Urban, architecture and Social Regeneration, Via Russoli, Milano

TORRI RISORSA

rice house®

CENTRO STUDI GRANDE MILANO

Coltivare la città

Ricehouse: the product takes on social and environmental responsibility

A Benefit Company that uses rice by-products rice to meet the demand for innovative materials for 100% natural constructions.

By organising the supply chain of rice by-products, it's possible to create an opportunity in the realisation of new materials for healthy building: an ethical and innovative way, committed to turning the home back into a living organism. Ricehouse presents itself as an intermediary between the valorisation of the raw material and its concrete application in the building world. A company route that focuses completely on sustainability, developing a circular economy system. "Our main objective is the commercialisation of new products derived from rice straw and husk. We believe in environmental responsibility combined with technological innovation to provide a sustainable alternative to the growing need for primary resources.

Building problem

HIGH ENERGY CONSUMPTION IN BUILDING SECTOR

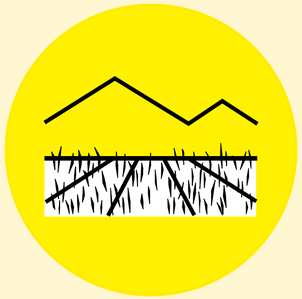
DURING THE CONSTRUCTION PHASE

40% of energetic consumption
36% of CO_2 emissions
1/3 of the total waste
50% of raw materials
21% of drinkable water

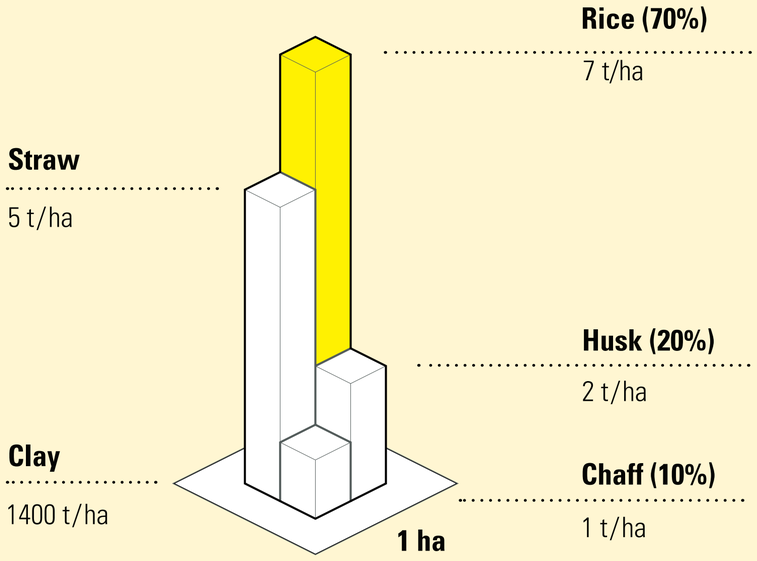
SICK BUILDING SYNDROME

40% of the materials are noxious

Agriculture problem



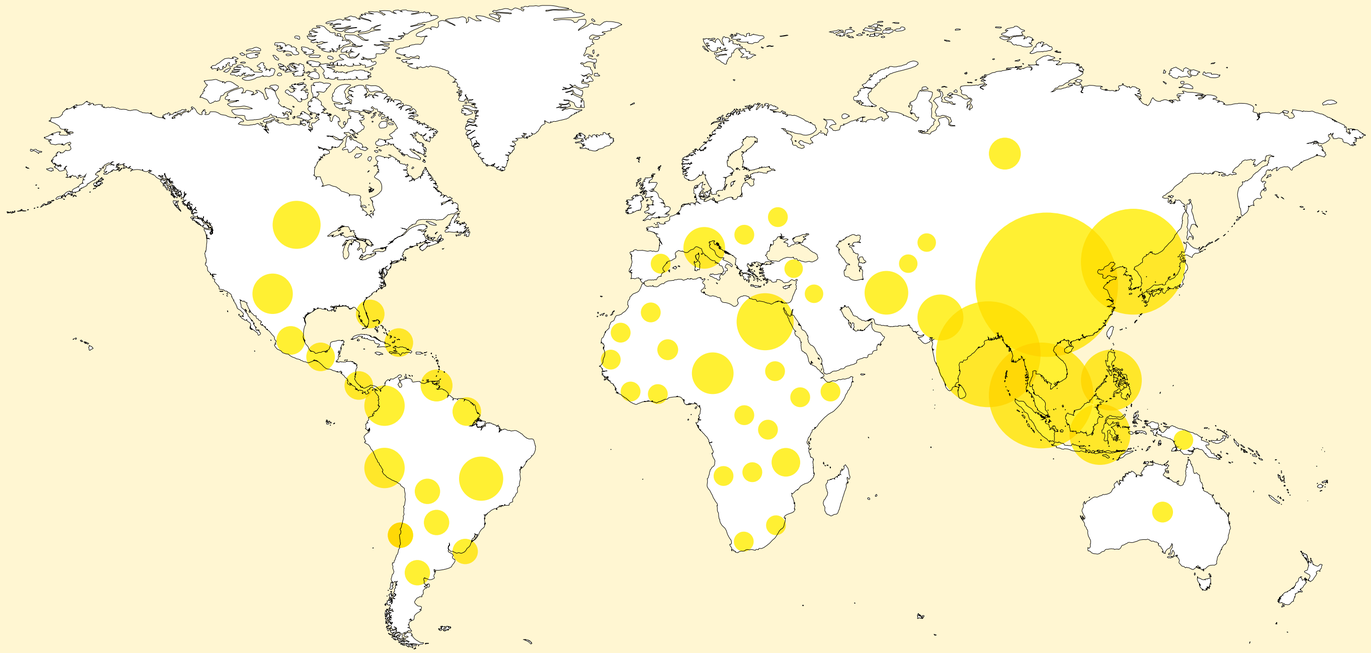
POLLUTION GENERATED FROM THE DISPOSAL OF RICE WASTE

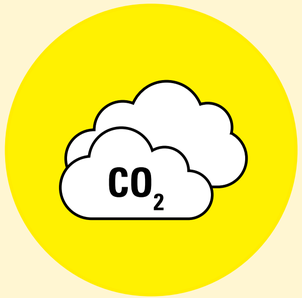


Rice = 7 tons per ha

Waste = 10 tons per ha

Opportunity: by-products of rice in the world

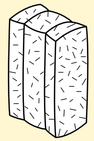




CO_2 REDUCERS

STRAW

1.200 millions
tons of CO_2
reduced every year



HUSK

479 millions
tons of CO_2
reduced every year

162 millions ha of **rice cultivation**
324 millions tons / year of **husk**
810 millions tons / year of **Straw**

5 continents and more than **100 countries**
1,2 billions tons of rice every year
Main **food** for
66% of the **world** population

Opportunity: by-products of rice in Italy

230.000
cultivated ha

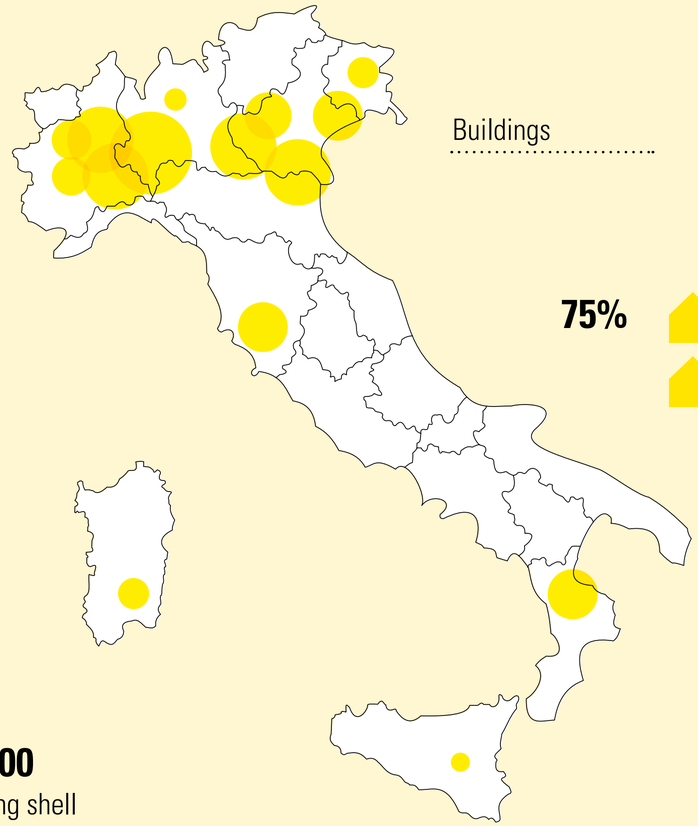
Rice

250 bales/ha

57.000.000
straw bales

2 bales = 1m²

28.700.000
m² of building shell



Buildings

93%
of which are built with non-sustainable materials

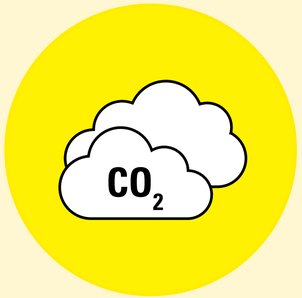
15.330.400
total m² built every year

75%

11.500.000
total m²

115.000
buildings

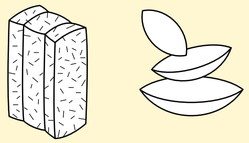
Assuming an average of 100 m² per building (250 m² ofbuilding shell)



CO_2 REDUCERS

Straw

1.7 millions
tons of CO_2
reduced every year



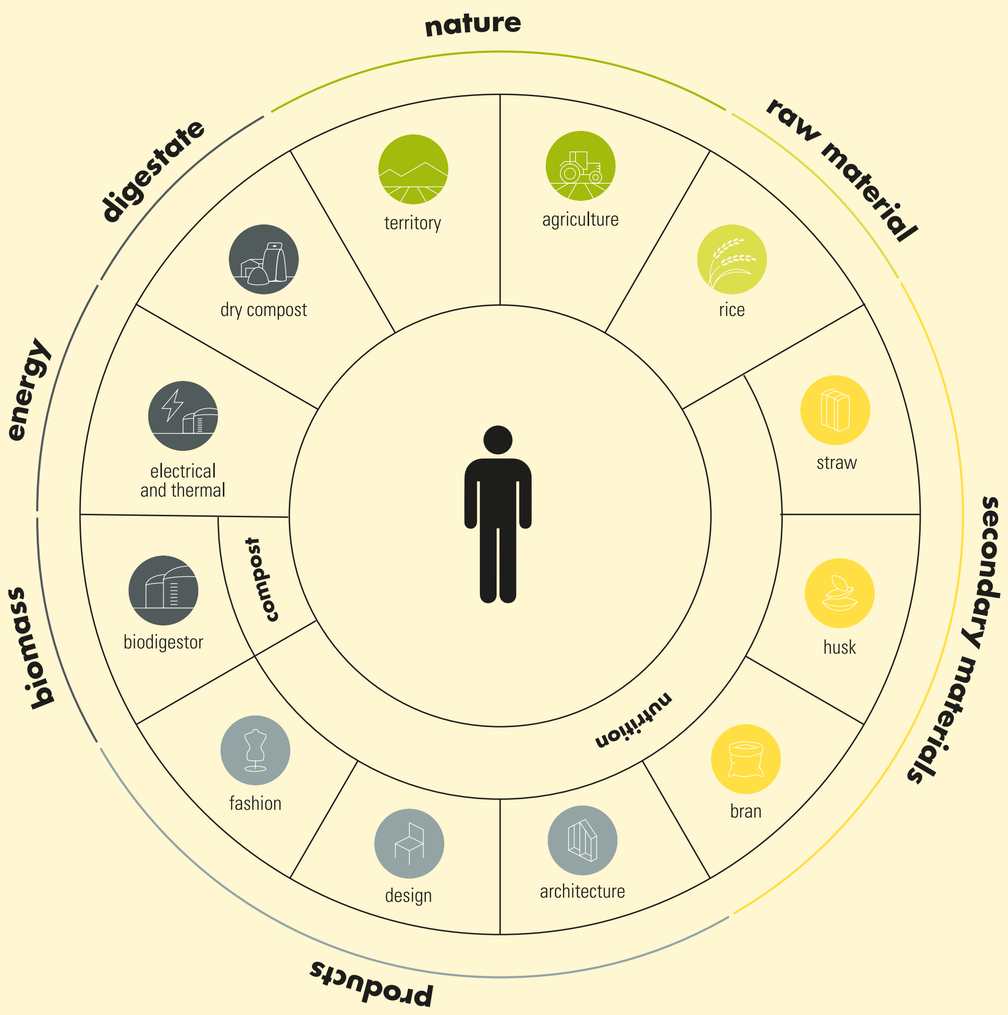
Husk

740.000
tons of CO_2
reduced every year

230.000 hectars of **rice cultivation**
0.5 millions tons / year of **husk**
1.15 millions tons / year of **straw**

1,6 millions tons of rice every year are **produced in Italy**
93% of the production is located in **northern Italy**
5 kg is the average yealry consumption **per person in Italy**

Circular economy of rice supply chain



Ricehouse is an innovative PMI, benefit society and BCorp that promotes a responsible change in society.

Ricehouse is a complete example of circular economy thanks to the development of a line of building products derived from the recycling of agricultural waste; this allows to solve the environmental problems directly connected to the disposal of this waste.

Certified B Corporation

SOLARIMPULSE EFFICIENT SOLUTION 2021

MYCARBONZERO

CE

coalizione Italia

SUSTAINABLE DEVELOPMENT GOALS

3 GOOD HEALTH AND WELL-BEING
5 GENDER EQUALITY
8 DECENT WORK AND ECONOMIC GROWTH
9 INDUSTRY, INNOVATION AND INFRASTRUCTURE
10 REDUCED INEQUALITIES
11 SUSTAINABLE CITIES AND COMMUNITIES
12 RESPONSIBLE CONSUMPTION AND PRODUCTION
13 CLIMATE ACTION
15 LIFE ON LAND
17 PARTNERSHIPS FOR THE GOALS

The building as a CO_2 container

Ricehouse architectural projects:

2021 Sequestered CO_2:
266 tons = 50.666 trees

2022 Sequestered CO_2:
765 tons = 150.000 trees

2023 Estimated sequestered CO_2:
1.200 tons = 228.571 trees

every year in Italy Estimated CO_2 sequestered if we used all available matter:

2.440.000 tons = 464.761.905 trees

Source: Eni Integrated Technical Study "Sustainable land use management and forest offsets" San Donato Milanese, October 2018

From the beggining to...

2014

Superortopiù

27, Via Tortona - Milano

Garden managed by the pensioners of the COAS association of Barona.

Active from April to June 2014

2015

The rice paddy on the roof

Garden managed by the pensioners of the COAS association of Barona.

Rice paddy on the roof managed by the rice growers of the Strada del Riso Vercellese di Qualità

Design workshop related to the project: "Cultivating the City - tower of street Russoli - Barona" in collaboration with Ecolé du Paysage de Versailles

Definition of the redevelopment project

Active from March to December 2015

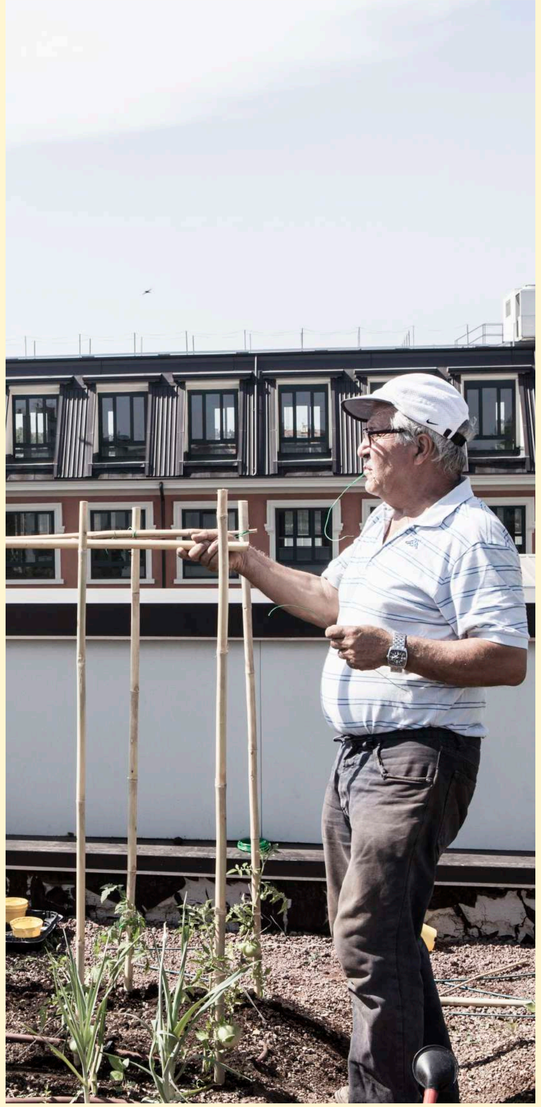
2020

The tower of via Russoli

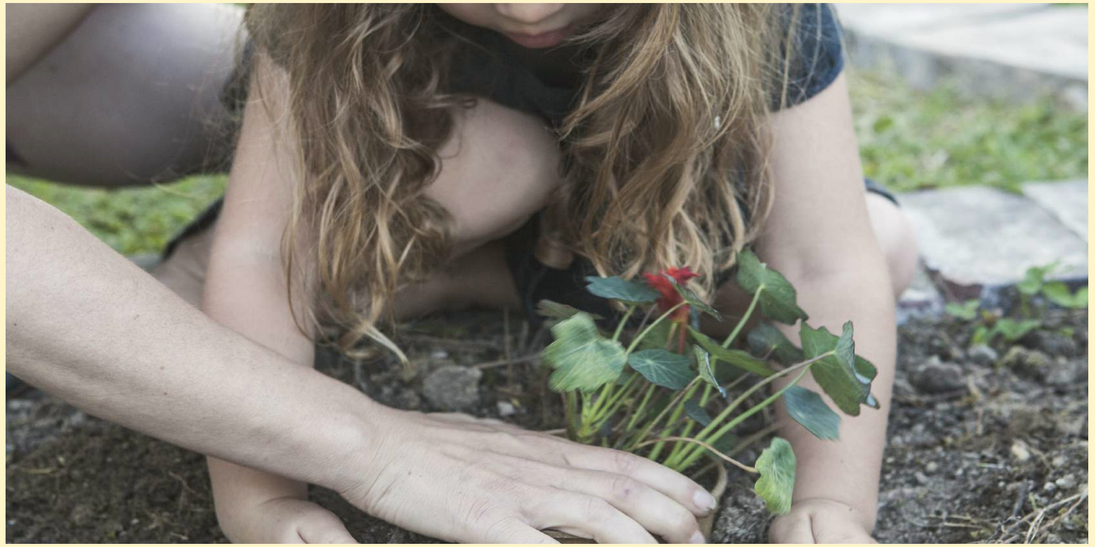
Via Russoli - Milano

First phase: Tower 18
- roof garden
- energy requalification

Superortopiù - Via Tortona



Superortopiù - Via Tortona



Torri Risorsa

City: **Milano**
Year: **2022-2023**
Surface: **15.060** *m²*
Energy demand: **7** *Kwh/m²anno*
Materials: rice husk, panel made of rice straw, plaster lime and rice husk, finishing plaster lime and rice husk, cork, cellular glass.
Plant strategy: photovoltaic system.

Torri Via Russoli

Milano

Via Russoli 14,16,18,20

Social regeneration and energy redevelopment

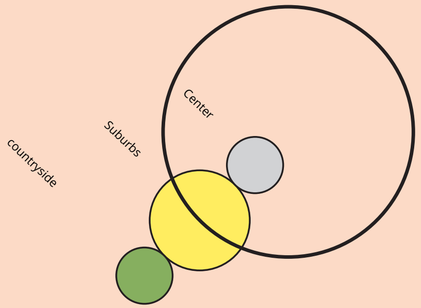
The social and urban regeneration of the four towers is carried out through an architectural project of energy redevelopment from class C to A4 with prefabricated technological system, which provides not only natural materials from the waste of rice production, but also laser scanner technologies that, through the use of BIM software, allow to have a rapid construction site without scaffolding that allows the continuity of housing tenants.

The transformation of flat roofs into roof gardens, in addition to promoting biodiversity, counteracts the islands of heat and creates new green spaces

The project therefore offers a positive environmental and social impact in the neighborhood.

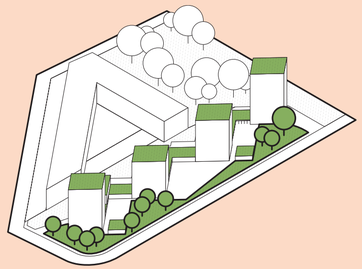
THE NEW LANGUAGE

The large-scale systemic approach allows you to multiply the effect of sustainability.
The sign of the third paradise, between city and countryside, focuses on the periphery.
The suburbs become the transforming dynamo of the entire society.



1

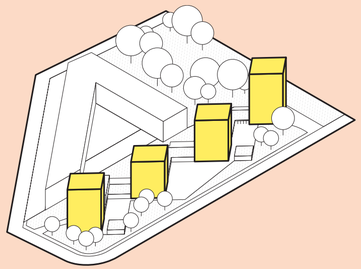
Roof requalification with green spaces



Fruit & Vegetable autonomy

2

Energy requalification

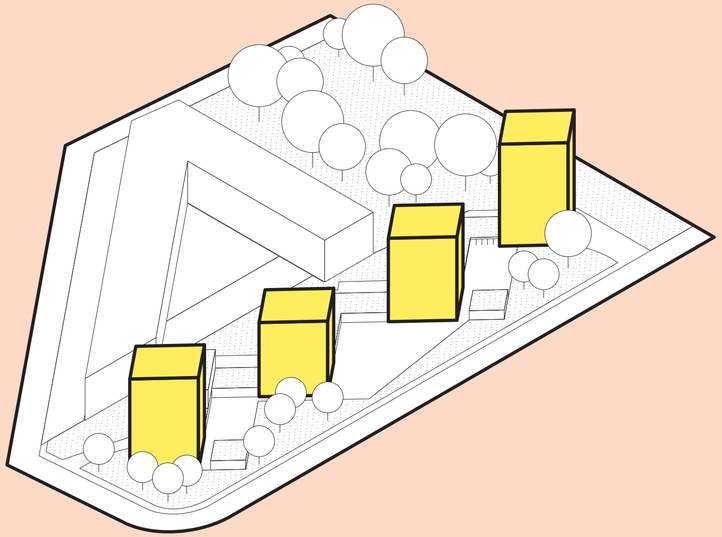


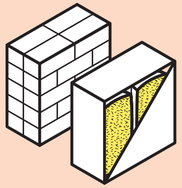
Energy autonomy

THE DESIGN INTERVENTIONS

Energy efficiency of the envelope

RICE HUSK COAT





- Investment for the future
- Environmental sustainability
- Excellent performance
- Healthy material

G

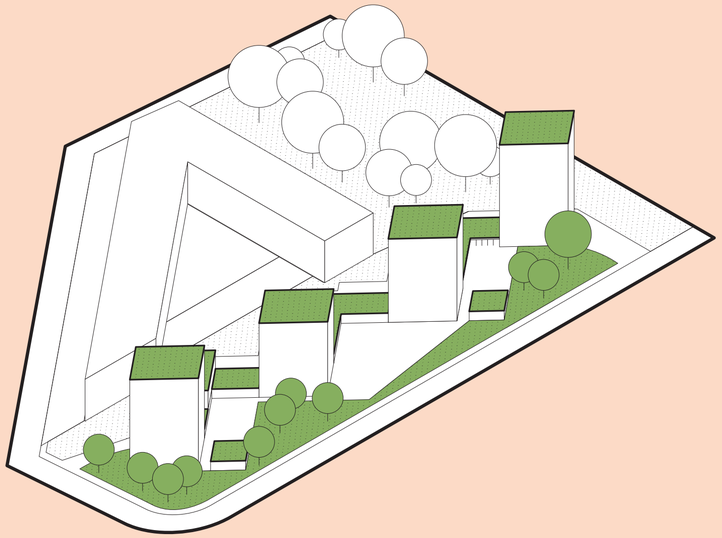
A+ /Nzeb

SELF-SUFFICIENCY ENERGETICS

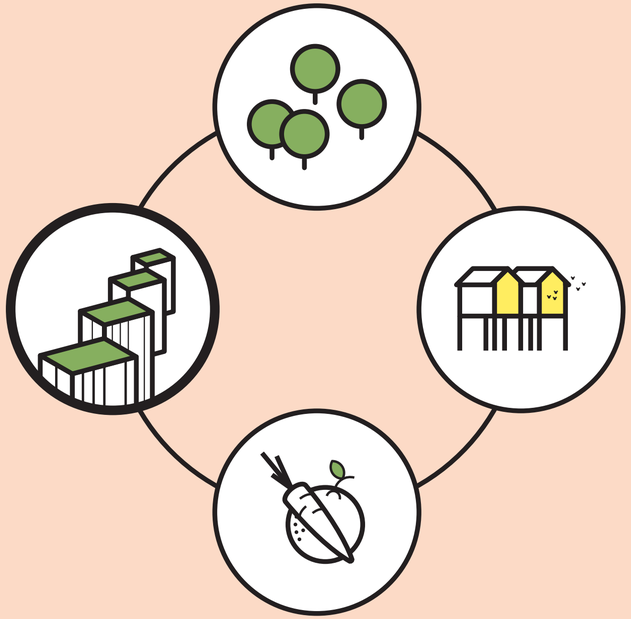
THE DESIGN INTERVENTIONS

Realization of green roofs and vegetable gardens

URBAN AGRICULTURE



1 Mq green rooftop



SELF-SUFFICIENCY ENERGETICS

SELF-SUFFICIENCY ENERGETICS

Social-Urban Rigeneration

Concept and benefits of the project

ECONOMIC SUSTAINABILITY
giving the possibility to those with a low income to produce food at low cost for their own consumption

WORK SUSTAINABILITY
bringing attention and interest to an ancient and precious traditional profession, that of the farmer, in the past progressively abandoned and still underestimated by the new generations

SOCIAL SUSTAINABILITY
creating aggregation and integration between all citizens and recovering those relations of good neighborliness and mutual help that the city sometimes cancels, generating loneliness

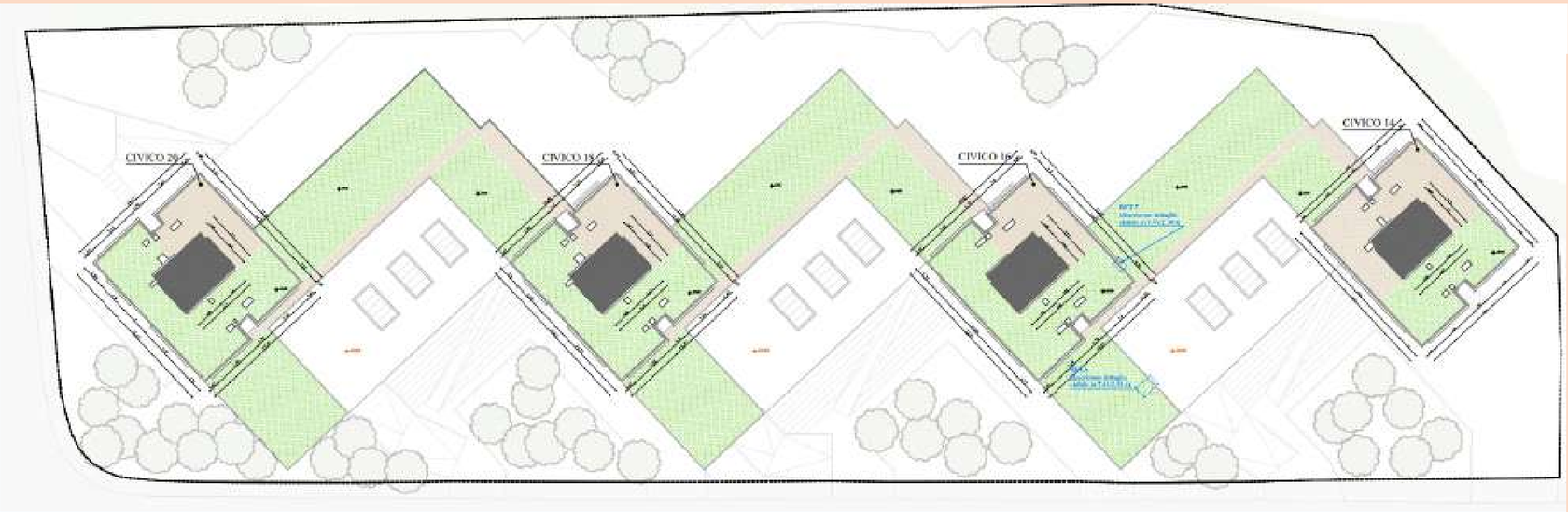
CIVIC SUSTAINABILITY
creating bonds of affection and respect of the citizen for the public territory, with a view to protection and care, recovering green areas otherwise abandoned at the mercy of thugs who often violate, soil and pollute public parks

ENVIROMENTAL SUSTAINABILITY
with the exclusive application of organic farming as a method of cultivation, to eat pesticide-free products and also create a 0 Km production chain

THE ARCHITECTURAL PROJECT

Pianta Piano Terra

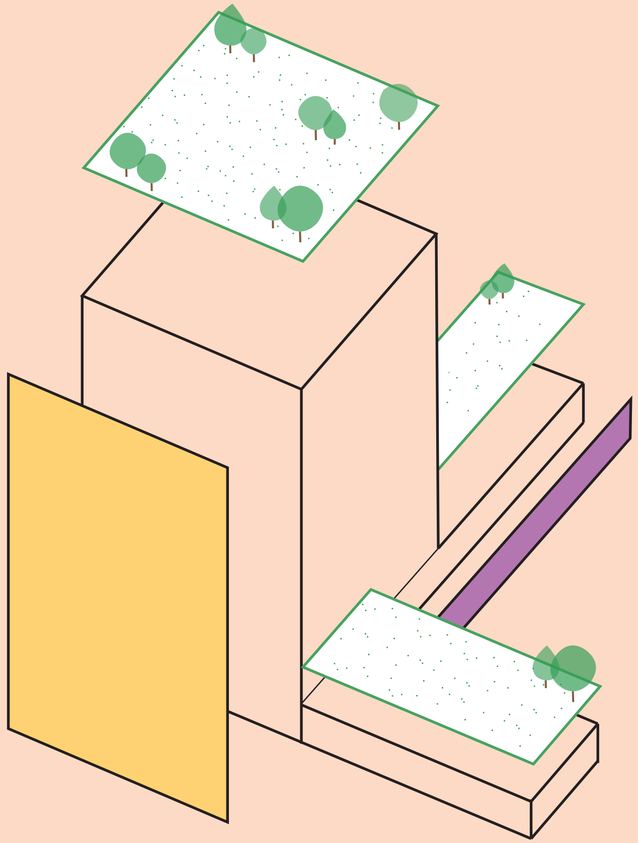
Pianta Piano Coperture

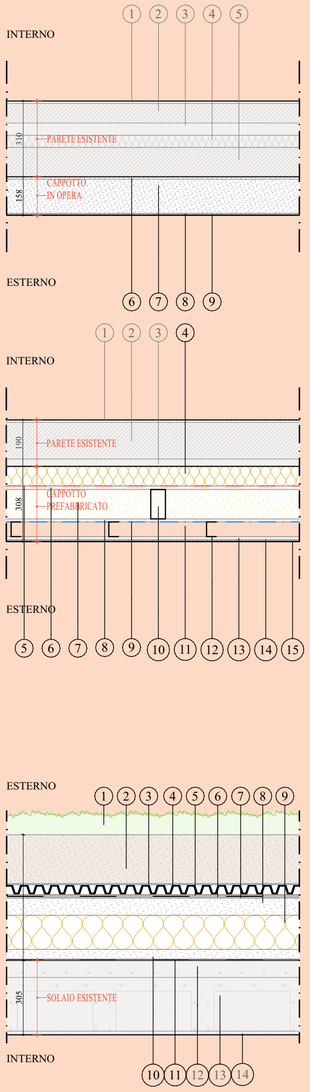


Prospetto Sud-Est

Prospetto Nord-Ovest

Stratigraphies of walls and floors





SV08 - PARETE PERIMETRALE

sp. 310 mm (parete esistente) + 158 mm (cappotto in opera)

1 intonaco - sp. 10 mm
2 laterizio forato - sp. 80 mm
3 intercapedine d'aria - sp. 50 mm
4 isolamento in polistirene - sp. 50 mm
5 laterizio facciavista - sp. 120 mm
6 collante a base calce - sp. 10 mm
7 isolamento in termointonaco RH 110 - sp. 140 mm
8 rasatura in calce Ricehouse RH 210 - sp. 2+2 mm
9 intonachino Ricehouse RH 220 - sp. 4 mm

SV03 - PARETE PERIMETRALE

sp. 190 mm (parete esistente) + 308 mm (cappotto prefabbricato)

1 intonaco - sp. 10 mm
2 laterizio forato - sp. 150 mm
3 intonaco - sp. 30 mm
4 isolamento Ricehouse RH 50 - sp. 80 mm
5 freno a vapore e barriera all'aria con armatura cellulosa naturale e riciclata
6 pannello OSB 4 in legno di pioppo - sp. 10 mm
7 isolamento in lolla di riso Ricehouse RH-L - sp. 120 mm
8 lastra in gessofibra non combustibile, classe A1 di reazione al fuoco, resistente all'umidit‡ VidiFire - sp. 12,5 mm
9 telo impermeabile
10 montante strutturale in legno di pioppo - dim. 60x120 mm
11 intercapedine d'aria - sp. 60 mm
12 profilo metallico
13 lastra in Aquapanel - sp. 12,5 mm
14 rasatura in calce Ricehouse RH 210 - sp. 2+2 mm
15 intonachino Ricehouse RH 220 - sp. 4 mm

SC05 - PRATO (comprende stratigrafie dalla SC.01 alla SC.06)

sp. 305 (solaio esistente) + 460 a 660 mm + var

1 vegetazione
2 TerraMediterranea TMT per inverdimenti intensivi sp. da 150 a 350 mm (compattata)
3 telo filtrante MediFilter MF 1
4 strato di accumulo, drenaggio aerazione MediDrain MD 40 - sp. 40 mm
5 feltro di accumulo e protezione MediPro MP500
6 impermeabilizzazione antiradice con membrana sintetica HarpoPlan ZDUV - sp. 1,5 mm
7 tessuto non tessuto di separazione
8 sottofondo pendenzato Lecamix Facile - sp. min 50 mm / max 160 mm
9 isolamento in vetro cellulare Foamglas Roof Board G2 T3+ - sp. 140 mm
10 livellamento piano di posa con Ecolight - sp. 40 mm
11 guaina di sacrificio
- substrato esistente - sp. 100 mm (da rimuovere)
- guaina bituminosa - sp. 20 mm (da rimuovere)
- massetto in cemento di pendenza - sp. 60/100 mm (da rimuovere)
- polistirene - sp. 70 mm (da rimuovere)
12 caldana in cls armato - sp. 70 mm
13 solaio in laterocemento - sp. 220 mm
14 intonaco - sp. 15 mm

Energy class

Energy performance

Energy class G

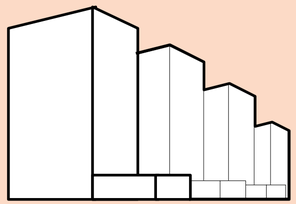
(energy demand 59.500 kWh/m^{2}anno)

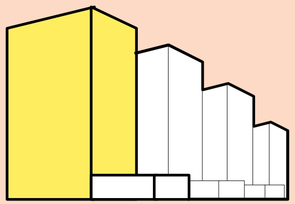
G

Classe Energetica A4

(fabbisogno 5.100 kWh/m^{2}anno)

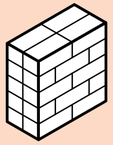
A4



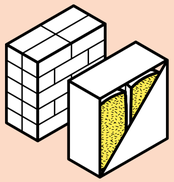


Current building

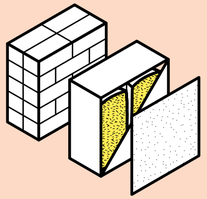
Re-building with rice husk



Existing



Husk coat

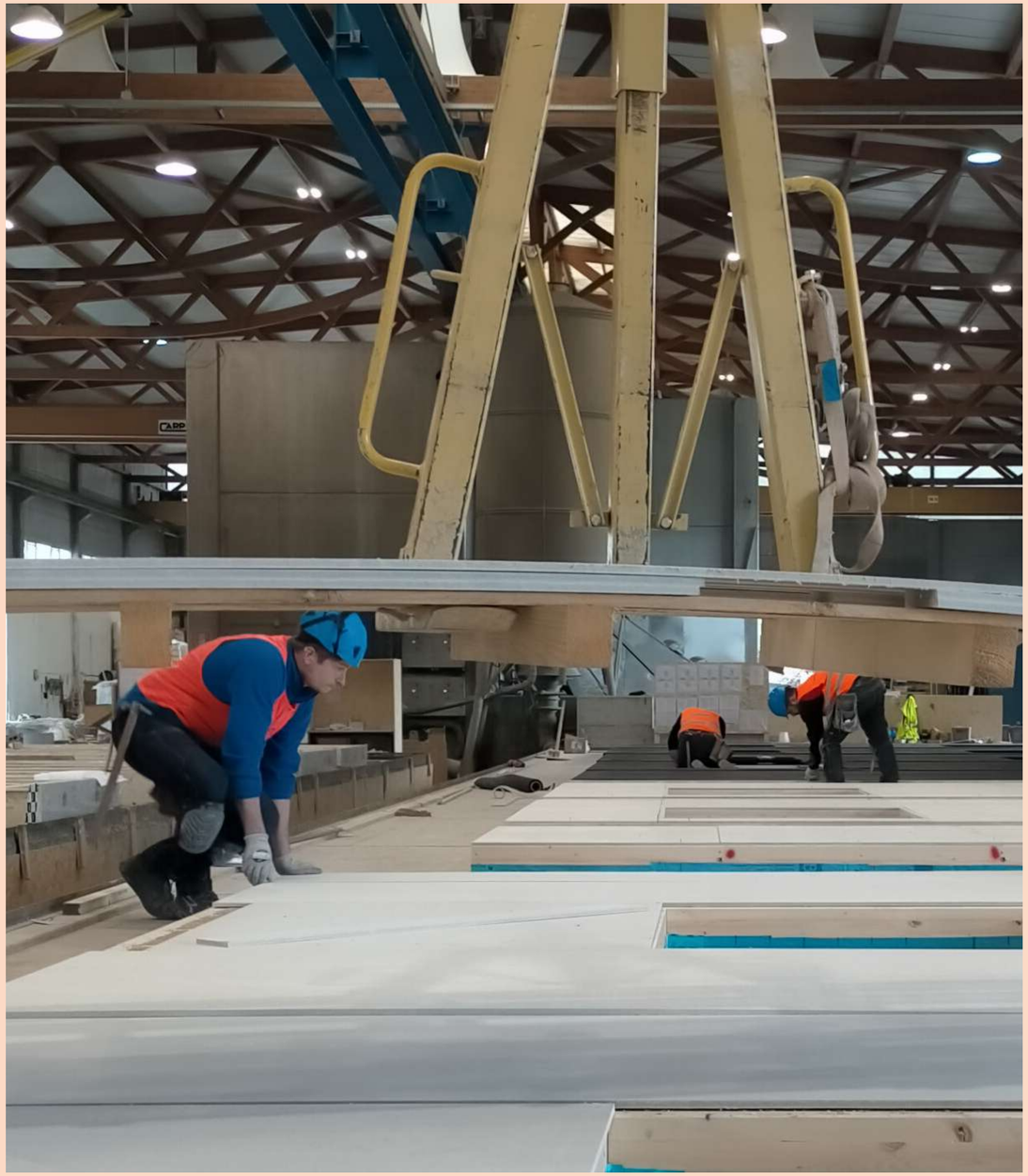


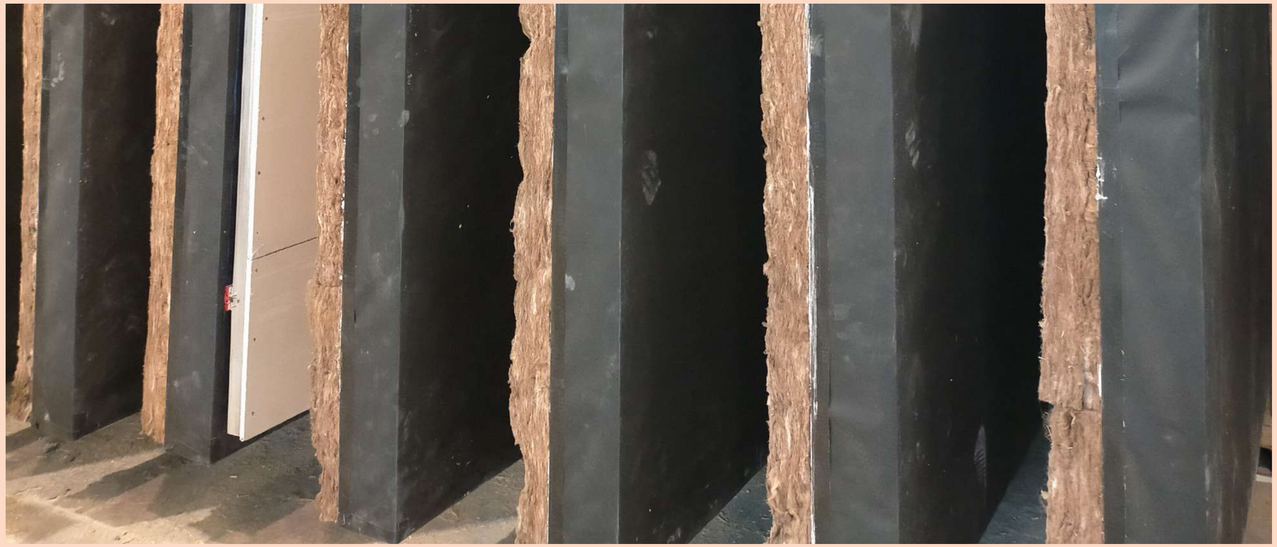
Finishes based on rice waste

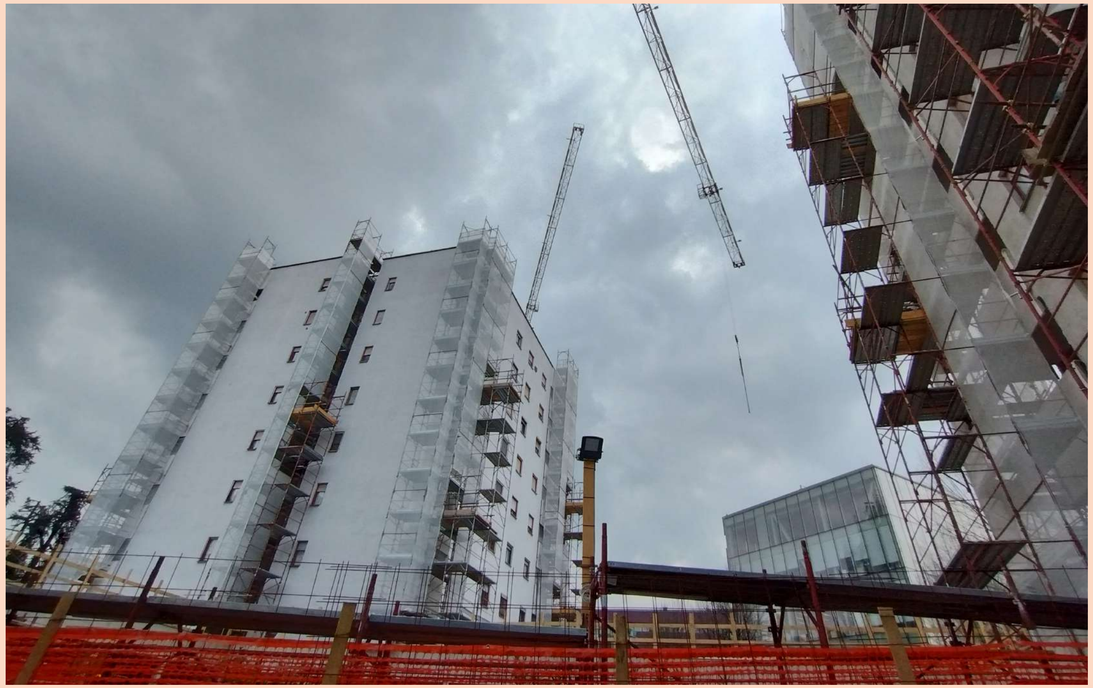
THE EXISTING BUILDINGS

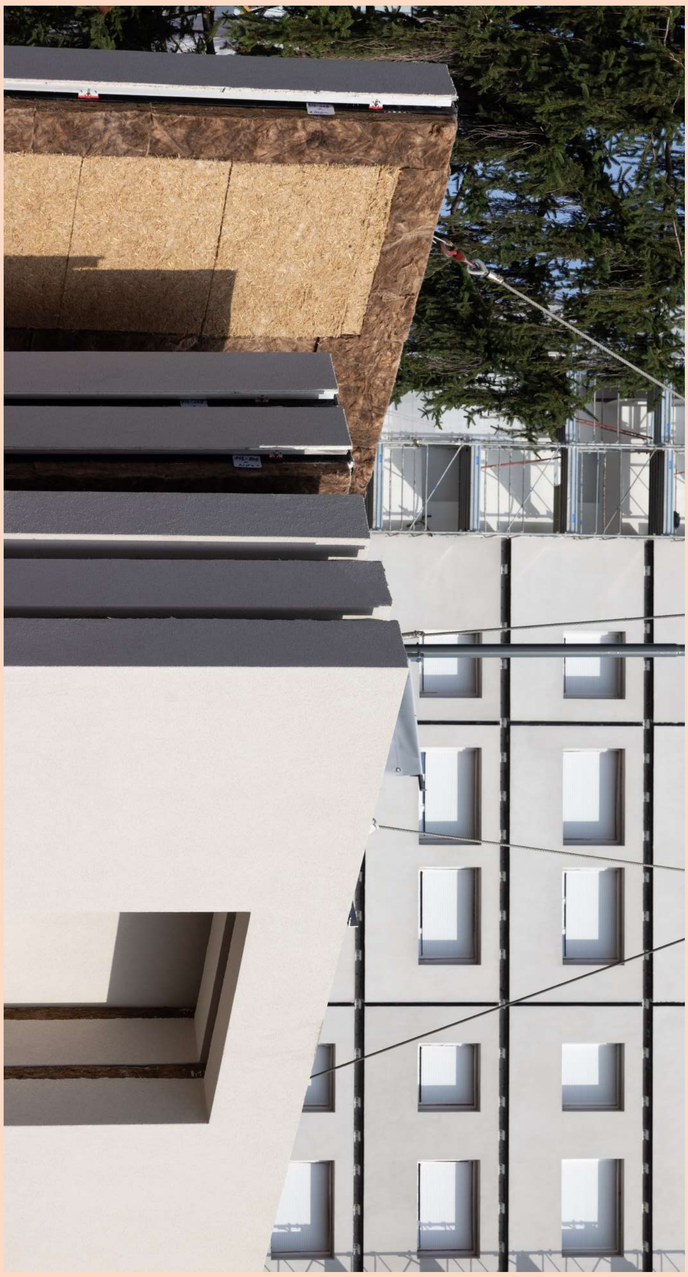
State of the building

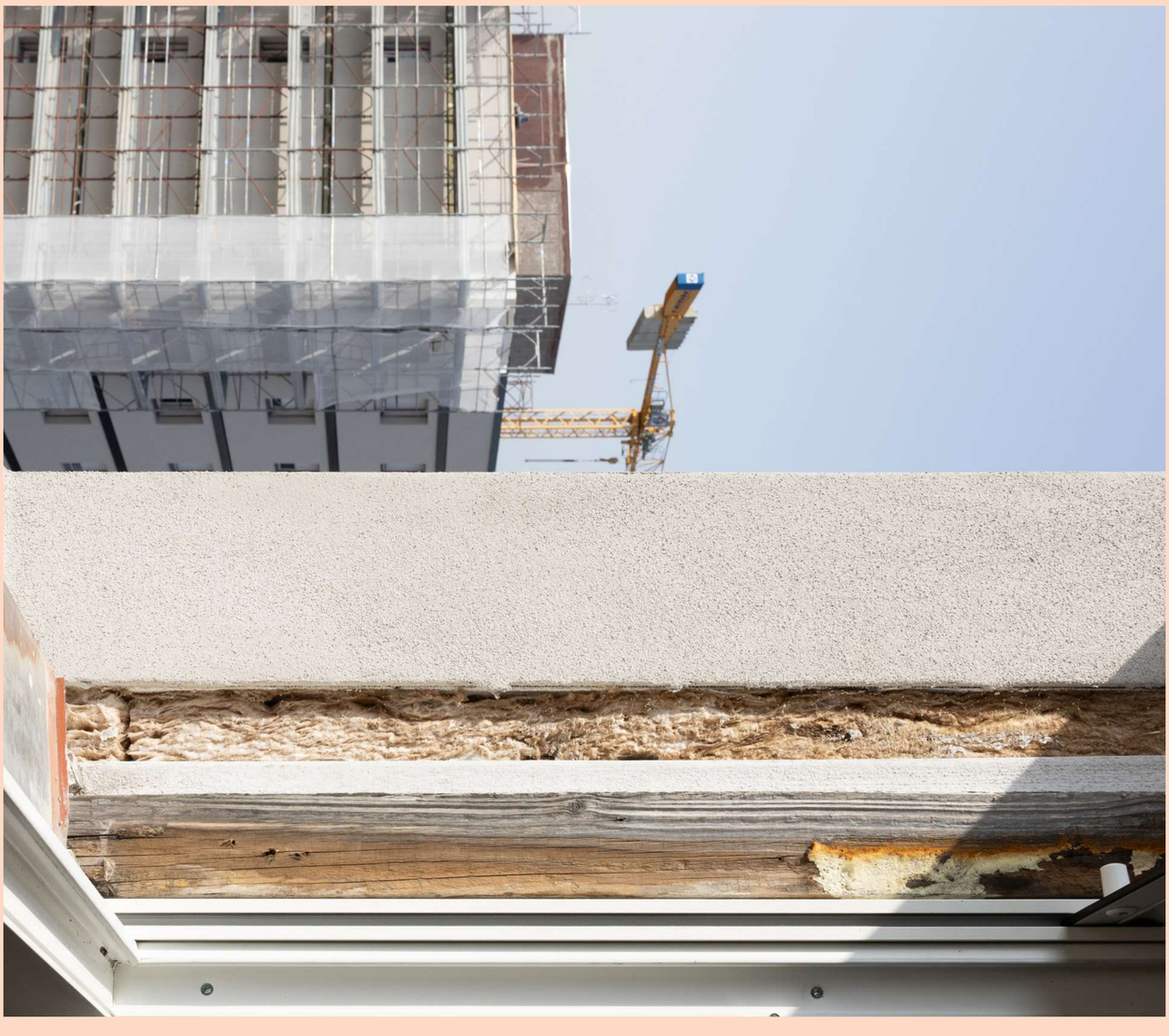
THE CONSTRUCTION SITE

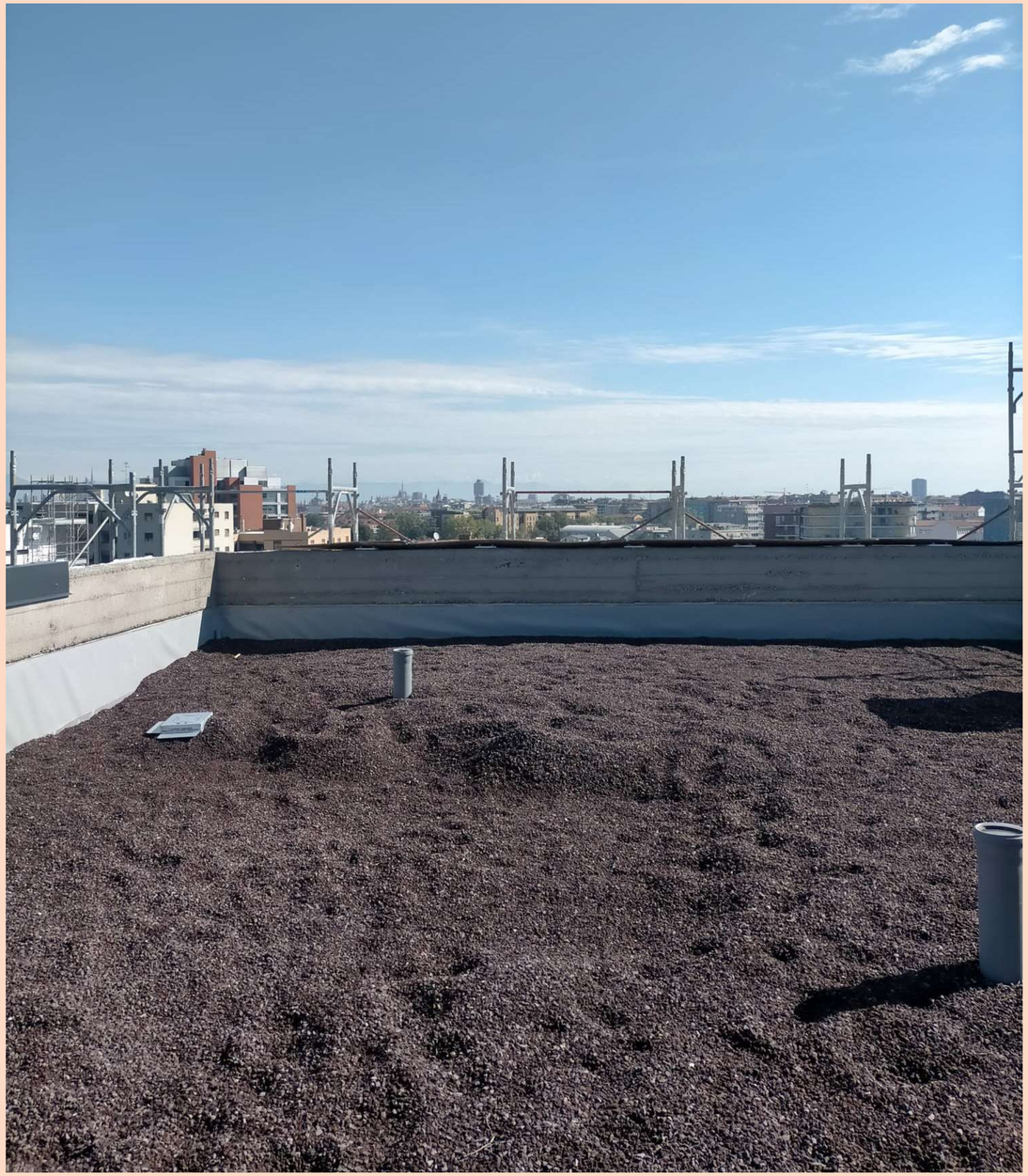




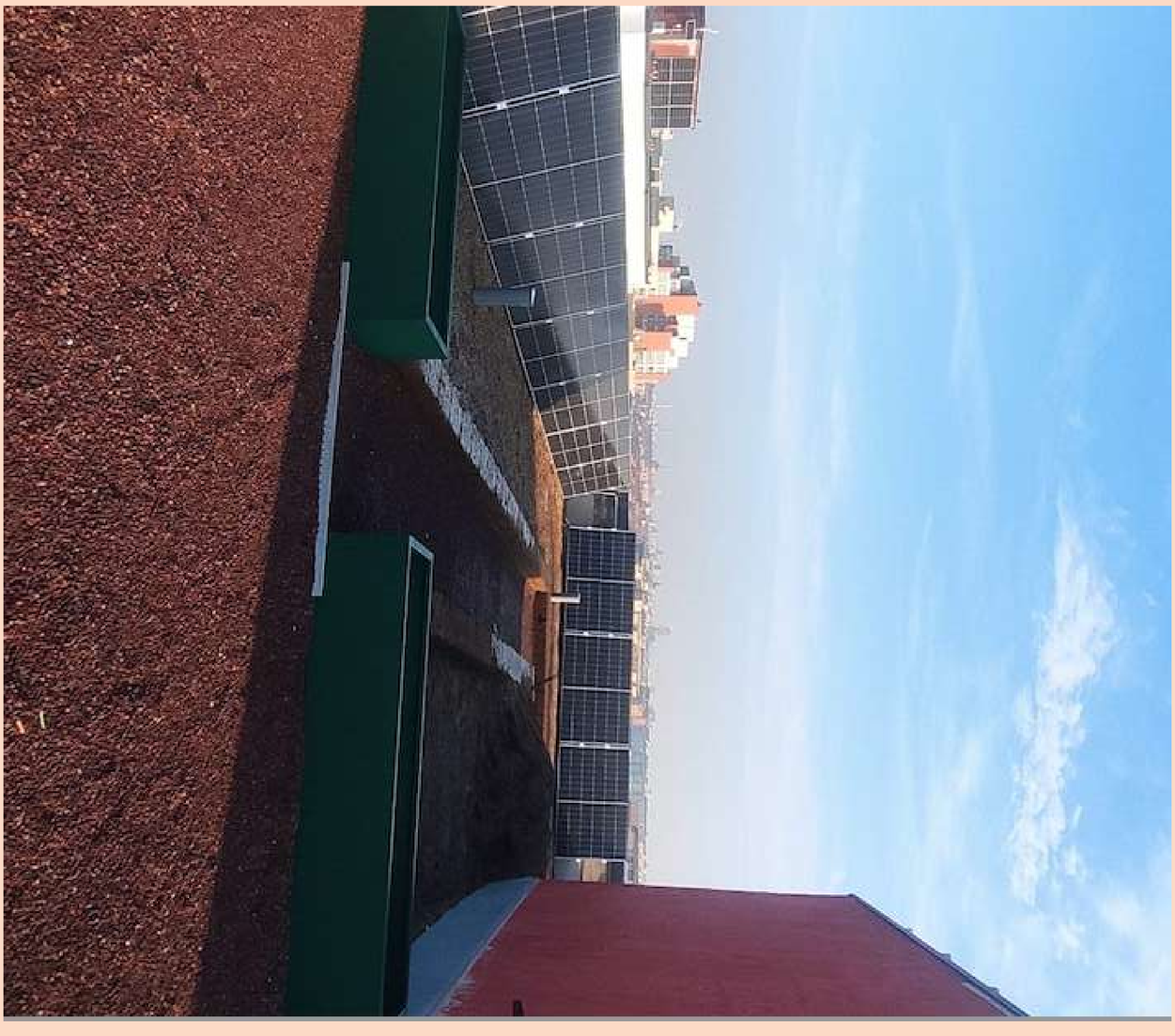






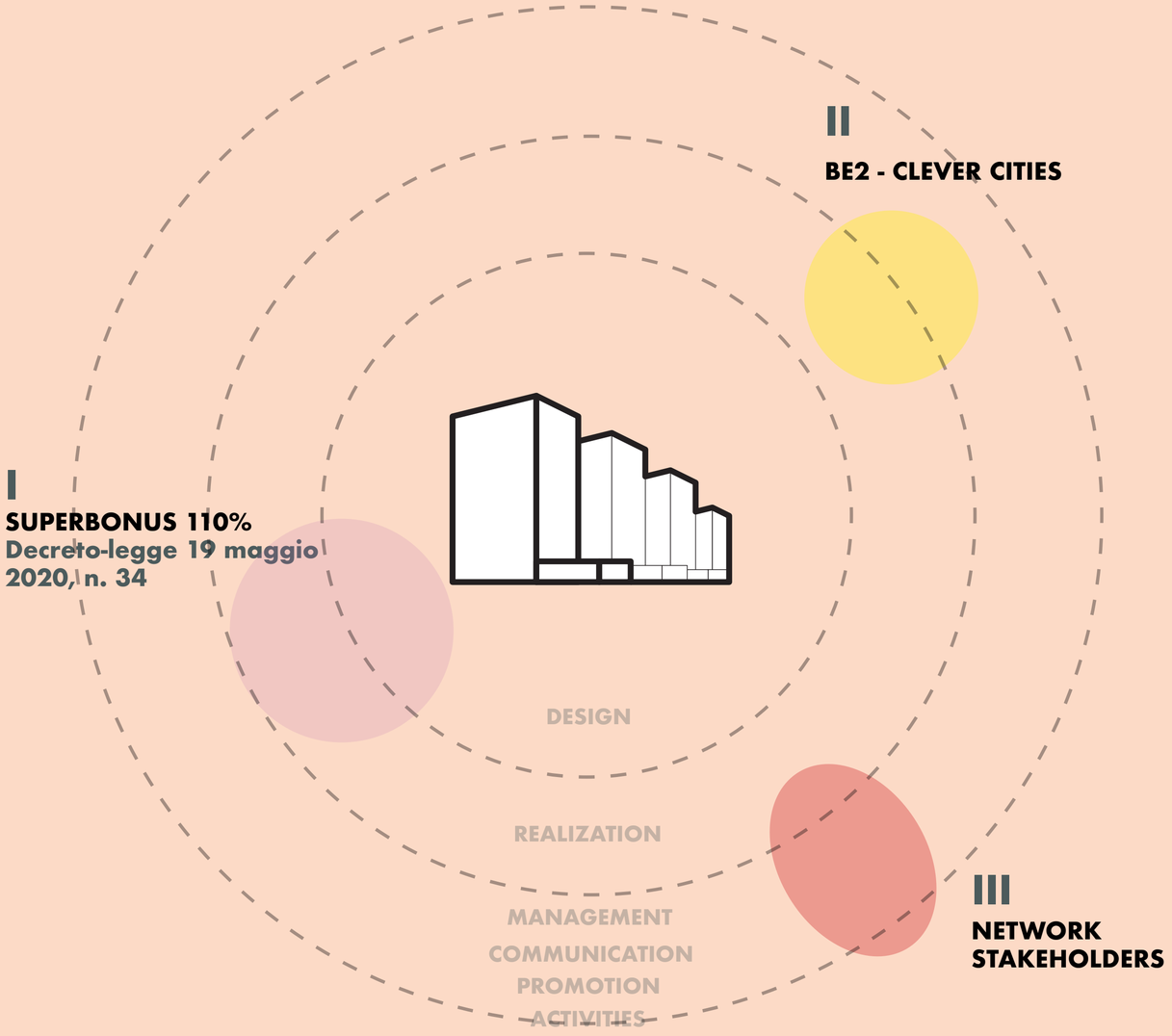


THE NEW FACE OF VIA RUSSOLI



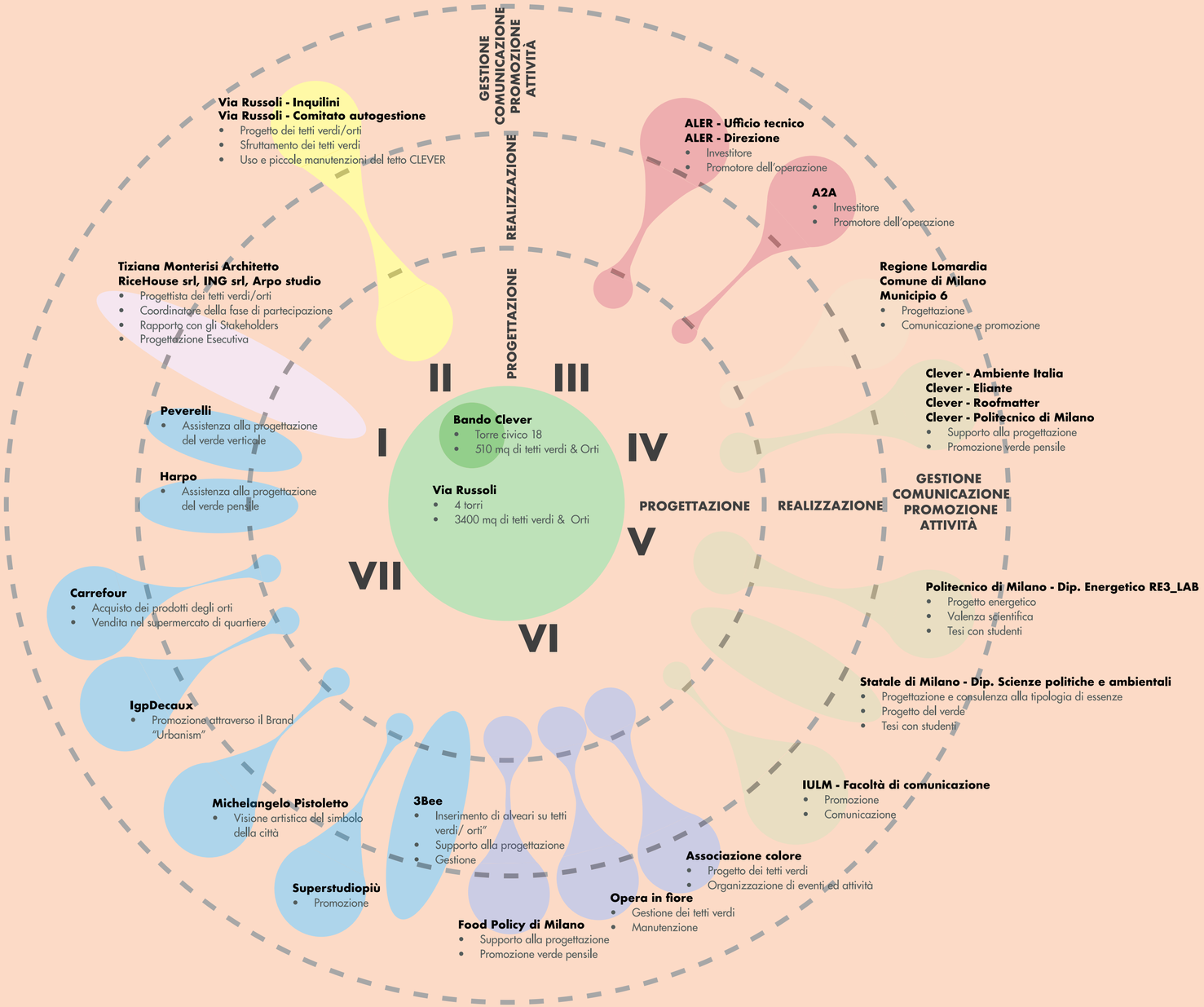
THE PROCUREMENT PROCESS

Funding opportunities



Stakeholder

Un percorso di co-creazione e co-progettazione sviluppato tra progettisti e stakeholder secondo un processo di coinvolgimento attivo attraverso le fasi di ispirazione ideazione e implementazione.



- **PROGETTISTA/ COORDINATORE PARTECIPAZIONE**
- **INQUILINI PRINCIPALI/ BENEFICIARI**
- **PROPRIETÀ**
- **ISTITUZIONI/ PARTE PUBBLICA**
- **UNIVERSITÀ**
- **ENTI / ASSOCIAZIONI**
- **REALTÀ PRIVATE**

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