



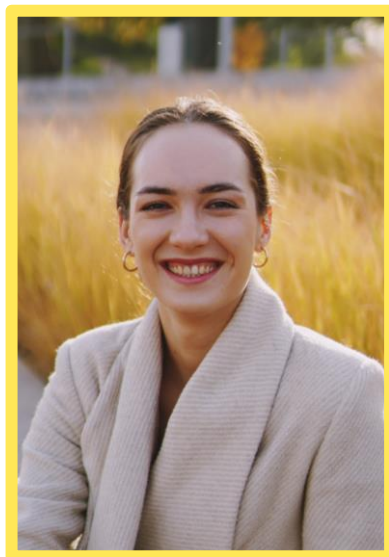
# ARCHITECTURE STUDENT CONTEST

18<sup>th</sup> INTERNATIONAL EDITION, LISBON 2023



ellow

POLAND  
TEAM 11



Magdalena  
Kazulak



Konstancja  
Staniecka



Politechnika  
Wroclawska

Teachers: Anna Bać, Lea Kazanecka-Olejnik



Inspired by Lisbon's Pink Street, we are designing a yellow path - a new cultural space on the city map.

If you follow it, you'll walk through a dense Miyawaki forest, go under a high passage and reach the Lisbon Video Library. The facade of the residential building that you pass by provides not only better views for users, but also enables implementation of sustainable solutions into the building e.g.: solar chimneys, natural ventilation. Come with us through nature to culture!





# WHY YELLOW?

Perfect sun reflection



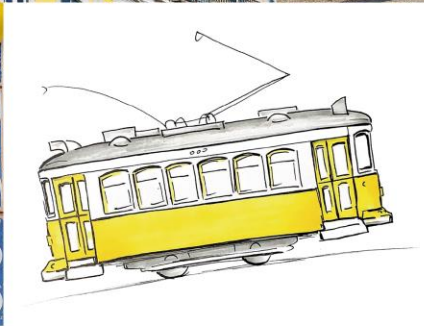
Bairro Alto facades



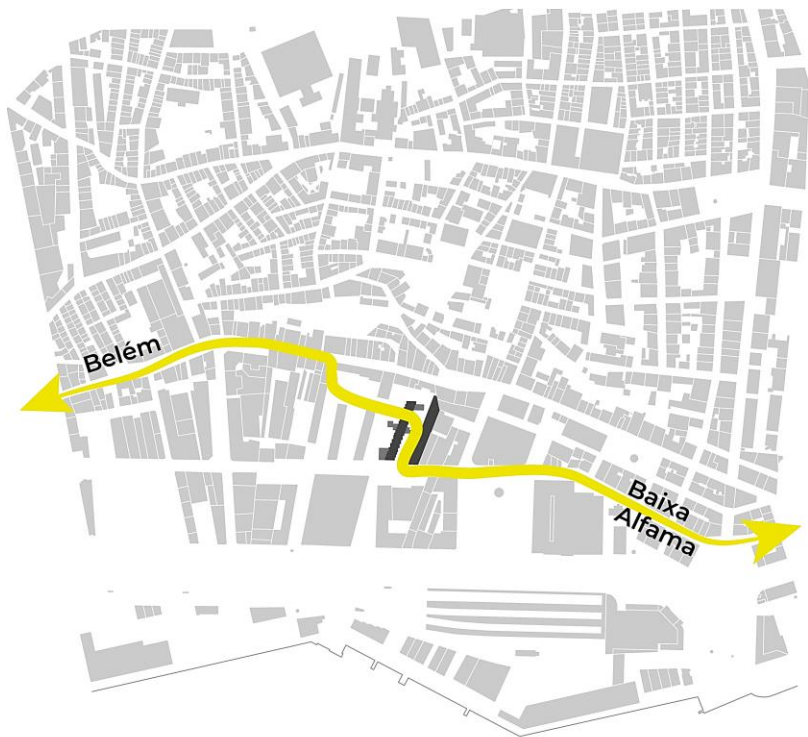
Praça do Comércio



Lisbon trams



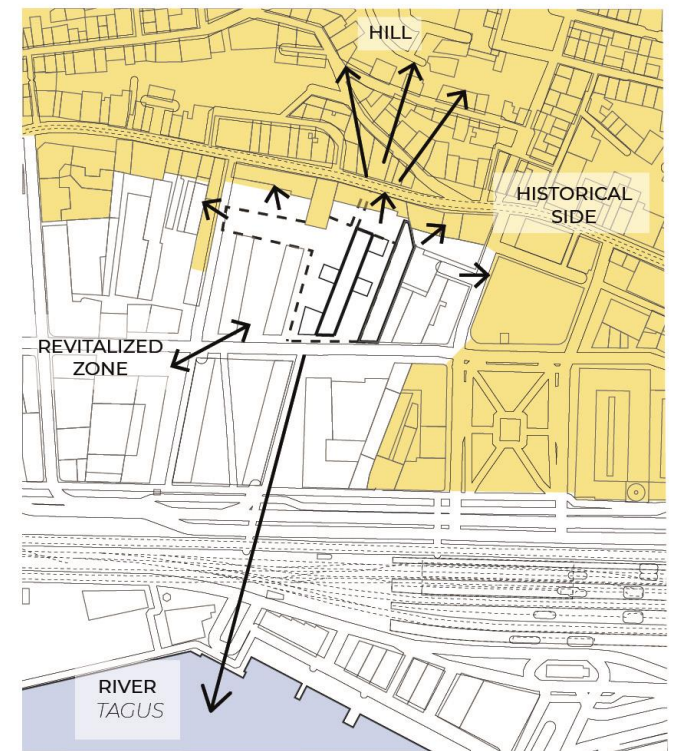




LOCATION



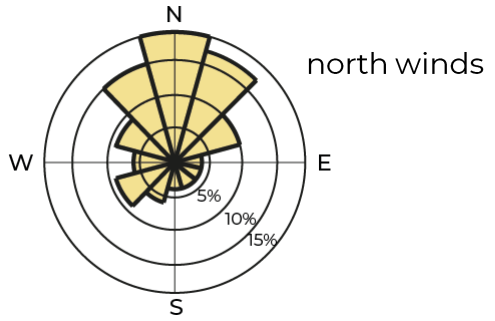
GREENERY ANALYSIS



SITE ANALYSIS

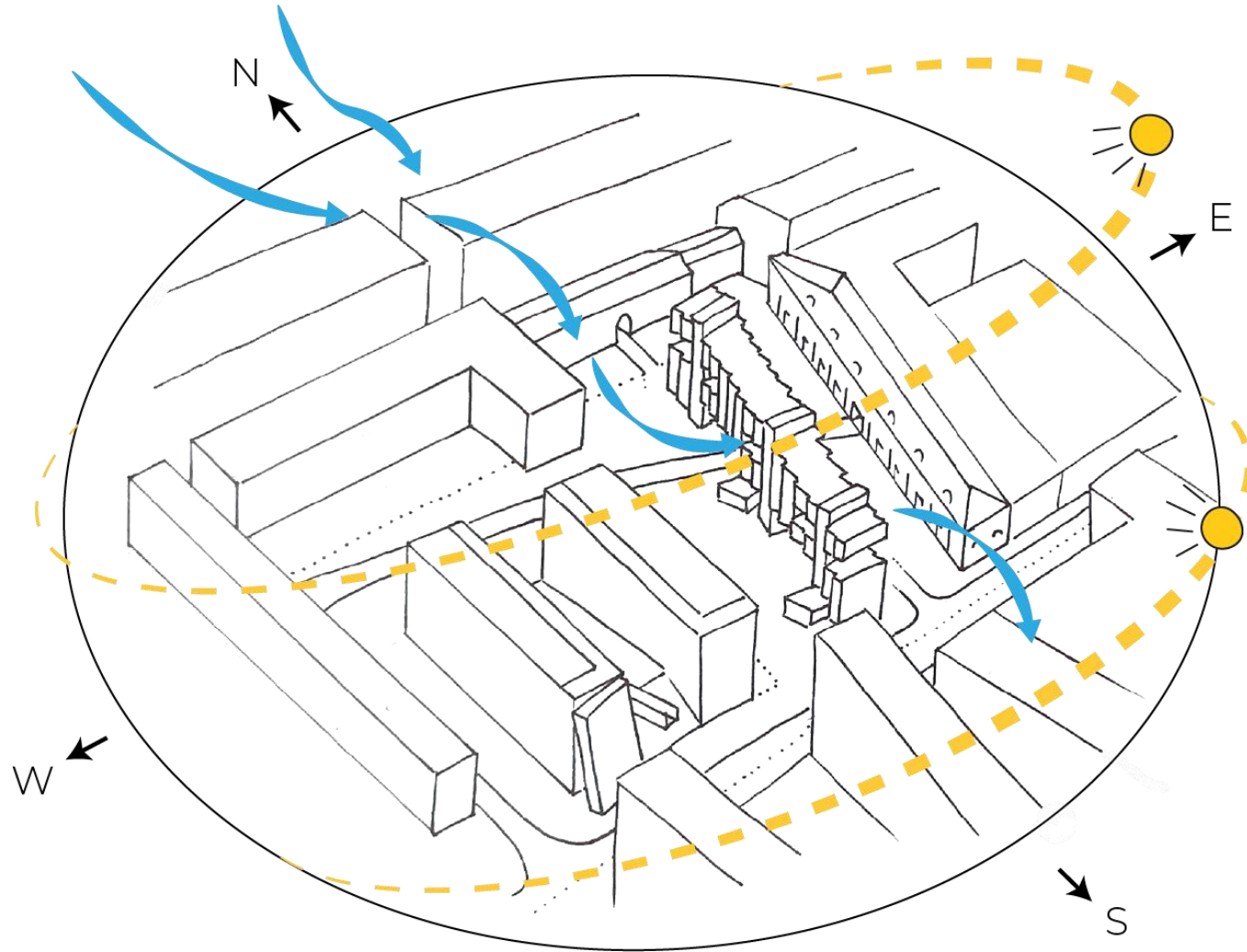


# SUSTAINABILITY ANALYSIS & STRATEGY



 wind - cooling, ventilation  
sun - energy, light

 overheating  
urban heat island



summer solstice  
sun altitude  $74,7^\circ$

solar radiation  
3017 hours per year

winter solstice  
sun altitude  $27,9^\circ$



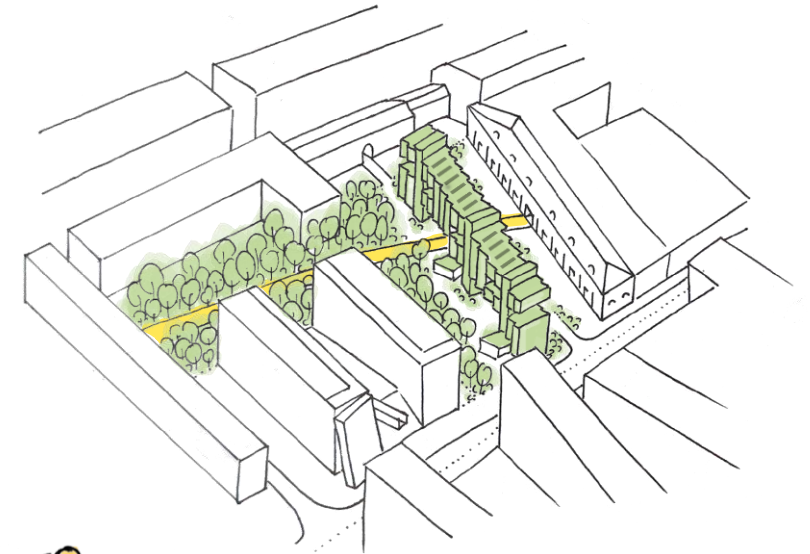
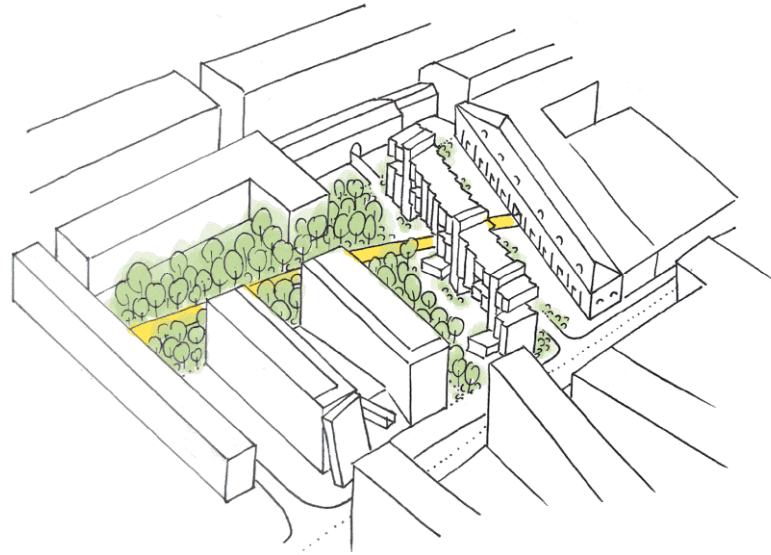
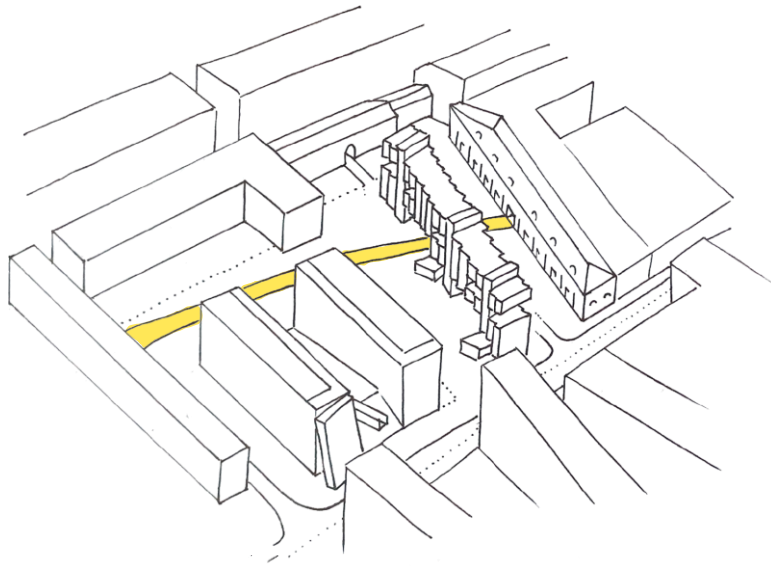




IMPROVING POSTINDUSTRIAL SPACE  
YELLOW STREET

DENSELY PLANTED  
SPONTANEOUS VEGETATION  
biodiversity & improved flood resilience

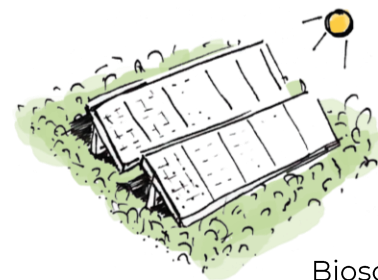
GREENING BUILDING  
GREEN ROOF, GREEN FACADE



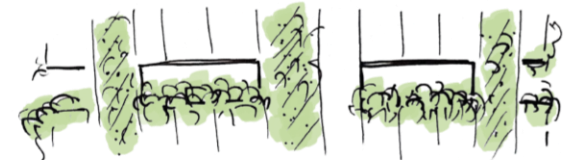
Where are  
the trees?



Miyawaki  
Forest



Biosolar  
roof



Green terraces

**NATIVE PLANTS  
PROPOSED FOR  
MIYAWAKI FOREST**

- Olea europaea*
- Prunus lusitanica*
- Arbutus andrachne*
- Quercus faginea*
- Pinus pinaster*
- Arbutus unedo*
- Quercus ilex*
- Pinus pinea*
- Quercus suber*
- Chamaerops humilis*
- Erica multiflora*
- Prunus lusitanica*
- Lavatera arborea*
- Cistus spp.*

- 1 Residential building
- 2 Lisbon Video Library
- 3 Exhibition space
- 4 Cafe
- 5 Gallery
- 6 Workshop
- 7 Start-up
- 8 Restaurant
- 9 Garbage room
- \* Pavement  
*Calçada portuguesa*
- \*\* Prairie flowerbeds
- ▲ Entrances
- △ Area acces
- ∧ Garage acces







Pink Street  
Rua Nova do Carvalho

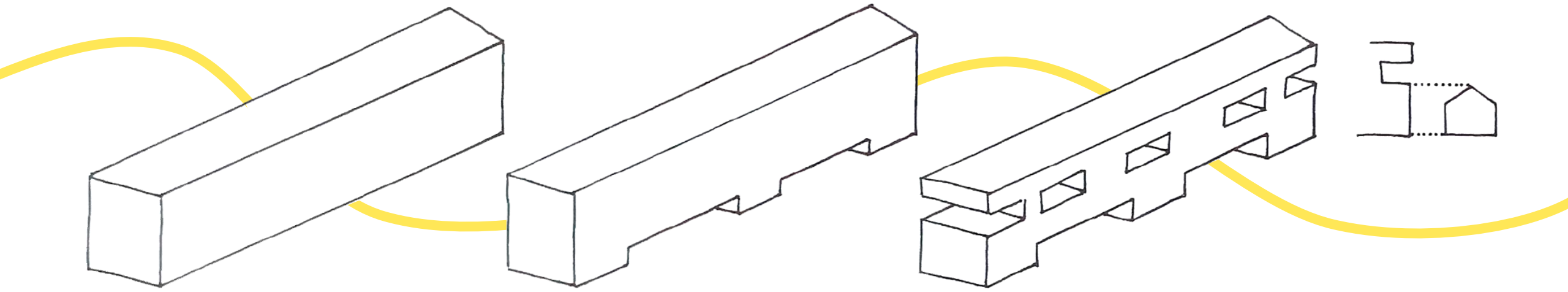


Blue Street  
Rua dos Bacalhoiros



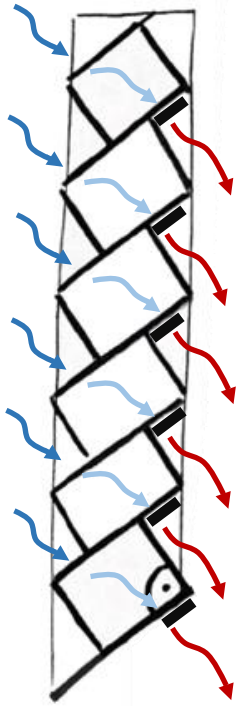
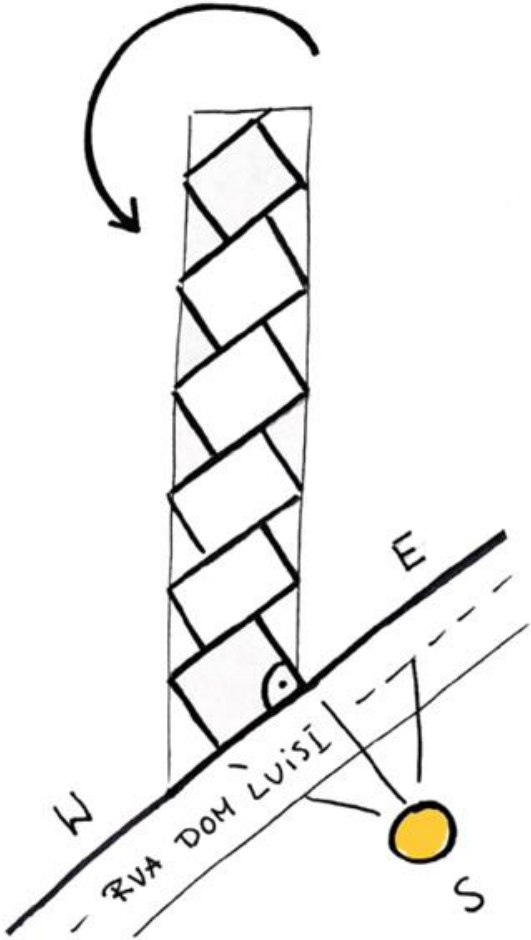
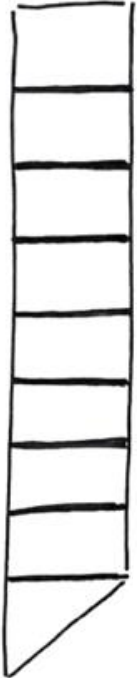
Yellow Street  
New !





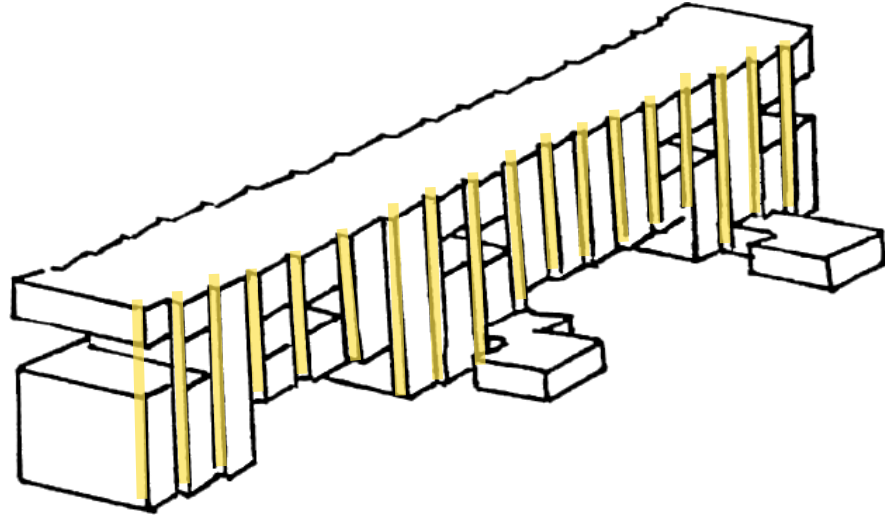


ROTATION IN RELATION TO THE STREET FRONTAGE AND THE FOUR CARDINAL DIRECTIONS  
Adapting to climatic conditions



SOLAR CHIMNEYS





FINAL FORM



MODULES



Staircase



Co-living units



T2

90,4 m<sup>2</sup>  
Balcony 3,1 m<sup>2</sup>

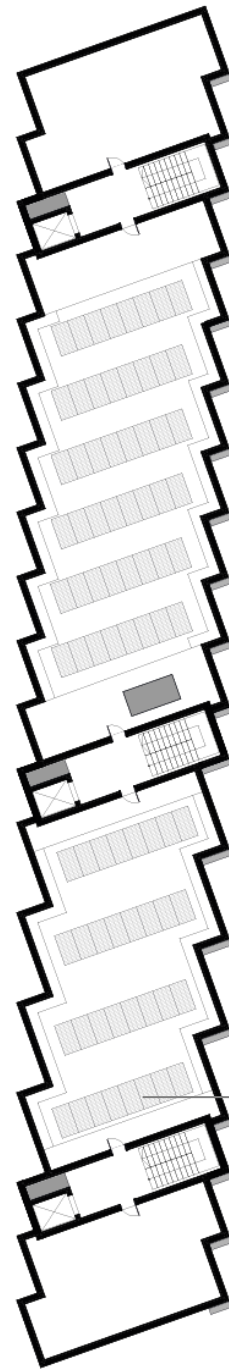


T1

63,3 m<sup>2</sup>  
Balcony 3,1 m<sup>2</sup>

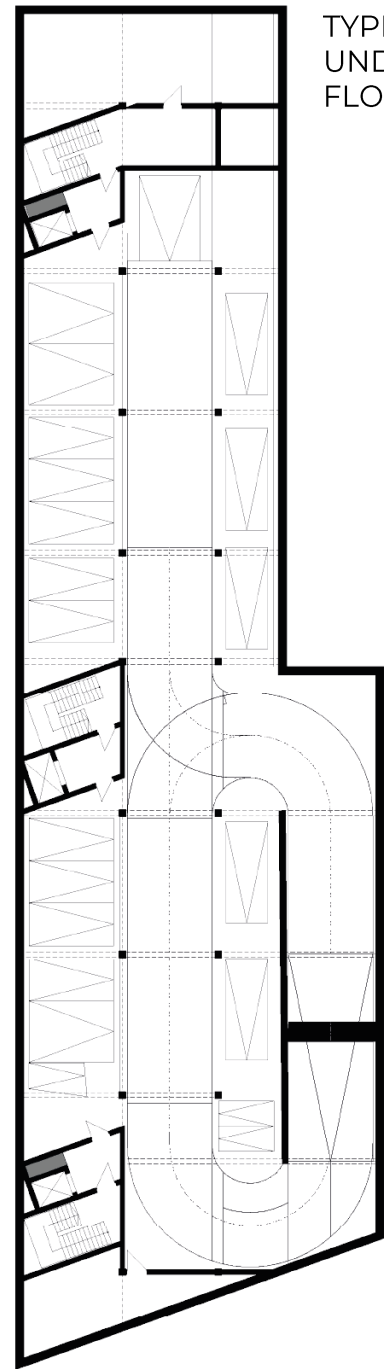


TYPICAL FLOOR PLAN



ROOF PLAN

Photovoltaic panels



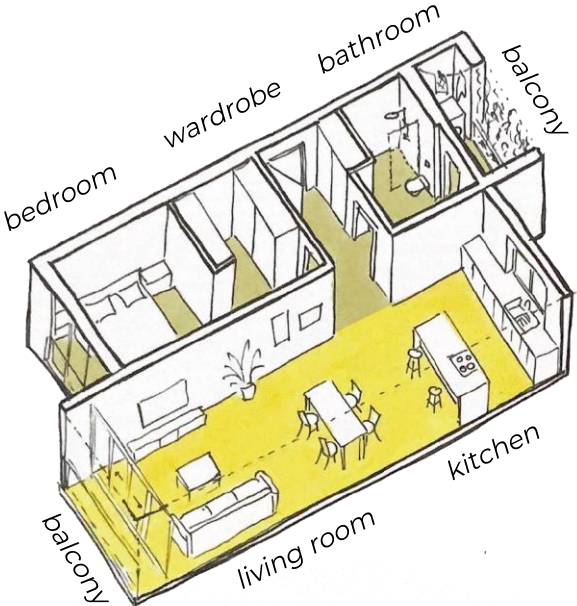
TYPICAL UNDERGROUND FLOOR PLAN



T1

Nr of apartments: 18  
Apartment area: 63,3 m<sup>2</sup>

Total area: 1139,4 m<sup>2</sup>



→ NIGHT ZONE

→ DAY ZONE

Kitchen and living room are the places we use the most. A kitchen is one of the most important places in our houses.

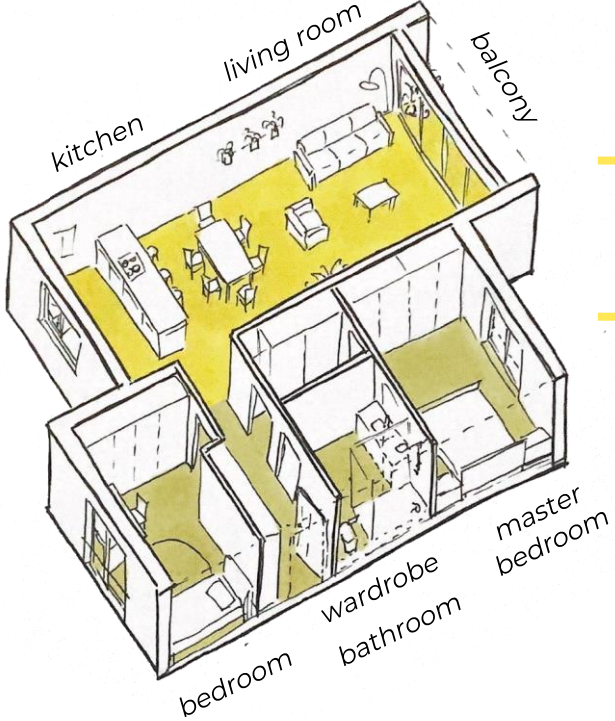


Food is a love language for us!

T2

Nr of apartments: 8  
Apartment area: 90,4 m<sup>2</sup>

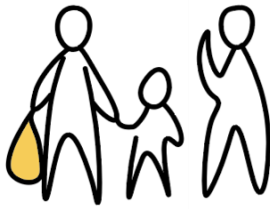
Total area: 723,2 m<sup>2</sup>



→ DAY ZONE

→ NIGHT ZONE

We like to invite families and friends and make dinner for them instead of ordering.

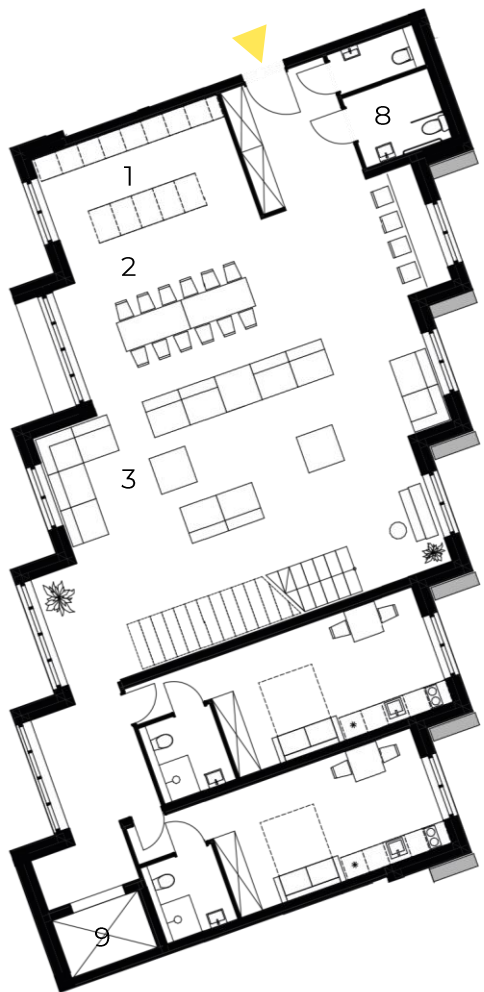


~ Jéssica & friends  
Letters from Portugal

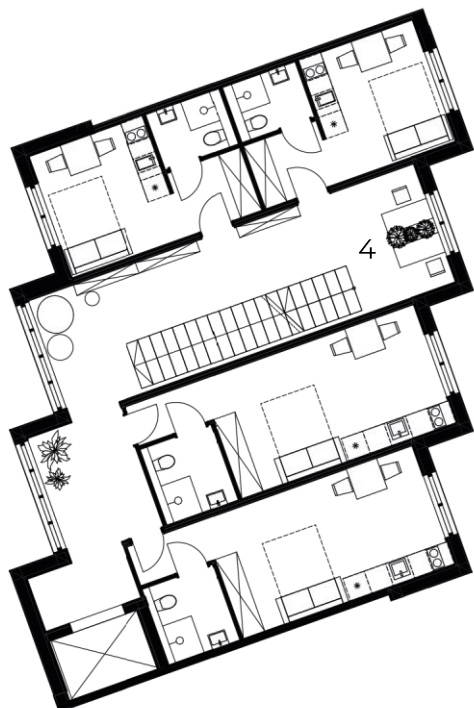




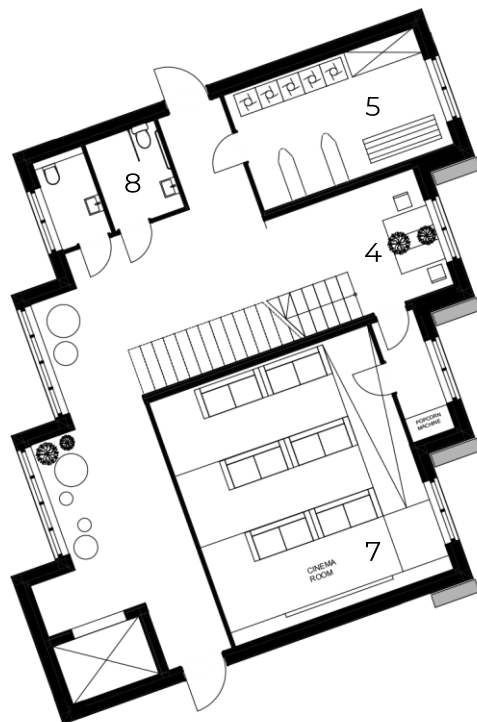




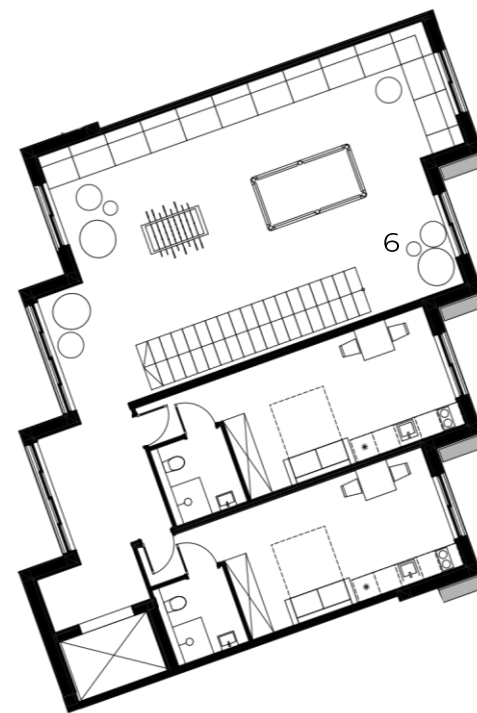
2. FLOOR  
CO-LIVING



3. & 5. FLOOR  
CO-LIVING



4. FLOOR  
CO-LIVING



6. FLOOR  
CO-LIVING

## Co-living private units

Nr of bigger units: 8  
(for two persons)  
Unit area [m<sup>2</sup>]: 26,4

Nr of smaller units: 4  
(for one person)  
Unit area [m<sup>2</sup>]: 17,8

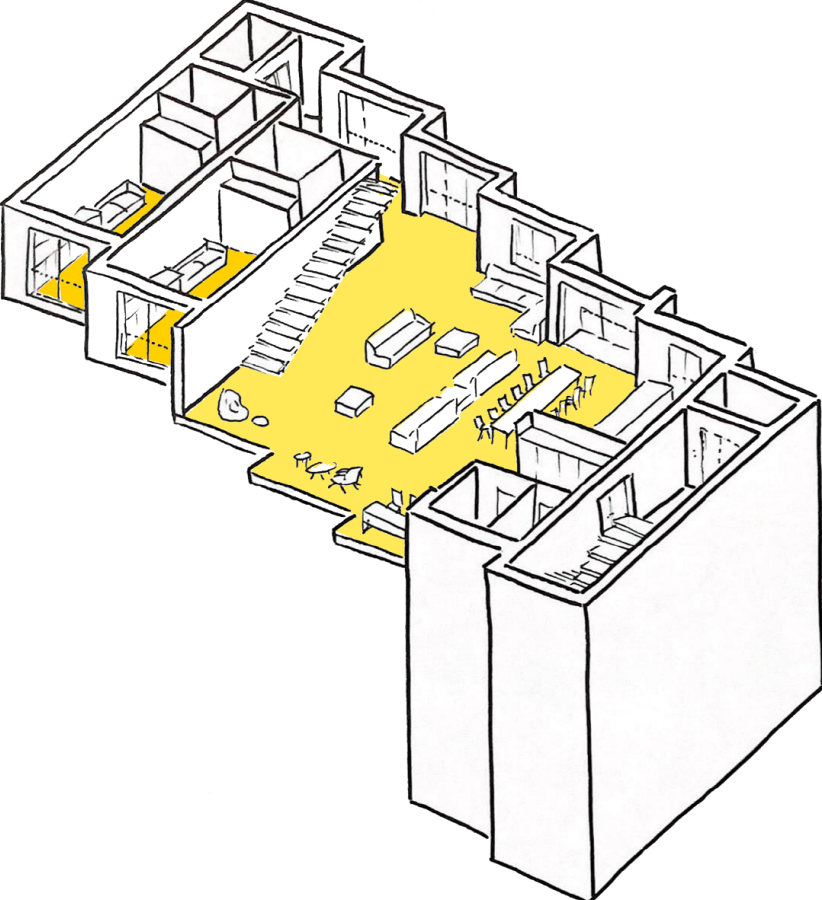


## Common areas:

Kitchen	1
Dining area	2
Living room	3
Work zones	4
Laundry room	5
Play room	6
Cinema room	7
Toilets	8
Lift	9

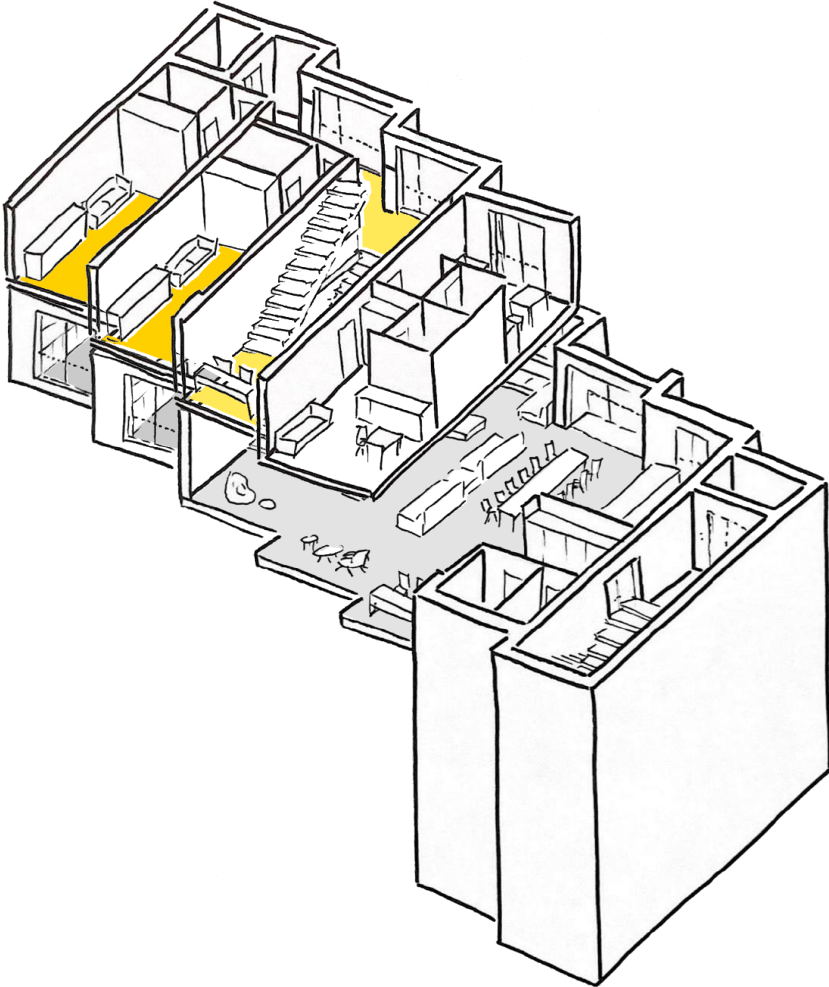


2. FLOOR

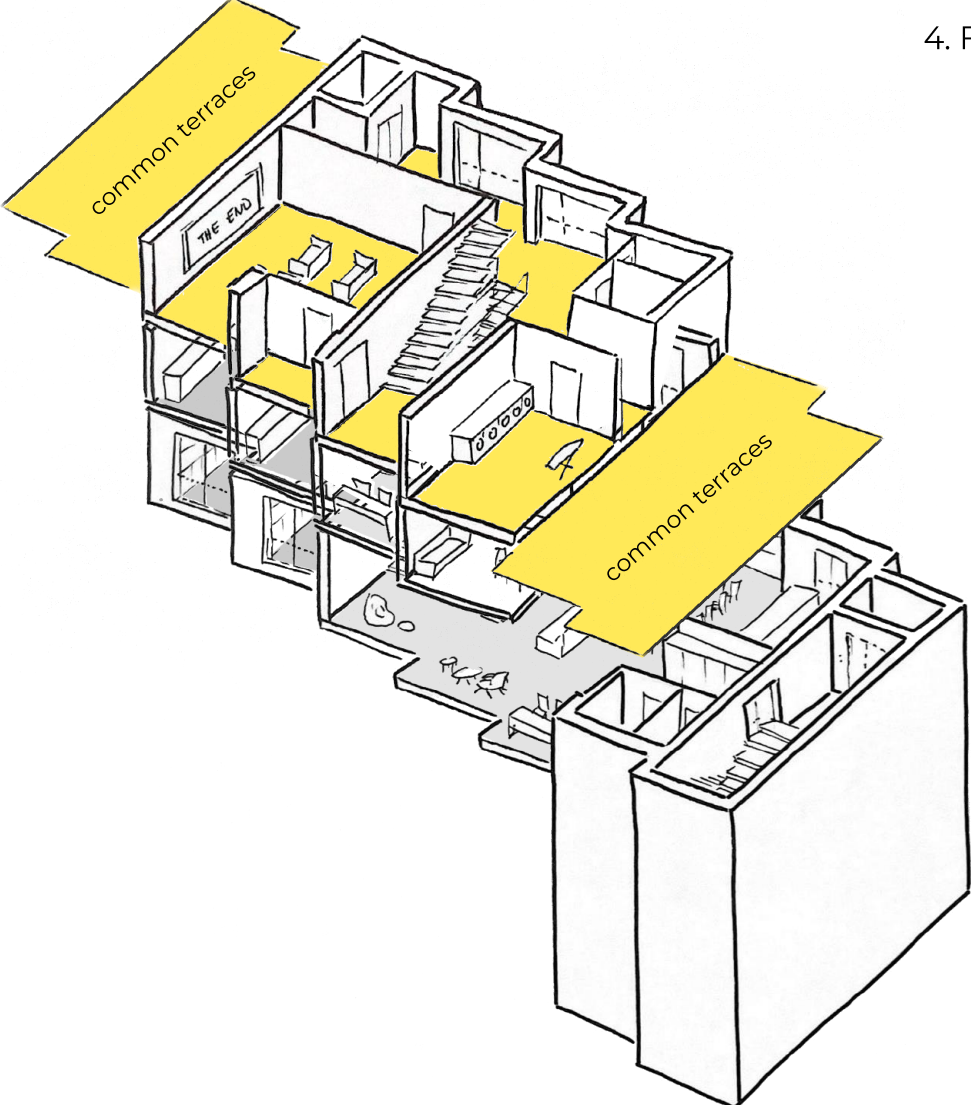




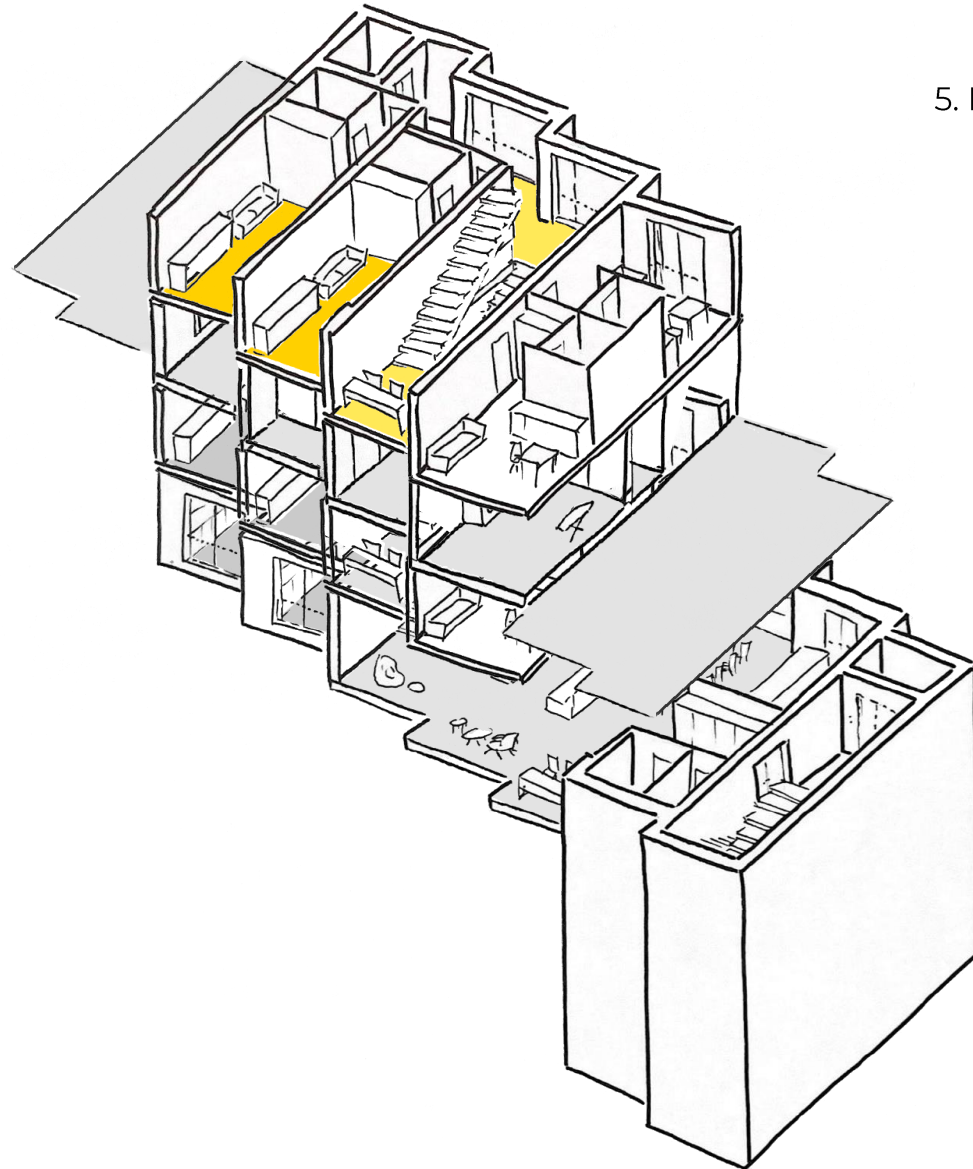
3. FLOOR



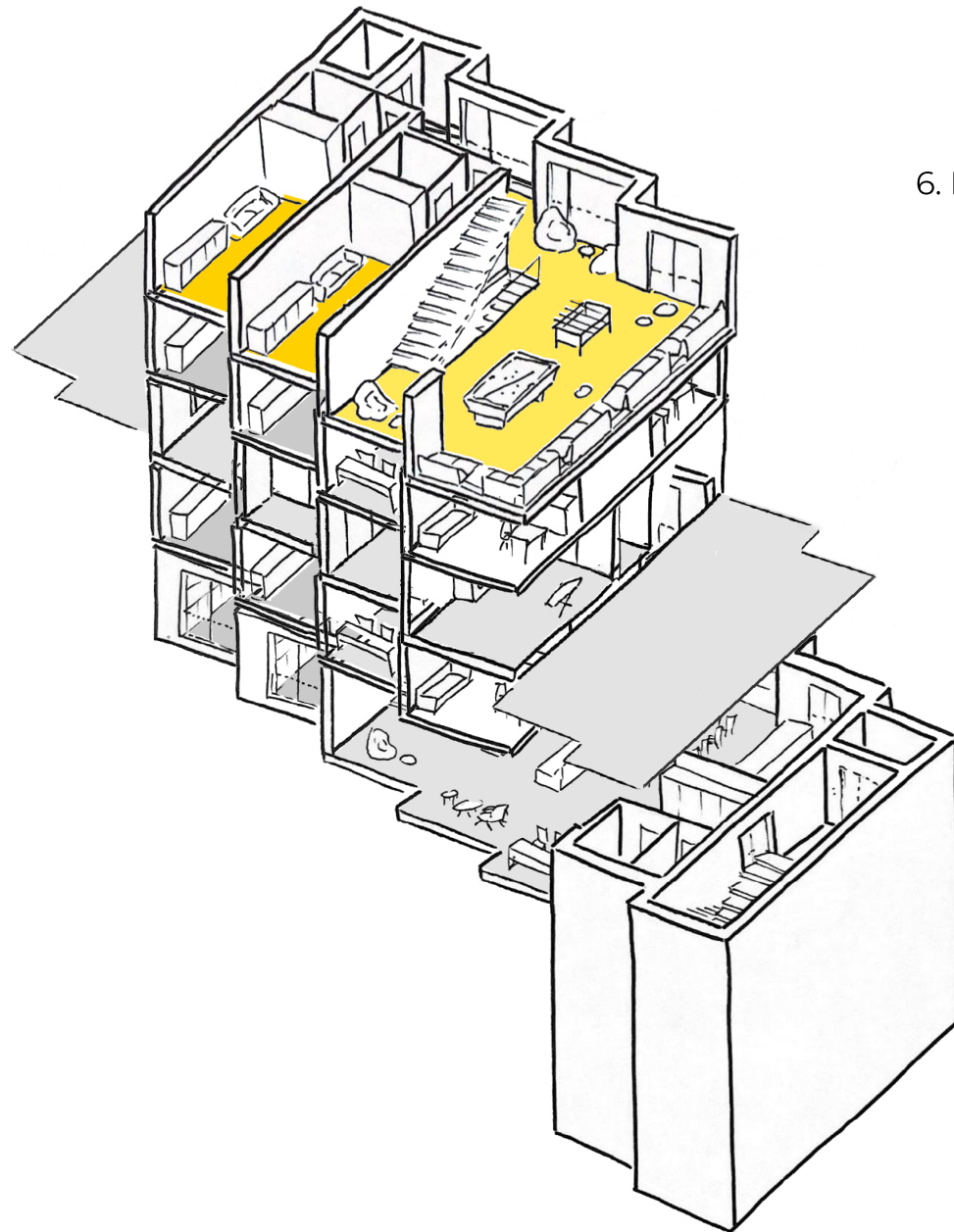
4. FLOOR







5. FLOOR

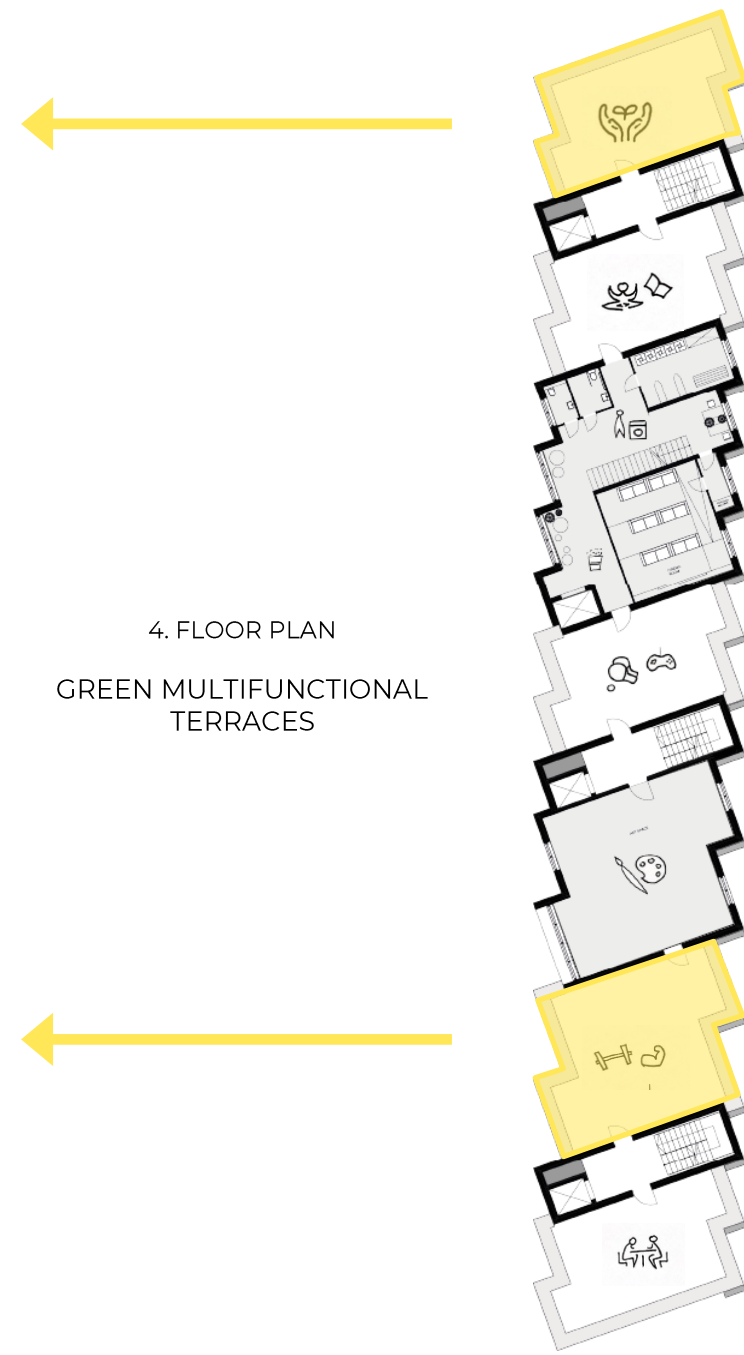


6. FLOOR





COMMON TERRACES

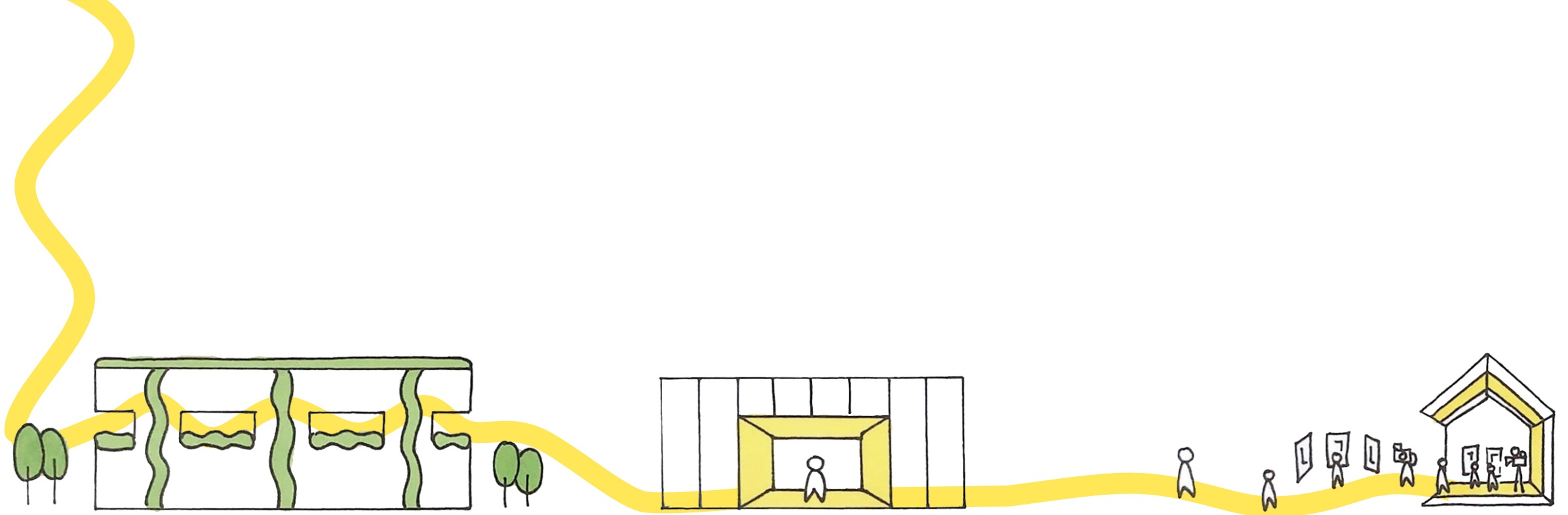


4. FLOOR PLAN  
GREEN MULTIFUNCTIONAL  
TERRACES









NATURE

SUSTAINABLE  
ARCHITECTURE

CULTURE





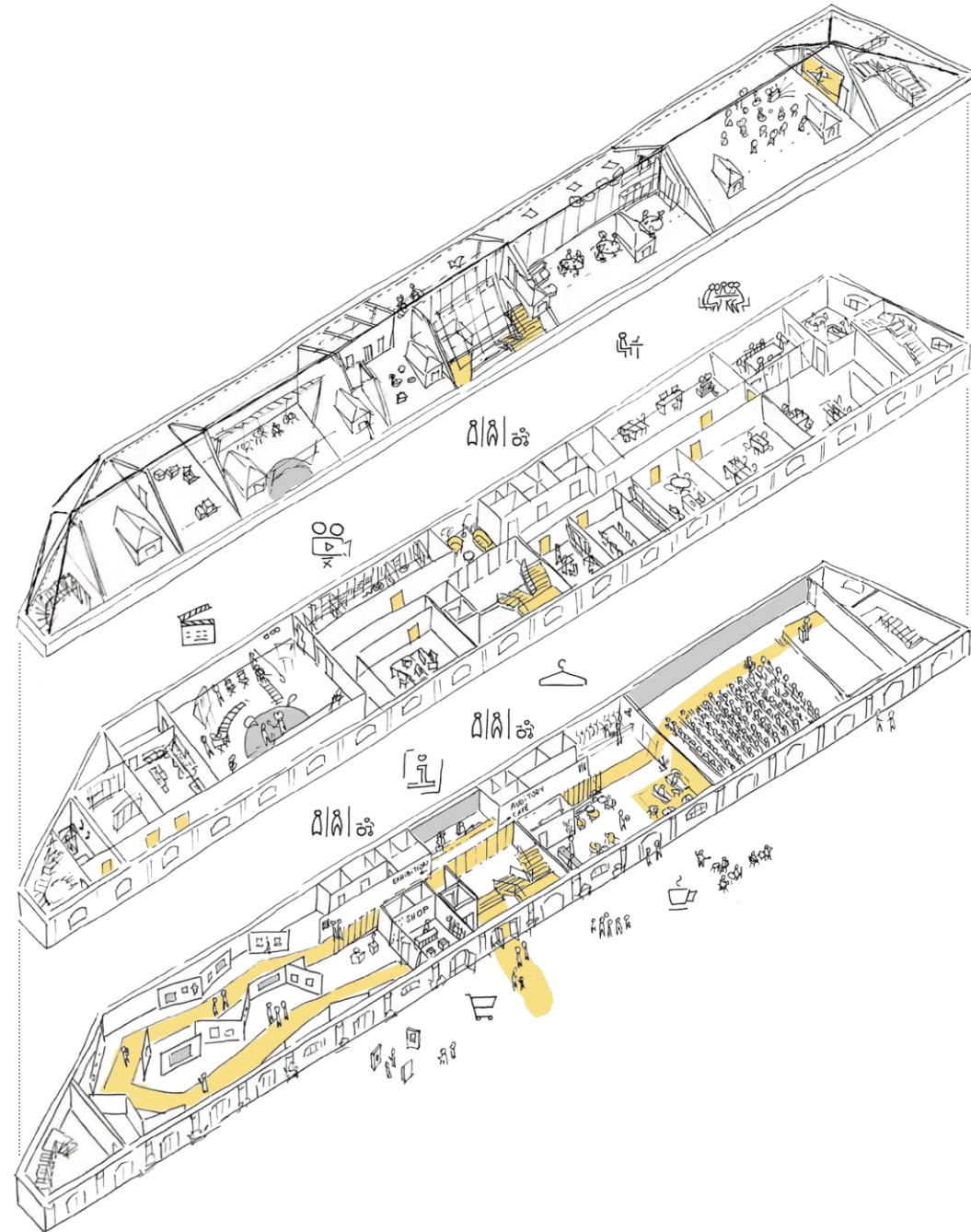






## ASSUMPTIONS:

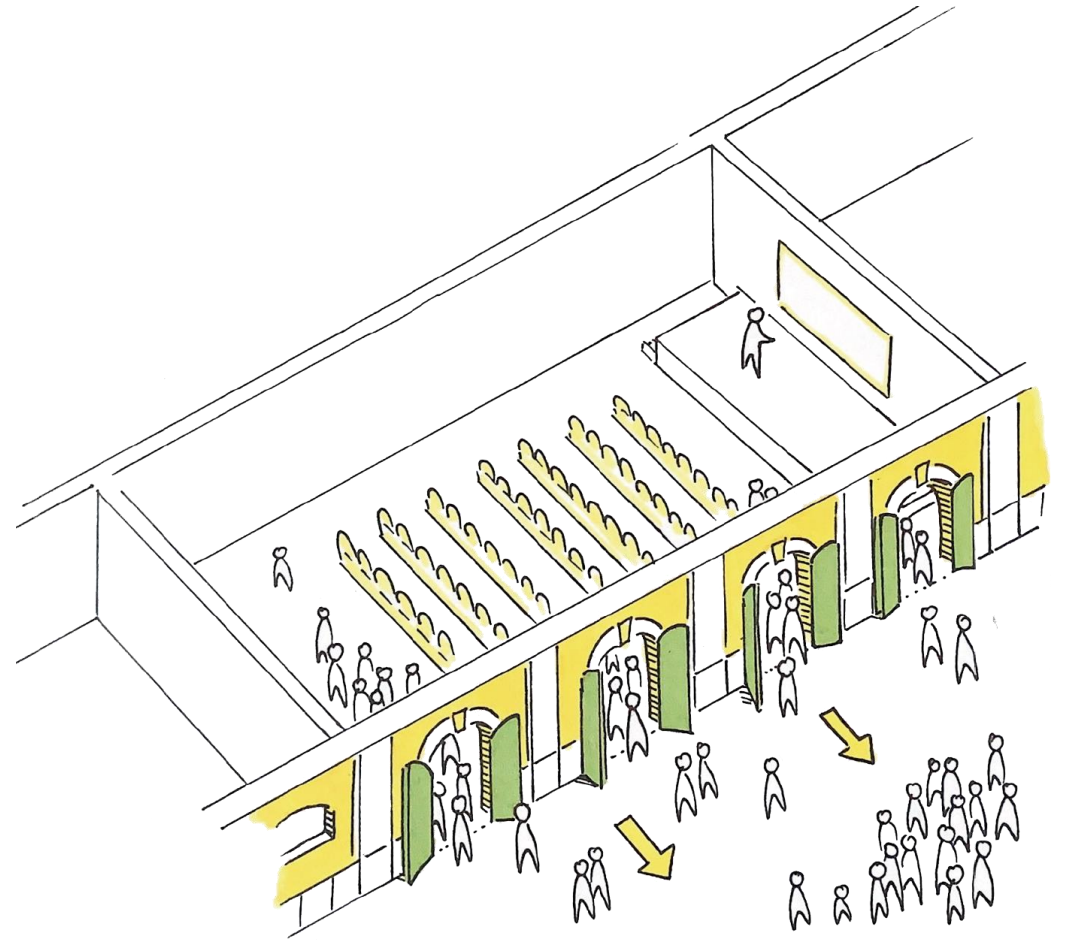
- to preserve the existing building,
- to renovate the façade,
- to preserve the original colors of facade based on stratigraphic research,
- to improve the thermal insulation of the building from the inside,
- to keep the main entrance to the building,
- to change the layout of the interior in order to adapt to the new functions while keeping the existing staircases,
- to equip space with Ecophon Akusto™ Wall C panels and Modular Ceiling E







INSIDE-OUTSIDE EXHIBITION SPACE



EASY EVACUATION

GROUND FLOOR

1. Welcome - reception	12 m <sup>2</sup>
2. Auditory	200 m <sup>2</sup>
3. Cafe - foyer	100 m <sup>2</sup>
4. Exhibitions room	300 m <sup>2</sup>
5. Shop	20 m <sup>2</sup>
6. Public bathrooms	45 m <sup>2</sup>

I FLOOR

Lisbon Film Commission	
7. Coordinator room	20 m <sup>2</sup>
8. Meetings room	20 m <sup>2</sup>
9. Working room	40 m <sup>2</sup>
10. Secretary & administration room	20 m <sup>2</sup>
11. Coordinator room	20 m <sup>2</sup>
12. Meetings room	20 m <sup>2</sup>
13. Workers bathroom	25 m <sup>2</sup>
14. Deposit and archive room	40 m <sup>2</sup>
15. Video digitalization room	40 m <sup>2</sup>
16. Film and video description room	40 m <sup>2</sup>
17. TV studio	100 m <sup>2</sup>
18. Networks Servers & Backstage room	10 m <sup>2</sup>
19. Executive project production room	30 m <sup>2</sup>
20. Filming equipment storage room	20 m <sup>2</sup>
21. Video edition room	40 m <sup>2</sup>
22. Sound studio	12 m <sup>2</sup>

II FLOOR

23. Individual visioning room	30 m <sup>2</sup>
24. Technical room	6 m <sup>2</sup>
25. Collective visioning room	120 m <sup>2</sup>
26. Reading space	15 m <sup>2</sup>
27. Workers eating/pantry area	



GROUND FLOOR PLAN



FIRST FLOOR PLAN



SECOND FLOOR PLAN









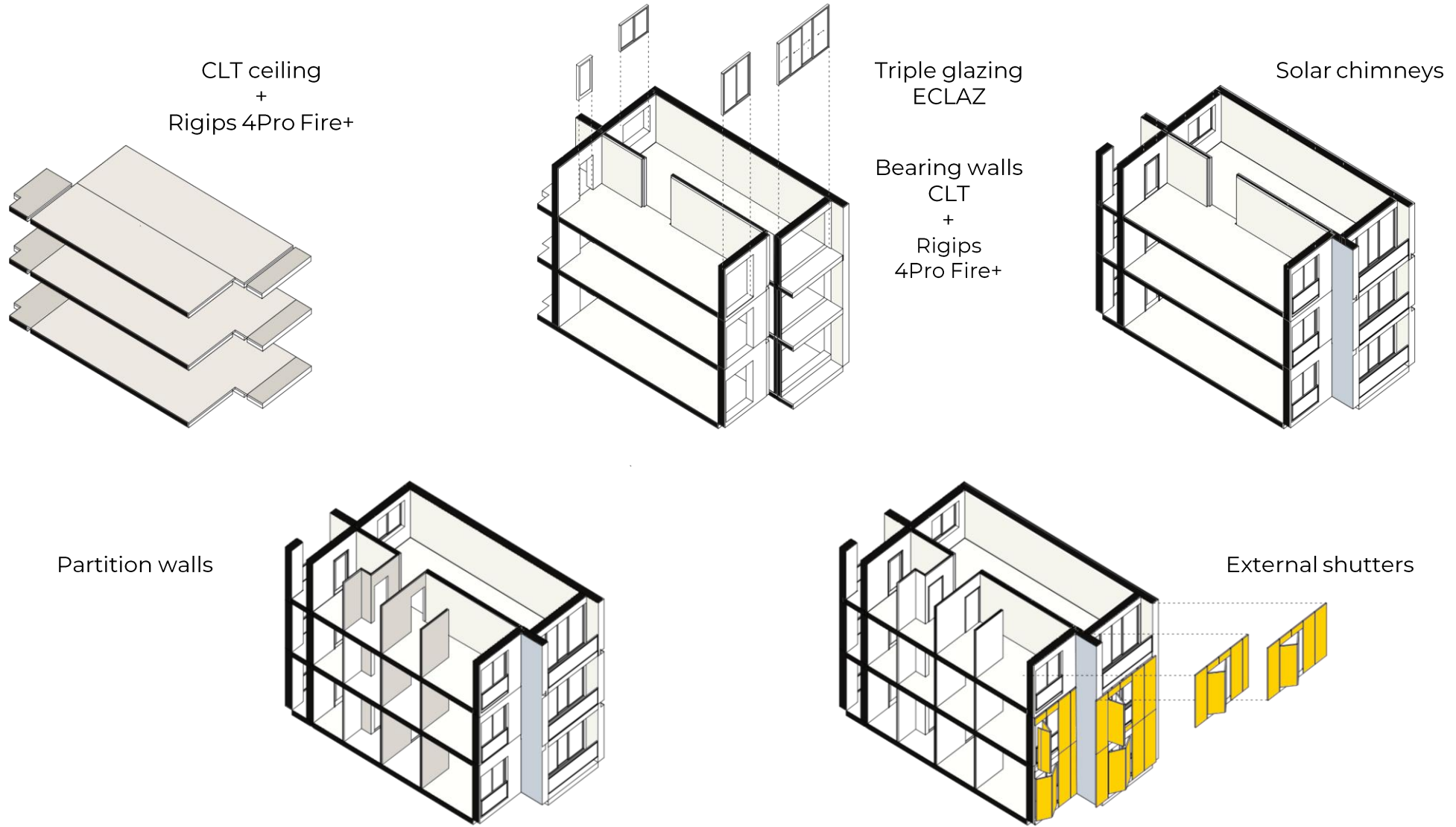




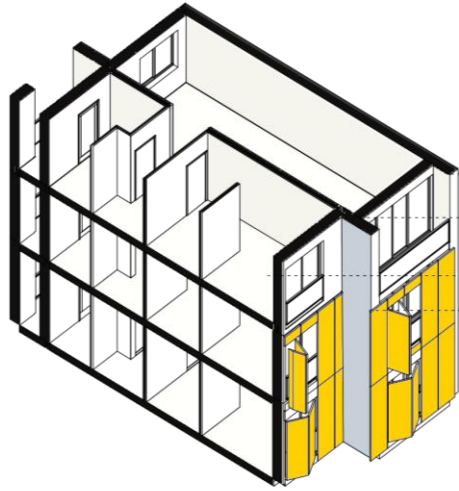




# PREFABRICATED CLT CONSTRUCTION







Energy & carbon



CLT - Low carbon footprint

Resources & circularity



Wood - Renewable resource

Health & safety on jobsites



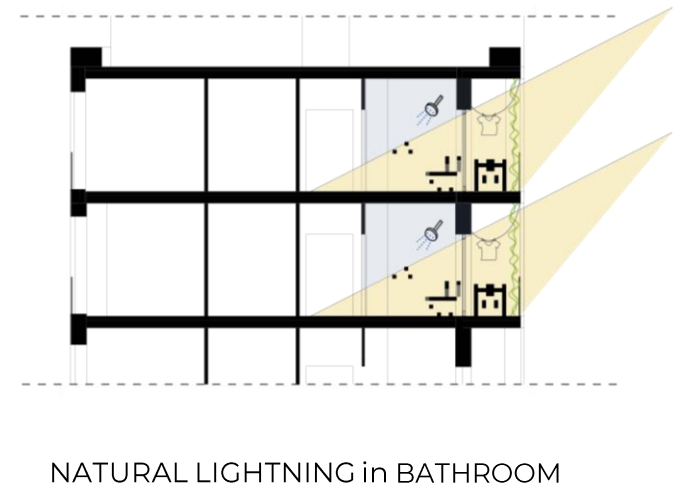
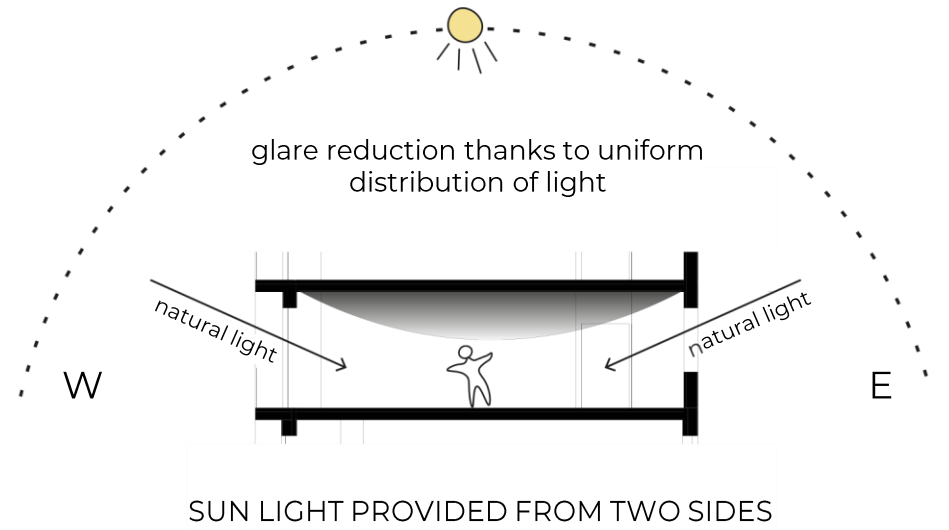
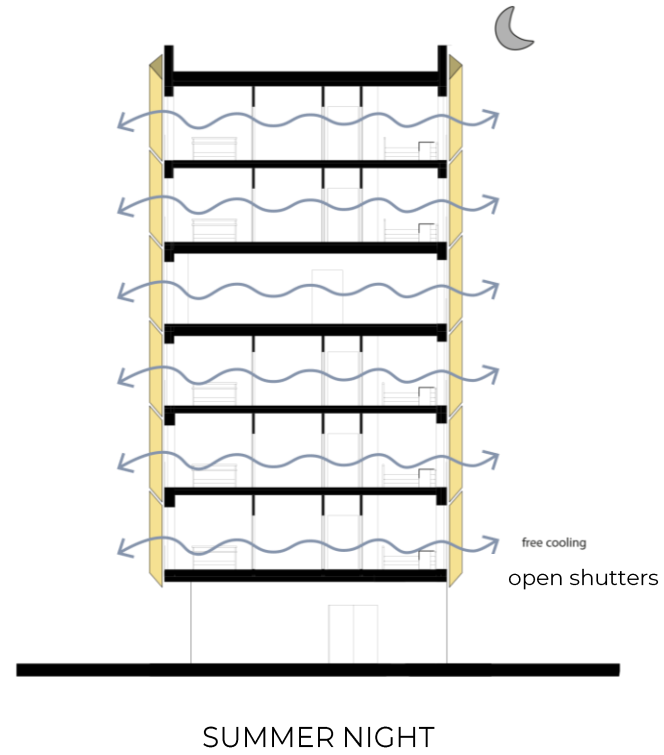
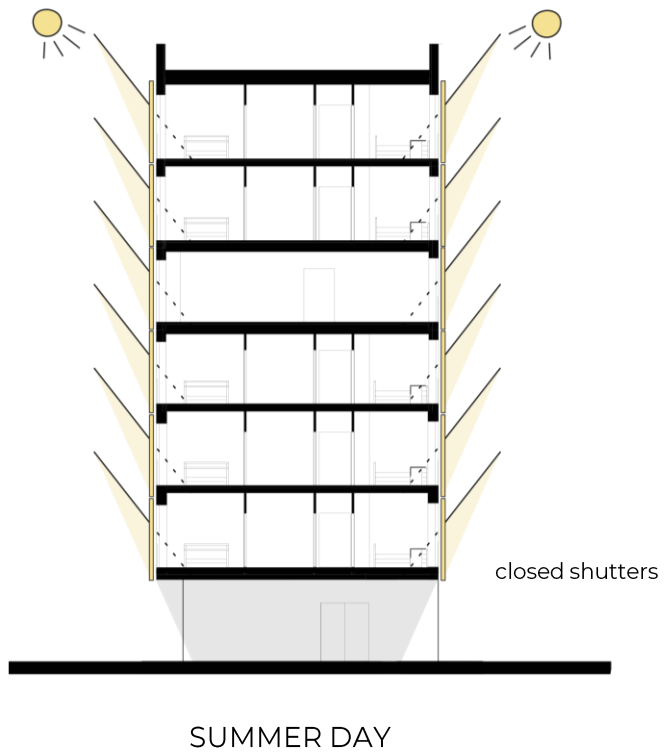
Prefabrication - easy installation, safer for builders

Fire safety



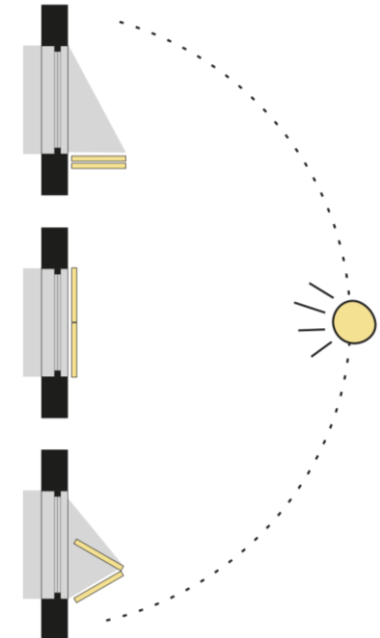
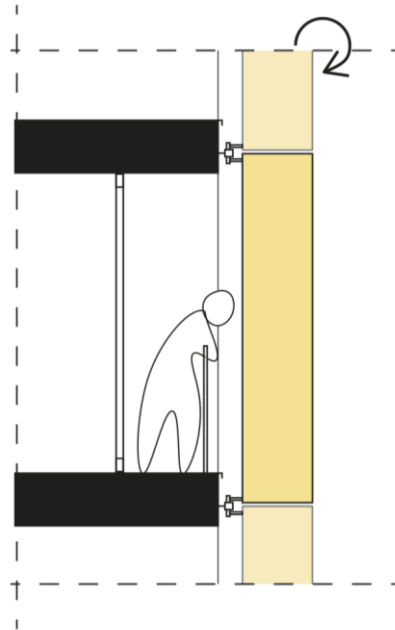
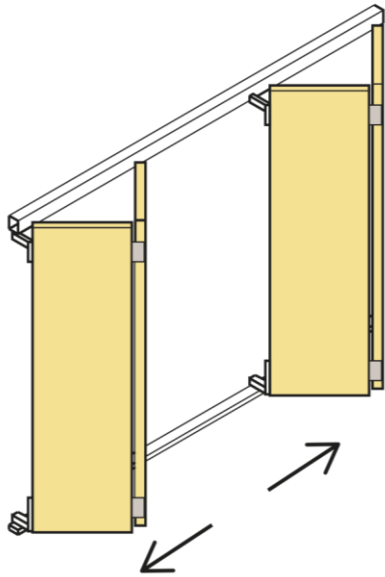
Rigips - fire-resistant plasterboards



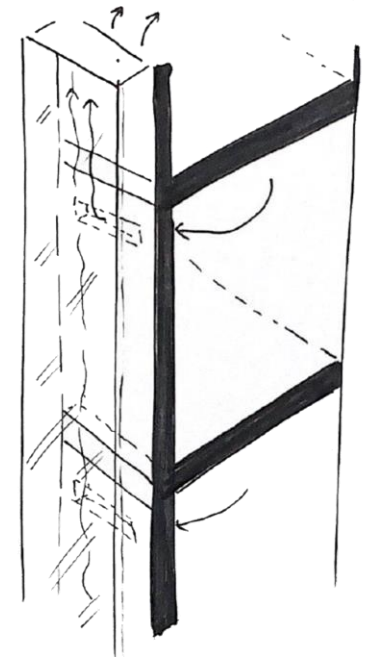
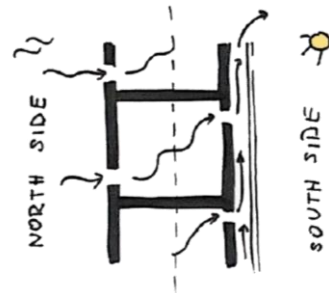
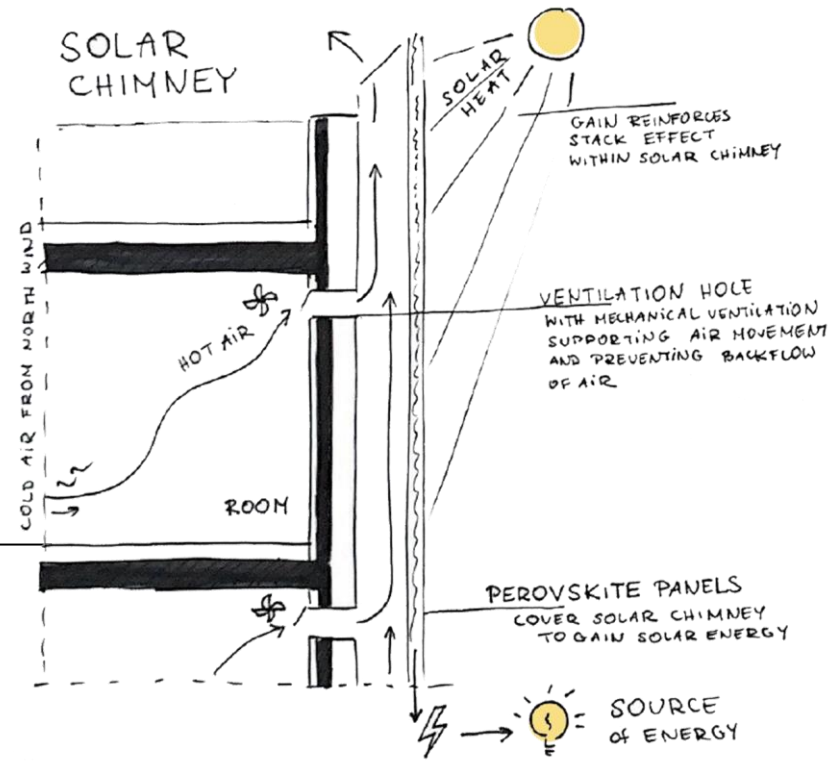




EXTERNAL VERTICAL FOLDING SHUTTER SYSTEM  
PROTECTION AGAINST OVERHEATING







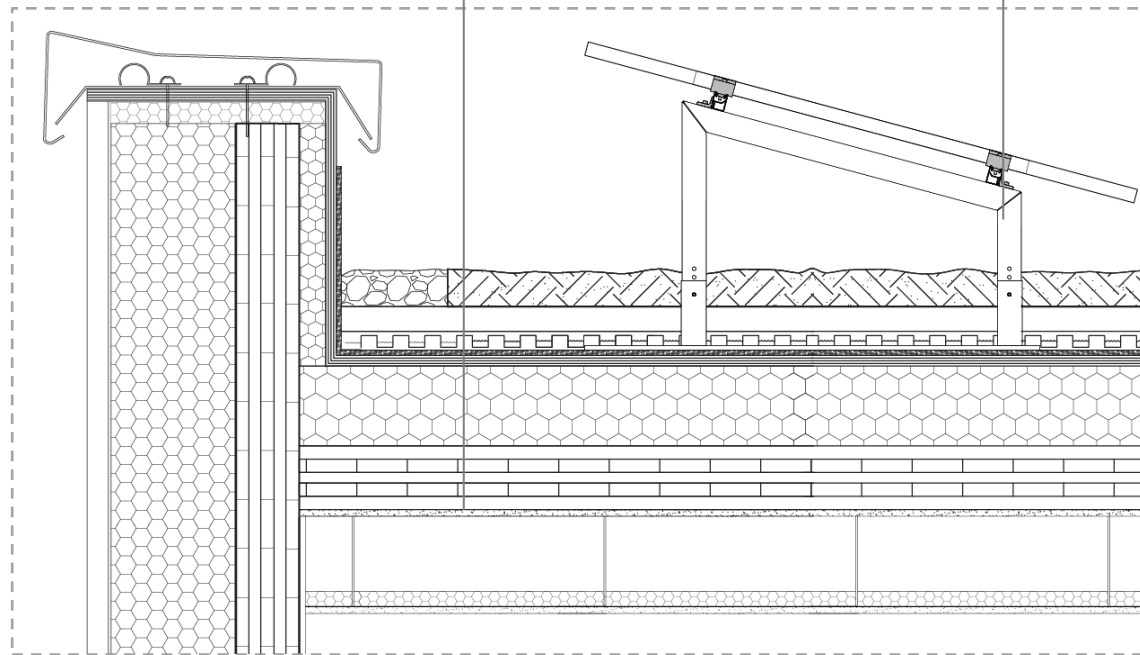


Vegetation *Sedum* layer  
 Light substrate  
 Isover FLORA 50 mm  
 Drainage layer  
 Protection layer  
 Waterproof membrane  
 ISOVER Multimax 30  
 Vapour barrier  
 CLT  
 Rigips RF

Photovoltaic module  
 Solar mounting frame

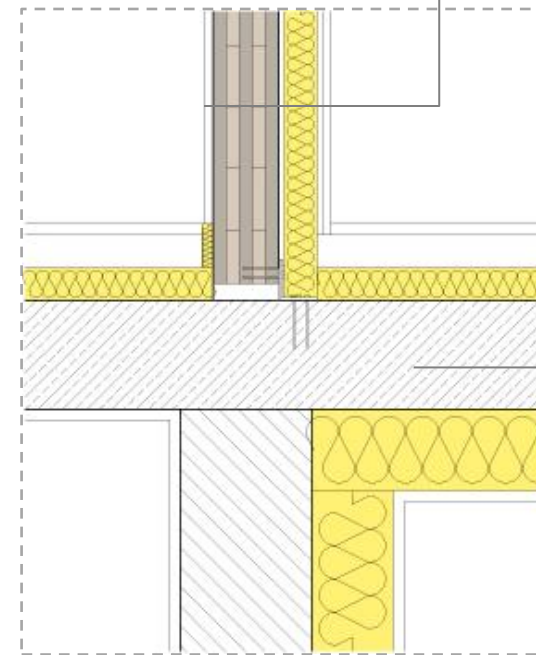


ATTIC & ROOF



Rigips RF  
 CLT  
 Air gap  
 ISOVER sound board Akuplat+  
 Rigips RF x2

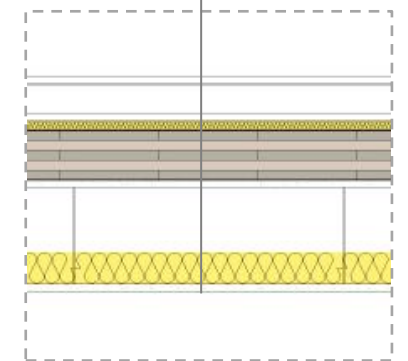
BEARING WALL



CHRYSO  
 EnviroMix®

Parquet  
 Foam  
 Weberfloor 150 dura  
 Aprobo Decibel 4  
 Glava footstep impact  
 soundboard  
 CLT  
 Rigips RF  
 Air gap for ventilation ducts  
 Ecophon Combison™ DUOA

CEILING











# Better visual comfort



Saint Gobain ECLAZ triple glazing with high light transmission  $LT=75\%$   $g=0.59$

All apartments oriented on two sides east and west

Light provided from two sides

Green view has a positive effect on health

Biophilia

LED lighting

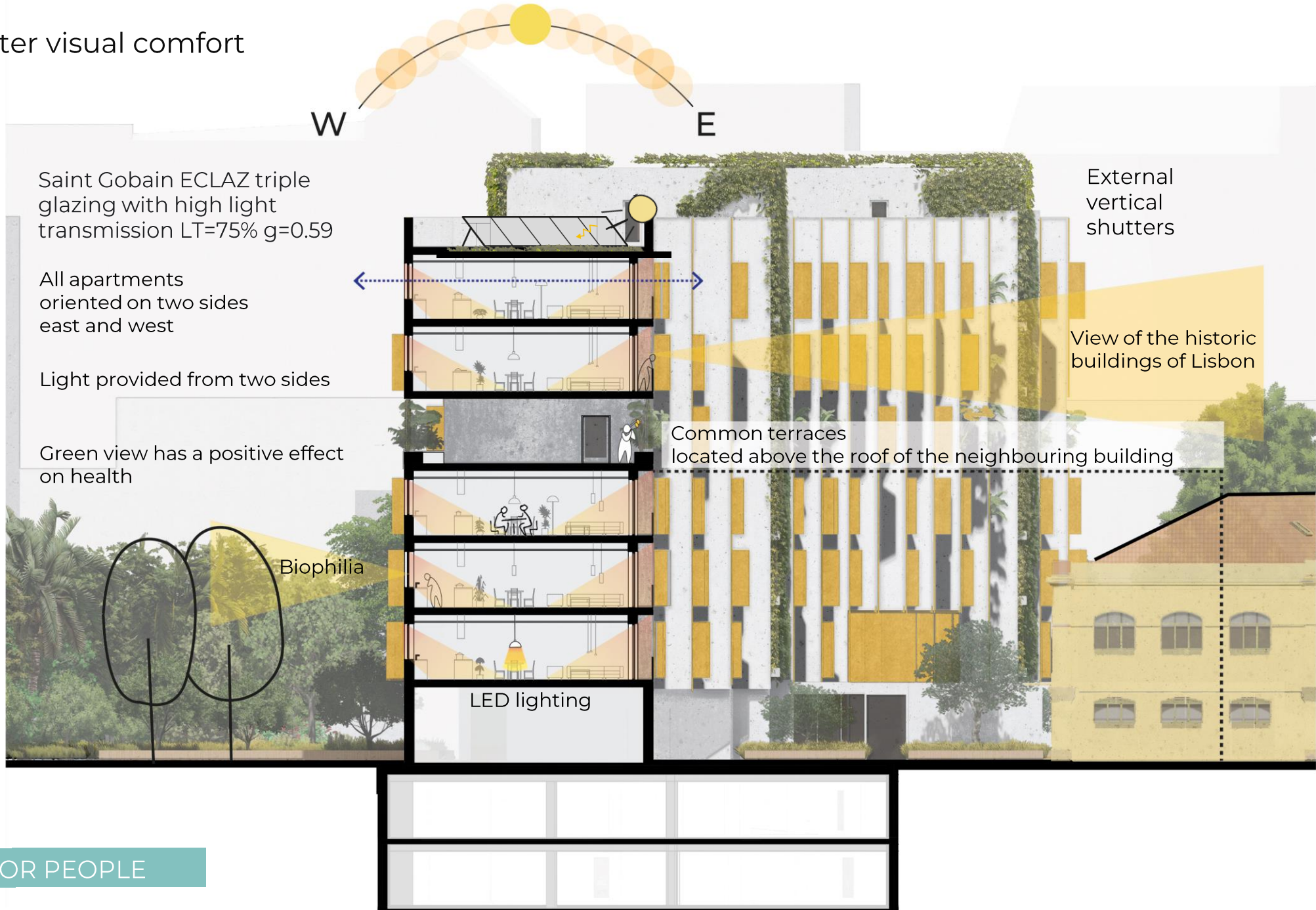
W

E

External vertical shutters

View of the historic buildings of Lisbon

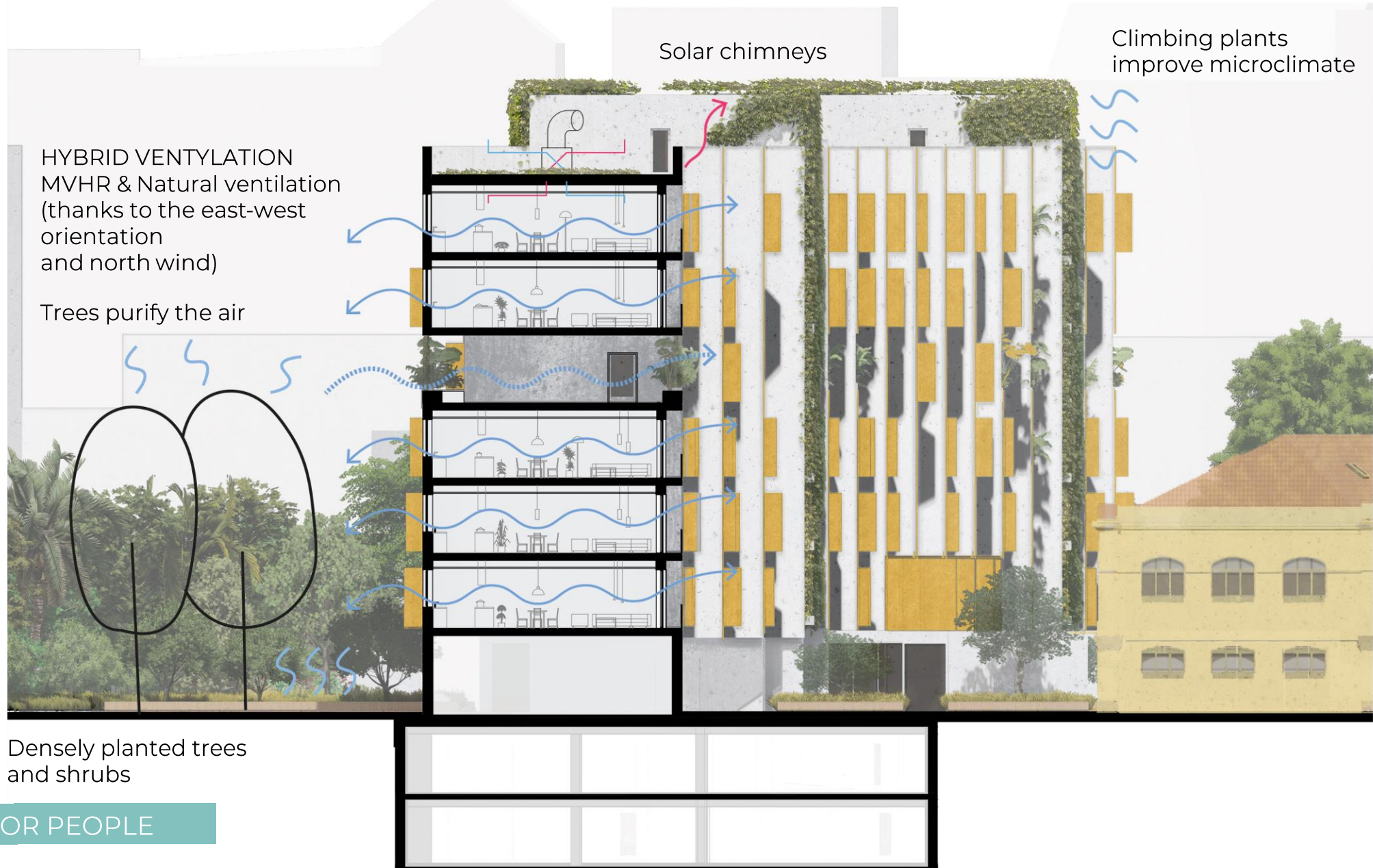
Common terraces located above the roof of the neighbouring building







# Improved indoor air quality







# Better thermal comfort



MVHR + natural ventilation

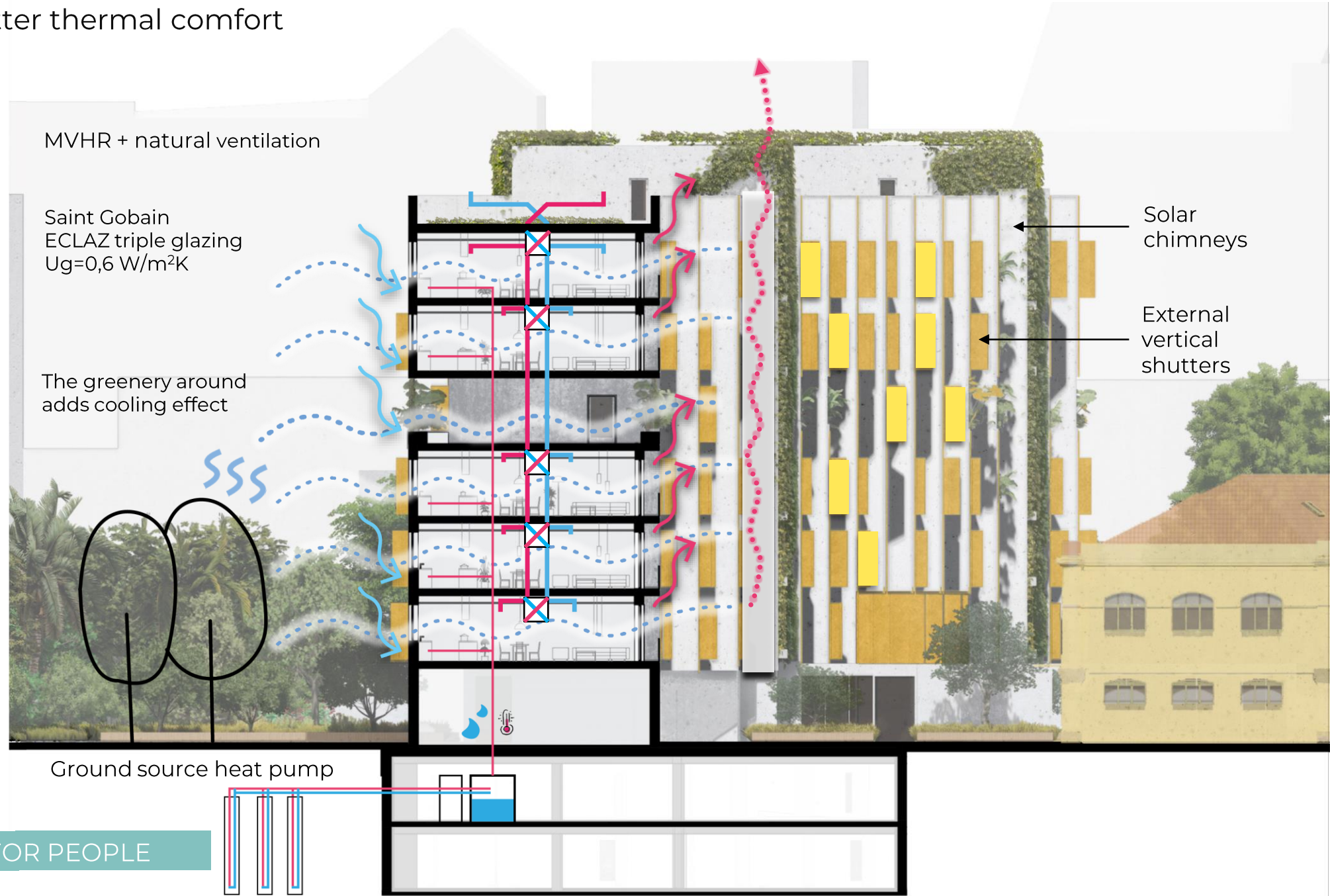
Saint Gobain  
ECLAZ triple glazing  
 $U_g=0,6 \text{ W/m}^2\text{K}$

The greenery around  
adds cooling effect

Ground source heat pump

Solar  
chimneys

External  
vertical  
shutters







# Better acoustics



SAINT-GOBAIN SILENT FLOOR®, ABROBO DECIBEL 4 & WEBER FLOOR SCREED + footstep impact sound board



ISOVER Piano® Sound Board - noise reduction between rooms



Saint Gobain ECLAZ STADIP SILENCE

HVAC system sound insulation ISOVER CLIMAVÉR®

Ecophon Akusto™ Wall C, Ecophon Sombra™ A - sound reduction for comfort in Video-Library studios

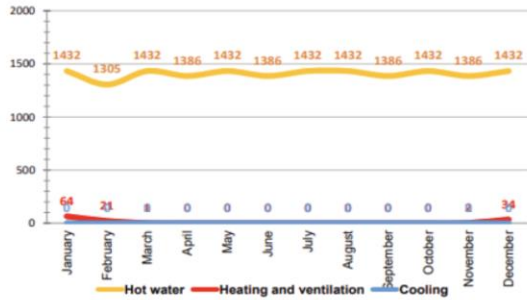


# 1. Useful energy (UE)

## 1.1 Amount of Useful energy (UE)

kWh	
<b>TOTAL:</b>	<b>16995</b>
QU <sub>H</sub> Heating	98
QU <sub>H</sub> Ventilation	24
QU <sub>W</sub> Hot water	16873
QU <sub>C</sub> Cooling	0

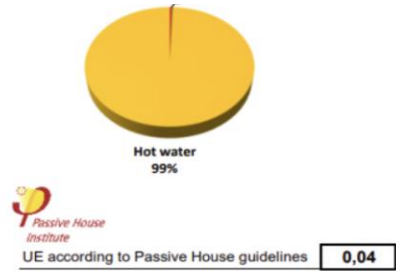
Monthly Useful energy [kWh/month]



## 1.2 Indicator of Useful energy

[kWh/m <sup>2</sup> .year]:	
<b>TOTAL:</b>	<b>5,01</b>
EU <sub>H</sub> Heating	0,03
EU <sub>H</sub> Ventilation	0,01
EU <sub>W</sub> Hot water	4,98
EU <sub>C</sub> Cooling	0,00

Percentage of Useful energy losses

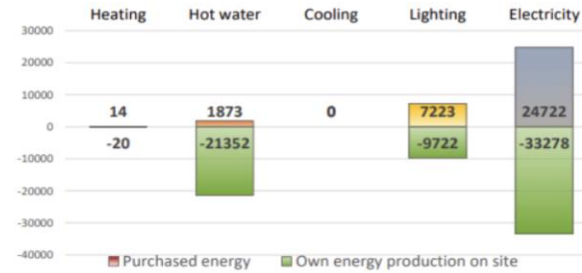


# 2. Final energy (FE)

## 2.1 Amount of finale energy

kWh	
<b>TOTAL:</b>	<b>98205</b>
QK <sub>H+W</sub> Heating and ventilation	34
QK <sub>W</sub> Hot water	23225
QK <sub>C</sub> Cooling	0
QK <sub>L</sub> Lighting	16945
QK <sub>C</sub> Other electricity	58001

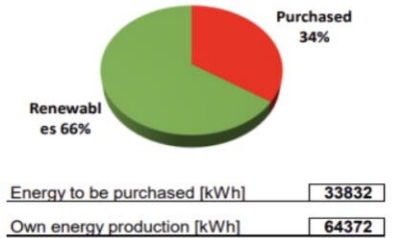
Balance of energy purchased and produced on site [kWh]



## 2.2 Final energy indicator

[kWh/m <sup>2</sup> .year]:	
<b>TOTAL:</b>	<b>28,98</b>
EK <sub>H+W</sub> Heating and ventilation	0,01
EK <sub>W</sub> Hot water	6,85
EK <sub>C</sub> Cooling	0,00
EK <sub>L</sub> Lighting	5,00
EK <sub>C</sub> Other electricity	17,11

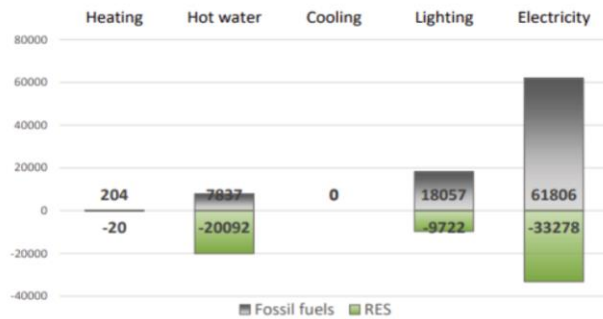
Balance of energy purchased and produced [kWh]



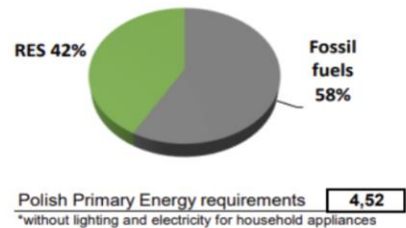
# 3. Primary energy (PE)

## 3.1 Energy from fossil fuels

Primary energy from fossil fuels [kWh]



Fossil fuel EP to RES ratio



# 4. Emissions\*

## 4.1 CO2 Emissions on site

kgCO <sub>2</sub> /year	
<b>TOTAL:</b>	<b>0</b>

## 4.2 CO2 emissions from PE beyond site

kgCO <sub>2</sub> /year	
<b>TOTAL:</b>	<b>22 678</b>

## 4.1 CO2 Emissions per person on site

kgCO <sub>2</sub> /year	
<b>TOTAL:</b>	<b>0</b>

## 4.2 CO2 emissions from PE per person beyond site


kgCO <sub>2</sub> /year	
<b>TOTAL:</b>	<b>270</b>

\*Total emissions from fossil fuels and biomass

This Quick.Energy tool was created as a didactic material for courses at the Faculty of Architecture of the Wrocław University of Technology  
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Version with an underground garage

Cradle to grave (A1-A4, B4-B5, C1-C4)	kg CO <sub>2</sub> e/m <sup>2</sup>
(< 230) A	 <b>327</b>
(230-340) B	
(340-450) C	
(450-560) D	
(560-670) E	
(670-780) F	
(> 780) G	



And if there were no cars and garages...

Cradle to grave (A1-A4, B4-B5, C1-C4)	kg CO <sub>2</sub> e/m <sup>2</sup>
(< 230) A	 <b>262</b>
(230-340) B	
(340-450) C	
(450-560) D	
(560-670) E	
(670-780) F	
(> 780) G	





...and it's all... Yellow





ellow

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