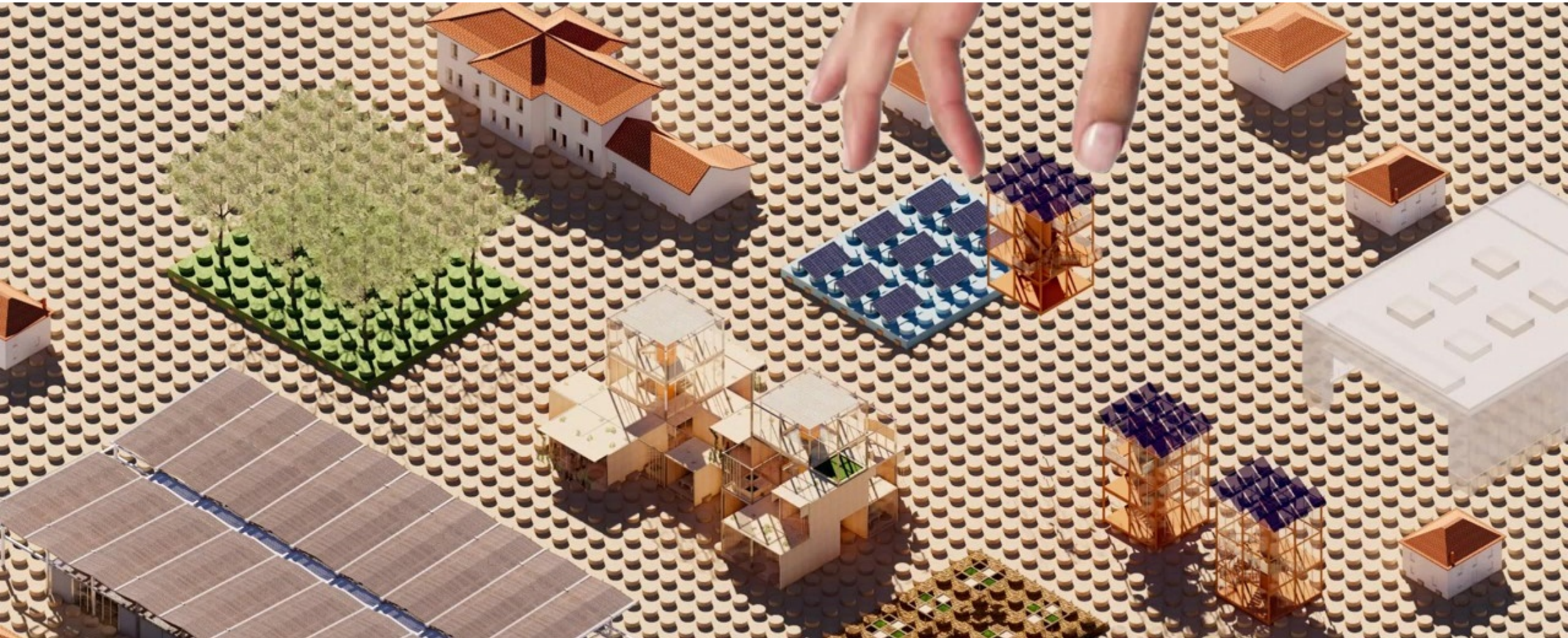


Team Number: 19

ENERGY ANCHOR

Tethering Nature, Community and Architecture to a Sustainable Future



Contents



Concept	Background	03
	Project Goal	07

Projects	New Construction (Site B)	12
	Formation Process	
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	Formation Process	
	Scenery	

Strategies	Low-carbon strategy	33
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Summary	Future Plan	38
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Background (Chimilin)

The style of the village of Chimilin is mostly traditional country style with strong local characteristics. Buildings in the village are made of stone, wood and brick. You can look out over the Alps and farmland, surrounded by better landscape resources.



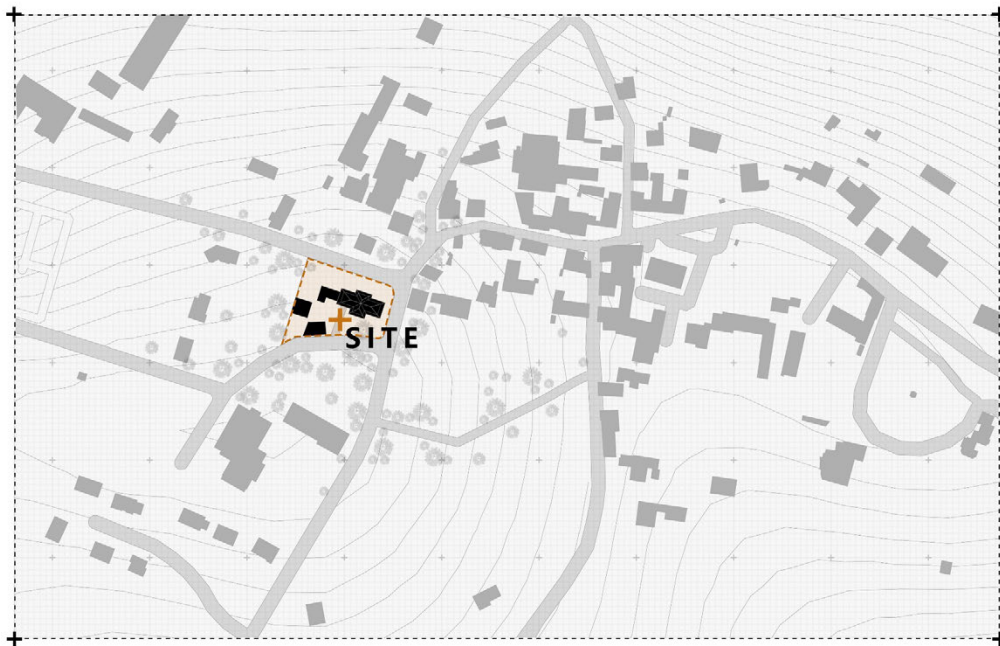
Background (Villefontaine)

The architectural style of the building has a strong rustic feel. Les Grands Ateliers, as a cultural center with scientific, artistic, and educational functions, the Grands Ateliers combines an industrial site, a stage, and a teaching space.

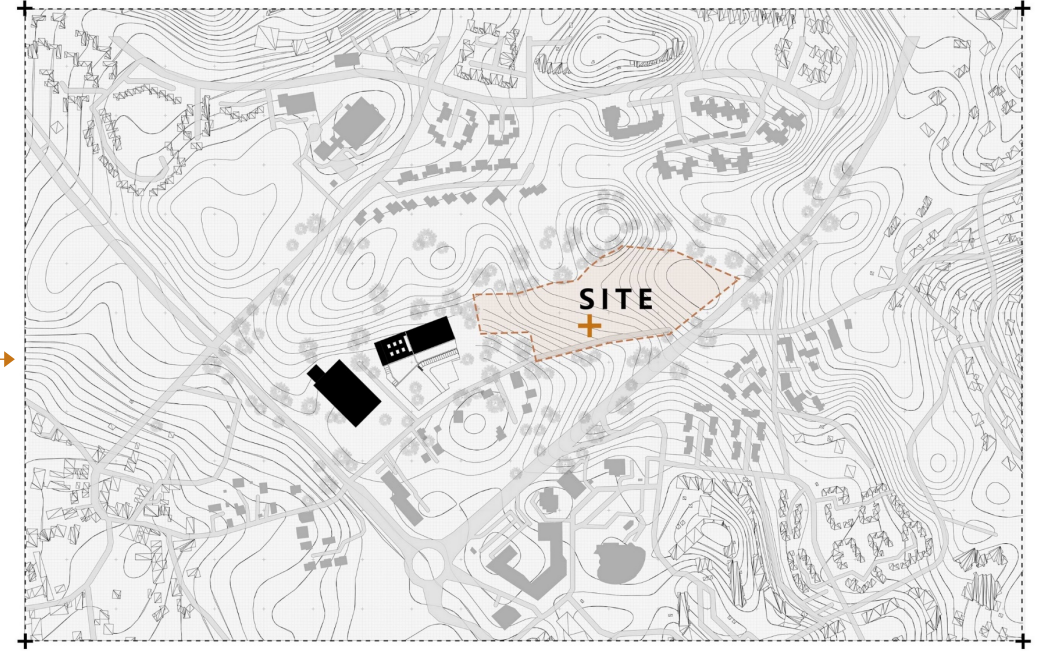


Background (Chimilin&Villefontaine)

Both buildings were designed with the purpose of being built for learning, community, and the need for a new design full of inclusion and openness. People here love nature, and they believe in low-carbon construction.



Commonalities



Rural environment and farmland



Beautiful landscapes

The application of traditional materials

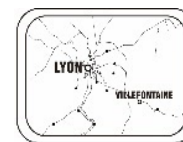


Localization of the new building

Several associations are active here



Functional and versatile spaces



As a satellite city of Lyon



Use by multiple groups of people

The abundant forest nearby



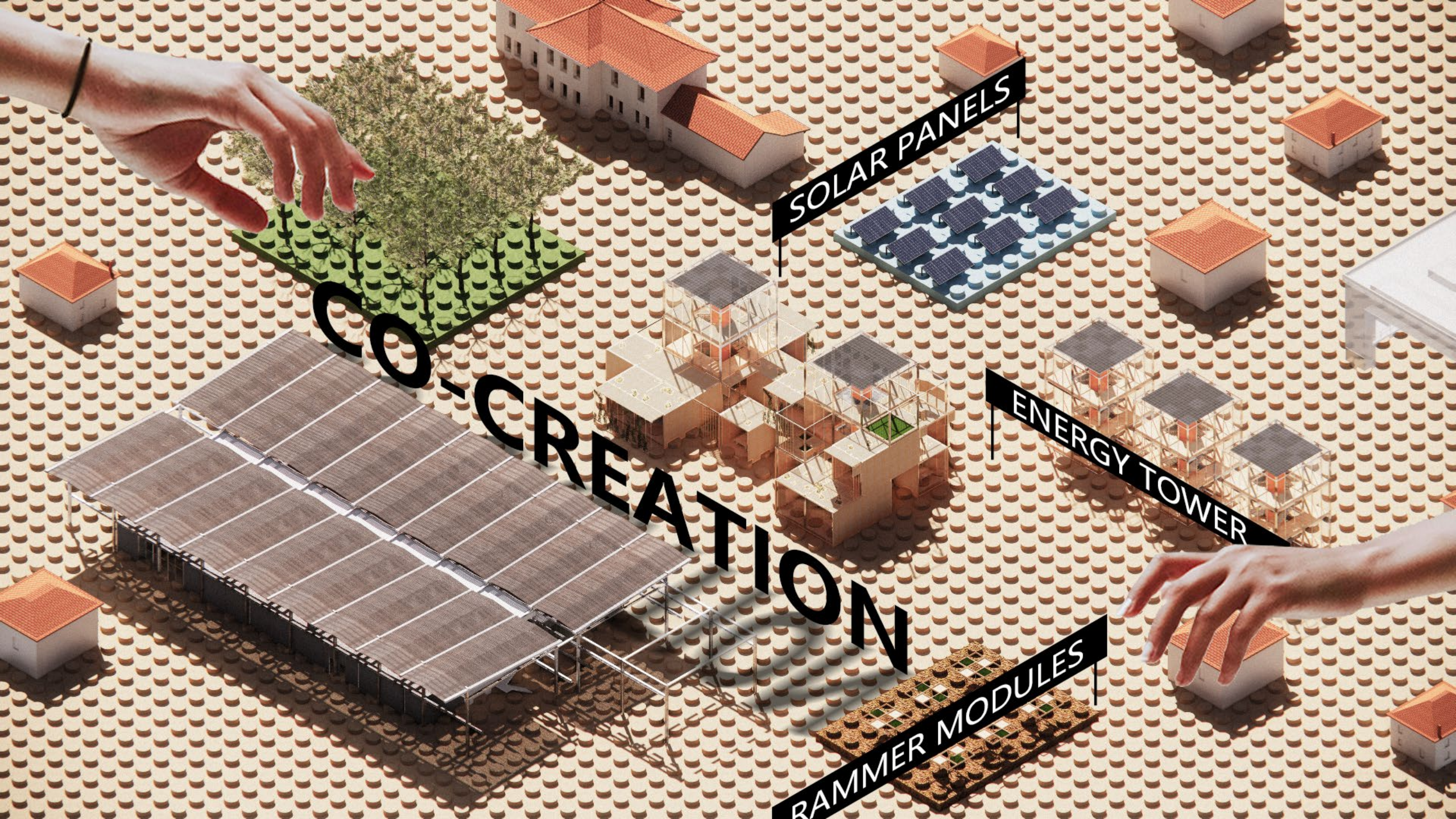
Excellent landscape and green space

The height difference of the site



Architecture that combines with nature





CO-CREATION

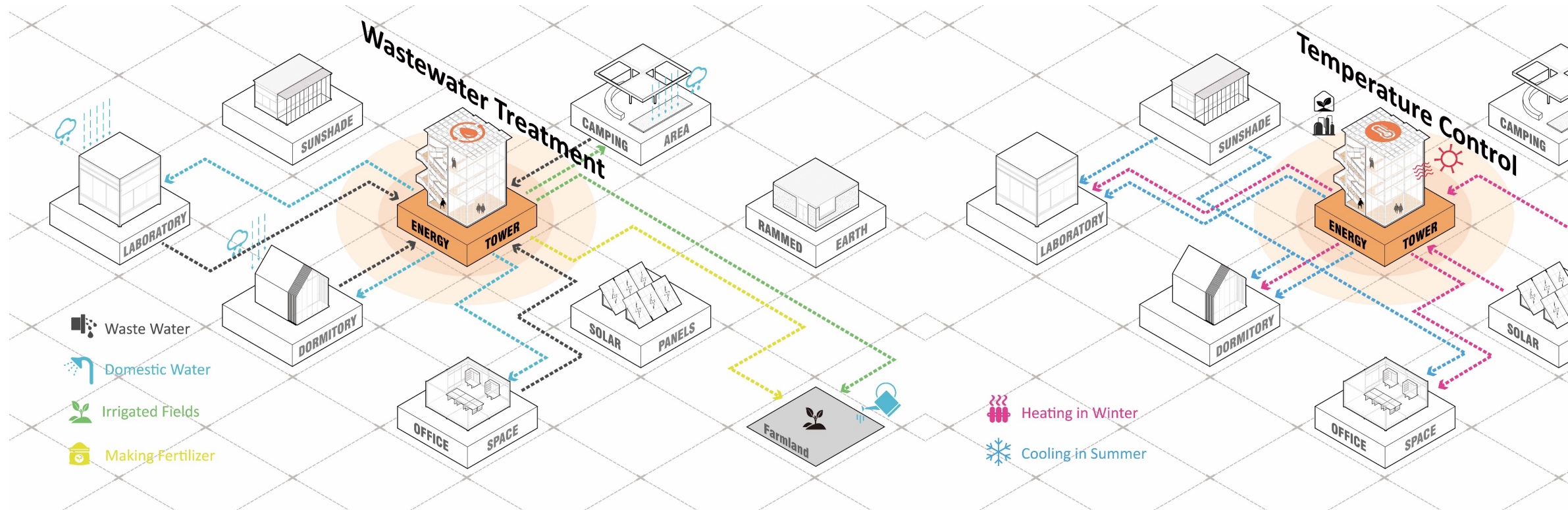
SOLAR PANELS

ENERGY TOWER

RAMMER MODULES

How to Solve

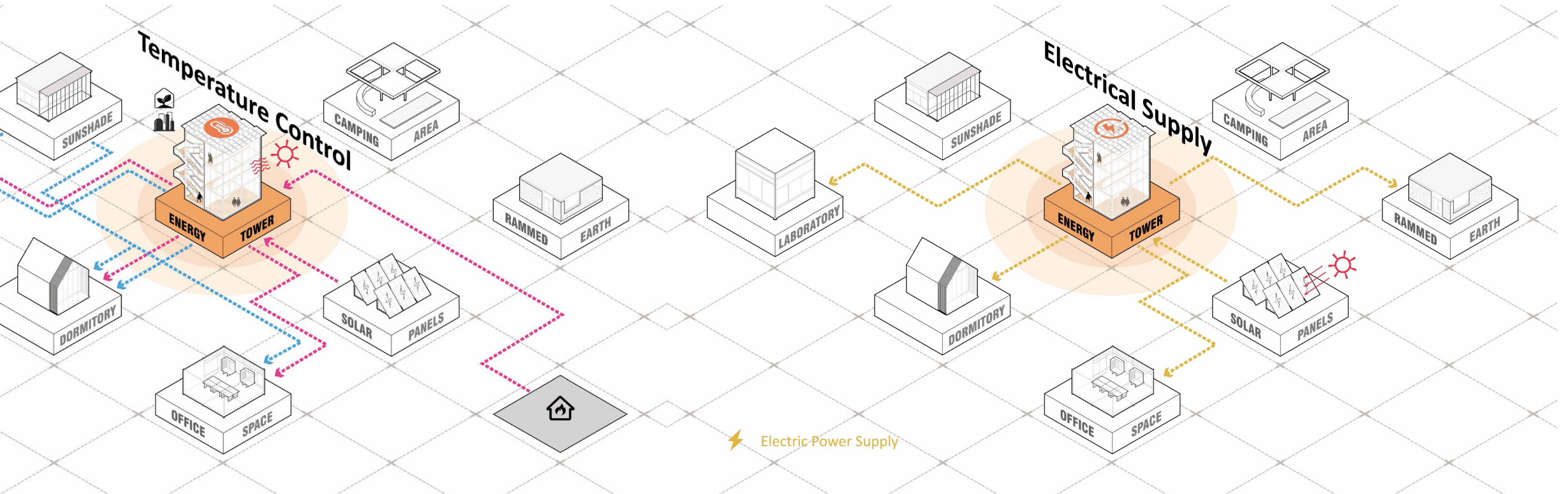
Co-creation goes beyond building to reduce carbon in use.



A Sustainable Solution Energy Tower

How to Solve

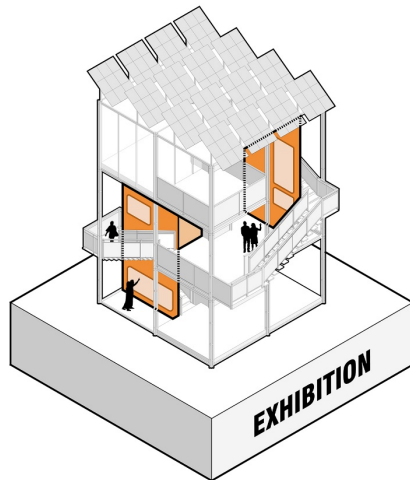
Co-creation goes beyond building to reduce carbon in use.



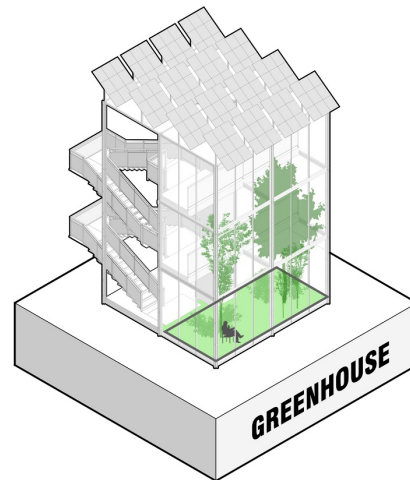
A Sustainable Solution
Energy Tower

Why Build a Tower

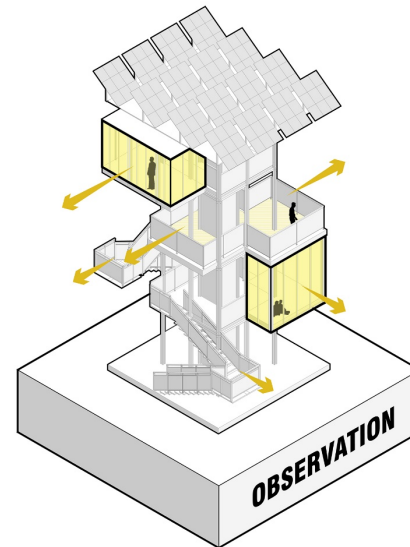
Others can supply — but only a tower connects, gathers, and inspires.



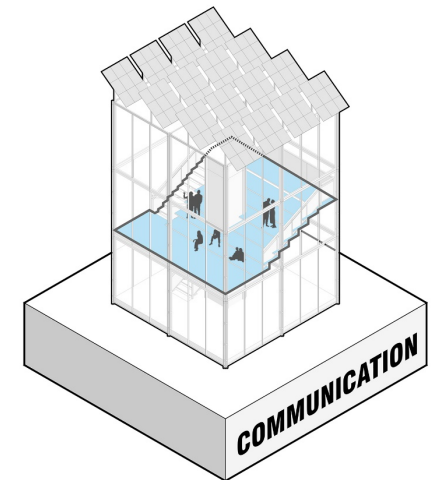
Explore, connect, and unwind at the exhibition space



Enjoy seasonal greenery and in the winter towers



Experience the forest through the iconic presence of the tower



Watch films and host events in a lively shared space

A Tower of Vitality Energy Tower

From Chimilin to Villefontaine



Energy tower: **Different** types of function, **bridging** the old and the new

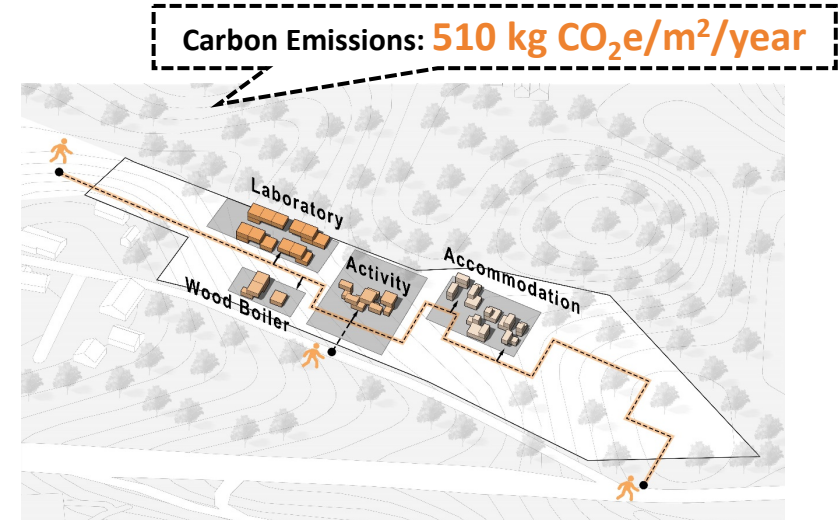
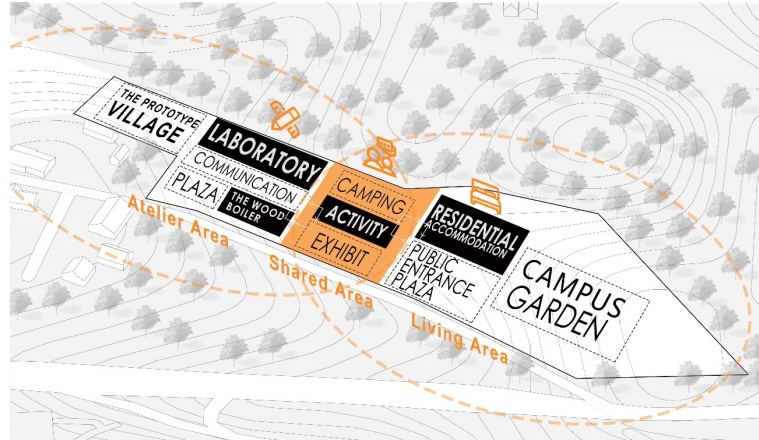
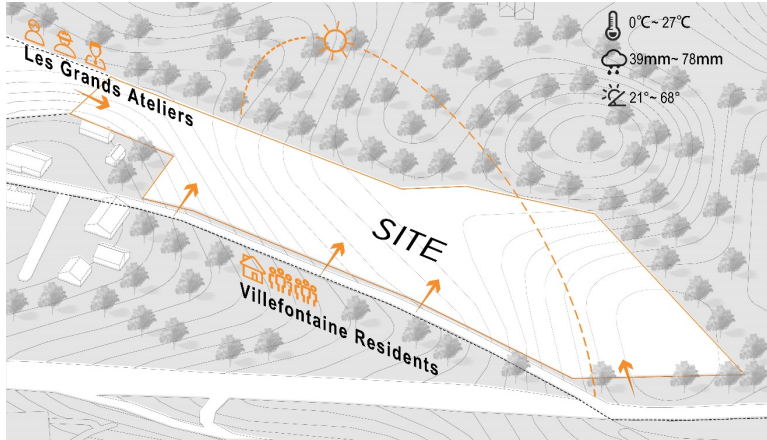
02. New Construction

Formation Process
Scenery

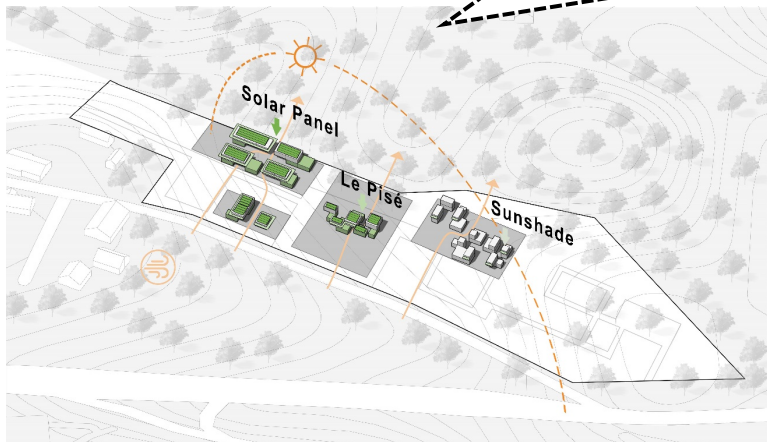


Formation Process

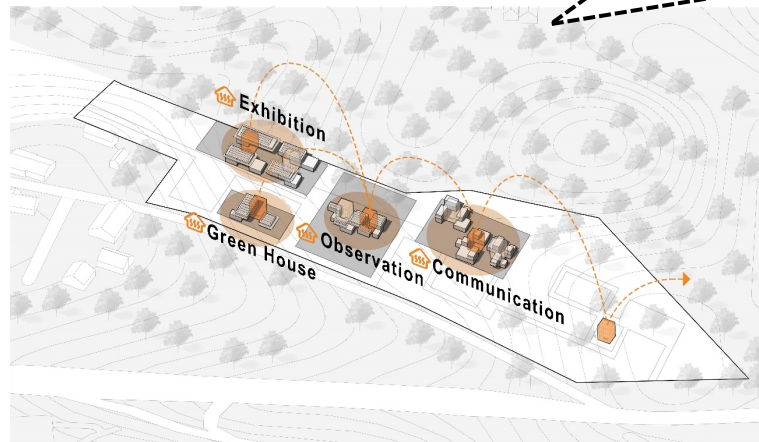
Site analysis: **two** main flows of people come from **different directions**, divide the site into **three** major areas.



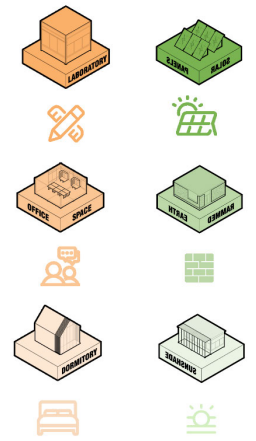
Carbon Emissions: **335 kg CO₂e/m²/year**



Carbon Emissions: **145 kg CO₂e/m²/year**

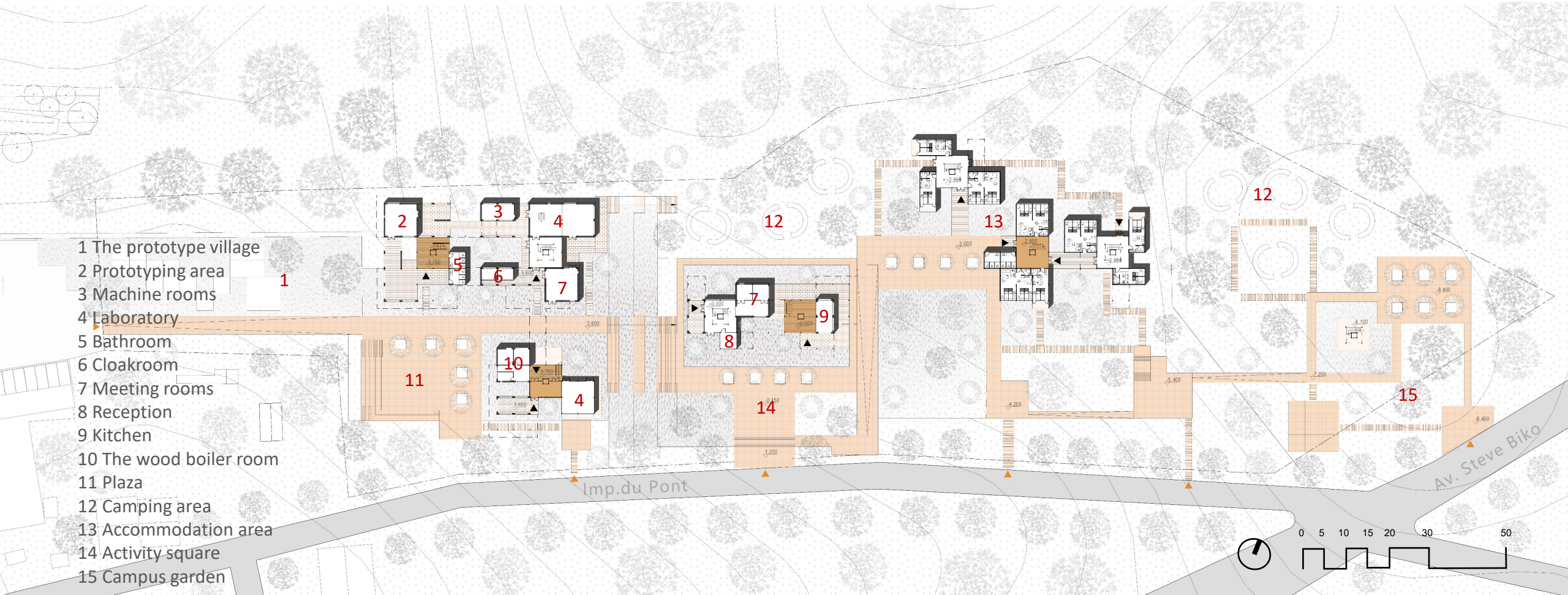


Basic low-carbon design contains solar panels, sunshade design and recyclable materials. Using Energy Tower centrally provides heat to each building unit to reduce energy loss.



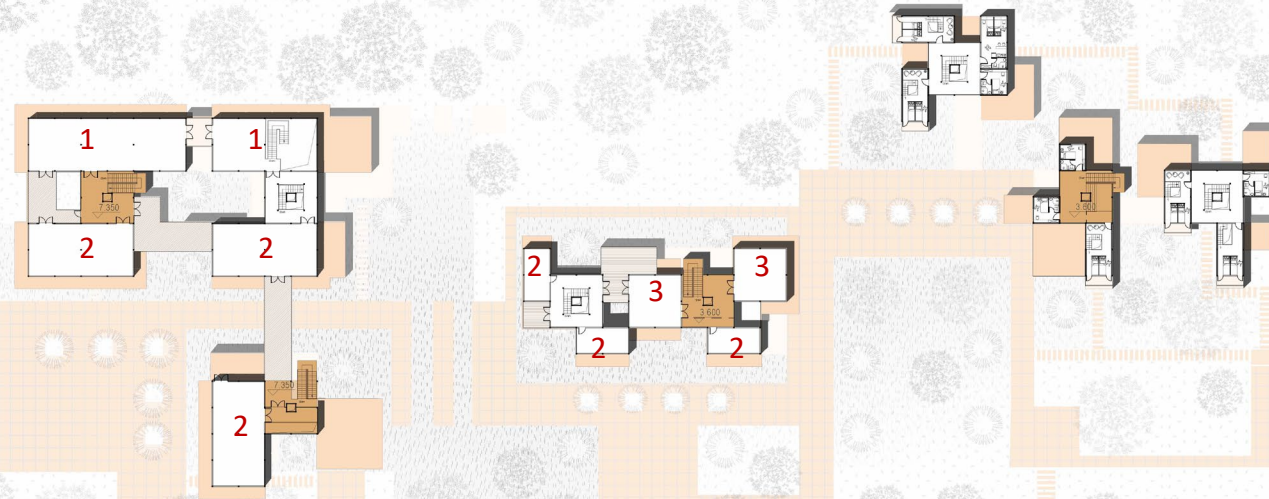
Plan

Ground Floor



Plan

First Floor

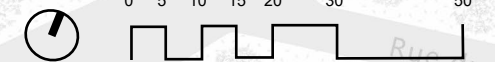


- 1 Office spaces
- 2 Multi-purpose room
- 3 Restaurant

Technical and Economic Indicators Table

Indicator	Value
General Information	
Site Area	18040m ²
Gross Floor Area (GFA)	6390m ²
Floor Area Ratio (FAR)	0.35
Building Coverage Ratio	17%
Number of Floors	3
Building Height	11m
Structure Type	Steel Frame
Carbon Emission (LCA)	145kg CO ₂ e/m ² /year
Solar Panel Area	700m ²

Functional Breakdown	
Residential Area	2400m ²
Laboratory Area	3090m ²
Shared Area	900m ²
Green Space	7680m ²



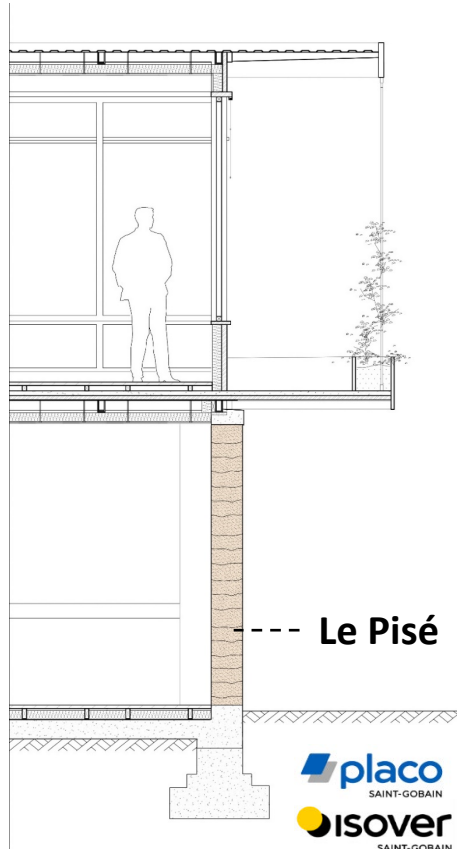
Imp. du Pont

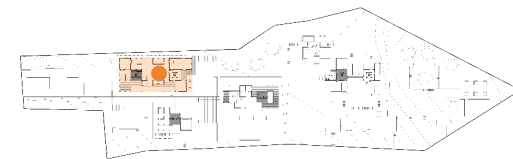
Av. Steve Biko

Rue du Pont

Laboratory Area

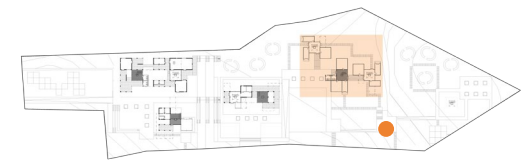
Combination of Technology and Craftsmanship





The Courtyard

Nurtured by the Earth
Growing with Light and Time

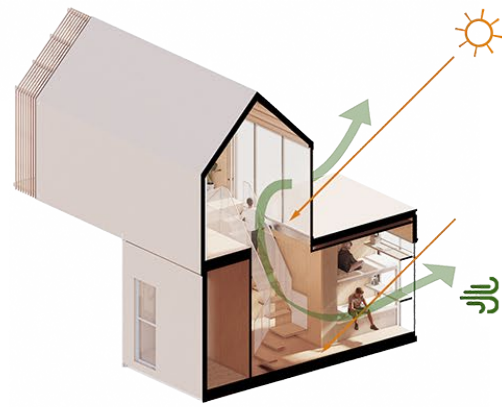


Accommodation Area

A Quiet Retreat Amidst Shared Green Life
Dwelling in the Spirit of the Village



Dormitory 8 beds



Dormitory 6 beds

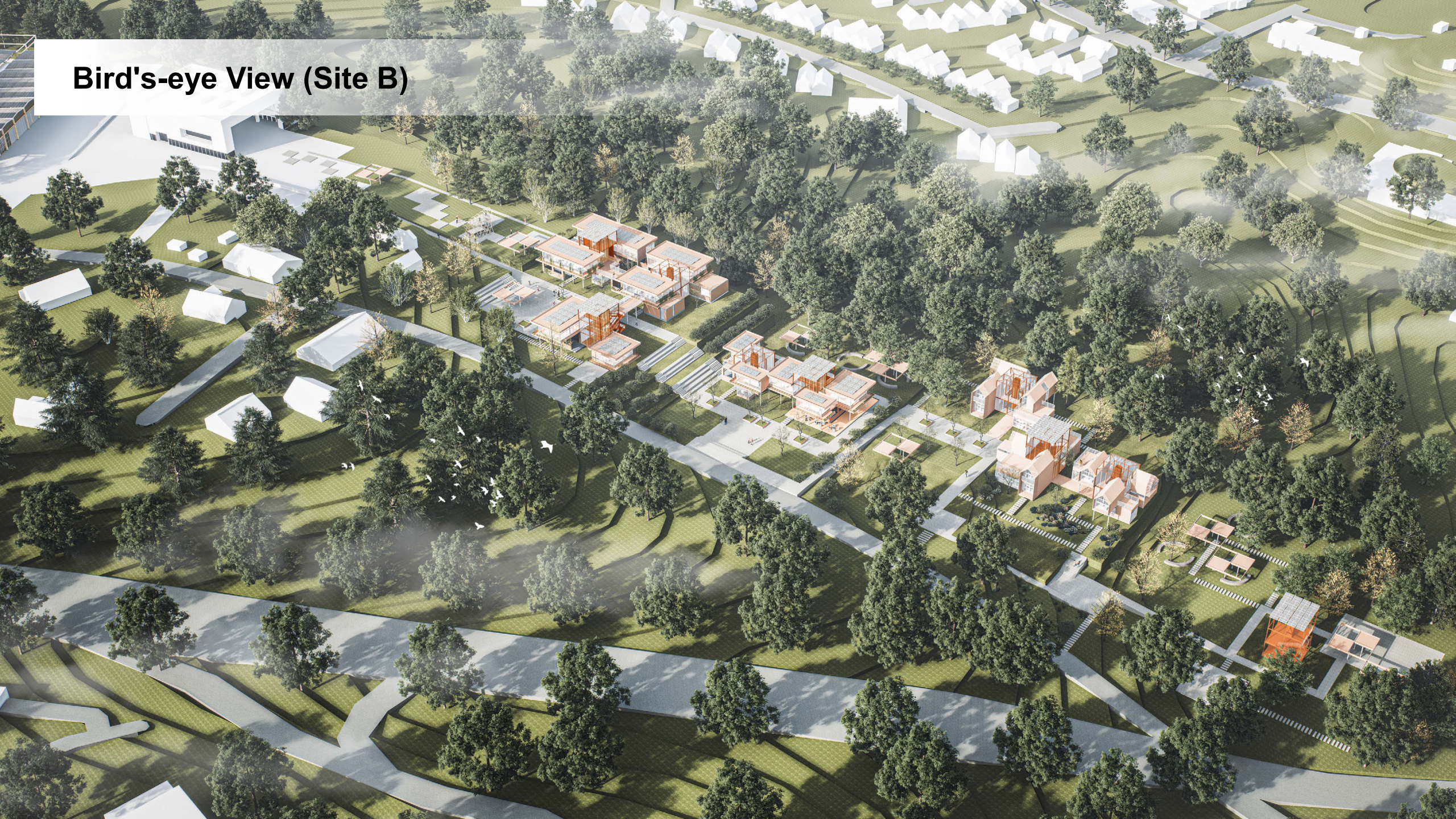


Double room

Living Space

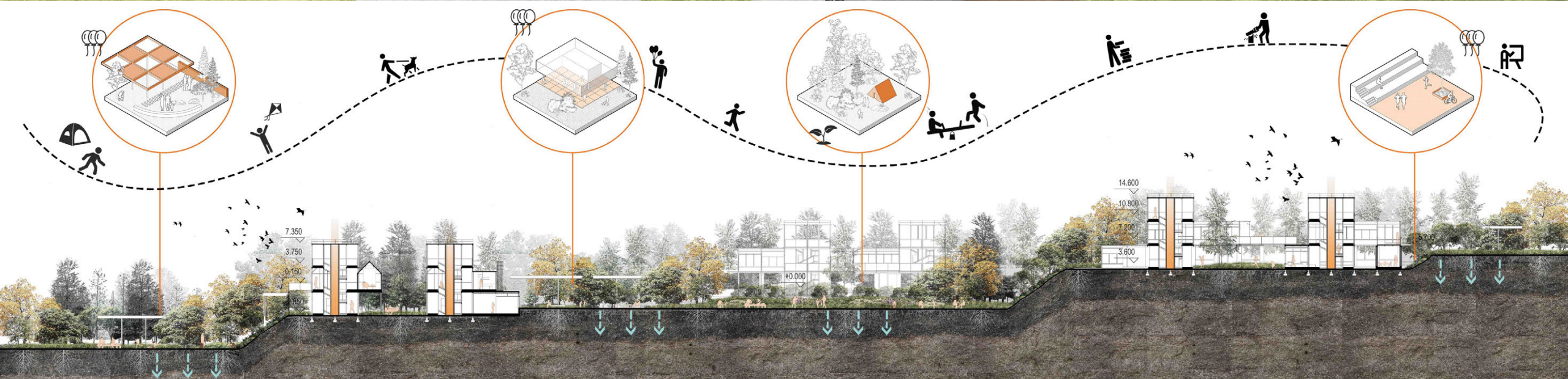
Private Sleeping Retreat
Breathe Light, Live Green

Bird's-eye View (Site B)



Landscape Design

Respond to Nature and Set Different Landscape Scenes

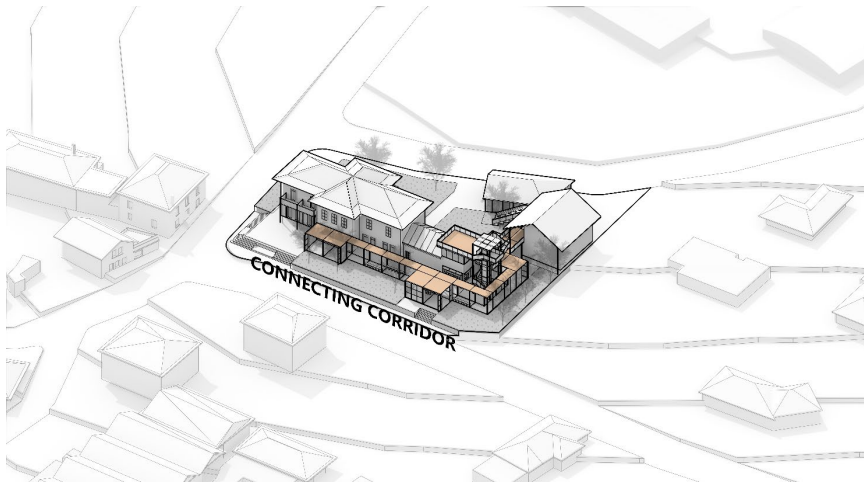
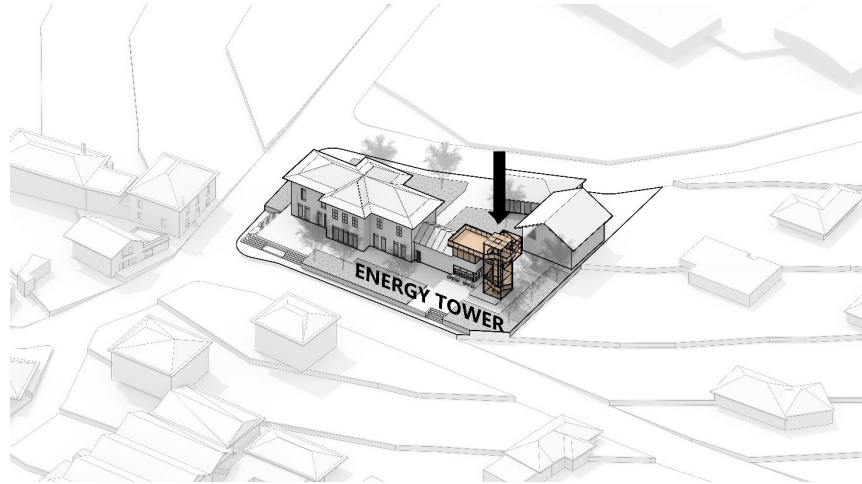
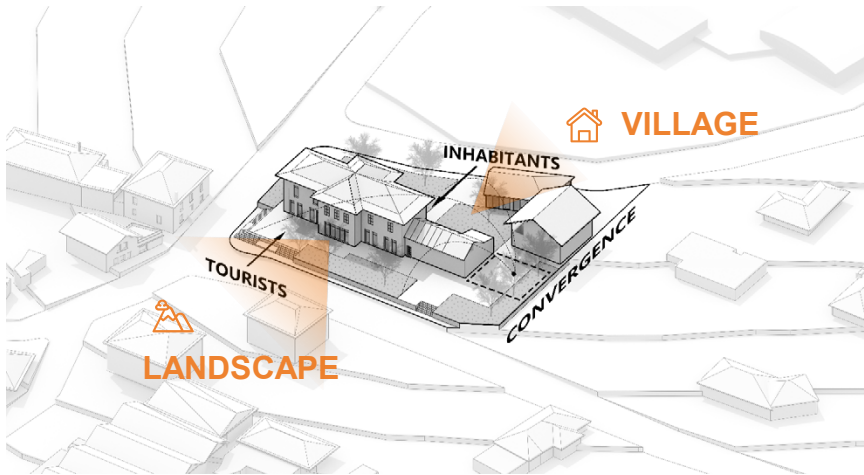


03. Renovation

Formation Process
Scenery



Formation Process



1. Site Analysis: two types of foot traffic, bridging the old and the new.
2. Placement in Energy Tower: energy converges and activity occurs at this center.
3. Inclusion of Gallery Space: linking old and new buildings, inside and outside.
4. Lightweight Assembled Structures: flexible and versatile forms.



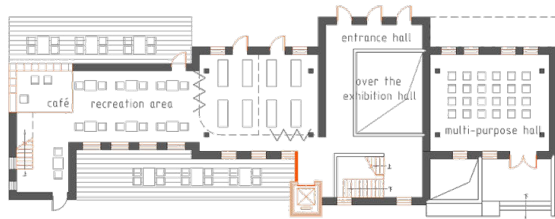
Bird's-eye View (Site A)

Plan

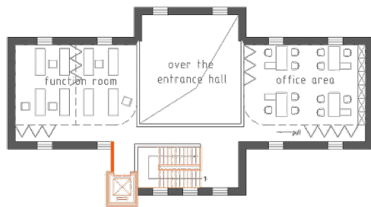
- renovate
- retain



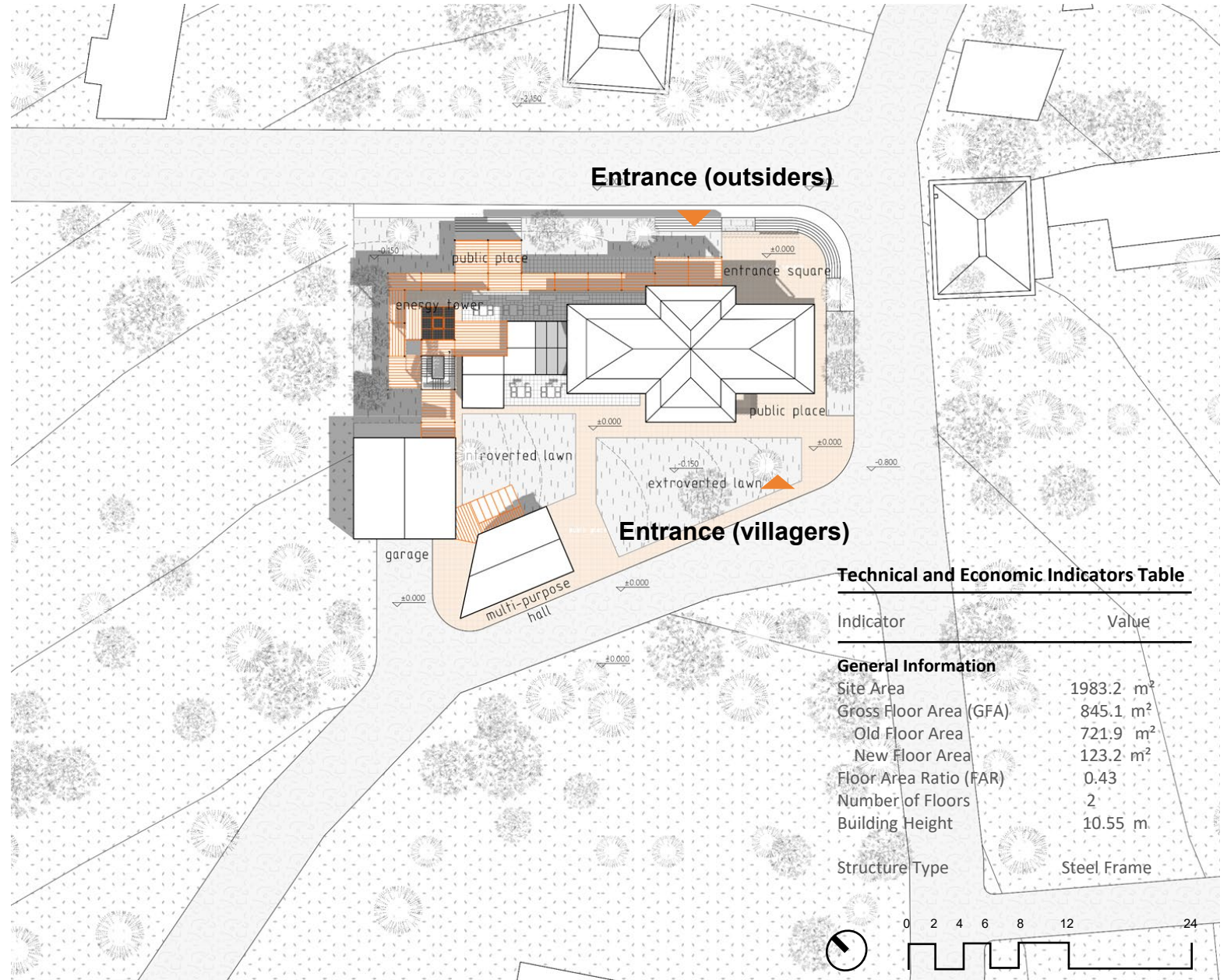
■ Underground Floor



■ Ground Floor

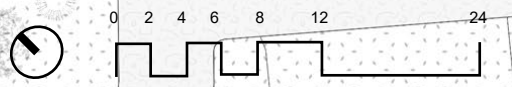


■ First Floor



Technical and Economic Indicators Table

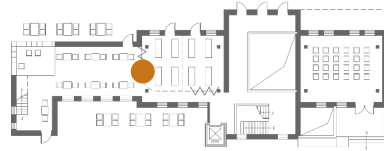
Indicator	Value
General Information	
Site Area	1983.2 m ²
Gross Floor Area (GFA)	845.1 m ²
Old Floor Area	721.9 m ²
New Floor Area	123.2 m ²
Floor Area Ratio (FAR)	0.43
Number of Floors	2
Building Height	10.55 m
Structure Type	Steel Frame





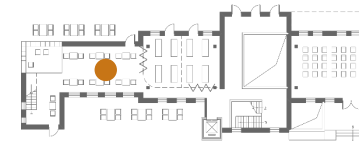
The entrance (Site A)

Double-height Atrium
South-facing Daylight



Remodeled Cafe and Office Space (Site A)

Structural Reinforcement
Wood Modular Furniture



Remodeled Cafe (Site A)

Indoor-outdoor Connections
Open Public Spaces



Outdoor Lawns (Site A)

Spaces with a Sense of Enclosure
Bringing People Together



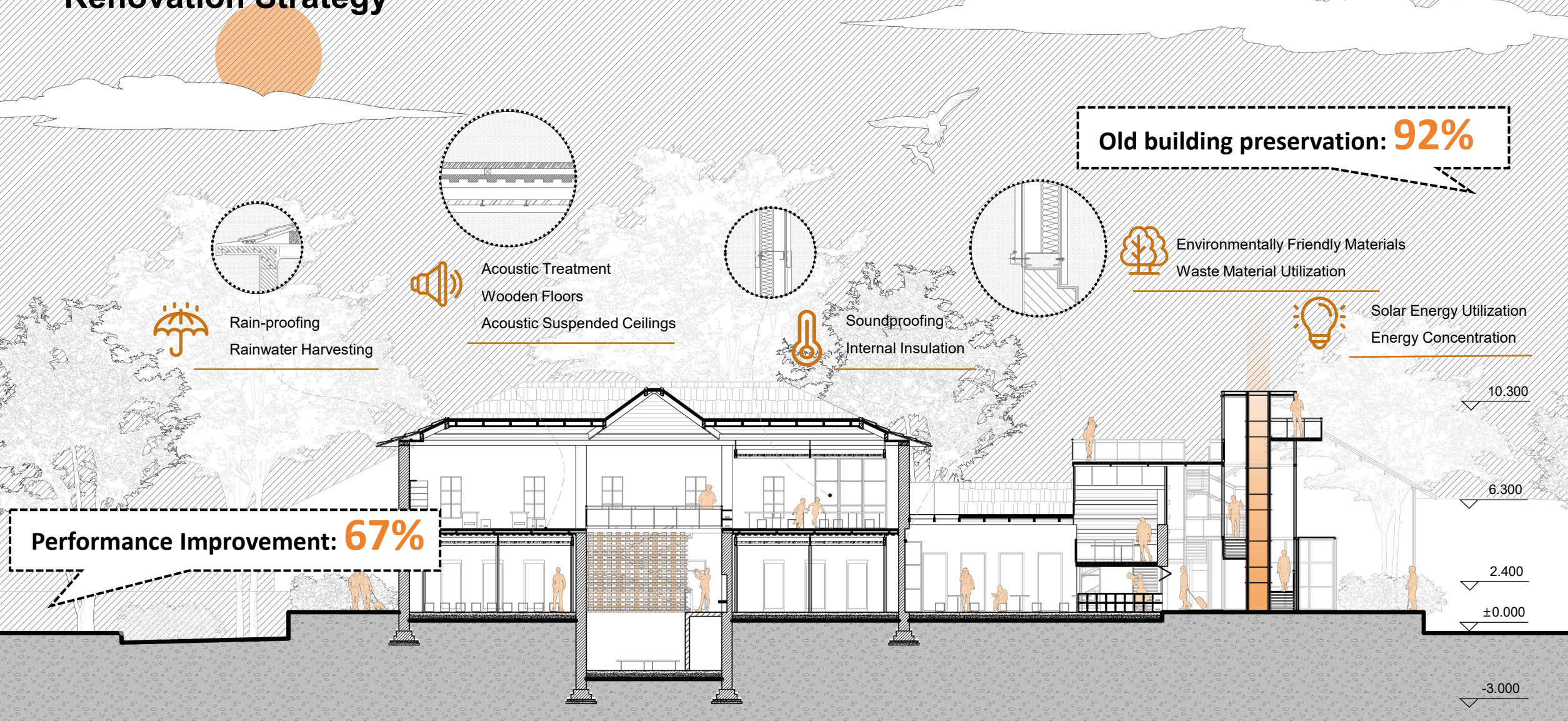
Additional External Veranda (Site A)

Lightweight Modular Structure
Reuse of bricks



Poetry and the Alps (Site A)

Renovation Strategy



04 Strategies

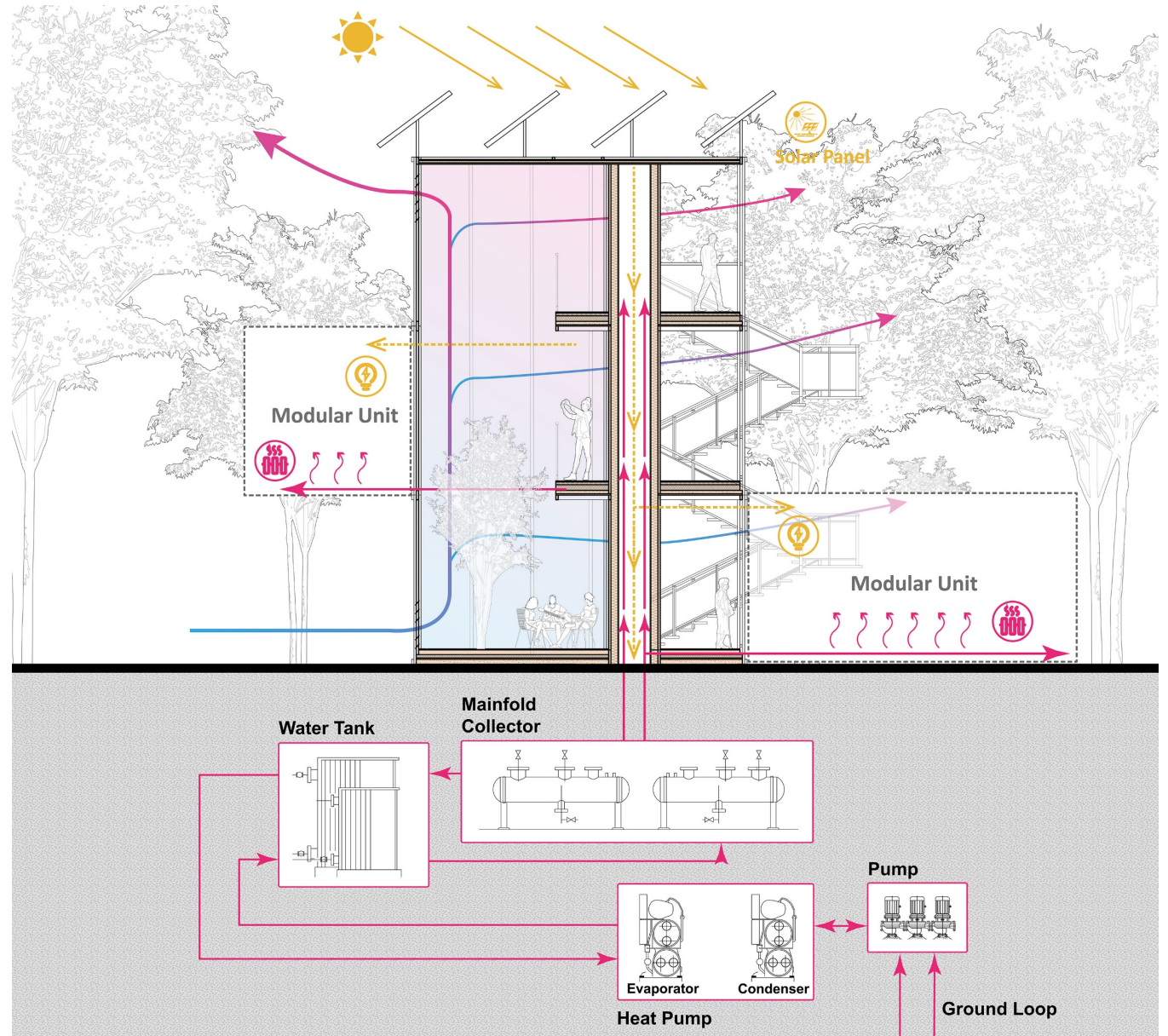
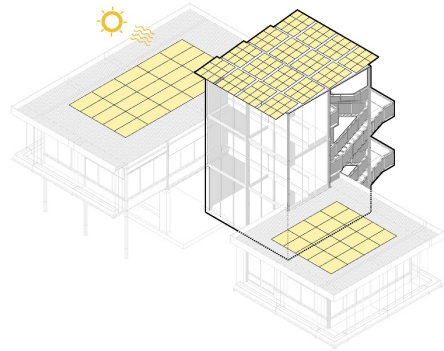
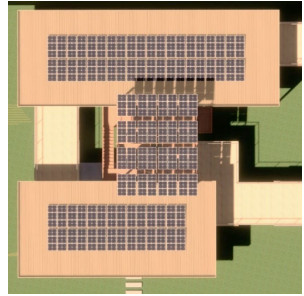
Low-carbon Strategy
Recyclable Materials
One Click LCA



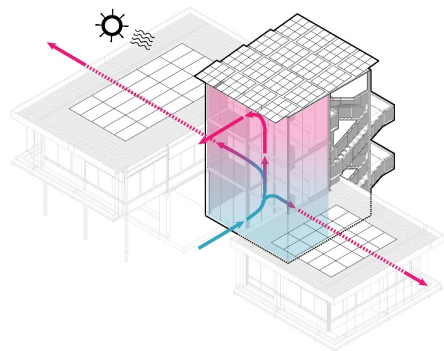
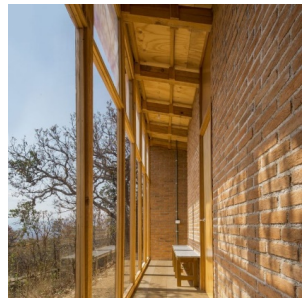
Low-carbon Strategy

Energy-saving Measures

Solar Tracking System



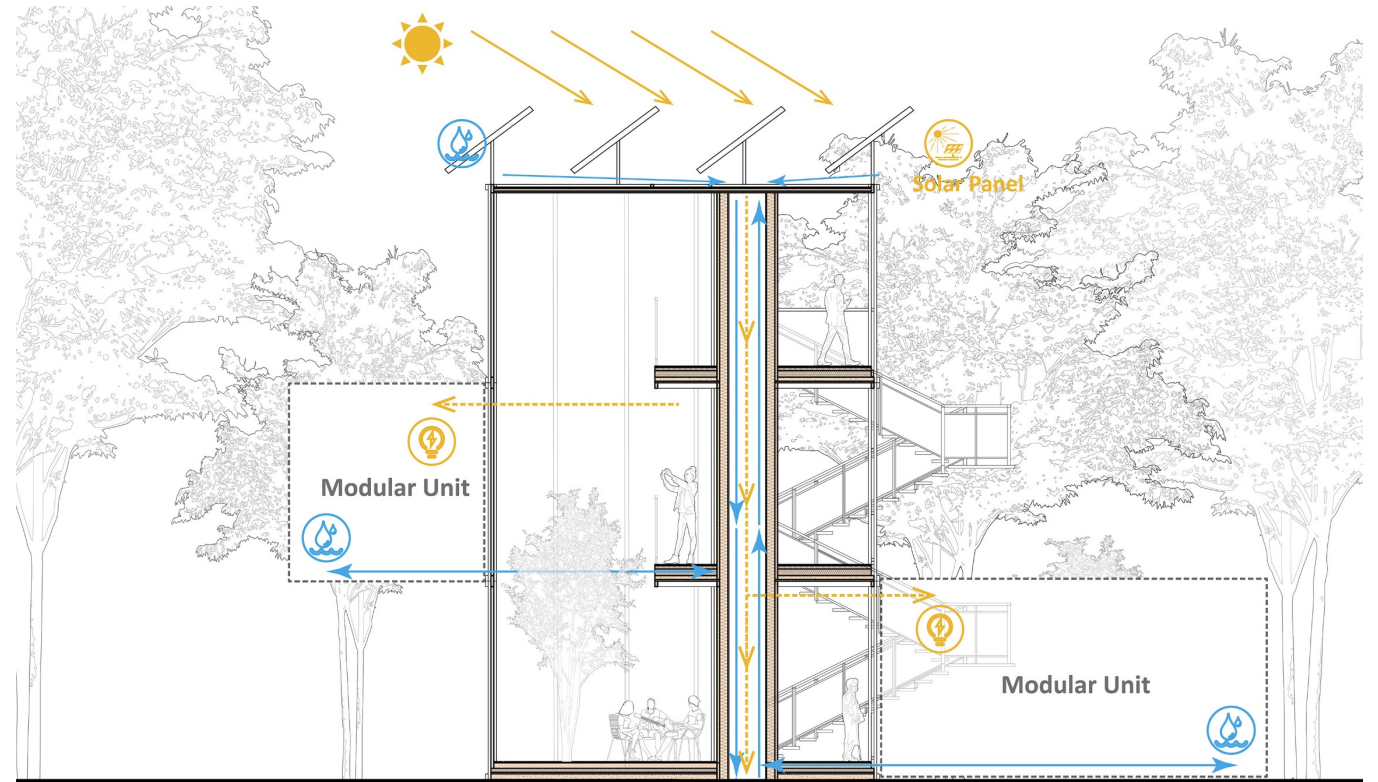
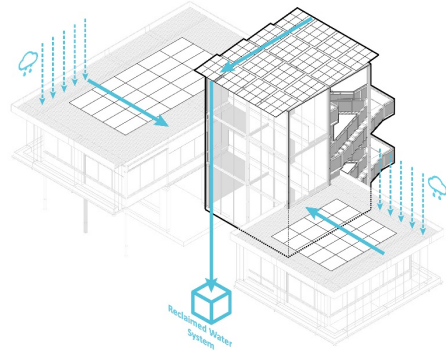
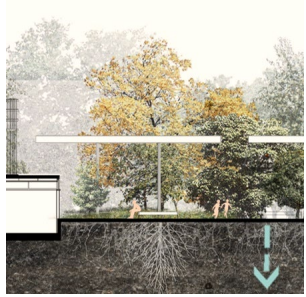
Thermal Mass Wall



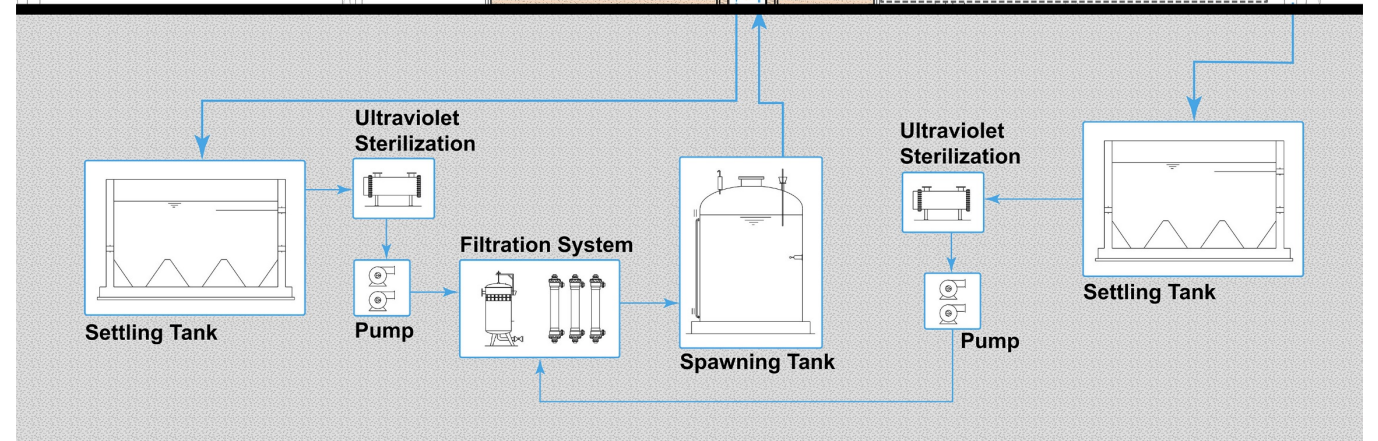
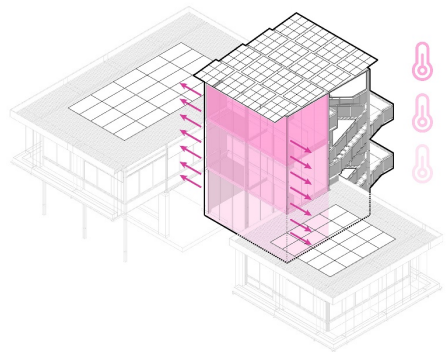
Low-carbon Strategy

Ecological Water Management

Circulating Utilization of Water Resources

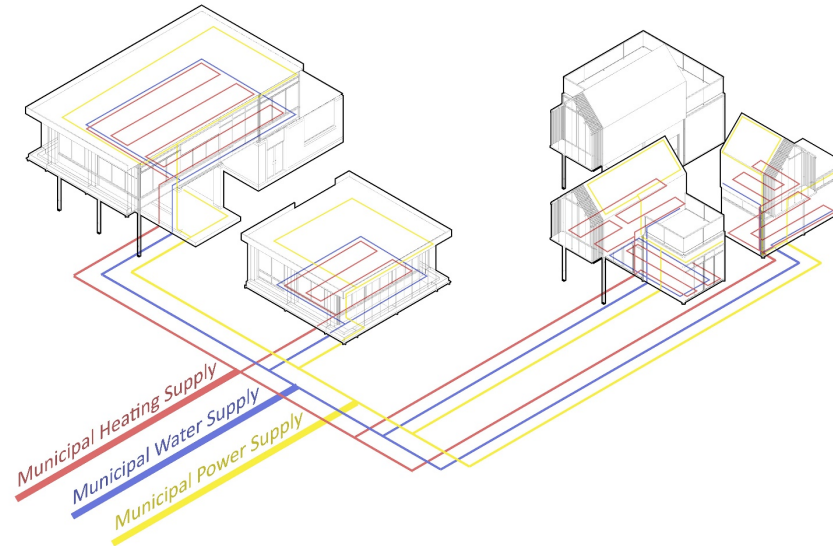
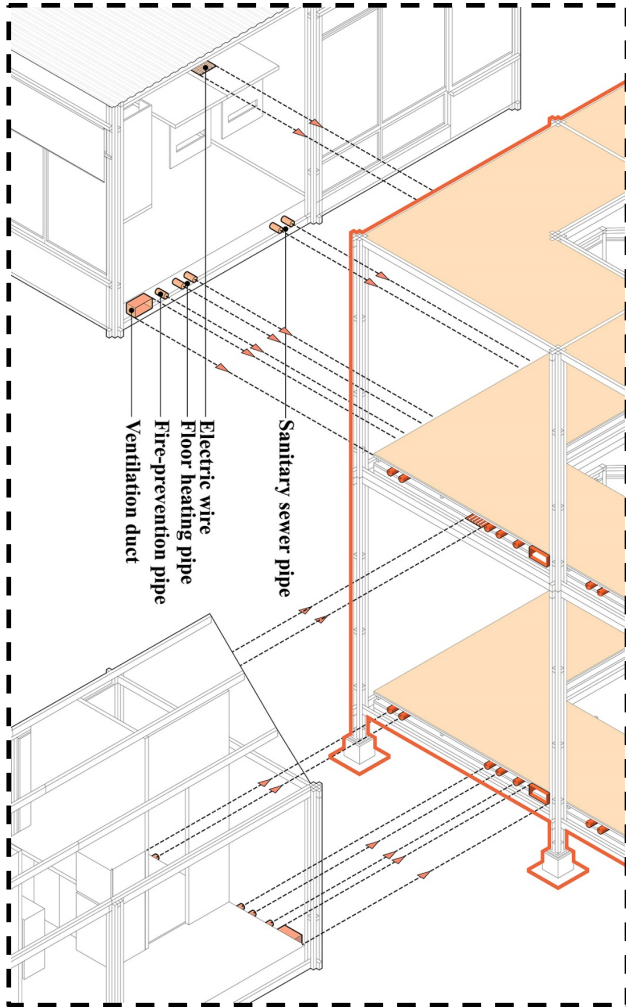


Using a Greenhouse System to Store Heat



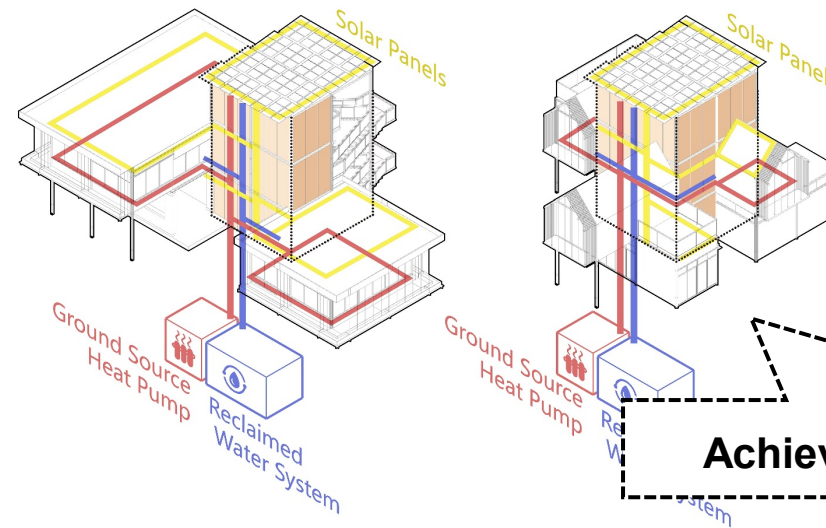
Low-carbon Strategy

Pipeline Connection Diagram



Energy Tower supply **before**

Conventional building systems depend on centralized municipal energy, consuming vast amounts of labor, materials, and funding — a process that is often inefficient and unsustainable.

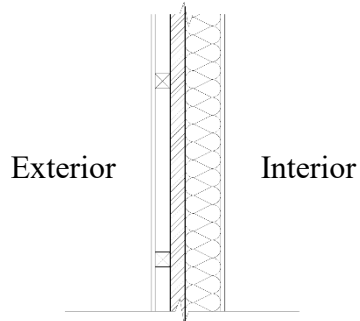


Energy Tower supply **after**

The Energy Tower enables centralized energy distribution, harnessing geothermal energy and recycling systems. All essential pipelines are integrated within the tower, simplifying construction and enhancing sustainability.

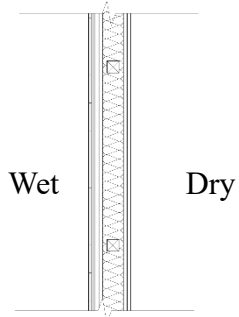
Achieve the energy **self-circulation**

Recyclable Materials



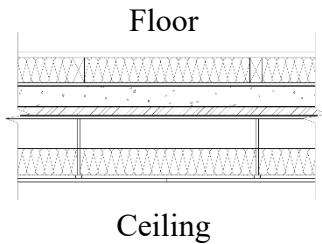
Modular Exterior Wall

- 12.5mm **PLACO Glasroc® X13 1250**
- 50mm Lightgauge Steel Joist
- 50mm profiled steel sheet
- 100mm **ISOVER GR 32 Roulé Revêtu Kraft**
- 12.5mm **PLACO Premium® BA 13**



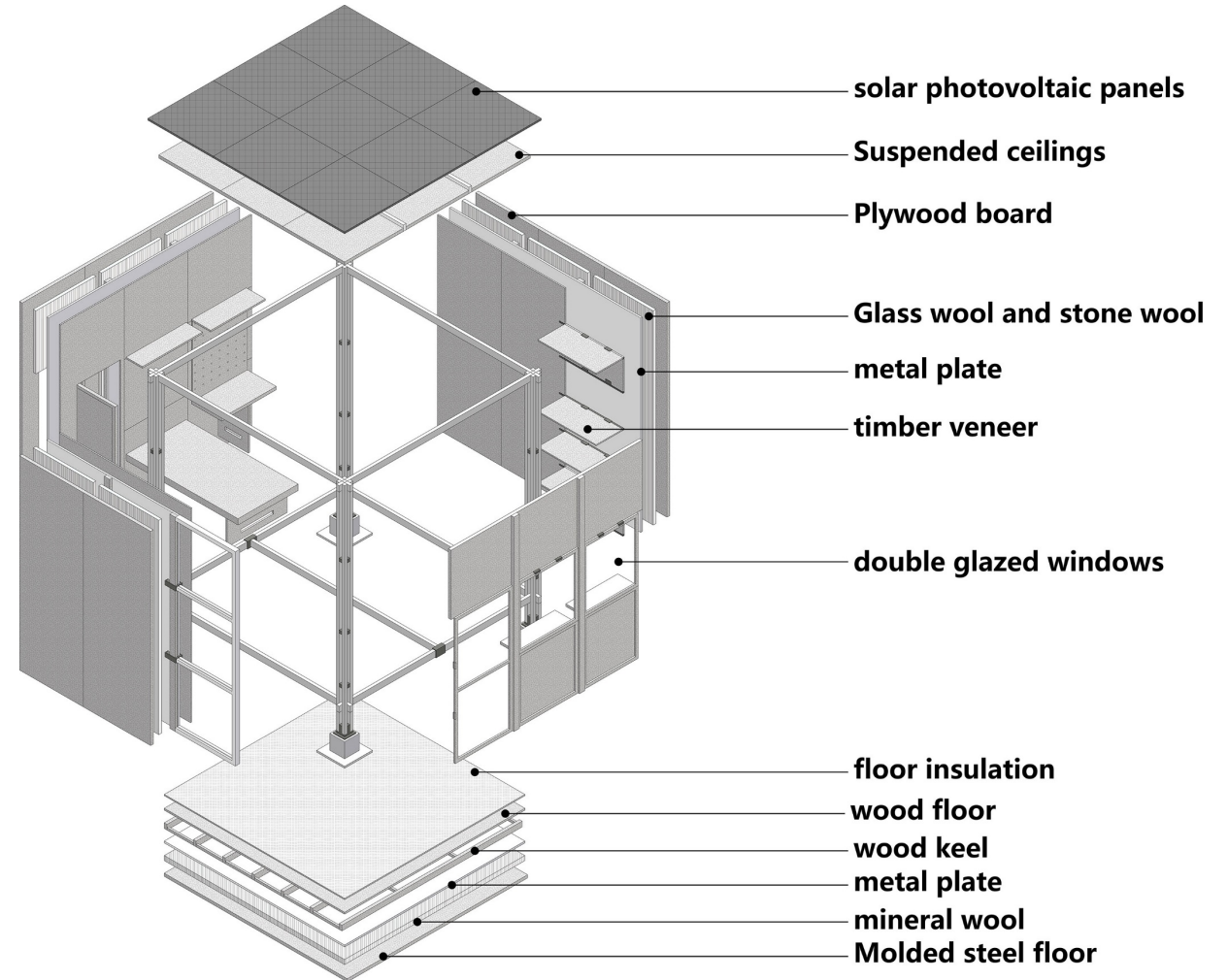
Interior Bathroom Partition Wall

- 30mm porcelain tiles and adhesives
- **WEBER Webertec Superflex D2**
- 12.5mm*2 **PLACO Placomarine® Premium BA 13**
- 85mm **ISOVER Système Optimax Habito®**
- 12.5mm*2 **PLACO Premium® BA 13**



Interior Floor and Ceiling

- 10mm floor timber
- 85mm **ISOVER Panotoit Tekfi 2**
- 20mm **WEBER Weberniv Elit**
- 90mm **CHRYSO EnviroMix ULC Concrete**
- 30mm profiled steel sheet
- 85mm **ISOVER GR 32 Roulé Revêtu Kraft**
- 12.5mm **ECOPHON Saga™ D**



One Click LCA

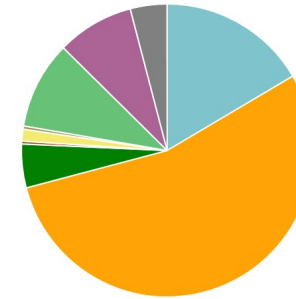
Achieve **low-carbon standards**

Cradle to grave (A1-A4, B4-B5, C1-C4)	kg CO ₂ e/m ²
(< 350) A	145
(350-530) B	
(530-710) C	
(710-890) D	
(890-1070) E	
(1070-1250) F	
(> 1250) G	



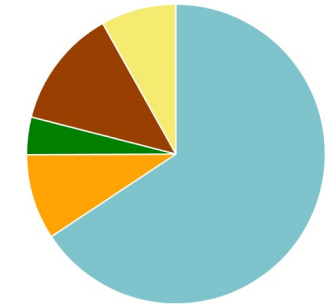
Global warming kg CO₂e - Classifications

- 1.1 Foundations (substructure) - 16.5%
- 1.2 Load bearing structural frame - 54.4%
- 1.2.1 Frame (beams, columns and slabs) - 4.8%
- 1.2.3 External walls - 0.3%
- 1.3.1 Ground floor slab - 1.3%
- 1.4.2 Façade openings - 0.4%
- 2.1.5 Floor coverings and finishes - 9.7%
- Construction site scenarios - 8.5%
- Deconstruction/demolition scenarios - 4.1%

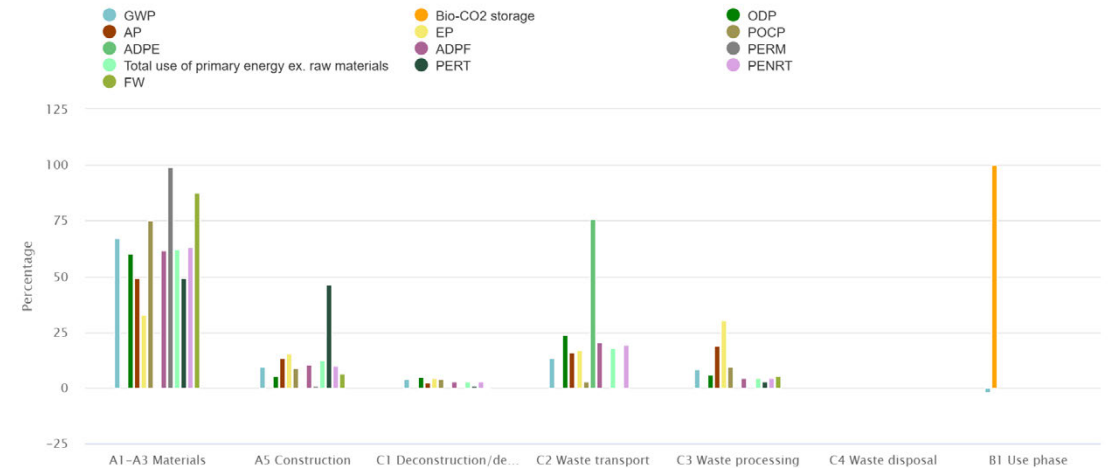


Global warming kg CO₂e - Life-cycle stages

- A1-A3 Materials - 65.7%
- C1 Deconstruction/demolition - 4.1%
- C3 Waste processing - 8.1%
- A5 Construction - 9.2%
- C2 Waste transport - 12.9%
- C4 Waste disposal - 0.0%



Results by life-cycle stage



5: Convert to reality



4: Play games together



1: Research user needs



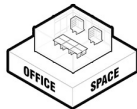
A space that grows.



LABORATORY
HIGH CARBON
MODULE



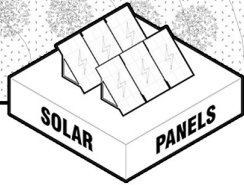
DORMITORY
HIGH CARBON
MODULE



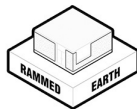
OFFICE SPACE
HIGH CARBON
MODULE



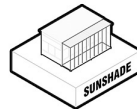
CAMPING AREA
LOW CARBON
MODULE



SOLAR PANELS
LOW CARBON
MODULE



RAMMED EARTH
LOW CARBON
MODULE



SUNSHADE
LOW CARBON
MODULE

2: Planning site



3: Space conversion to modulo

