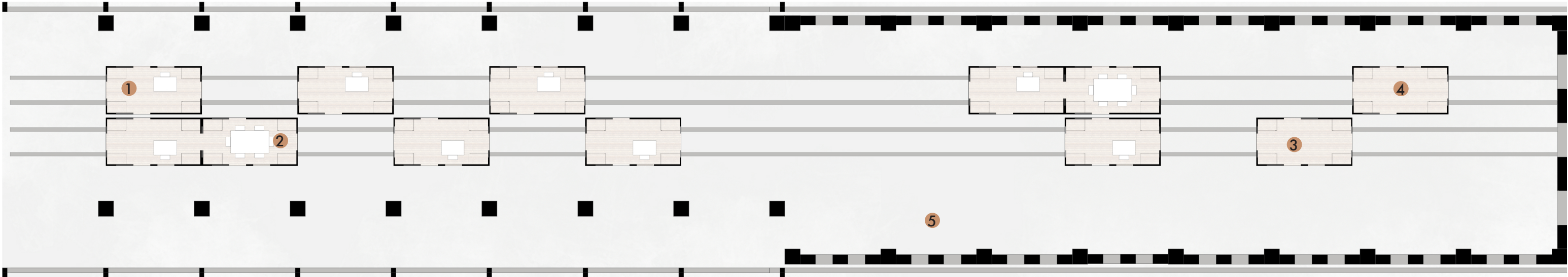
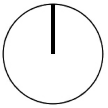


- 1 Temporary Exhibitin Area
- 2 Coffee Spot
- 3 Snack Spot
- 4 Temporary Event Hall
- 5 Foyer



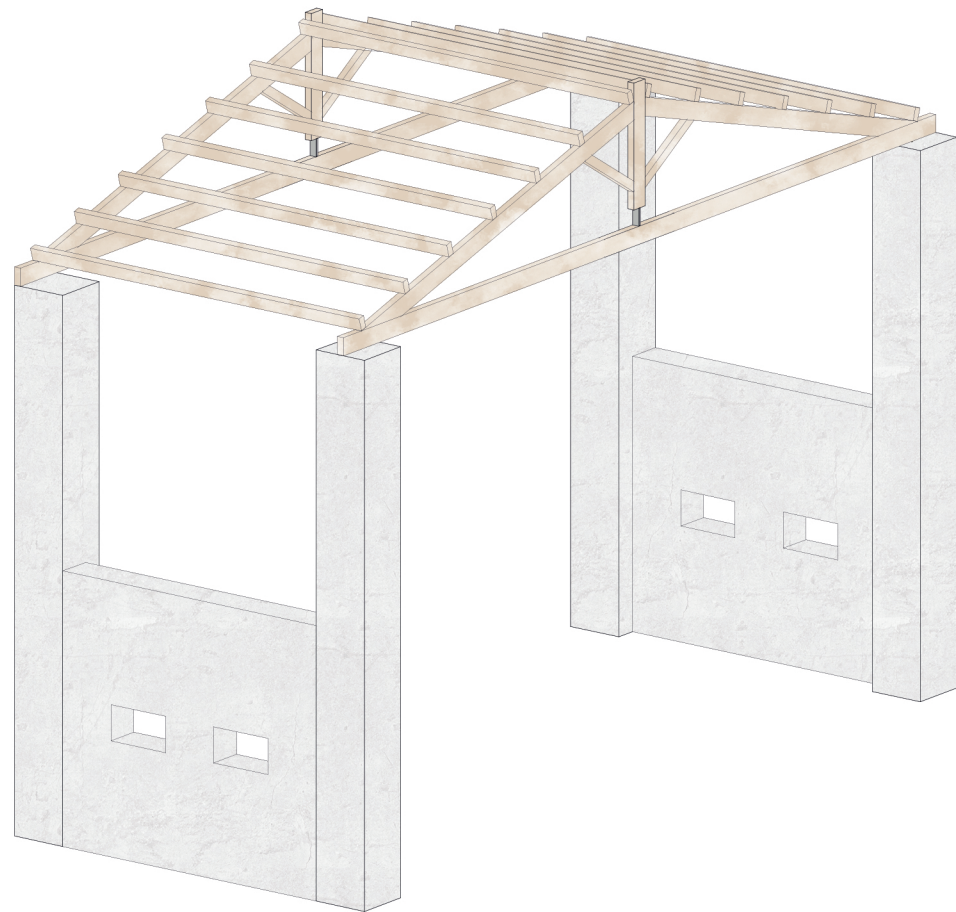
### Sliding Building: option 2

The visualization in the second option of this building, whose form and function change according to its location, creates a semi-open space by fully revealing the preserved original structure. In this visualization, the wagon units serve individual and collective work areas. While these units can form a closed studying unit on their own, they can also be connected to serve co-working areas and workshops.

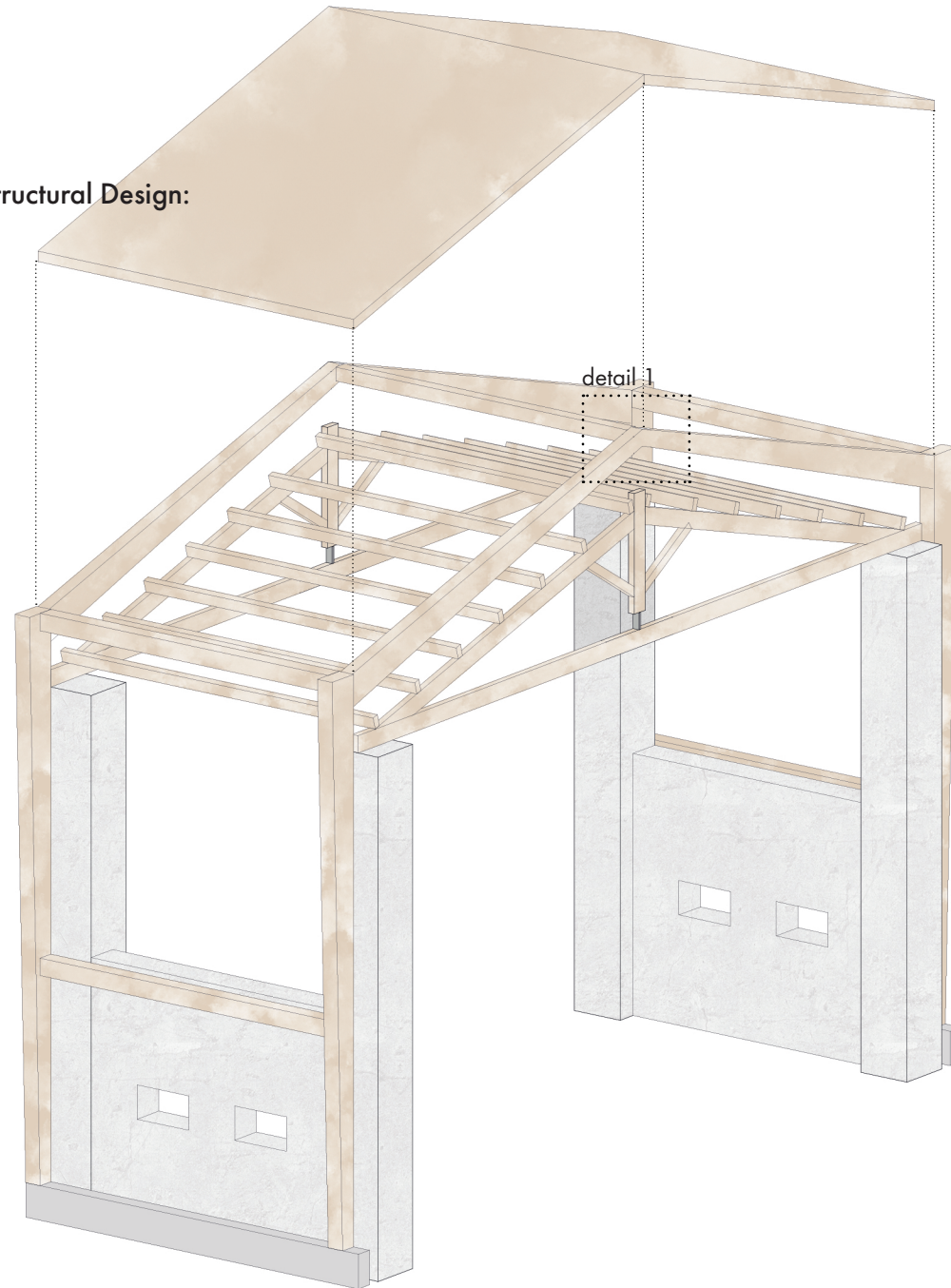


- ① Study Room
- ② Co-work
- ③ Coffee Spot
- ④ Snack Spot
- ⑤ Foyer

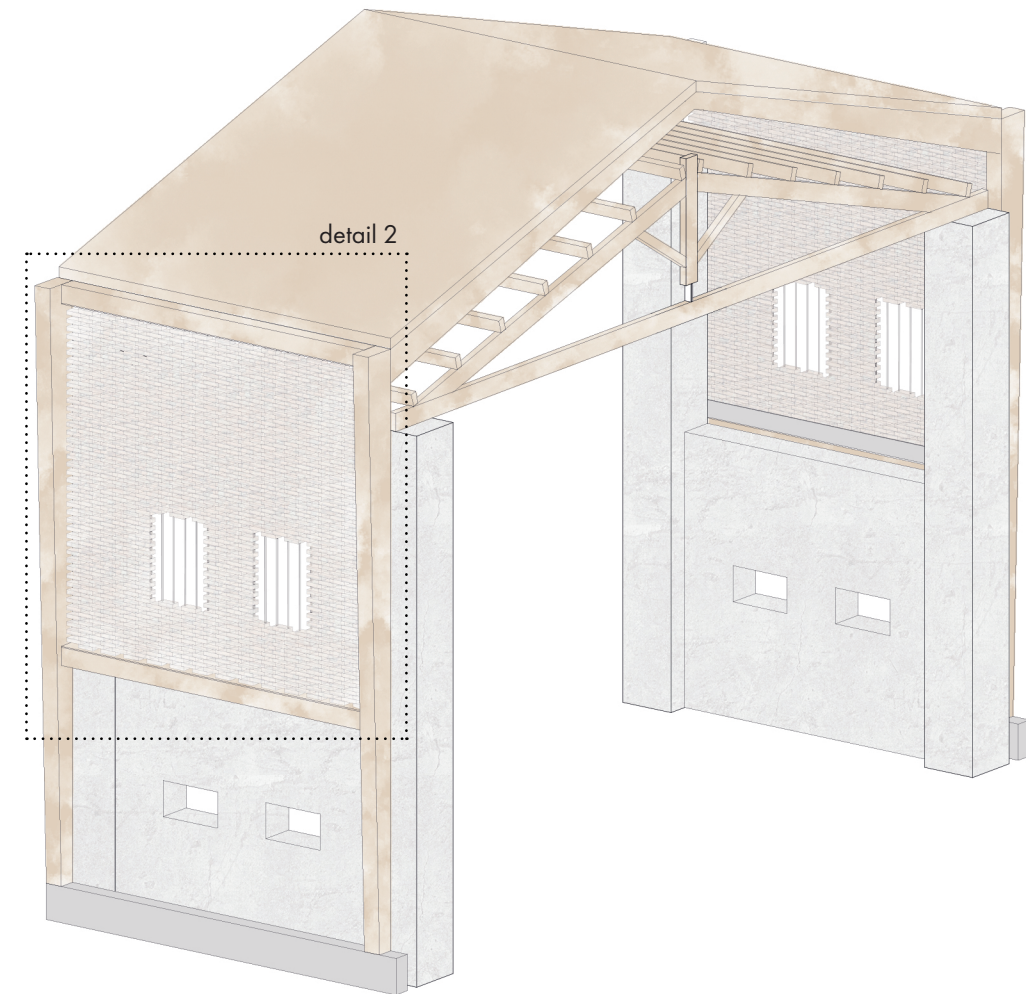
1 Protecting of the "Old" structure:  
"Tetto Alla Lombarda with Capriate"



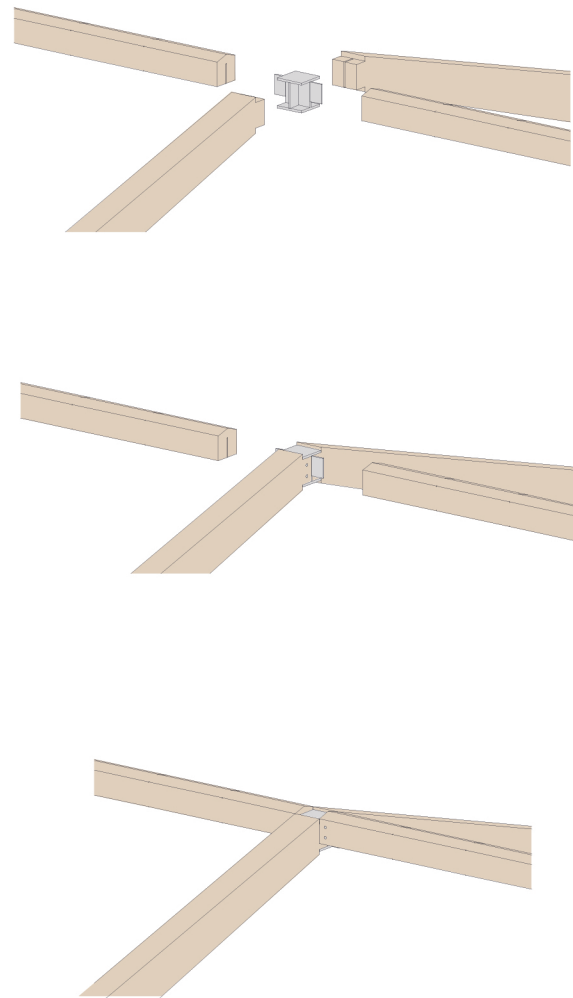
2 New Structural Design:  
"CLT"



3 New Facade Design:  
"Existing Brick Material of the Building"



● Detail 1: Joint of the new structural design with "CLT"

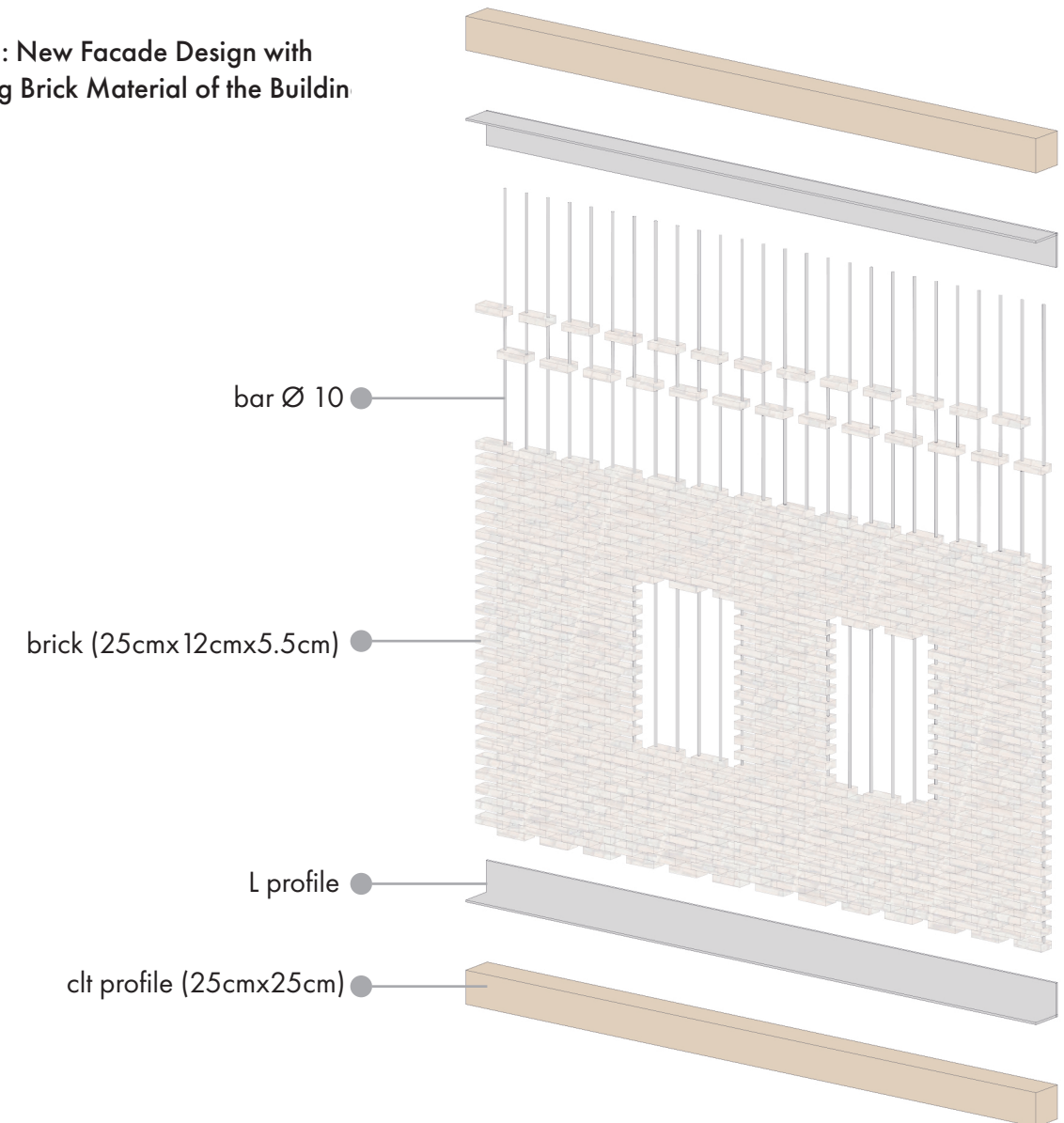


**Sustainable and Self-Sufficient Building Design:**

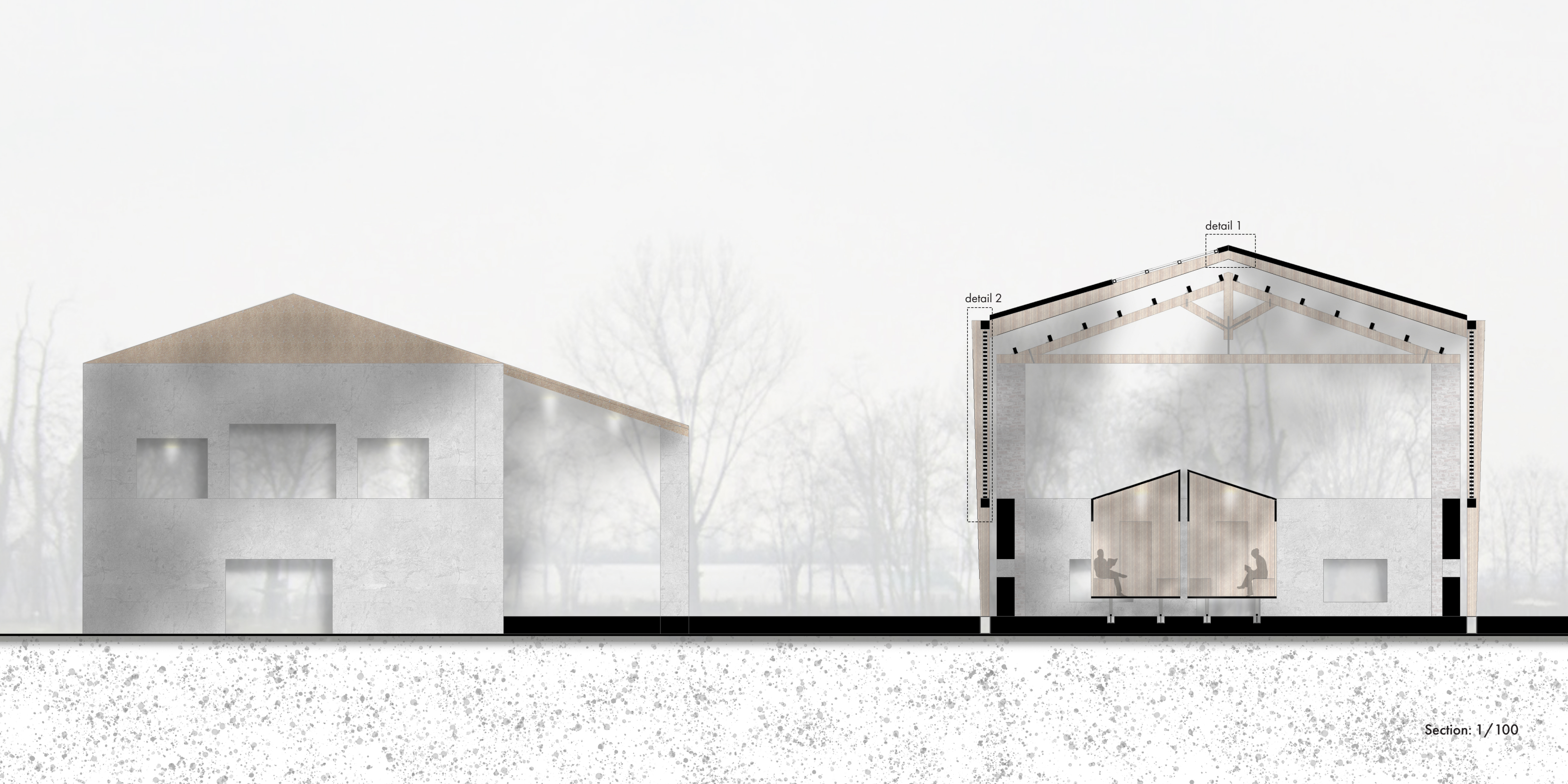
The project consists of a design that seeks to overcome environmental challenges through innovative, sustainable, affordable construction and aims to cause minimal damage to the environment. From this point, the existing materials in the area were evaluated as much as possible, and sustainable materials and resources were preferred. The new structure is made by "CLT" which is cross-laminated timber. This structure has been disassembled and combined with the ability to be moved to another suitable context by using the portable feature of the material when necessary. Thus, while the materials used for the project are produced with an architectural approach that is appropriate for the context and serves the memory, materials that will not pose a threat to the environment can be reused according to the needs over the years. The façade part of the design was designed by making use of the usable bricks of the destroyed building in the area.

As a result, an environmentally friendly building design has been created in terms of CO2 emissions, which is the biggest problem in the global world.

● Detail 2: New Facade Design with "Existing Brick Material of the Building"







detail 1

detail 2

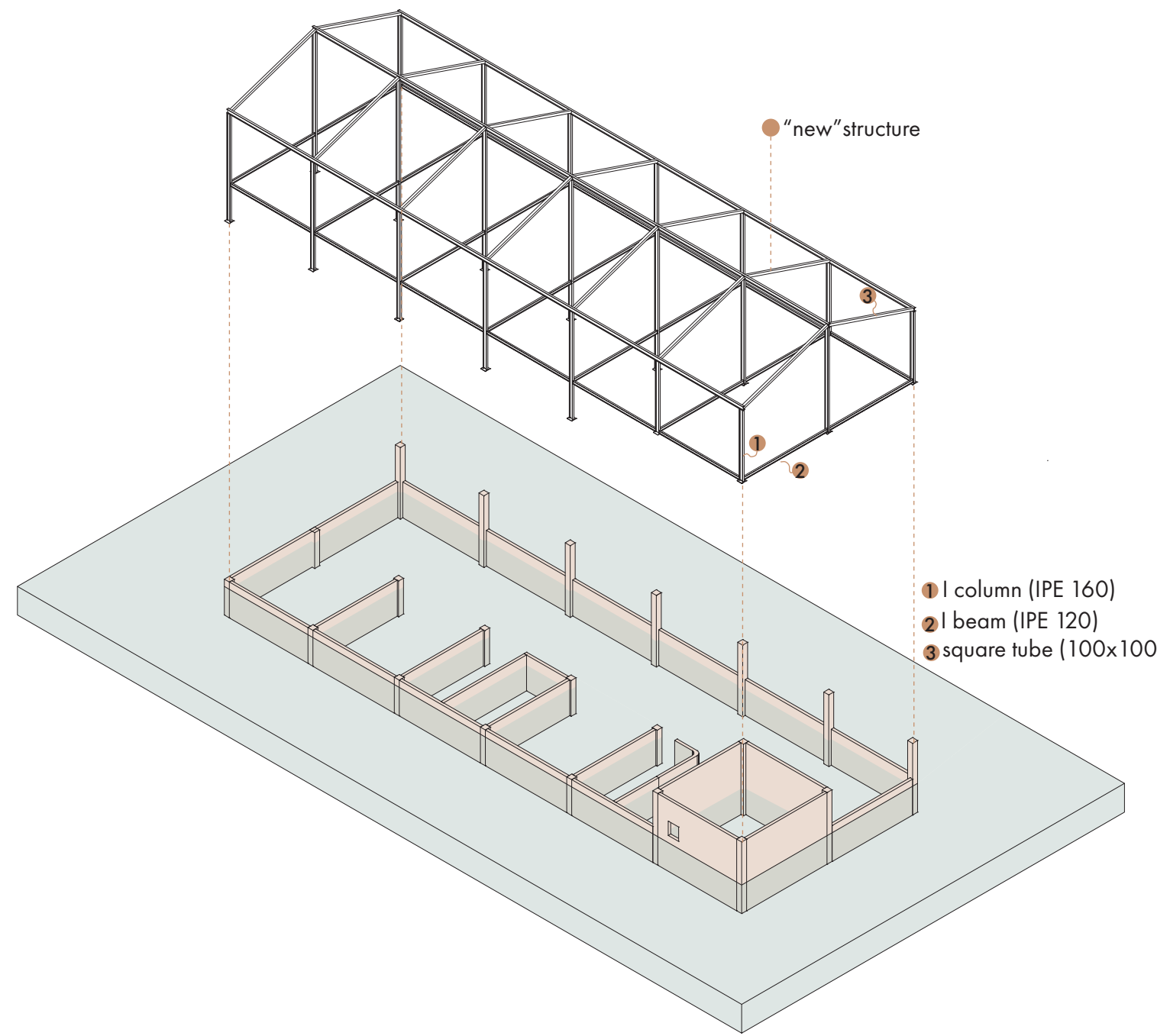
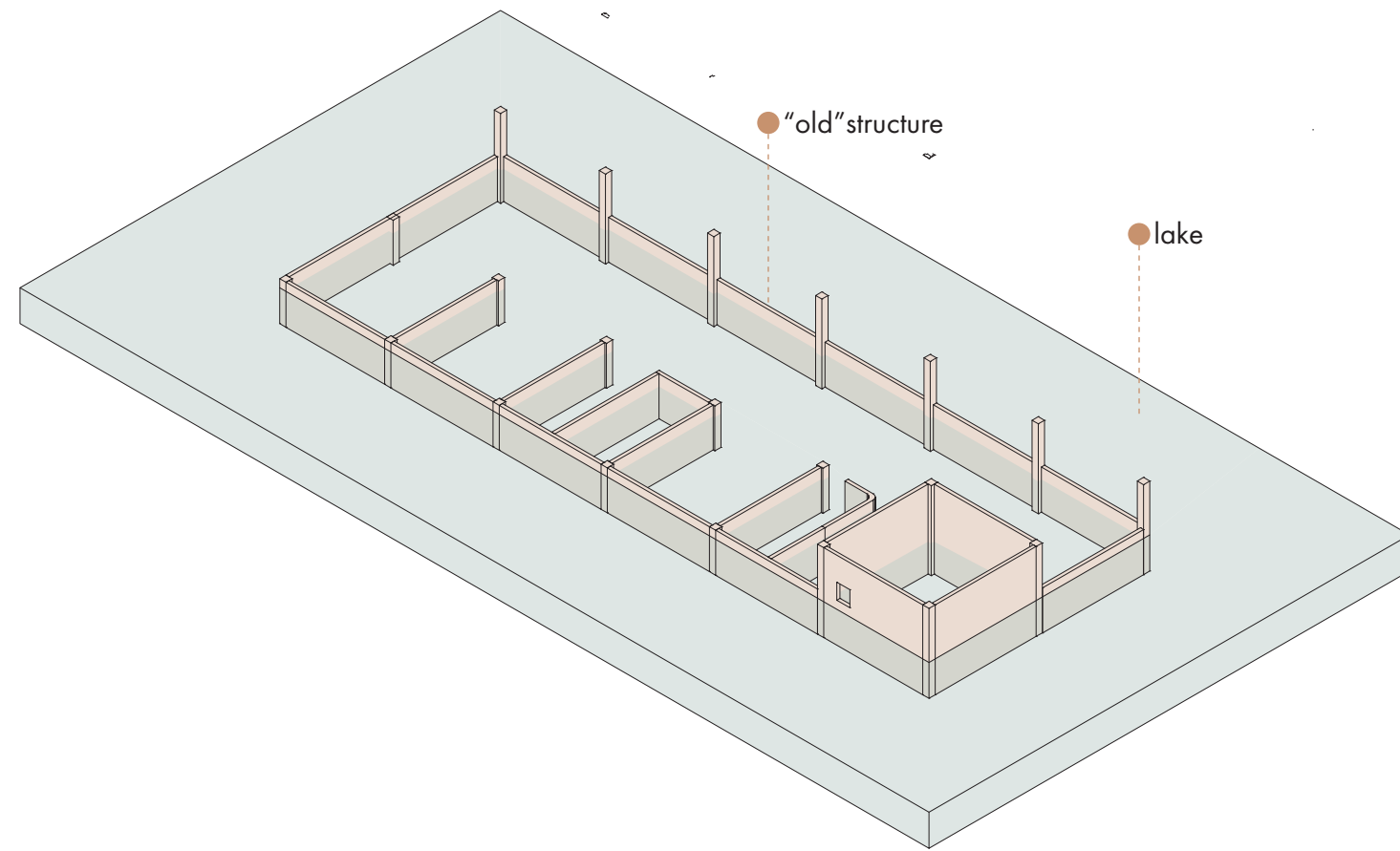


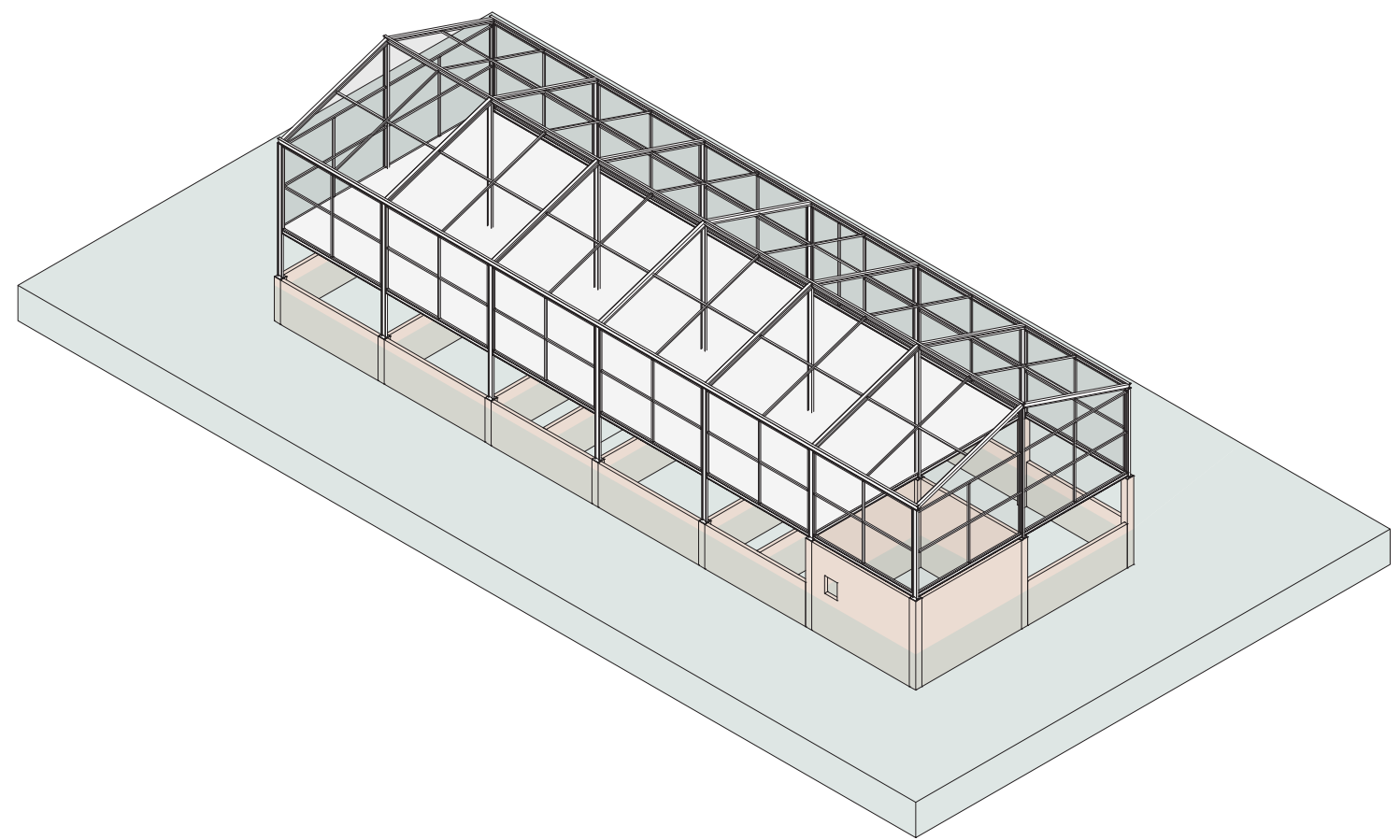
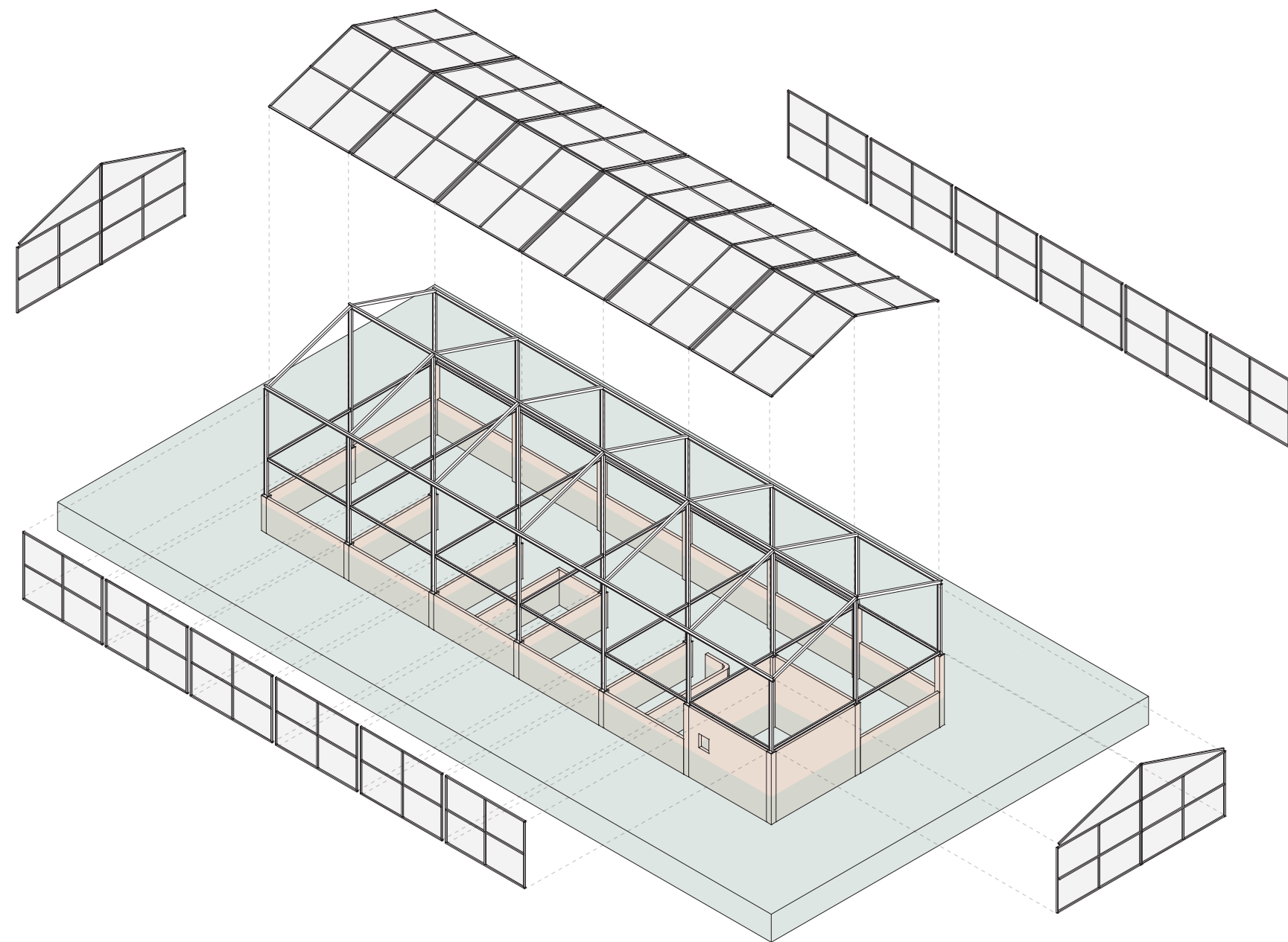
Elevation Option 1  
Scale: 1/200

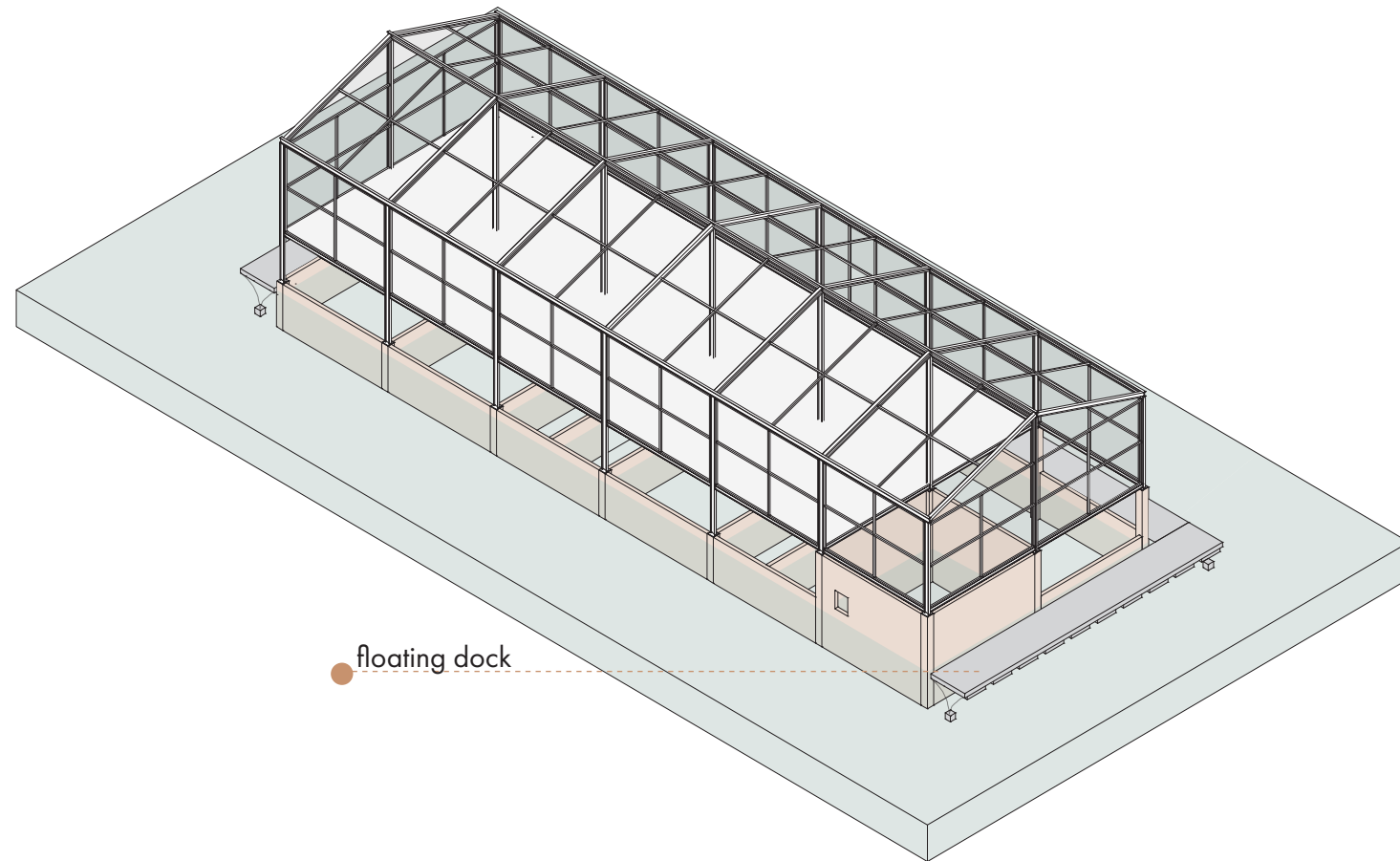


Elevation Option 2  
Scale: 1/200

“ Lago Verde: Building on the Lake ”

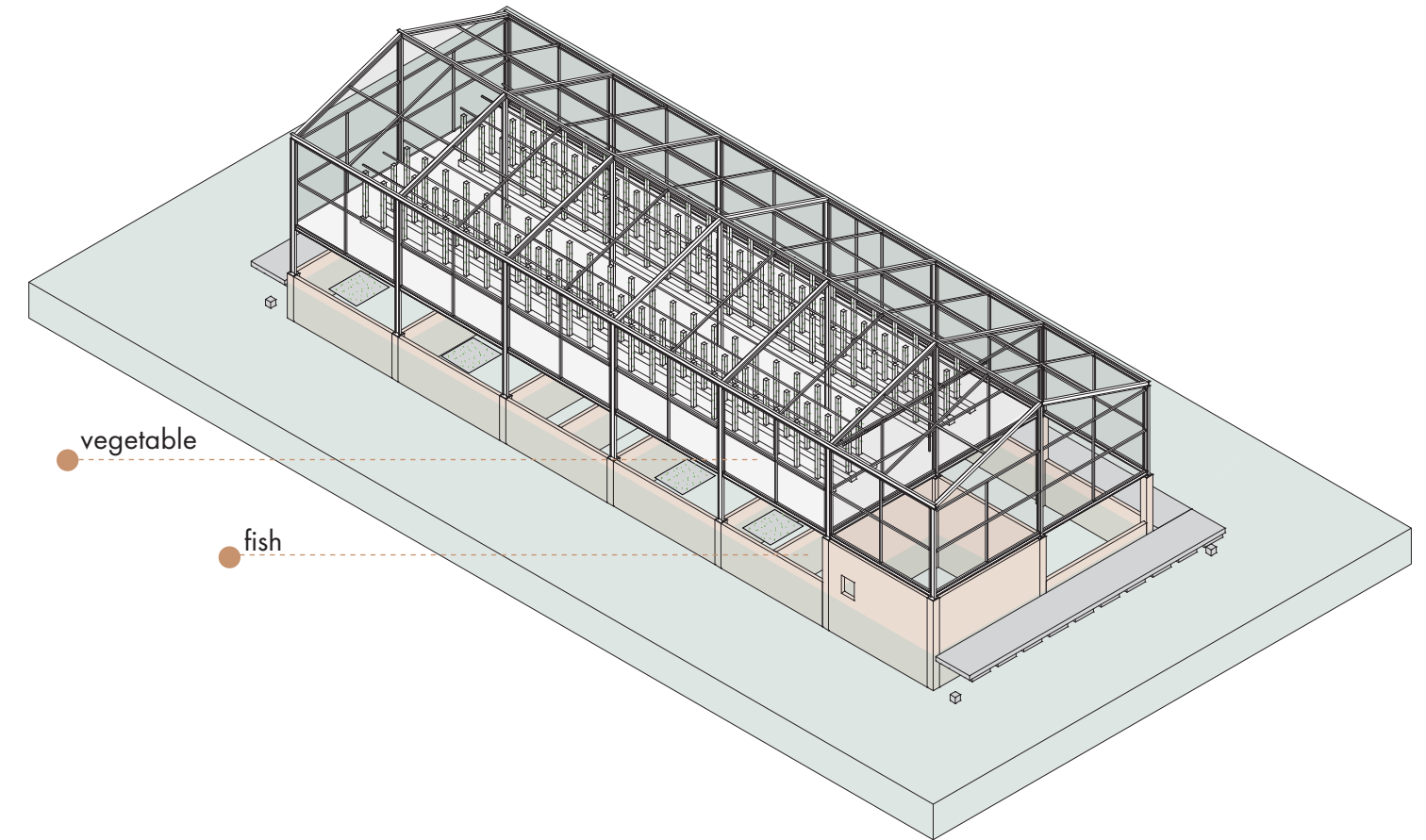






### Water Movement: floating dock

A floating modular walking platform was used to adapt to the periodic rise and fall of the water. Thus, it has been made possible to reach the greenhouse in every climate and amount of water.



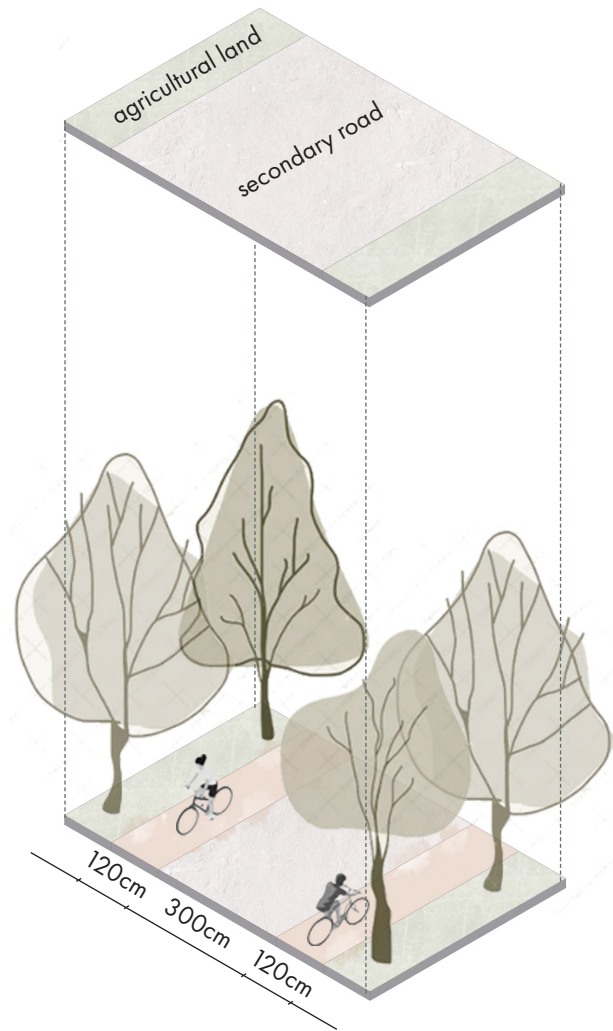


**Building on the Lake:**

The lake which is Lago Verde has transformed over time, its water level has increased and its borders have expanded. There used to be a masonry brick building on the lake border, but after the transformation of the lake, some of the building was flooded and a part of the building was destroyed. The existing part of the building was protected and a new addition was designed on top of the old structure. The aquaponic system, which is a new and technological function and is intertwined with agriculture, has been installed in the building. Vegetables are grown with the greenhouse feature in the newly added structure by making use of fish in the underwater part of the building. This new design aims to establish an experimental unit to create a food and water source for a self-sufficient community and this hybrid system was created by establishing a link between the new and the old and utilizing the feature of the sport of fishing.



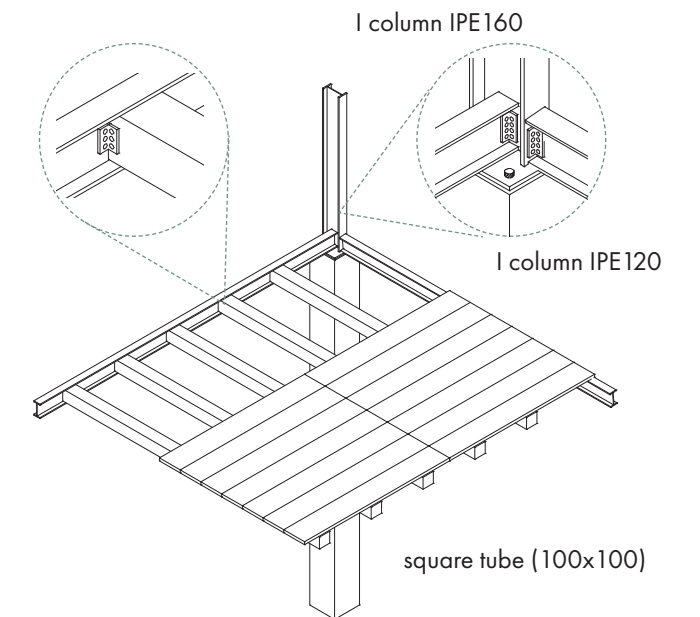
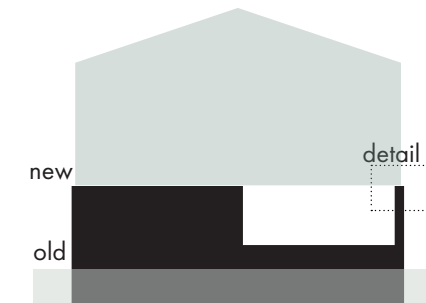
## ● Ecologic Corridor



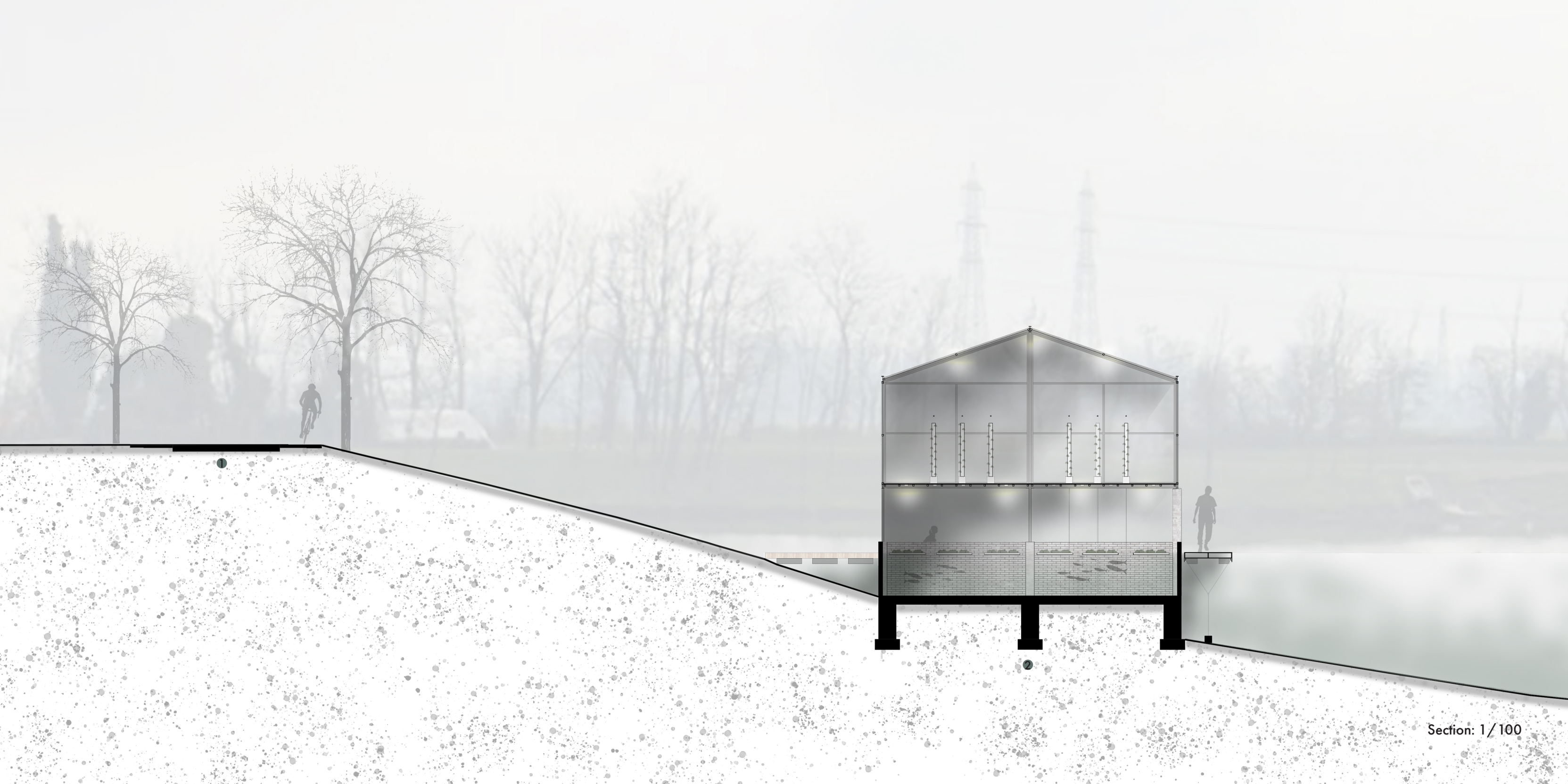
### Relationship with Ecologic Corridor:

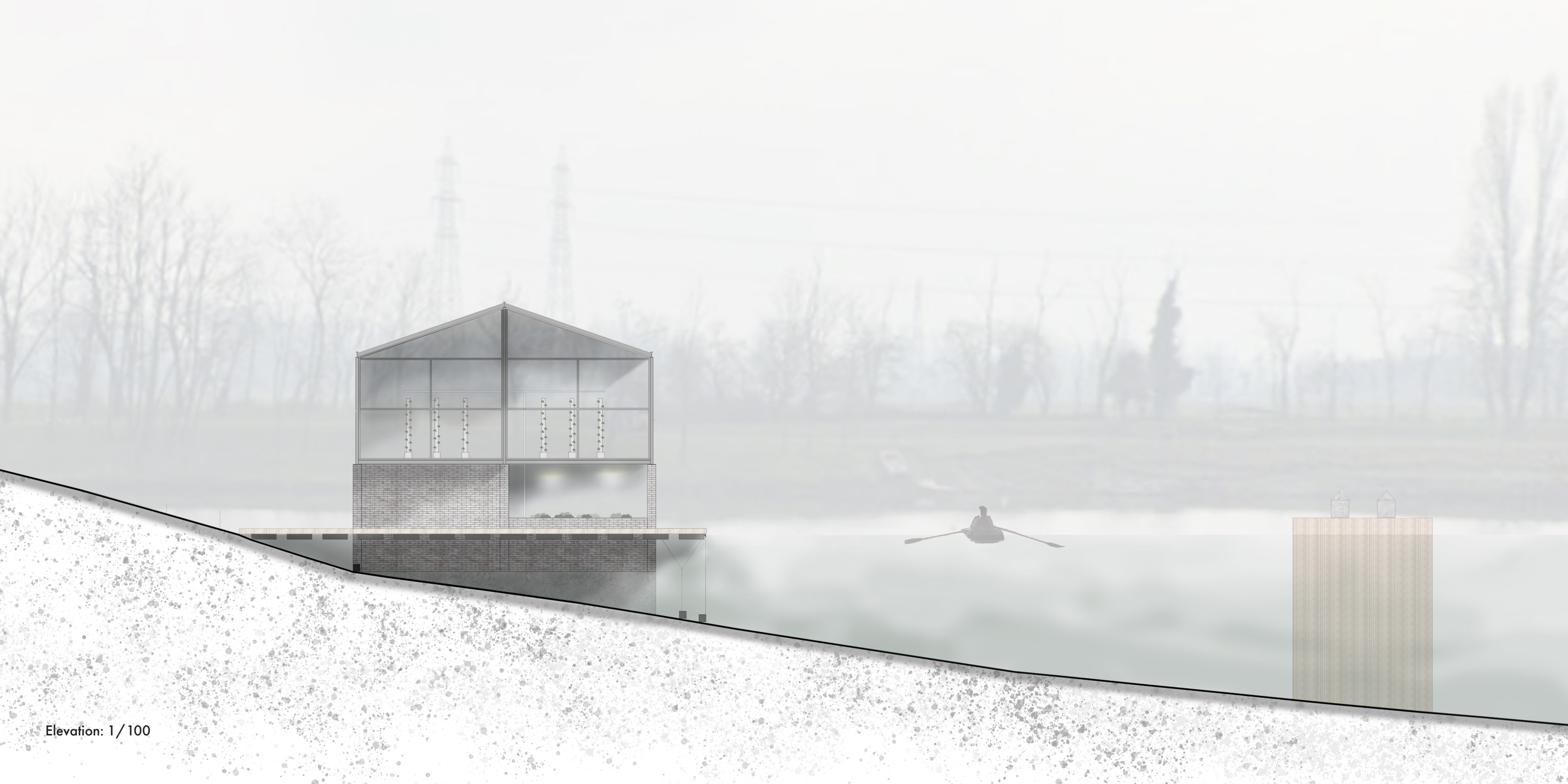
The building on the lake is in direct visual contact with the ecologic corridor. The ecologic corridor is a road that was previously only a secondary road and was used to serve agricultural lands. A bicycle and walking path has been added to this road and it has been opened to vehicle traffic only when necessary. Thus, a new visual image has been added to the agricultural points seen during the ecological corridor journey with this new experimental unit which is the hybrid system called "aquaponic" and an interaction between the ecologic corridor and the lake has been established. Thanks to the floating dock surrounding the new design, users have the opportunity to examine the structure and the system of the new unit from the outside.

## ● Detail 1: Joint of the "new - old": the building on the lake

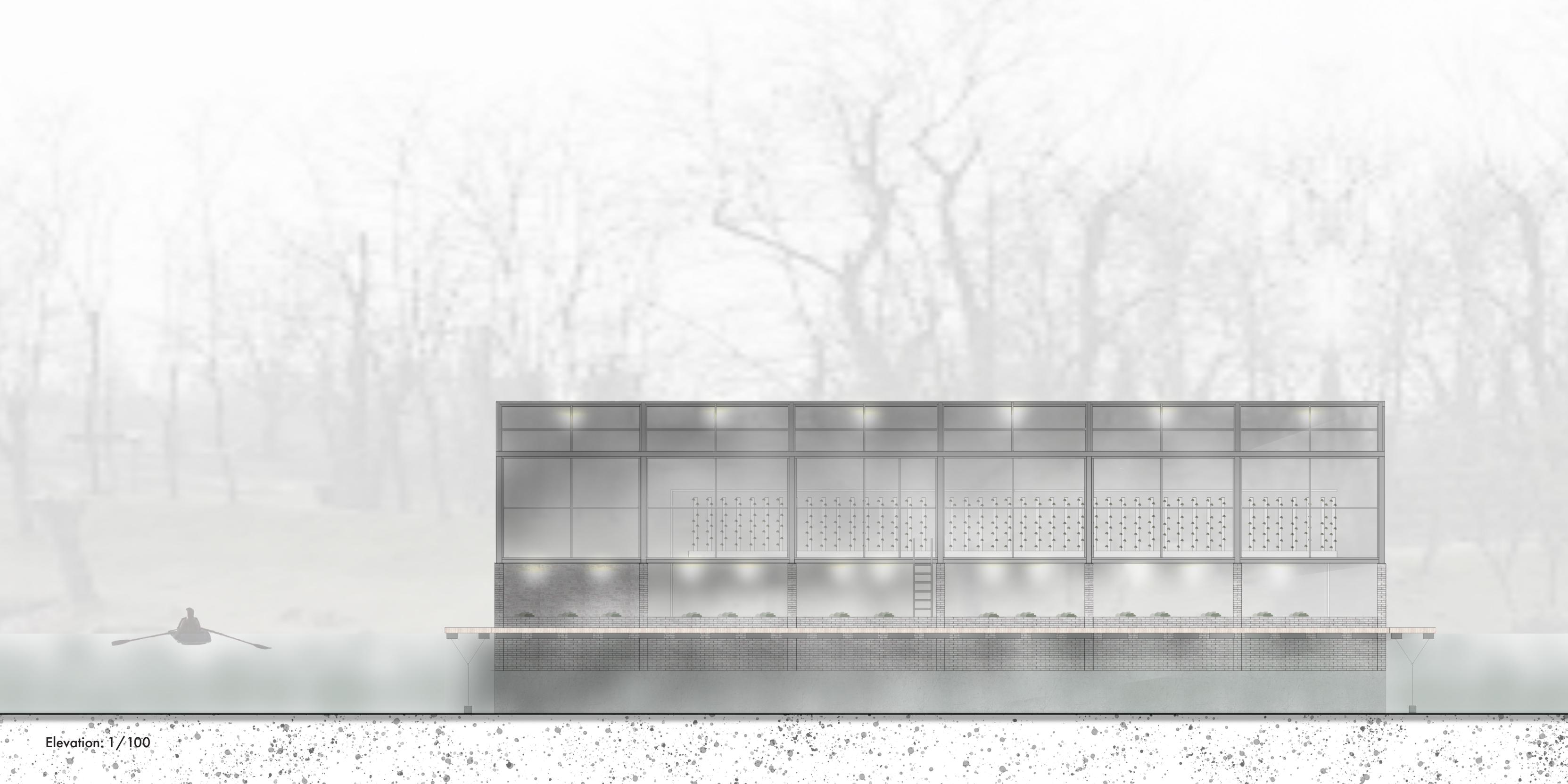








Elevation: 1/100



Elevation: 1/100

Bonomi A., Abruzzese A. (2004), *La città infinita*, Bruno Mondadori

Brenner N. (2013), *Towards a study of planetary urbanization*, Jovis Verlage

Bruzzese A., Lapenna A. (2017). *Linking Territories: rurality, landscape and urban borders*, Planum Publisher.

Cattaneo T. (2014), *Rural-urbanism-architecture: design strategies for small towns development*, Alinea editrice

Citta Metropolitana di Milano (2016), *Milano metropoli reale, metropoli possibile: piano strategico triennale del territorio metropolitano*

Citta Metropolitana di Milano (2019), *Milano metropolitane al futuro: piano strategico triennale del territorio metropolitano aggiornamento*

Comune di Milano, Centro Studi Pim, Politecnico di Milano (2009), *Le cascine di milano verso e oltre expo 2015: un sistema di luoghi dedicati all'agricoltura, all'alimentazione, all'abitare e alla cura del territorio*

Comune di Milano (2019), *Milano 2030: piano di governo del territorio*

Comune di Milano (2020), *Programma integrato di intervento ai sensi dell l.r. 12/2005 via macconago 24-36: relazione paesaggistica*

Debiaggi P., Tartaglia A. (2020), *The use of sports for urban regeneration: projects for an aquatic center in milan - porto di mare*, Maggioli Editore

Goddek S., Joyce A., Kotzen B., Burnell M. G. (2019), *Aquaponics food production systems: combined aquaculture and hydroponic production technologies for the future*, Springer

Marx K. (1857), *Contribution à la critique de l'économie politique*. Paris : Éditions sociales, 1972

Milano Metropoli Rurale (2014), *Rurbance: for a balanced development of the relations between rural and urban areas*

Nocerino R. (2020), *Sharing cities: an integrated approach for the smart city*, Comune di Milano

Pucci P. (2017), *Urban and rural are not symmetrical categories: the challenges of the hybridization projects*, *Linking Territories: rurality, landscape and urban borders*, Planum Publisher

Politecnico di Milano: Seminar (2018), *Regenerating european cities: urban development strategies of the milan municipality*

Sousa M. (2018), *The open agri project: journal 2*, Urban Innovative Actions

Sousa M. (2018), *The open agri project: journal 3*, Urban Innovative Actions

Sousa M. (2018), *Zoom-in: experimentation laboratory in urban agriculture*, Urban Innovative Actions

Sousa M. (2019), *The open agri project: journal 4*, Urban Innovative Actions

Sousa M. (2020), *The open agri project: journal 5*, Urban Innovative Actions

Sousa M. (2018), *Zoom-in: OpenAgri participative urban metabolism*, Urban Innovative Actions

Sousa M. (2022), *The open agri project: journal 6*, Urban Innovative Actions

<https://foodpolicymilano.org>

<https://www.uia-initiative.eu>

<https://www.milanometropolirurale.regione.lombardia.it>

<https://re.public.polimi.it>

<http://www.parcoticinello.it>

<https://www.cascinagaggioli.it/>

<https://www.treccani.it/enciclopedia/>

<https://www.comune.milano.it>

<http://www.polisocial.polimi.it/it/off-campus/>

<https://www.thinkwood.com>

<http://dati.istat.it/Index.aspx>

## ACKNOWLEDGEMENTS

My endless thanks to my thesis supervisor Prof. Leonardo Belladelli for reflecting on his continuous support, patience, motivation, and energy to me in the most beautiful way at every moment of my master's thesis work, and for sincerely sharing his valuable academic knowledge with me. I would like to say that it was a great experience and luck to undergo this valuable process under his guidance.

I offer my eternal thanks and love to my family, my mother Arzum and my father Erkan, who brought me to this life, sincerely showed me their love since I was born, and made me feel that they are always by my side under all circumstances, who have made great efforts and contributions in every step of my life.

I would like to express my special thanks to my grandmothers Yüksel and Saniye, who have thought of me in their every moment since I was a little girl and have made a lot of effort for me.

Aysegul