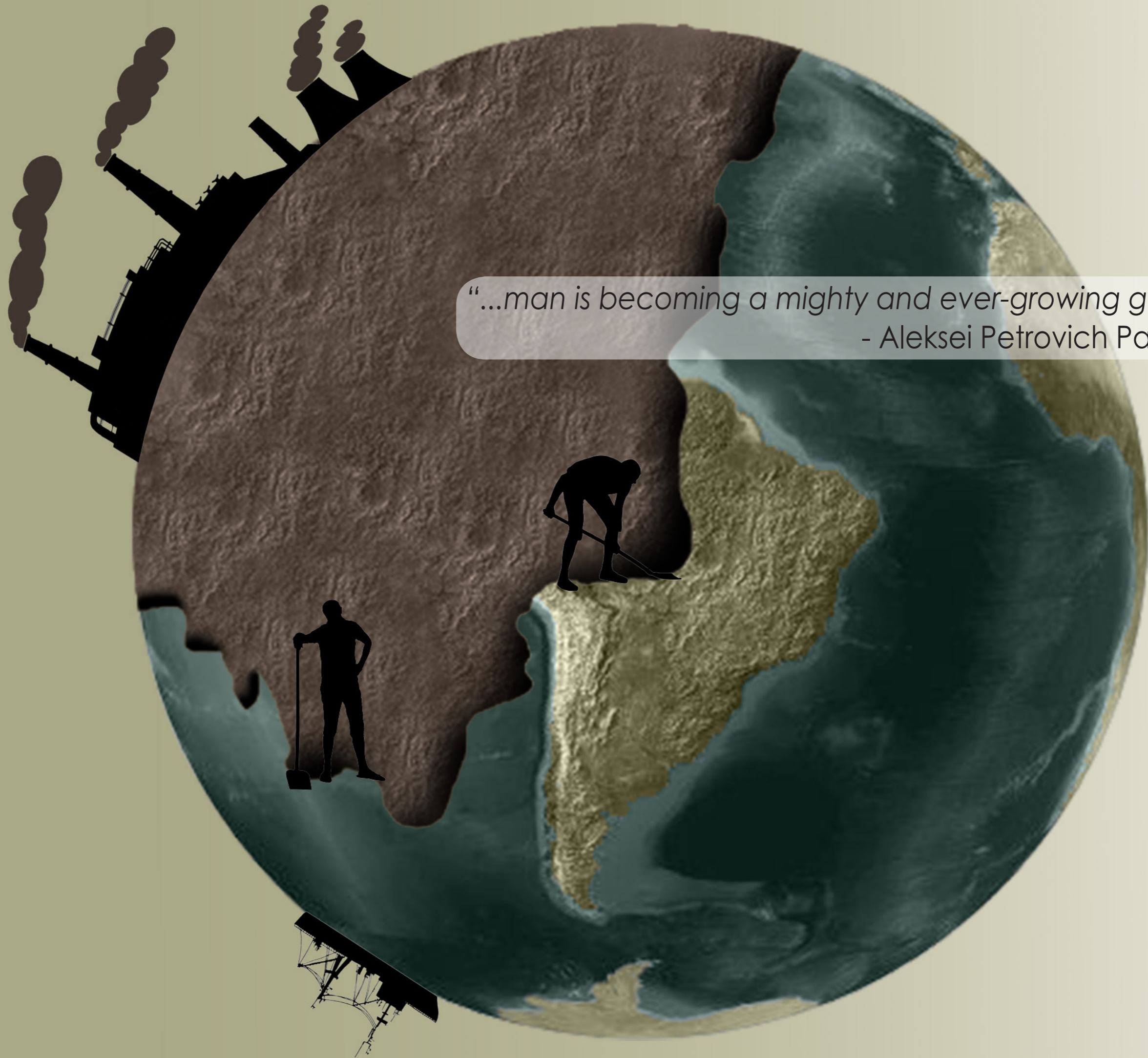


An ecocentric mindset to slow
down climate change | **Eco-centric Architecture**

Anneloes van Slooten

AR3TT015 Transitional Territories - Research Module

MSc Architecture, Technical University Delft



"...man is becoming a mighty and ever-growing geological force."
- Aleksei Petrovich Pavlov (1854-1929).

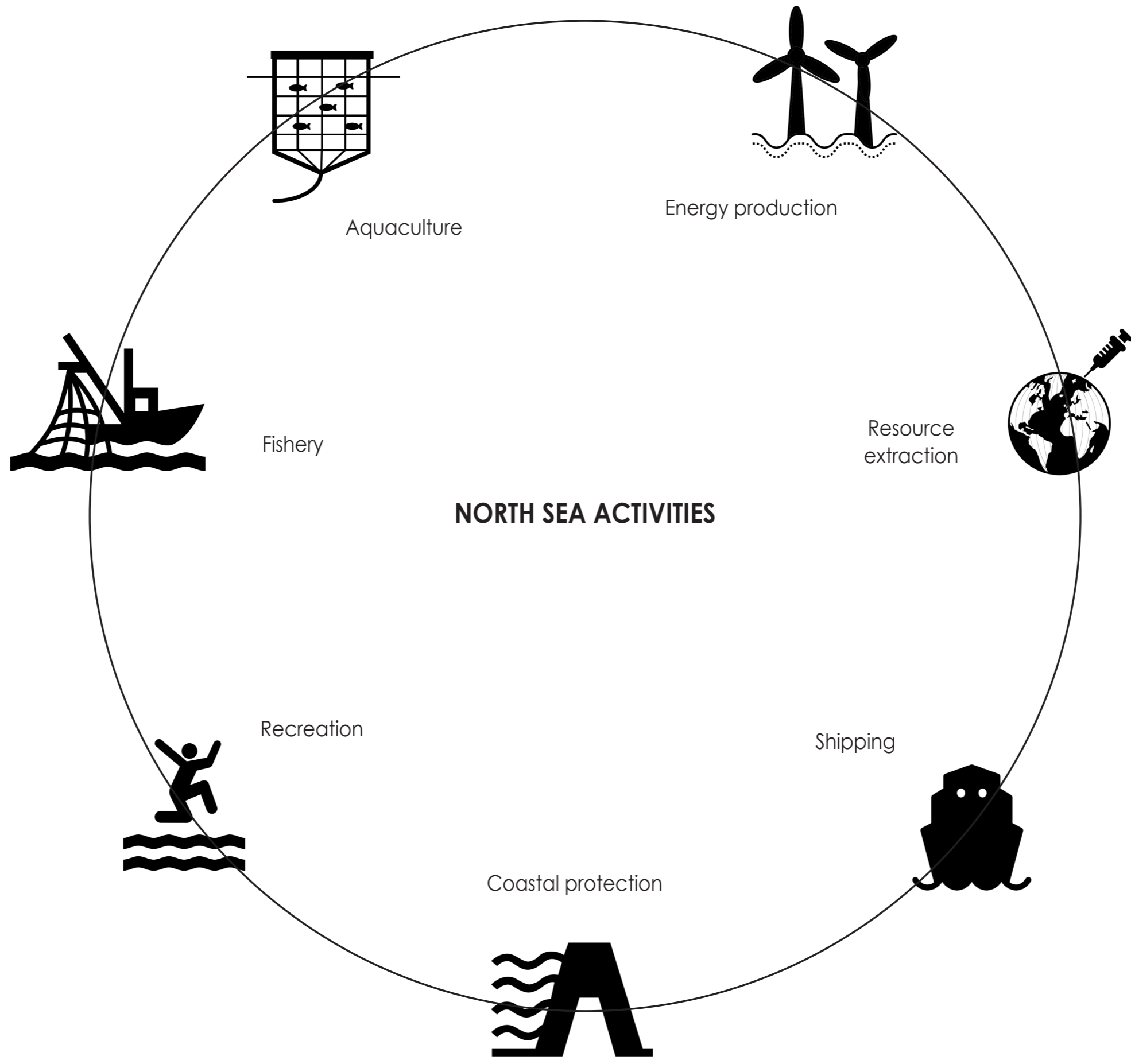
- We destroyed, displaced and fragmented natural habitats with our interventions

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- We used the world as a garbage bin

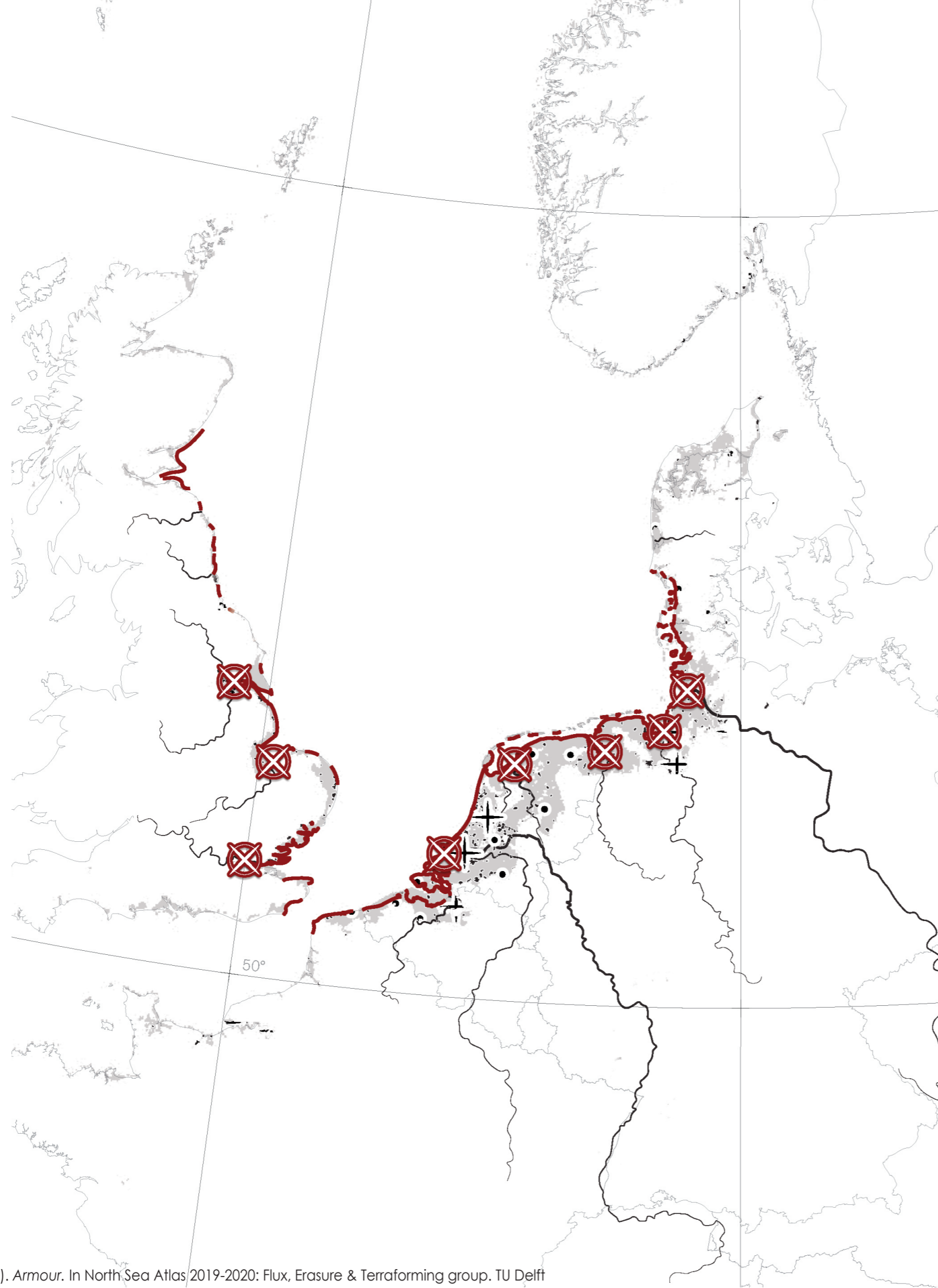
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- We used the world as a garbage bin
- Which both led to a decline in biodiversity

- We destroyed, displaced and fragmented natural habitats with our interventions
- We used the world as a garbage bin
- Which both led to a decline in biodiversity
- We exploited resources and modified hydrogeochemical cycles in an unsustainable way

- Ken Yeang 2020

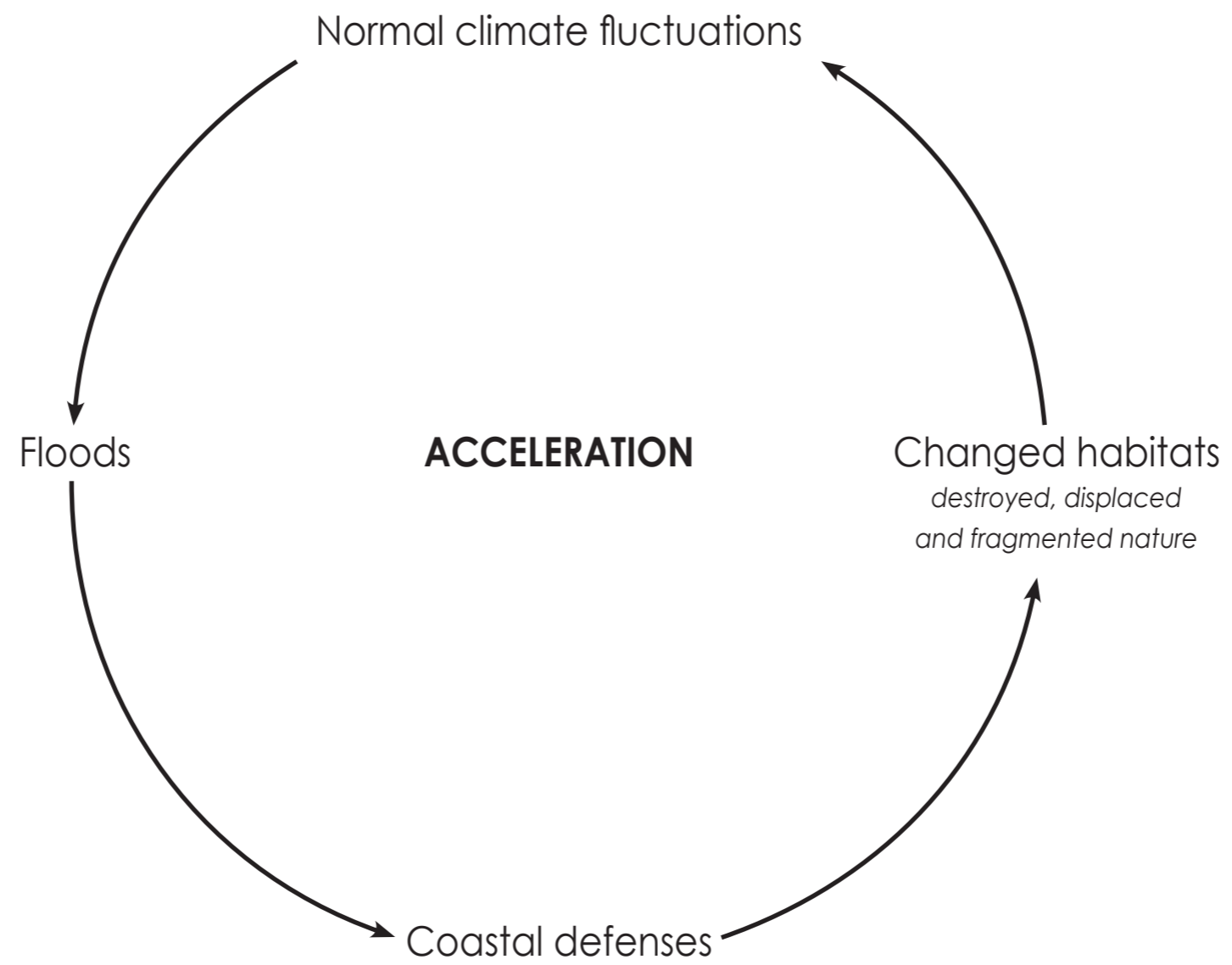


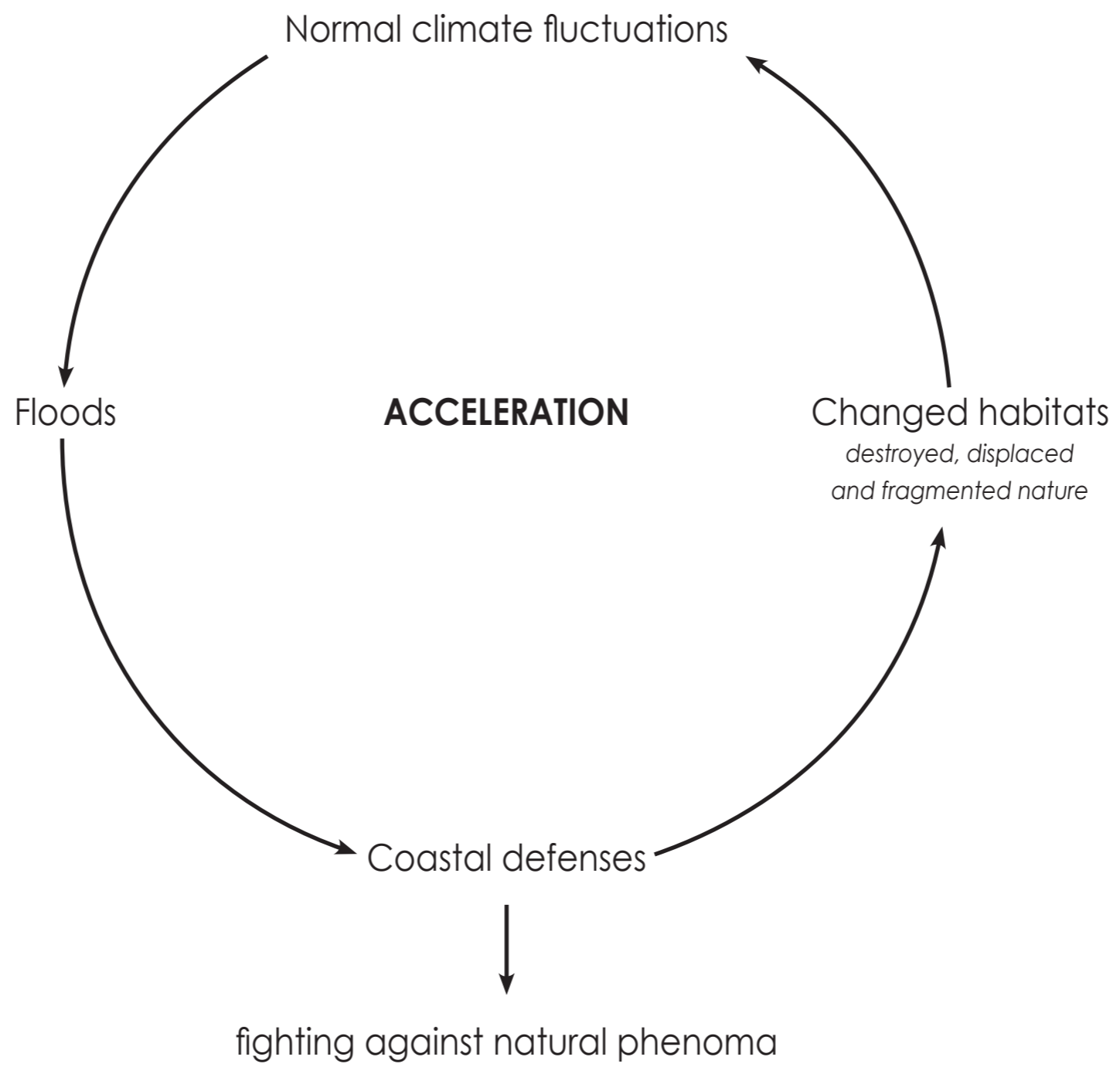
Icons from the Noun Project, dates not known:
Aquaculture. Troiano, A.; World. Furtado, G.; Energy production. Panasovska, O.; Syringe. Icon Lauk.; Ship. Artdabana@Design.; Levees. Coloripop.; Jump Into The River. Prado, L.; Fishing Vessel. Prado, L.



Coastal Defenses (2019) Flux, Erasure & Terraforming, Armour

- ~ Rivers
- Areas prone to floodrisk
- Hold the line policy
- ⊗ Vulnerable crosspoint river/sea
- + Affected ports
- Affected cities







Anthropocentric

Ecocentric

Stop producing waste

This will prevent contamination and depletion of land and water

Stop producing waste

This will prevent contamination and depletion of land and water

Consume less

Only take what is necessary to decrease everything we use

Stop producing waste

This will prevent contamination and depletion of land and water

Consume less

Only take what is necessary to decrease everything we use

Stop nature fragmentation

Mixed-use for humans and nature can help to prevent fragmented habitats

Stop producing waste

This will prevent contamination and depletion of land and water

Consume less

Only take what is necessary to decrease everything we use

Stop nature fragmentation

Mixed-use for humans and nature can help to prevent fragmented habitats

Minimizing the land use change

Reducing by human occupied land

Stop fighting nature



"You never change things by fighting the existing reality. To change something, build a new model that makes the existing model obsolete."

- Richard Buckminster Fuller

The choice between city and nature is history



*"The choice between city and nature is a false choice
and an unnecessary and outdated dichotomy."*

- Timothy Beatley

Aiming to stimulate the senses, is molding reality



*"We are in constant exchange with our settings;
simultaneously we internalize the setting and project our own
bodies, or aspects of our body schemes, onto the setting."*

- Juhani Pallasmaa

How to create a symbiosis between architecture and its surrounding ecosystems?



Norderney

- A constant fight against the sea
- Clear separation between the man-made and the natural environment
- Largest town of all Wadden Sea Islands
- Usage of renewable energy

Towards a self-sustaining, ecocentric island.



Natural environments

Beaches



Tidal creeks



Dunes:

Fore dunes



Dune slacks



White dunes



mudflat



Grey dunes



Salt marshes



Brown dunes



Forest



Man-Made environments

Harbour



Luftbild Norderney (Havenmeester, n.k.)

Urban



Infrastructure



Airport



Flughafen norderney (Nordseewolf, n.k.)

Campsites



Beach (sand nourished)



Embankments:

Dykes



Sea walls



Groins



Man-Made Nature environments

Polders



Parks

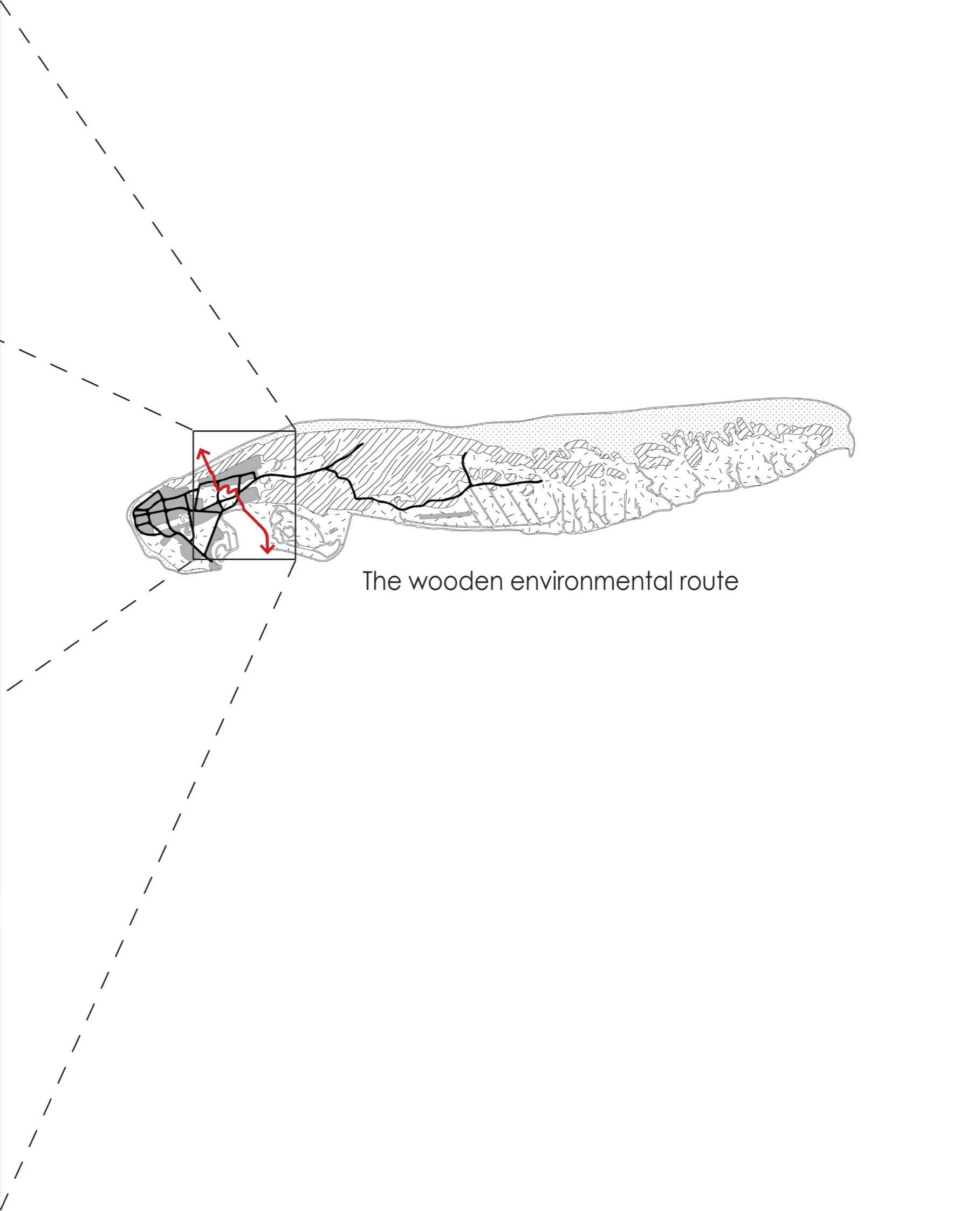


Napoleonschanze (Norderney Nordsee-Magazin, n.k.)

Pasture land

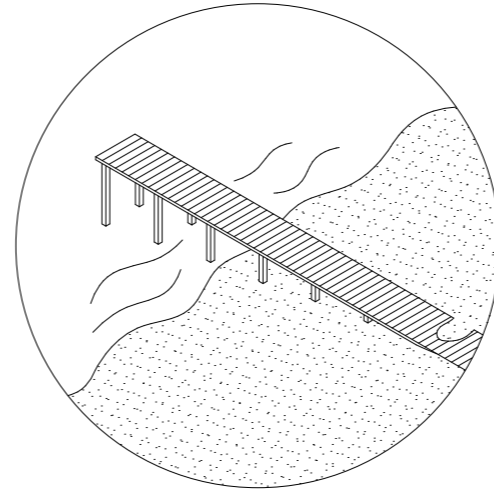


Norderney-Pferde (Sabine Groel-Koch, 2018)

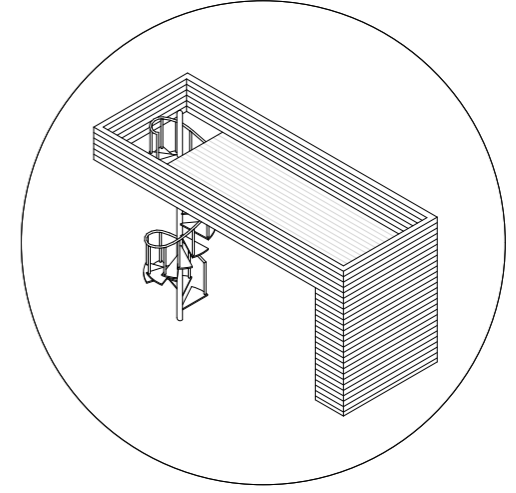




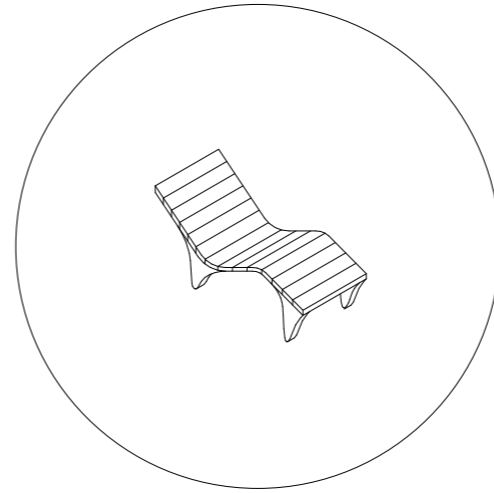
1 Pier
Experiencing the rough water



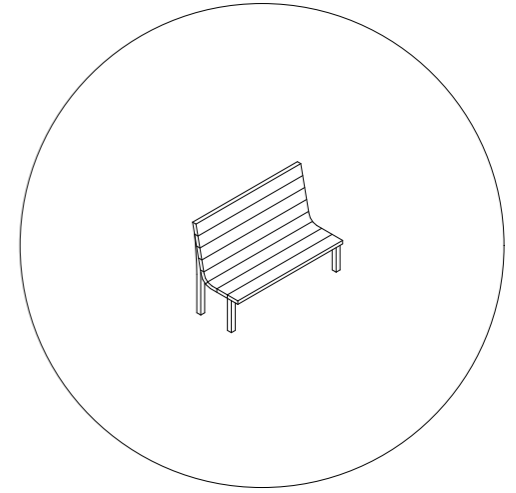
2 Lookout
Having a bird view over the dunes



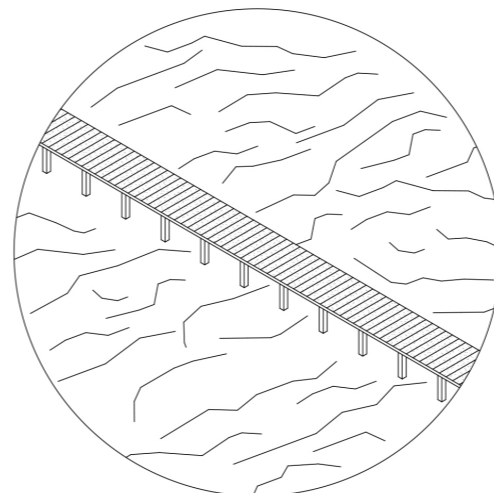
3 Lounger
Taking in the forest above you



4 Bench
Having a view over the mudflat

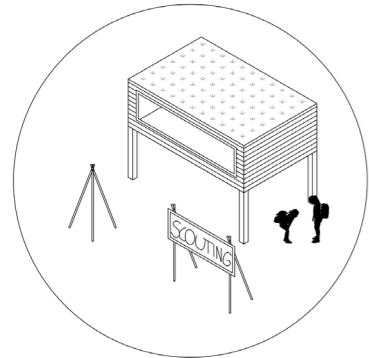


5 Waddenpath
Experiencing the tides

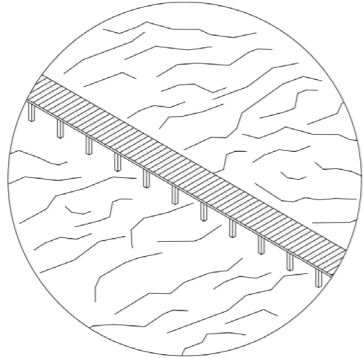




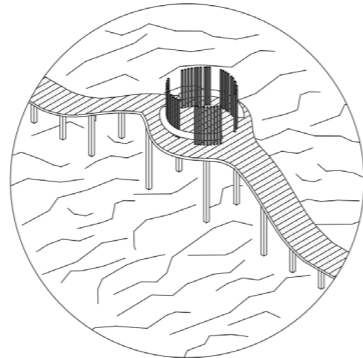
1 Scouting



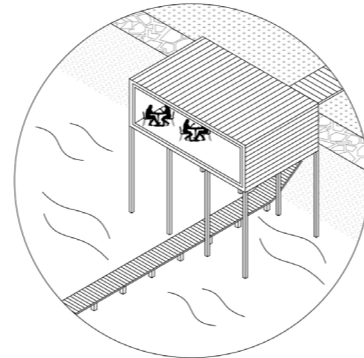
2 The Wadden Sea path



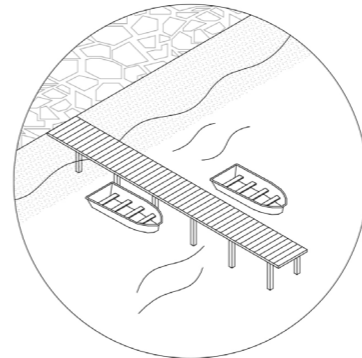
3 Observation deck



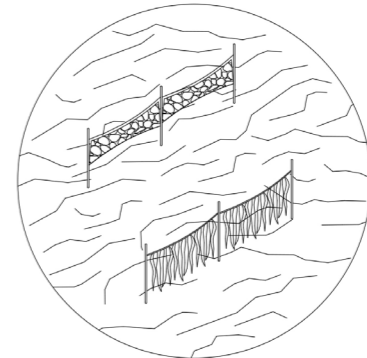
4 Restaurant



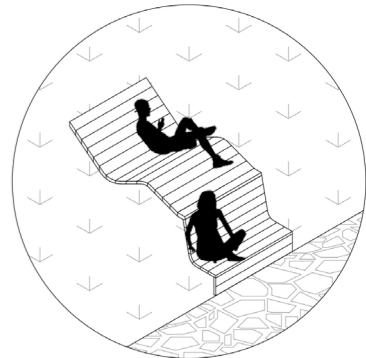
5 Jetty



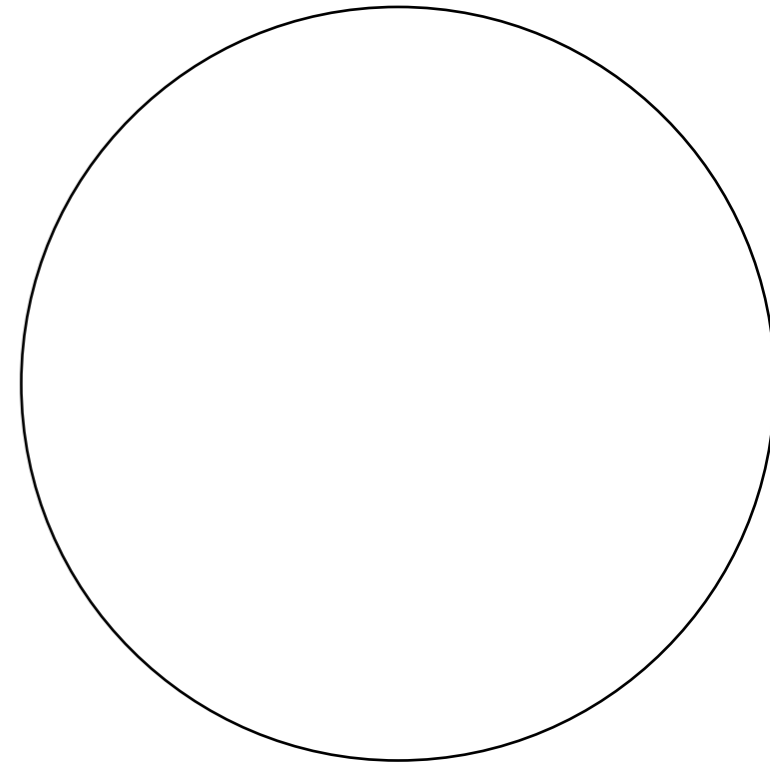
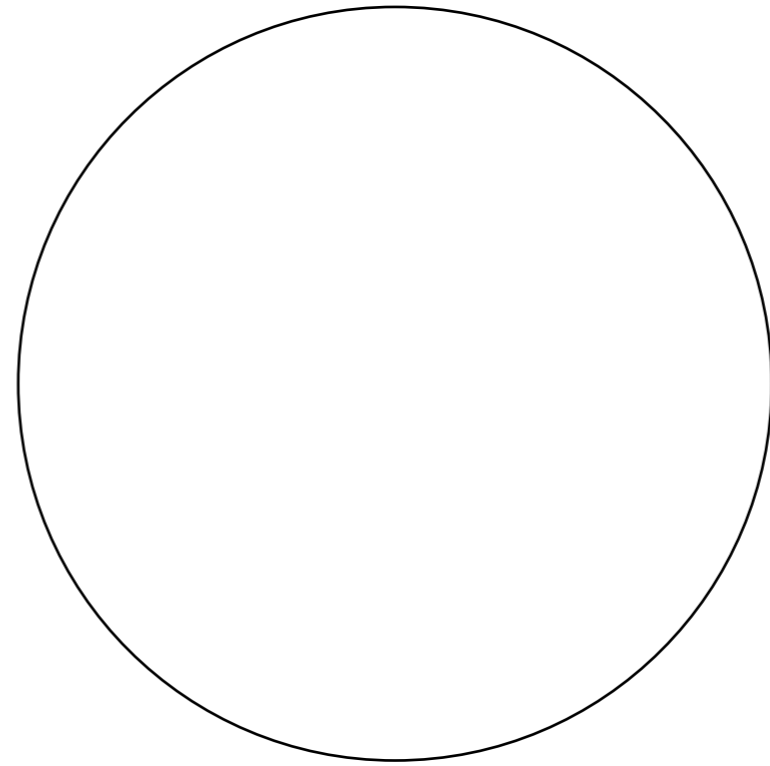
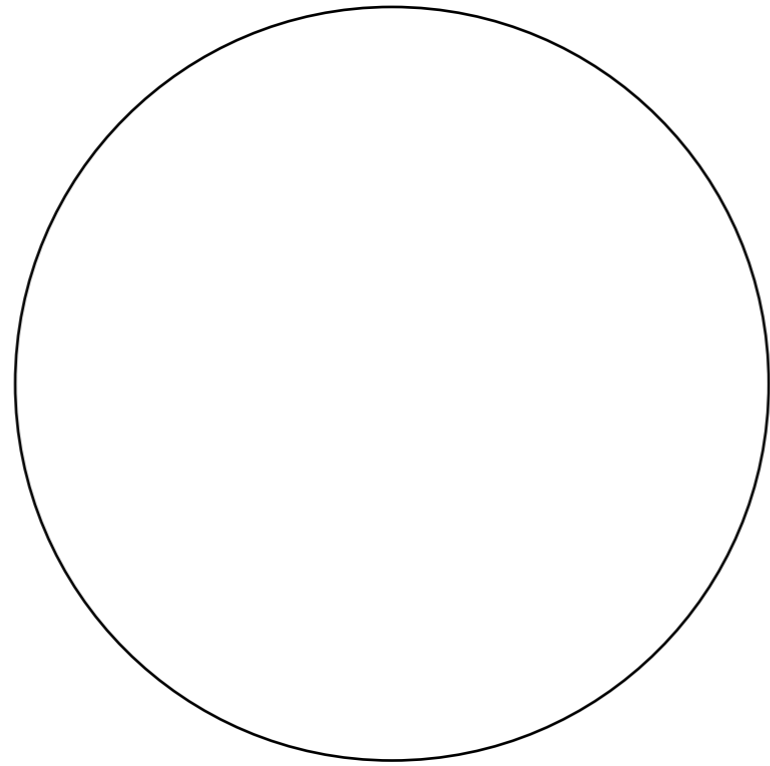
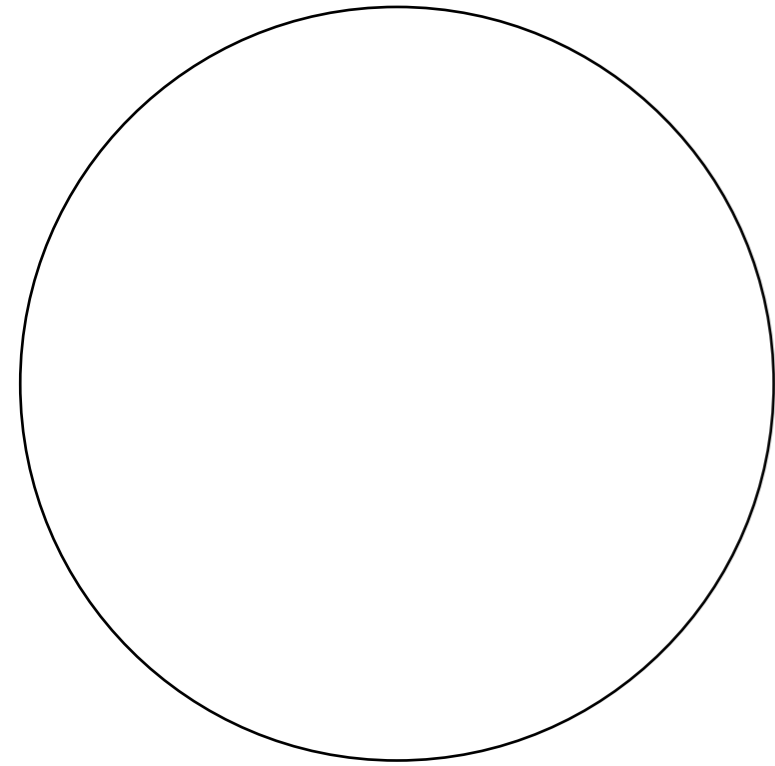
6 The mudflat farm



7 Dike benches



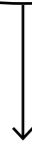
Together on the edge between land and sea
The mudflat symbionts



Together on the edge between land and sea
The mudflat symbionts



Together on the edge between land and sea
The mudflat symbionts



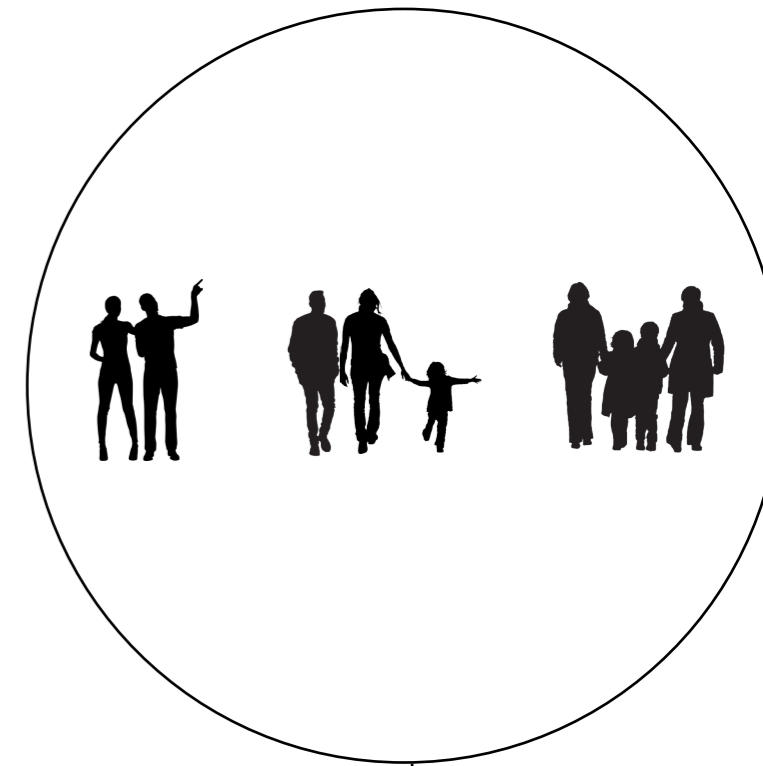
⚡ shared energy supplies
💧 shared water system



⚡ shared energy supplies
💧 shared water system

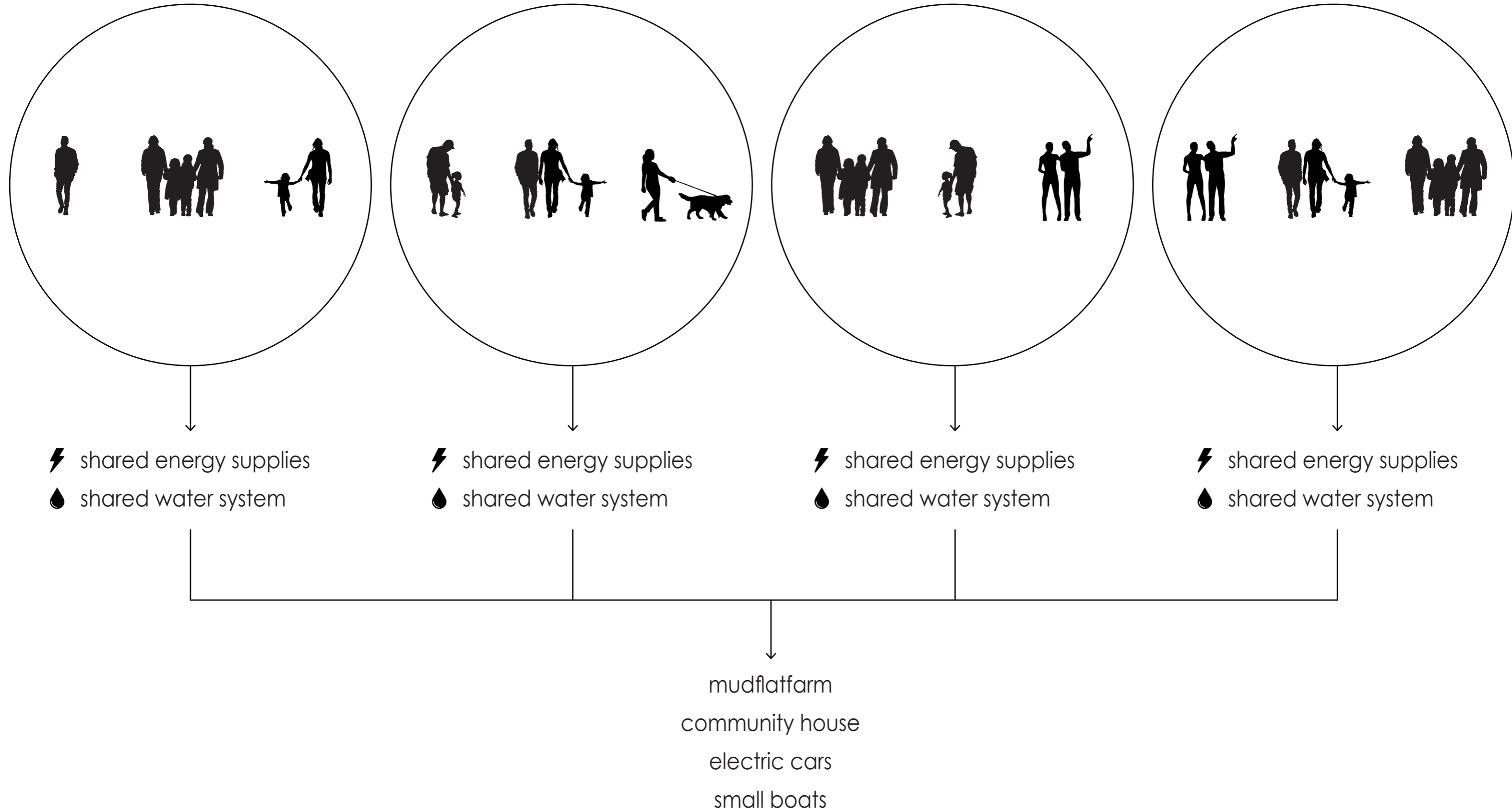


⚡ shared energy supplies
💧 shared water system



⚡ shared energy supplies
💧 shared water system

Together on the edge between land and sea
The mudflat symbionts



Together on the edge between land and sea
The mudflat symbionts



Together on the edge between land and sea
The mudflat symbionts



Together on the edge between land and sea
The mudflat symbionts

oysters



seaweed

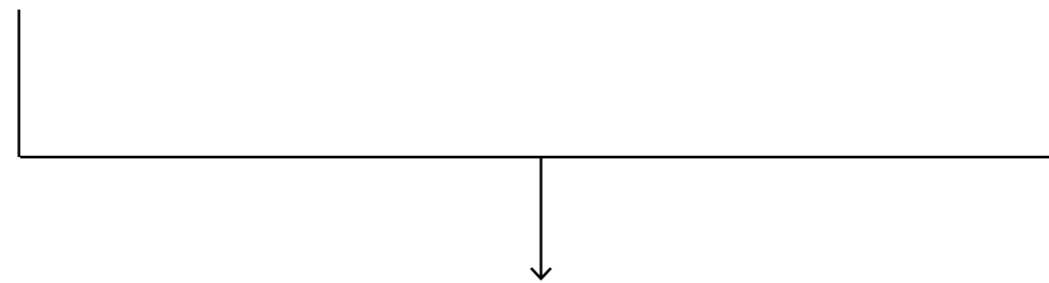


Together on the edge between land and sea
The mudflat symbionts

oysters



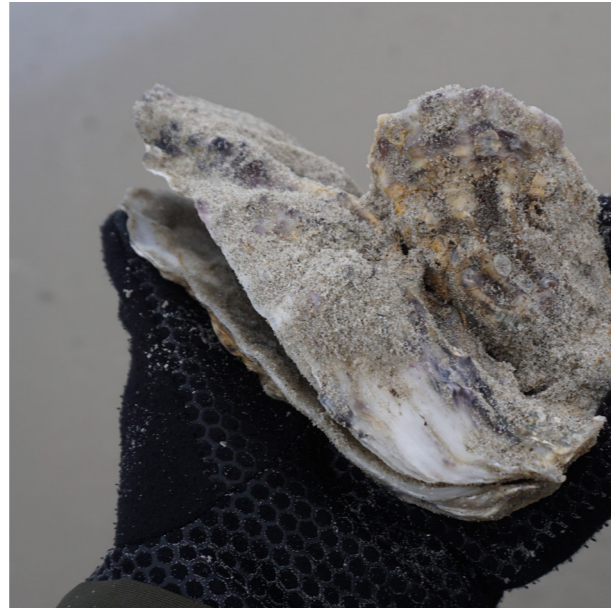
seaweed



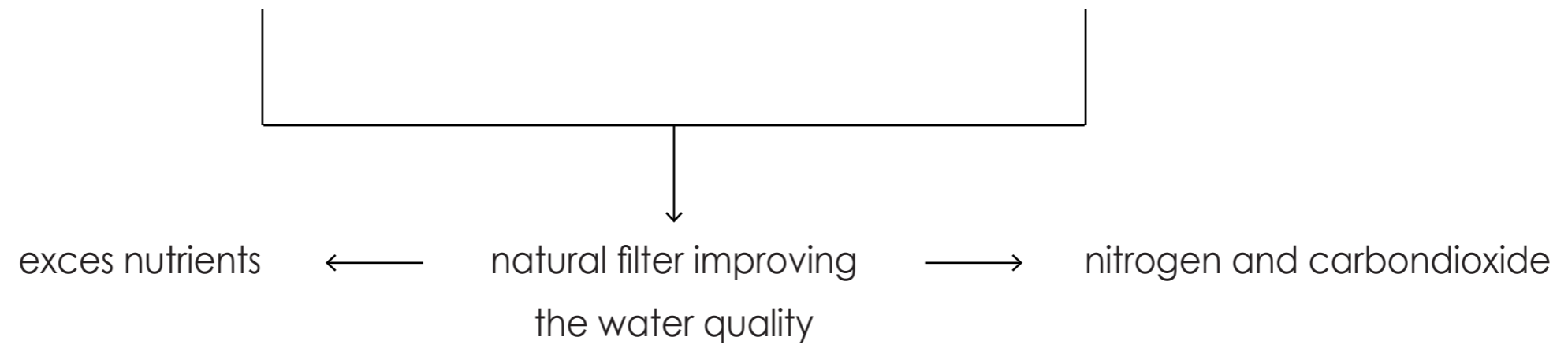
natural filter improving
the water quality

Together on the edge between land and sea
The mudflat symbionts

oysters



seaweed

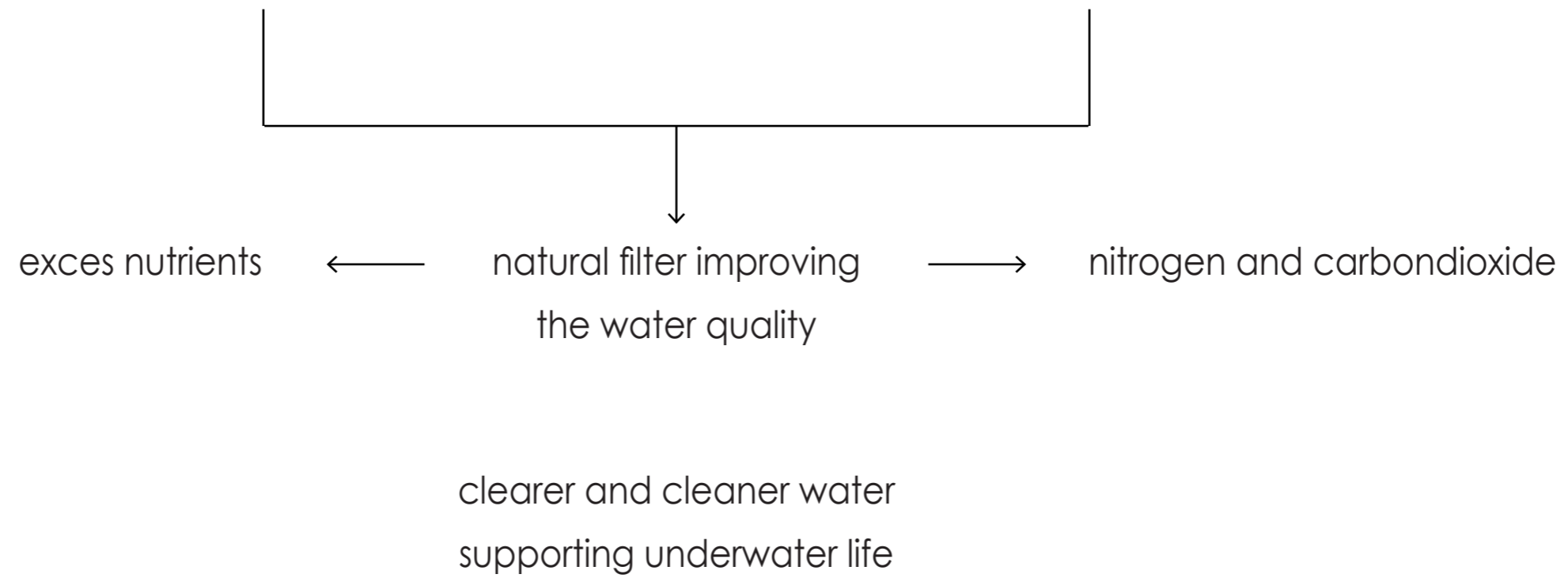


Together on the edge between land and sea
The mudflat symbionts

oysters



seaweed



Together on the edge between land and sea
The mudflat symbionts

oysters



healthy food

seaweed



healthy food

Together on the edge between land and sea
The mudflat symbionts

oysters



healthy food
fertilizer

seaweed



healthy food
fertilizer

Together on the edge between land and sea
The mudflat symbionts

oysters



healthy food
fertilizer
building material

seaweed



healthy food
fertilizer
building material

Together on the edge between land and sea
The mudflat symbionts

oysters



healthy food
fertilizer
building material

seaweed



healthy food
fertilizer
building material
renewable energy (biomass)

Together on the edge between land and sea
The mudflat symbionts

oysters



healthy food
fertilizer
building material

seaweed



healthy food
fertilizer
building material → roofing
renewable energy (biomass) facade
insulation
interior finishing



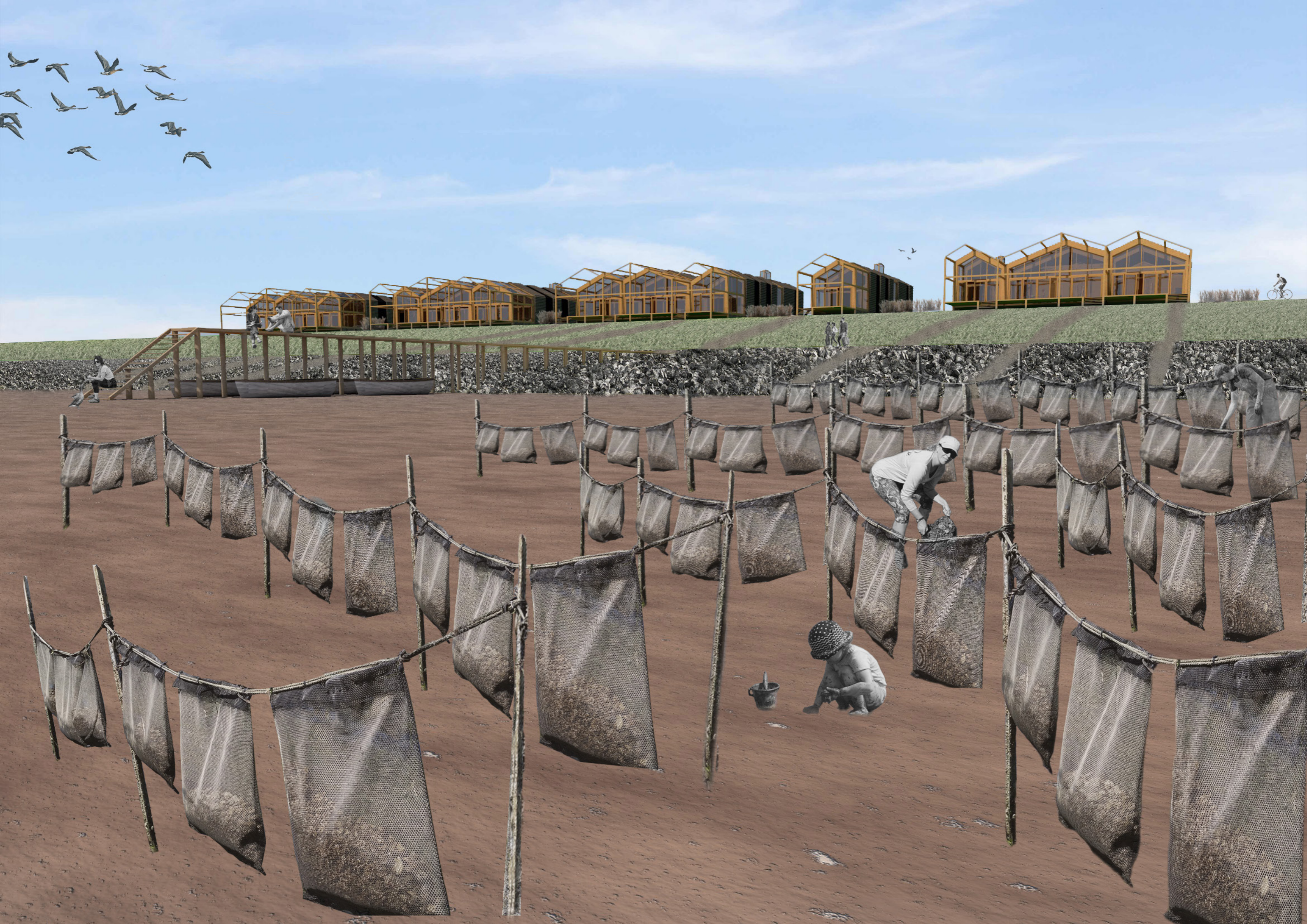
Læsø Andrine's House. (Schnack, A., n.k.)



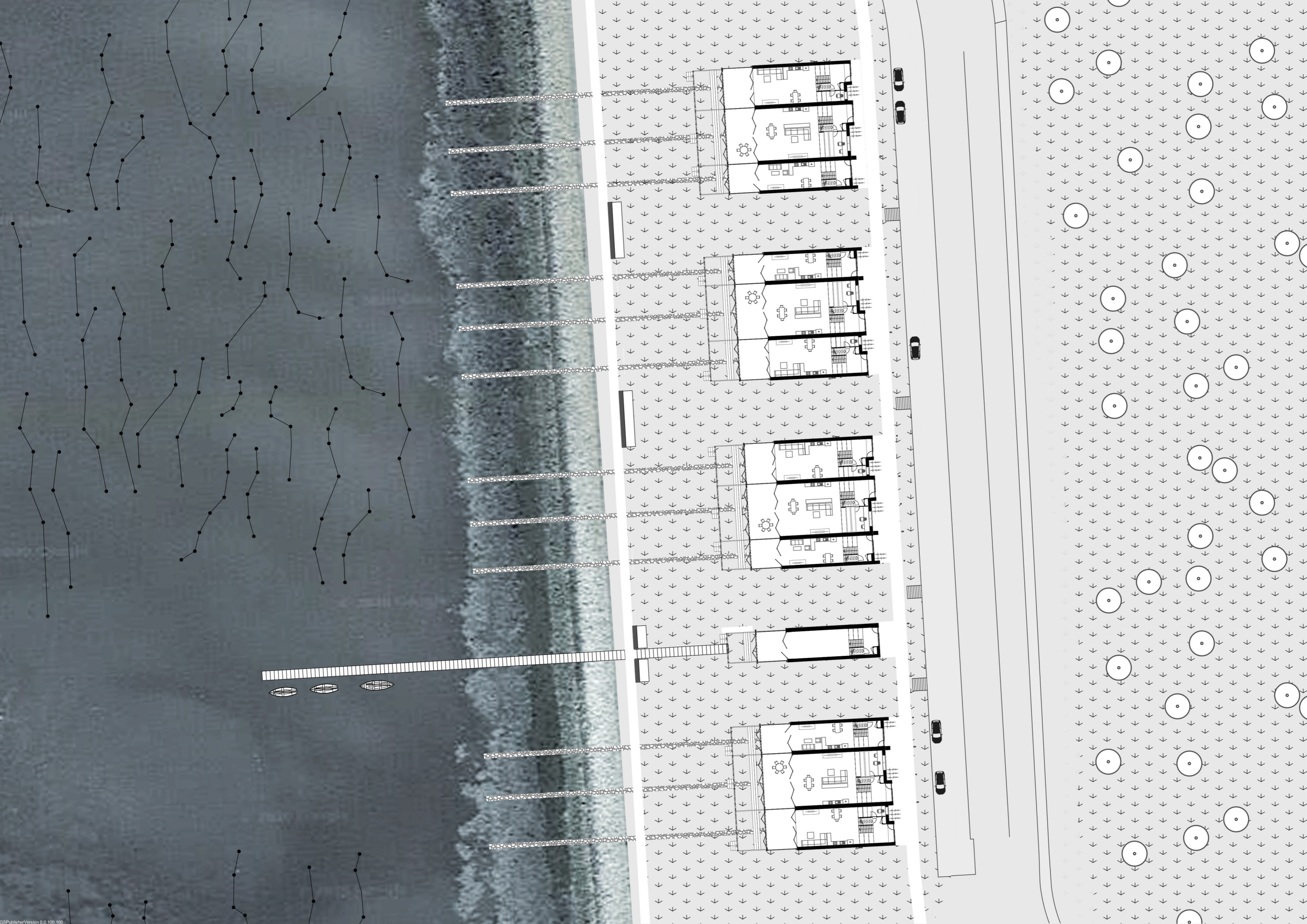
Making Houses Out of Seaweed (DaSilva, 2019)

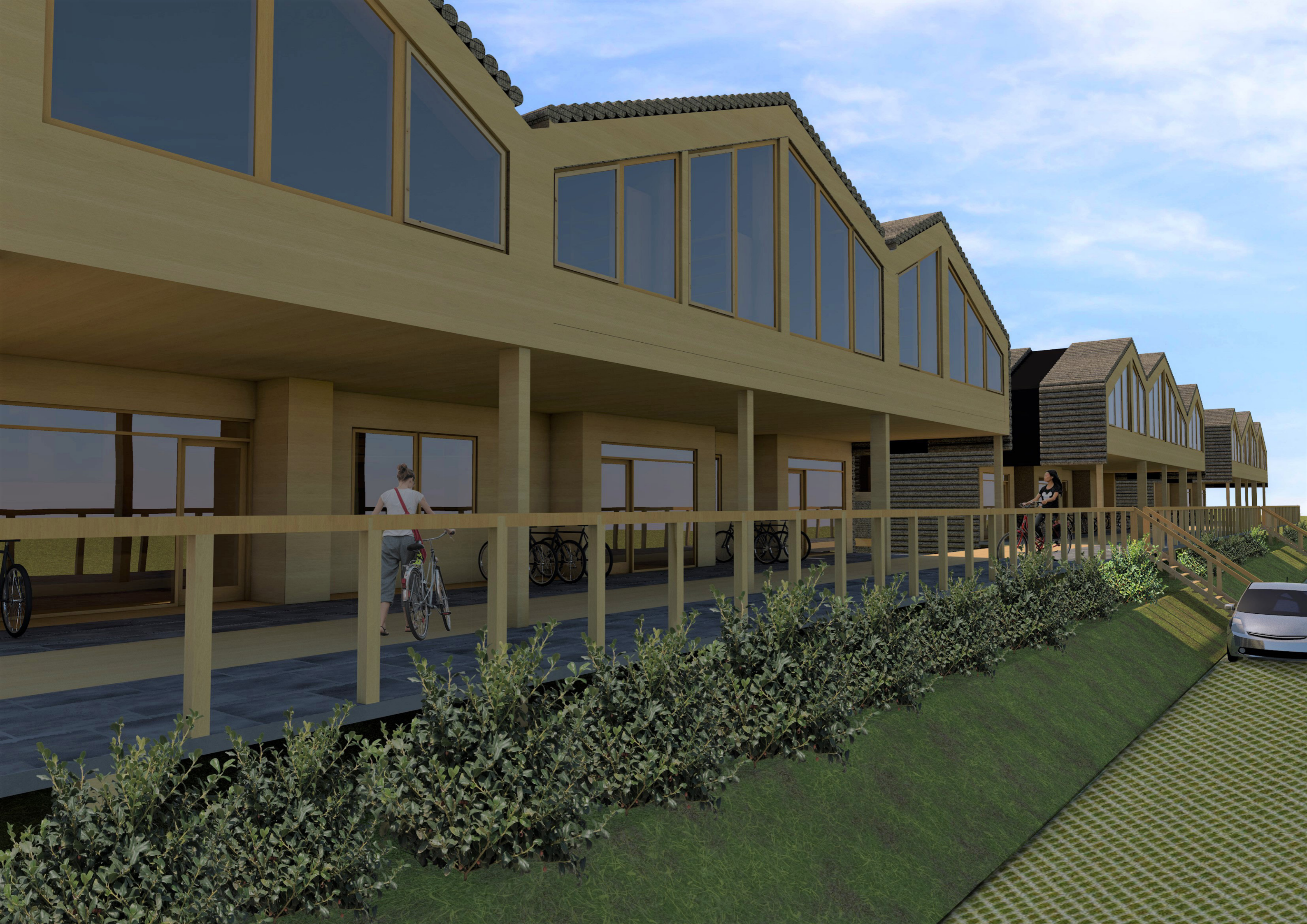


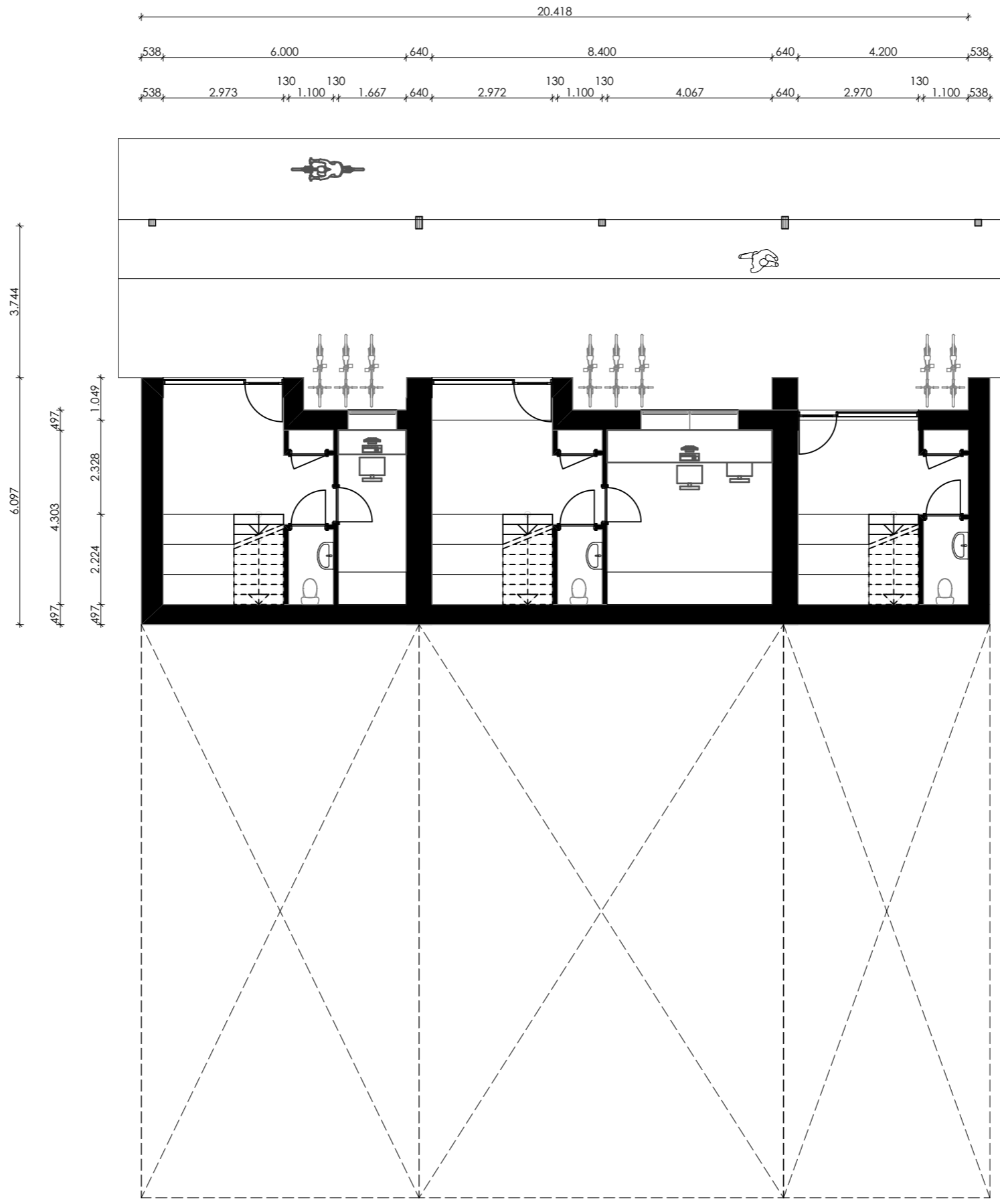
Plade-installation. (Studio Seagrass, n.k.)





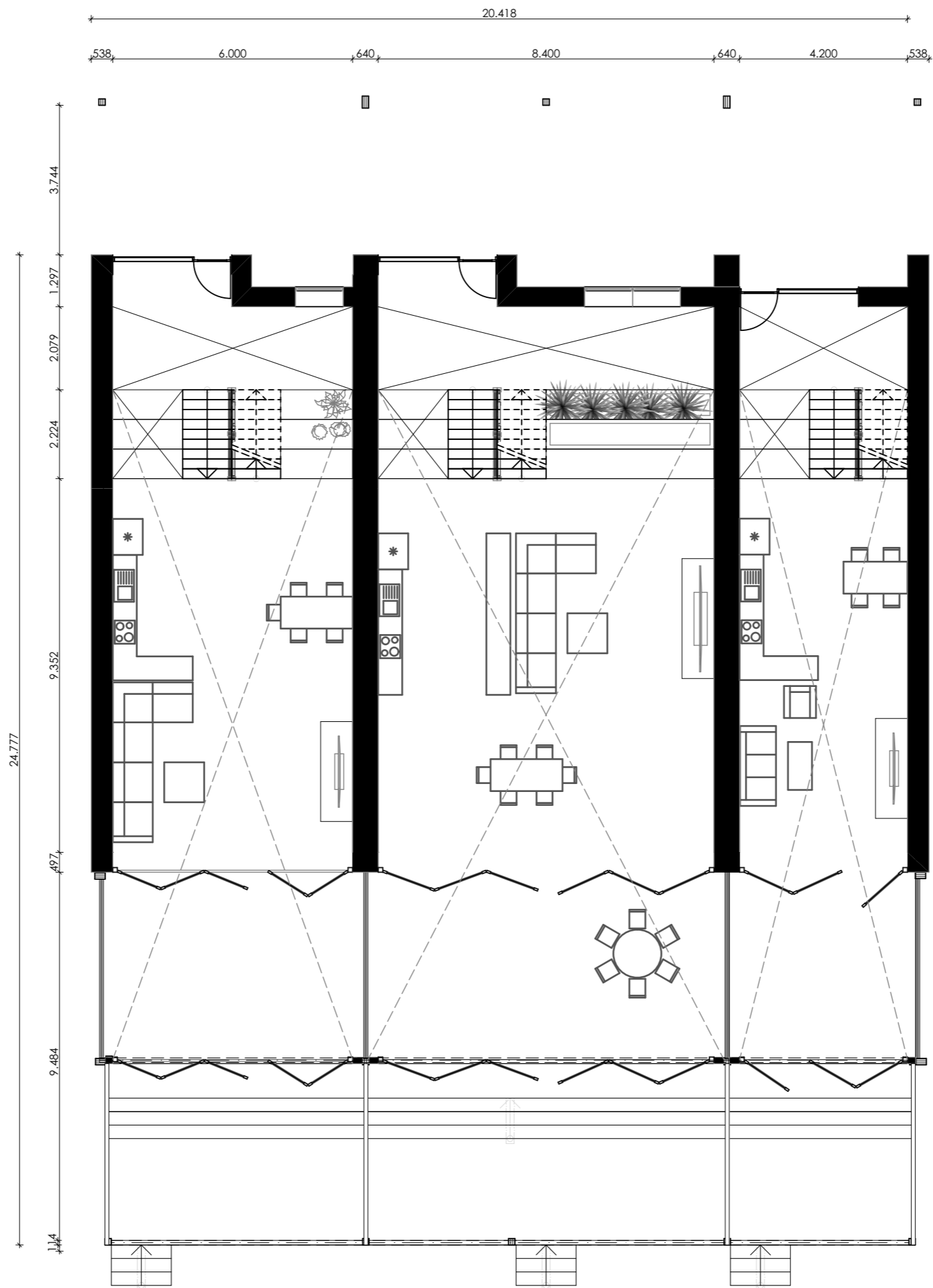






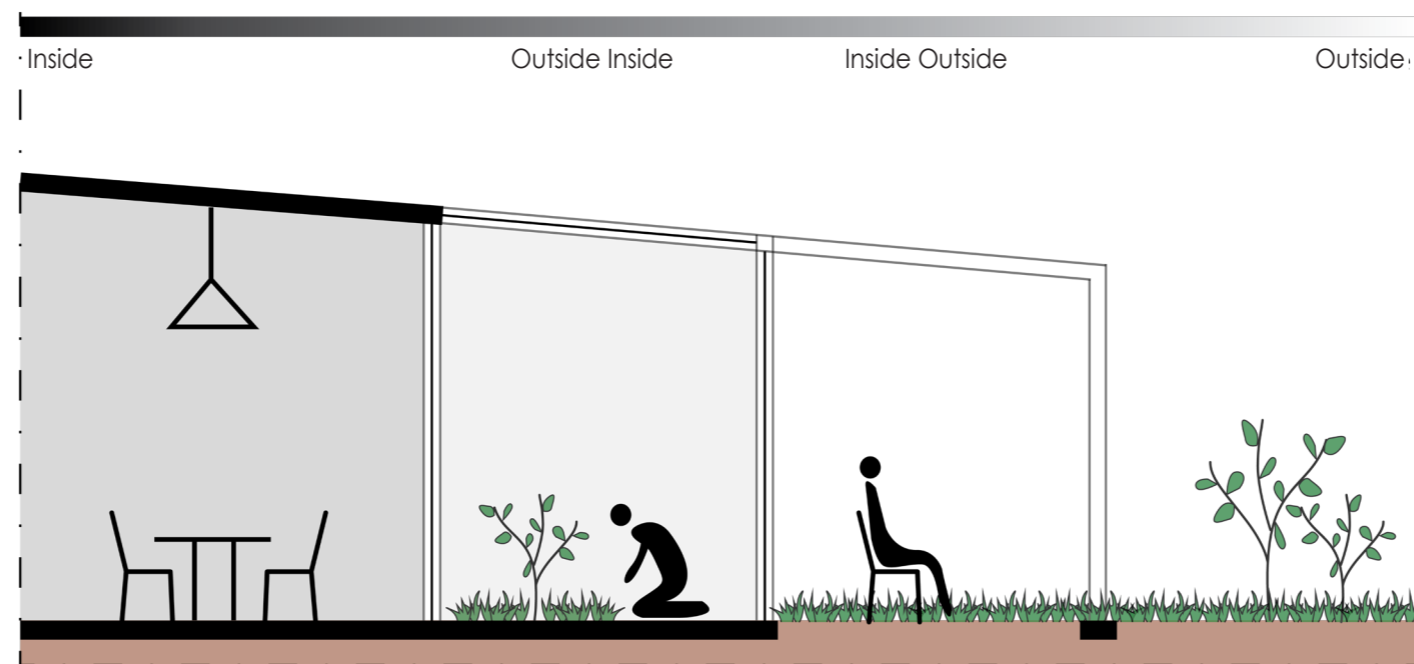
P = 6070





P = 7670

The inside-outside gradient



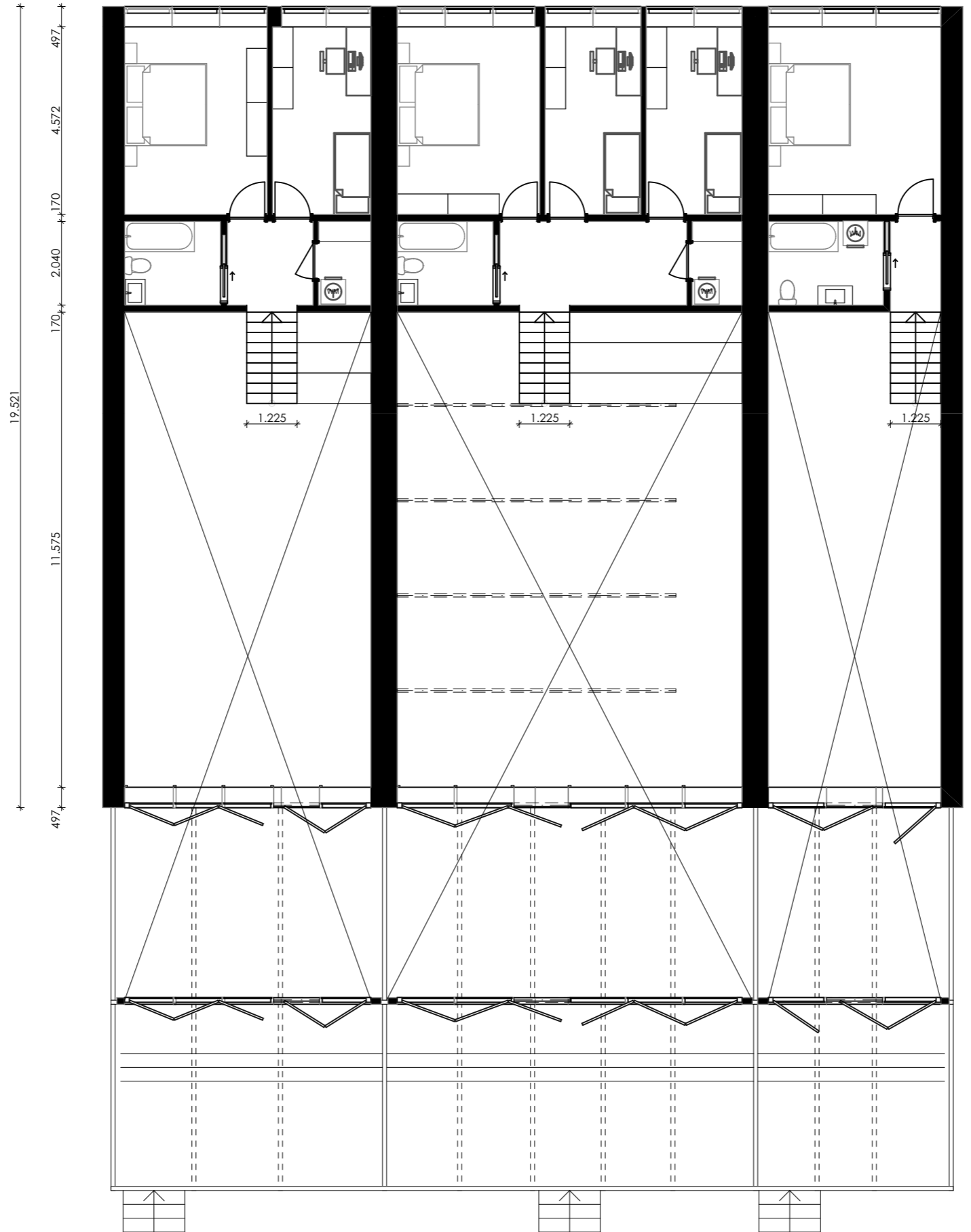


20.956

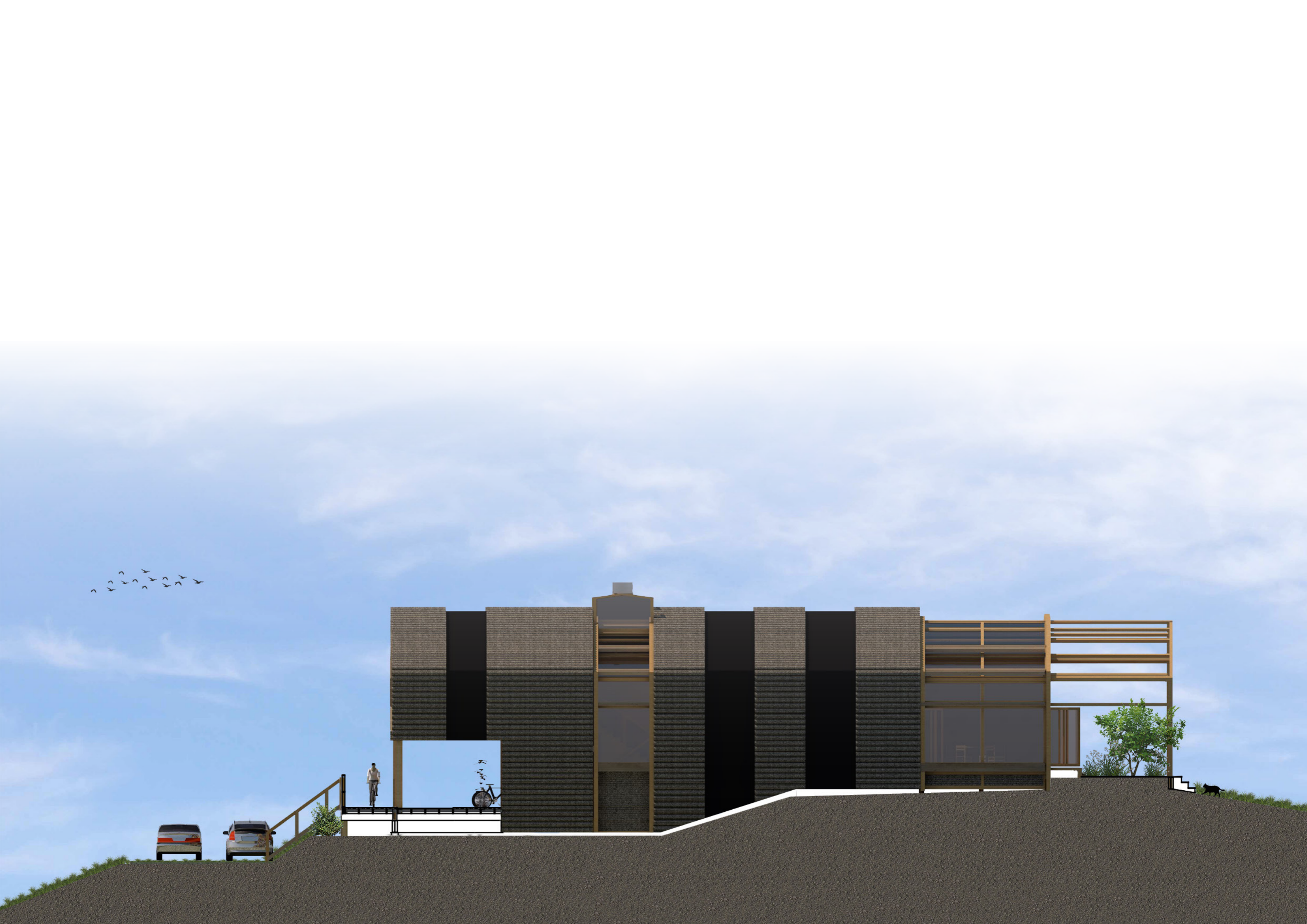
6.538 640 8.400 640 4.200 538

4.011 130 2.398 640 3.472 130 2.335 130 2.335 640 4.200 538

538 2.334 170 2.087 130 1.279 640 2.334 170 4.549 130 1.216 640 2.805 170 1.225 538

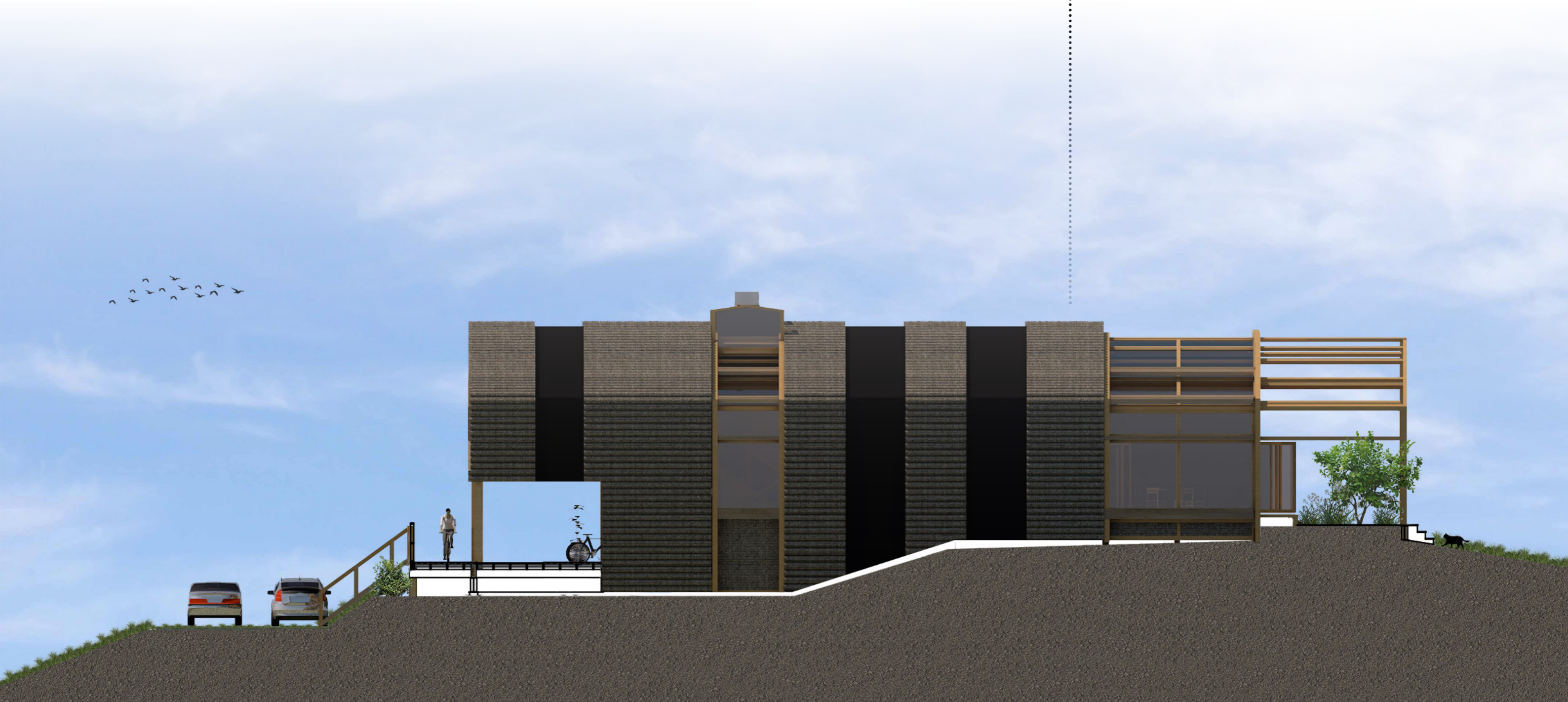
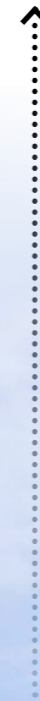








The Modern Seaweed House.
(Vandkunsten Architects, n.d.)





A&T loci
(Dapansolar, n.d.)



The Modern Seaweed House.
(Vandkunsten Architects, n.d.)







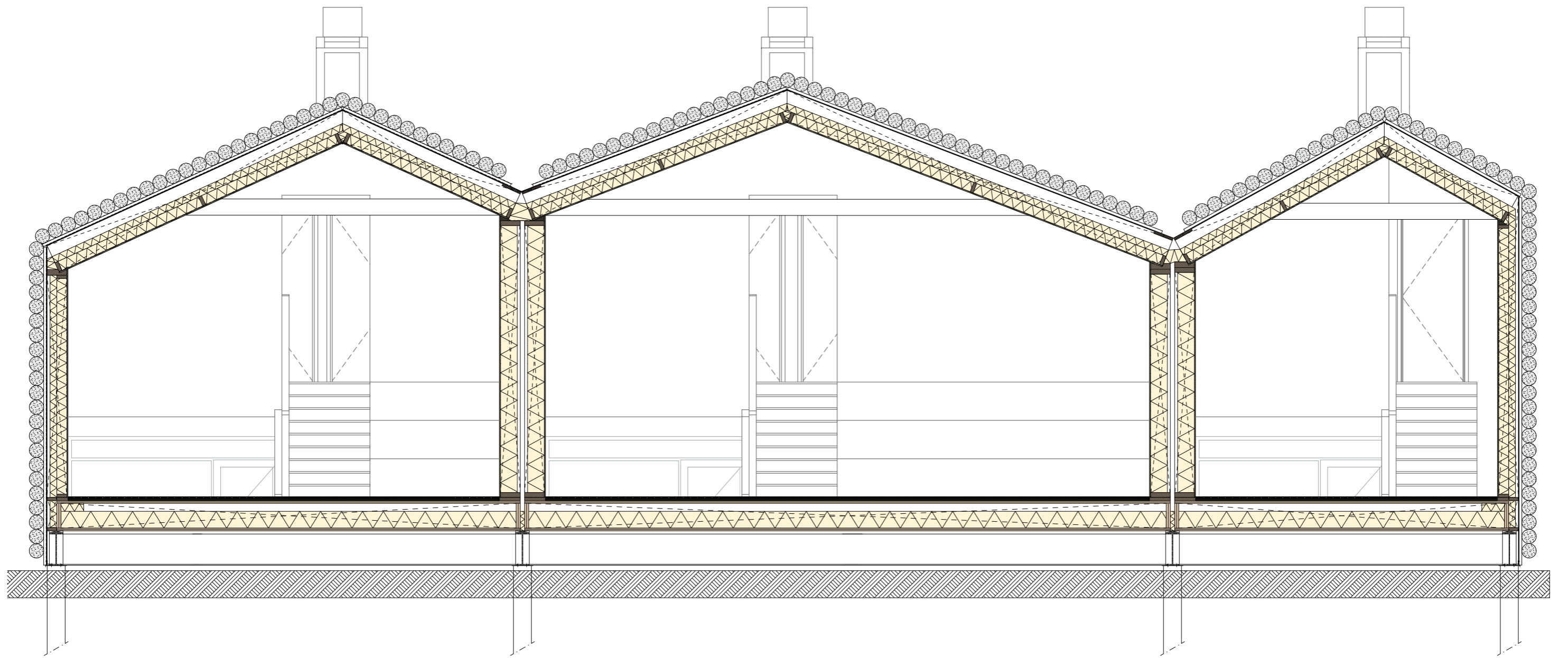
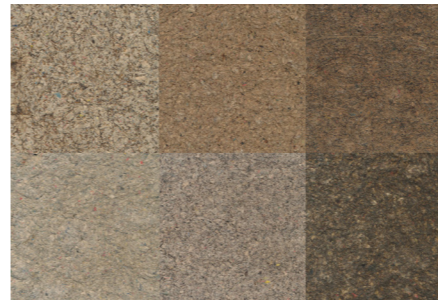
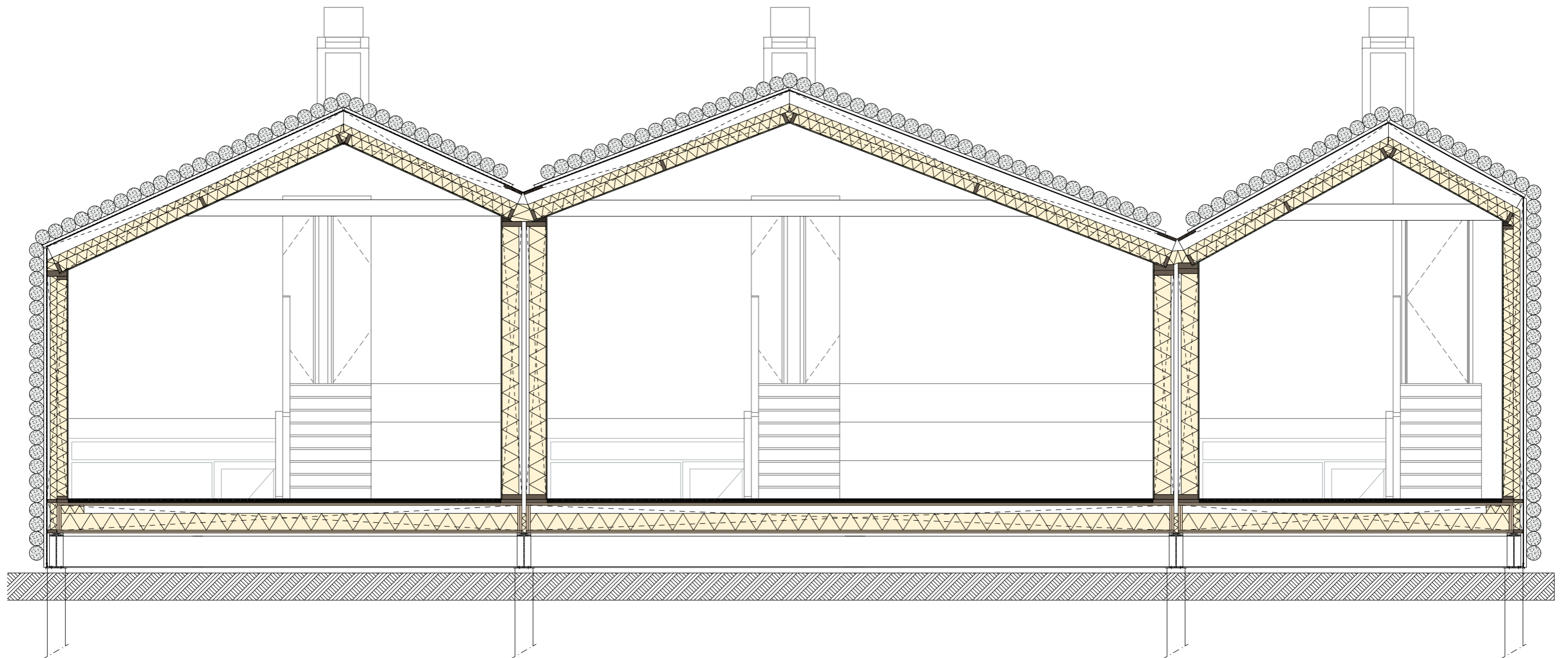




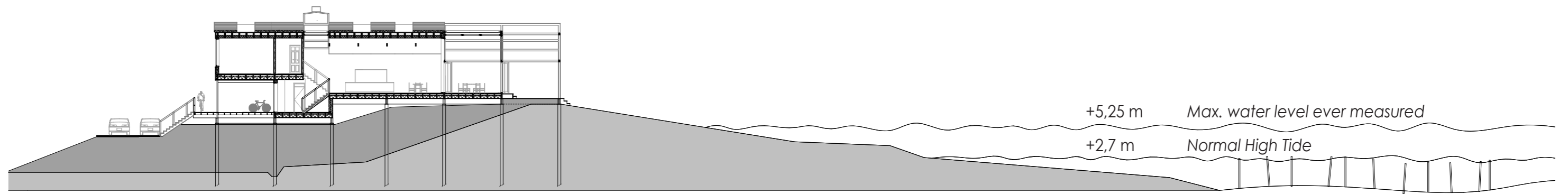
Figure Plade-installation.
(Studio Seagrass, n.k.)



Terroir material, texture and colour (Edvard, J.,
n.k.)







+5,25 m Max. water level ever measured

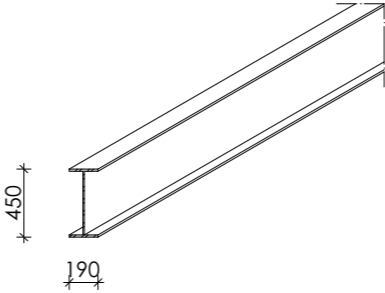
+2,7 m Normal High Tide

Structure

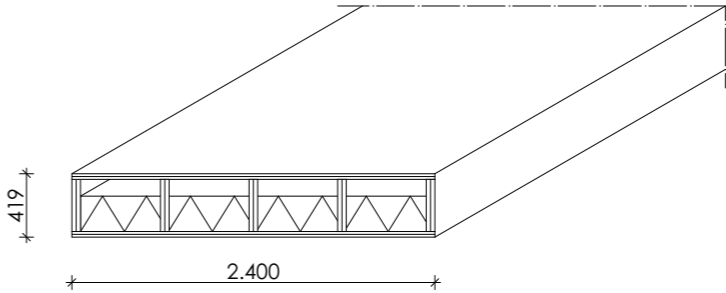
- Demountable



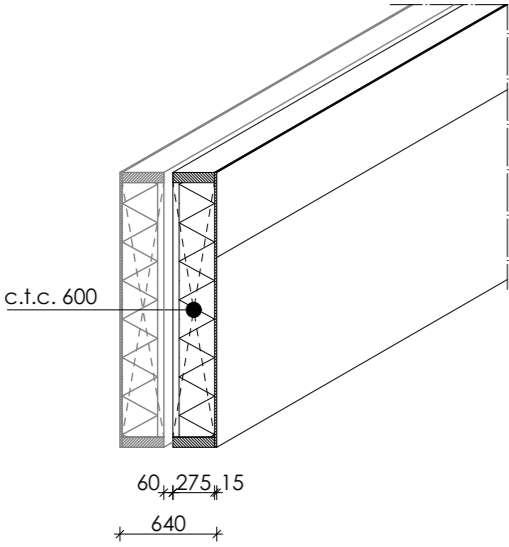
Hollow foundation poles



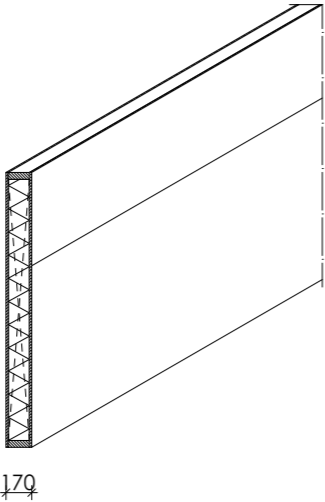
Steel foundation beams IPE 450



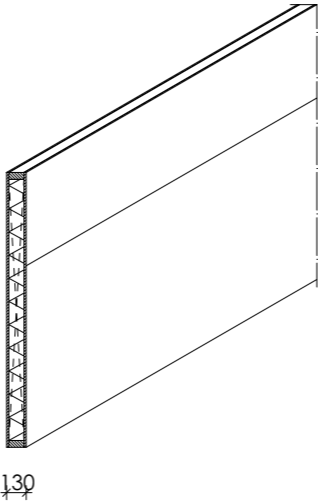
Wooden hollow core slab floor (kanaalplaatvloer)



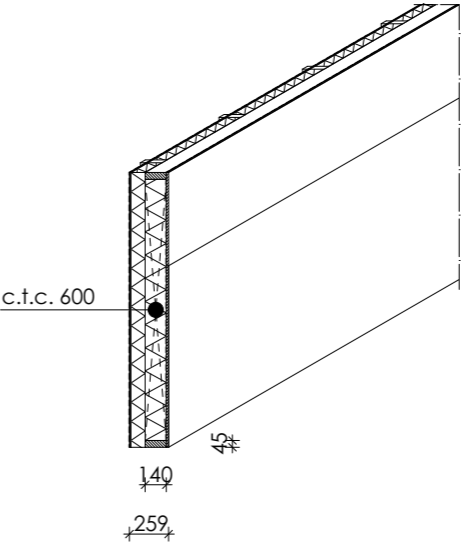
Separating wall



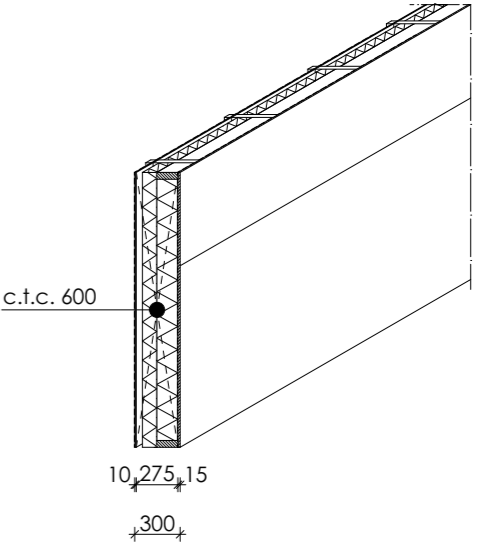
Internal walls bathroom



Internal walls



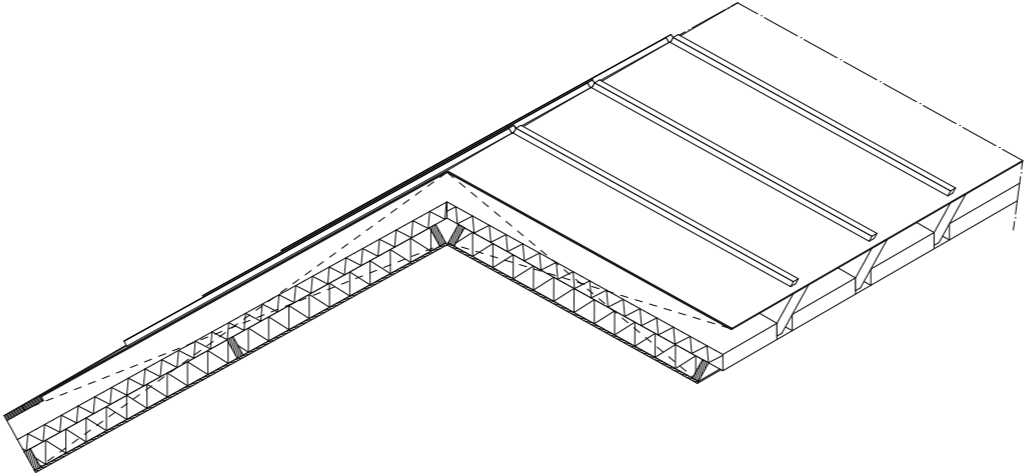
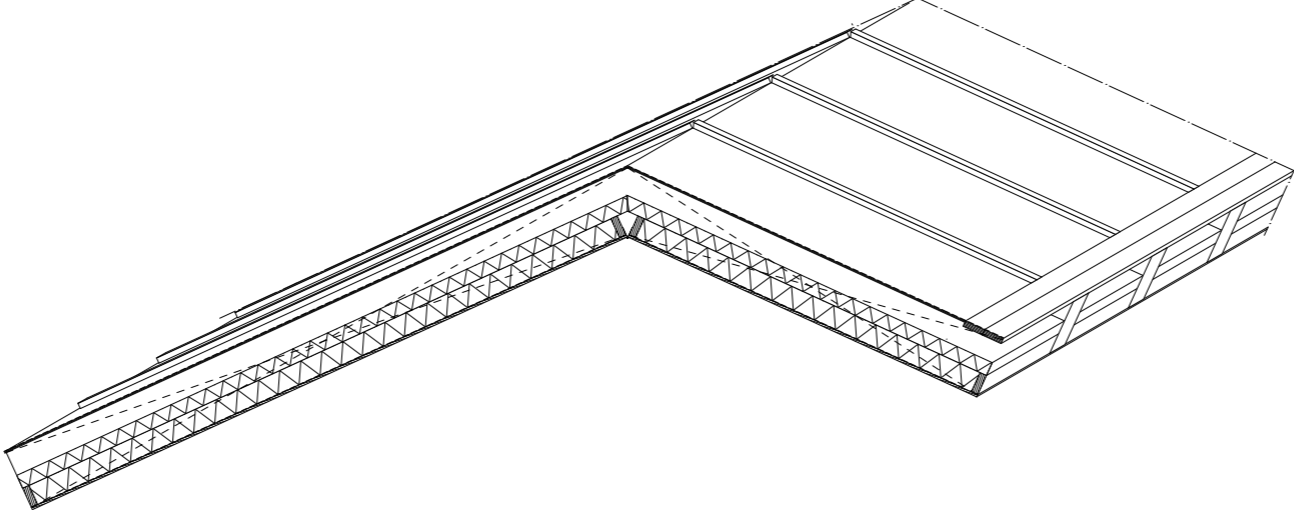
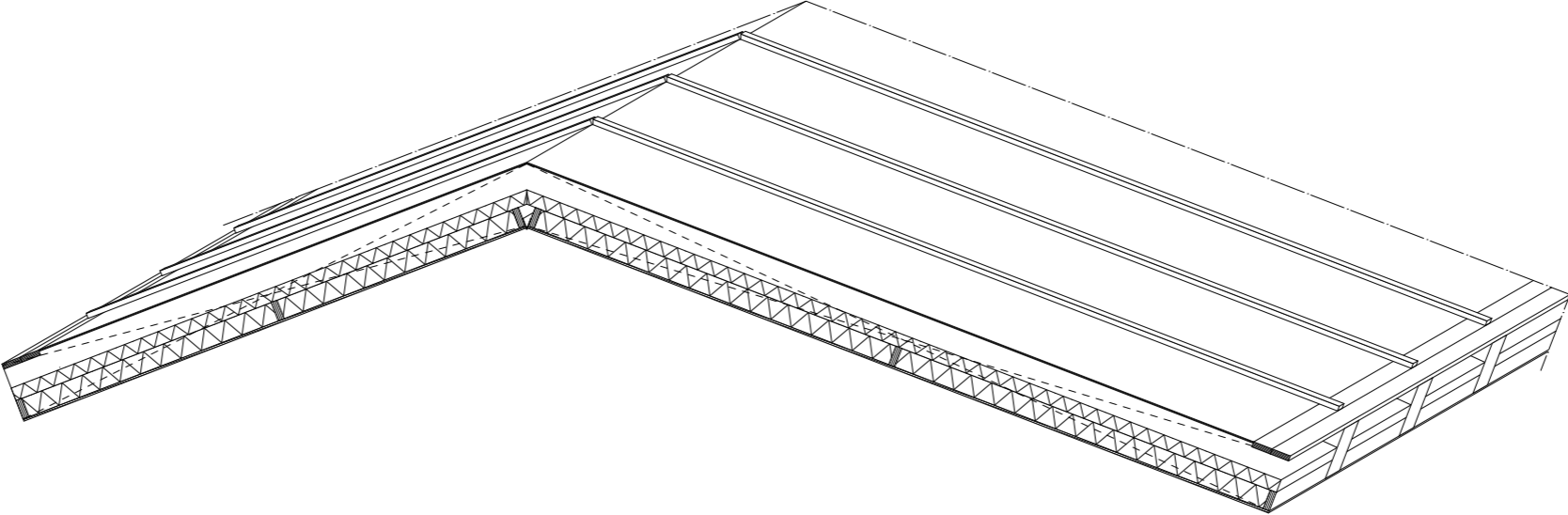
Outside wall non bearing



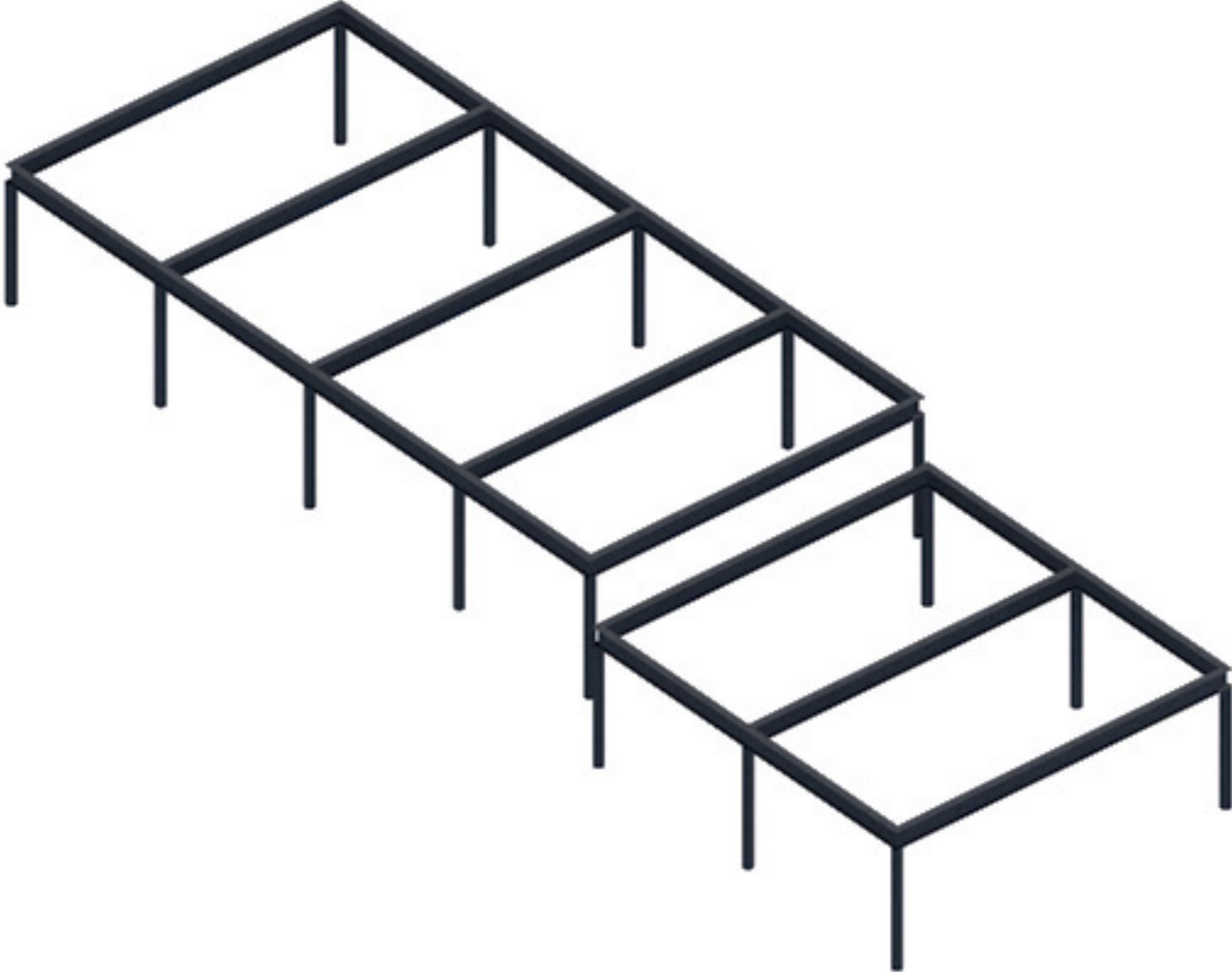
Outside wall bearing

Structure

- Demountable



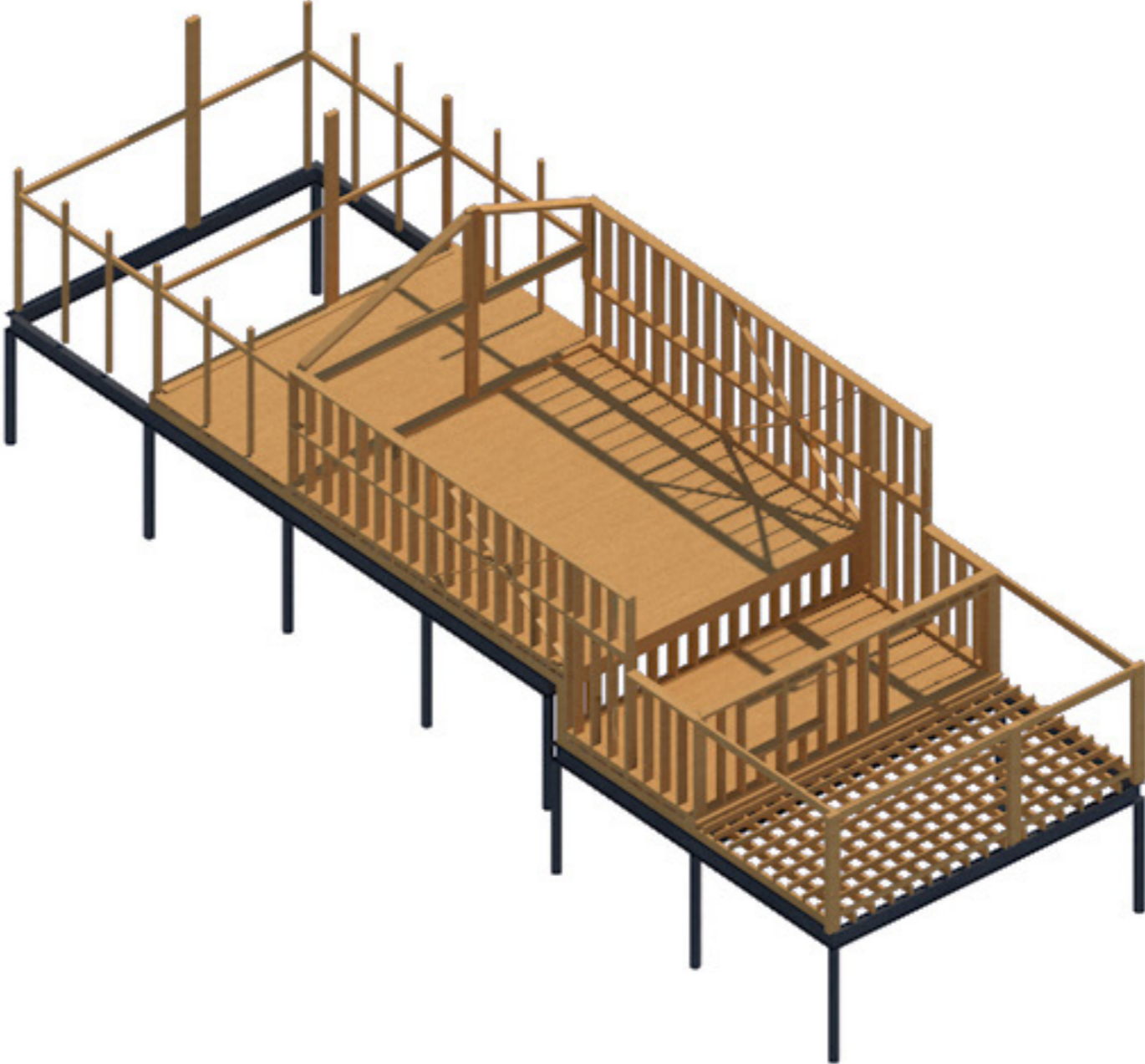
Structure



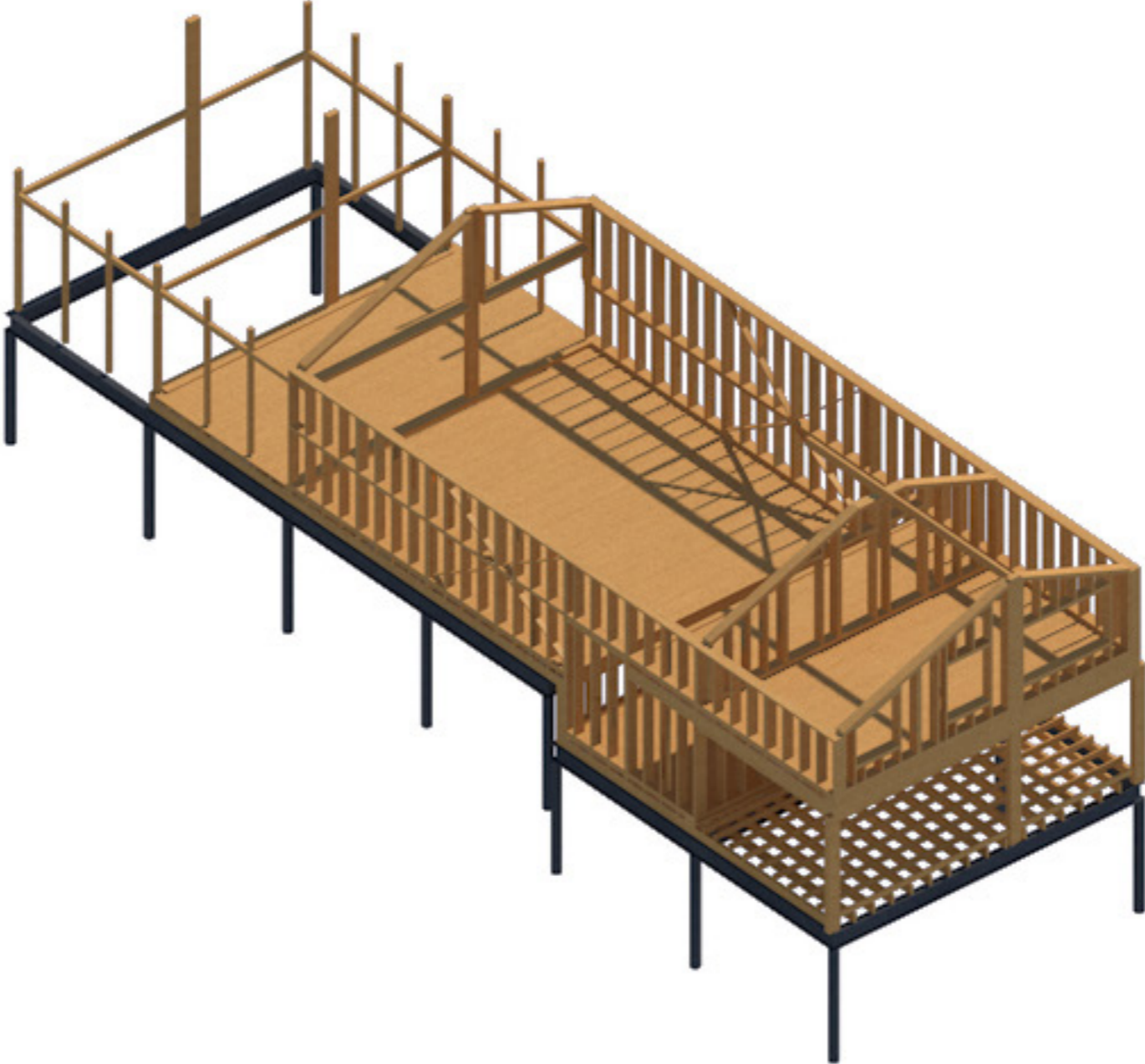
Structure



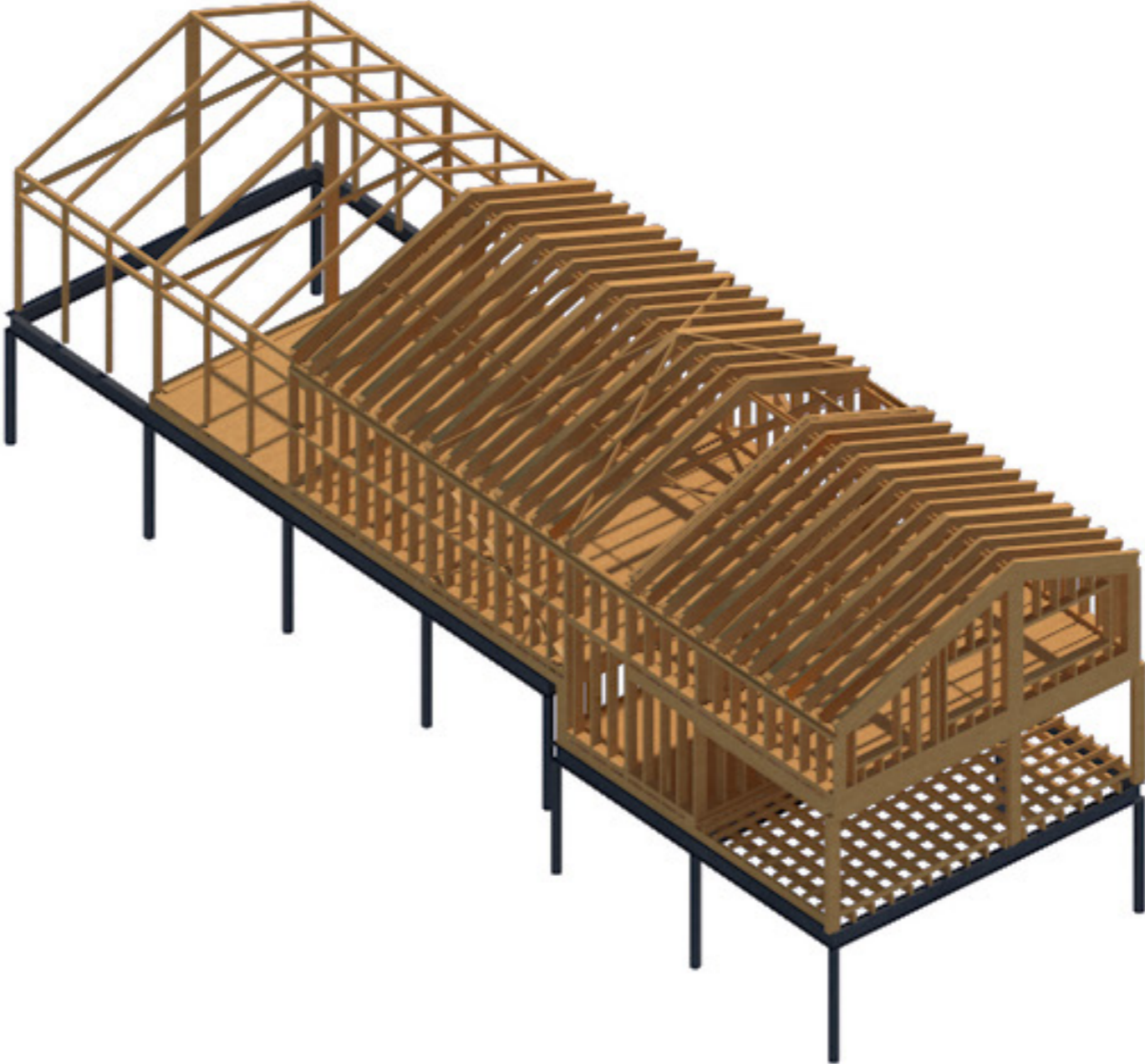
Structure



Structure

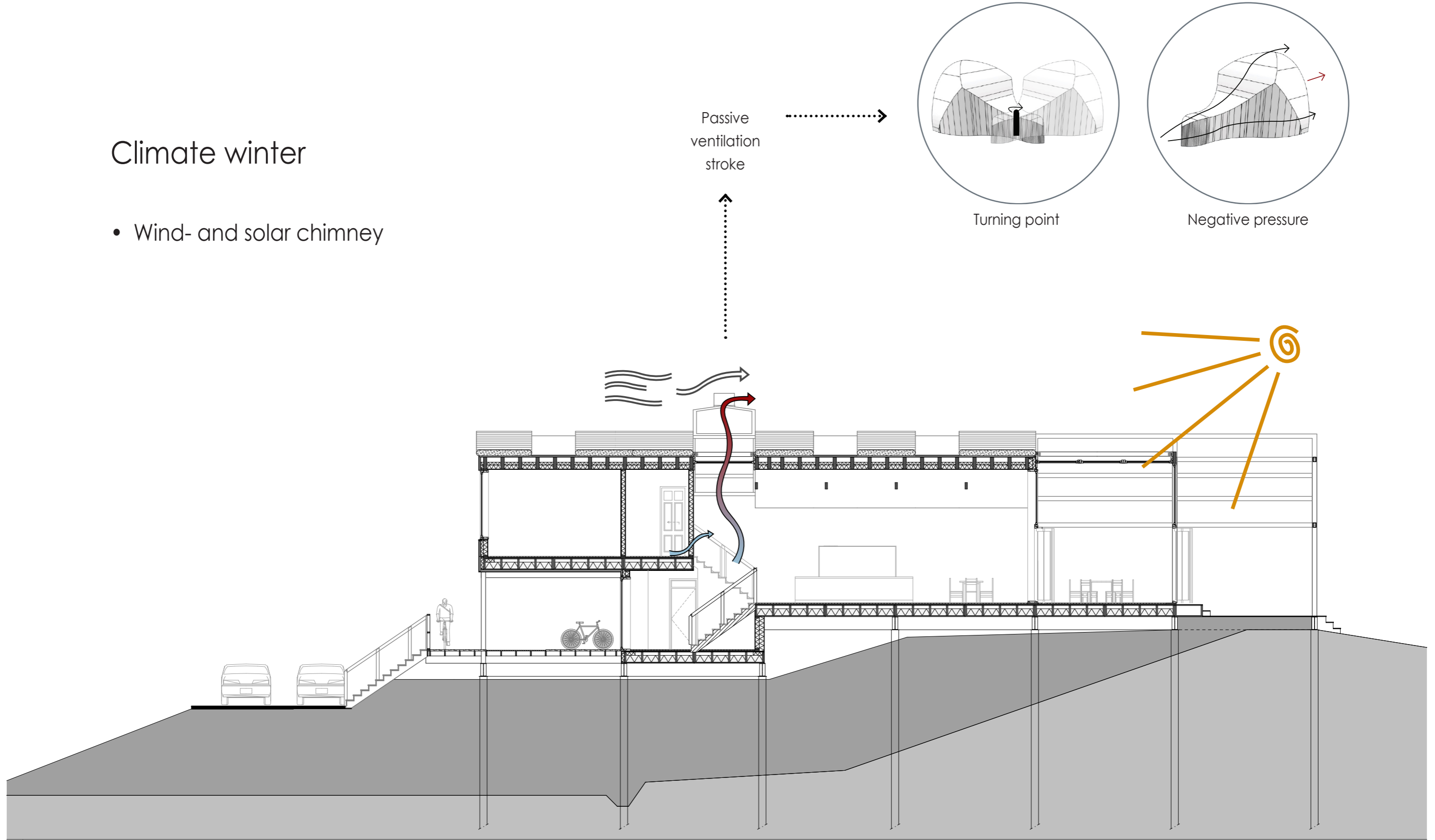


Structure



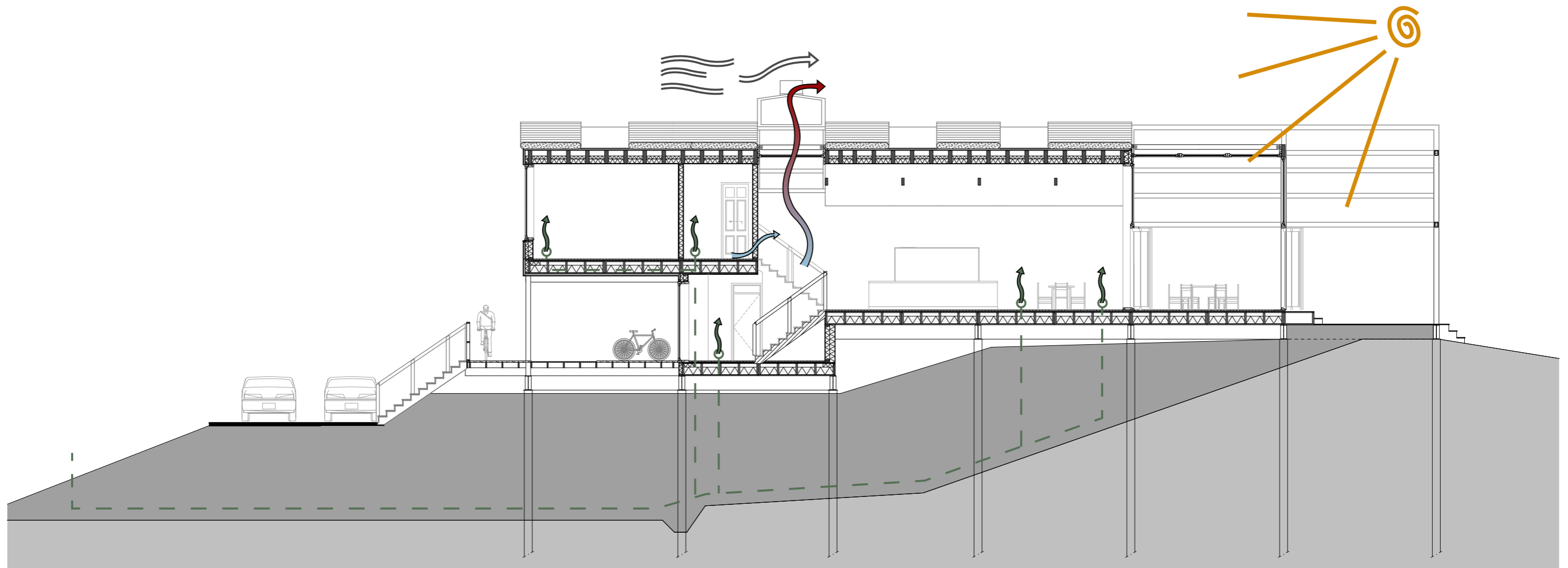
Climate winter

- Wind- and solar chimney



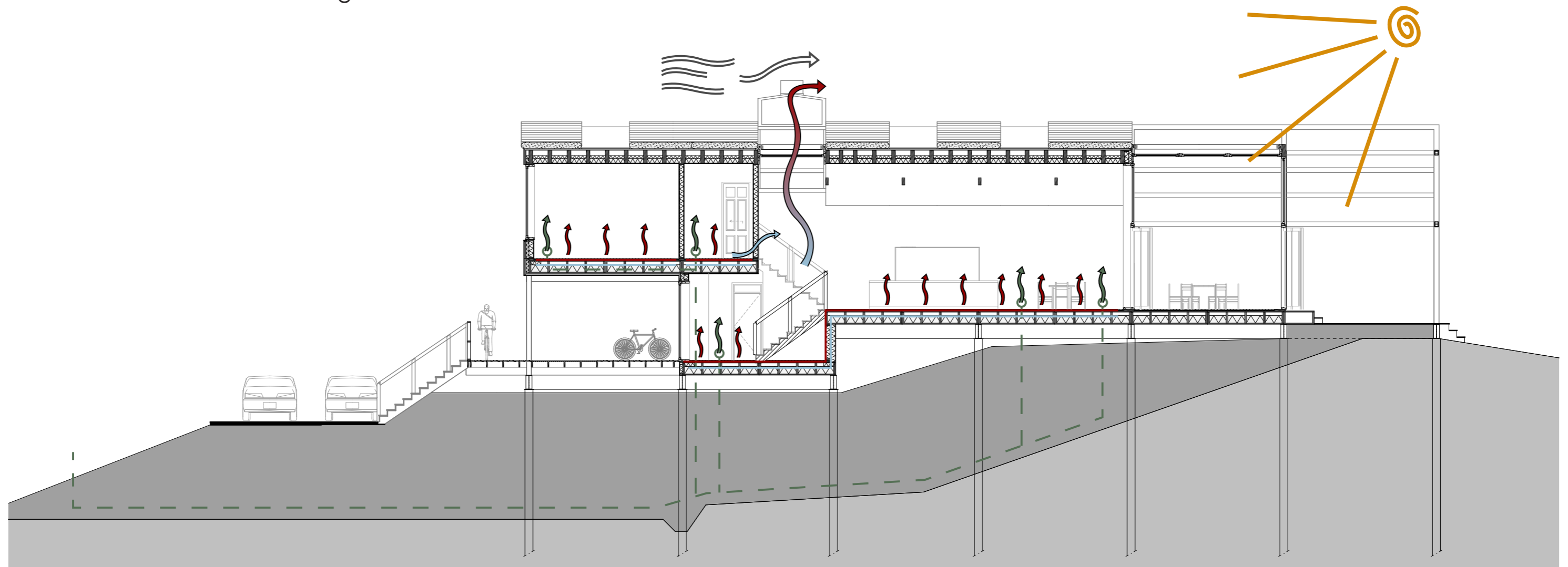
Climate winter

- Wind- and solar chimney
- Earth tube ventilation



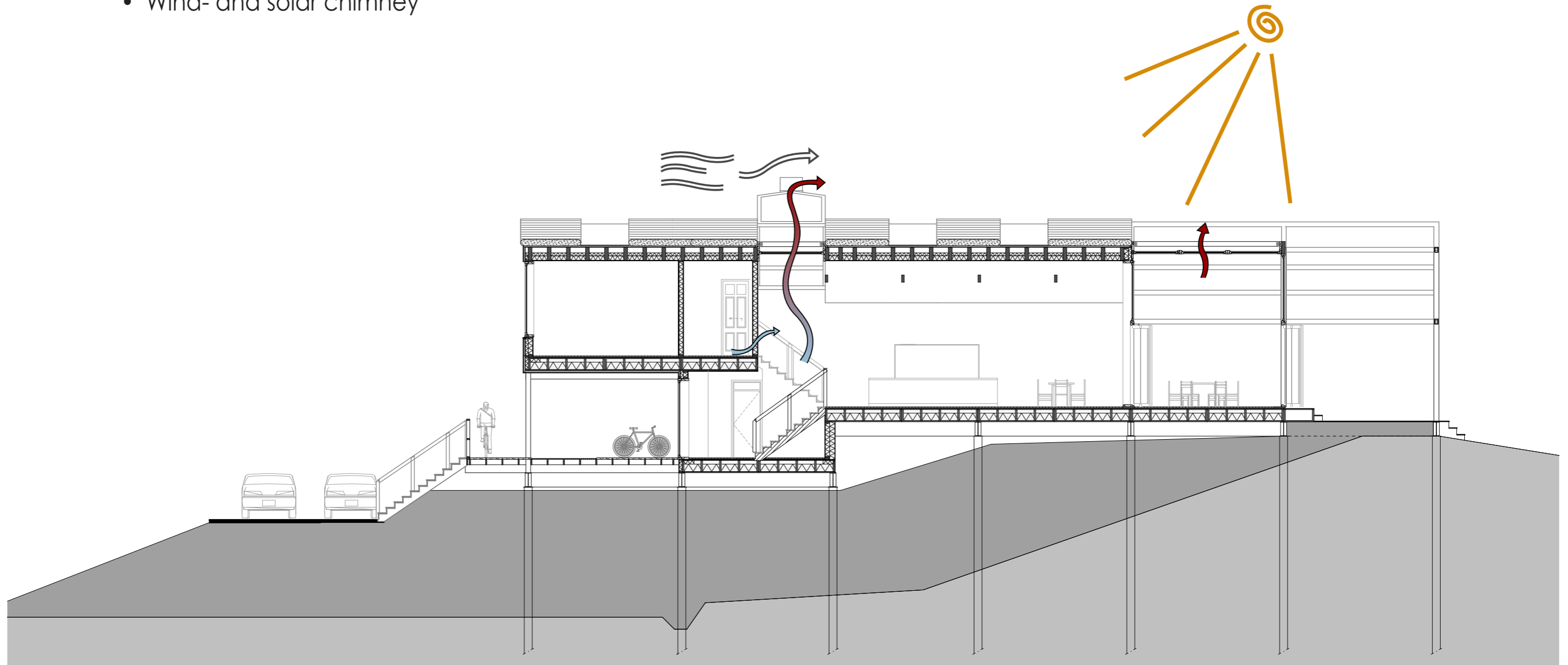
Climate winter

- Wind- and solar chimney
- Earth tube ventilation
- Underfloor heating



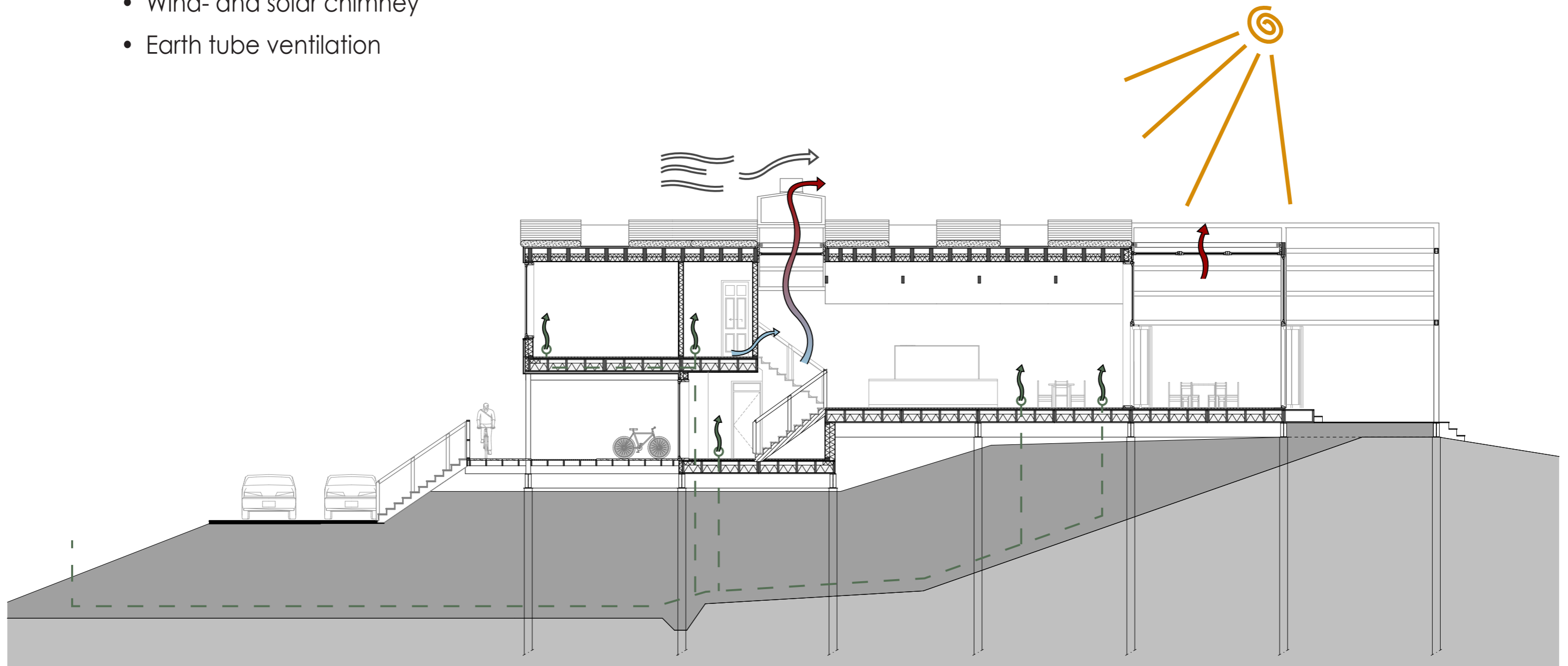
Climate summer

- Wind- and solar chimney



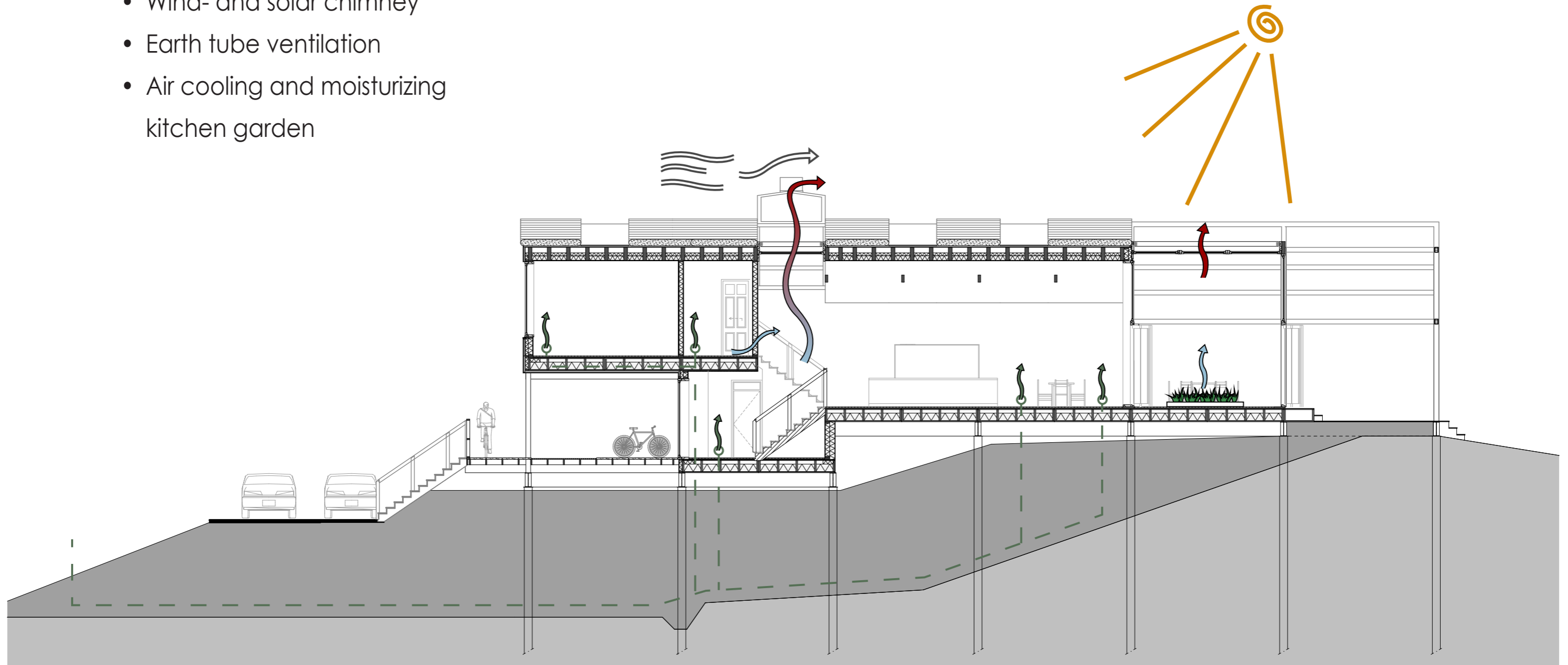
Climate summer

- Wind- and solar chimney
- Earth tube ventilation

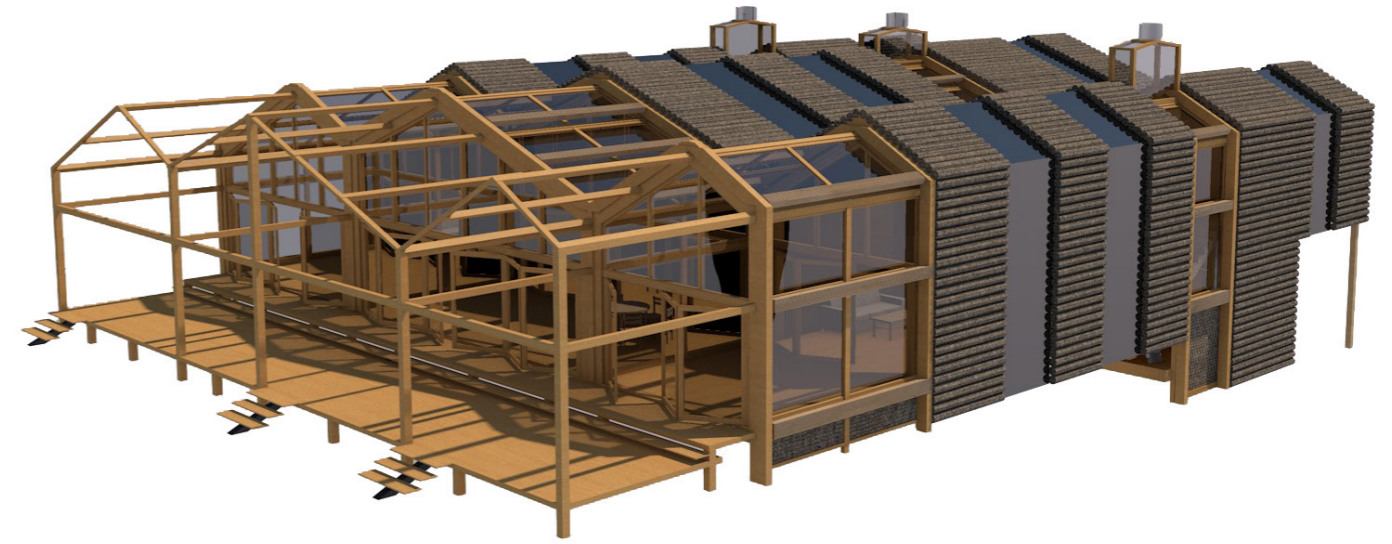


Climate summer

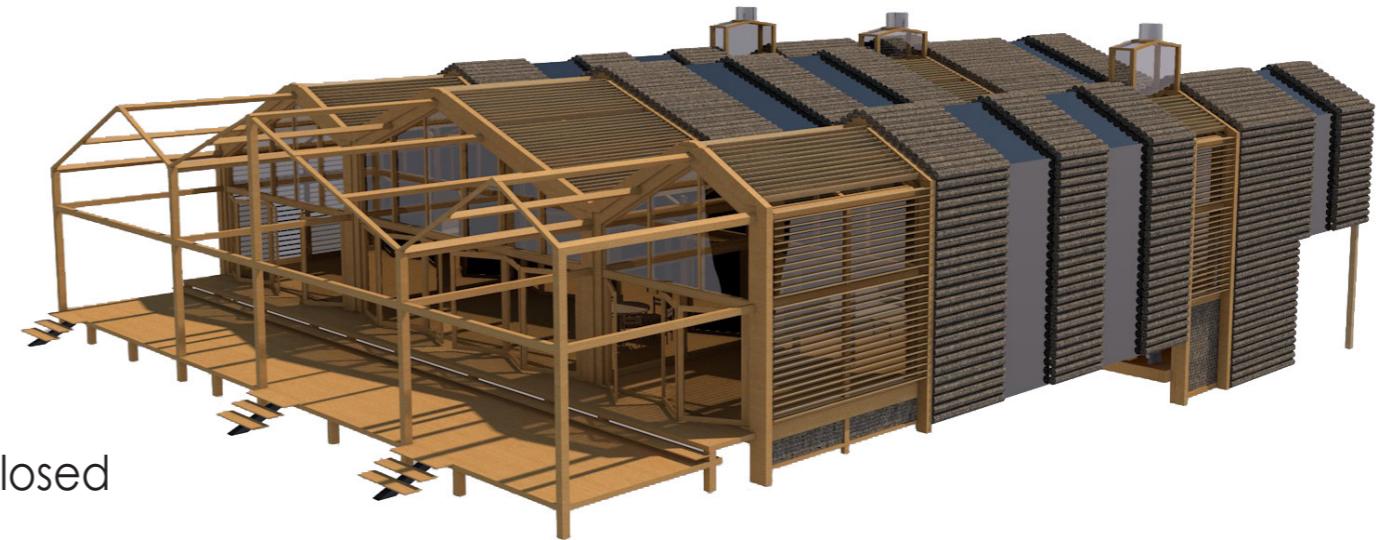
- Wind- and solar chimney
- Earth tube ventilation
- Air cooling and moisturizing kitchen garden



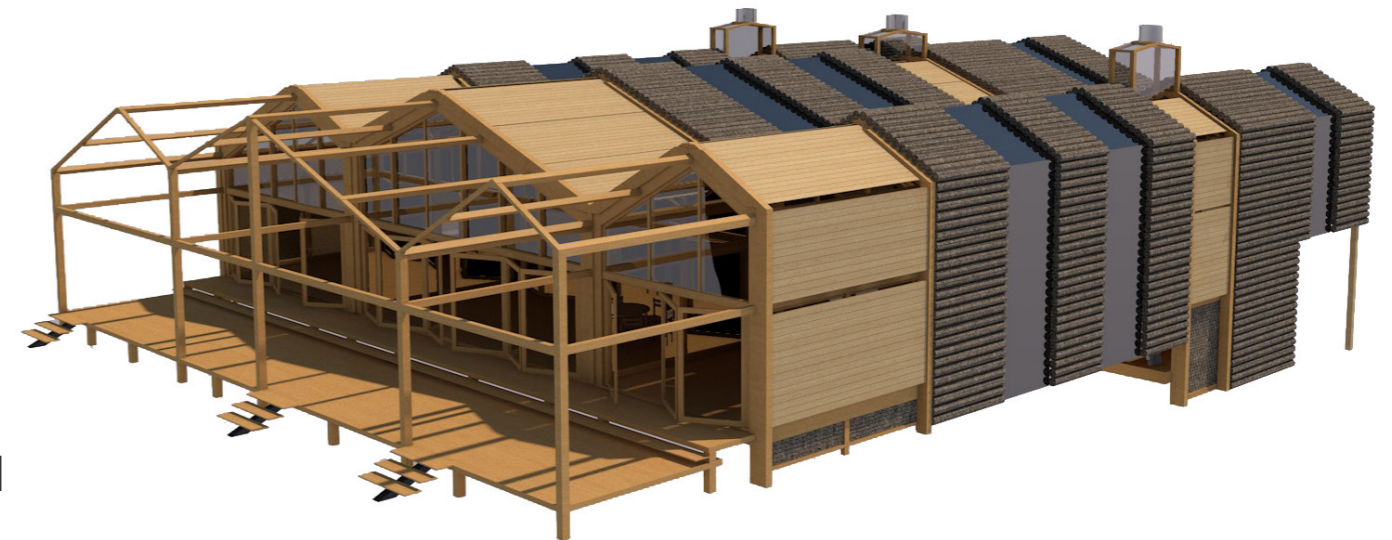
Sun shading



- open

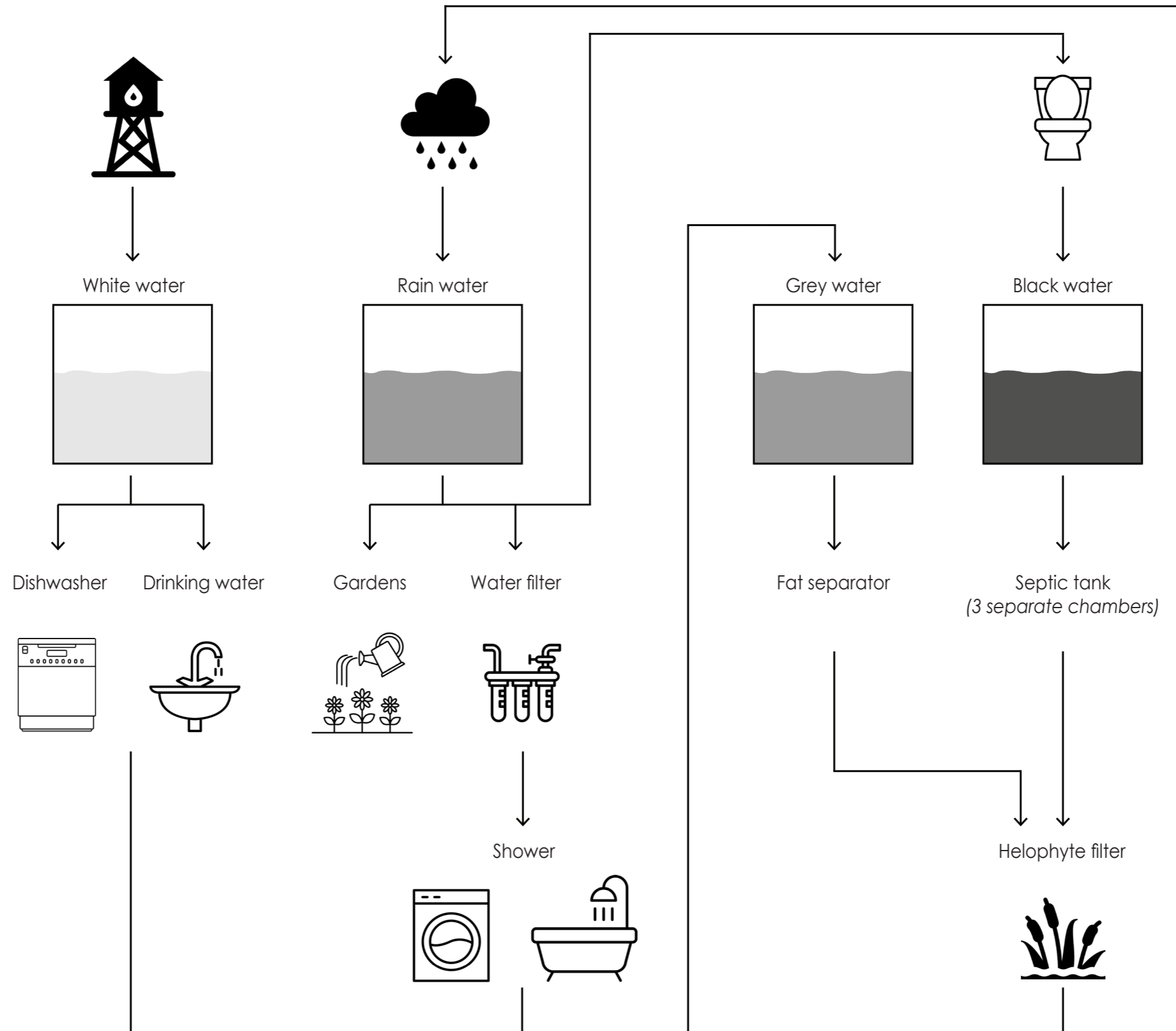


- semi closed

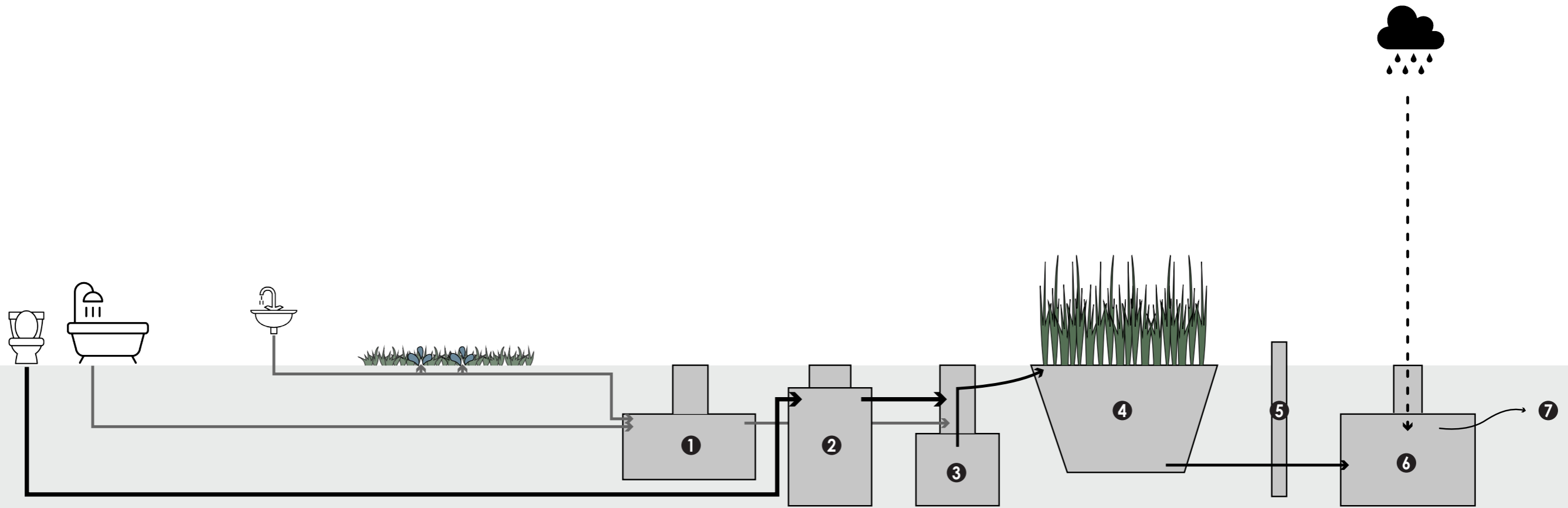
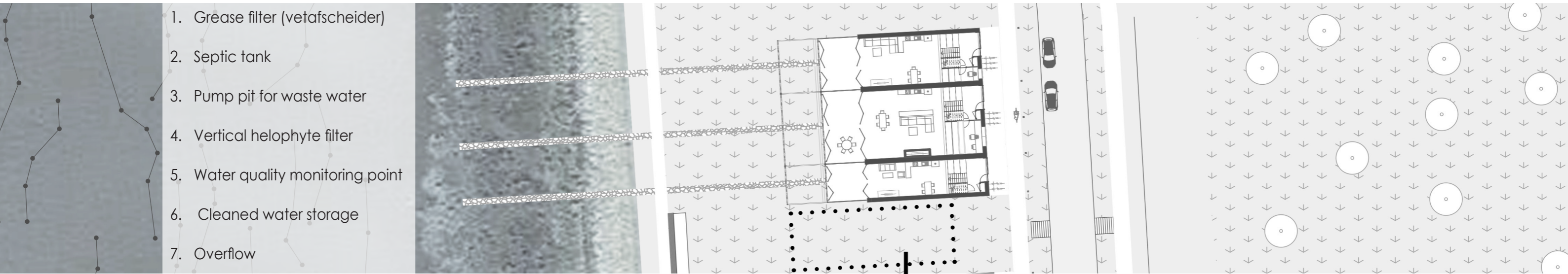


- closed

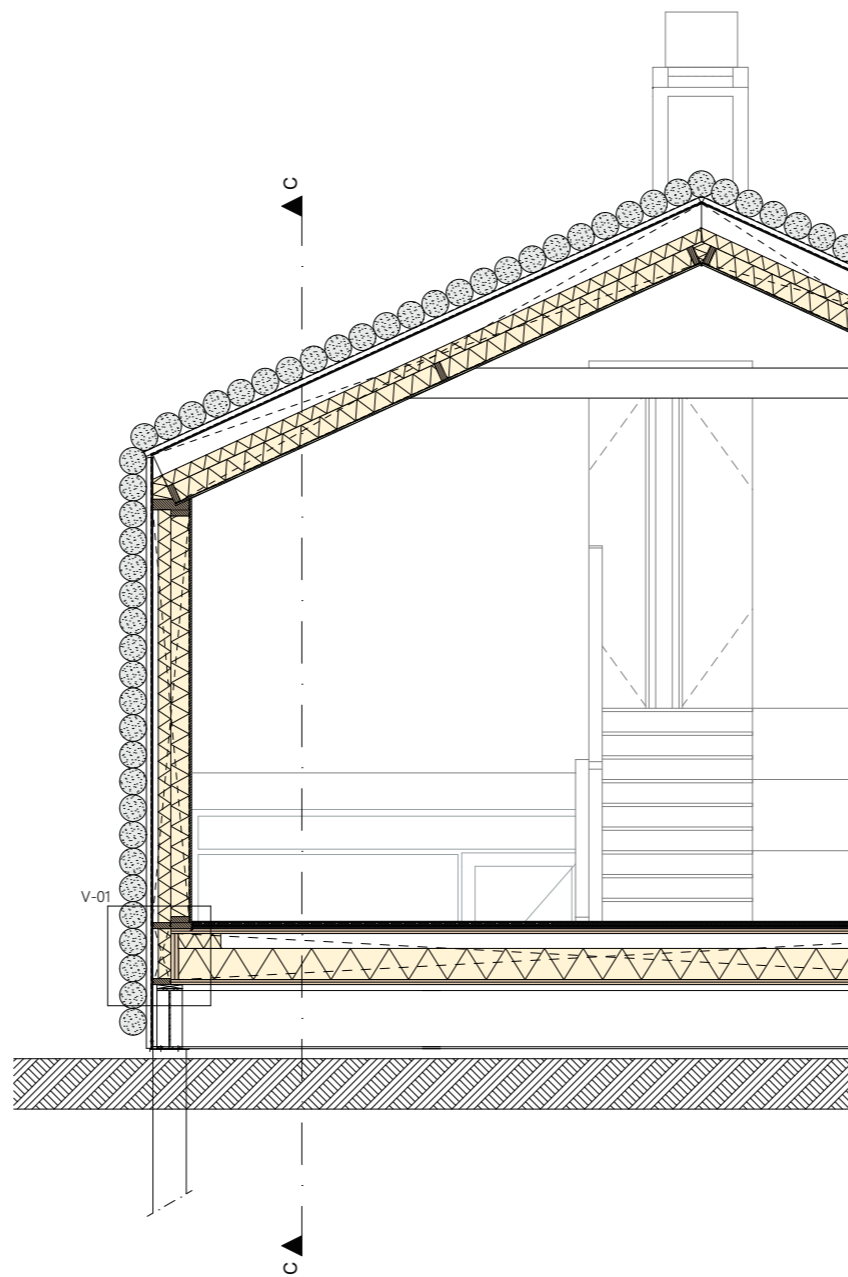
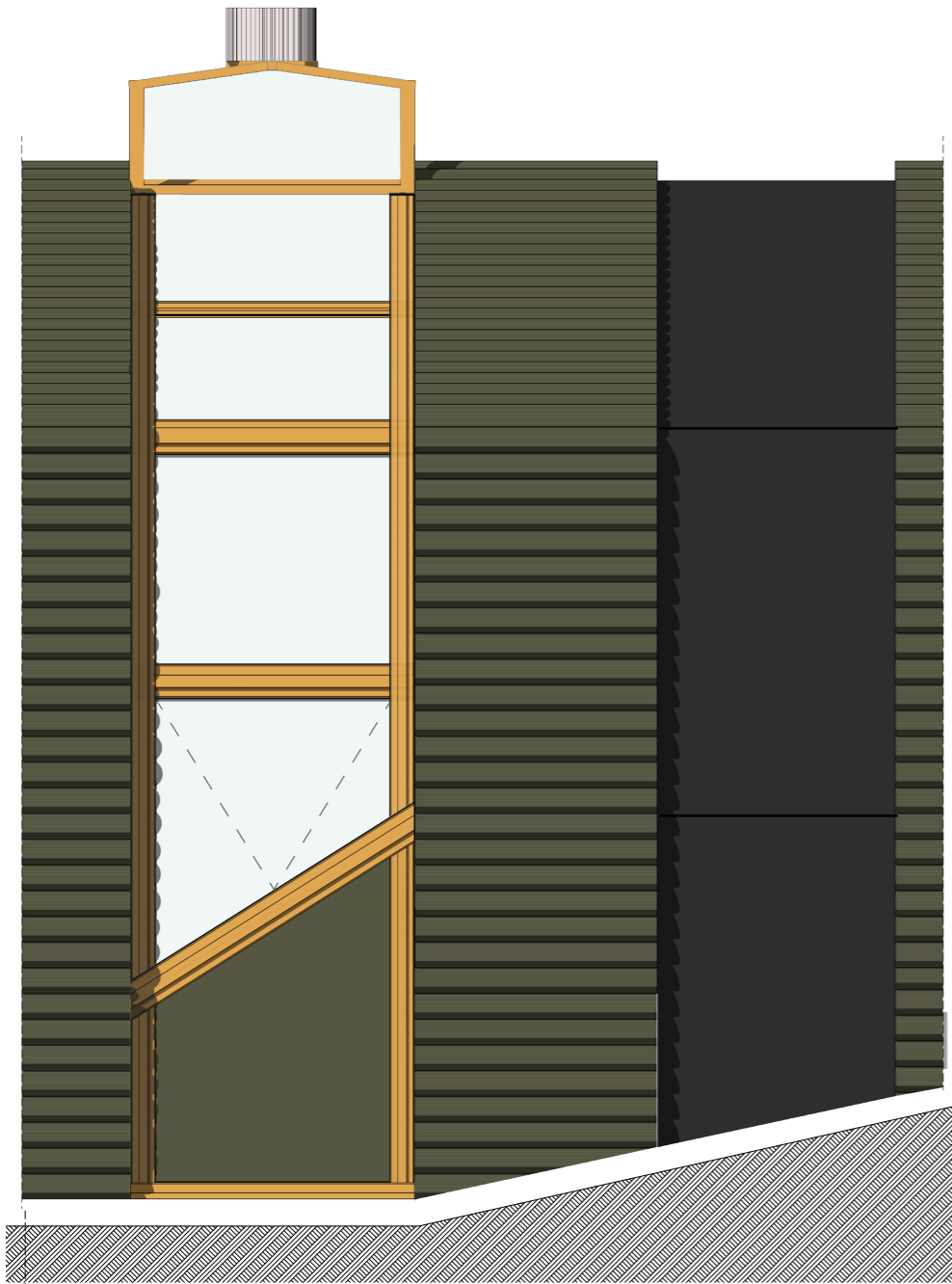
Water cycle



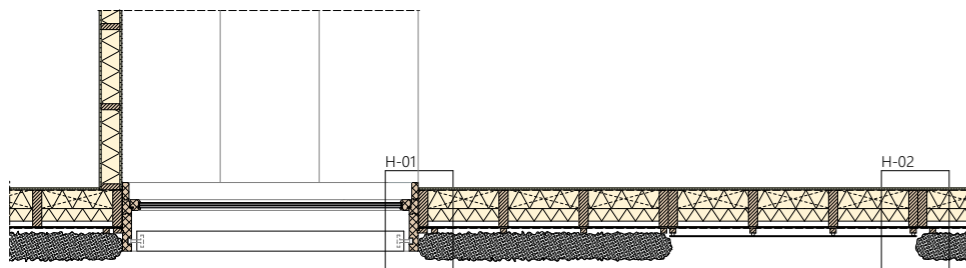
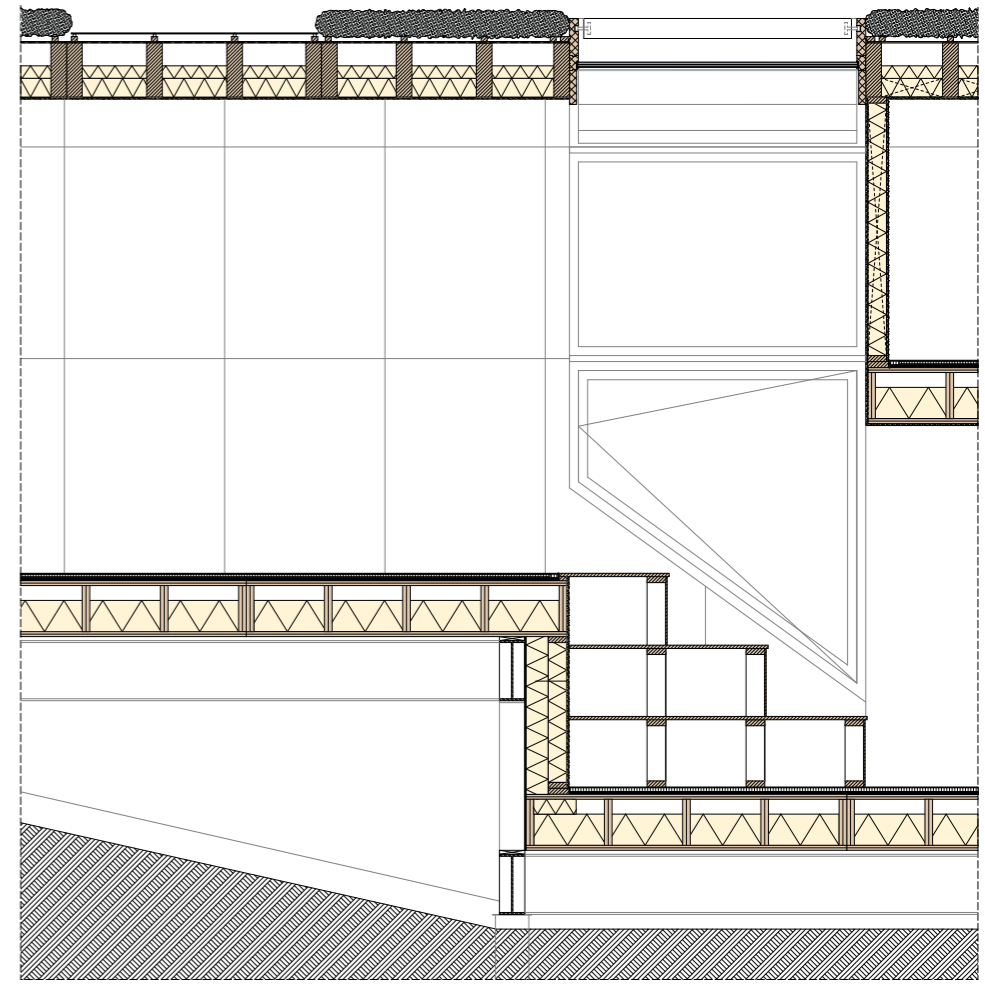
Water cycle



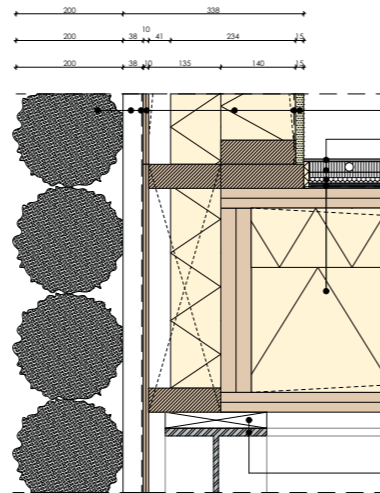




Section C-C

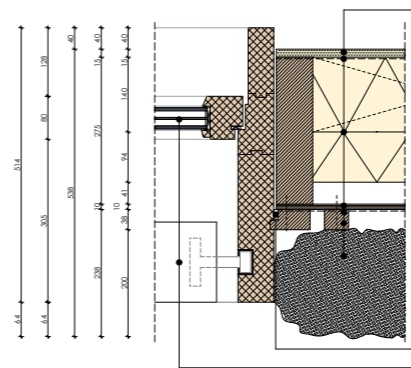


V-01



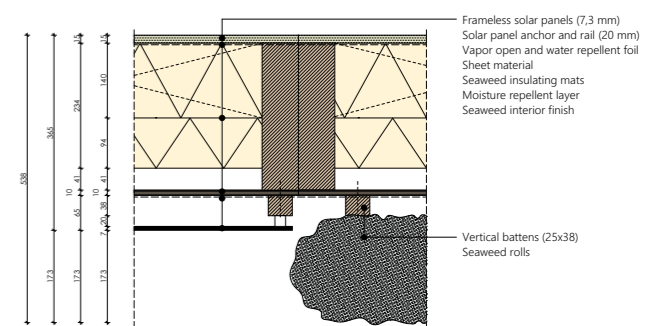
- Seaweed rolls
 - Vertical battens (25x38)
 - Vapor open and water repellent foil
 - Sheet material
 - Seaweed insulating mats
 - Moisture repellent layer
 - Seaweed interior finish
- Filler
 - Double layer gypsum plasterboard (with floor heating)
 - Fel underlay
 - Equalization granules on a protection foil
 - Wooden channel plate floor Kerto-riipa

H-01



- Seaweed rolls
 - Vertical battens (25x38)
 - Vapor open and water repellent foil
 - Sheet material
 - Seaweed insulating mats
 - Moisture repellent layer
 - Seaweed interior finish
- Seam sealing
 - HR+++ glass
 - Wooden slats system

H-02



- Frameless solar panels (7,3 mm)
 - Solar panel anchor and rail (20 mm)
 - Vapor open and water repellent foil
 - Sheet material
 - Seaweed insulating mats
 - Moisture repellent layer
 - Seaweed interior finish
- Vertical battens (25x38)
 - Seaweed rolls

How to create a symbiosis between architecture and its surrounding ecosystems?



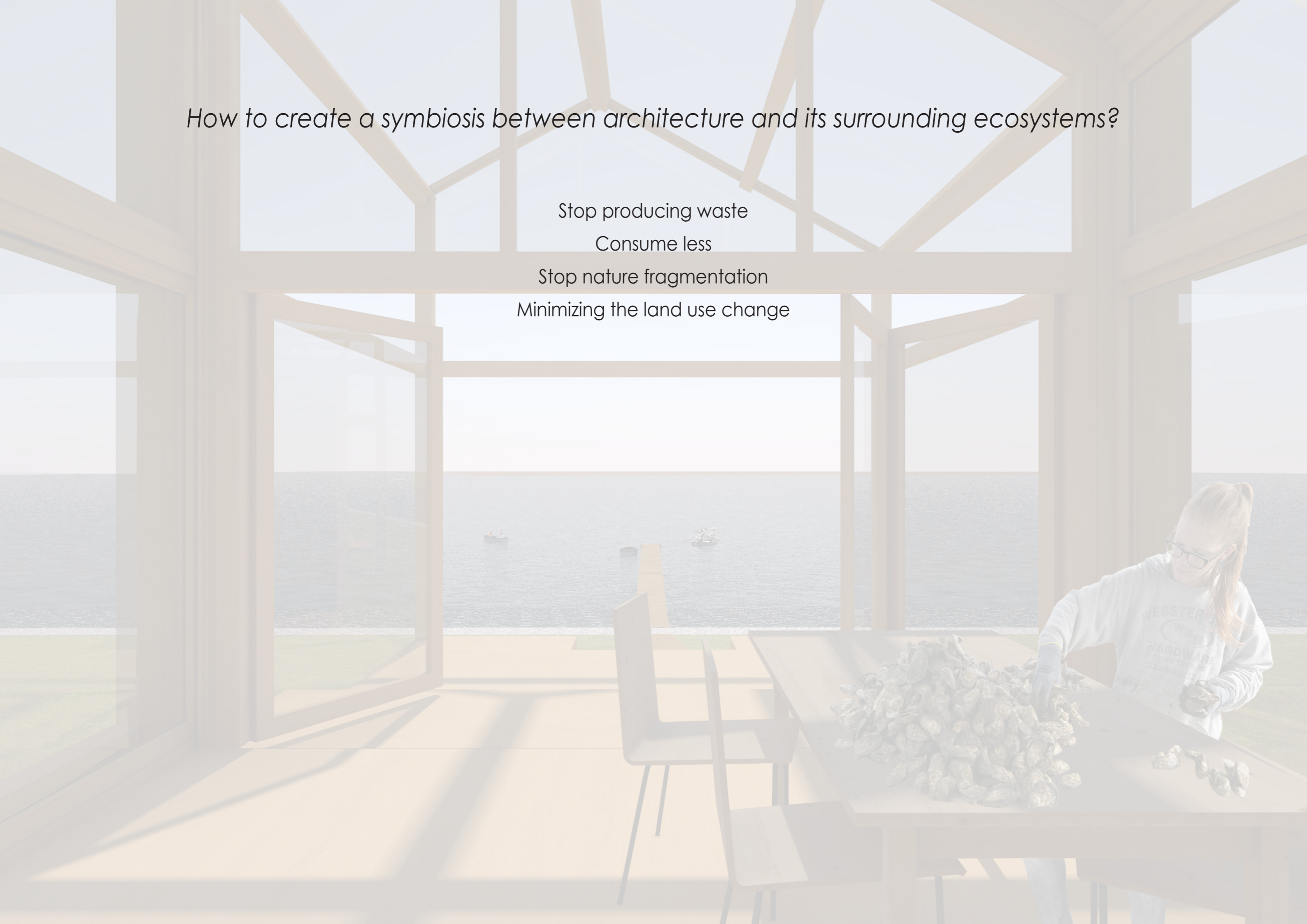
How to create a symbiosis between architecture and its surrounding ecosystems?

Stop producing waste

Consume less

Stop nature fragmentation

Minimizing the land use change



How to create a symbiosis between architecture and its surrounding ecosystems?

Stop producing waste

Consume less

Stop nature fragmentation

Minimizing the land use change

Towards eco-centric architecture:

- re-use materials
to prevent waste and minimize consumption
- eco-friendly materials
to prevent waste and minimize pollution
- passive systems
to minimize the needed energy
- renewable energy
to minimize pollution
- Experience
to take care of the ecosystems
- water cycle
demountable
- seaweed, wood and seafoodshells
- passive ventilation system
earth tube ventilation
- solar panels
- view over the landscapes
the inside-outside gradient
mudflatfarm
small jetty

Thank you

