

BAMBOOTOPIA

P5 Presentation

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Delft University of Technology

Architecture, Urbanism and Building Sciences master programme

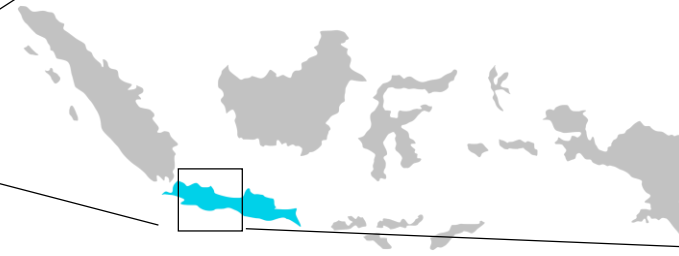
Architecture Track

Architectural Engineering Graduation Studio

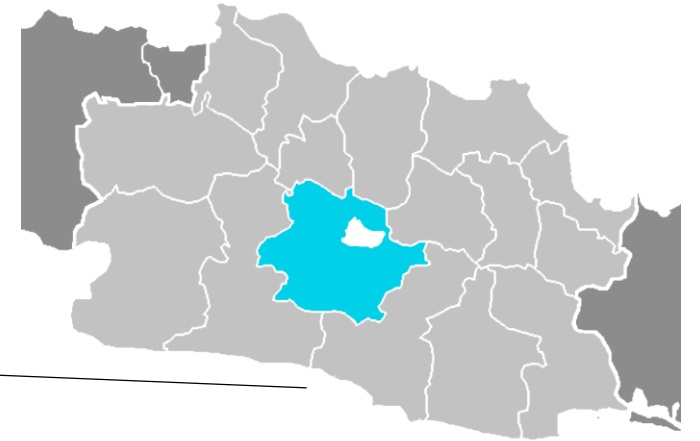




Indonesia



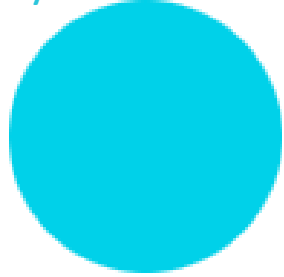
Java Island



Great Bandung



Industry 22.55%



Resources 2.35%



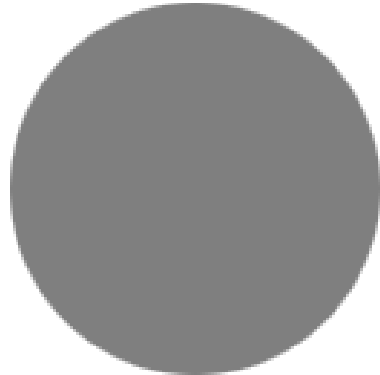
Service 6.64%



Construction 4.86%



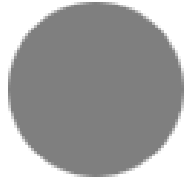
Commerce & Tourist 41.67%



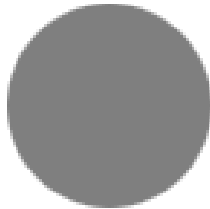
Agriculture 0.21%

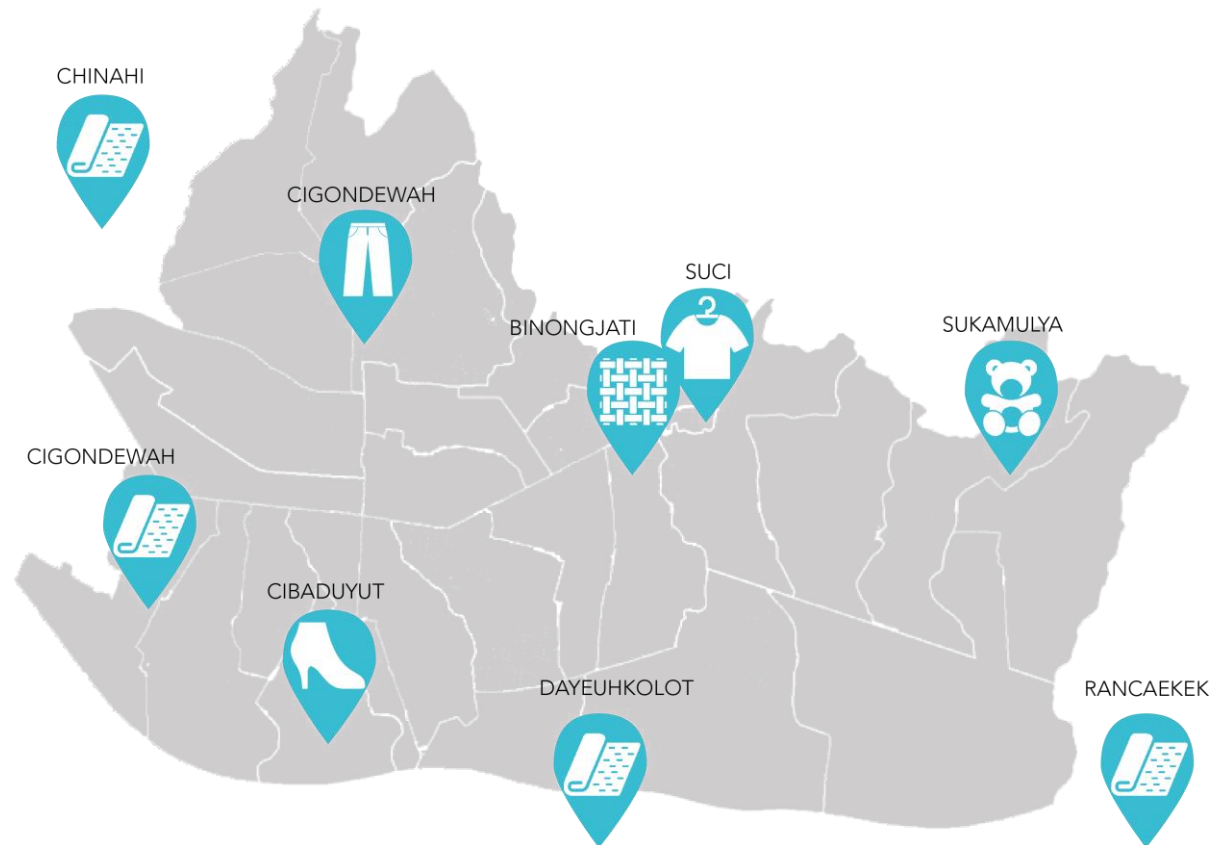


Others 9.25%



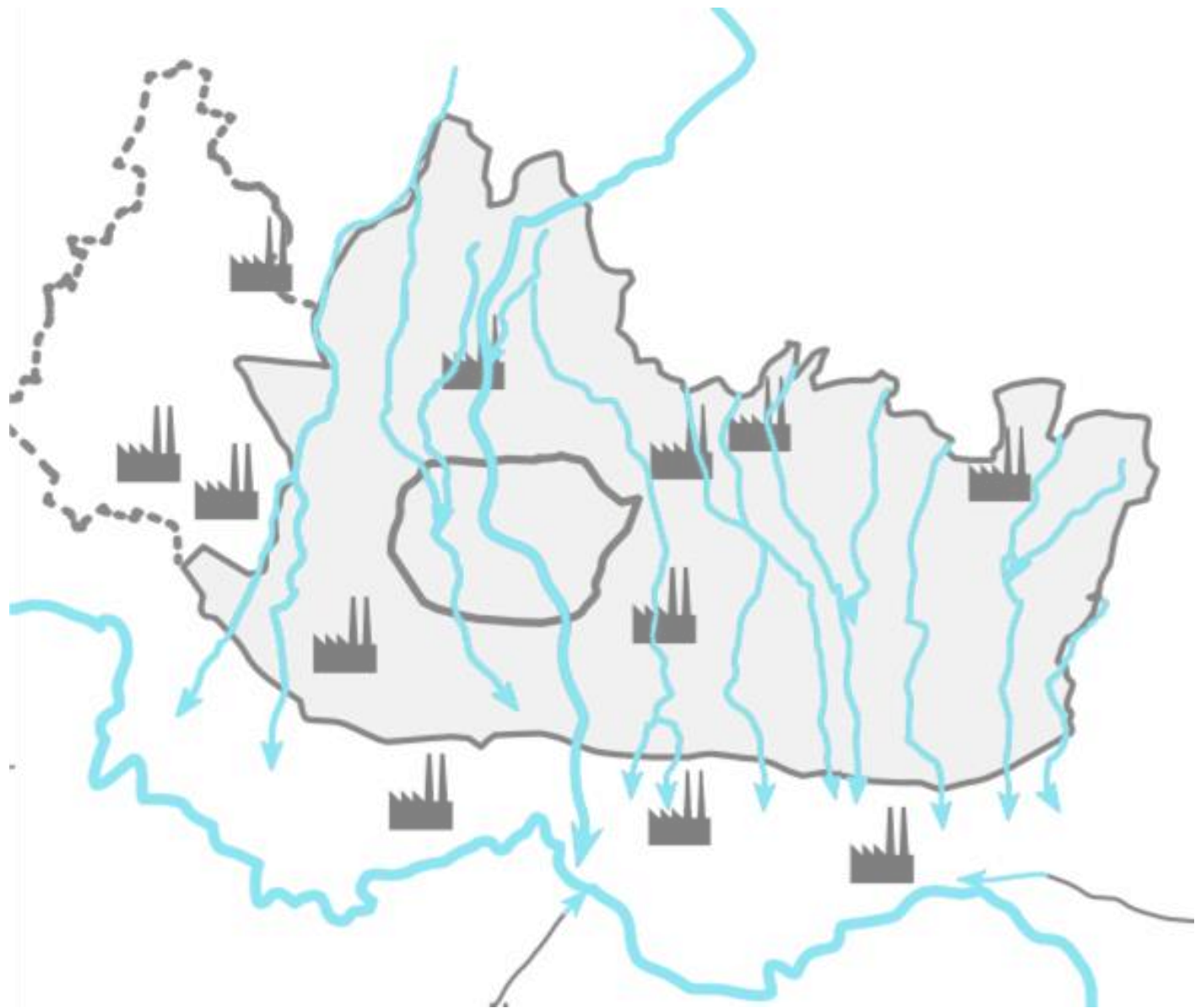
Telecom 12.47%





New industry centers in Bandung (2013)

Binongjati	Knitting Industry
Cigondewah	Textile Industry
Suci	T-shirt & Clothes Industry
Cihampelas	Jeans Industry
Cibaduyut	Shoes Industry
Sukamulya	Doll Industry
Dayeuhkolot	Textile Industry
Rancaekek	Textile Industry
Chimahi	Textile Industry





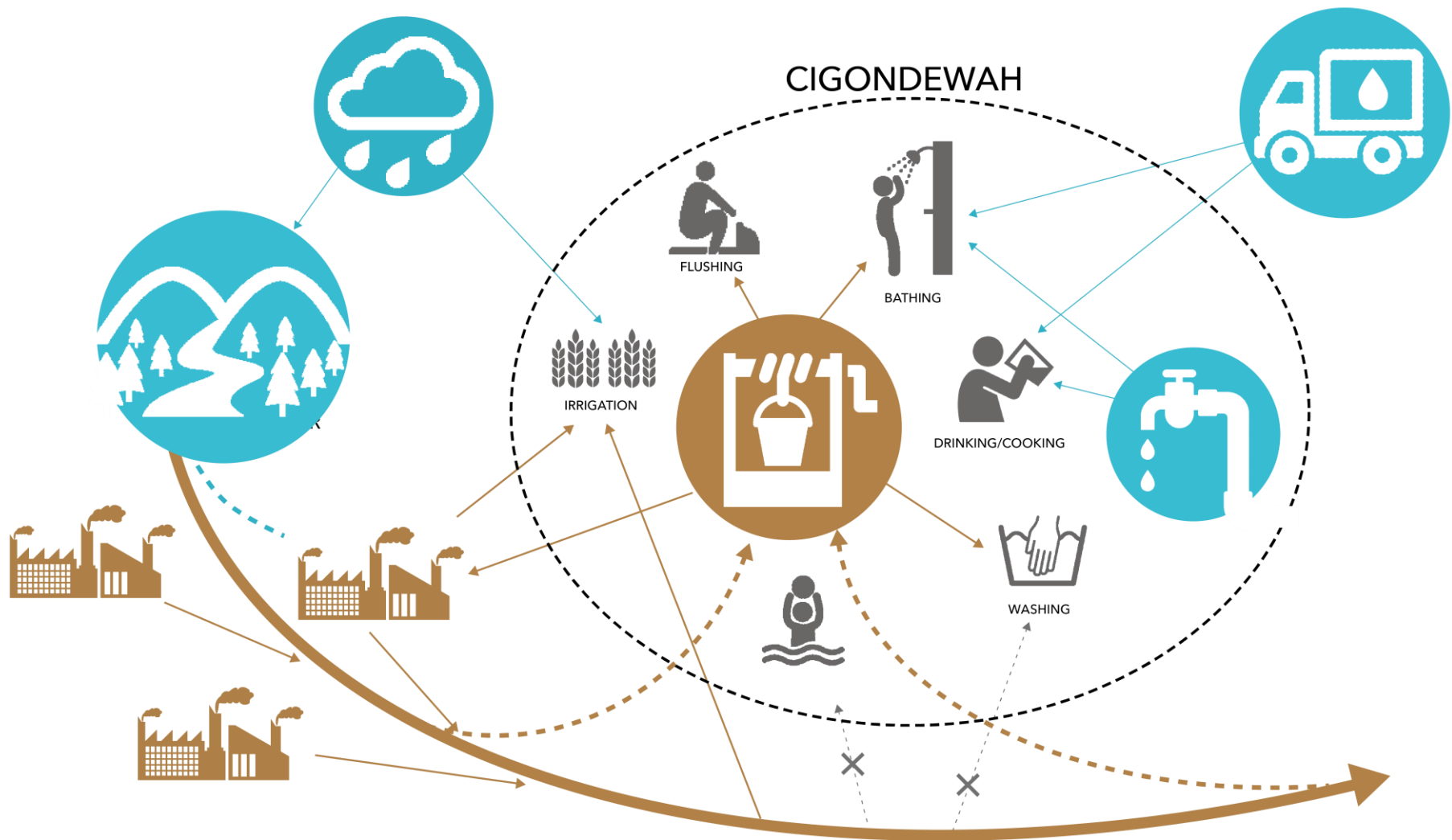
INDUSTRIAL POLLUTION



GREEN SPACE SHRINK



FARMER'S LIMITED PROFIT



**WATER UTILIZATION
&
POLLUTION THREAT**

- Irrigation water pollution
- Overusing groundwater
- Potential risk: groundwater pollution

SHRINKING GREEN SPACE

- Farmland gave way to high profit factories and housings
- Land-use type lead to ground subsidence
- Spatial decay



2003-8-21



2012-5-26



2016-5-06





TEXTILE

HIGH PROFIT

EXPANDING

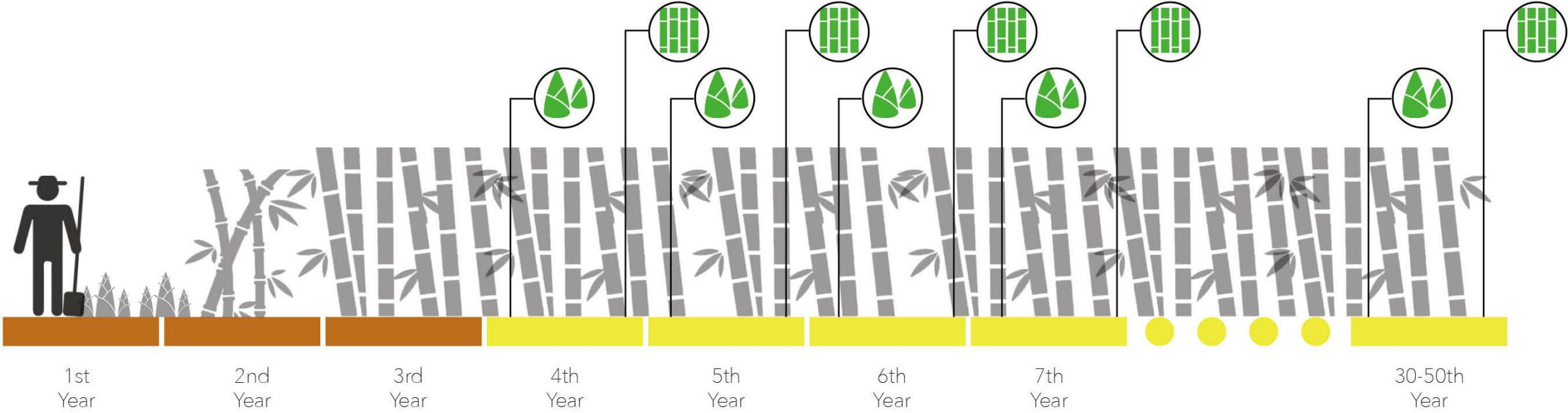
FOOD

LOW PROFIT

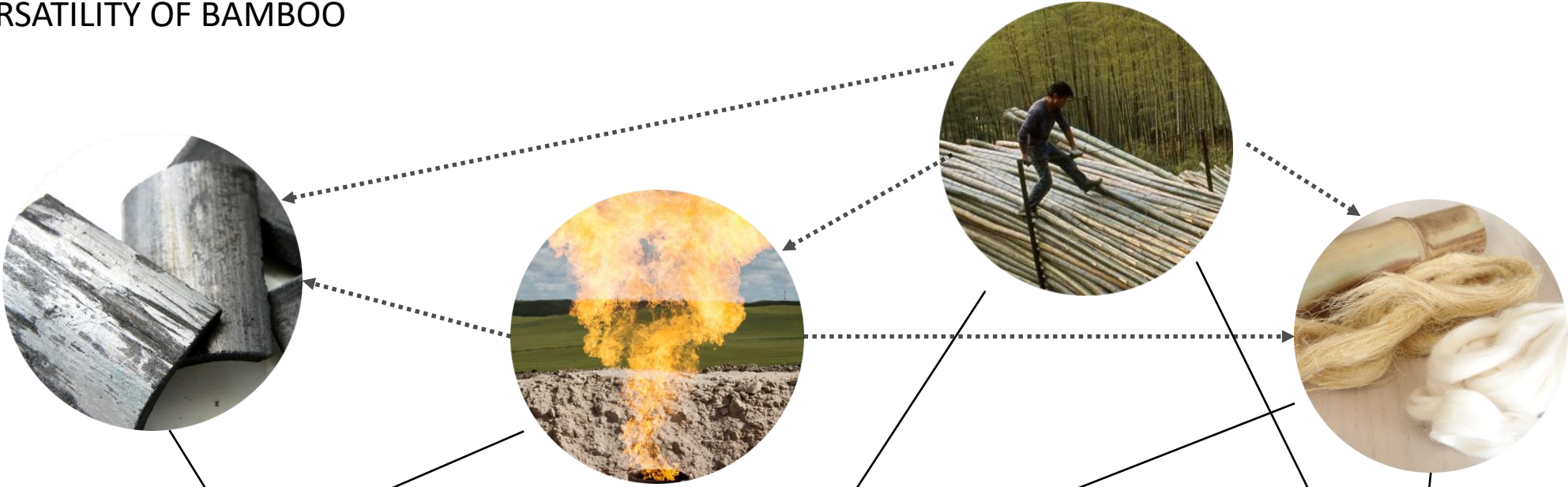
SHRINKING



EASY GROW BIOMASS RESOURCE



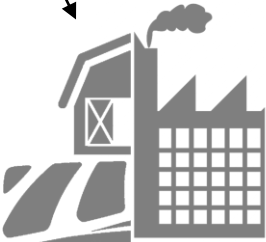
VERSATILITY OF BAMBOO



1 Filtering polluted water and soil with bio-base method

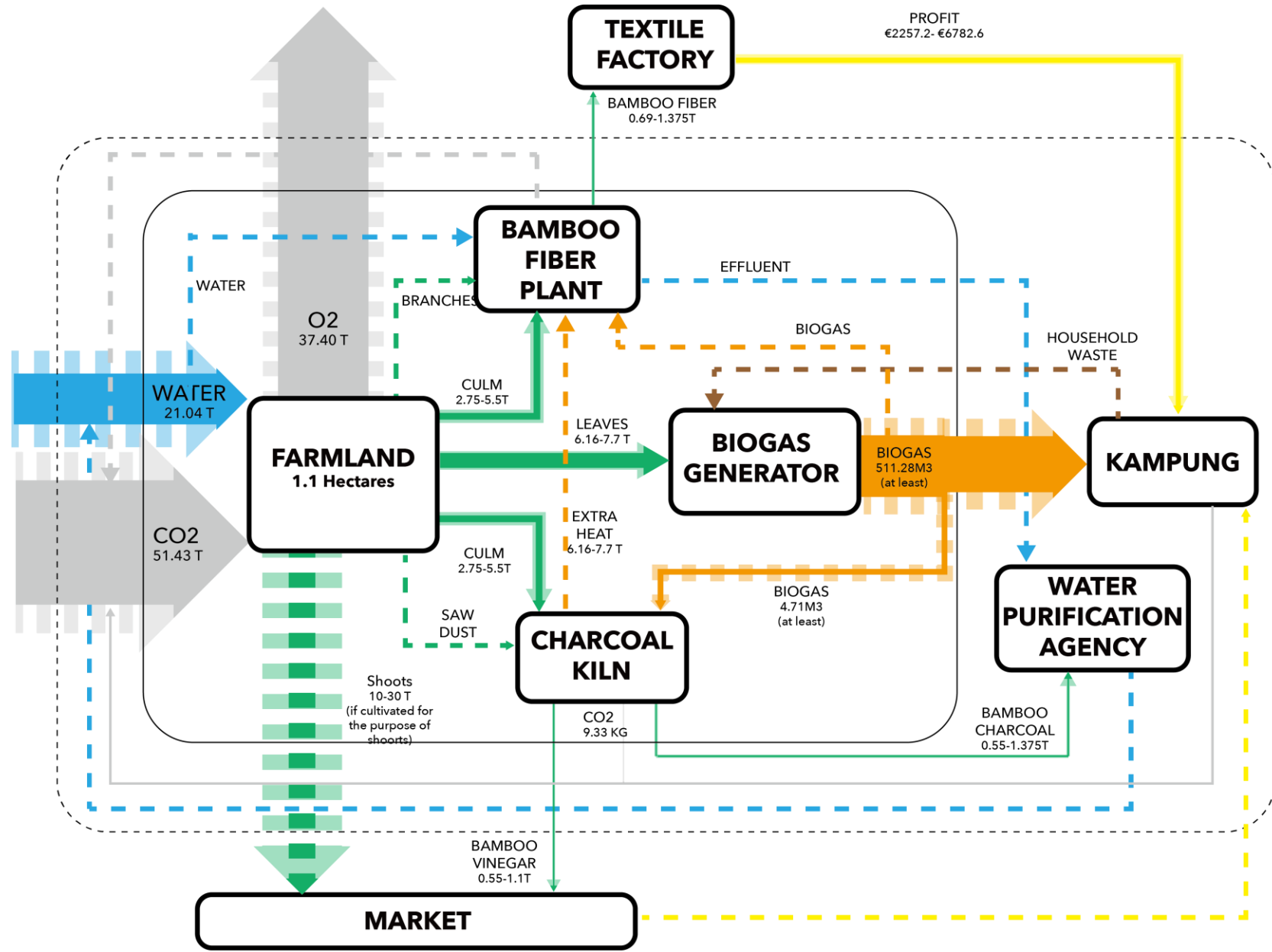


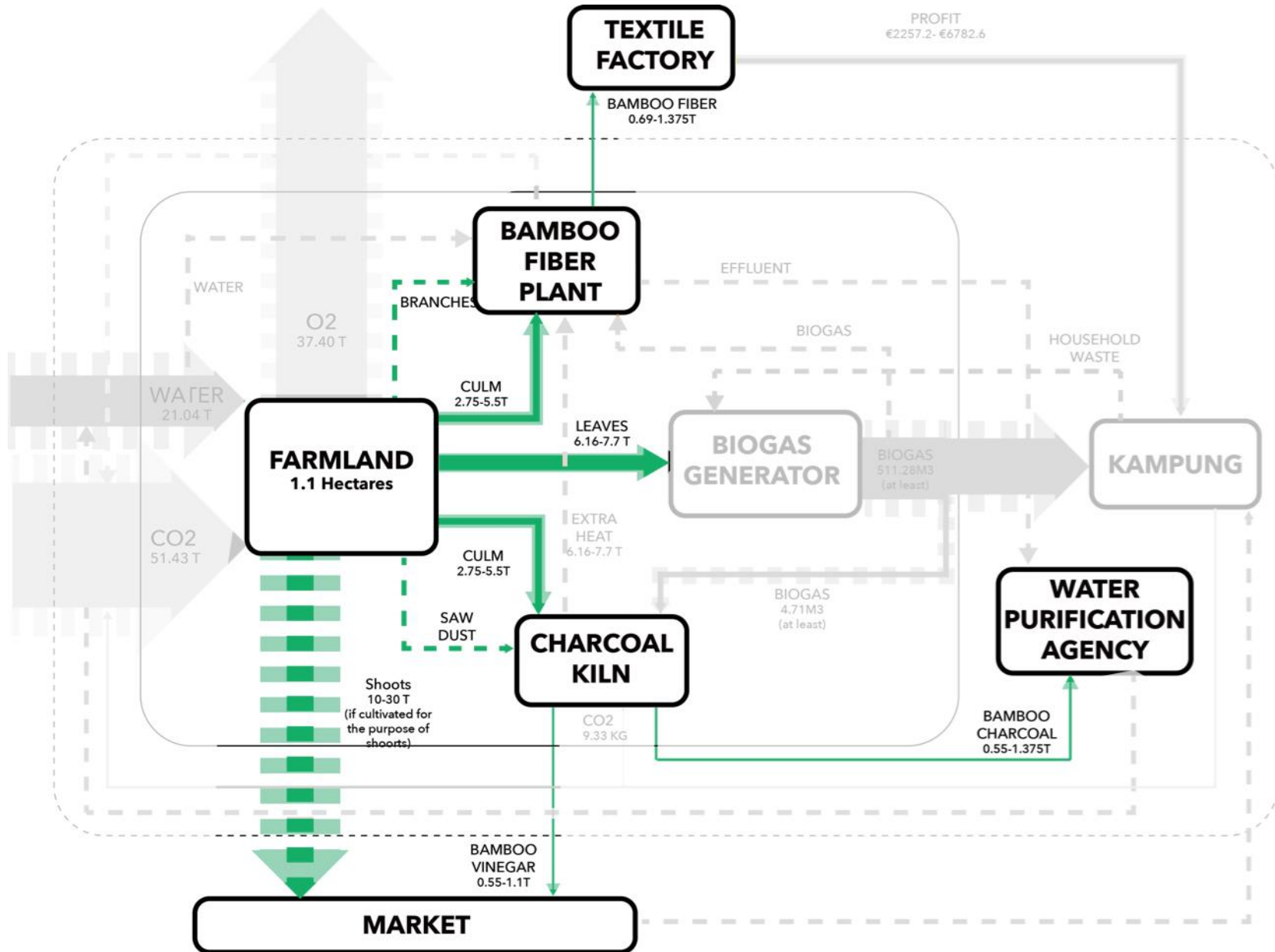
2 Making profit with productive farmland



3 Integrating with local industry and identities.

FLOW RESEARCH

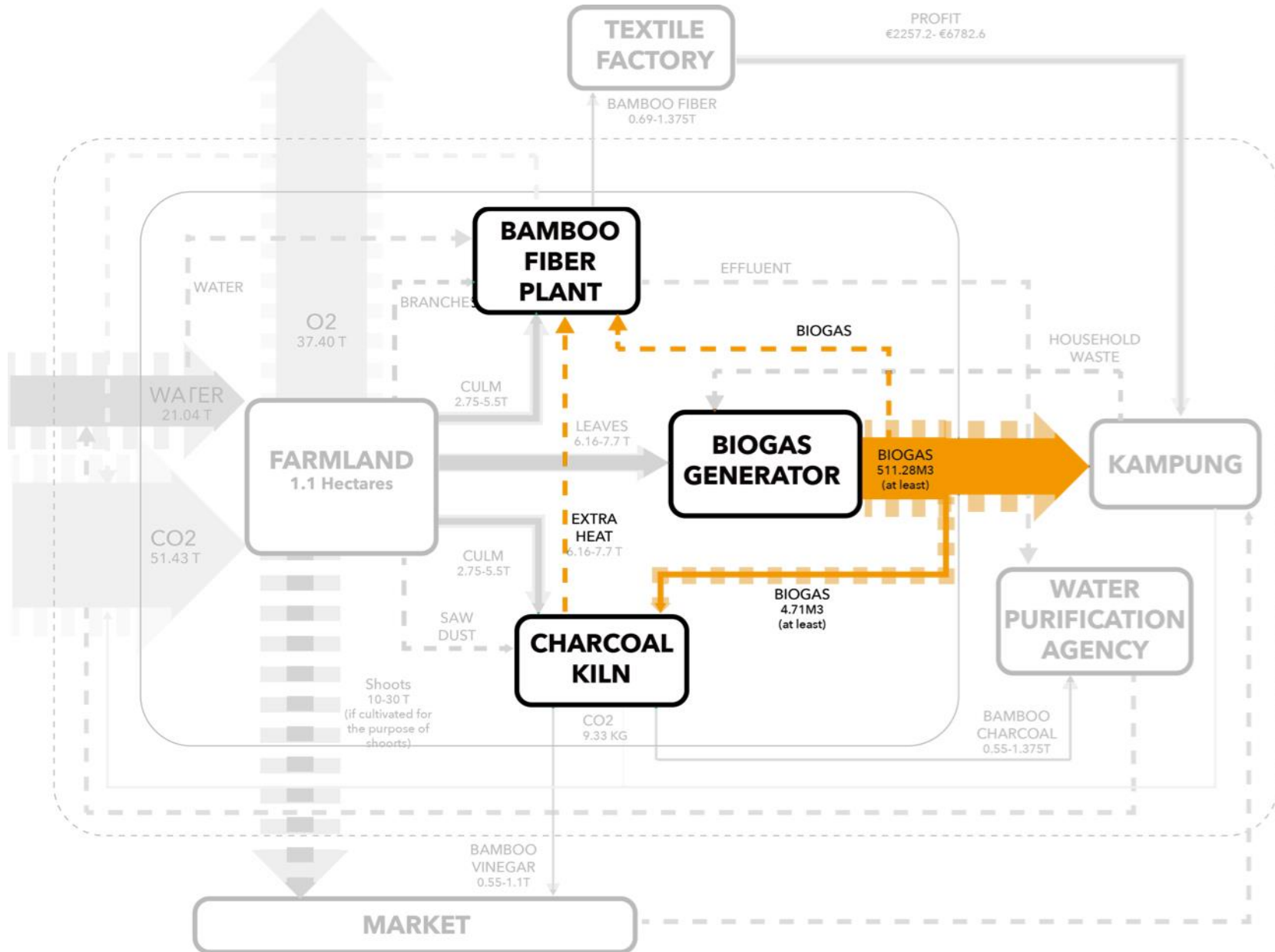




FLOW RESEARCH

MATERIAL

- Main product:
 - Bamboo fiber 0.69-1.375T/Y
 - Bamboo charcoal 0.55-1.375T/Y
- Byproduct:
 - Bamboo shoot 10-30T/Y
 - Biogas(bamboo leaves): 511.28M3/Y



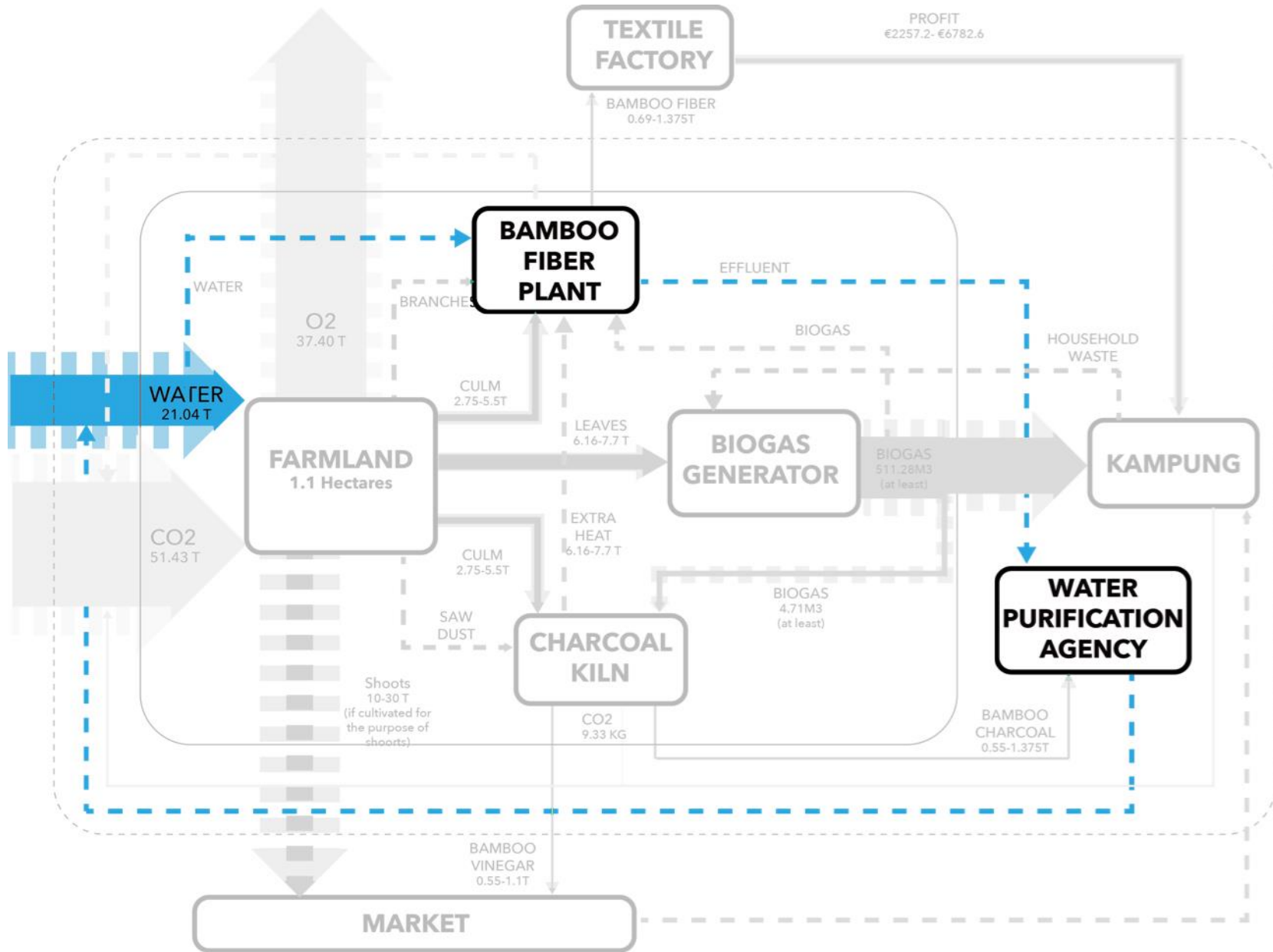
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Energy

- Biogas for charcoaling: 4.71M3/Y
- Excess Biogas:
- Around 500 M3



FLOW RESEARCH

MATERIAL

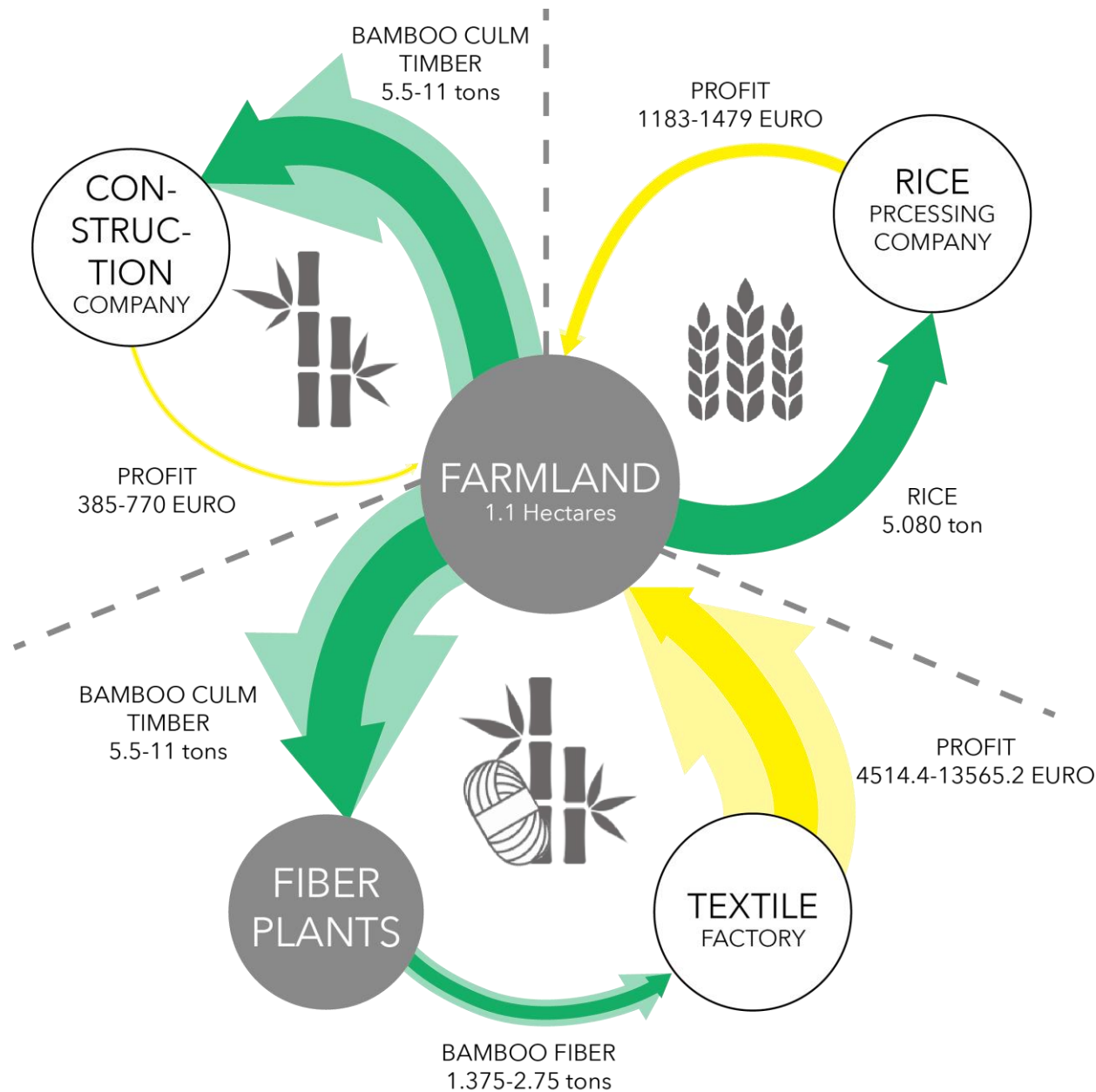
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Water

- Cyclic utilization



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Water

- Cyclic utilization

Benefit

- Bamboo plantation=1/3 rice field
- Bamboo plantation+ processing=4 times rice field (at least)



UPCYCLE

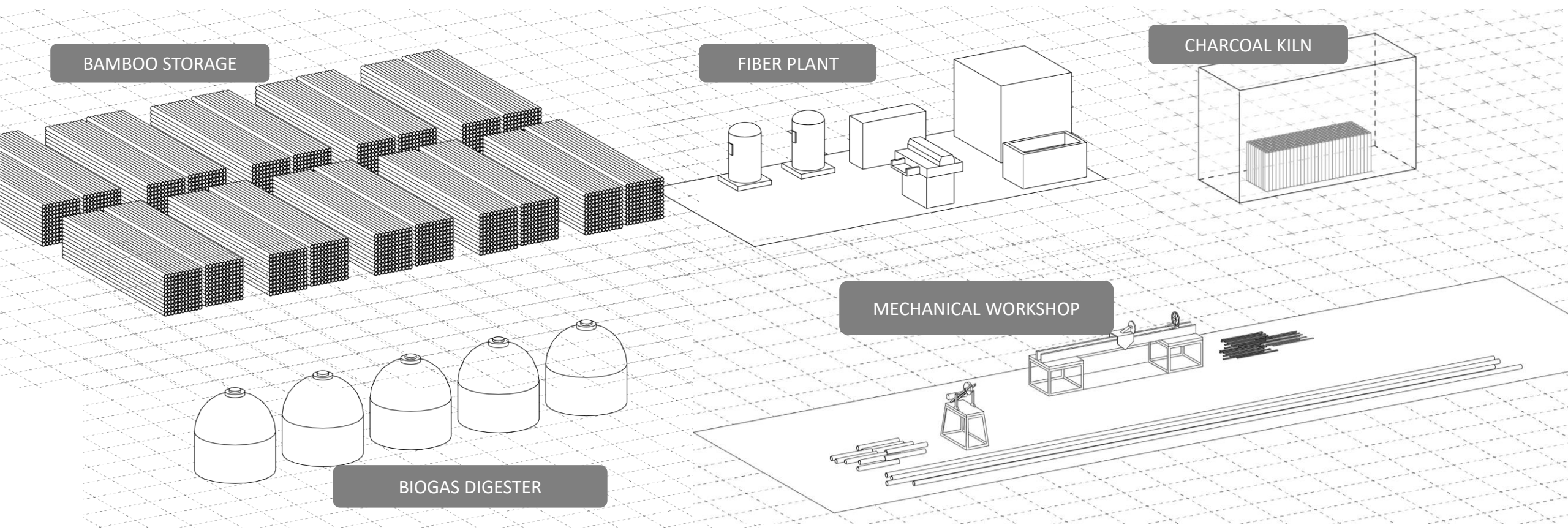


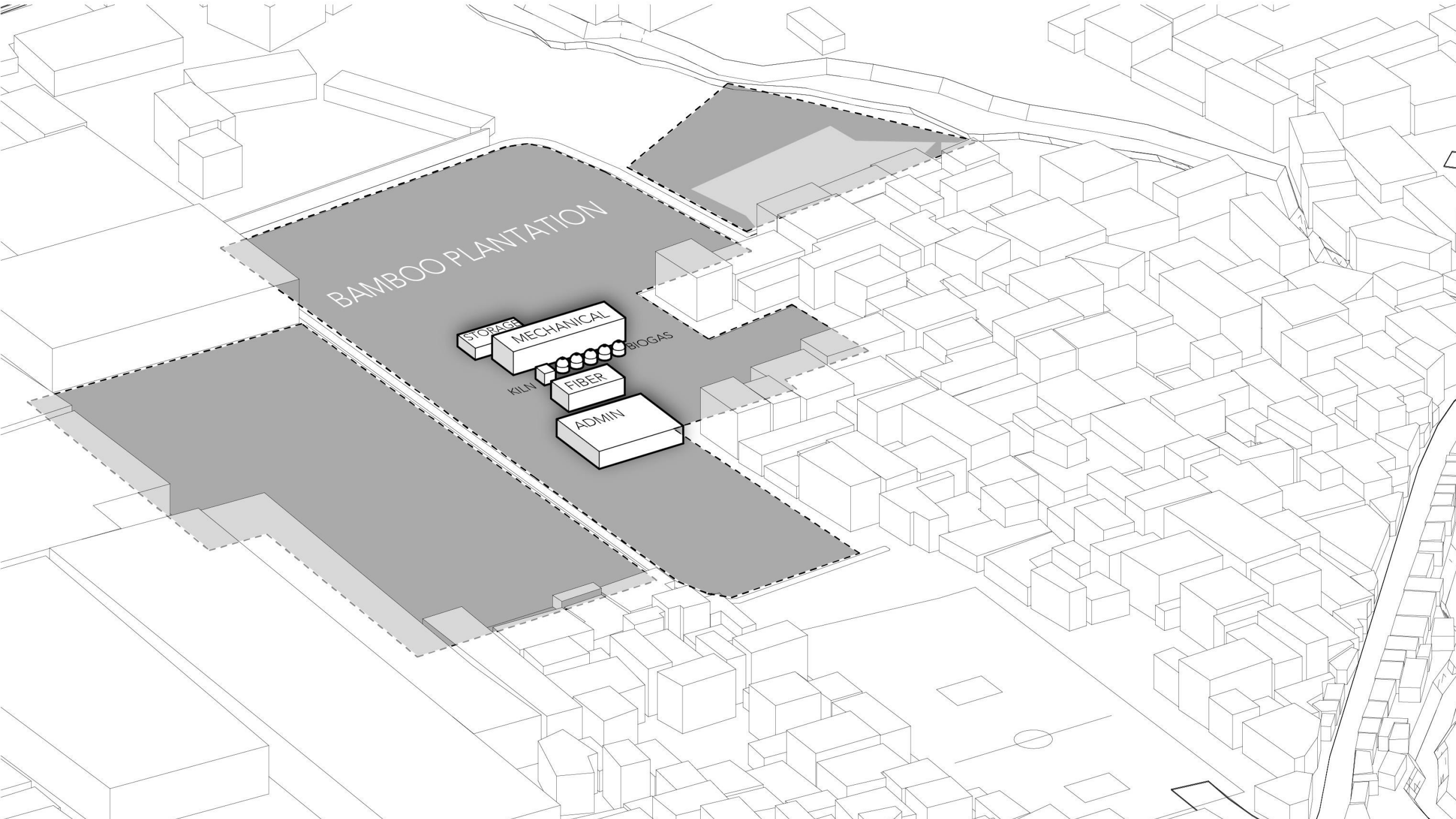
BENEFIT



INSPIRE

SPATIAL REQUIREMENT

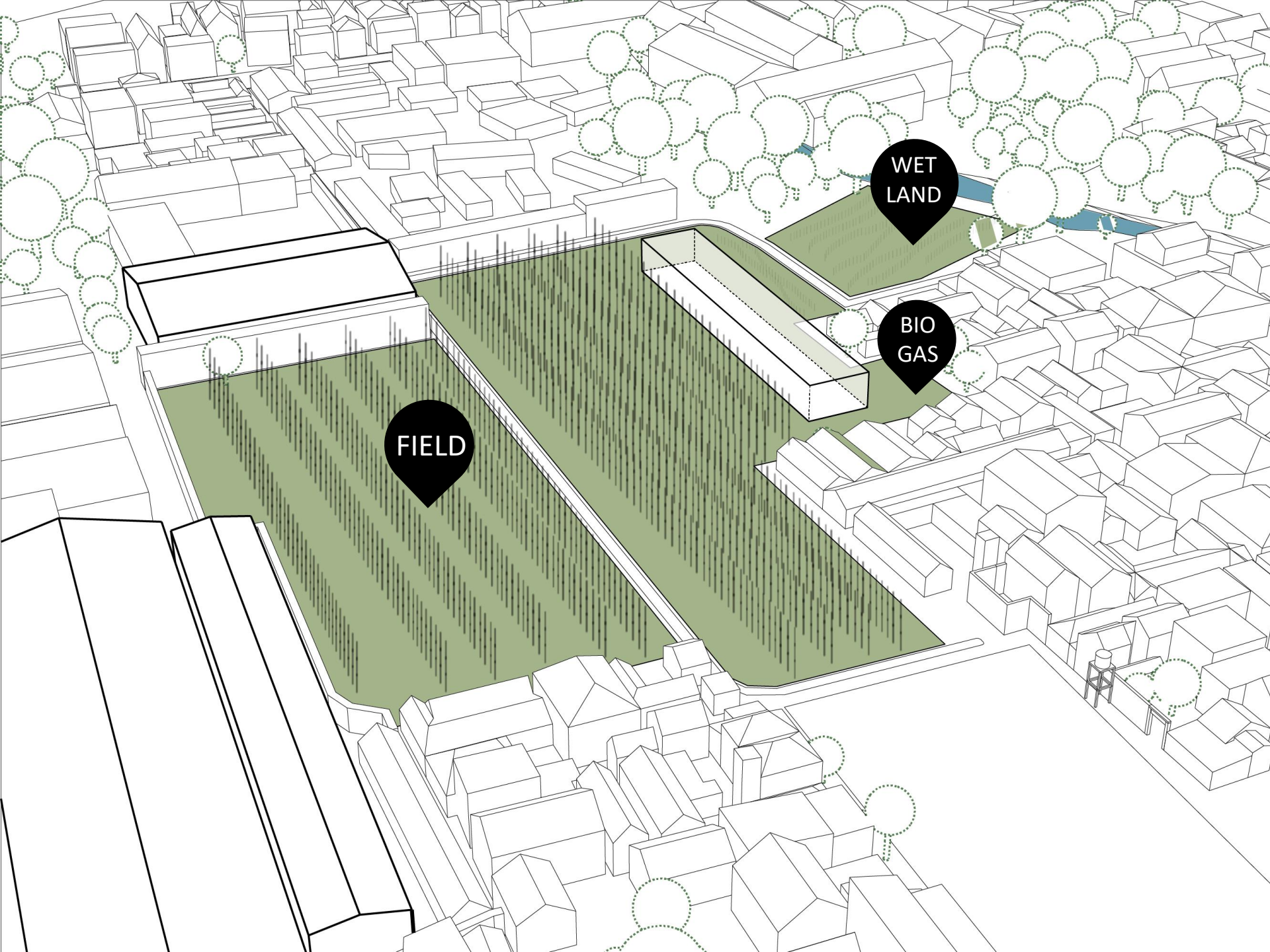




BAMBOO PLANTATION

STORAGE
MECHANICAL
KILN
FIBER
ADMIN

BIOGAS

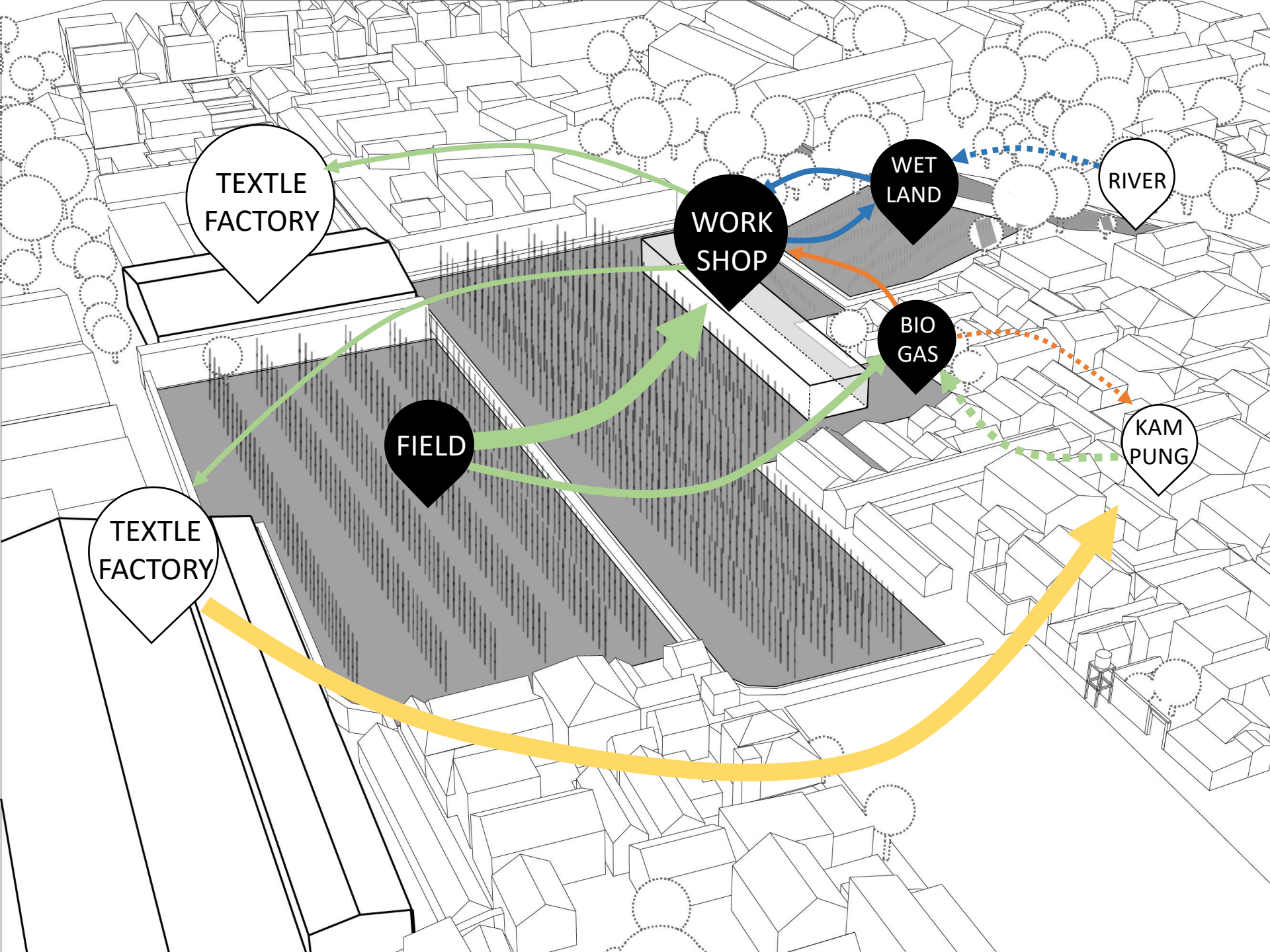


SITE DESIGN

- Bamboo field
- Biogas garden
- Wetland garden

PROJECT POSITION

- Long stripe
- Dividing different green spaces



TEXTLE
FACTORY

WORK
SHOP

WET
LAND

RIVER

FIELD

BIO
GAS

KAM
PUNG

TEXTLE
FACTORY

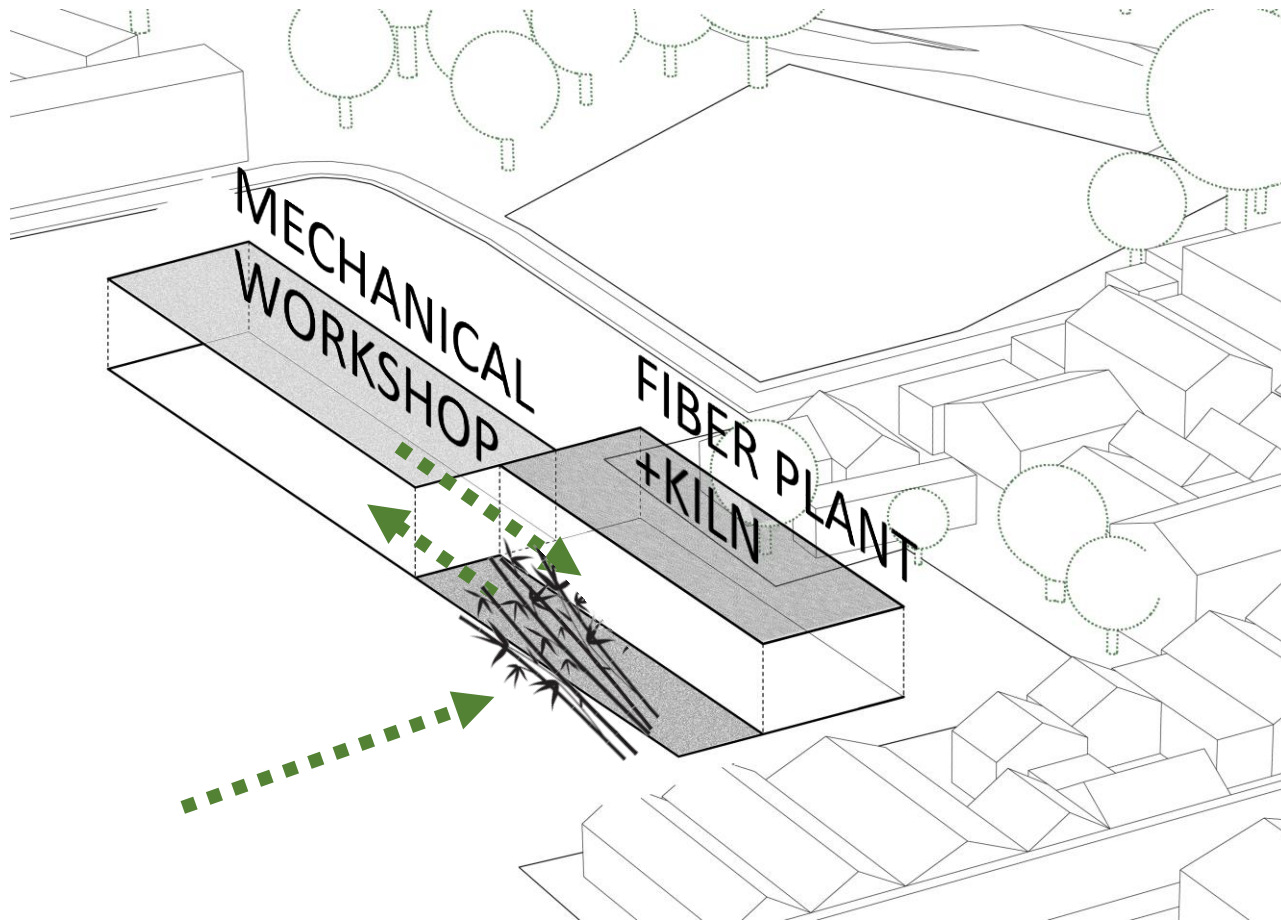
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PROJECT GUESTURE

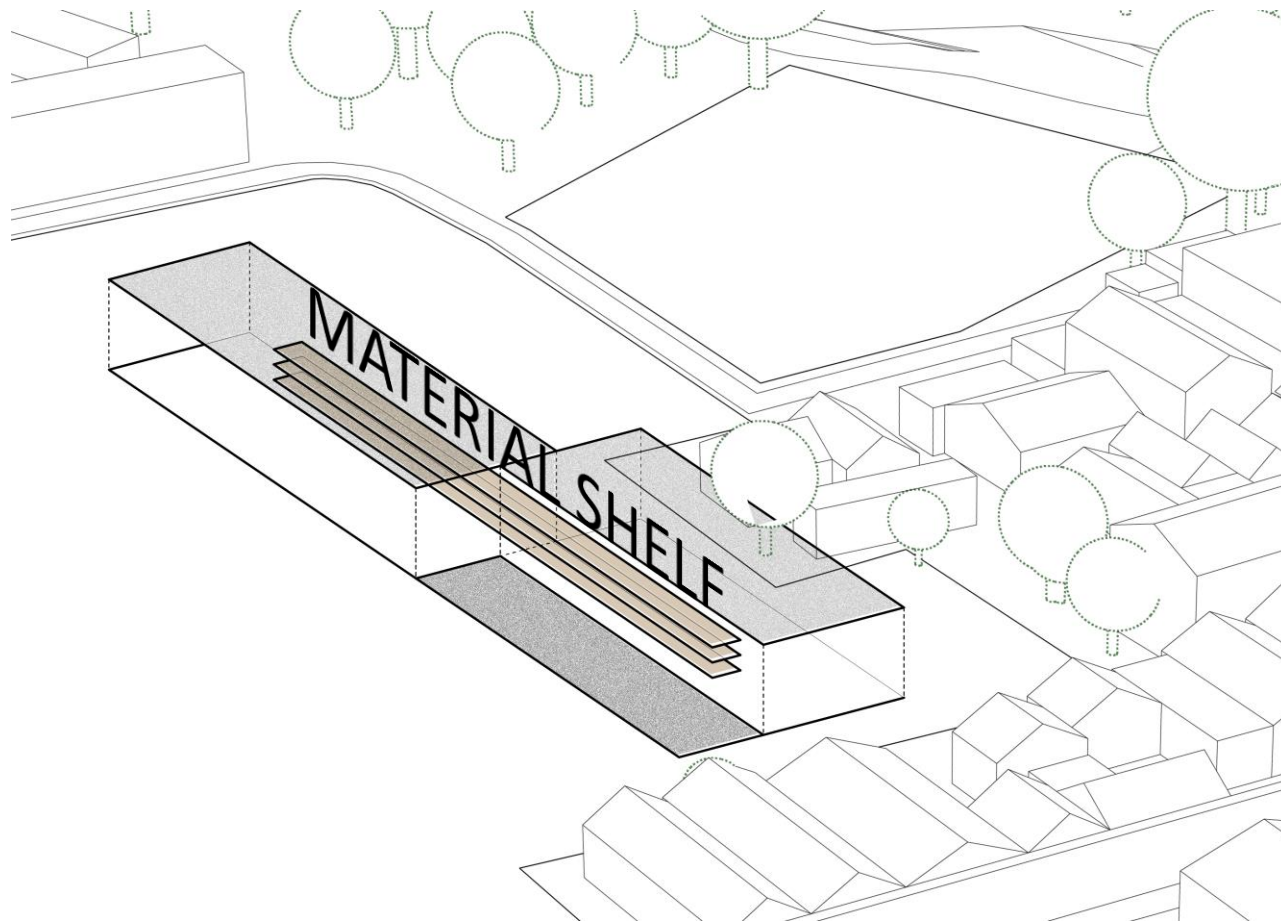
- Long stripe
- Dividing different green space

FLOW MANAGEMENT



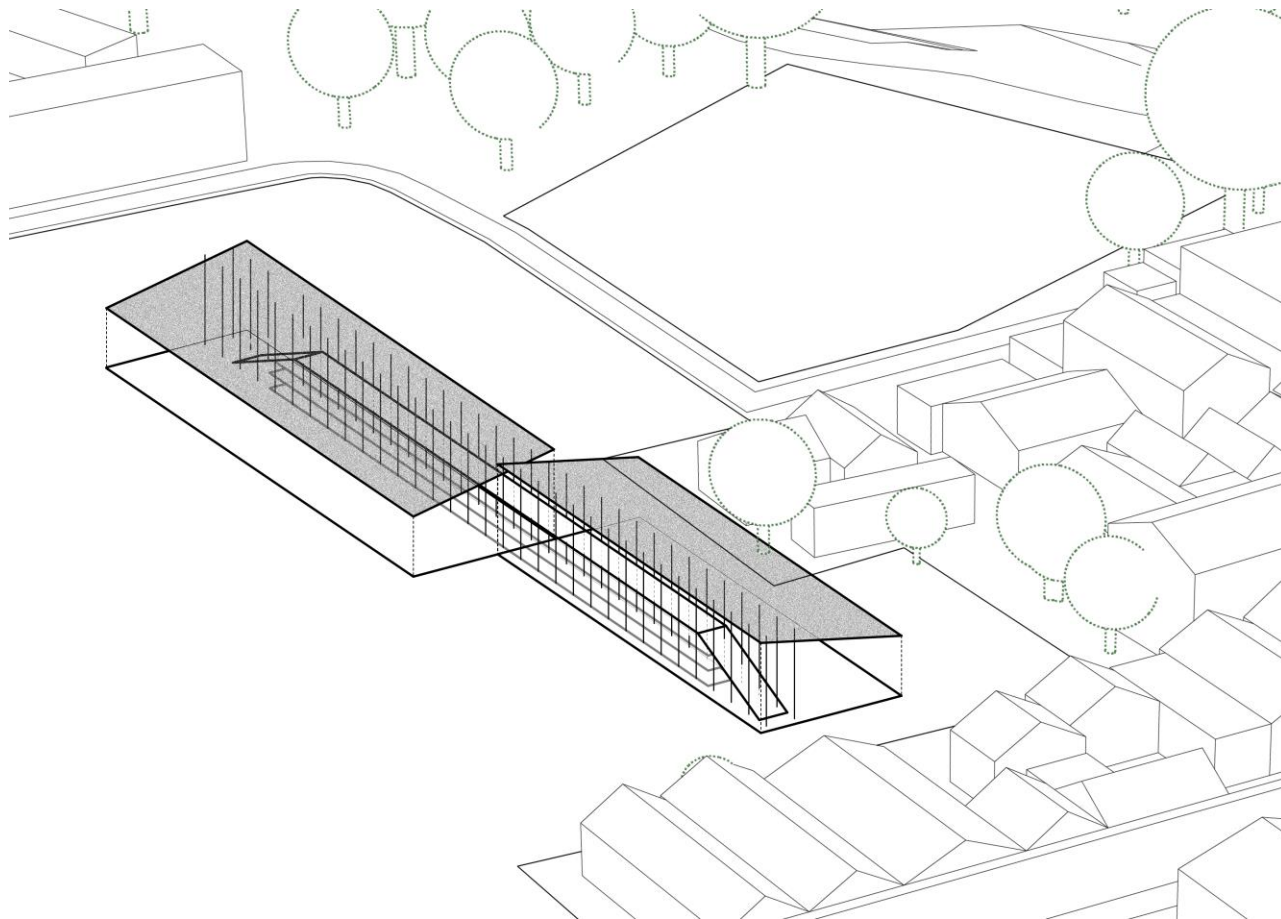
DESIGN GESTURE

- Good receipt platform
- Mechanical workshop
- Bamboo fiber plant



PROJECT GESTURE

- Good receipt platform
- Mechanical workshop
- Bamboo fiber plant
- Bamboo shelf/ air-dry

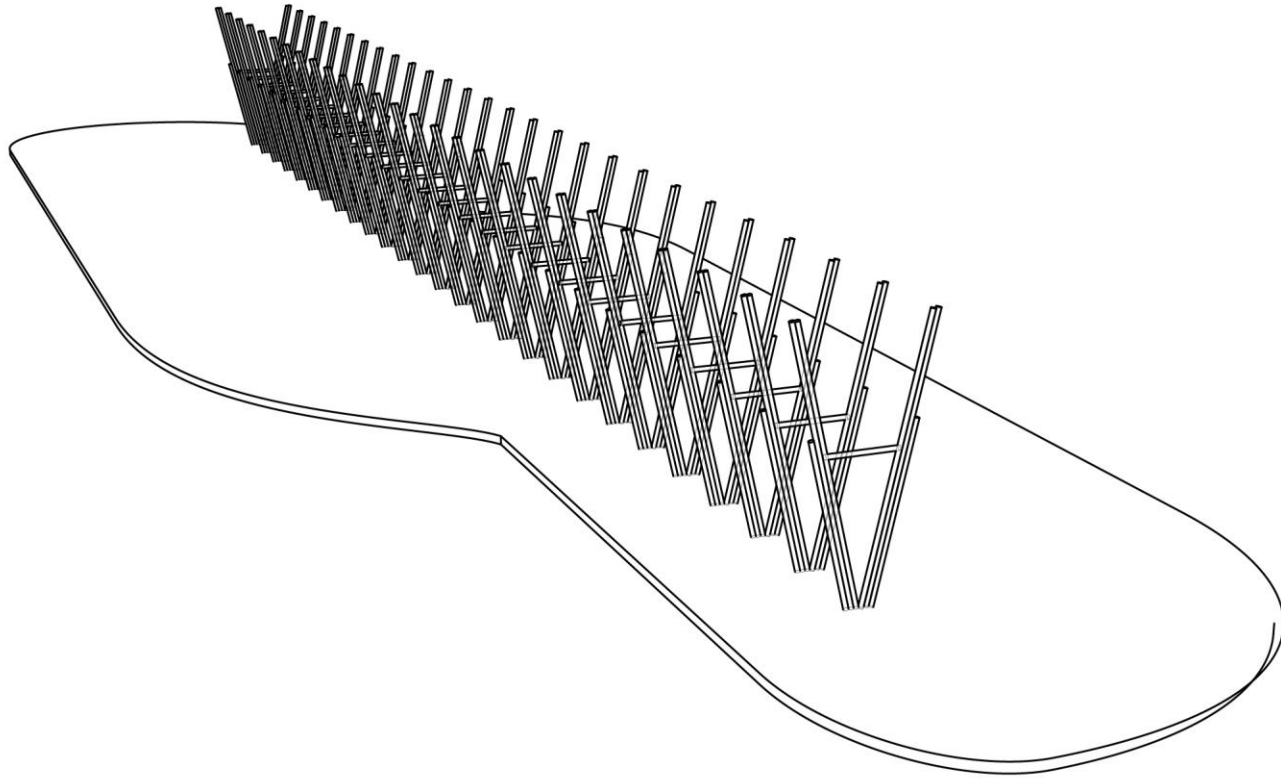


PROJECT GUESTURE

- Good receipt platform
- Mechanical workshop
- Bamboo fiber plant
- Bamboo shelf/ air-dry
- Visitor's walkway

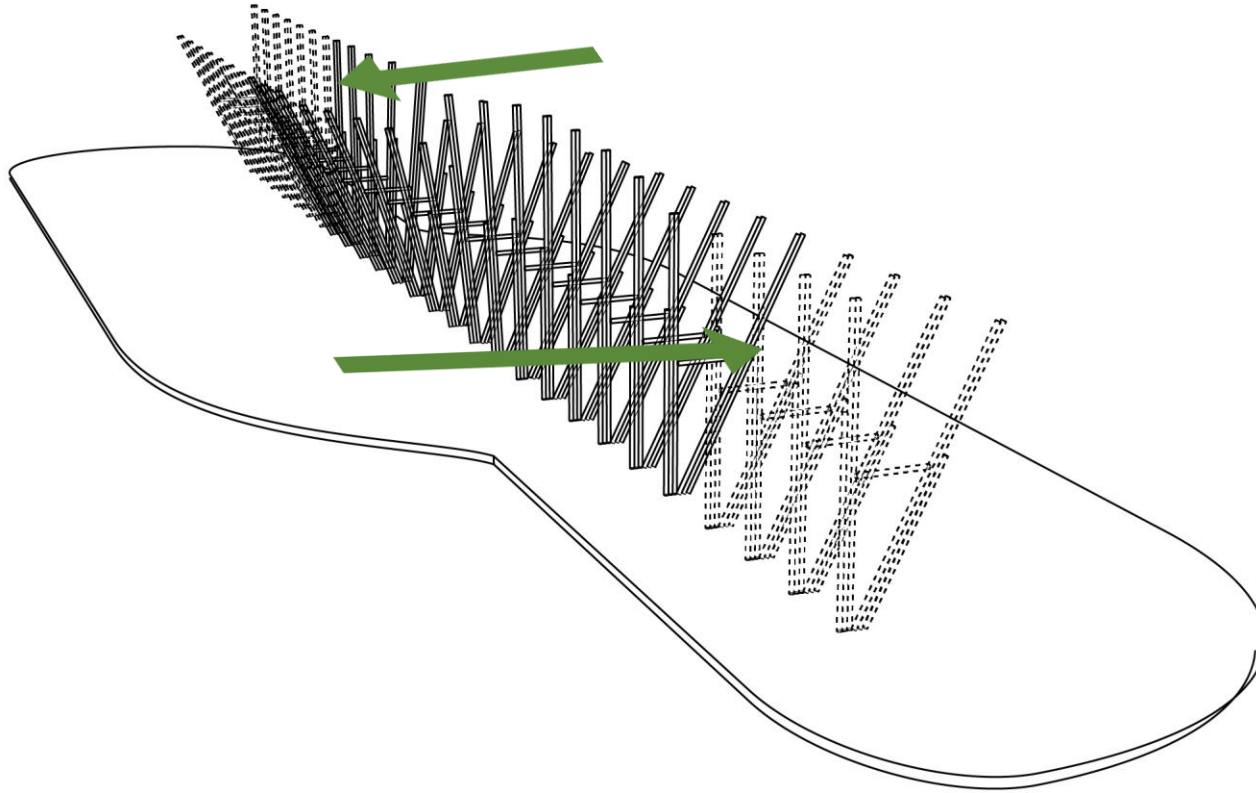
THE SPINE

- Shelf + Walkway + structure
- Functional core
- Aesthetic focus



V-SHAPE

- Reduce span
- Free Ground floor
- Spacious Walkway

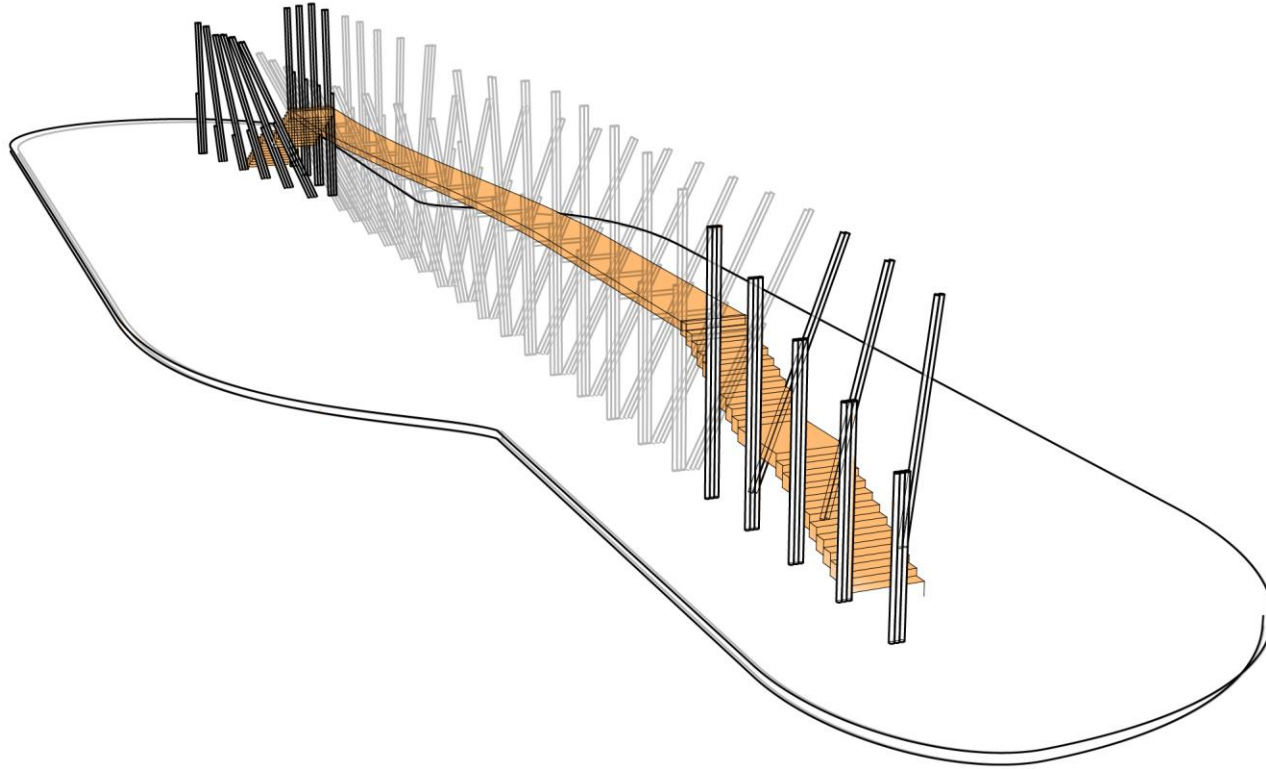


V-SHAPE

- Reduce span
- Free Ground floor
- Spacious Walkway

A Twist

- Tilt towards bigger span
- Winding walkway
- Shape the curvy roof



V-SHAPE

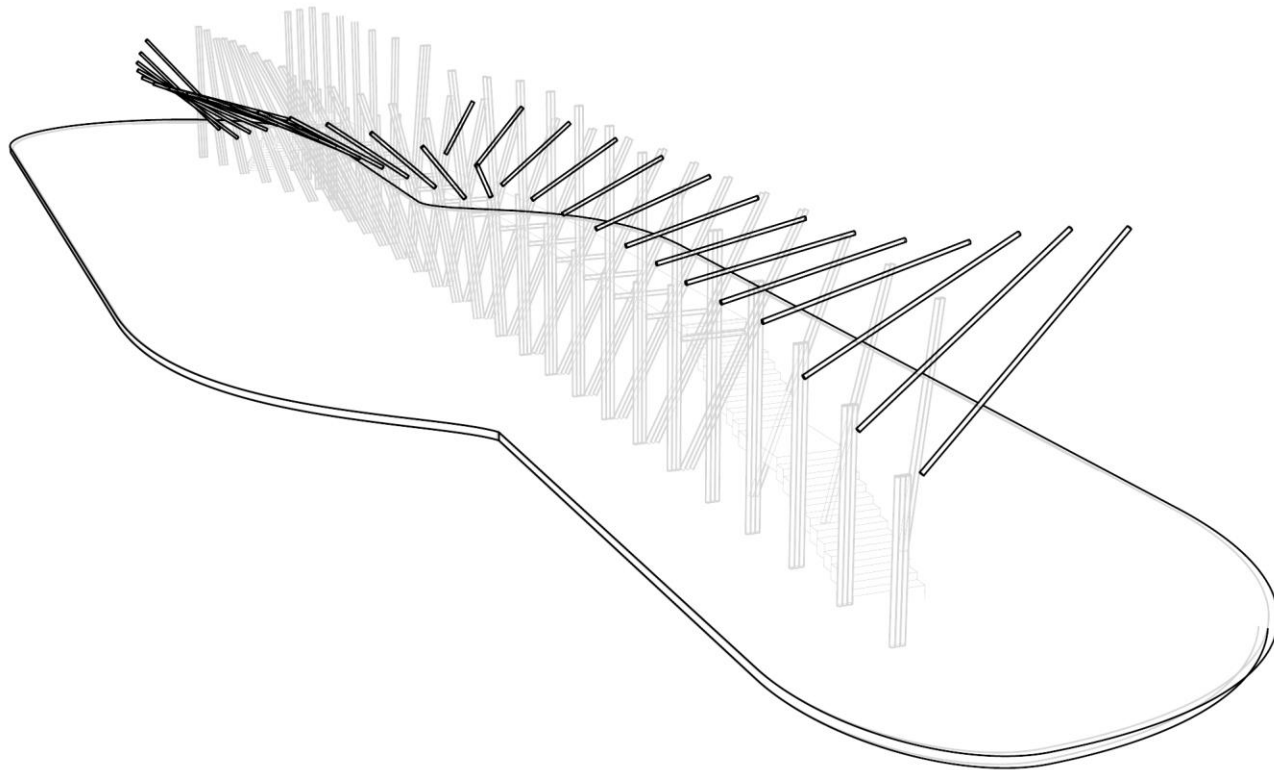
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Two ends

- Kiln and Entrance
- Separating V frame (stairs)



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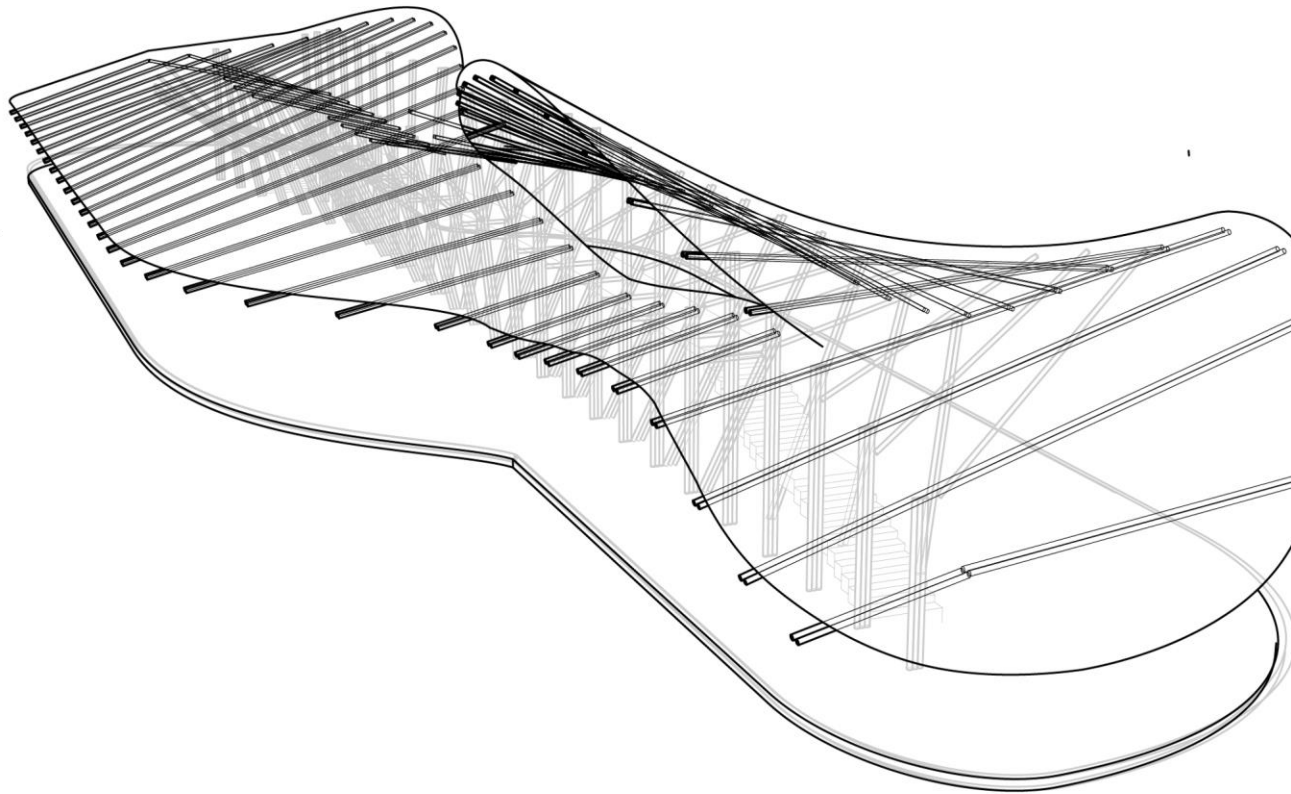
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Two ends

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Secondary Structure

- Structural need
- Emphasizing important side of the space



V-SHAPE

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- Free Ground floor
- Spacious Walkway

A Twist

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Two ends

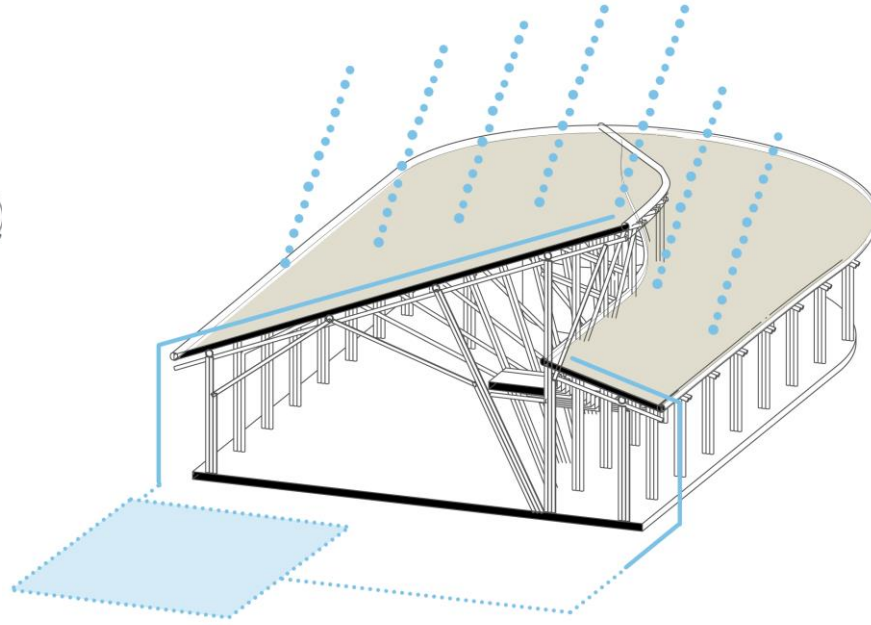
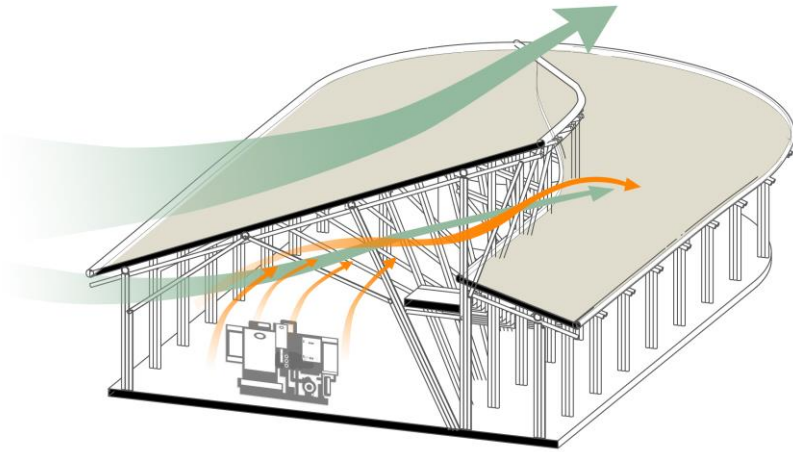
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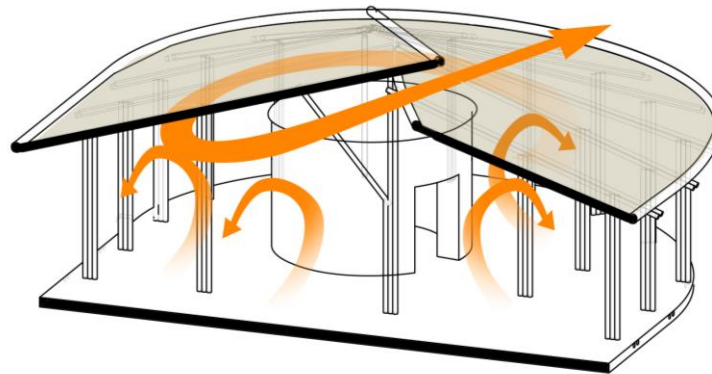
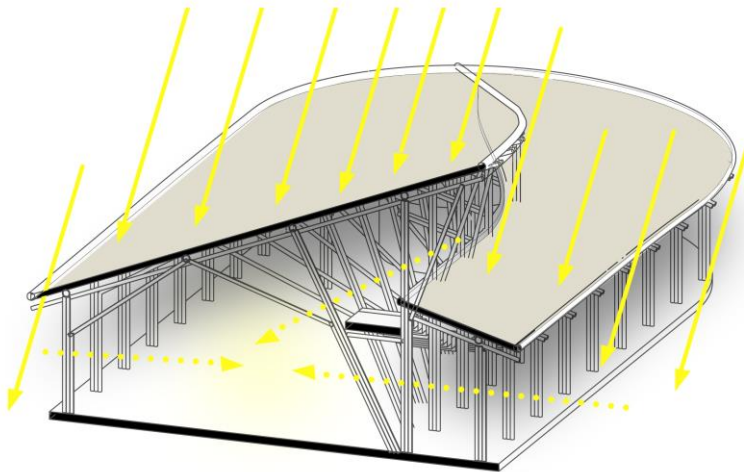
Roof Shape

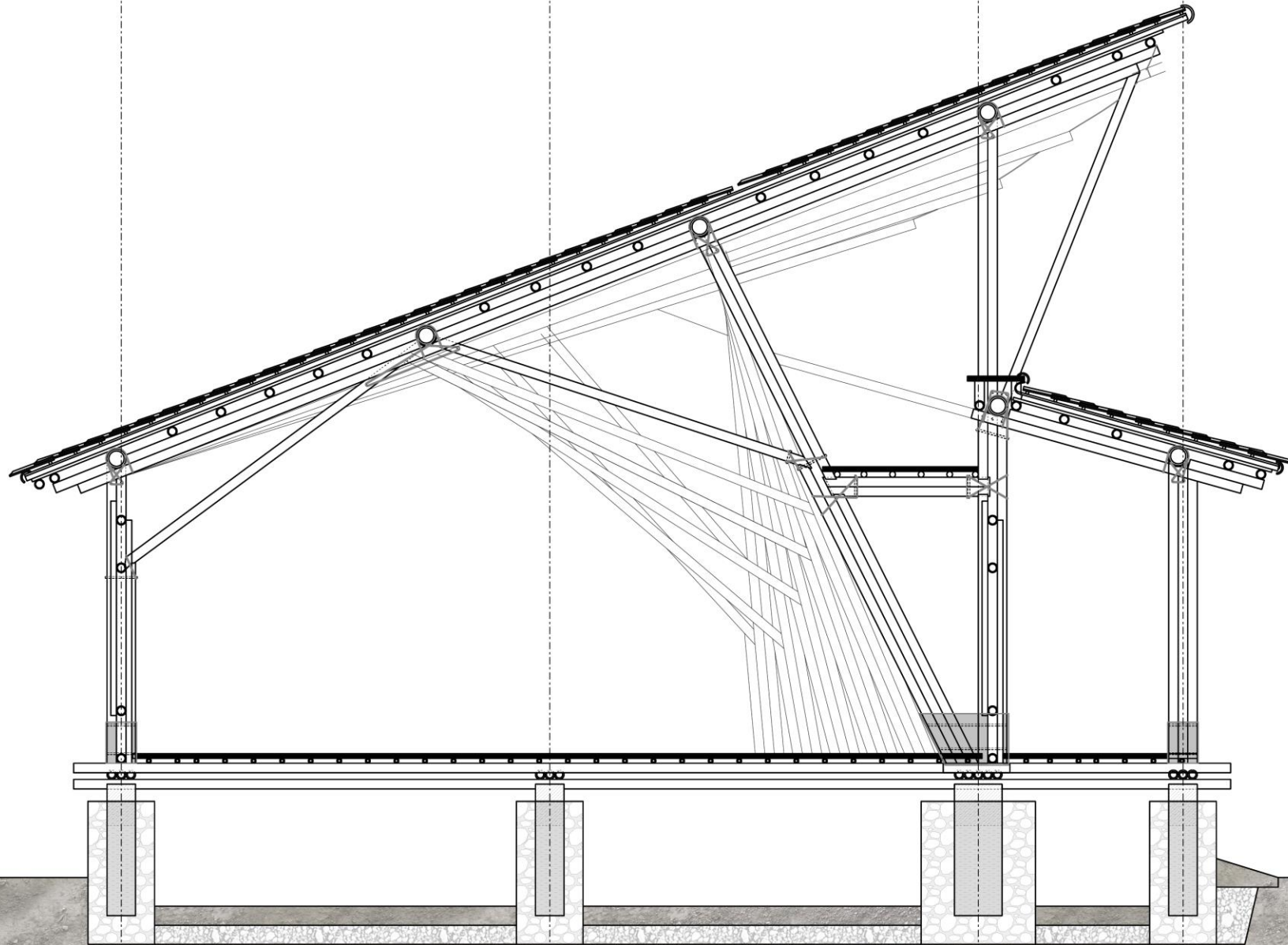
- Climate strategy



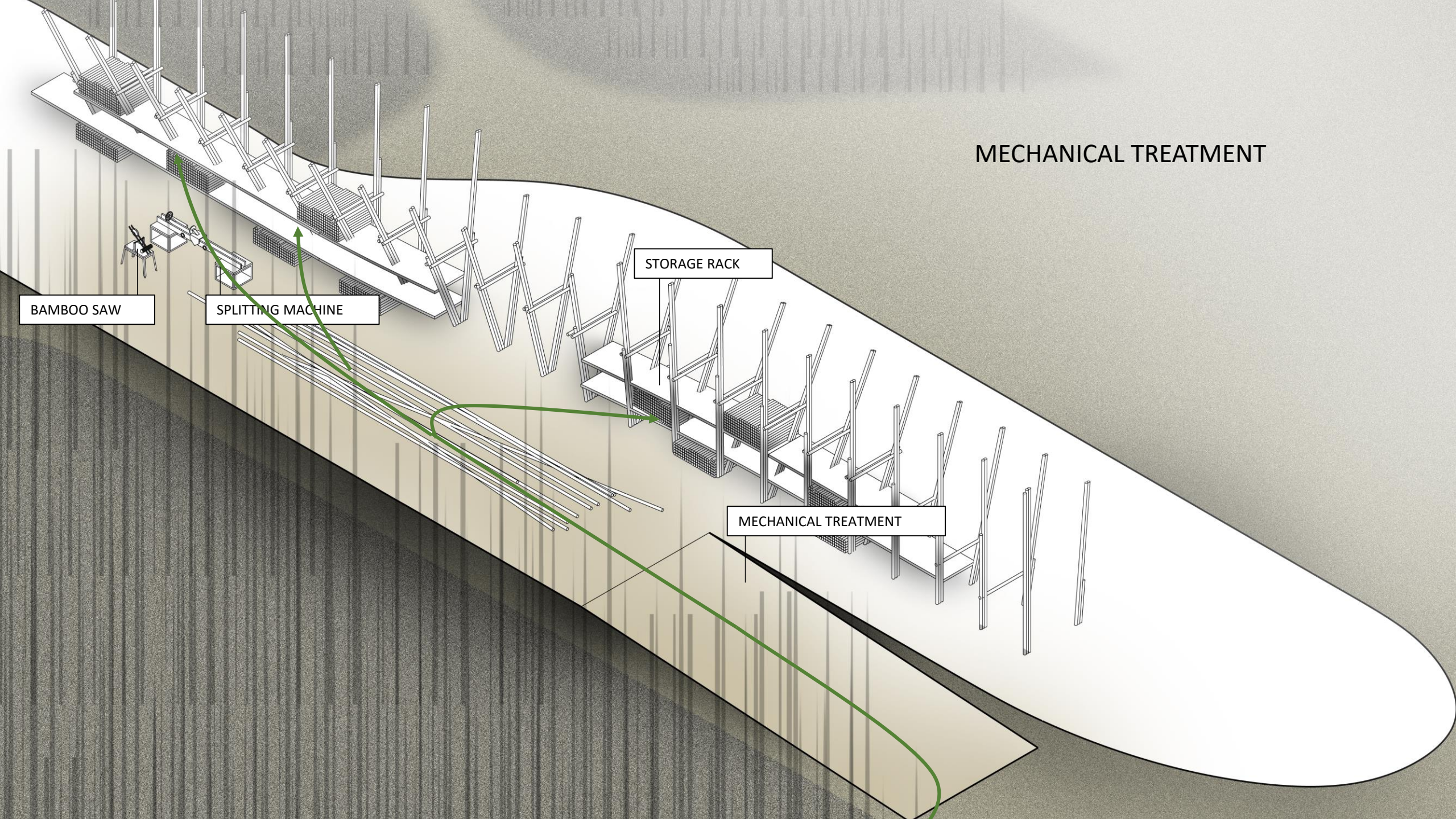
Climate Strategy

- Protect structure from rain
- Enough Shading
- Indirect Natural lighting
- Letting out redundant heat





STANDARD
SECTION



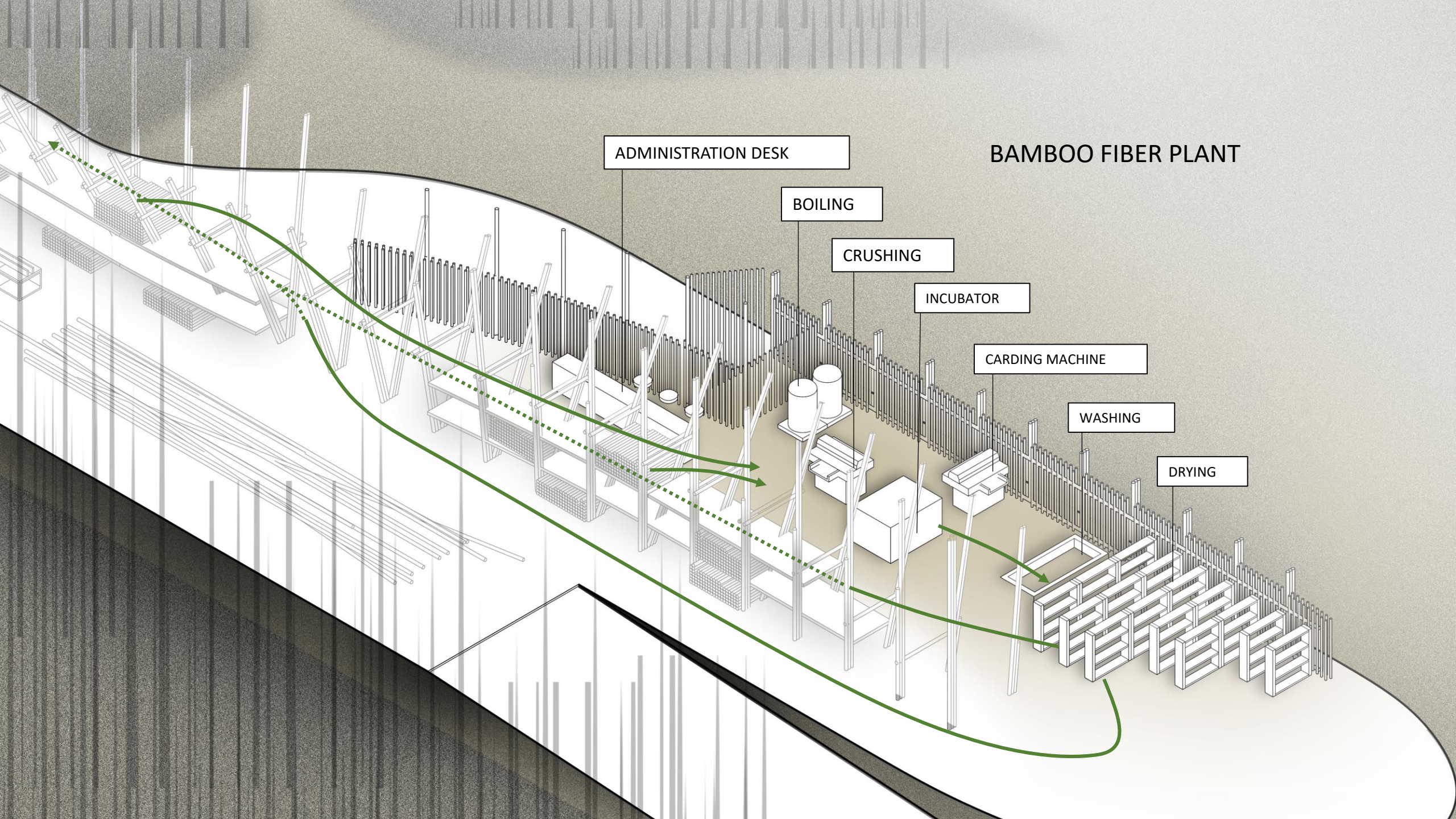
BAMBOO SAW

SPLITTING MACHINE

STORAGE RACK

MECHANICAL TREATMENT

MECHANICAL TREATMENT



BAMBOO FIBER PLANT

ADMINISTRATION DESK

BOILING

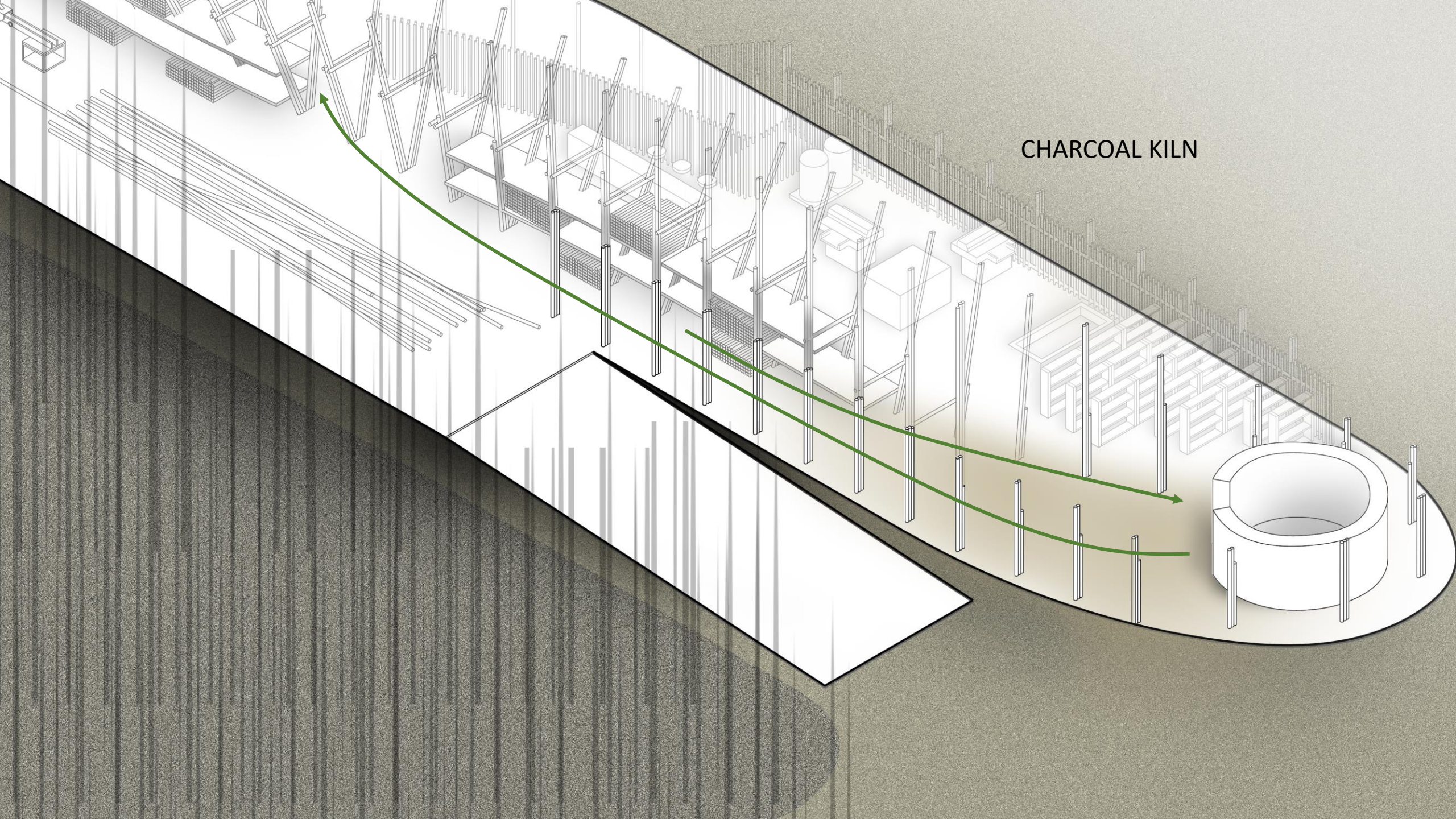
CRUSHING

INCUBATOR

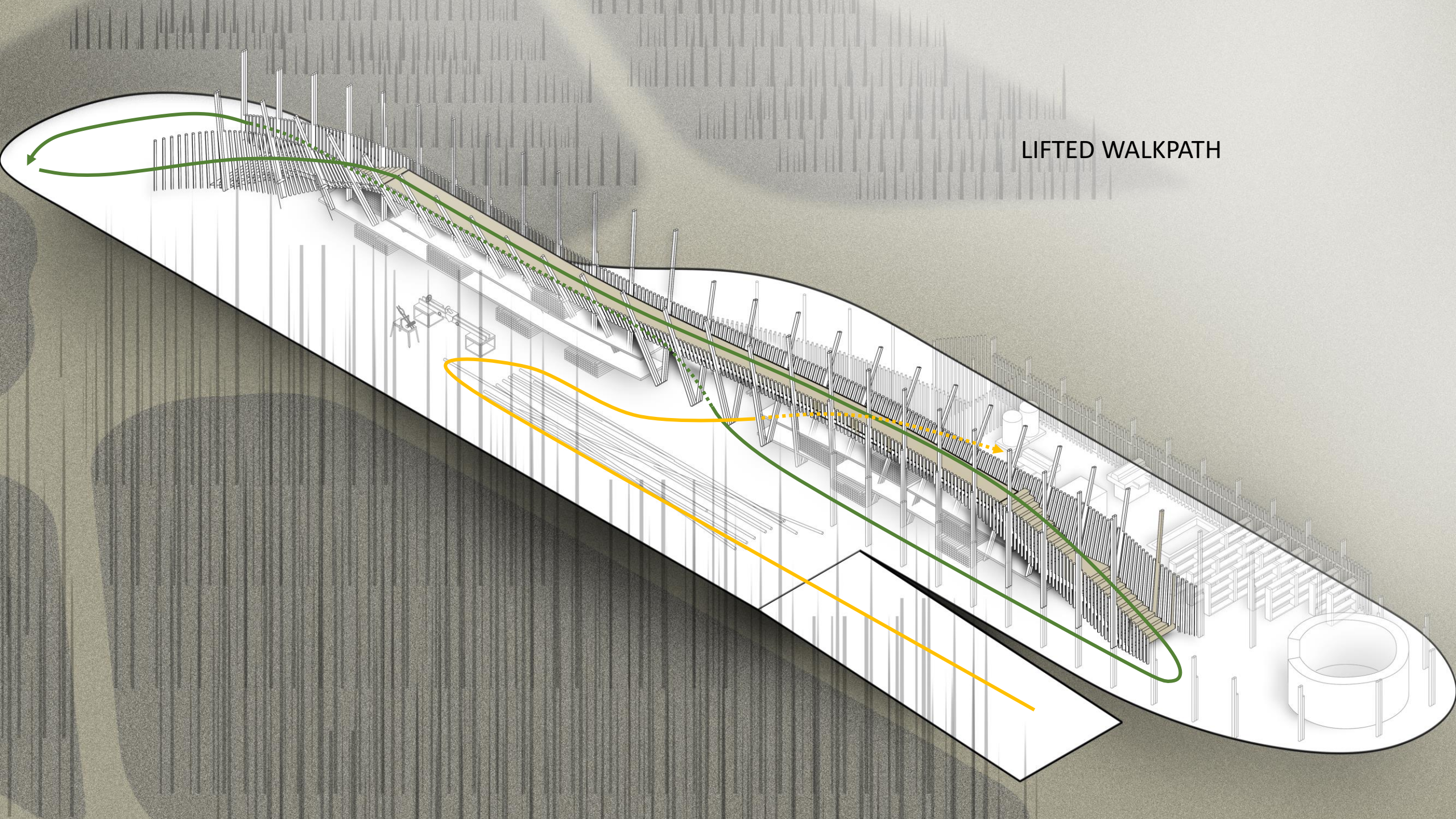
CARDING MACHINE

WASHING

DRYING



CHARCOAL KILN



LIFTED WALKPATH

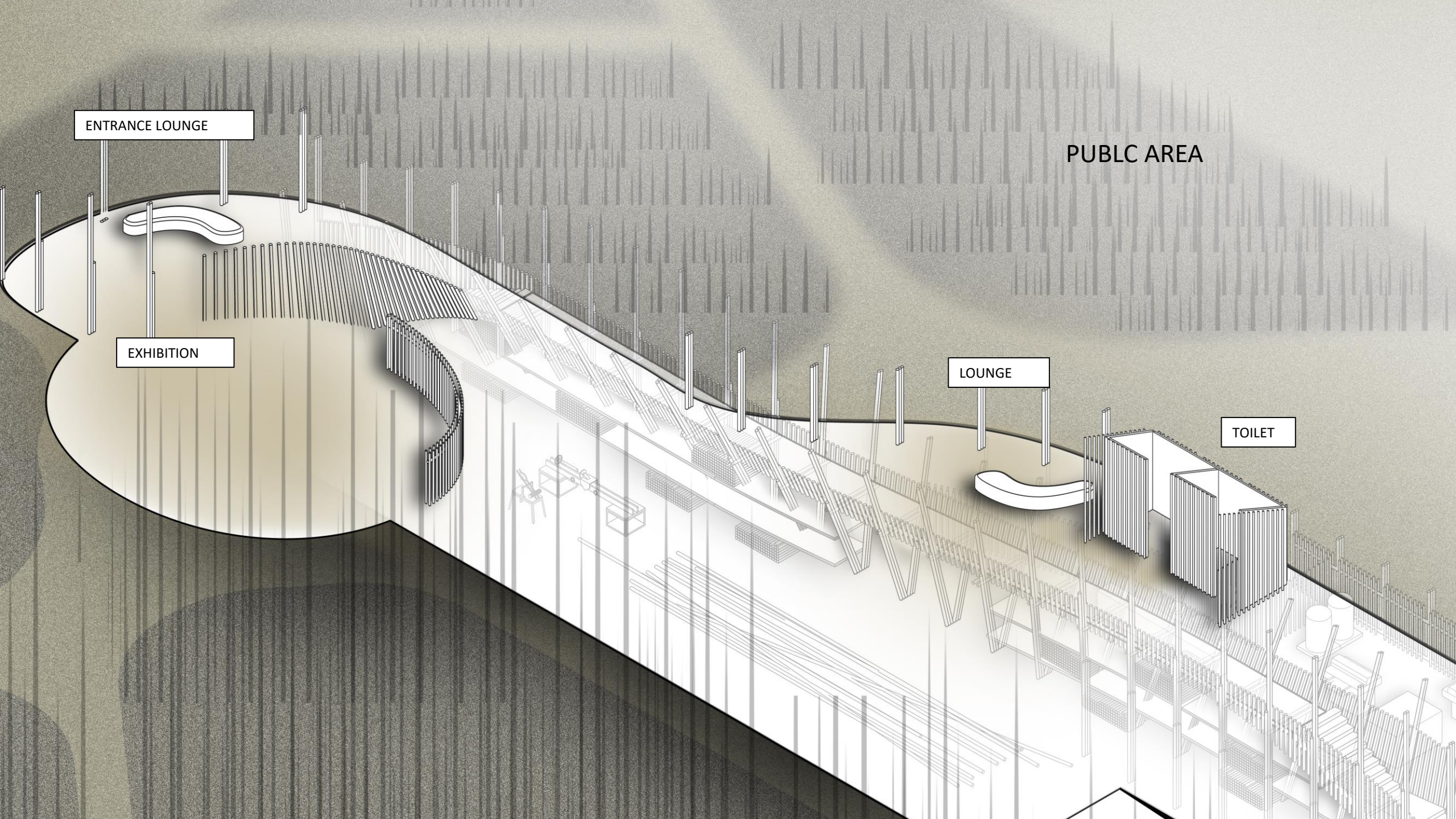
ENTRANCE LOUNGE

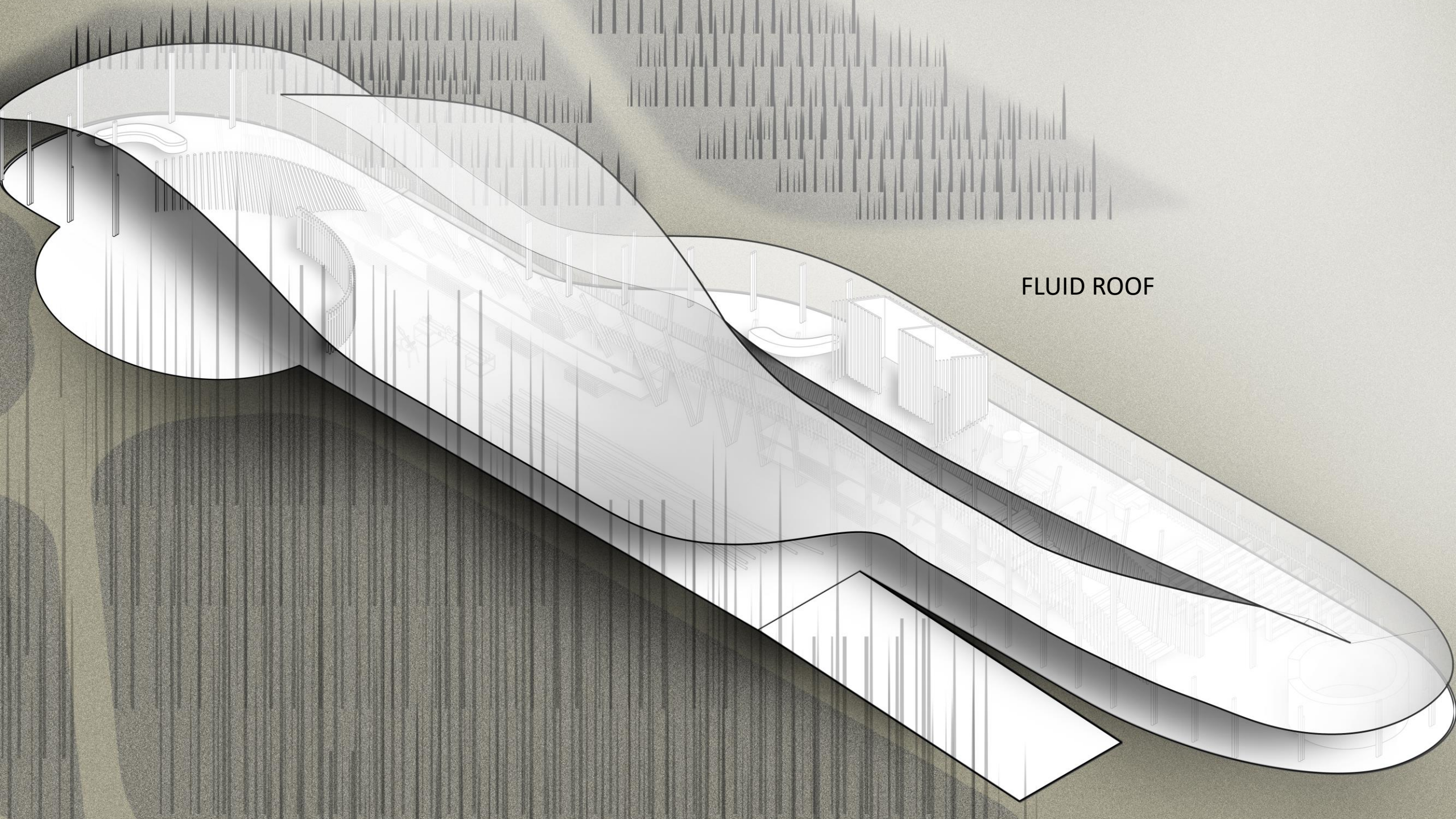
EXHIBITION

PUBLIC AREA

LOUNGE

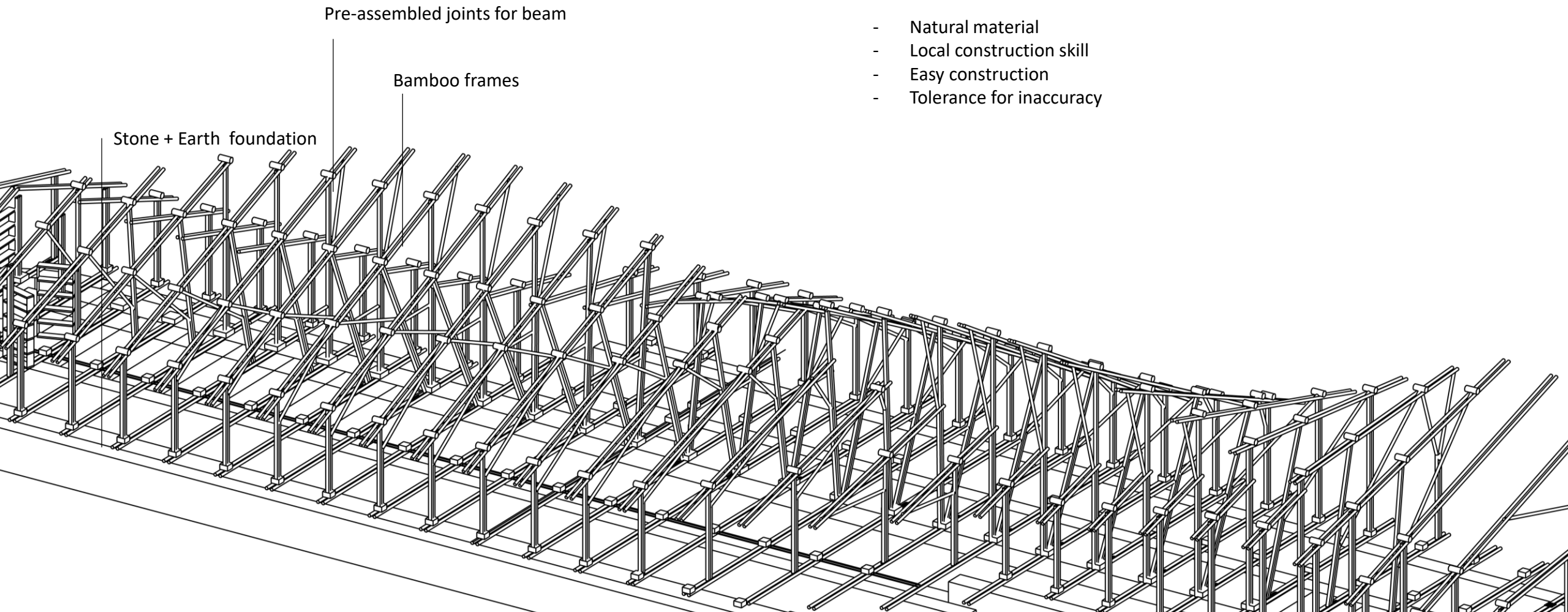
TOILET



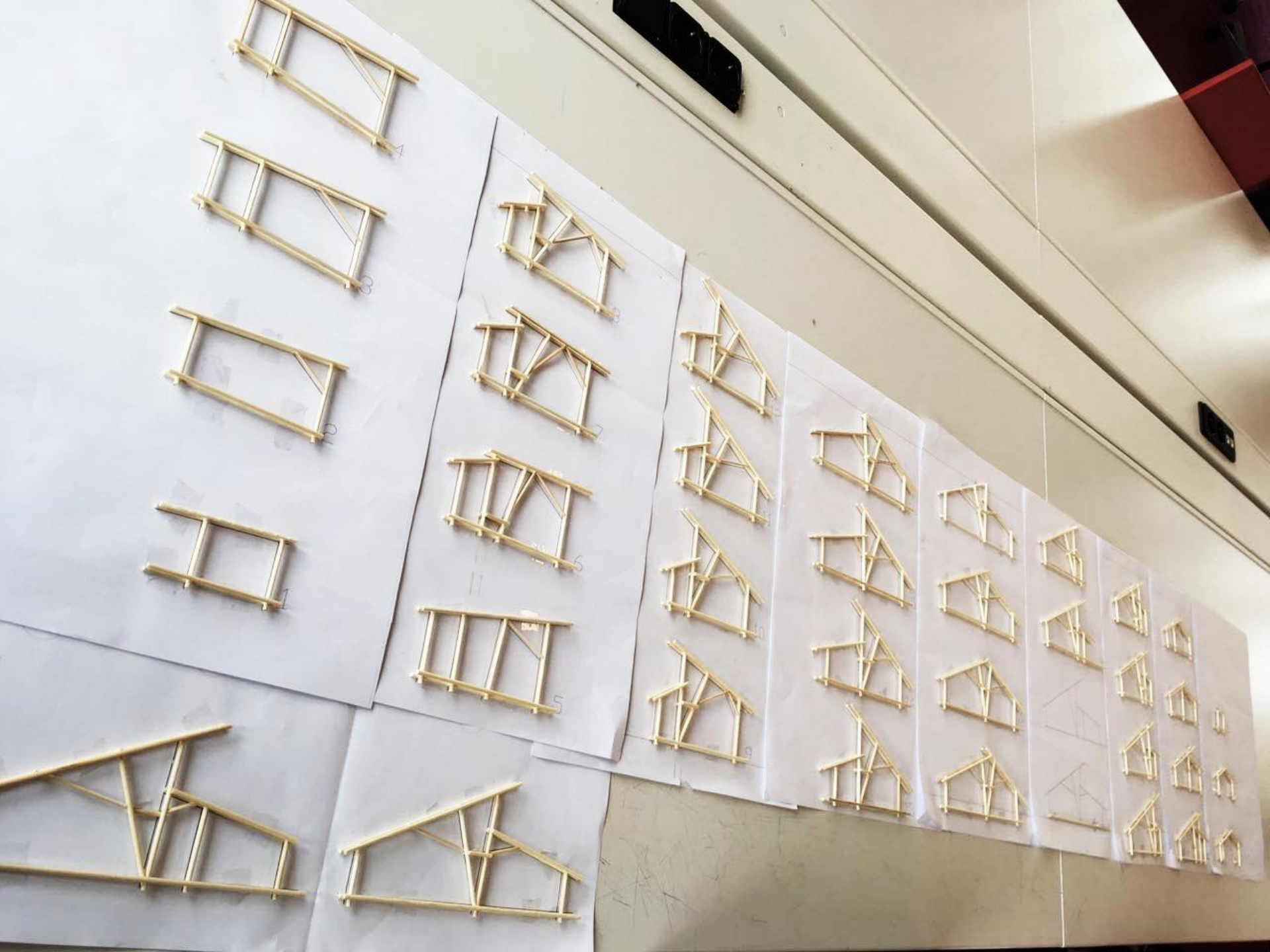


FLUID ROOF

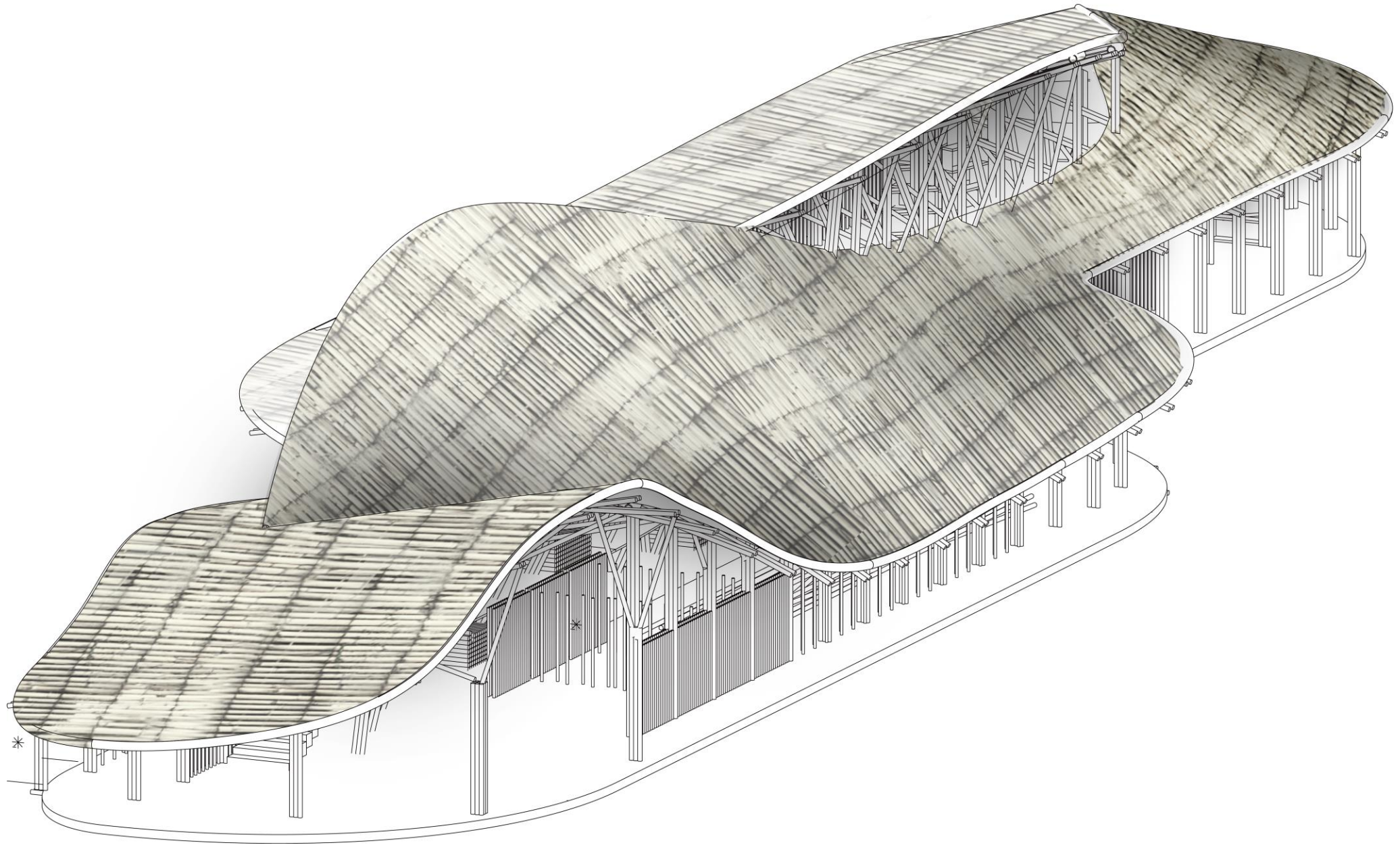
MATERIALIZATION & CONSTRUCTION

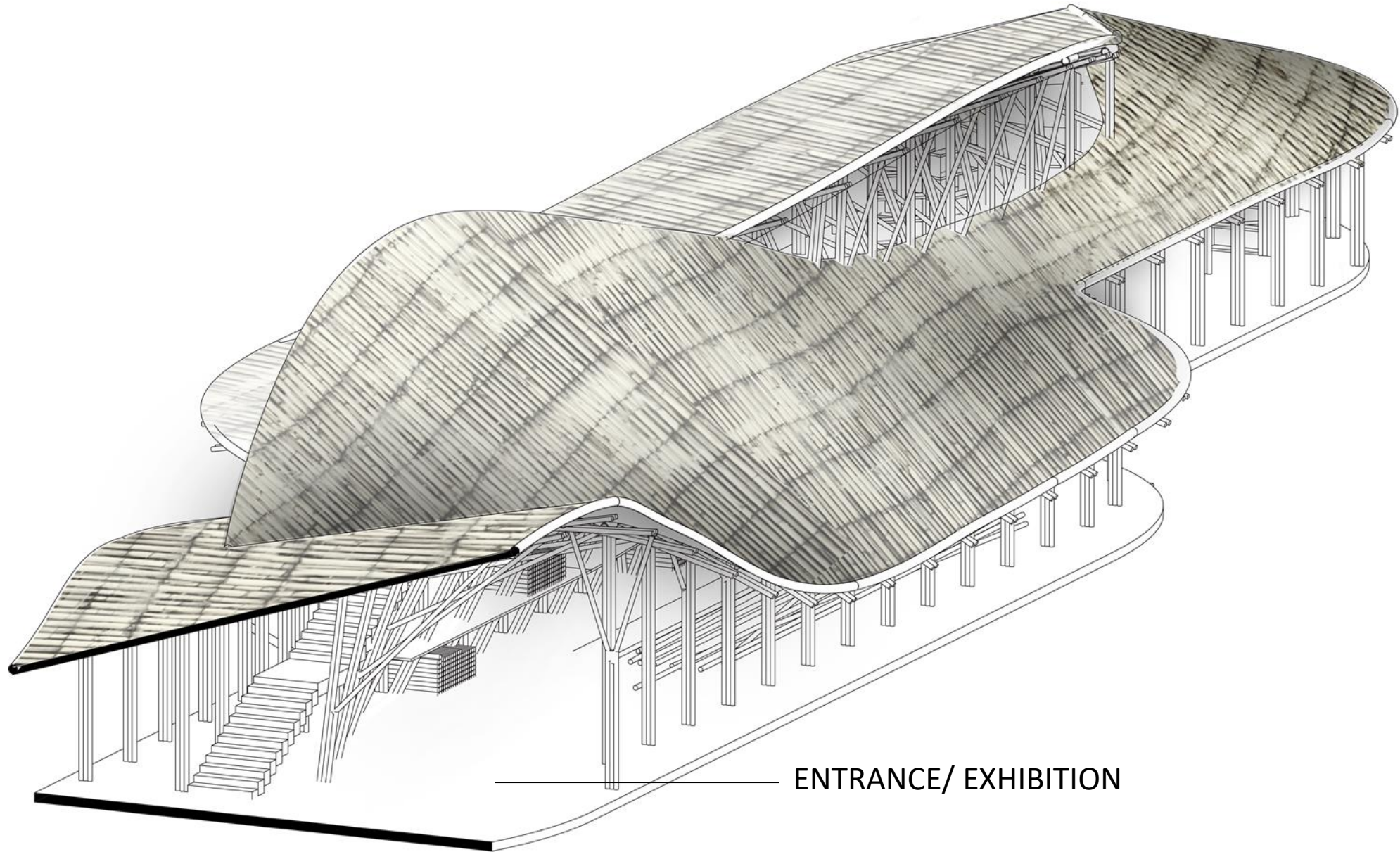


- Natural material
- Local construction skill
- Easy construction
- Tolerance for inaccuracy

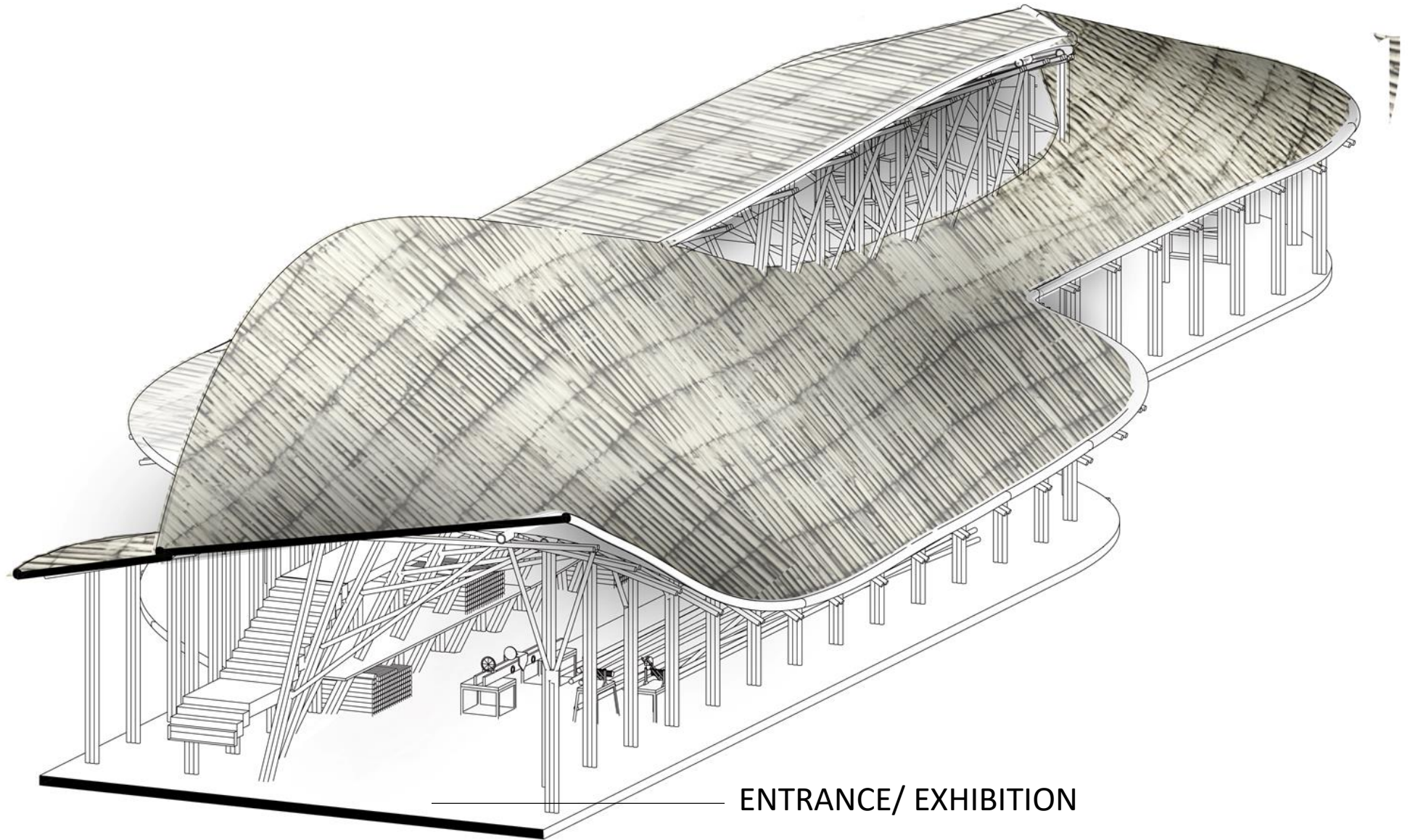




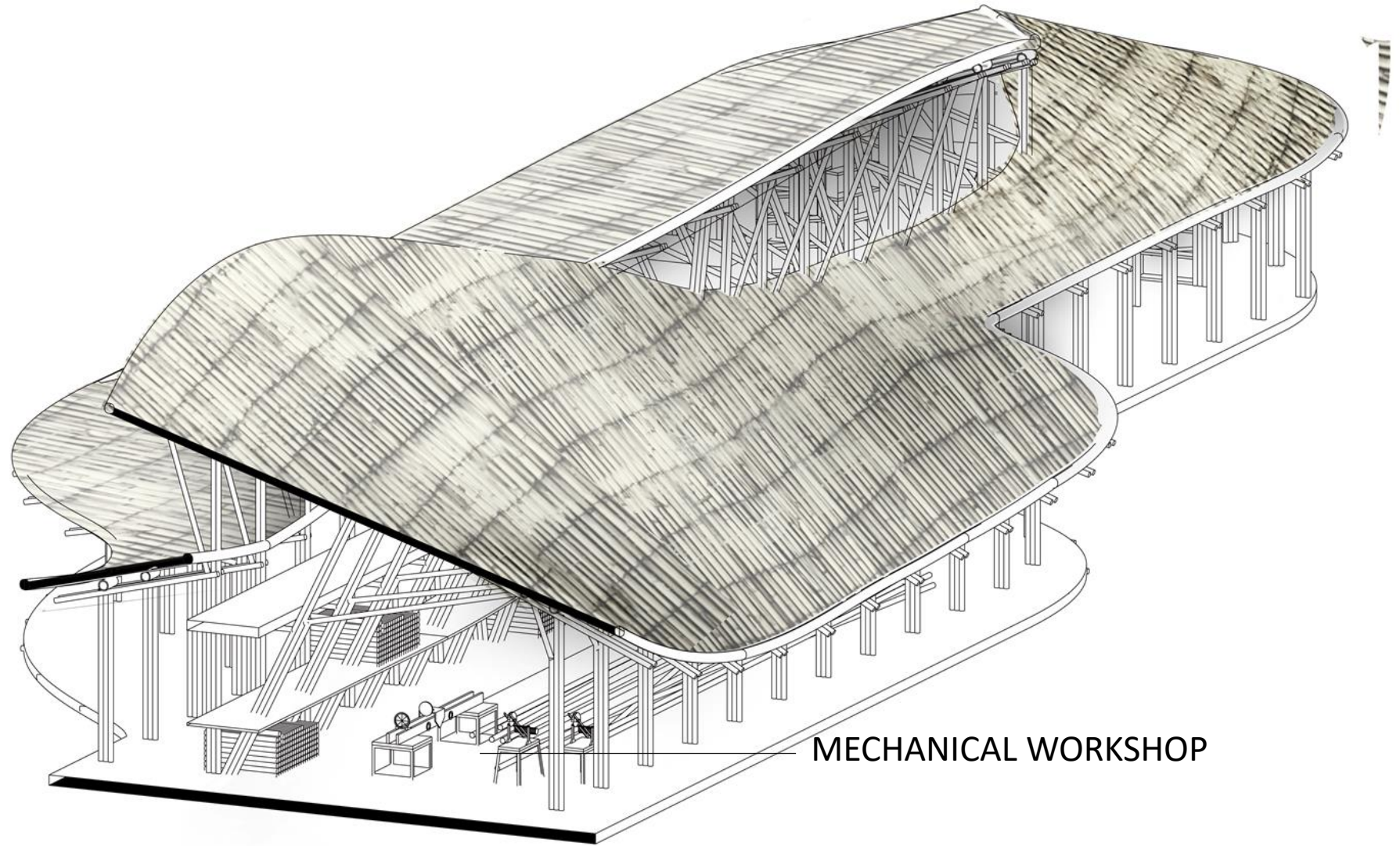




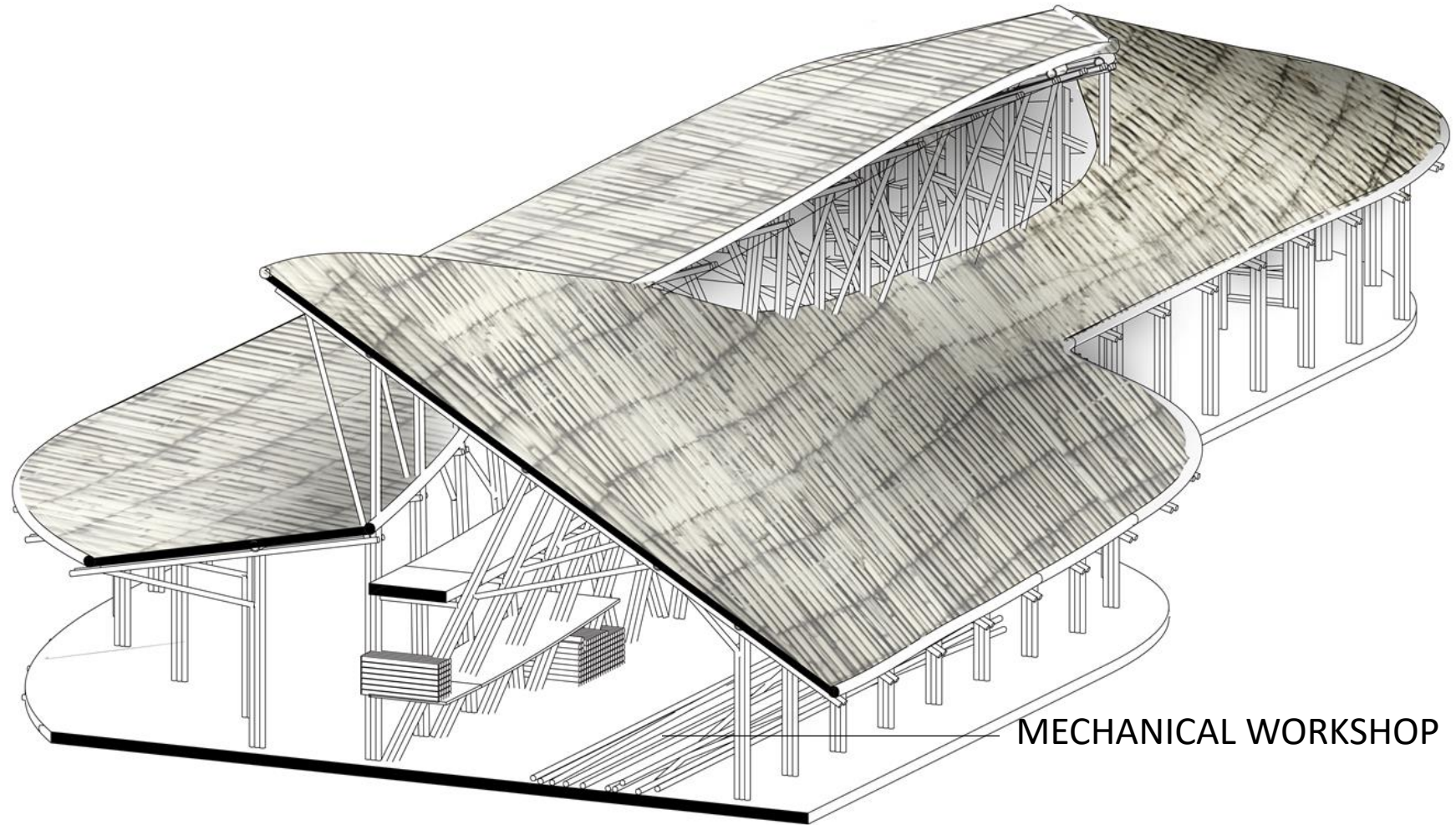
ENTRANCE/ EXHIBITION



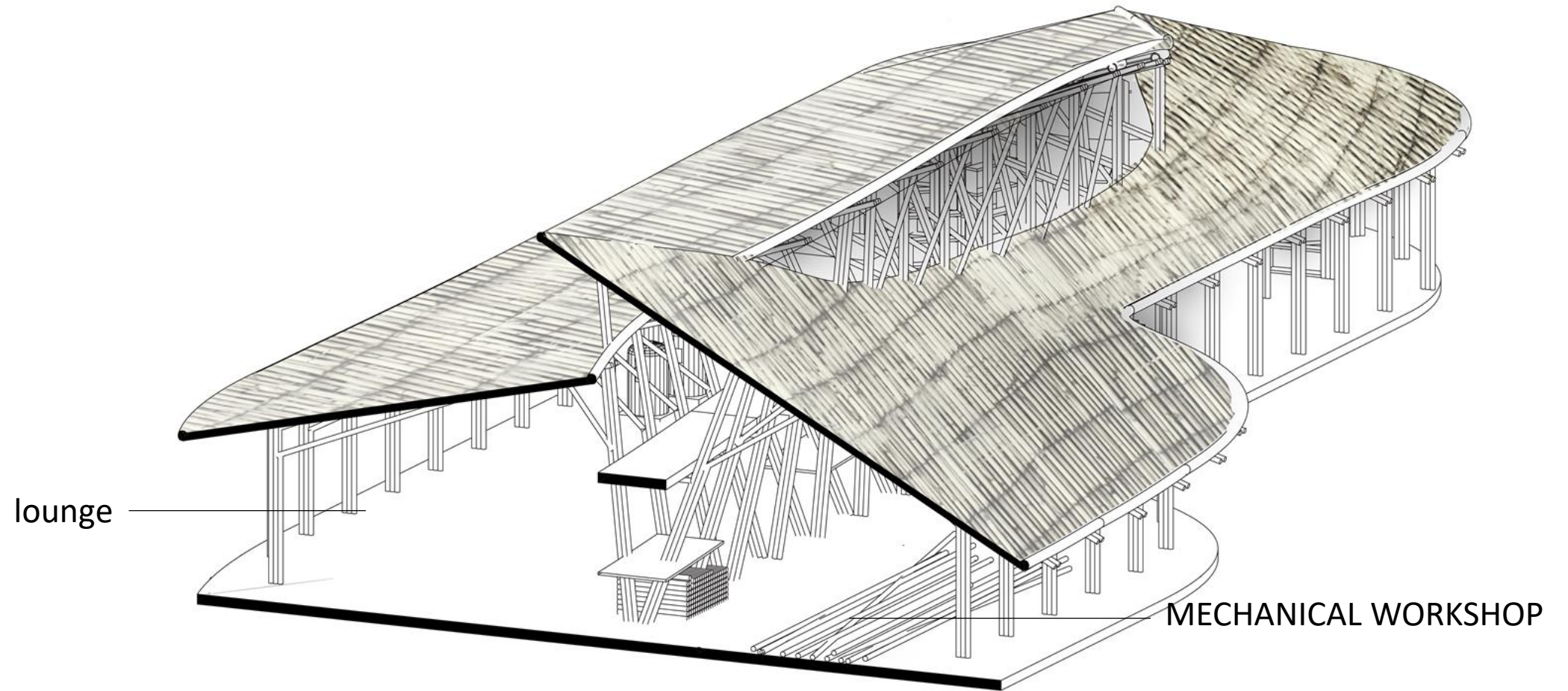
ENTRANCE/ EXHIBITION



MECHANICAL WORKSHOP



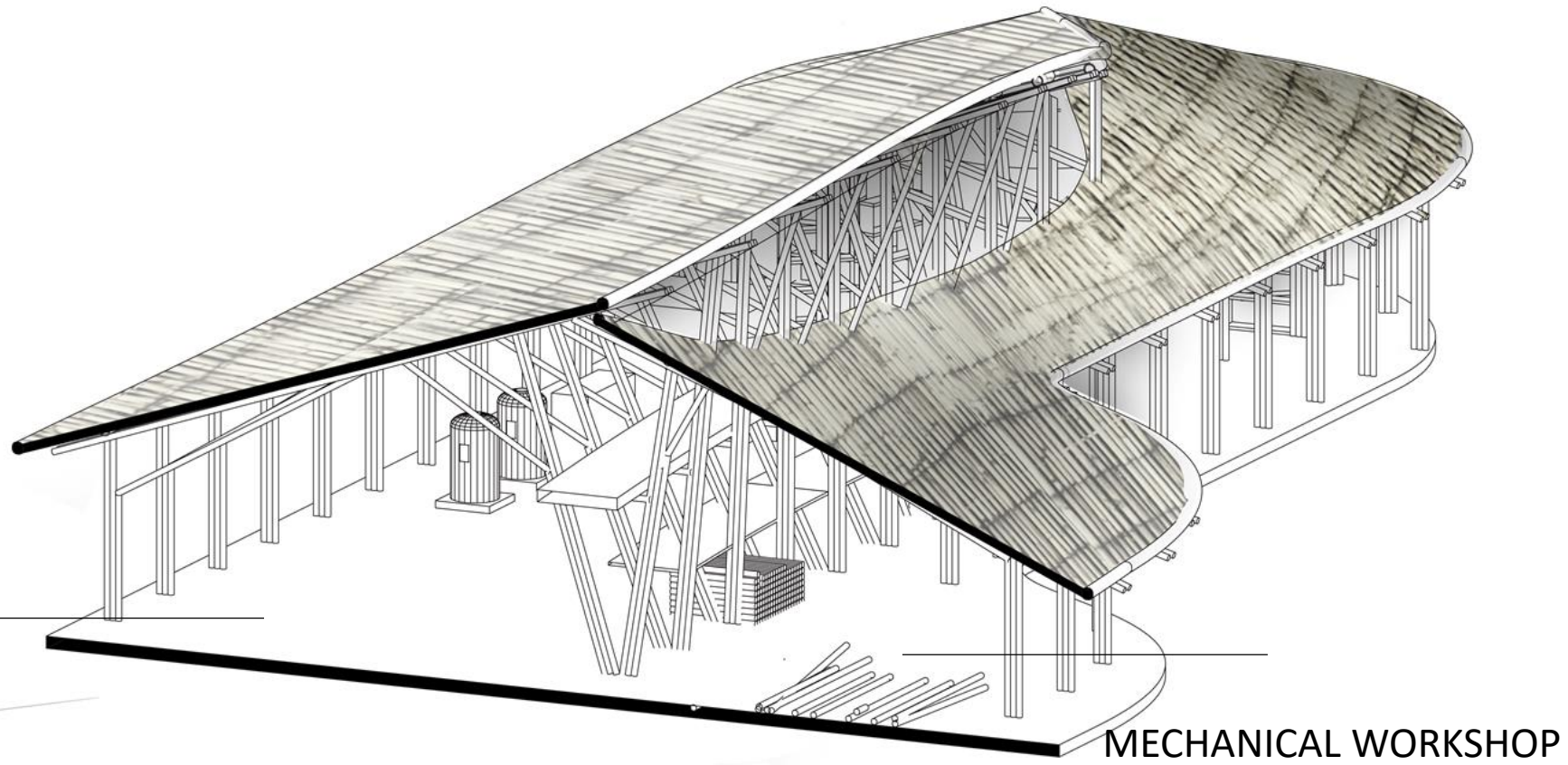
MECHANICAL WORKSHOP



lounge

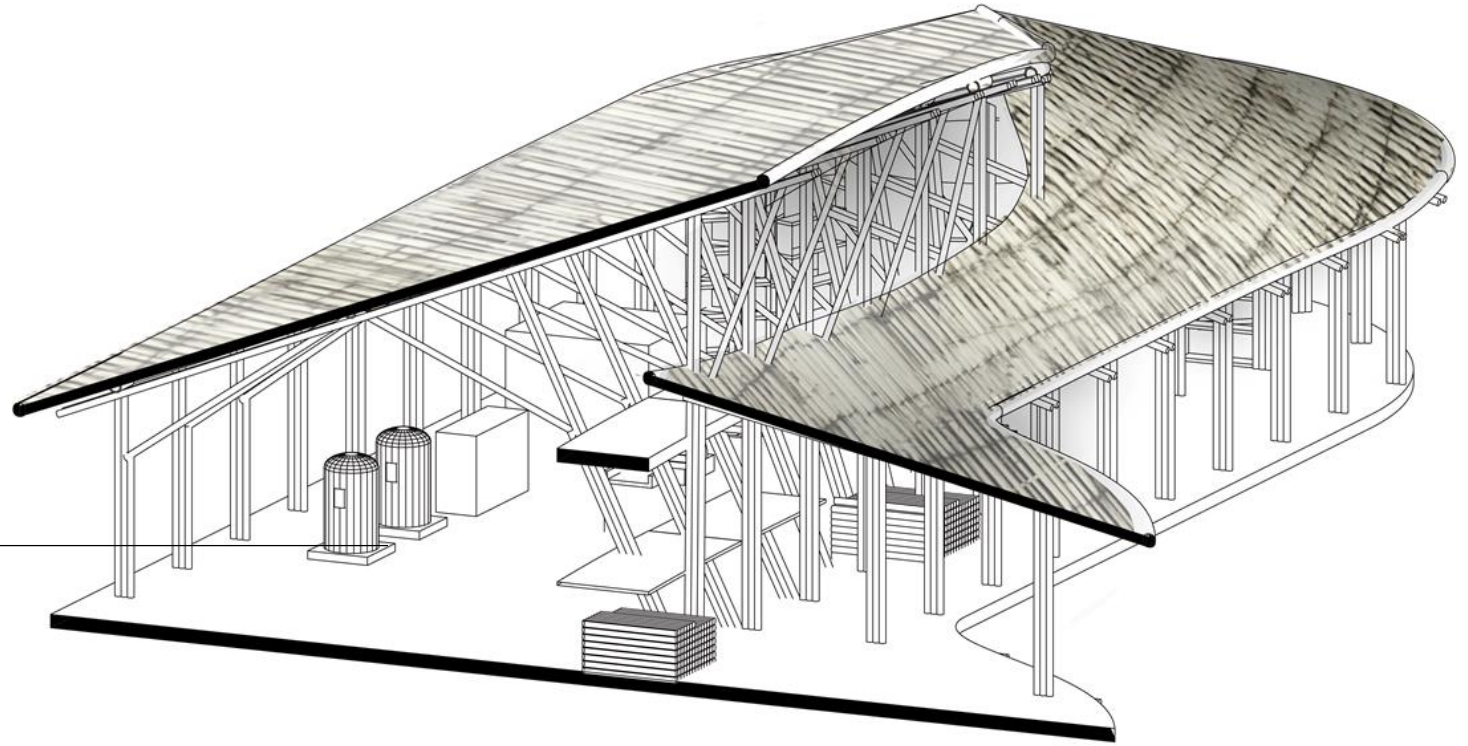
MECHANICAL WORKSHOP

lounge

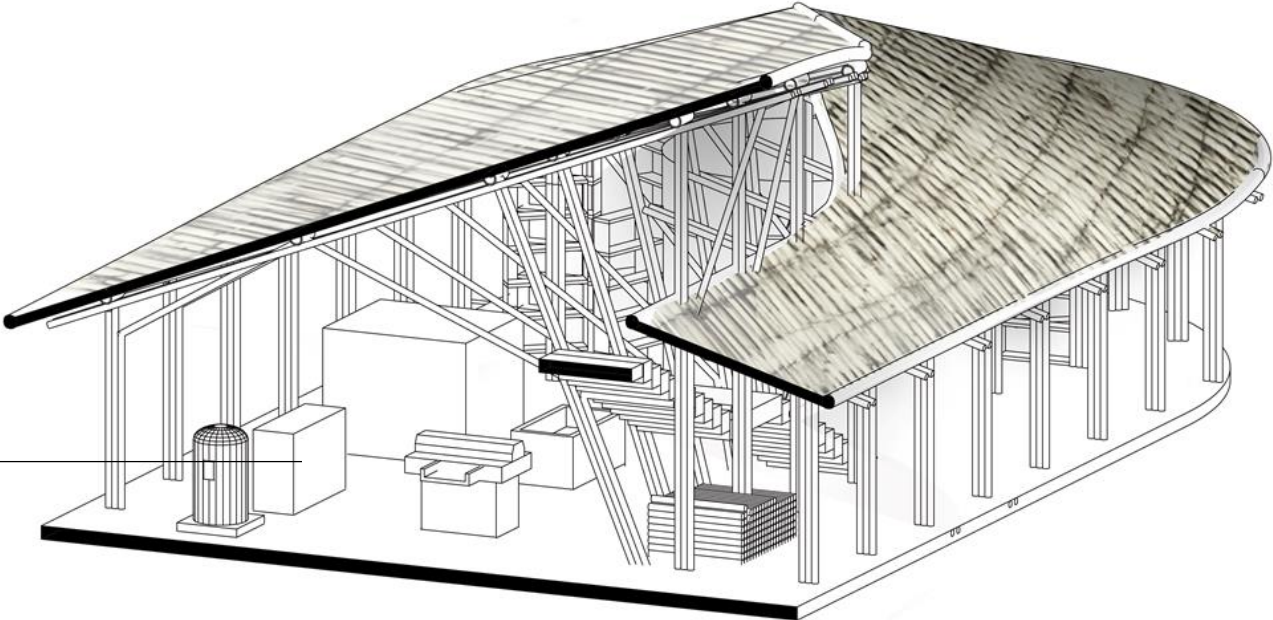


MECHANICAL WORKSHOP

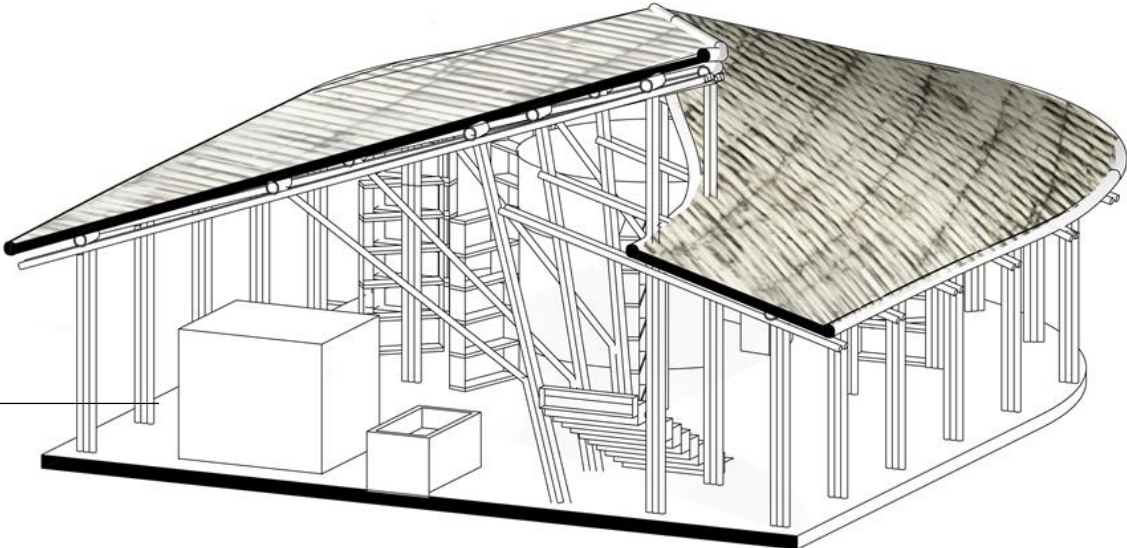
FIBER PLANT



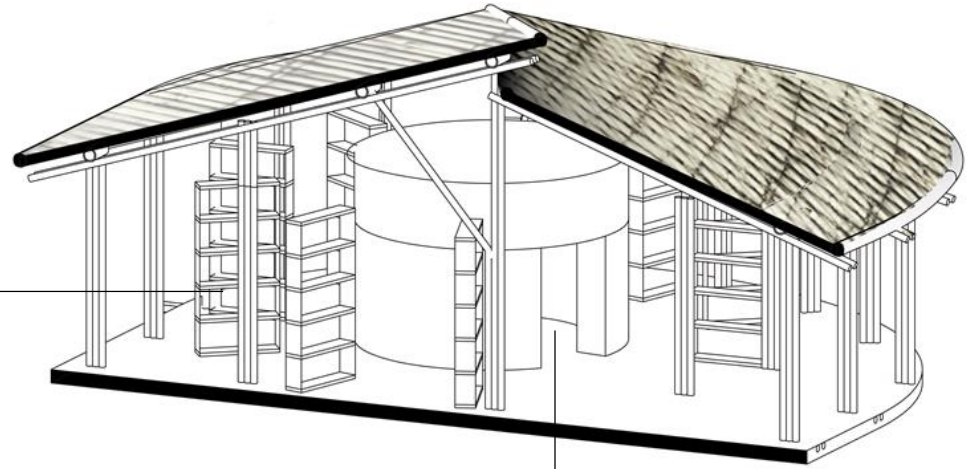
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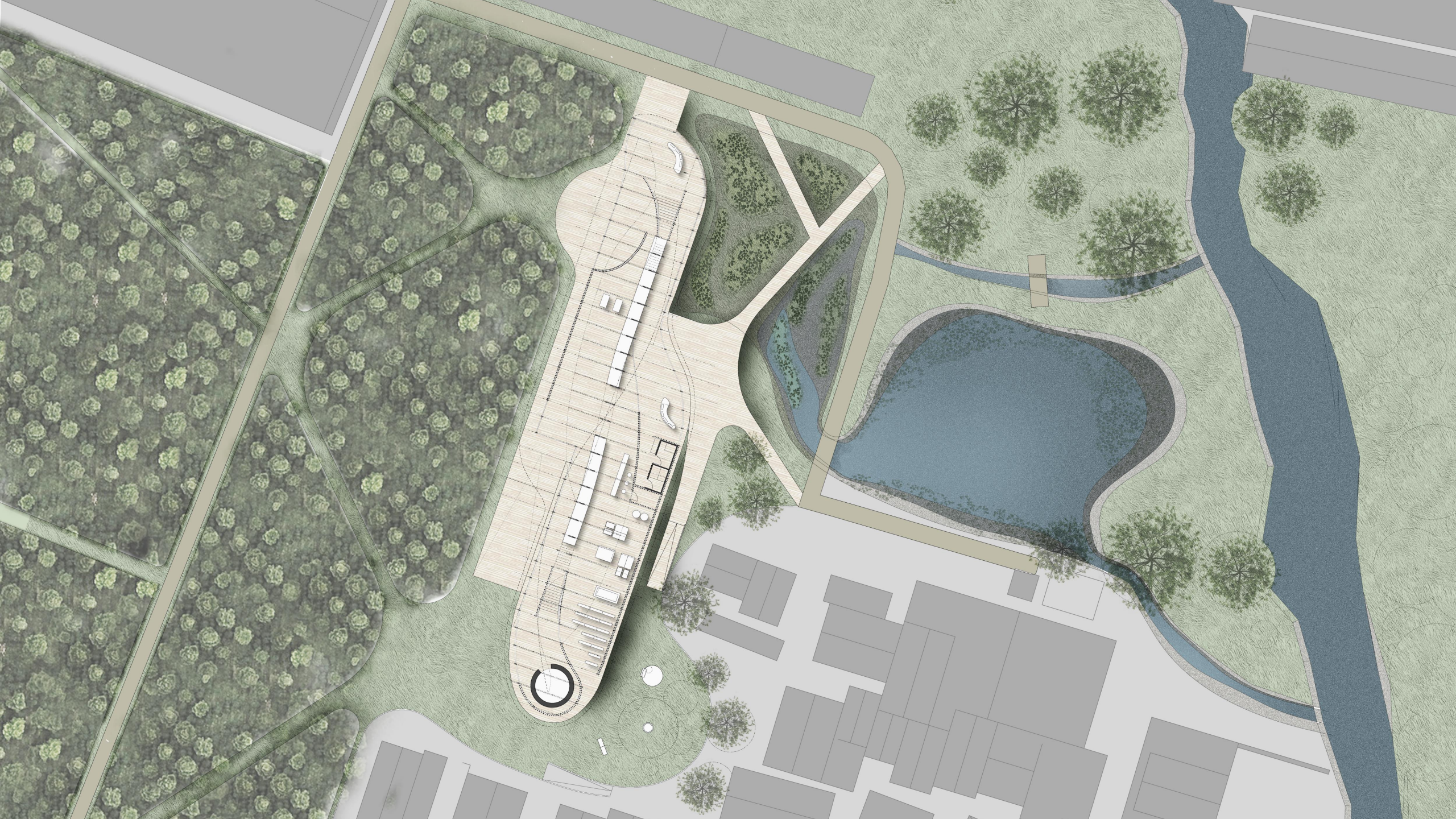
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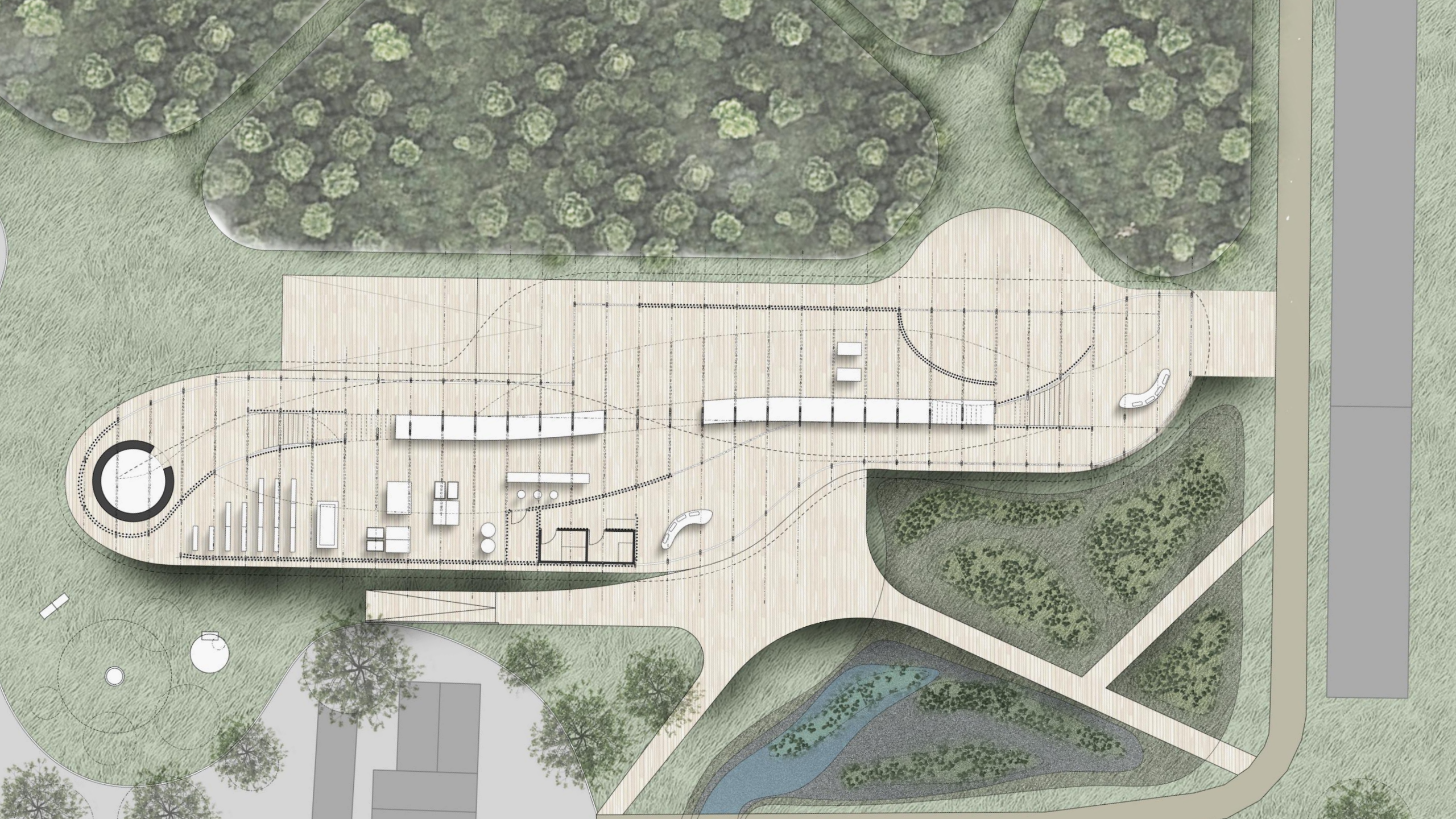


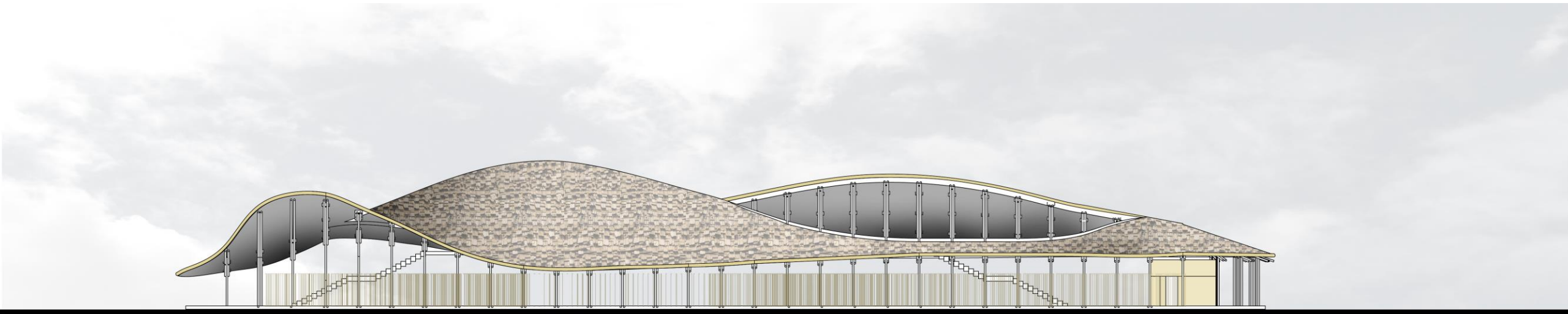
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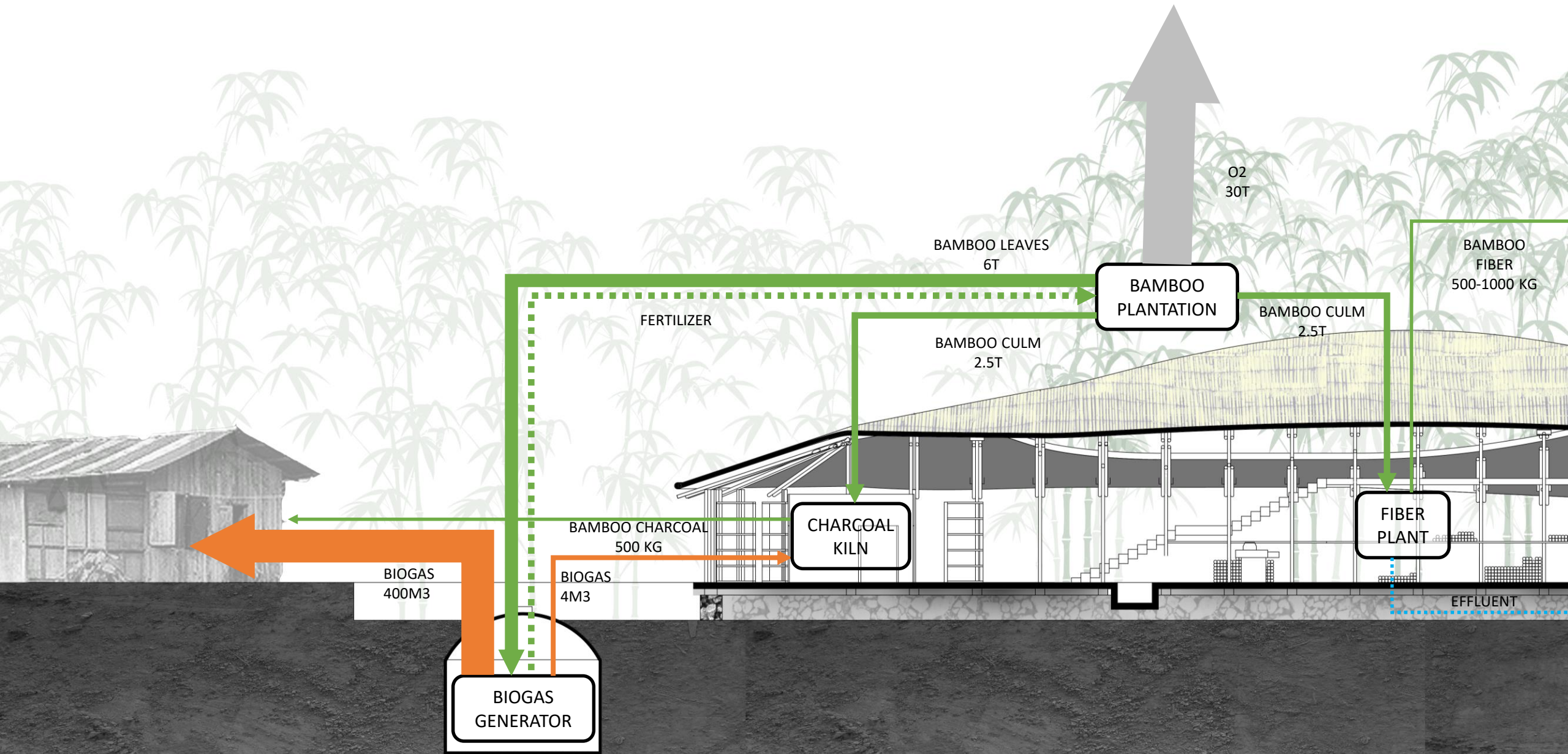


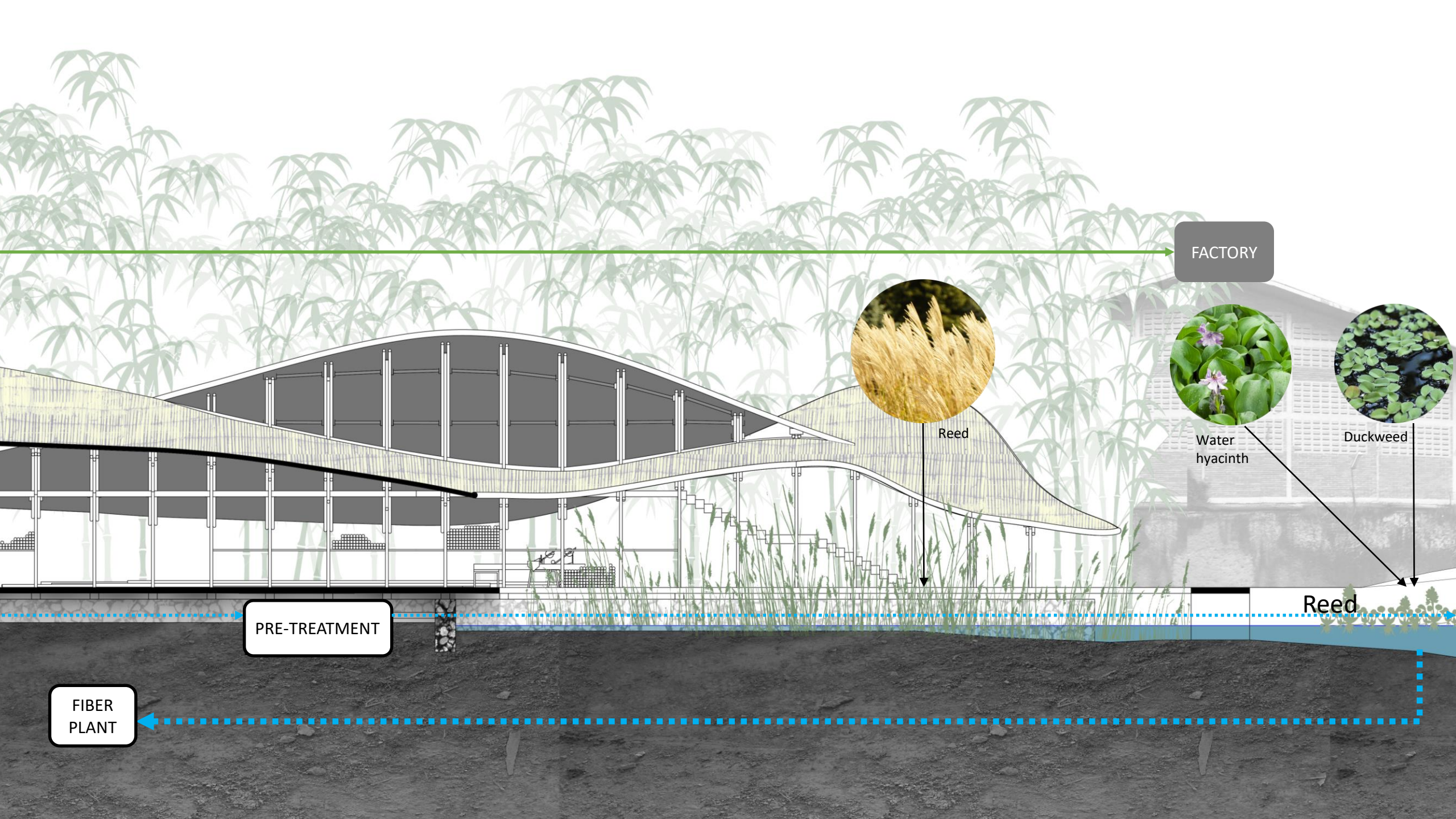
CHARCOAL
KILN











FACTORY



Reed



Water hyacinth



Duckweed

PRE-TREATMENT

FIBER PLANT

Reed

