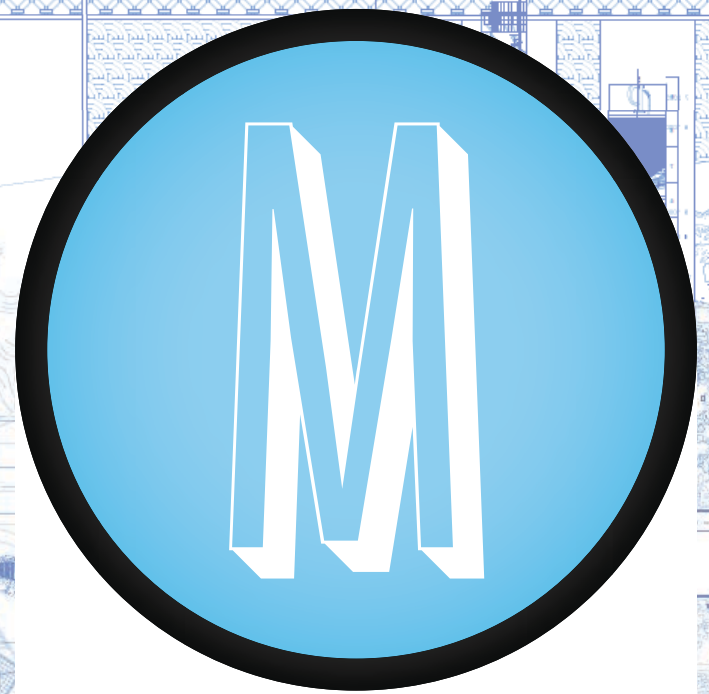




# SALKA

DESIGN ARCHITECTURE URBANISM ECOLOGY TECHNOLOGY RESEARCH EDUCATION

DIRECTOR AT THE INSTITUTE FOR ADVANCED ARCHITECTURE OF CATALONIA  
GATES CAMBRIDGE PHD SCHOLAR ALUMNUS

MICHAEL.SALKA@IAAC.NET

+1970 903-5993

# PORTFOLIO



DESIGN

DESIGN

ARCHITECTURE

URBANISM

ECOLOGY

TECHNOLOGY

RESEARCH

EDUCATION

MICHAEL.SALKA@IAAC.NET

+1 970 903-5993

## SMALL BUILDINGS

### FORESTONE

Institute for Advanced Architecture of Catalonia (IAAC)  
Design Build Studio Director  
2025

### CATHEDRAL OF ROBOTIC ARTISANS (CORA)

Institute for Advanced Architecture of Catalonia (IAAC)  
Design Build Studio Director  
2024

*Design Educates Awards Gold Prize in Architectural Design*  
*ArchDaily Building of the Year 2026 in Small-Scale & Installations Category*

### MOBILE CABIN / CATALYST (MO.CA)

Institute for Advanced Architecture of Catalonia (IAAC)  
Design Build Studio Director  
2023

*ArchDaily Building of the Year 2025 Finalist in Hospitality*  
*Design Educates Awards SolarLux Choice in Architectural Design*

### SOLAR GREENHOUSE

Institute for Advanced Architecture of Catalonia (IAAC)  
Sustainable Forestry Instructor & Design Build Studio Consultant  
2021

*Monocle Design Awards Smartest Student Project*

### THE VOXEL: A QUARANTINE CABIN

Institute for Advanced Architecture of Catalonia (IAAC)  
Design Build Studio Instructor & Academic Coordinator  
2020

*Design Educates Awards Special Recognition*  
*Featured in the New York Times*

## LARGE BUILDINGS & MASTERPLANS

### VAQUITA TOWNHOMES

Hangar 41: Architecture, Planning & Interiors  
Associate Architect  
2018

### GEOS NEIGHBORHOOD

Sustainable Urban Neighborhoods (SUN) Studio  
Intern Architect  
2014

*The nation's largest master-planned, net-zero energy neighborhood*



DESIGN

DESIGN

ARCHITECTURE

URBANISM

ECOLOGY

TECHNOLOGY

RESEARCH

EDUCATION

MICHAEL.SALKA@IAAC.NET

+1 970 903-5993

## MÀQUINA CLIMÀTICA

Institute for Advanced Architecture of Catalonia (IAAC)

Design Build Studio Director

2024

*FAD 2025 Selection for Ephemeral Interventions*

URBAN  
INSTALLATIONS

## FURNISH (FAST URBAN RESPONSES FOR NEW INCLUSIVE SPACES & HABITAT)

Institute for Advanced Architecture of Catalonia (IAAC)

Project Manager / Fabrication Mentor & Design Build Studio Instructor

2020 - 2022

*European Institute for Innovation & Technology "Success Story"*

*New European Bauhaus Prize 2024 Finalist in "Prioritising the People and Places That Need It Most"*

## ACCES3D

Institute for Advanced Architecture of Catalonia (IAAC)

Project Manager

2020

*G20 InfraChallenge Finalist*

## SUSTAINABLE FOREST MANAGEMENT & ENGINEERED TIMBER PRODUCTION

Institute for Advanced Architecture of Catalonia (IAAC)

Technical Director & Head of Projects

2019 - 2026

ECOSYSTEM  
INTERVENTIONS

## NEW EUROPEAN BAUHAUS ACADEMY (NEBA) ALLIANCE

Institute for Advanced Architecture of Catalonia (IAAC)

Founding Partner & South Hub Lead

2024 - 2026

NETWORKS  
& PLATFORMS

## OPTOPPEN

Institute for Advanced Architecture of Catalonia (IAAC)

Founding Partner

2023 - 2024

## BIOMATERIAL HOUSING IN LATIN AMERICA AND THE CARIBBEAN

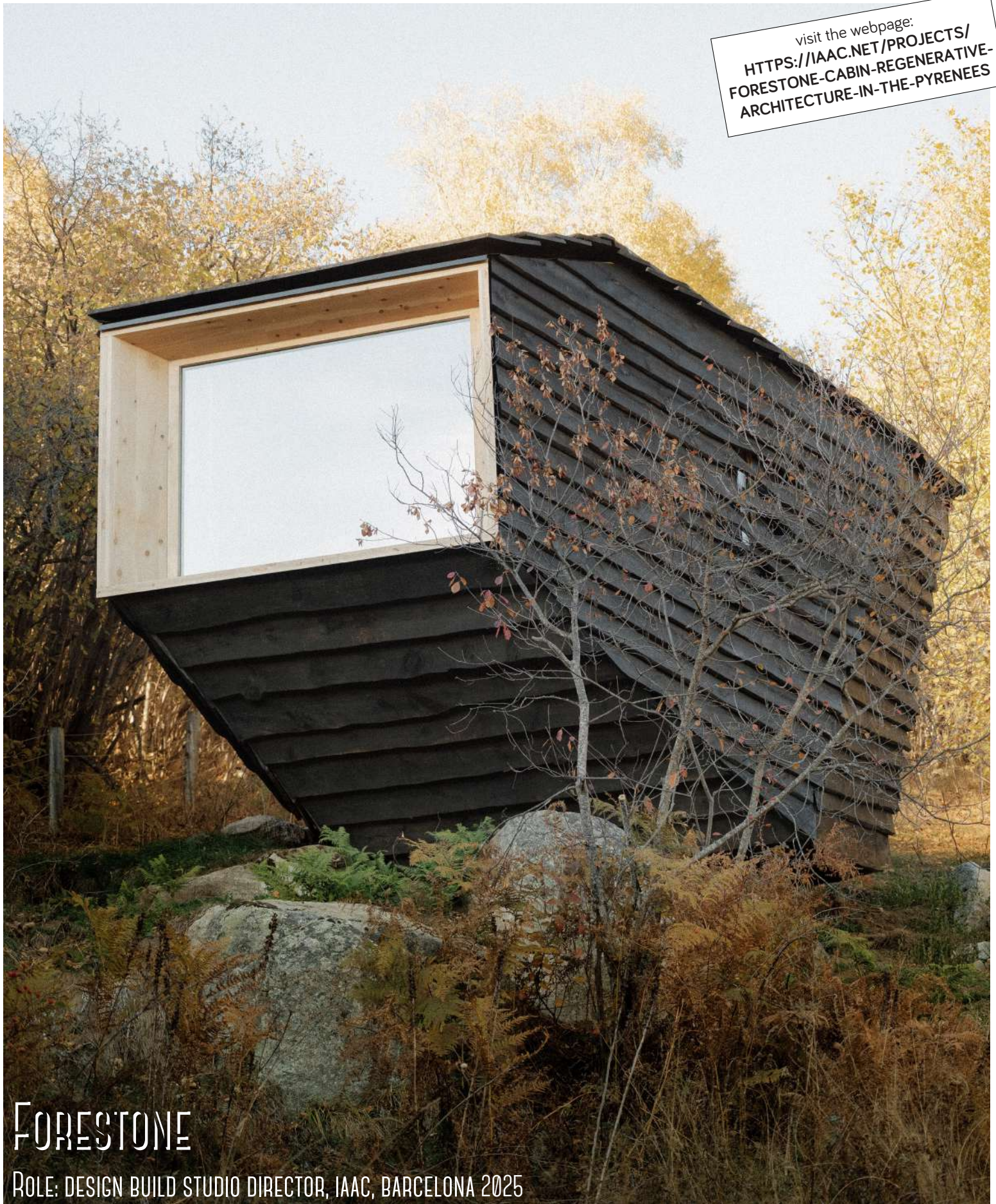
Institute for Advanced Architecture of Catalonia (IAAC)

Lead Author

2023 - 2024

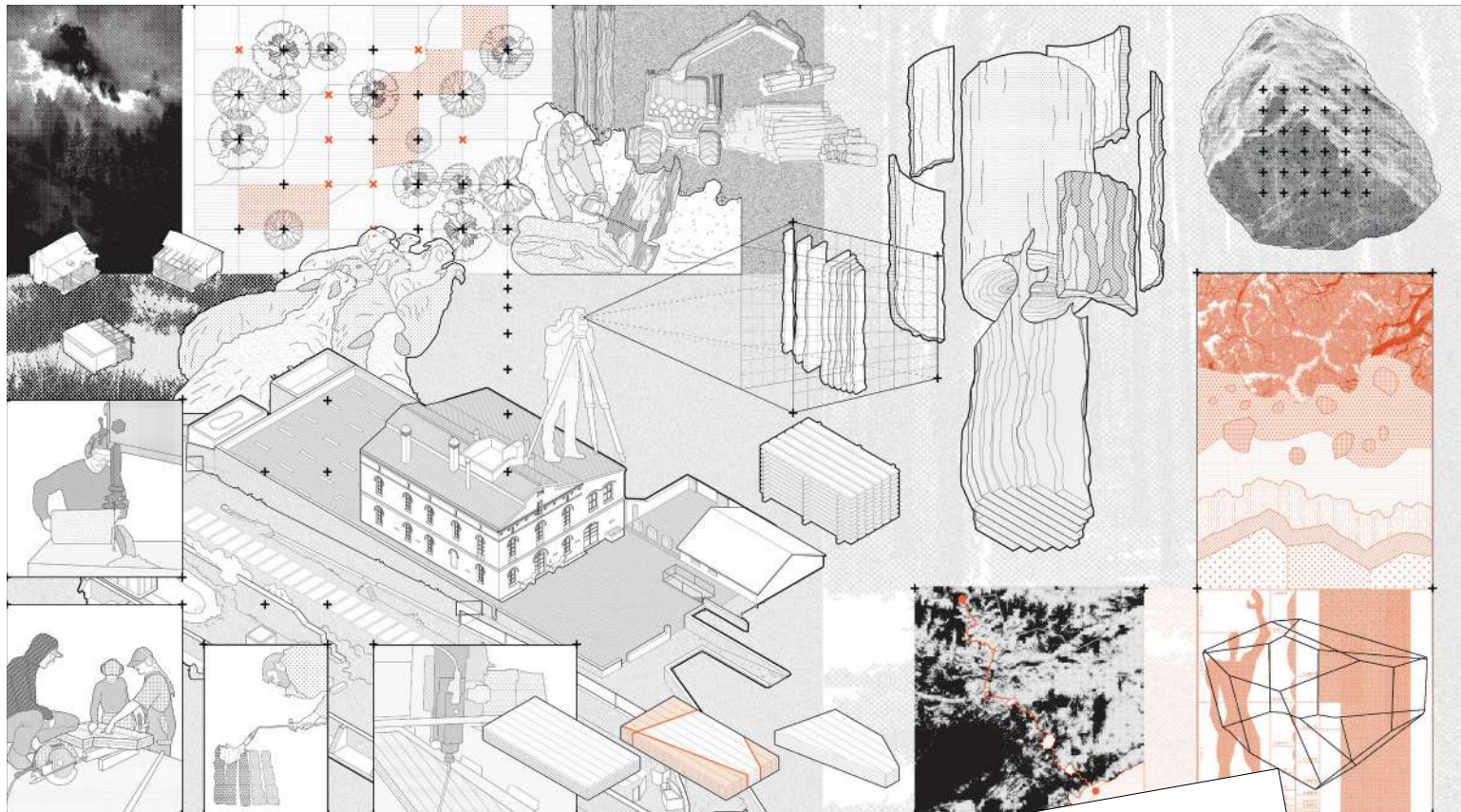
REPORTS

visit the webpage:  
[HTTPS://IAAC.NET/PROJECTS/FORESTONE-CABIN-REGENERATIVE-ARCHITECTURE-IN-THE-PYRENEES](https://iaac.net/projects/forestone-cabin-regenerative-architecture-in-the-pyrenees)

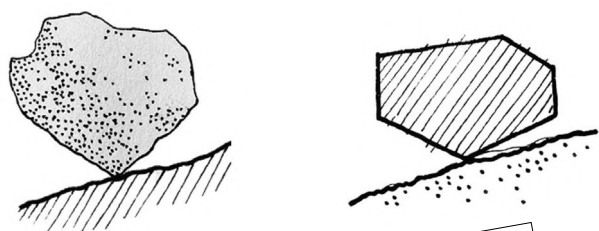


FORESTONE

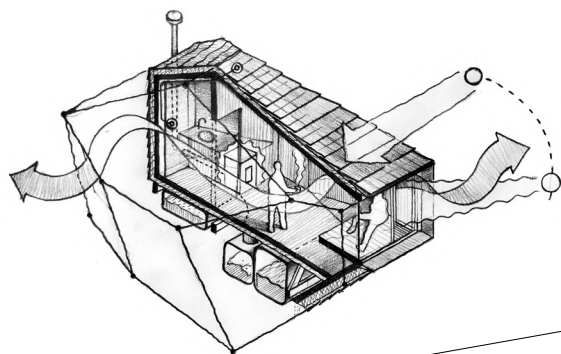
ROLE: DESIGN BUILD STUDIO DIRECTOR, IAAC, BARCELONA 2025



concept development  
FACING FIRE WITH NATURAL MATERIALS

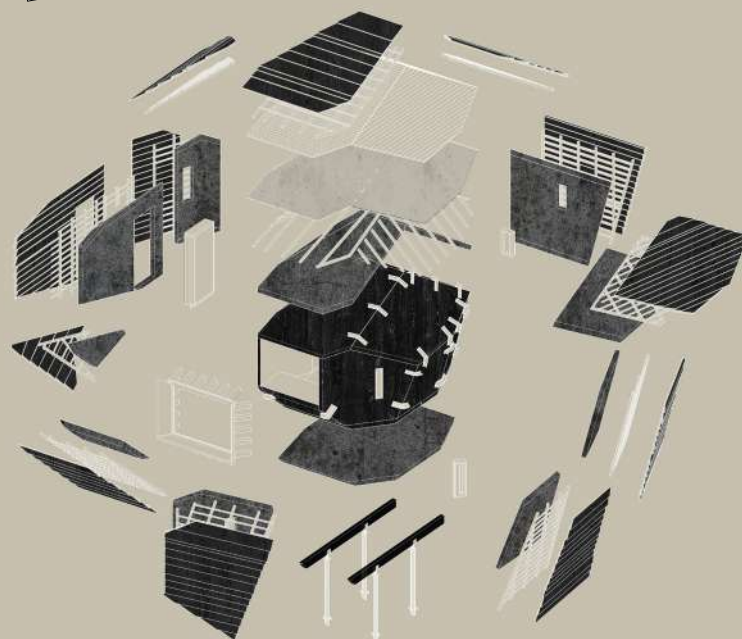


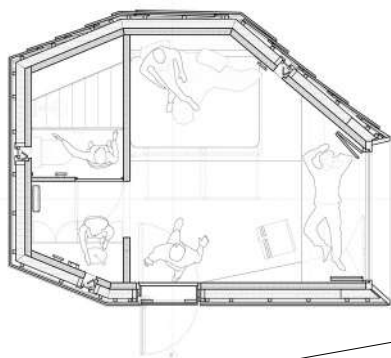
form finding  
A MOUNTAIN STONE, MADE OF WOOD



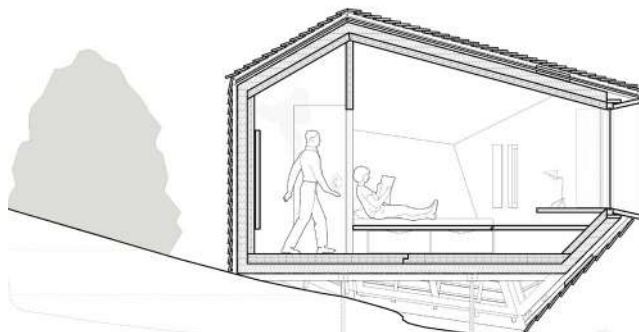
thermodynamics  
OPTIMIZED SOLAR GAIN + PASSIVE VENTILATION

layered systems  
MODULAR PREFABRICATION = RAPID, PRECISE ASSEMBLY





plan & section  
**COMPLEX FORM, SIMPLE CONSTRUCTION**



unrolled section  
**SMALL FOOTPRINT, MANY USES**



wall system prototype  
**CLT + WOOD FIBER INSULATION + YAKISUGI CLADDING**









visit the webpage:  
[HTTPS://IAAC.NET/PROJECTS/  
CORA-ROBOTIC-TIMBER-VAULTS](https://iaac.net/projects/cora-robotic-timber-vaults)

# CORA CATHEDRAL OF ROBOTIC ARTISANS

ROLE: DESIGN BUILD STUDIO DIRECTOR, IAAC, BARCELONA 2024

DESIGN  
EDUCATES  
AWARDS  
GOLD  
PRIZE  
2025



BUILDING  
OF THE YEAR  
2025  
FINALIST



### Green Roof

Wood volume: 2.20 m<sup>3</sup>

CO<sub>2</sub> storage: 528 kg

### Façade

Wood volume: 2.37 m<sup>3</sup>

CO<sub>2</sub> storage: 568.8 kg

### Structure

Wood volume: 6.17 m<sup>3</sup>

CO<sub>2</sub> storage: 1,480.8 kg

### Doors & Windows

Wood volume: 0.42 m<sup>3</sup>

CO<sub>2</sub> storage: 100.8 kg

### Existing Brick Walls

Repaired & cleaned

CO<sub>2</sub> emissions: 0 kg

### Furniture

Wood volume: 1.42 m<sup>3</sup>

CO<sub>2</sub> storage: 273.6 kg

### Floor

Concrete volume: 5.6 m<sup>3</sup>

CO<sub>2</sub> emissions: 1,428 kg

**NET CO<sub>2</sub> STORAGE**  
= 1,524 kg

unrolled elevation scan  
**ADAPTIVE REUSE**



visit the webpage:  
[HTTPS://IAAC.NET/PROJECTS/MOBILE-CATALYST-MO-CA](https://iaac.net/projects/mobile-catalyst-mo-ca)



# MOBILE CABIN / CATALYST (MO.CA)

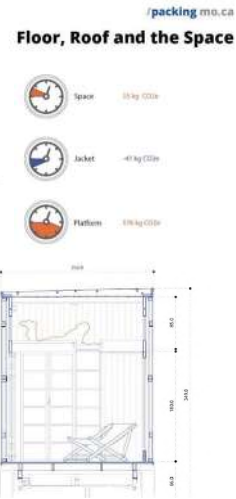
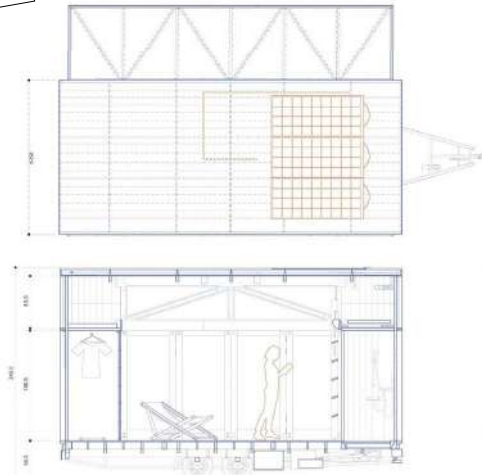
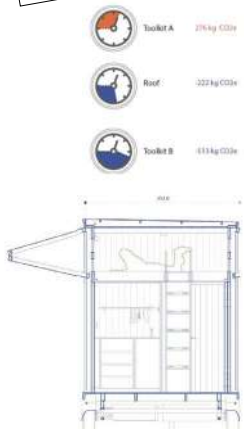
ROLE: DESIGN BUILD STUDIO DIRECTOR, IAAC, BARCELONA 2023

DESIGN  
EDUCATES  
AWARDS  
STUDY  
CHOICE  
2024



BUILDING  
OF THE YEAR  
2023  
FINALIST

logistics  
SPATIAL EFFICIENCY



visit the webpage:  
[HTTPS://IAAC.NET/PROJECTS/SOLAR-GREENHOUSE](https://iaac.net/projects/solar-greenhouse)



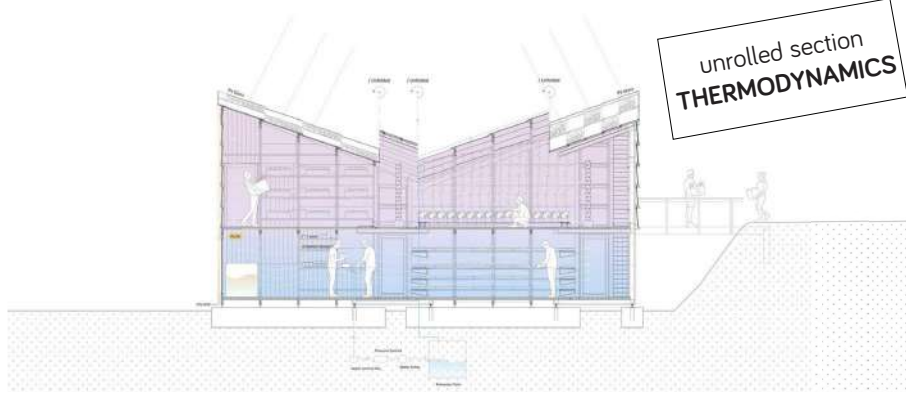
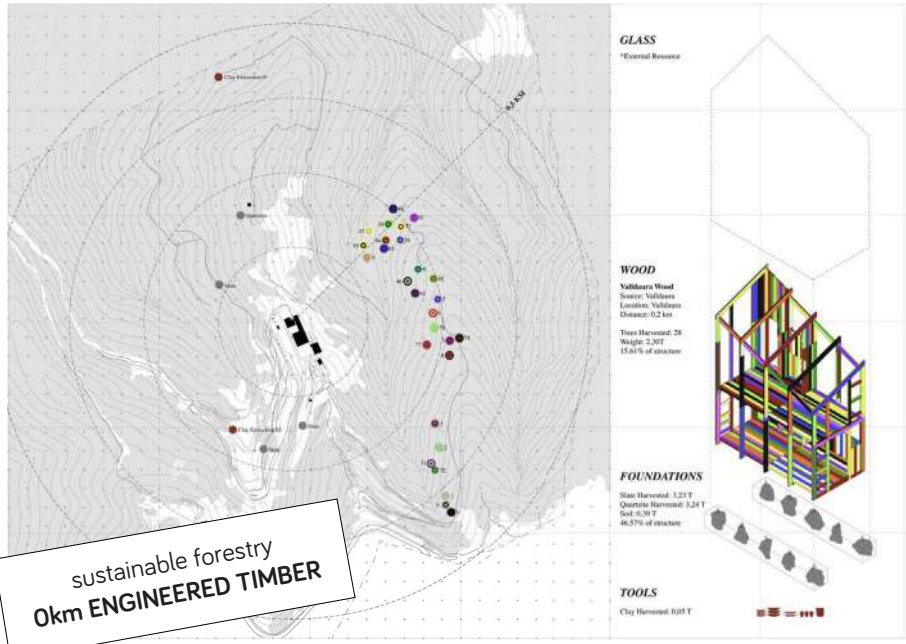
# SOLAR GREENHOUSE

ROLE: SUSTAINABLE FOREST MANAGEMENT INSTRUCTOR & DESIGN BUILD STUDIO CONSULTANT

IAAC, BARCELONA 2021



MONOCLE



visit the webpage:  
[HTTPS://IAAC.NET/PROJECTS/MAEBB-VOXEL-QUARANTINE-CABIN](https://iaac.net/projects/maebb-voxel-quarantine-cabin)

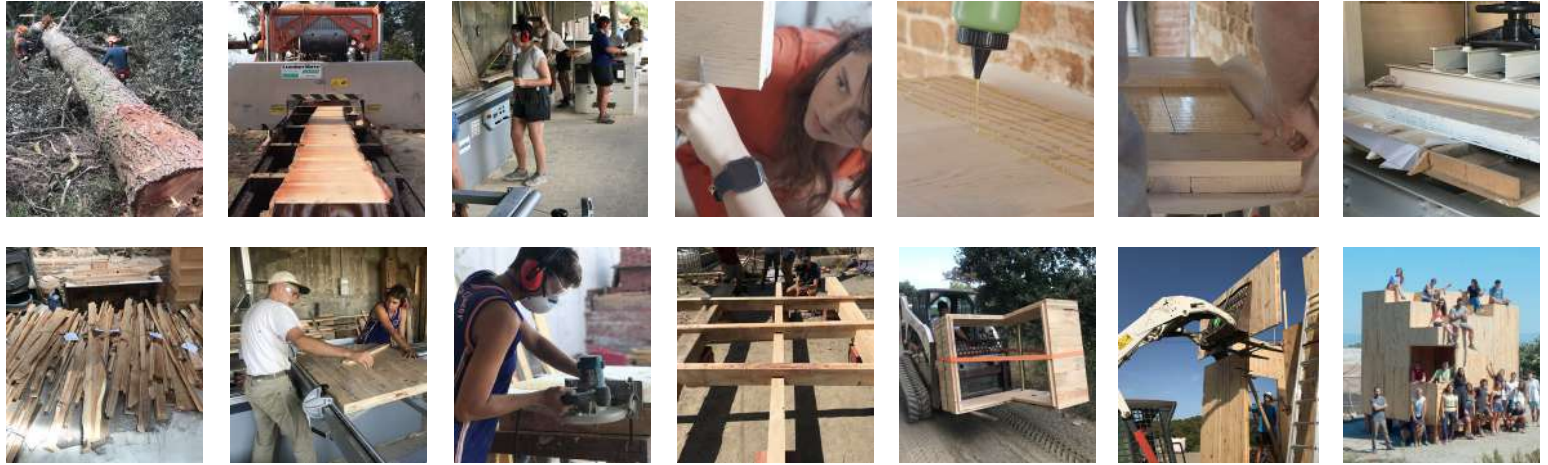
# THE VOXEL A QUARANTINE CABIN

ROLES: DESIGN BUILD STUDIO INSTRUCTOR & ACADEMIC COORDINATOR, IAAC, BARCELONA 2020

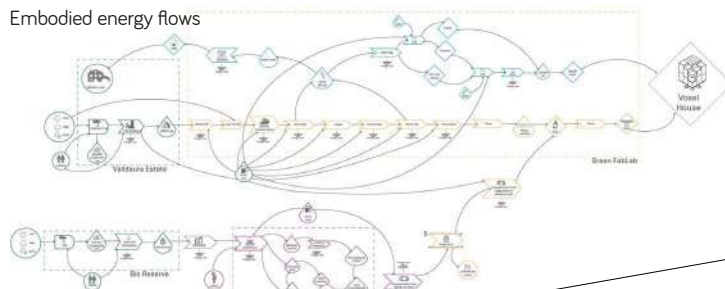
The  
New York  
Times

DESIGN  
EDUCATES  
AWARDS  
SPECIAL  
RECOGNITION  
2021





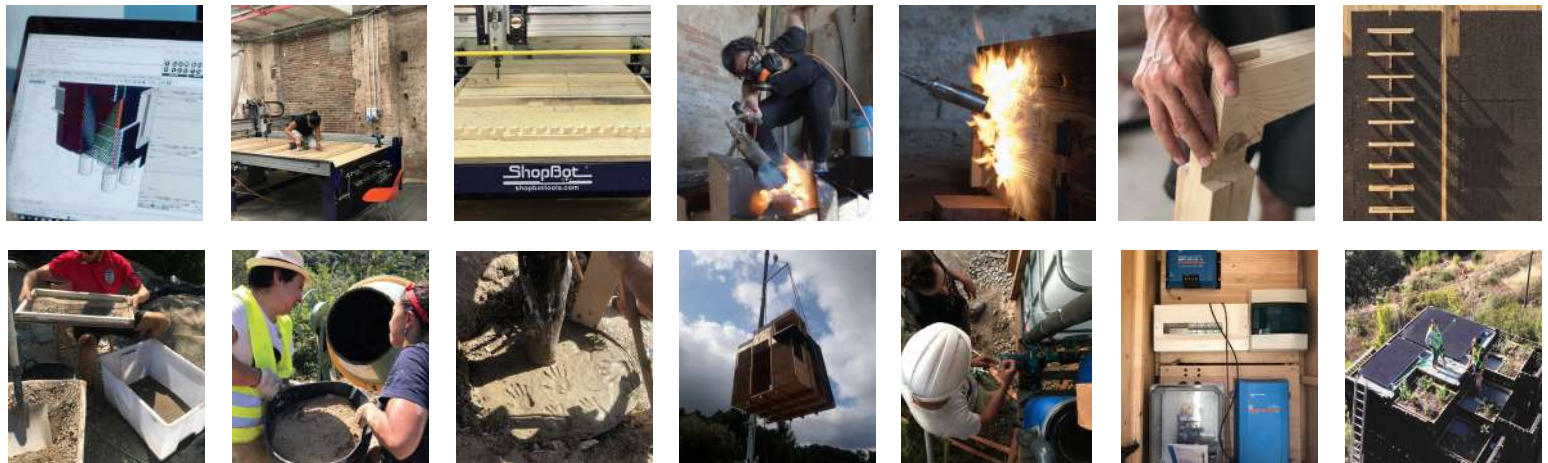
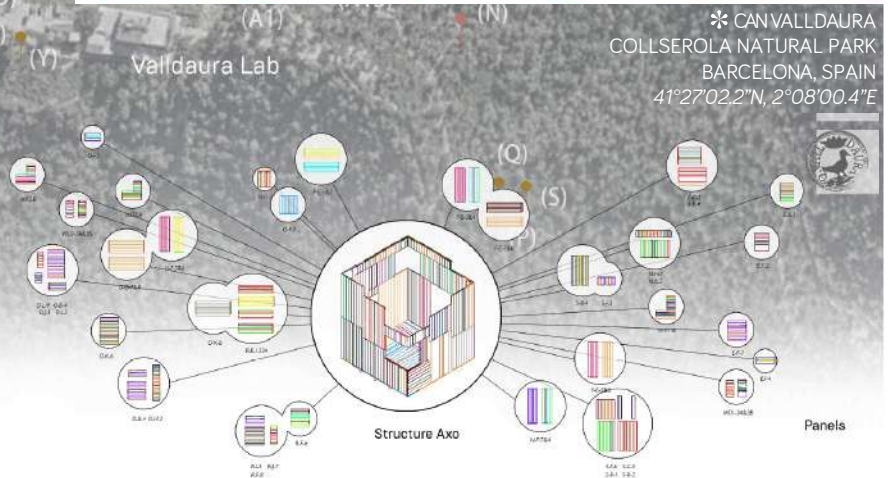
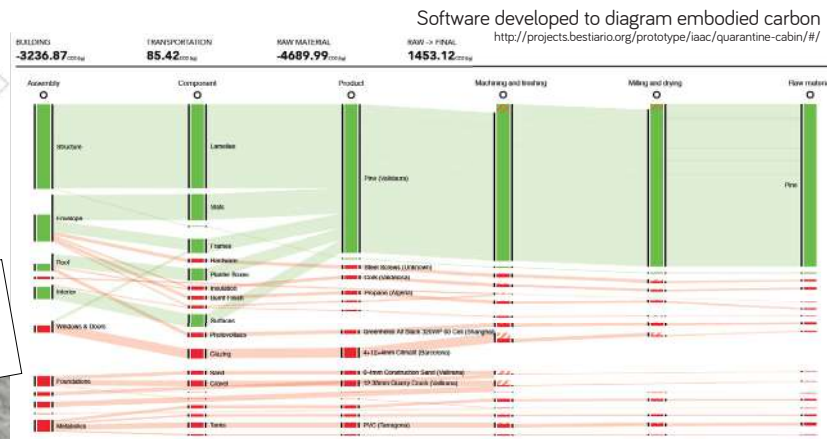
Embodied energy flows



Timber selectively harvested and processed on site



materiality  
**FULLY TRACEABLE  
TIMBER + CARBON**



## logistics BUDGET

- 1 - Primary structure (cross-laminated timber / CLT) - local pine wood
- 2 - Door and window boxes (cross-laminated timber / CLT) - local pine wood
- 3 - Interior furniture (cross-laminated timber / CLT) - local pine wood
- 4 - Rain screen (charred offcuts from CLT production) - local pine wood
- 5 - Entry stair platforms (charred offcuts from CLT production) - local pine wood
- 6 - Floor frame - local pine wood

7 - Glazing - low emissivity glass | €1,180,32

8 - Foundations (poured each concrete / PEC) - local soil + local gravel + cement | €178,66

9 - Roof - regional cork + rubber membrane | €504,00

10 - Rooftop planters - local pine wood + 3D printed PET-G drainage channels + local soil + local vegetation | €115,05

11 - Solar panels - monocrystalline silicon | €705,00

Not pictured - Insulation / weatherproofing - regional cork | €610,50

Not pictured (re: metabolics) - Piping - polyethylene + aluminum  
 Not pictured (re: metabolics) - Fresh, rain, gray and blackwater tanks - polyvinyl chloride  
 Not pictured (re: metabolics) - Fresh and graywater pumps - steel  
 Not pictured (re: metabolics) - Fittings and valves - steel  
 Not pictured (re: metabolics) - Water heater - steel  
 Not pictured (re: metabolics) - Sink - steel  
 Not pictured (re: metabolics) - Shower - steel  
 Not pictured (re: metabolics) - Microrefrigerator - steel  
 Not pictured (re: metabolics) - 5 stage filtration system - cotton + carbon + membrane  
 Not pictured (re: metabolics) - Sealants - silicon + linseed oil + turpentine  
 Not pictured (re: metabolics) - Toilet - porcelain  
 Not pictured (re: metabolics) - Cables - copper + rubber  
 Not pictured (re: metabolics) - Inverter - steel + copper  
 Not pictured (re: metabolics) - Controller - phenol formaldehyde + silicon + copper  
 Not pictured (re: metabolics) - Batteries - lead acid gel  
 Not pictured (re: metabolics) - Switches and outlets - phenol formaldehyde  
 Not pictured (re: metabolics) - Induction cooktop - ceramic glass  
 Not pictured (re: metabolics) - Lights - LED

## logistics INSTALLATION

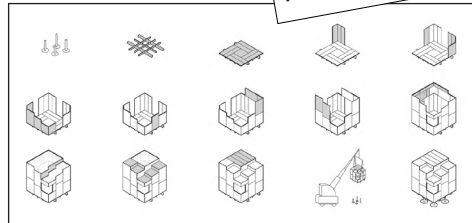
€2,550,00  
(harvest + milling)

€6,678,31

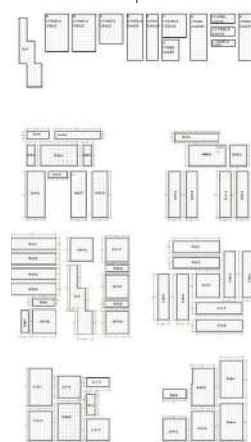
**TOTAL HARD COST**  
=  
**€18,479.99**

\* All CLT panels are pre-fabricated and rapidly assembled in a secure staging area before the entire structure is lifted into position on site by a crane

## logistics PRE-FABRICATION



Pre-fabricated CLT panels

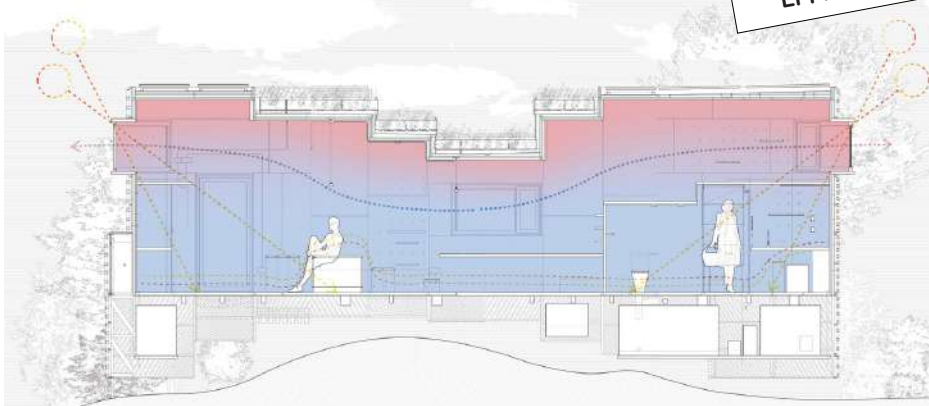


## logistics SPATIAL EFFICIENCY

Site plan

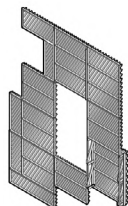


Unrolled thermodynamic section

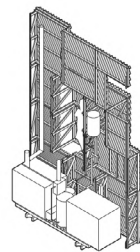


## logistics PARAMETRIC OPTIMIZATION

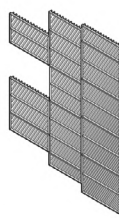
\* Spacing of rain screen slats parametrically modulated in response to solar gain and privacy, with bump-outs containing indoor/outdoor spaces and metabolic equipment



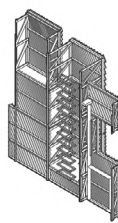
Northwest



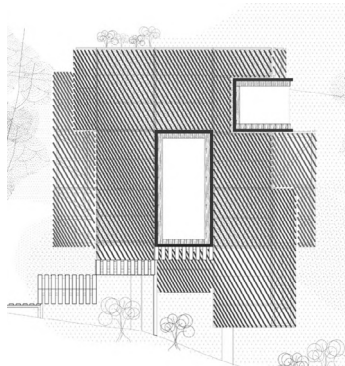
Southwest



Southeast



Northeast



Northwest elevation



Plan

roof system  
12 m<sup>2</sup>

rainwater collection surface  
8 m<sup>2</sup>

green roof  
4 m<sup>2</sup>

gravel rainwater filtration  
4 m<sup>2</sup>

rainwater drain

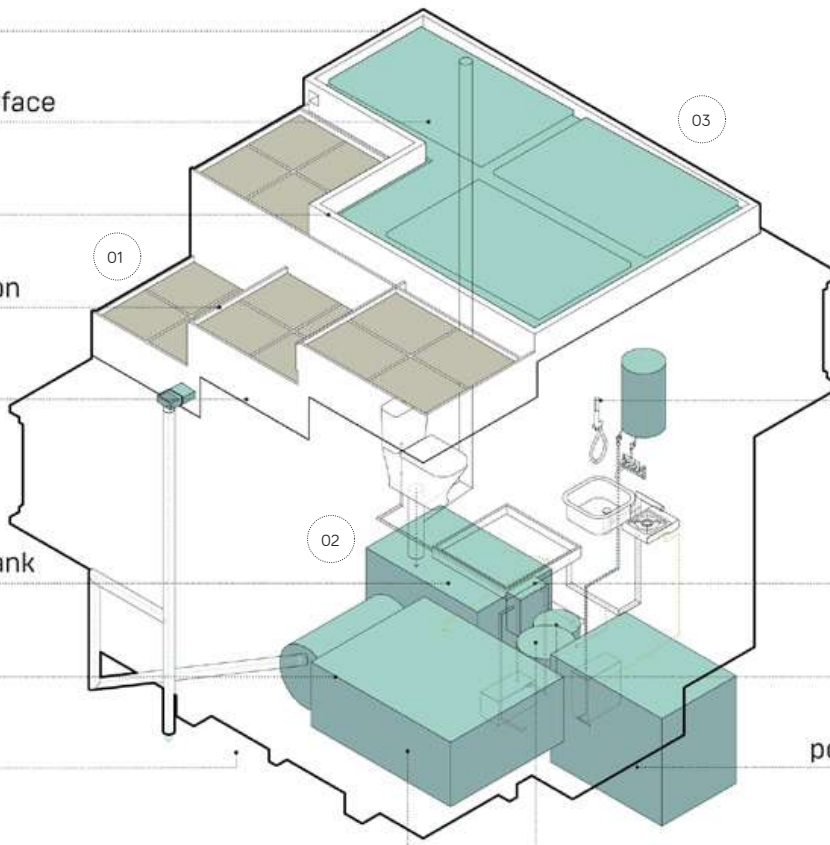
black water/compost tank  
600 L

rainwater tank  
250 L

first flush diverter

gas pillow container  
500 L

14 DAYS OF WATER  
SELF-SUFFICIENCY



hot water tank  
30 L

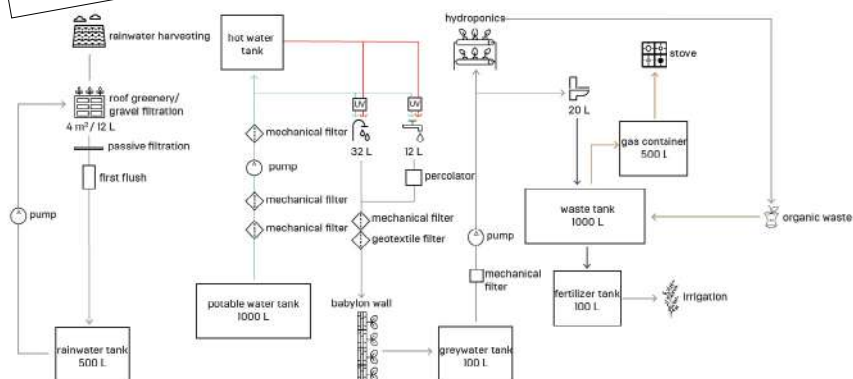
grey water filter

fertilizer tank  
30 L

potable water tank  
600 L

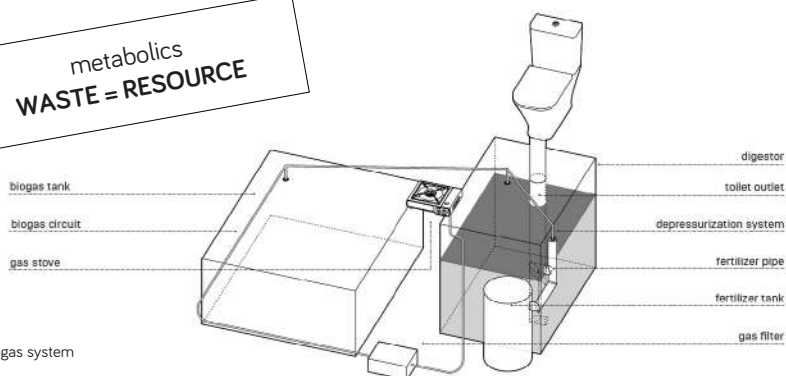
grey water tank  
200 L

metabolics  
GRAYWATER RECYCLING  
+ RAINWATER COLLECTION



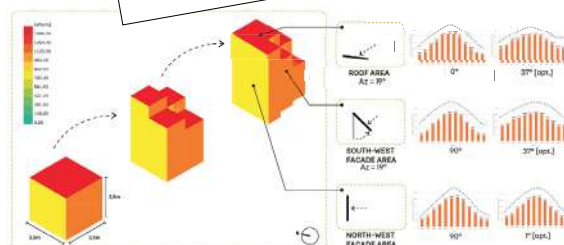
Circular water + waste flows

metabolics  
WASTE = RESOURCE

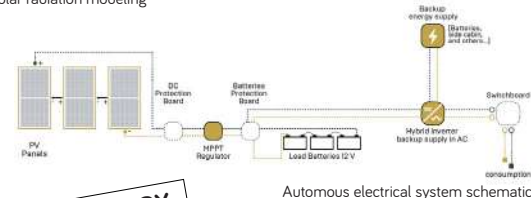


Biogas system

metabolics  
ENERGY

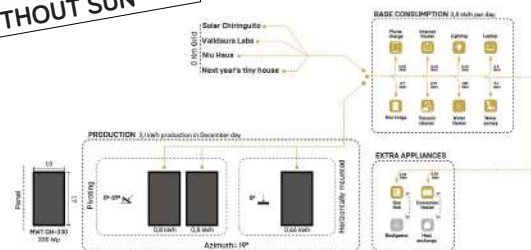


Solar radiation modeling



Autonomous electrical system schematic

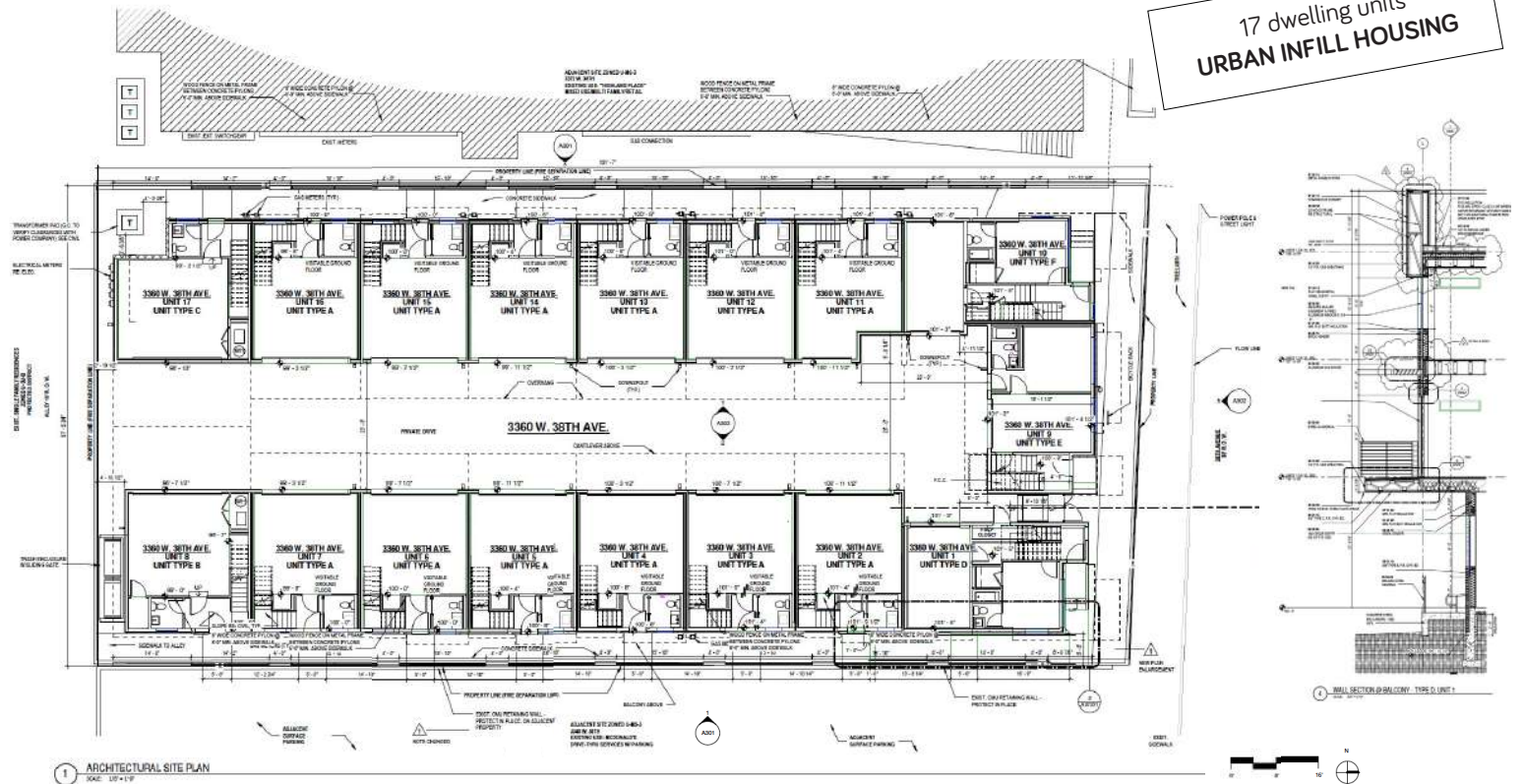
72 HOURS OF ENERGY  
SELF-SUFFICIENCY  
WITHOUT SUN



Electrical production + consumption + autonomous local energy grid schematic









308 dwelling units  
THE USA's LARGEST  
NET-ZERO NEIGHBORHOOD

Neighborhood Plan



- Single Family
- Live/Work Townhomes or Attached Dwellings
- Attached Dwellings
- Apartments or Attached Dwellings
- Residential Mixed Use
- Common House with Residential above Garages



visit the website:  
[HTTPS://DISCOVERGEOS.COM](https://discovergeos.com)





# MAQUINA CLIMATICA

ROLE: DESIGN BUILD STUDIO DIRECTOR, IAAC, BARCELONA 2024



inaugural use of  
the renovated  
**PARC DE LA CIUTADELLA  
HIVERNACLE**  
from the 1888 World Expo



exploring the potential for  
**VERTICAL FARMING  
ON BARCELONA'S  
ROOFTOPS**



modular hydroponic shelf  
**FROM LOCAL WOOD**



**FAD 2025  
SELECTION**  
for ephemeral  
interventions

INSTALLATION  
AT ESCOLA ENTENÇA  
IAAC, BARCELONA



FURNISH

FAST URBAN RESPONSES FOR NEW INCLUSIVE SPACES & HABITAT

ROLE 1: PROJECT MANAGER & DESIGN BUILD STUDIO INSTRUCTOR / DIRECTOR, IAAC, BARCELONA 2020-2022

ROLE 2: DESIGN & FABRICATION MENTOR, ALL INTERNATIONAL TEAMS, 2020

COORDINATOR: CARNET / PARTNERS: IAAC, UPC, ELISAVA, FAB LAB NETWORK, CITY OF MILAN, CITY OF BARCELONA



PROTOTYPE 1: VORA  
ELISAVA, BARCELONA



PROTOTYPE 2: MUE.SLI  
UNPARK (POLIMI), MILAN



**PROTOTYPE 3: THEATRON  
BPGANG (FABLAB BUDAPEST), BUDAPEST**



**PROTOTYPE 4: EDUS POINT  
UPC, BARCELONA**



PROTOTYPE 5: KONCH  
NOT-19 (AALTO FAB LAB), ESPOO

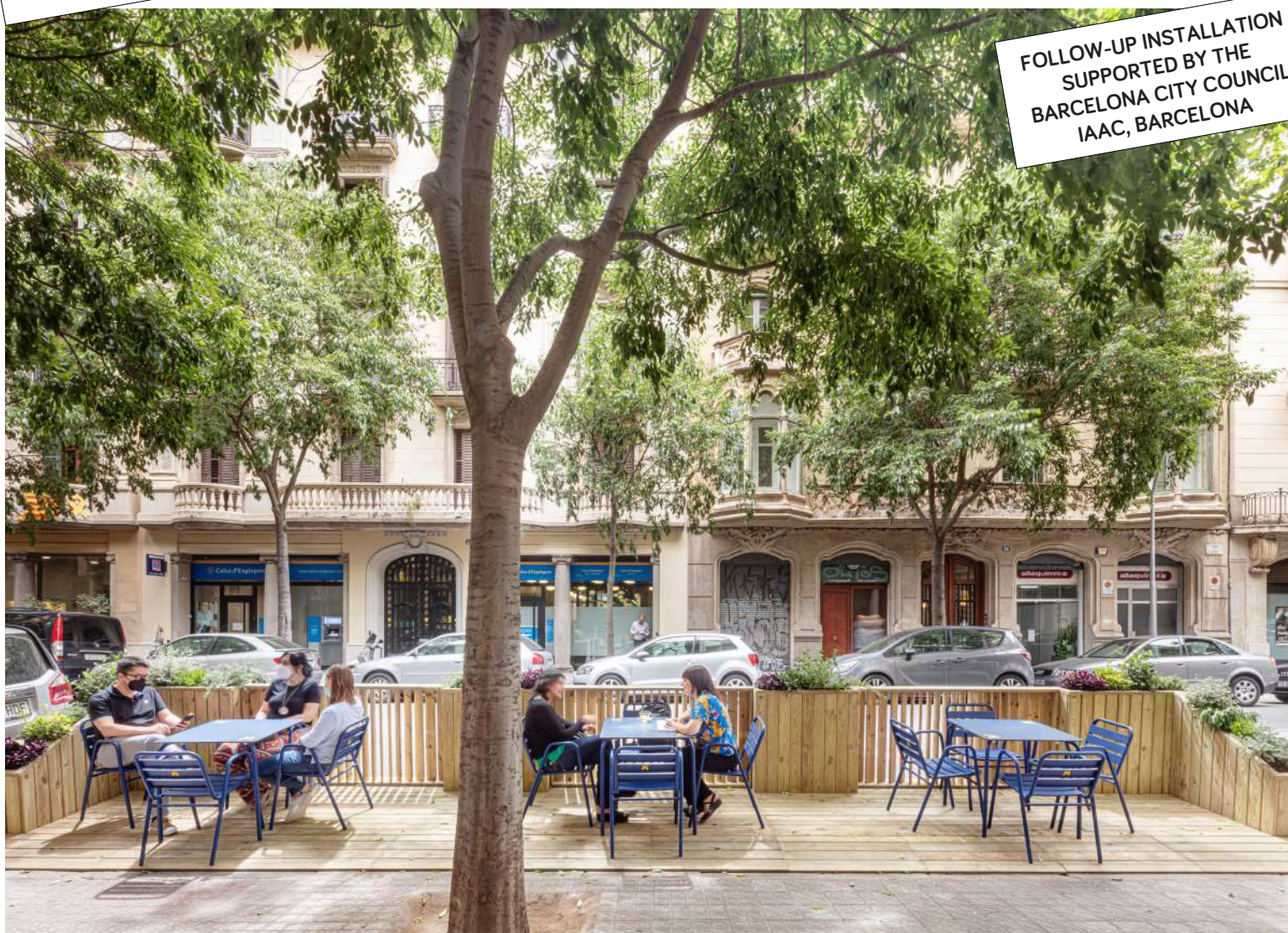


PROTOTYPE 6: AEIOU  
EAUM & I+D+ARQ, GUIMARAES



**PROTOTYPE 7: OPEN TERRACE  
IAAC, BARCELONA**

visit the website for the original project:  
[HTTPS://FURNISH.TECH](https://furnish.tech)



**FOLLOW-UP INSTALLATION  
SUPPORTED BY THE  
BARCELONA CITY COUNCIL  
IAAC, BARCELONA**



visit the website for the follow-up:  
[HTTPS://ECOPARKLET.COM](https://ecoparklet.com)





# Access3D

ROLE: PROJECT MANAGER, IAAC, BARCELONA 2020

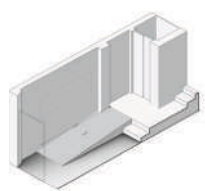
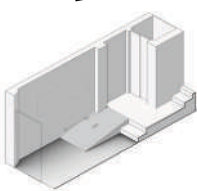
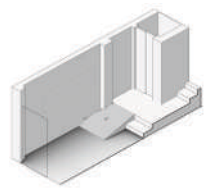
PARTNERS: SENSEDI, NOUMENA / FUNDER: FUNDACIÓN MUTUA DE PROPIETARIOS



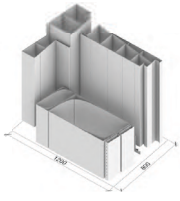
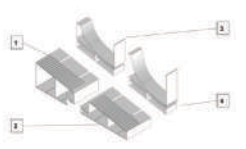
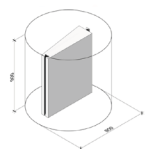
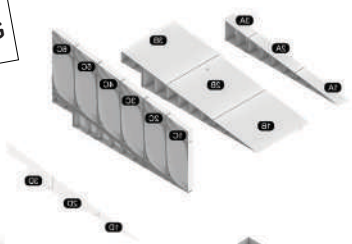
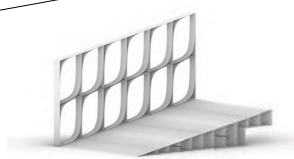
laser scan  
AUTOMATED 3D MODEL



design flexibility  
PARAMETRIC ADAPTATION



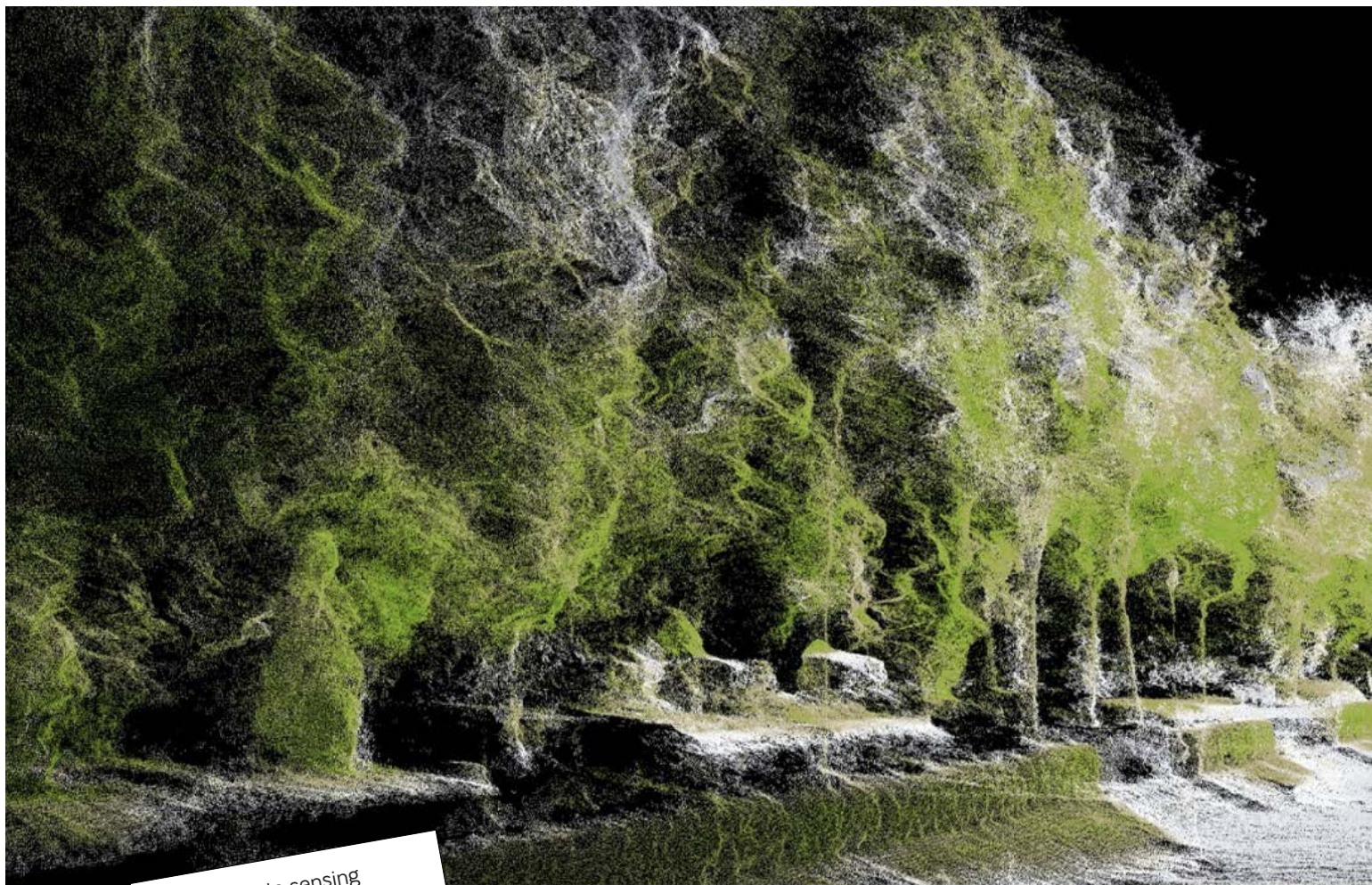
discrete components  
OPTIMIZED FOR 3D PRINTING



visit the webpage:  
[HTTPS://VALDAURA.NET/  
SUSTAINABLE-FOREST-MANAGEMENT-  
TRACEABLE-TIMBER](https://valldaura.net/sustainable-forest-management-traceable-timber)

# SUSTAINABLE FOREST MANAGEMENT & ENGINEERED TIMBER PRODUCTION

ROLE: TECHNICAL DIRECTOR & HEAD OF PROJECTS, IAAC, BARCELONA 2019 - 2026

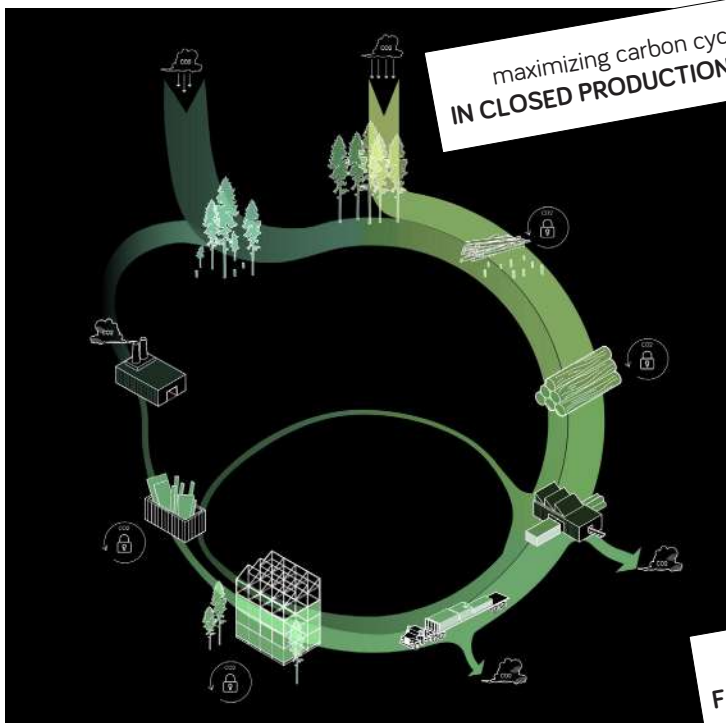
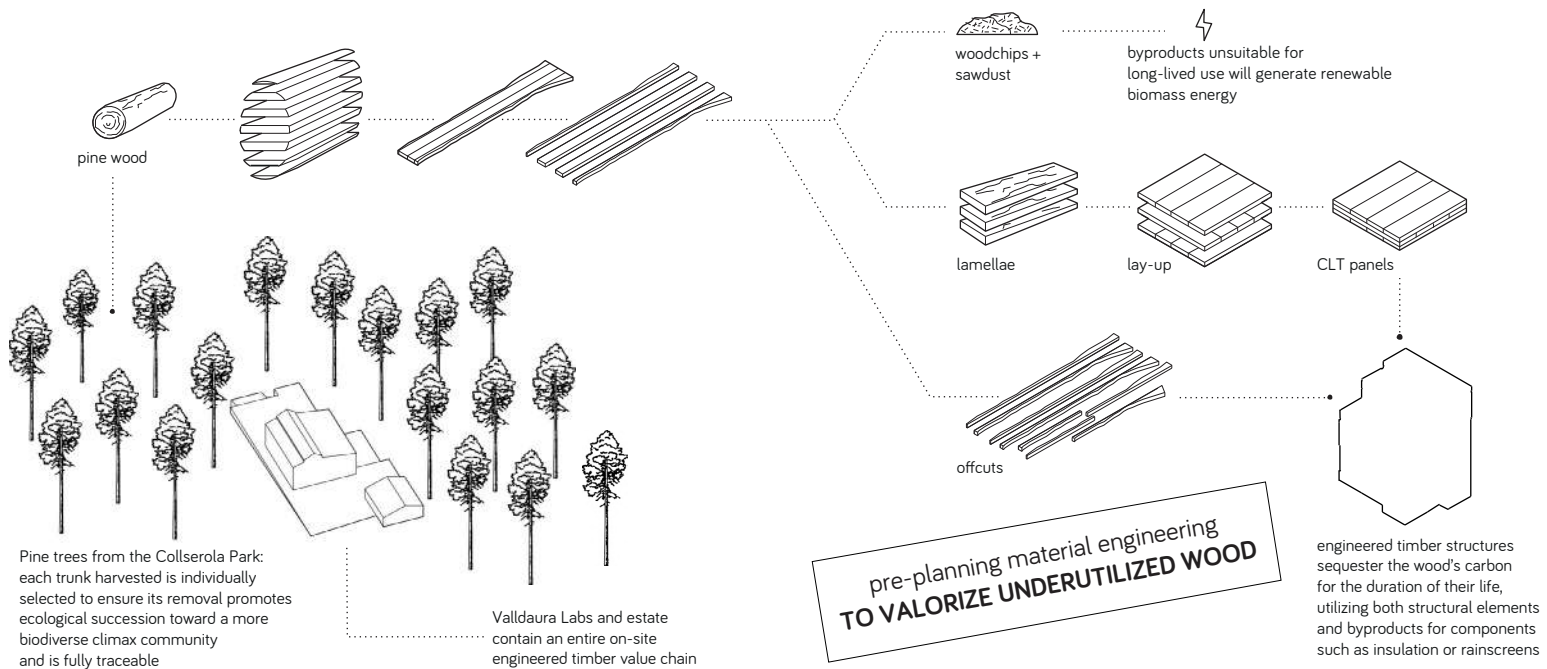


remote sensing  
INITIAL DATA CAPTURE





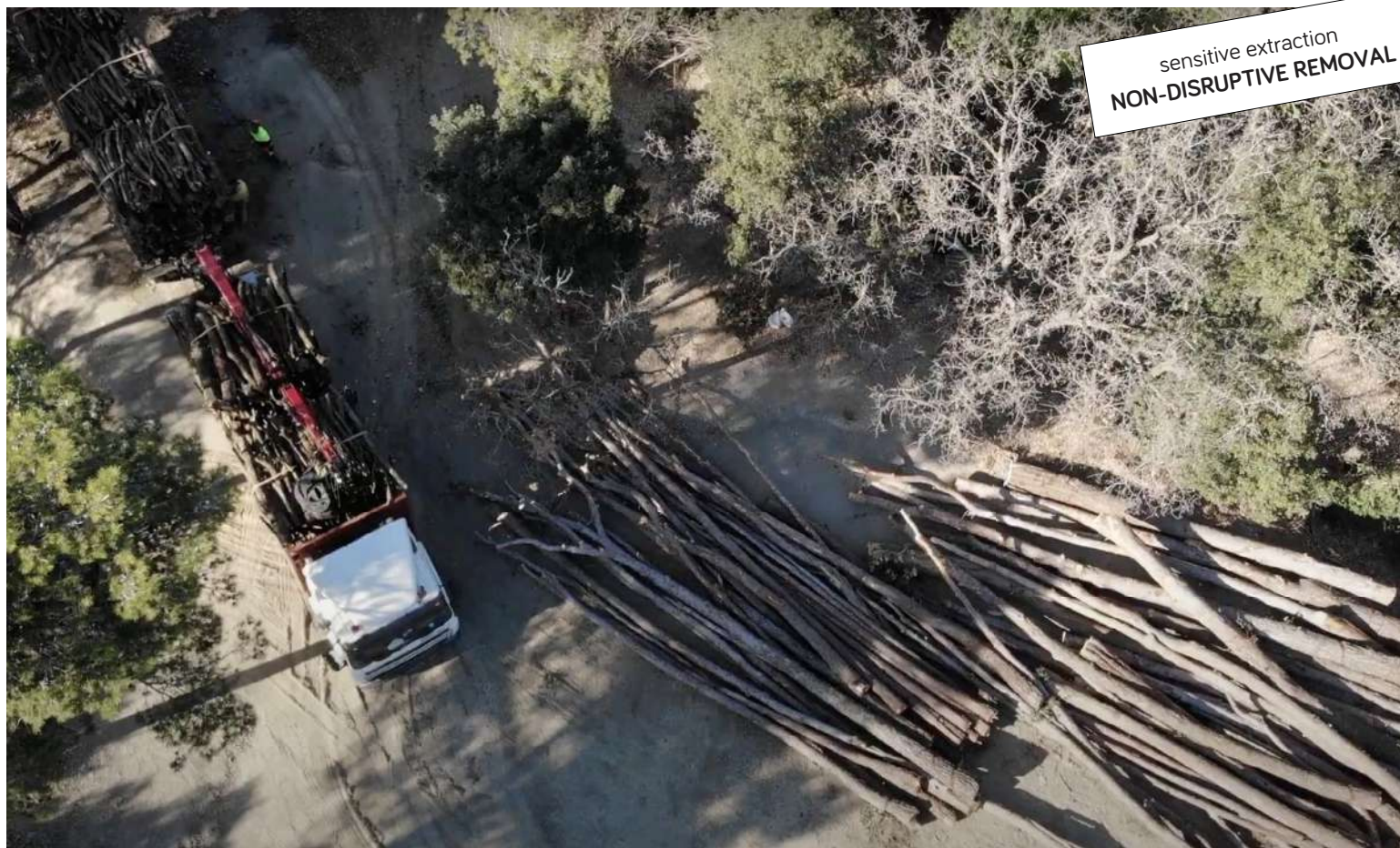
point cloud rendering  
FROM 3D SCAN > 3D MODEL



partnering with ecologists  
FOR SELECTIVE HARVESTING



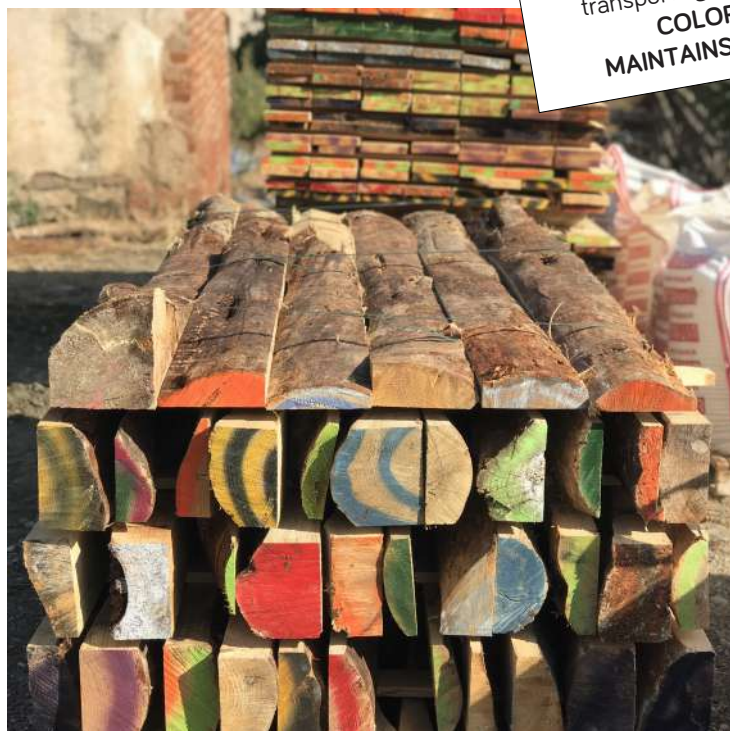
| Tree | Species    | Latitude (N) | Longitude (E) | Diameter (cm) | Height (m) | Altitude (m) | Color Code   | Photos                                                                                                                                                                        |
|------|------------|--------------|---------------|---------------|------------|--------------|--------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 11   | White Pine | 41.427218    | 2.193245      | 37            | 1336       | 1135         |              | <a href="https://www.google.com/maps/@41.427218,-2.193245,37m/data=!3m1!1e3!1s409202778">https://www.google.com/maps/@41.427218,-2.193245,37m/data=!3m1!1e3!1s409202778</a>   |
| 12   | White Pine | 41.42707     | 2.193211      | 40            | 1417       | 1135         |              | <a href="https://www.google.com/maps/@41.42707,-2.193211,40m/data=!3m1!1e3!1s409202778">https://www.google.com/maps/@41.42707,-2.193211,40m/data=!3m1!1e3!1s409202778</a>     |
| 13   | White Pine | 41.42729     | 2.193234      | 39            | 1129       |              |              | <a href="https://www.google.com/maps/@41.42729,-2.193234,39m/data=!3m1!1e3!1s409202778">https://www.google.com/maps/@41.42729,-2.193234,39m/data=!3m1!1e3!1s409202778</a>     |
| 14   | White Pine | 41.42733     | 2.193300      | 38            | 1225       | 1135         | Blue/Red     | <a href="https://www.google.com/maps/@41.42733,-2.193300,38m/data=!3m1!1e3!1s409202778">https://www.google.com/maps/@41.42733,-2.193300,38m/data=!3m1!1e3!1s409202778</a>     |
| 15   | White Pine | 41.44009     | 2.193418      | 30            | 1105       |              |              | <a href="https://www.google.com/maps/@41.44009,-2.193418,30m/data=!3m1!1e3!1s409202778">https://www.google.com/maps/@41.44009,-2.193418,30m/data=!3m1!1e3!1s409202778</a>     |
| 17   | White Pine | 41.42742     | 2.193271      | 61            | 1400       | 1140         |              | <a href="https://www.google.com/maps/@41.42742,-2.193271,61m/data=!3m1!1e3!1s409202778">https://www.google.com/maps/@41.42742,-2.193271,61m/data=!3m1!1e3!1s409202778</a>     |
| 18   | White Pine | 41.42751     | 2.193251      | 57            | 1500       | 1067         |              | <a href="https://www.google.com/maps/@41.42751,-2.193251,57m/data=!3m1!1e3!1s409202778">https://www.google.com/maps/@41.42751,-2.193251,57m/data=!3m1!1e3!1s409202778</a>     |
| 19   | White Pine | 41.42751     | 2.193250      | 50            | 1500       | 1067         |              | <a href="https://www.google.com/maps/@41.42751,-2.193250,50m/data=!3m1!1e3!1s409202778">https://www.google.com/maps/@41.42751,-2.193250,50m/data=!3m1!1e3!1s409202778</a>     |
| 20   | White Pine | 41.42753     | 2.193251      | 54            | 1500       | 1067         | Blue/Yellow  | <a href="https://www.google.com/maps/@41.42753,-2.193251,54m/data=!3m1!1e3!1s409202778">https://www.google.com/maps/@41.42753,-2.193251,54m/data=!3m1!1e3!1s409202778</a>     |
| 21   | White Pine | 41.44009     | 2.193252      | 78            | 1000       | 1021         |              | <a href="https://www.google.com/maps/@41.44009,-2.193252,78m/data=!3m1!1e3!1s409202778">https://www.google.com/maps/@41.44009,-2.193252,78m/data=!3m1!1e3!1s409202778</a>     |
| 22   | White Pine | 41.44142     | 2.193258      | 43            | 1260       | 1061         |              | <a href="https://www.google.com/maps/@41.44142,-2.193258,43m/data=!3m1!1e3!1s409202778">https://www.google.com/maps/@41.44142,-2.193258,43m/data=!3m1!1e3!1s409202778</a>     |
| 23   | White Pine | 41.44142     | 2.193271      | 60            | 1400       | 1061         | Green/Black  | <a href="https://www.google.com/maps/@41.44142,-2.193271,60m/data=!3m1!1e3!1s409202778">https://www.google.com/maps/@41.44142,-2.193271,60m/data=!3m1!1e3!1s409202778</a>     |
| 24   | White Pine | 41.44217     | 2.193400      | 51.5          | 875        |              |              | <a href="https://www.google.com/maps/@41.44217,-2.193400,51.5m/data=!3m1!1e3!1s409202778">https://www.google.com/maps/@41.44217,-2.193400,51.5m/data=!3m1!1e3!1s409202778</a> |
| 25   | White Pine | 41.44013     | 2.193178      | 35            | 1000       |              |              | <a href="https://www.google.com/maps/@41.44013,-2.193178,35m/data=!3m1!1e3!1s409202778">https://www.google.com/maps/@41.44013,-2.193178,35m/data=!3m1!1e3!1s409202778</a>     |
| 26   | White Pine | 41.44031     | 2.193254      | 36            | 1042       |              | Red/White    | <a href="https://www.google.com/maps/@41.44031,-2.193254,36m/data=!3m1!1e3!1s409202778">https://www.google.com/maps/@41.44031,-2.193254,36m/data=!3m1!1e3!1s409202778</a>     |
| 27   | White Pine | 41.44031     | 2.193241      | 36            | 1042       |              | Blue         | <a href="https://www.google.com/maps/@41.44031,-2.193241,36m/data=!3m1!1e3!1s409202778">https://www.google.com/maps/@41.44031,-2.193241,36m/data=!3m1!1e3!1s409202778</a>     |
| 28   | White Pine | 41.44560     | 2.193160      | 56            | 1009       | 1056         |              | <a href="https://www.google.com/maps/@41.44560,-2.193160,56m/data=!3m1!1e3!1s409202778">https://www.google.com/maps/@41.44560,-2.193160,56m/data=!3m1!1e3!1s409202778</a>     |
| 29   | White Pine | 41.44560     | 2.193160      | 56            | 1009       | 1056         |              | <a href="https://www.google.com/maps/@41.44560,-2.193160,56m/data=!3m1!1e3!1s409202778">https://www.google.com/maps/@41.44560,-2.193160,56m/data=!3m1!1e3!1s409202778</a>     |
| 30   | White Pine | 41.44560     | 2.193173      | 78            | 2270       | 1020         | Brown/White  | <a href="https://www.google.com/maps/@41.44560,-2.193173,78m/data=!3m1!1e3!1s409202778">https://www.google.com/maps/@41.44560,-2.193173,78m/data=!3m1!1e3!1s409202778</a>     |
| 31   | White Pine | 41.44548     | 2.193116      | 80            | 2135       | 1042         | Orange/Black | <a href="https://www.google.com/maps/@41.44548,-2.193116,80m/data=!3m1!1e3!1s409202778">https://www.google.com/maps/@41.44548,-2.193116,80m/data=!3m1!1e3!1s409202778</a>     |
| 32   | White Pine | 41.44548     | 2.193181      | 80            | 2135       | 1042         | Black/White  | <a href="https://www.google.com/maps/@41.44548,-2.193181,80m/data=!3m1!1e3!1s409202778">https://www.google.com/maps/@41.44548,-2.193181,80m/data=!3m1!1e3!1s409202778</a>     |
| 33   | Yew Oak    | 41.44864     | 2.193241      | 49            | 1822       | 990          | Black/Yellow | <a href="https://www.google.com/maps/@41.44864,-2.193241,49m/data=!3m1!1e3!1s409202778">https://www.google.com</a>                                                            |



sensitive extraction  
**NON-DISRUPTIVE REMOVAL**



transporting + milling + shaping  
**COLOR-CODING  
MAINTAINS TRACEABILITY**



modular composites  
**ENABLE DESIGN FLEXIBILITY  
& RAPID DEPLOYMENT**



lamination  
**ENHANCES STRENGTH  
& DIMENSIONAL STABILITY**



translating traceability  
FROM MAP TO MODEL

Process



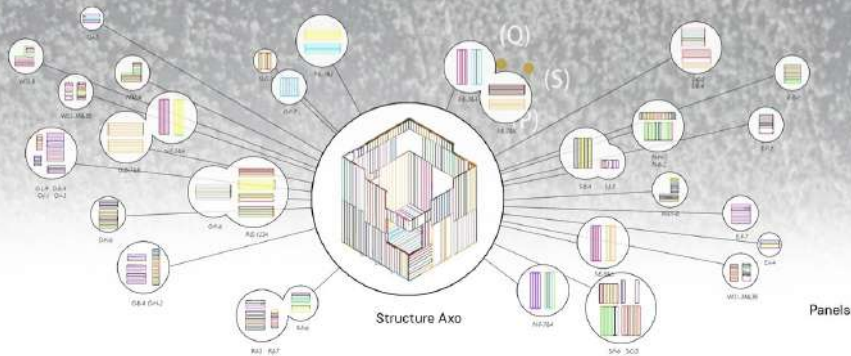
Offcuts



Lamellae



Trunks

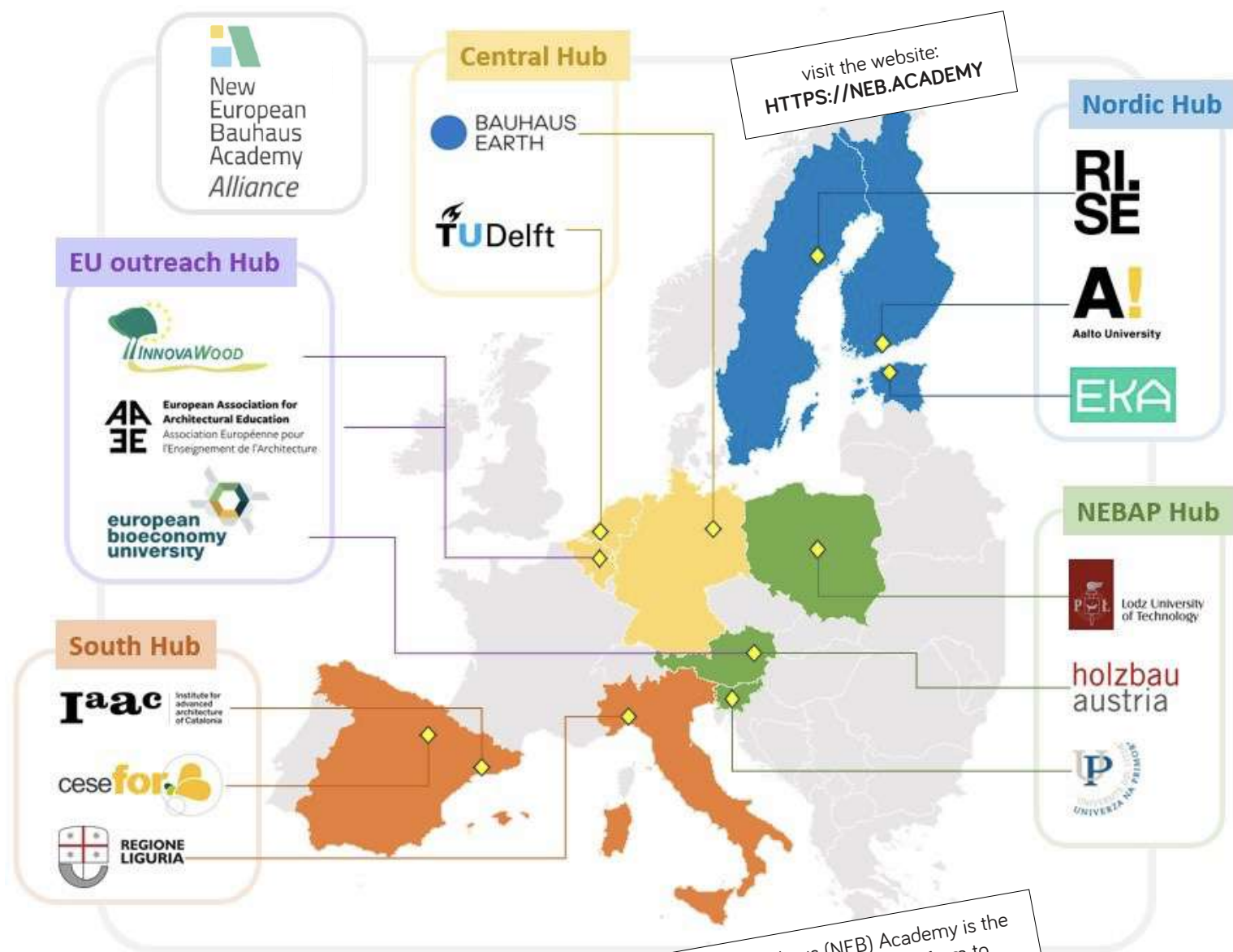


panelized structures  
MADE OF FULLY TRACED 0km  
CROSS-LAMINATED TIMBER



timber in tension  
LINEAR STRUCTURE  
WITH A 14m GLULAM BEAM





# NEW EUROPEAN BAUHAUS ACADEMY ALLIANCE

ROLE: FOUNDING PARTNER & SOUTH HUB LEAD,  
IAAC, BARCELONA 2024-2026

COORDINATOR: UNIVERSITY OF PRIMORSKA

PARTNERS: IAAC, TU DELFT, AALTO, RISE, INNOVAWOOD

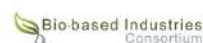
BAUHAUS EARTH, BOKU, CESEFOR, EAAE, EKA, TUL

HOLZBAU AUSTRIA, REGIONE LIGURIA

FUNDER: EUROPEAN COMMISSION

the New European Bauhaus (NEB) Academy is the European Commission's flagship platform to **TRAIN, UPSKILL AND RESKILL THE CONSTRUCTION ECOSYSTEM** to achieve a **CARBON NEUTRAL BUILDING SECTOR** and a **BEAUTIFUL, SUSTAINABLE AND INCLUSIVE** transformation of the built environment

**THE NEB ACADEMY (NEBA) ALLIANCE** is the consortium of 14 international organisations tasked with co-designing and **LAUNCHING THE NEB ACADEMY BETWEEN 2024 - 2026**



NEW EUROPEAN BAUHAUS ALLIANCE

## NEBA in a nutshell

the NEB Academy aims to train  
**5,000 professionals by 2026**  
**1 million by 2028**  
**and 3 million by 2030**



### NEB Academy

Connecting educators and trainers to ensure a widespread impact across the entire construction ecosystem.

[Learn more](#)



### NEBA Alliance

Creating the conceptual and legal basis for the NEB Academy setup and to establish the initial network of Hubs and training infrastructures.

[Learn more](#)



### Hubs

Serving as a matchmaker between learners and trainers, as well as an open directory and repository for NEBA-certified training content.

[Learn more](#)



### Outreach

Networking and outreach actions designed to raise awareness and develop business opportunities for both educators and companies.

[Learn more](#)

## Courses we provide ...

### Bio-based

Using renewable, natural materials like wood, hemp, or straw in construction, promoting sustainability, reducing carbon footprints, and enhancing environmental resilience and resource efficiency.

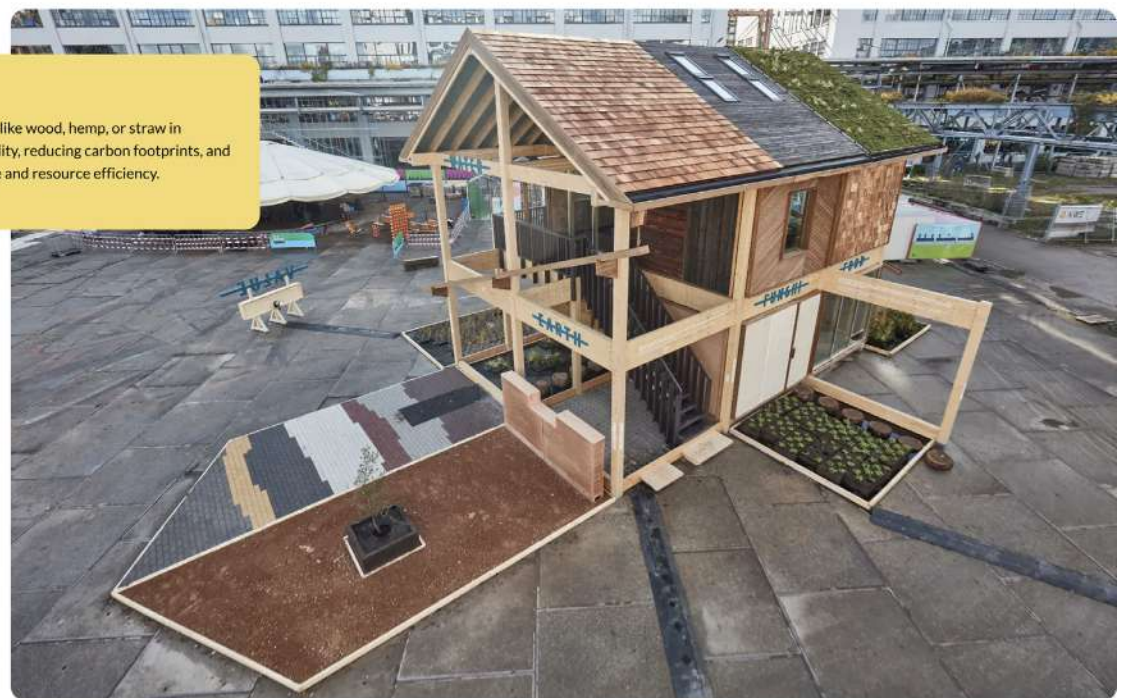
[Course overview](#)

### Circular

### Regenerative

### Long-life

### Digital



## TESTIMONIALS

I welcome the New European Bauhaus Academy Alliance, a powerhouse of 14 European partners, ready to launch its EU-wide training network. It will be a solid support for Europe's construction industry, addressing labour shortages and promoting knowledge sharing including on sustainable bio-based solutions, like the circular use of wood and other innovative materials.



**Ursula von der Leyen**  
 President of the European Commission

# Building up with timber

visit the interactive website:  
[WWW.OPTOPPEN.ORG](http://WWW.OPTOPPEN.ORG)

Low carbon redevelopment and extension of existing buildings



Use the Tool!

Gramophone Works, London

## Policies

Current and upcoming policies for countries that have specific relating to Optoppen or encourage the use of timber for upw

Learn more

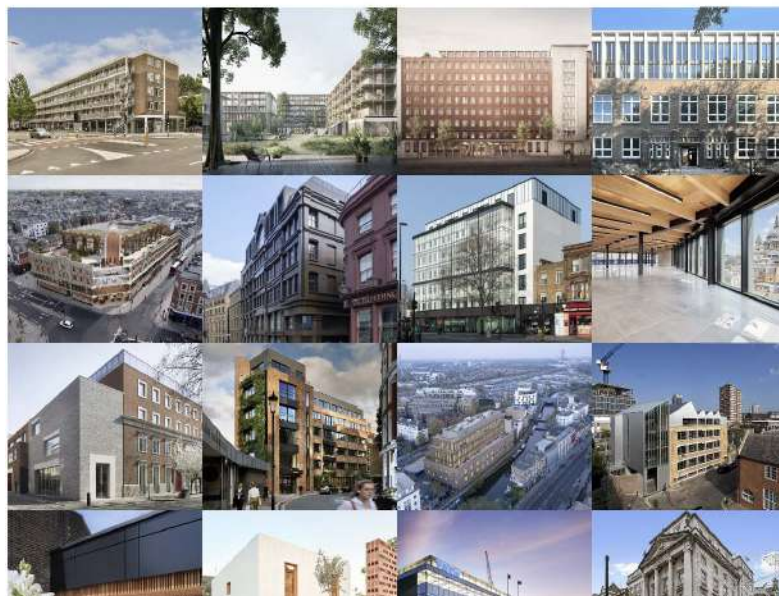


## Projects

Search & Filter ▾  
74 projects

Grid view List view

Sort by  
Featured First ▾



## OPTOPPEN

ROLE: FOUNDING PARTNER, IAAC, BARCELONA 2023-2024

COORDINATOR: WHITBY WOOD

PARTNERS: IAAC, TU DELFT, NUN, MULE, RISING TIDE,  
HOLLAND HOUTLAND, CREATIVE CITY SOLUTIONS

FUNDER: BUILT BY NATURE

SUPPORTER: TIMBER DEVELOPMENT UK

## What is Optoppen?

"Optoppen," a Dutch term translating as "topping up," refers to a construction method aimed at maximising the usable space in our cities through the addition of lightweight, low-carbon roof extensions.



## Why Optoppen?

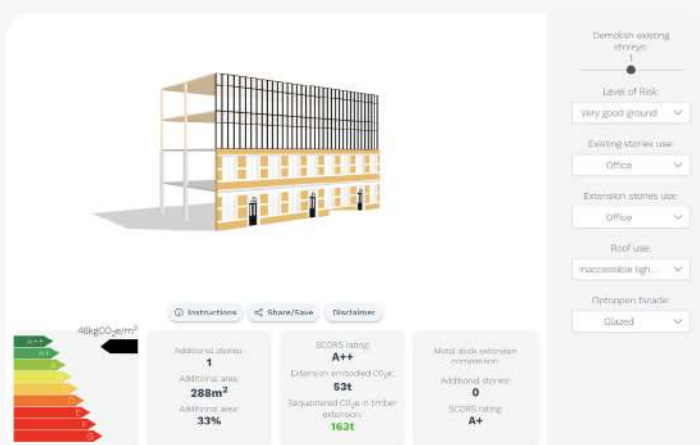
Densifying urban neighborhoods through increased floor area provides a low embodied carbon solution that delivers new homes while funding retrofit and renovation efforts by reusing existing structures.

## The Optoppen tool

A web based tool to assess the number of storeys and increased floor area that can be added onto your building.

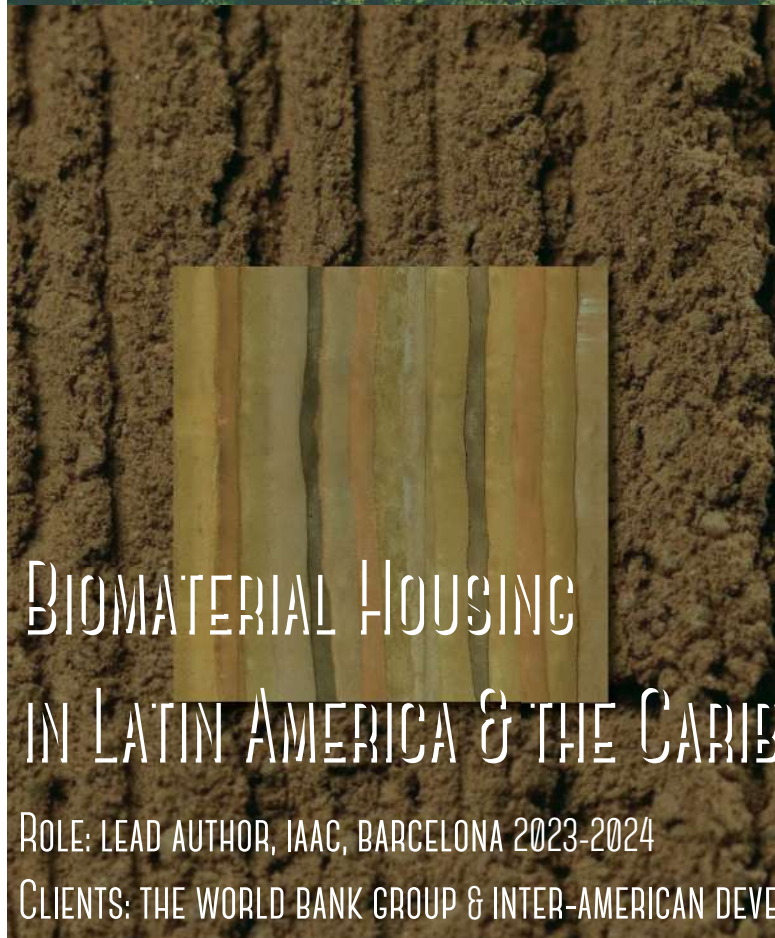
[Check Out](#)

city-wide optoppen potentials  
from the 3 case studies of  
**LONDON, BARCELONA  
& ROTTERDAM**



| City      | New Homes | New Floor Area (m2) | % Area Increase | Stored Carbon (TCO <sub>2</sub> e) | # of Sitka Spruce Trees |
|-----------|-----------|---------------------|-----------------|------------------------------------|-------------------------|
| London    | 515,500   | 45,752,900          | 7.70            | 4,330,400                          | 5,773,900               |
| Barcelona | 195,600   | 15,565,600          | 9.27            | 1,497,500                          | 1,863,300               |
| Rotterdam | 60,100    | 5,500,800           | 11.56           | 520,600                            | 694,100                 |

visit the webpage:  
[HTTPS://IAAC.NET/PROJECTS/  
BIOMATERIAL-HOUSING-IN-  
LATIN-AMERICA-AND-THE-  
CARIBBEAN-REPORT](https://iaac.net/projects/biomaterial-housing-in-latin-america-and-the-caribbean-report)



# BIOMATERIAL HOUSING IN LATIN AMERICA & THE CARIBBEAN

ROLE: LEAD AUTHOR, IAAC, BARCELONA 2023-2024

CLIENTS: THE WORLD BANK GROUP & INTER-AMERICAN DEVELOPMENT BANK



THE WORLD BANK



GFDRR  
Global Facility for Disaster Reduction and Recovery

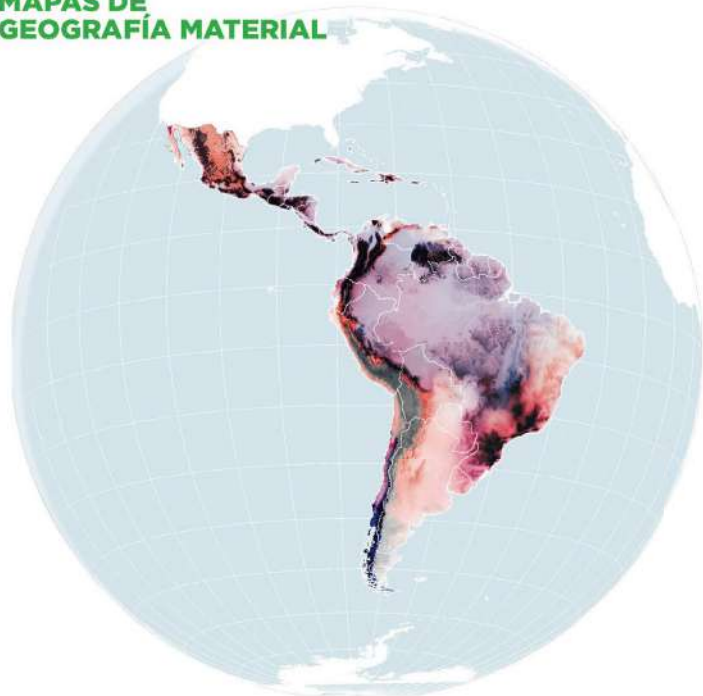


MINISTERIO DE  
DESARROLLO  
URBANO Y VIVIENDA



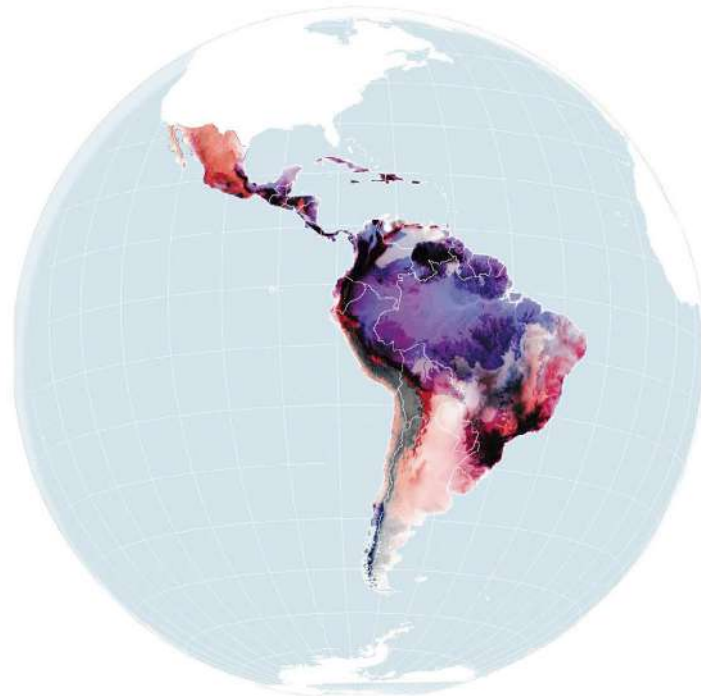
IDB

## MAPAS DE GEOGRAFÍA MATERIAL



MAPA 07: Zonas más adecuadas para la generación de **MADERA**

Zonas donde ya existen bosques adecuados para madera para construcción y la temperatura y precipitaciones son óptimas  
 Zonas con temperatura y precipitaciones óptimas para la proliferación de bosques para madera de construcción  
 Zonas con temperatura muy adecuada para bosques que generen madera para la construcción  
 Zonas con temperatura adecuada para bosques que generen madera para la construcción

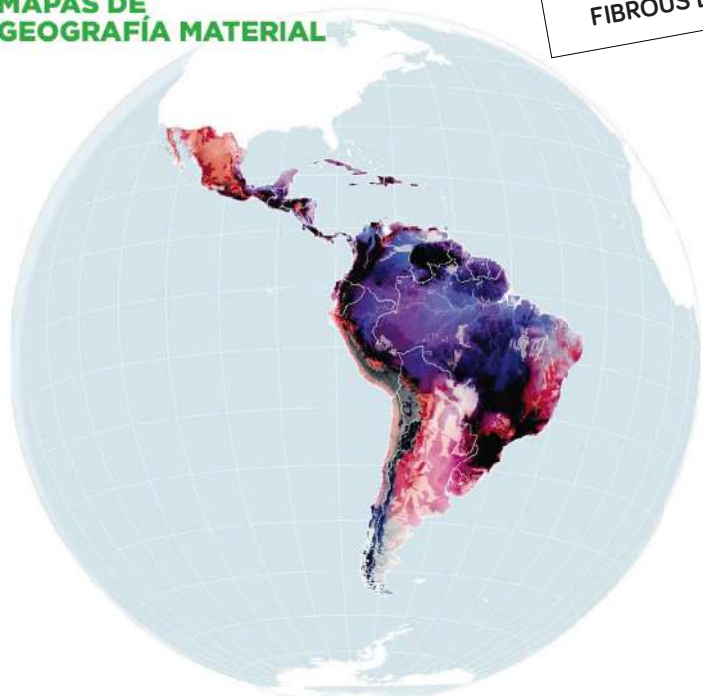


MAPA 08: Zonas adecuadas para la generación de **BAMBU**

Zonas donde ya existen bosques de bambú y las precipitaciones y temperaturas son óptimas para su proliferación  
 Zonas donde temperatura y precipitaciones son óptimas para la proliferación de plantación de bambú  
 Zonas donde la temperatura es muy adecuada para la proliferación de plantación de bambú  
 Zonas donde la temperatura es adecuada para la proliferación de plantación de bambú

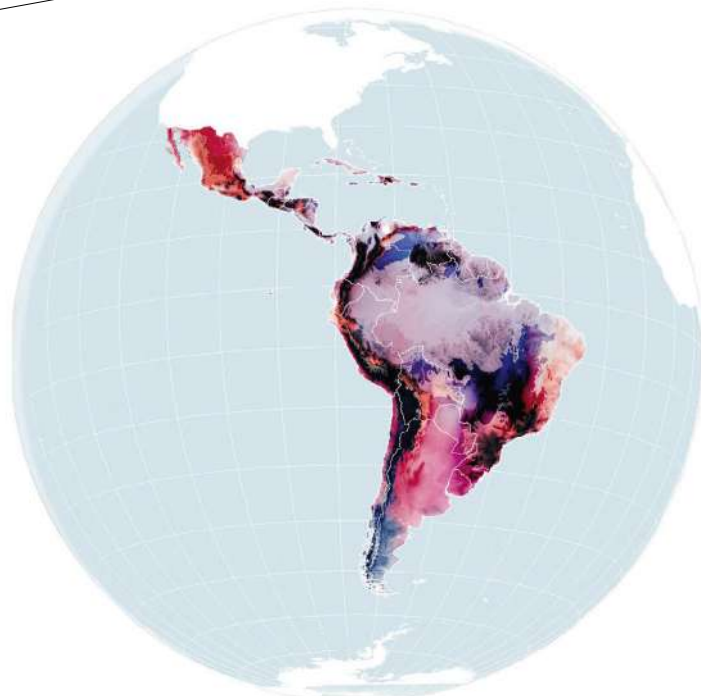
mapping appropriate zones  
for the generation of  
**WOOD, BAMBOO, EARTH, AND  
FIBROUS BUILDING MATERIALS**

## MAPAS DE GEOGRAFÍA MATERIAL



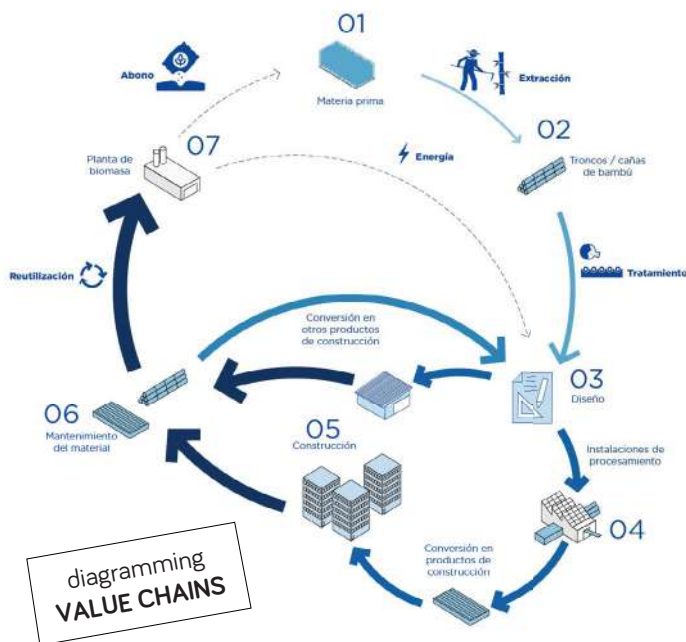
MAPA 09: Zonas adecuadas para la extracción de **TIERRA** apropiada para la construcción

Zonas donde ya existe la tierra apropiada para la construcción y la temperatura y precipitaciones son óptimas  
 Zonas donde temperatura y precipitaciones son óptimas para la proliferación de tierra para la construcción  
 Zonas donde la temperatura es muy adecuada para la proliferación de tierra para la construcción  
 Zonas donde temperatura es adecuada para la proliferación de tierra para la construcción



MAPA 10: Zonas adecuadas para la generación de **MATERIALES FIBROSOS**

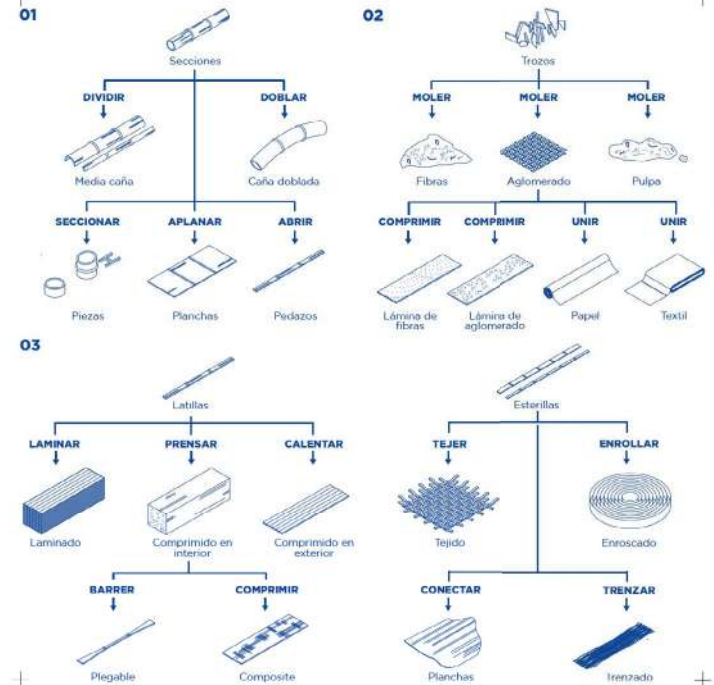
Zonas donde ya existen espacios para la generación de materiales fibrosos y la temperatura y precipitaciones son óptimas  
 Zonas donde temperatura y precipitaciones son óptimas para la proliferación de materiales fibrosos  
 Zonas donde temperatura es muy adecuada para la proliferación de materiales fibrosos  
 Zonas donde temperatura es adecuada para la proliferación de materiales fibrosos



**FIGURA 12:** Cadenas de valor del bambú.

- CULTIVO Y COSECHA DEL BAMBÚ:** Comienza con la plantación y el crecimiento del bambú en áreas adecuadas. Se seleccionan variedades de bambú adecuadas para su uso en la construcción.
- COSECHA Y TRATAMIENTO:** El bambú maduro se cosecha y se somete a procesos de secado y tratamiento para mejorar su durabilidad y resistencia a plagas y enfermedades.
- DISEÑO:** Los arquitectos e ingenieros utilizan el bambú en proyectos de construcción para crear estructuras, revestimientos, mobiliario y otros elementos, aprovechando sus propiedades únicas.
- PROCESAMIENTO:** El bambú se procesa para obtener cañas o tabloncillos de bambú de diferentes tamaños y grosores, que son seleccionados para su uso en la construcción. Se utilizan las cañas y tabloncillos de bambú procesados para fabricar una variedad de productos de construcción, como vigas, columnas, paneles, tableros, pisos, techos y otros elementos estructurales y decorativos.
- CONSTRUCCIÓN RESIDENCIAL:** Estos productos se aplican en distintos sistemas constructivos y pueden ser utilizados en diversas etapas de la construcción.
- USO Y MANTENIMIENTO:** Las estructuras y elementos de bambú se utilizan durante la vida útil del edificio y pueden requerir mantenimiento periódico, como sellado y reparación de superficies.
- RECICLAJE Y ELIMINACIÓN:** Al final de su vida útil, el bambú puede ser reciclado o reutilizado en otros productos o procesos, o eliminado de manera responsable para minimizar su impacto ambiental.

Fuente: Estructuras de Guadua. Norma Ecuatoriana de la Construcción (NEC), 2016. MIDUVI.



**FIGURA 13:** Productos derivados del bambú.

- CAÑAS COMPLETAS:** Estas provienen directamente del corte del culmo, es decir, el tallo aéreo de la planta. Las partes del culmo más utilizadas en la construcción son la cepa, la basa y la sobrebasa, con un enfoque particular en las dos primeras debido a su idoneidad para aplicaciones estructurales.
- VIRUTAS DE CAÑA:** Este material de ingeniería está compuesto por varias piezas de madera aserrada, de pequeñas dimensiones, unidas mediante encolado con la dirección de la fibra en sentido paralelo y utilizando uniones dentadas.
- LAMINADOS DE BAMBÚ:** Estos se obtienen a partir de láminas delgadas adheridas entre sí. Dichas láminas, de espesor reducido y ancho variable (aproximadamente 4,0 cm), se extraen de cañas cuadradas y son sometidas a un proceso de lijado para lograr una superficie uniforme. Las láminas se ensamblan en filas consecutivas, pegándolas entre sí para formar perfiles de mayores dimensiones.
- ESTERILLAS:** Se obtienen a partir de las mismas cañas, las cuales se dividen en la dirección de la fibra, es decir, en la dirección longitudinal de la caña, siguiendo su eje de crecimiento. Esto transforma el cilindro original en un plano horizontal y da lugar a las esterillas utilizadas en diversos contextos de construcción.

Fuente: Productos derivados del Bambú, (2020). Jaime Baladrón Laborda.

## MENSAJES CLAVE

# 01

highlighting  
KEY TAKE-HOME MESSAGES

De todas las actividades humanas que implican una transformación profunda de los recursos y el paisaje natural, la industria de la construcción es la que más materiales utiliza a escala mundial: representa entre el 30 y el 50% de la extracción de recursos y el 25% de la generación de residuos sólidos.

Benachio et al., 2020; UNEP, 2021

## LA BALSANERA NATURA FUTURA

### TIPOLOGÍA

Vivienda unifamiliar

### REGIÓN

Costa, Babahoyo, Ecuador

### MATERIALES PRINCIPALES

Madera

### AÑO Y TIEMPO DE CONSTRUCCIÓN

2023 - 2 meses

### ÁREA CONSTRUIDA

70 m<sup>2</sup>

### ALTURA

5m

### USUARIOS

4 personas

### COSTO DE CONSTRUCCIÓN

\$25000

### MANO DE OBRA

10 obreros

### NÚMERO DE UNIDADES

1 vivienda

### ELEMENTOS ESTANDARIZADOS

Estructura de madera, puertas y ventanas

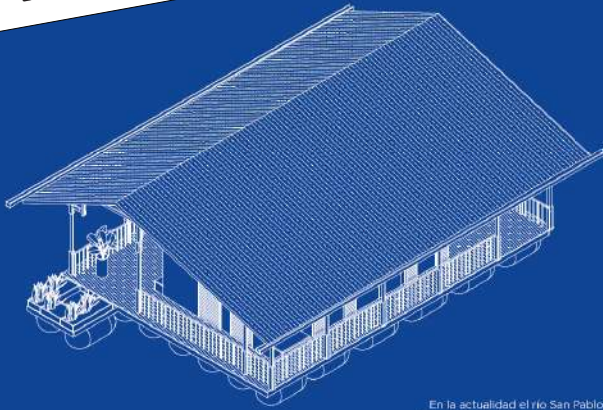
### ACTORES DE PARTICIPACIÓN

Comunidad y Fundación in terra

### POLÍTICAS PÚBLICAS

Los habitantes de las 25 casas sienten la necesidad de preservar su vínculo con el territorio, pese a la inexistencia de políticas públicas que promuevan el cuidado de su hábitat.

documenting  
BEST PRACTICE CASE STUDIES



En la actualidad el río San Pablo ha dejado de ser una vía comercial fluvial, mermando el número de sus típicas estructuras flotantes de 200 a 25 y aumentando el riesgo de su desaparición, pese a ser reconocidas como Bien Patrimonial del Ecuador. La Balsanera plantea una extensión de 2m a cada lado de las plataformas actuales (6m x 7m) para potencializar los entornos productivos de sus habitantes. La estructura se compone de porticos modulares construidos con madera local, que forman una cerca a dos aguas, generando espacios de almacenaje ventilados e iluminados naturalmente a través de sus celosías perimetrales de madera.

### DENSIDAD



### MATERIALIDAD



### REPLICABILIDAD



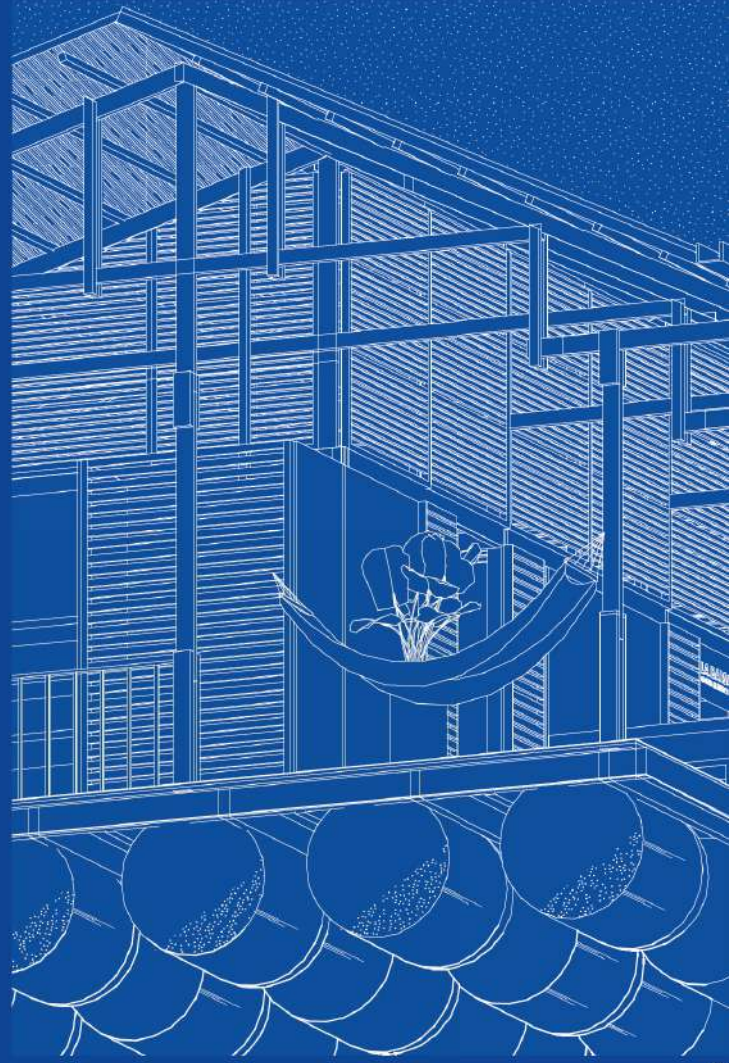
### MANO DE OBRA

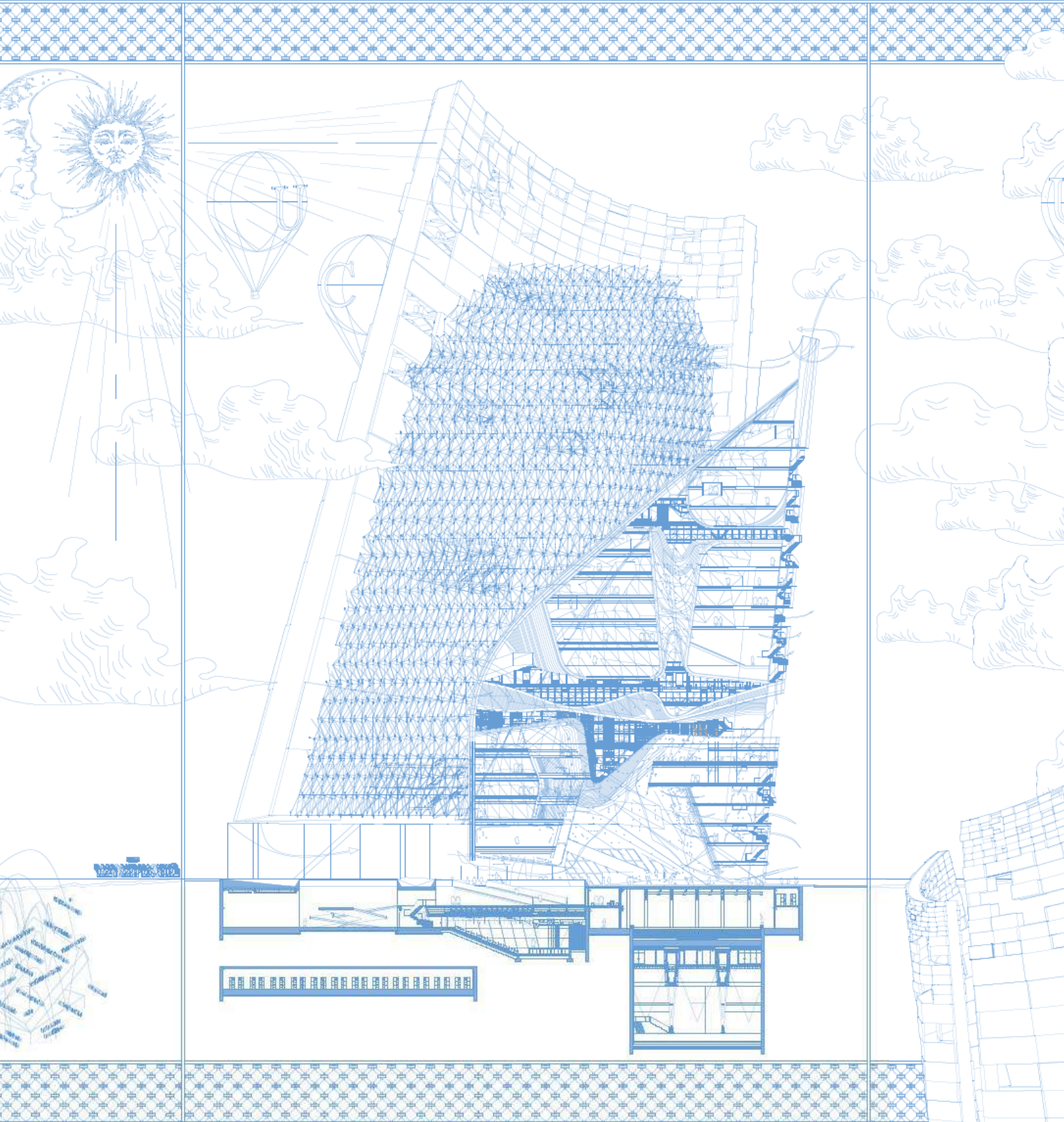


### TIEMPO



### COSTO





DESIGN

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URBANISM

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