

# GRADUATION PRESENTATION

## METROPOLIS MEETS WETLAND

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external examiner:

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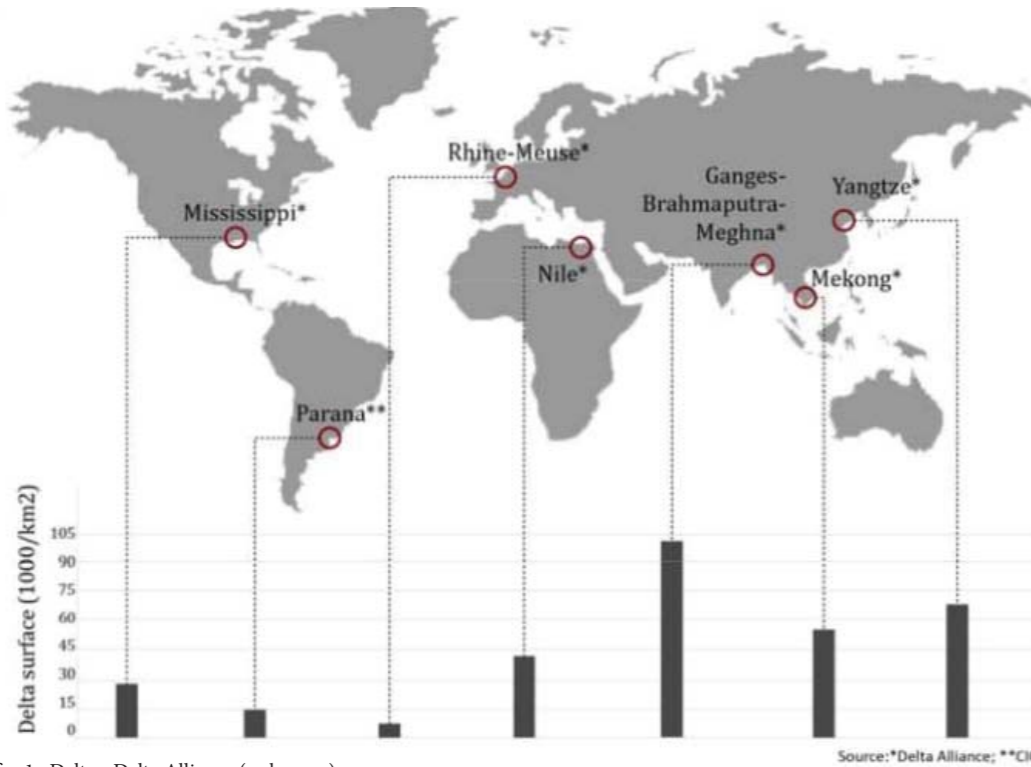


fig. 1., Deltas, Delta Alliance (unknown)

## PARANA DELTA ARGENTINA

THE CHOSEN LOCATION FOR MY GRADUATION PROJECT IS THE PARANA DELTA OF ARGENTINA. THIS DELTA IS 15.000 KM2 AND WITH THAT ONE OF THE BIGGEST DELTAS OF THE WORLD.

THE URBAN POPULATION GROWTH WILL BE 150% BY 2050

AND 75% OF THE POPULATION LIVING IN COASTAL AREAS (16.500.00 PEOPLE)

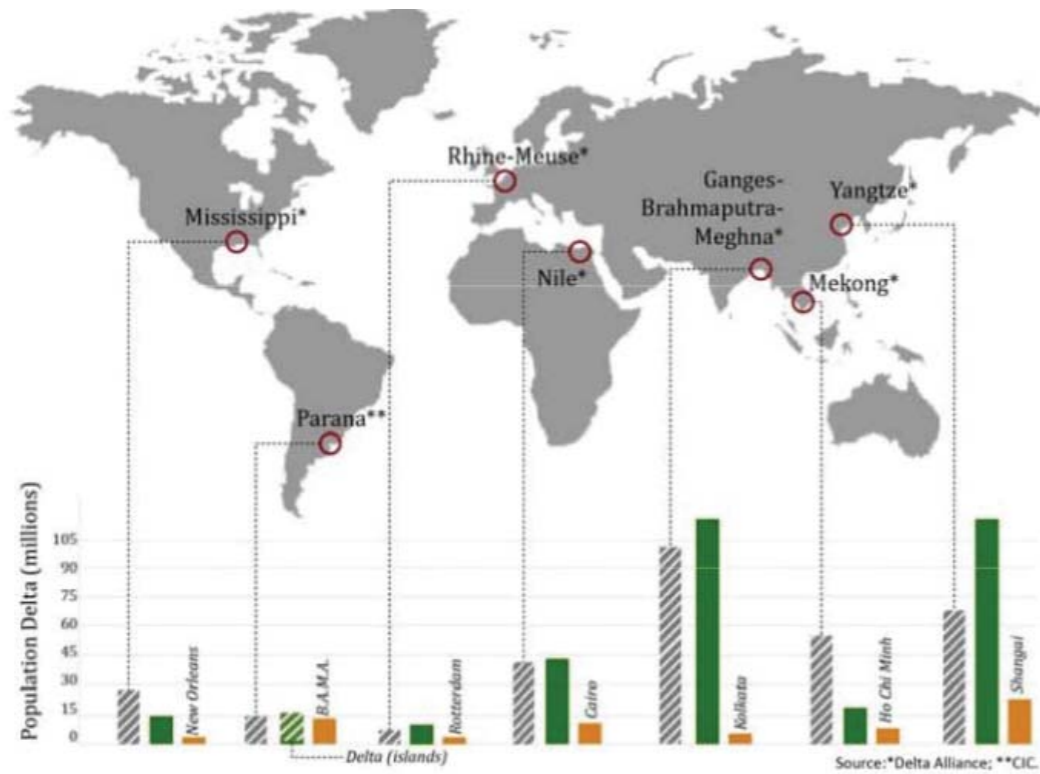
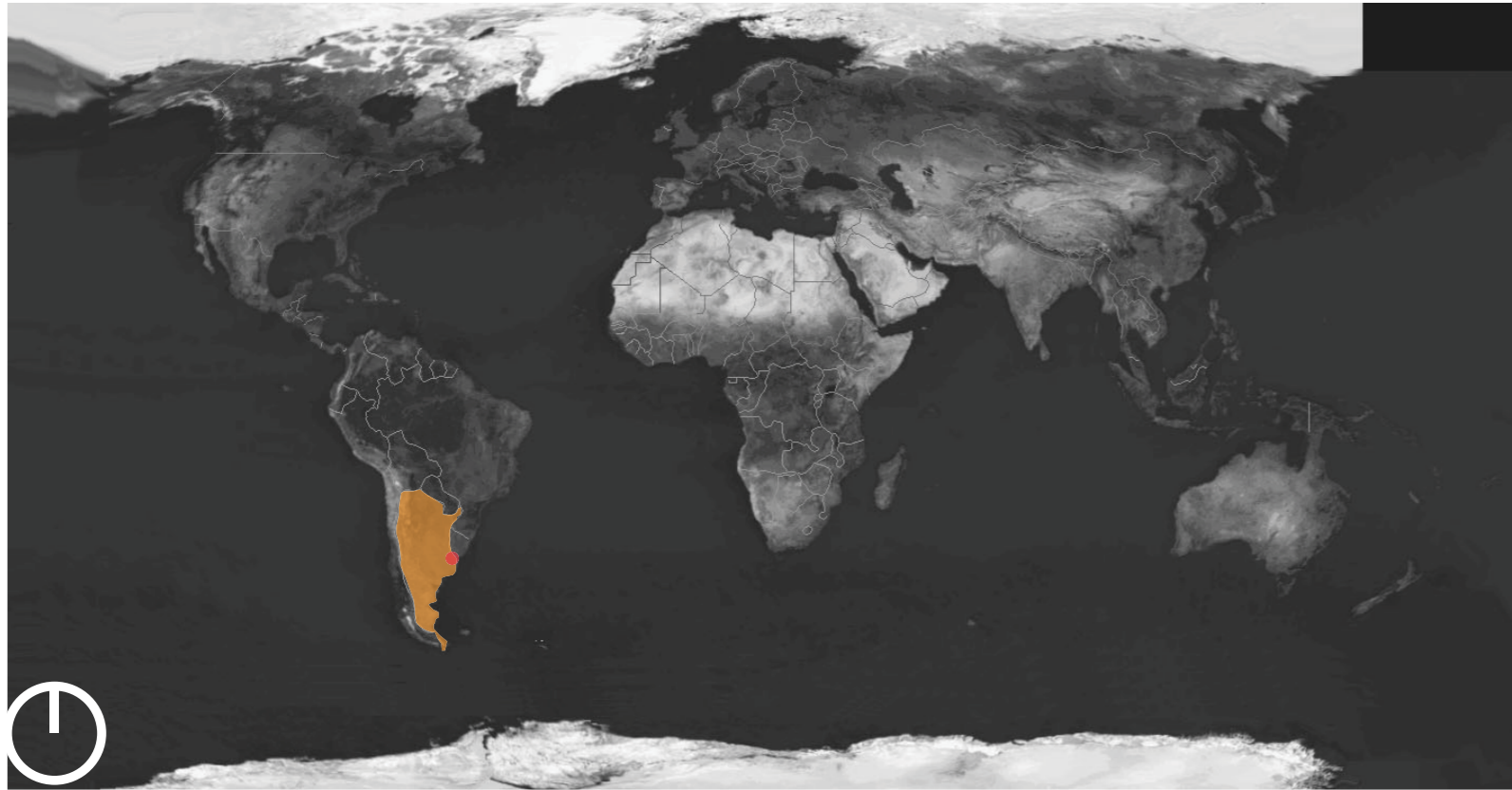


fig. 2., Deltas population, Delta Alliance (unknown)

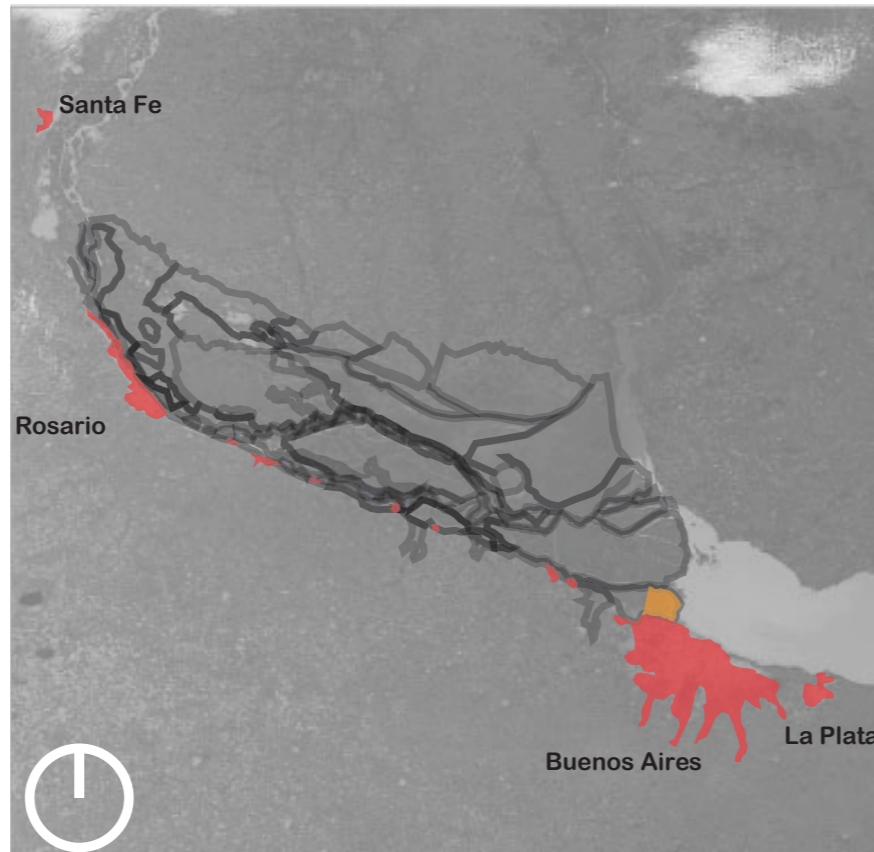
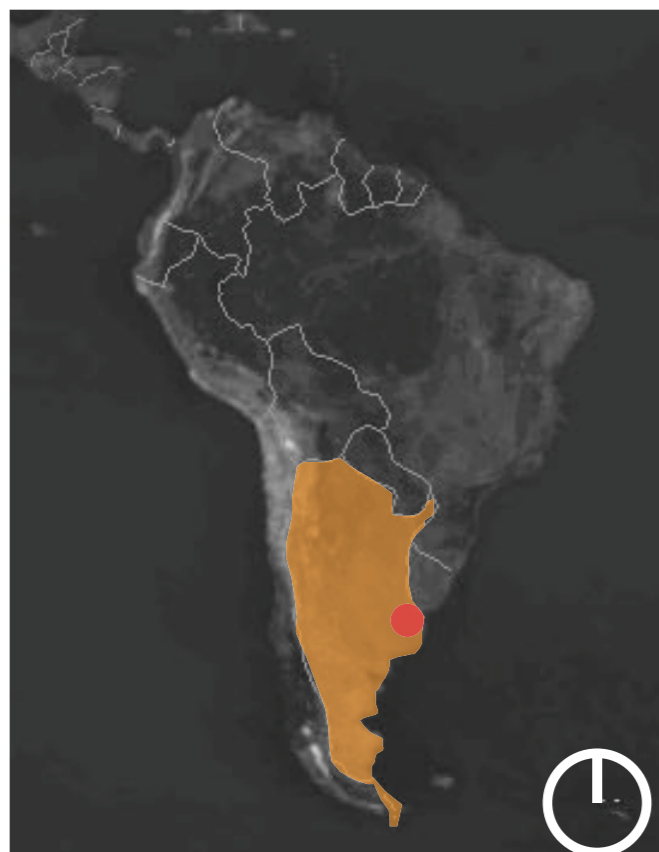




## PARANA DELTA ARGENTINA

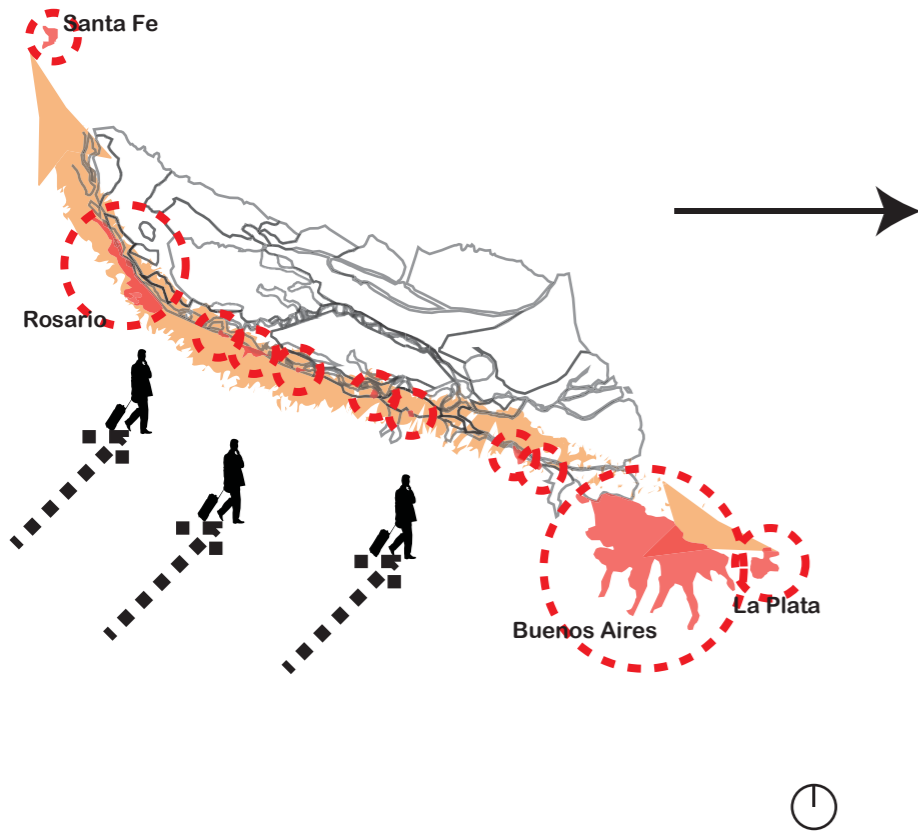
THE PARANA DELTA IS PART OF THE SOUTH AMERICAN CONTINENT. IT IS INTERLOCKED BETWEEN BRAZIL, URUGUAY AND ARGENTINA.

THE LOWER PARANA DELTA, THE DELTA PART CONSIDERING MY GRADUATION PROJECT, IS SITUATED AT THE BORDER OF ARGENTINA, RIO DE LA PLATA AND URUGUAY NEXT TO BUENOS AIRES, CAPITAL OF ARGENTINA

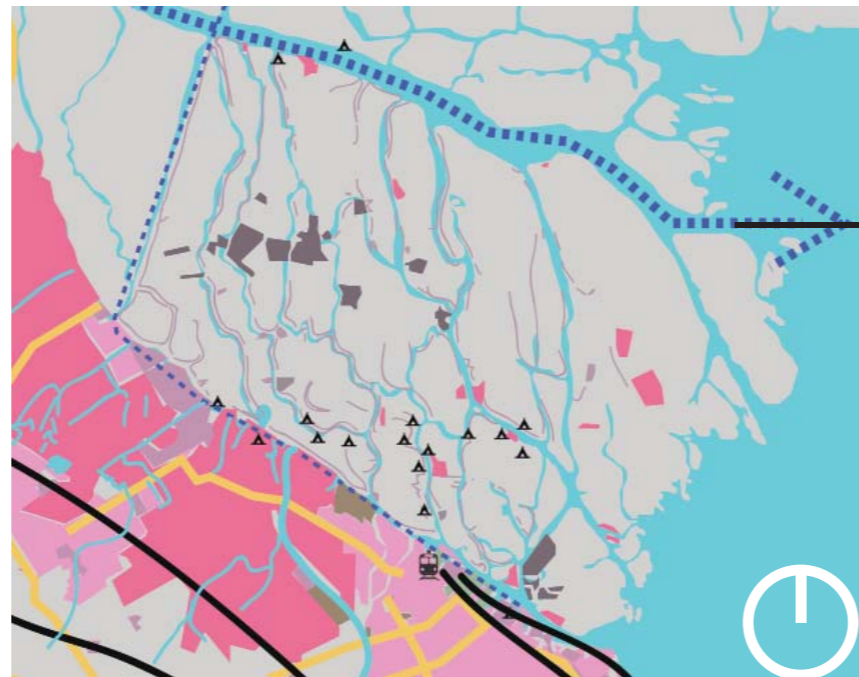


# PROBLEM STATEMENT

## ECONOMIC MOVEMENT

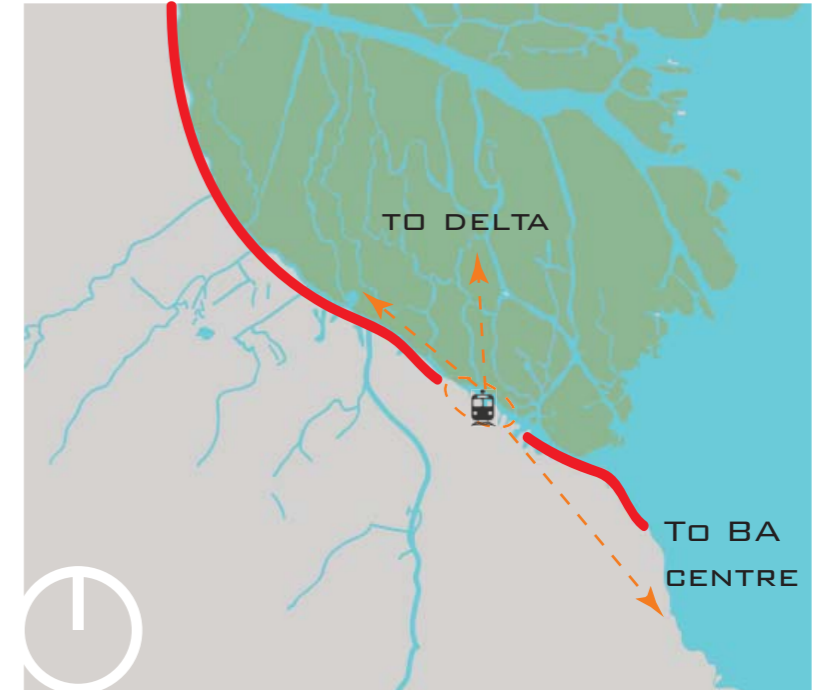


## PRIVATIZATION



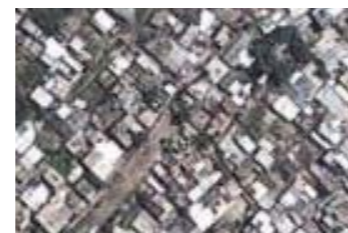
- |                      |               |
|----------------------|---------------|
| Gated community      | Farming       |
| Housing              | Industry      |
| Unformal settlements | Unused land   |
| Urban settlements    | Manufacturing |
| Lodging              | Harbor        |

## CONNECTION



GATED  
COMMUNITIES

DENSITY  
30H/HA

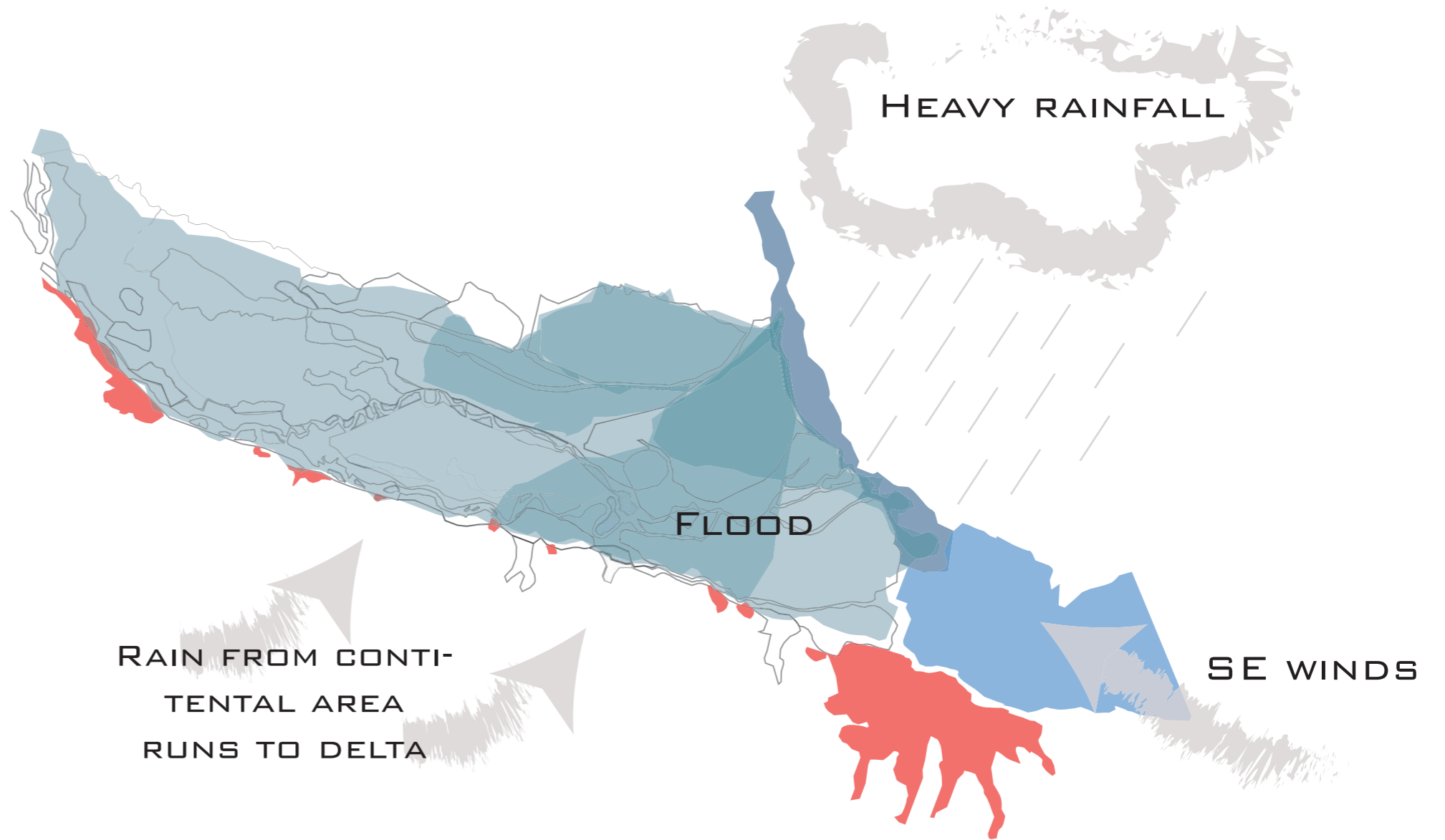
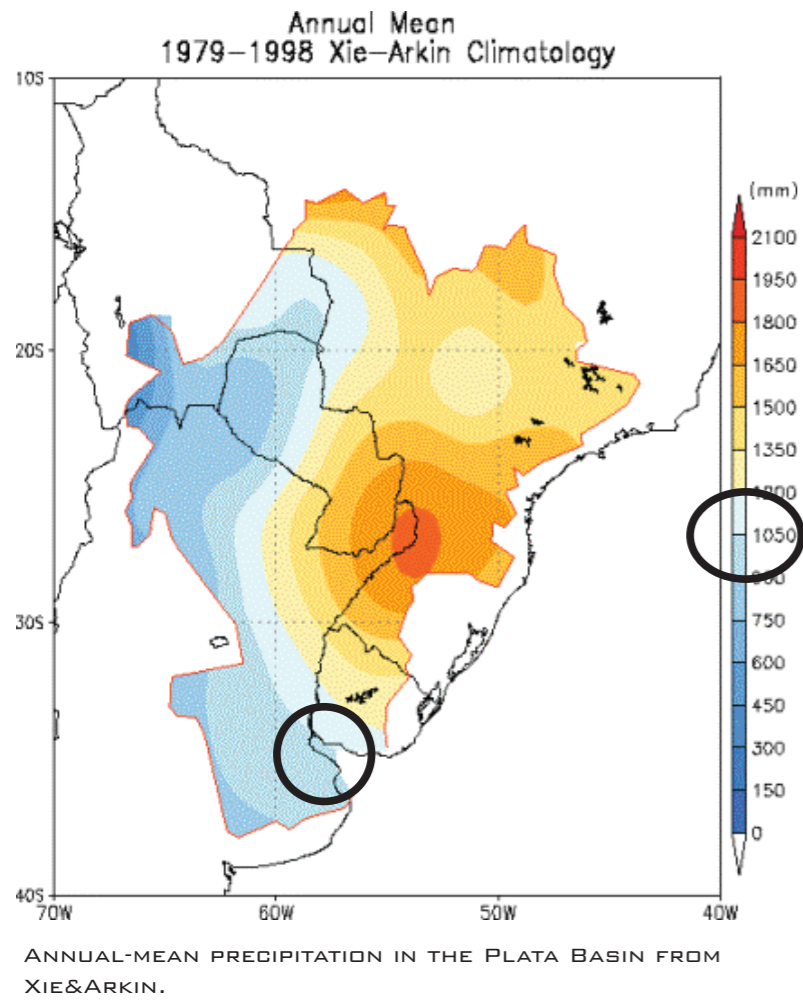


INFORMAL  
SETTLEMENTS

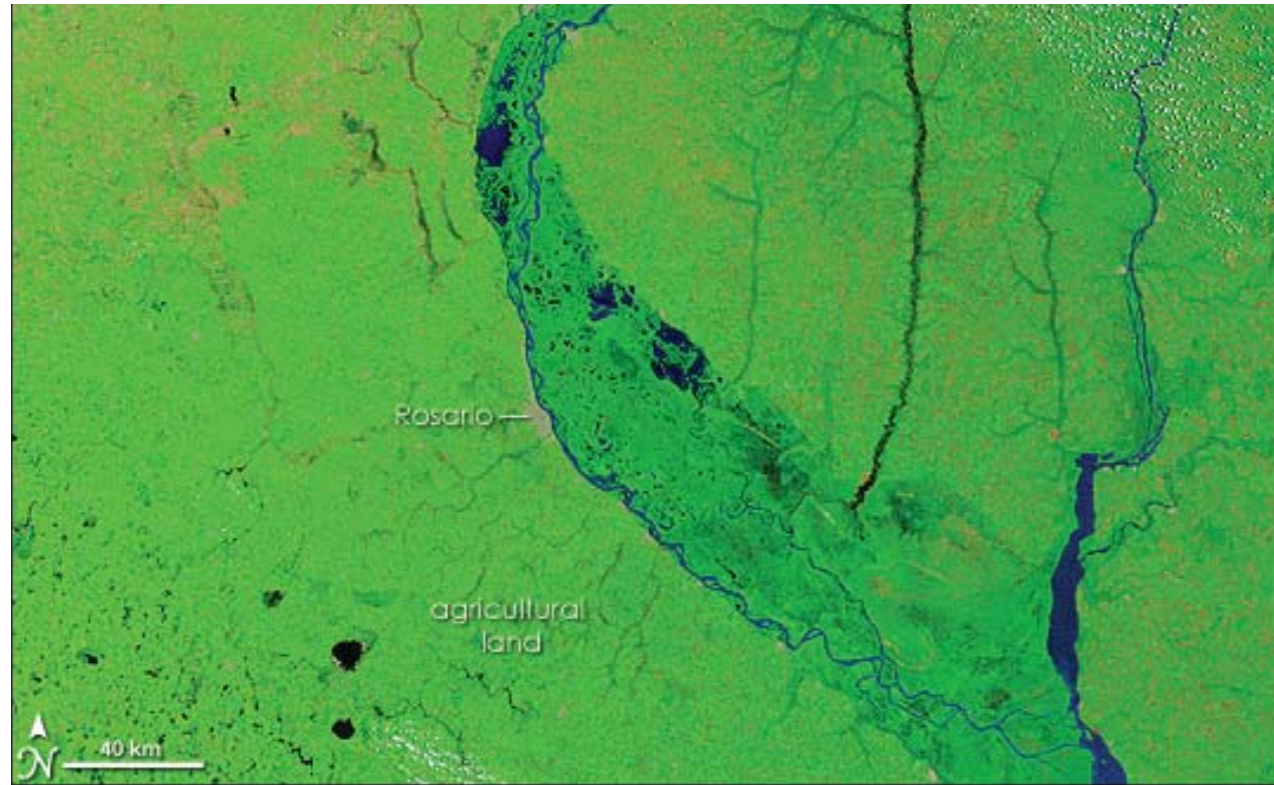
HIGH DENSITY



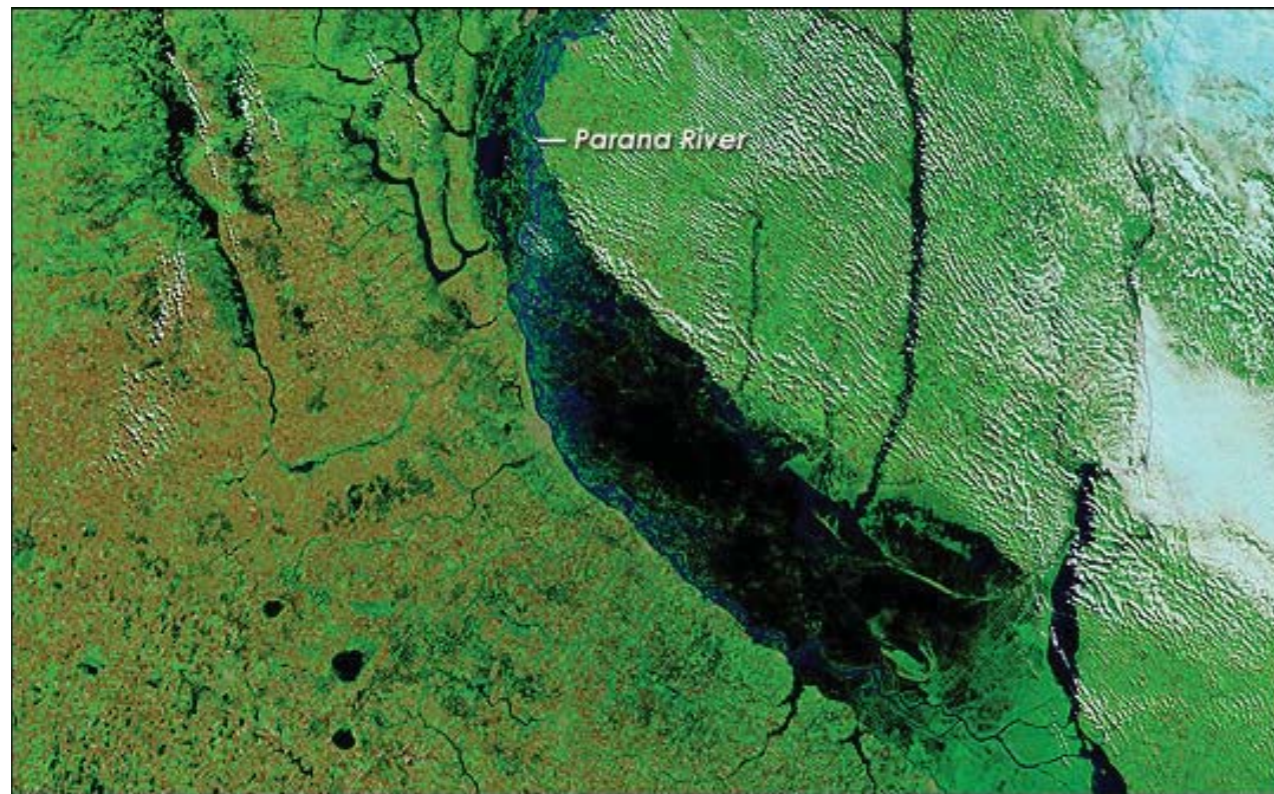
# PROBLEM STATEMENT



# PROBLEM STATEMENT



January 13, 2007



April 3, 2007 FLOODPLAIN PARANA DELTA, NASA, (2007)





# PROBLEM STATEMENT



FLOOD RISK 1, CHAGO, (2013)



# PROBLEM STATEMENT



# PROBLEM STATEMENT



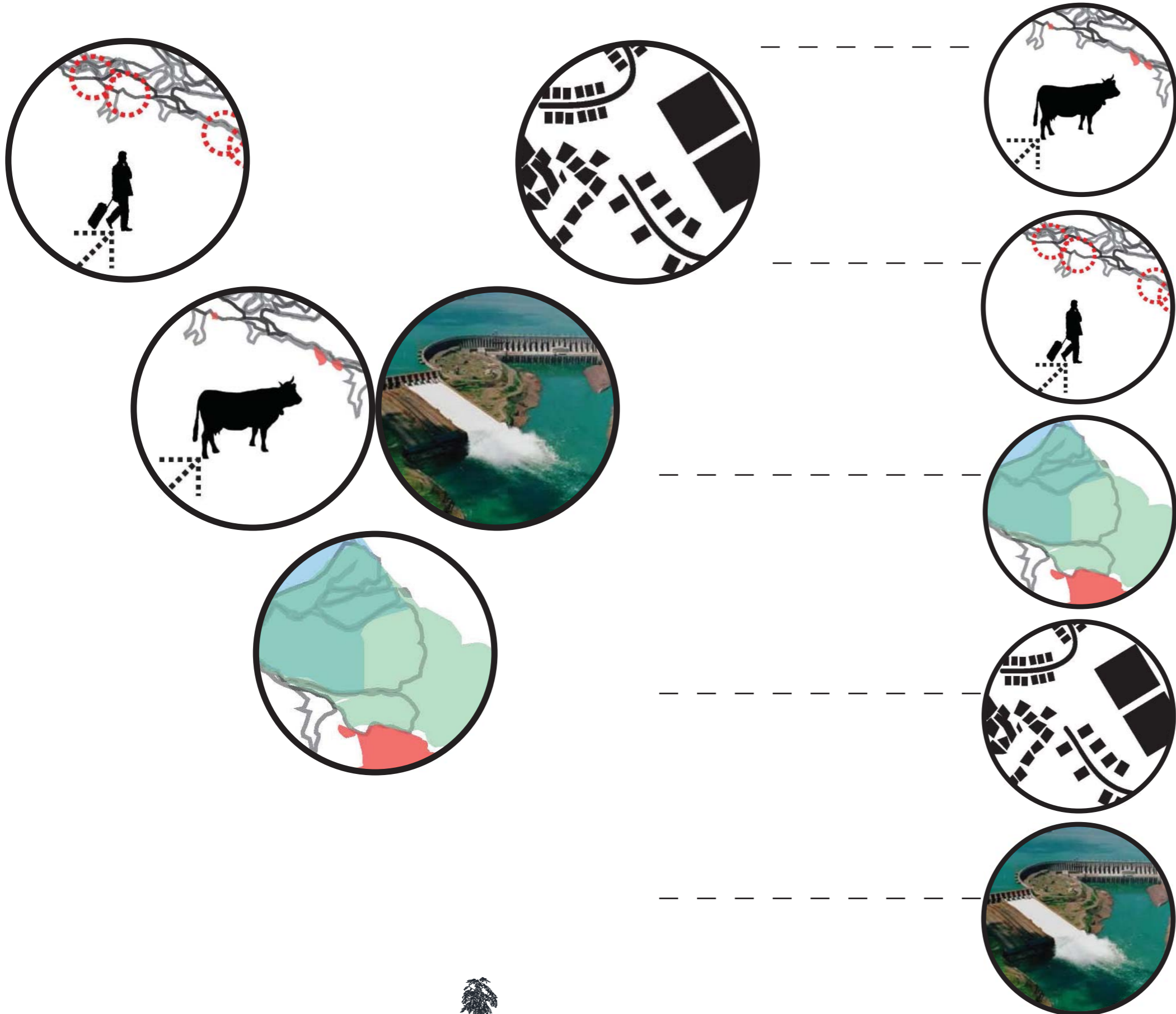
# PROBLEM STATEMENT



ITAIPU DAM, USMANAWAN68 (2014)



# CONCLUSION PROBLEM STATEMENT



LIVESTOCK MOVEMENT THE CATTLE AFFECTS THE NATURAL ENVIRONMENT OF THE DELTA. THEIR FEACES PRODUCES SOIL AND WATER POLLUTION. BESIDES, THE SOIL OF THE SLOPES GET LOOSE BECAUSE OF THE GRAZING. THIS OCCURES EROSION AT THE RIVER SLOPES, WHICH AT IT SELFS MAY OCCURE FLOODING OF THE WETLANDS.

ECONOMIC MOVEMENT THE POPULATION AT THE BORDER IOF THE PARANA DELTA IS INCREASING. BUENOS AIRES AND ROSARIO ARE STILL GROWING. ALSO NEW SETTLEMENT ARE BUILT.

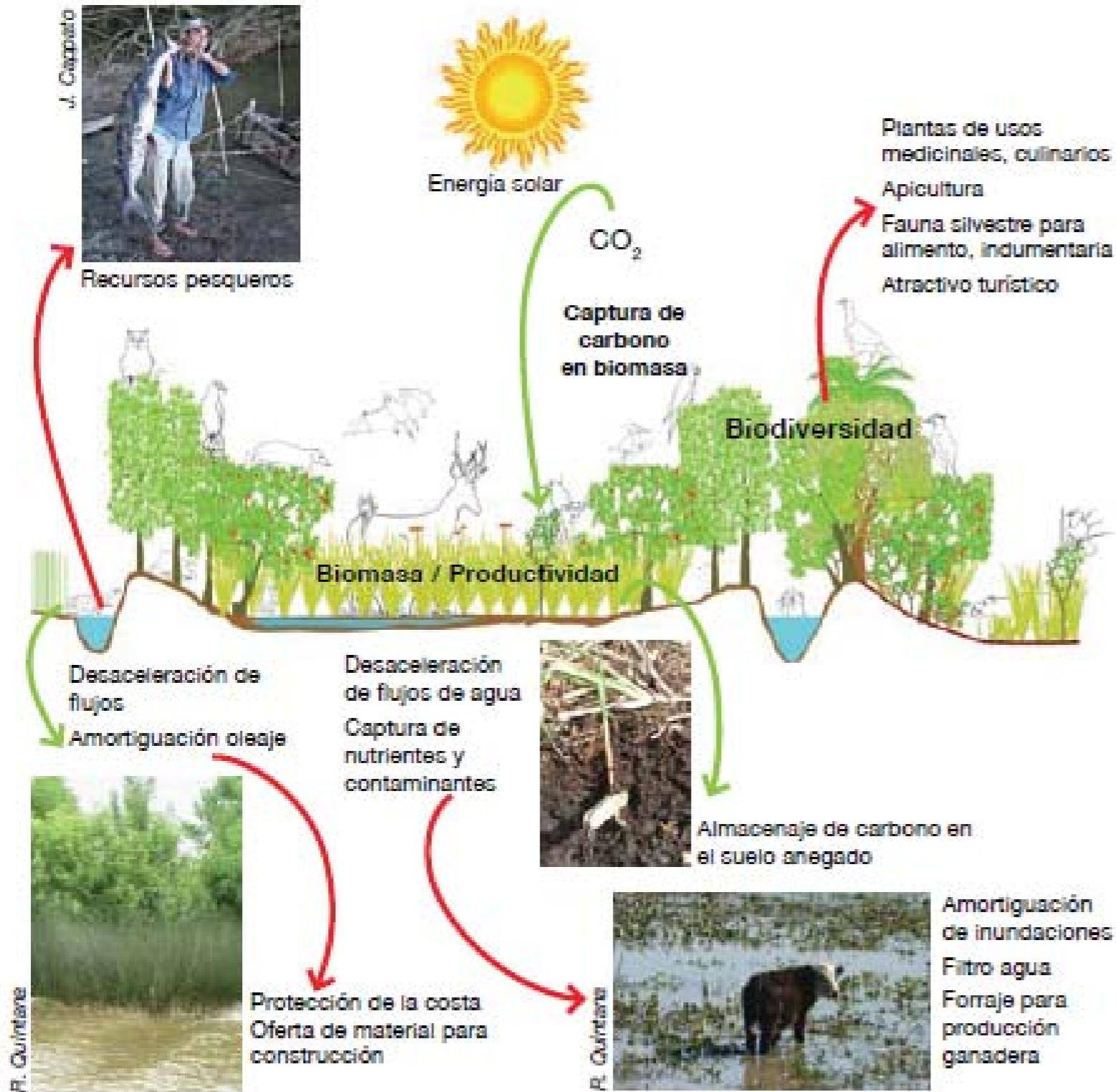
FLOOD PULSE TIDES OF THE RIO DE LA PLATA, FLOOD OF THE PARANA-, GUALEGUAY-, AND URUGUAY RIVER AND LOCAL PRECIPITATIONS ARE THE SOURCES OF THE FLOODS OF THE WETLANDS OF THE PARANA DELTA

URBAN SETTLEMENTS NEW, NONE PLAND URBAN SETTLEMENT ARE BUILT IN THE PARANA DELTA. BECASUE OF THE RECLAMATION OF THE LAND, THE WATER IN THE WETLANDS CAN'T FLOW. THE FLOOD PULSE OF THE WETLANDS IS THE MOST IMPORTANT AND MOST BIOLOGICALL PRODUCTIVE FEATURE OF THE ECOSYSTEM OF THE WETLANDS

DAMS AT THE HIGHER DELTA DESTROY AQUATIC HABITAT AND IS THE SOURCE OF FLOODING OF 100.000 HA OF LAND.



# VULNERABILITY



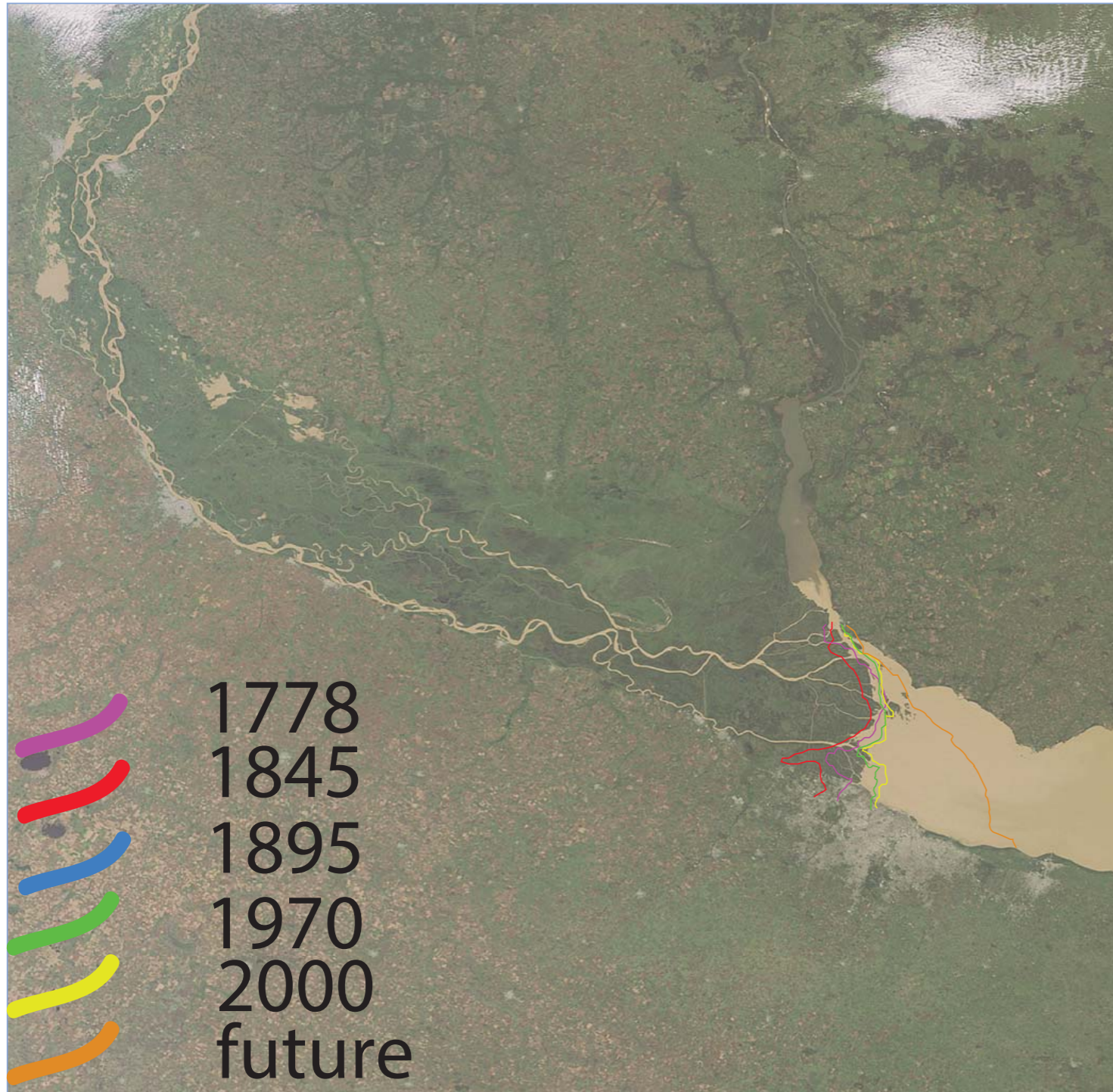
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DIAGRAM ECOLOGICAL IMPORTANCE, WETLAND IN-

Wetlands International - Fundación Humedales



# VUNERABILITY



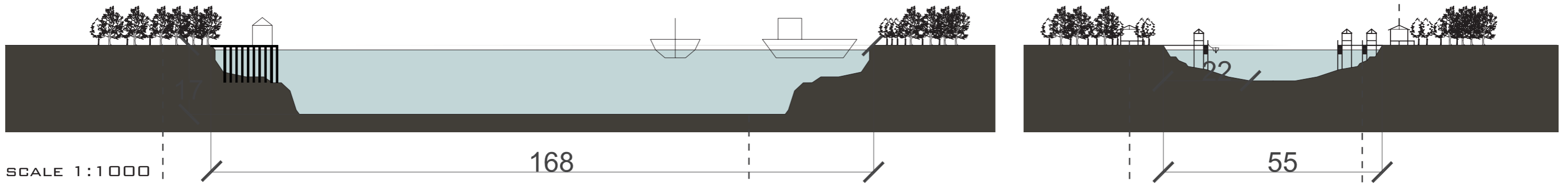
DELTA GROWS BY SEDIMENTATION

50-100M A YEAR

IN 50 YEARS THE DELTA ISLANDS WILL REASCH BUENOS AIRES



# Vulnerability





## POSITION AND AIM

MY POSITION **RESPONDS TO THE PRESSURE** OF THE DELTA COASTLINE. IT FOCALIZES ON THE NEEDS OF THE LOWER MIDDLE CLASS. UNDER THIS PERSPECTIVE NEW COMMUNITIES MUST **RECOGNIZE THE ECOLOGICAL SYSTEM** OF THE DELTA TO BE A SUSTAINABLE COMMUNITY. WITHIN THE CONSIDERATION OF THE **RE-ACCESSIBILITY** OF THE COASTAL AREAS AND OF THE **CONNECTIVITY** WITH THE METROPOLIS.

BY **MAKING PEOPLE AWARE OF THE DYNAMICS** OF THE ECOLOGICAL SYSTEM PEOPLE WILL RESPECT THIS NATURAL ENVIRONMENT MORE, THEY WILL FEEL RESPONSABLE FOR ITS WELL BEING.

BY GIVING PEOPLE **POWER** OVER THEIR OWN HOUSES, BY MAKE IT POSSIBLE TO **EXPAND** IT IF WISHED, PEOPLE WILL INDICATE THEIR SELFS WITH THEIR LIVING ENVIRONMENT WHICH MAKES THEM MORE **RESPONSABLE** FOR THIS ENVIRONMENT. IN THIS WAY THE COMMUNITY WILL BE A **LIVEABLE AREA** WITH SOCIAL CONTROL. WHICH WILL MAKTE THE LOCATION A **SAFE AND HEALTHY PLACE TO LIVE.**



**HOW TO REEVALUATE HOUSING FOR THE LOWER MIDDLE CLASS AS A DENSIFY AREA IN THE ECOLOGICAL IMPORTANT PARANA DELTA OF ARGENTINA AS A PART OF THE METROPOLISATION OF THE COASTAL AREA BETWEEN ROSARIO AND BUENOS AIRES?**



# TARGET GROUP



STARTERS



MORE SPACE AROUND THE DWELLING



SMALL FAMILIES



GREEN ENVIRONMENT

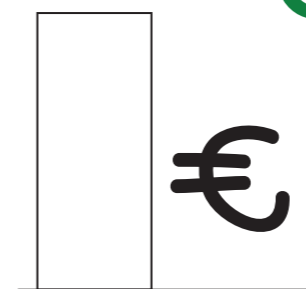
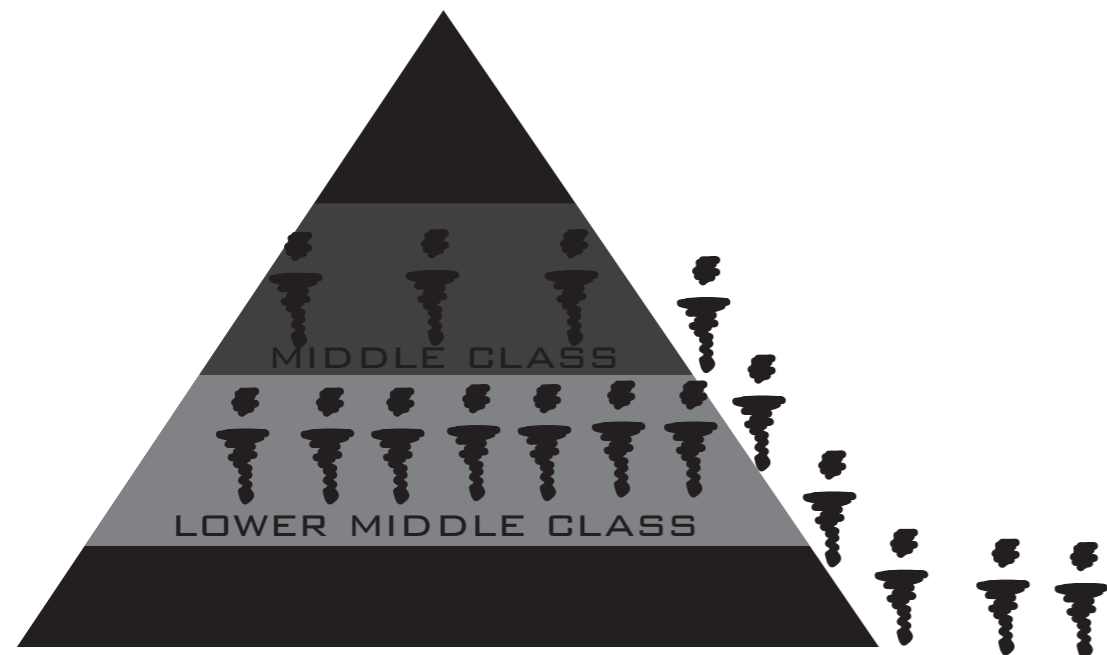


SMALL FAMILIES LIVING WITH GRANDPARENT



CONNECTION ECONOMIC HART

ECO-



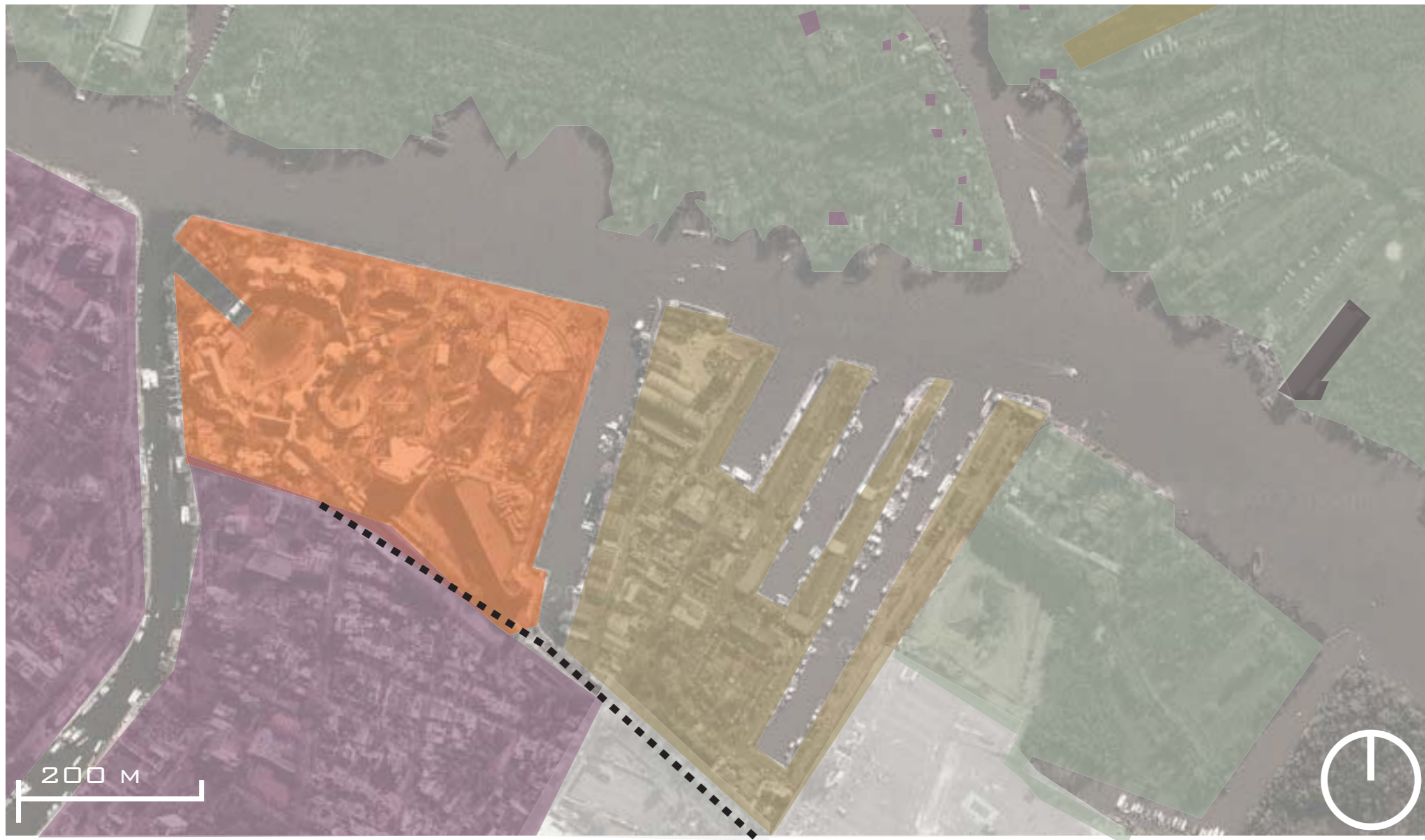
CONNECTION ECONOMIC HART

ECO-

# PILOT LOCATION



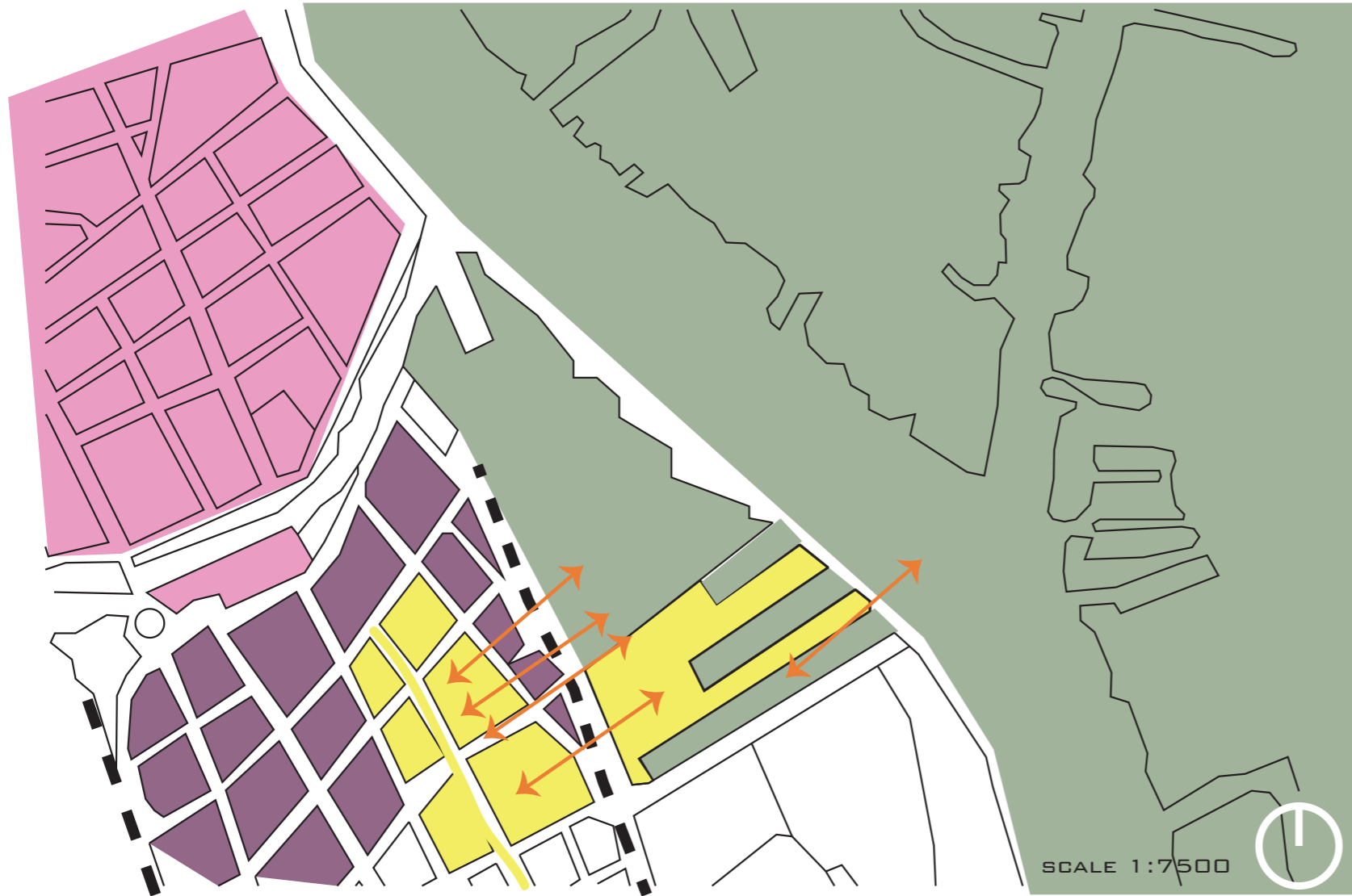
# LAND USE



-  HOUSING
-  FARMING
-  MANUFACTURING
-  UNUSED LAND
-  ENTERTAINMENT PARK
-  HARBOR
-  PARKING



# ECONOMIC VALUE



- URBAN TISSUE
- DELTA
- URBAN TISSUE RUNDOWN AREA
- ECONOMIC HIGH VALUE



Flavio Pigazzi, (2009)



Mauricio, (2005)

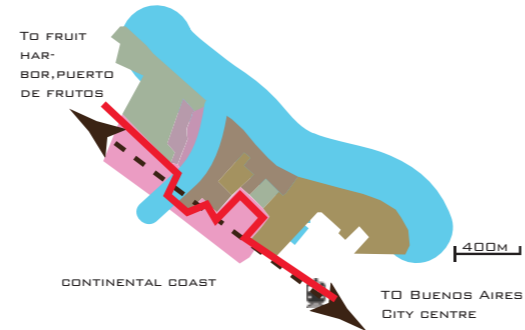


# LAND USE

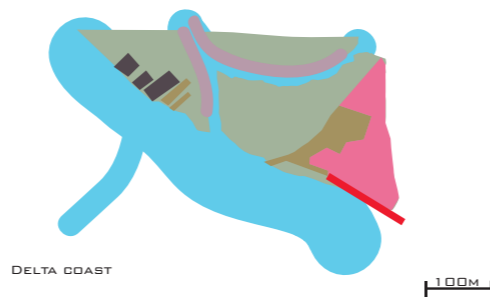
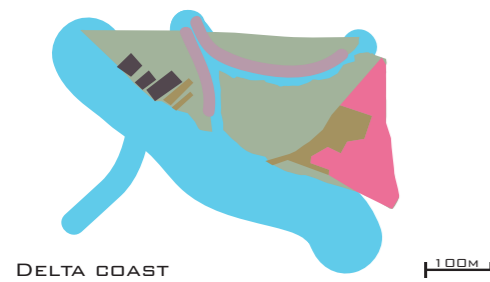
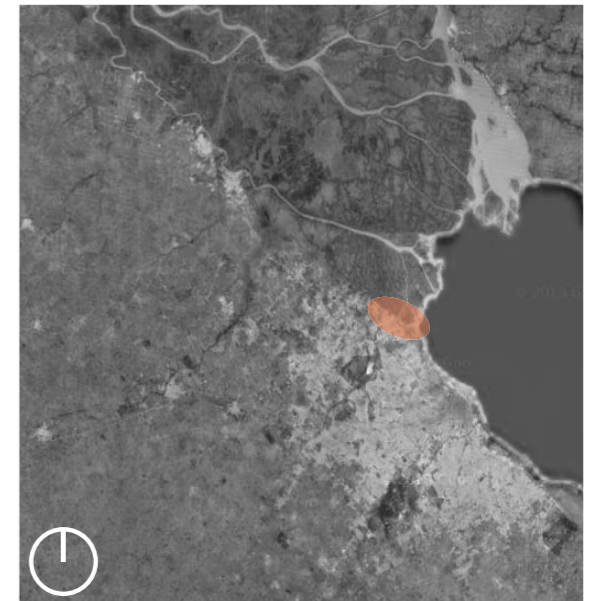
## LAND USE



## CONNECTIVITY



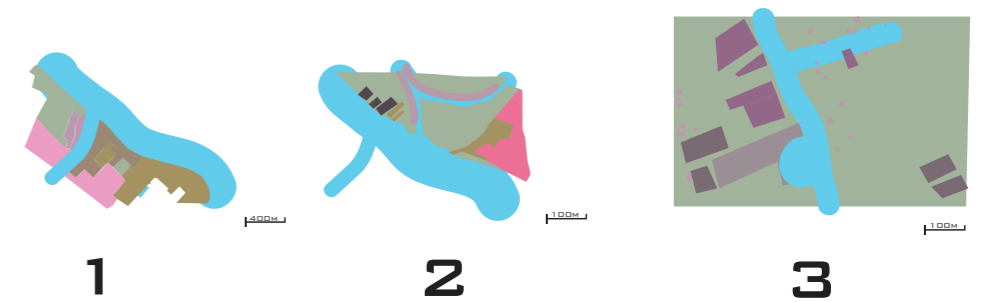
CONTINENTAL AREA  
BAD CONNECTION FROM AND TO DELTA

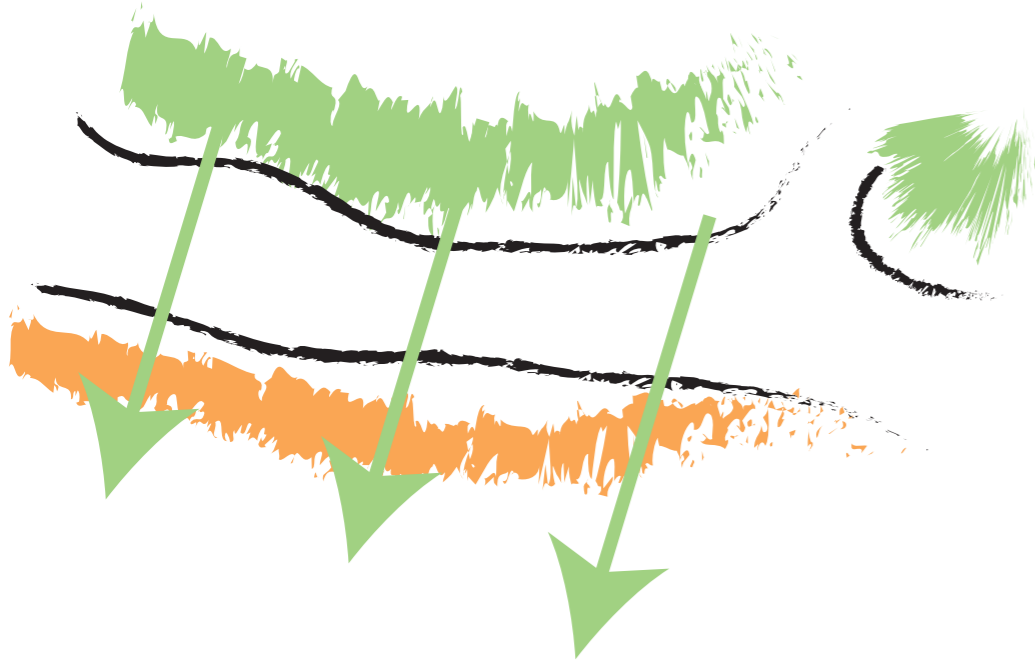


COASTAL AREA  
BAD CONNECTION FROM AND TO METROPOLIS  
BETTER CONNECTION IN THE DELTA  
GATED COMMUNITIES DISTURBS THIS ACCESSIBILITY CONNECTION BY BOAT.



INNER DELTA COAST  
GOOD CONNECTIVITY FROM THE INTER DELTA AND THE WATER  
BAD CONNECTION FROM AND TO METROPOLIS

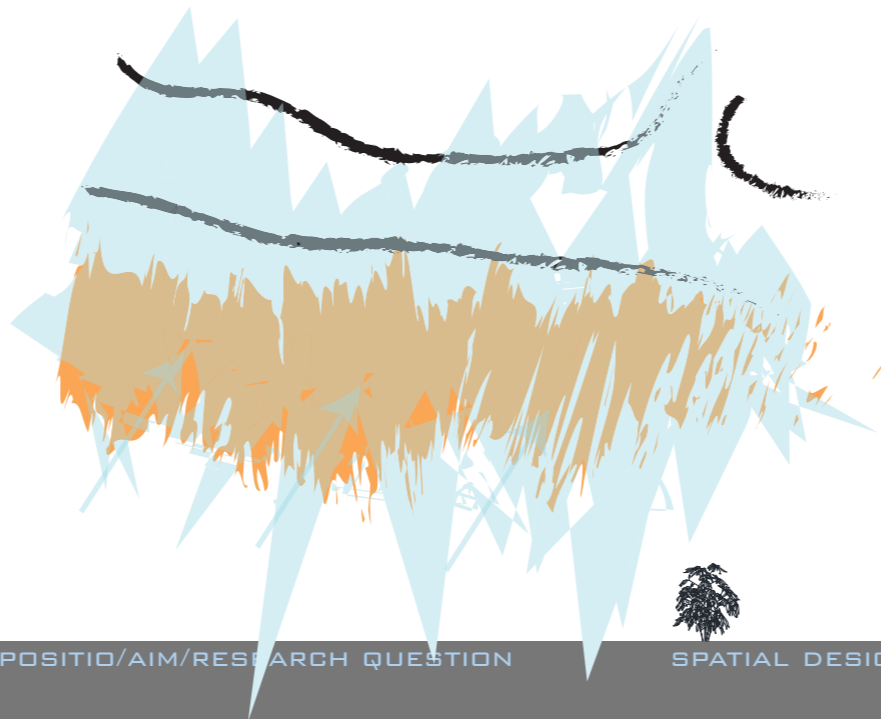
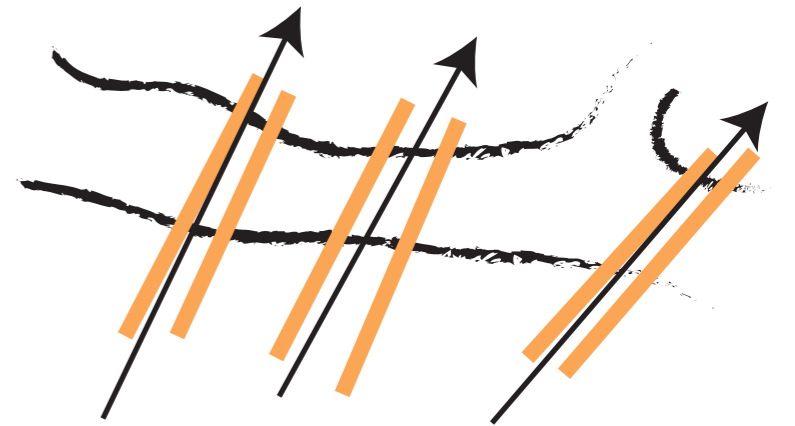
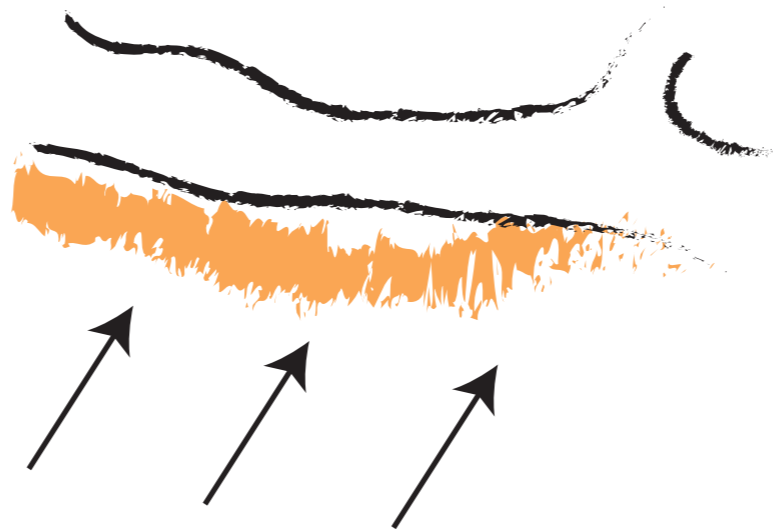




FIRST THE HIGH PRESSURE AT THE COAST DUE TO THE CLOSED COMMUNITIES AND INFORMAL SETTLEMENTS. BY INTRODUCING THE DELTA SYSTEM INTO THE URBAN SYSTEM THE COASTAL AREA IS OPENED AND NEW CONNECTION TO AND FROM THE DELTA ARE PROVIDED.

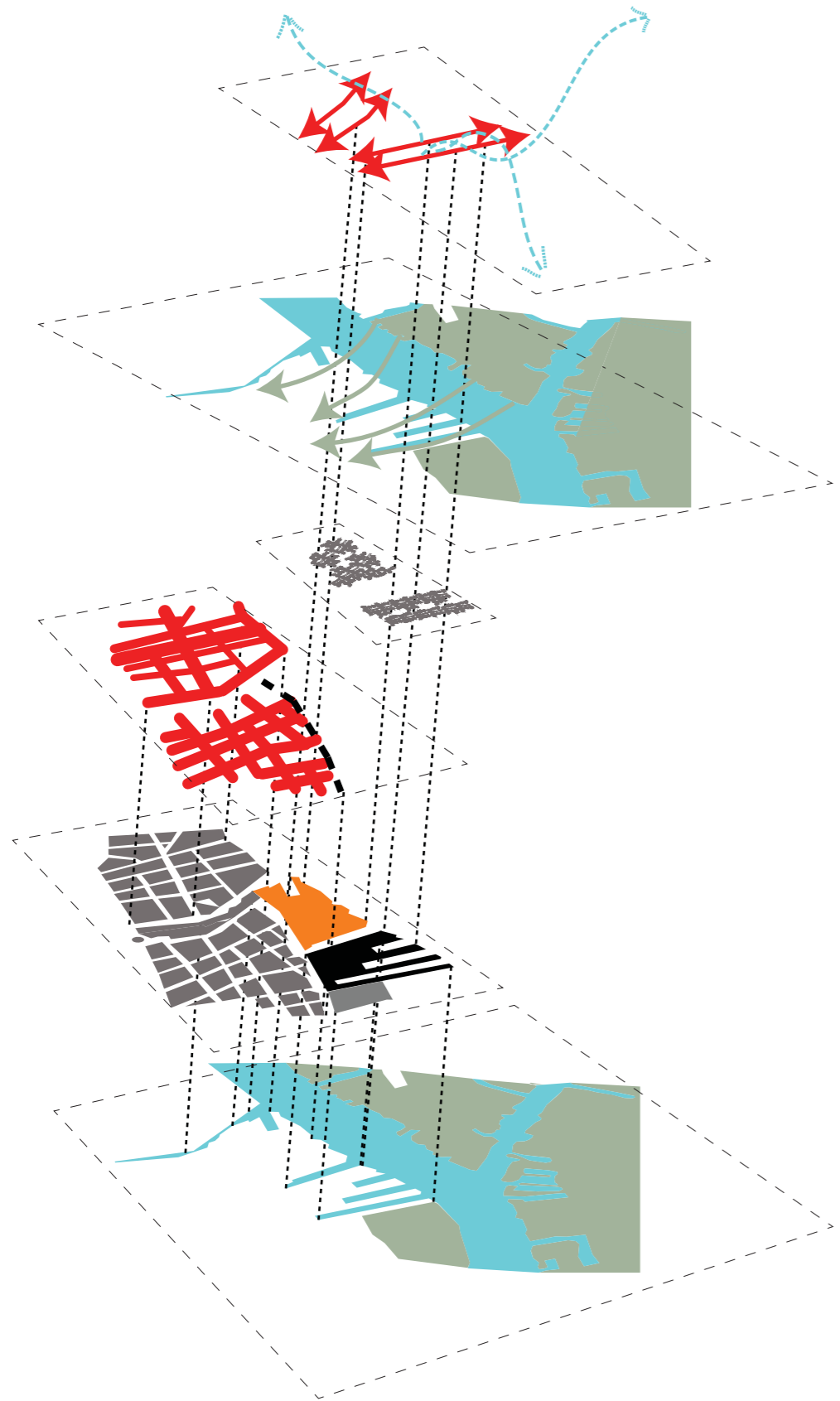
ALSO BY MAKING THE URBAN TISSUE IN THE COAST LESS DENSE, I COUNTERACT AT THE MISSING IMPERMEABILITY OF THE COASTAL AREA. THE COASTAL AREA NOW IS A FLOOD PLAIN THAT CAN ADAPT HUGE AMOUNT OF WATER DURING HAVY RAINFALL. BESIDES THE FUNCTIONALITY OF A FLOODPLAIN ALSO THE APPERANCE OF A GREEN COAST IS BETTER IF THIS IS PARTLY GREEN AND ACCESSIBLE.

BY INTEGRATING THE DELTA SYSTEM INTO THE URBAN SYSTEM SEEVRAL KNOWN PROBLEMS OF THE AREA ARE COUNTERACTED. THIS NEW URBAN SYSTEM OF INTERGARTING THE DELTA SYSTEM AND THE URBAN SYSTEM GIVES THE COASTAL AREA MORE VALUE.









NEW ROUTING

INTRODUCING DELTA  
SYSTEM IN URBAN  
SYSTEM

NEW URBAN SETTLEMENTS

ROUTING

URBAN TISSUE

NATURAL LAYER



# SPATIAL DESIGN

## LAND USE

- AREA INTRODUCE URBAN IN NATURE
- AREA INTRODUCE NATURE IN URBAN
- DIKE WITH PARKING FACILITIES
- HARBOR--> HOP ON HOP OF TO AND FROM DELTA DISTRIBUTION CENTER RECYCLABLE MATERIALS FOR USE IN COMMUNITIES

## ECONOMIC

- ACCESSIBLE FOR PUBLIC
- PUBLIC BUILDING AS ATTRACTION IN AREA

## CONNECTIVITY

- PUBLIC ROUTE CONNECTS DEVELOPED AREA BY COMMUNITY WITH THE DELTA
- HARBOR PROVIDES CONNECTION TO AND FROM DELTA



# STRATEGY

TO MAKE THIS PLAN AS REASONABLE AS POSSIBLE IT IS IMPORTANT TO MAKE A STRATEGY FOR THE DEVELOPMENT OF THE AREA. THAT IS WHY I MADE A STRATEGY FOR THIS PILOT LOCATION. FIG. 7.3

## FASE 1:

DEVELOPING THE HARBOUR. THIS WILL INCREASE THE ECONOMIC VALUE OF THE AREA AND MAKES THIS AREA AN ATTRACTION POINT OF THE CITY OF BUENOS AIRES. BESIDES THIS WILL PROVIDE THE ACCESS TO AND FROM THE DELTA WHICH IS IMPORTANT IN MY CONCEPT.

## FASE 2:

DEVELOPING HOUSES FOR THE HIGHER MIDDLE CLASS. THE MONEY PROVIDED FROM THIS PROJECT WILL BE USED IN FASE 3.

## FASE 3:

IN THIS STADIUM THE HOUSES FOR THE LOWER MIDDLE CLASS WILL BE BUILT WITH THE MONEY FROM FASE 2.

## FASE 4:

IN FASE FOR THE PROTOTYPES WILL EXPAND INTO THE DELTA. A NEW GENERATION OF LIVING IN THE DELTA WILL START.

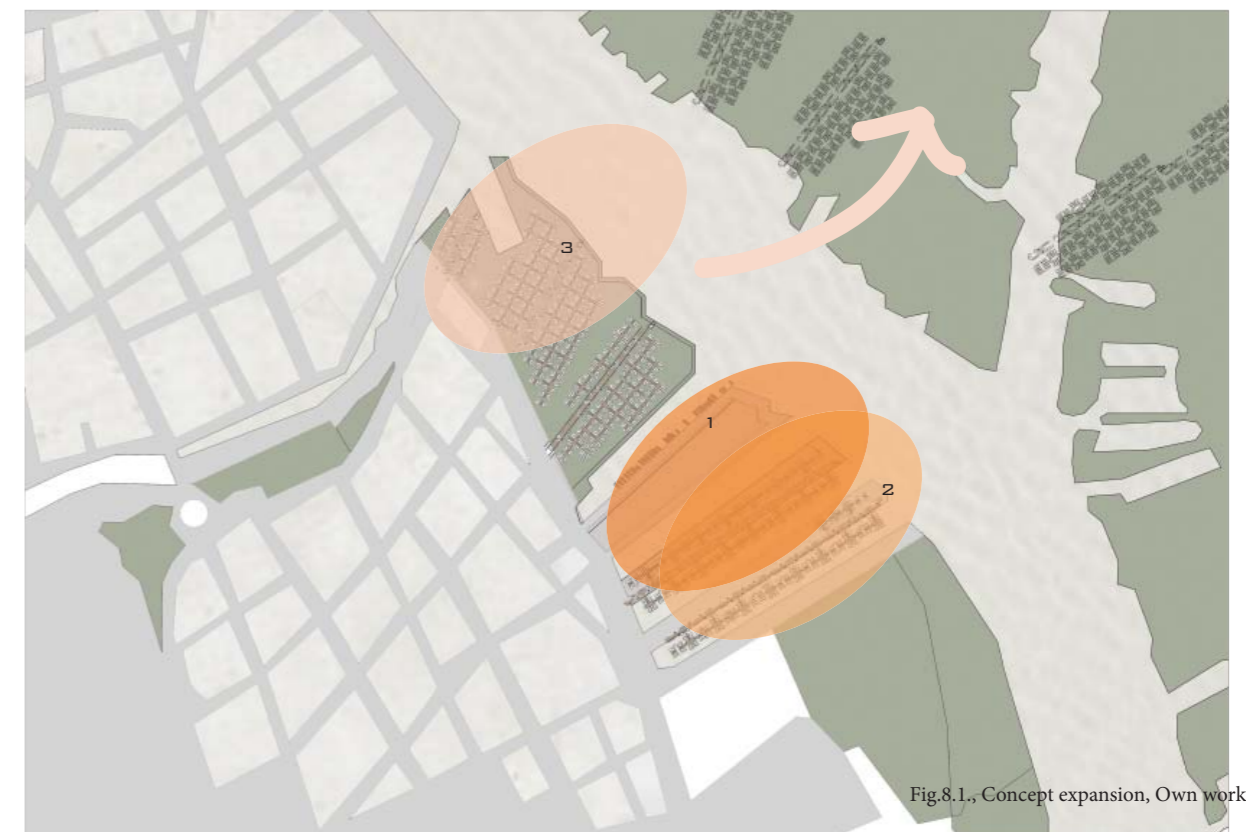


Fig.8.1., Concept expansion, Own work, (2014)



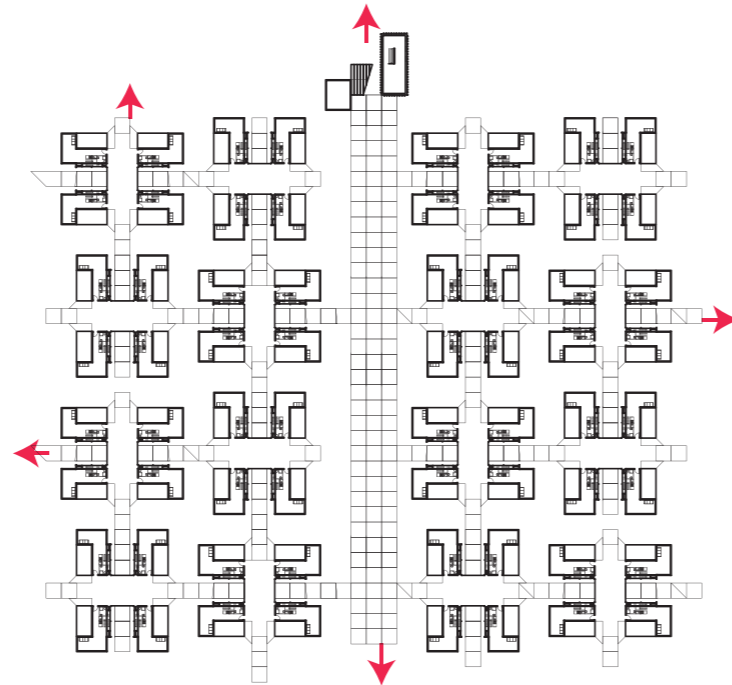
# CONCEPT

## REGIONAL SCALE

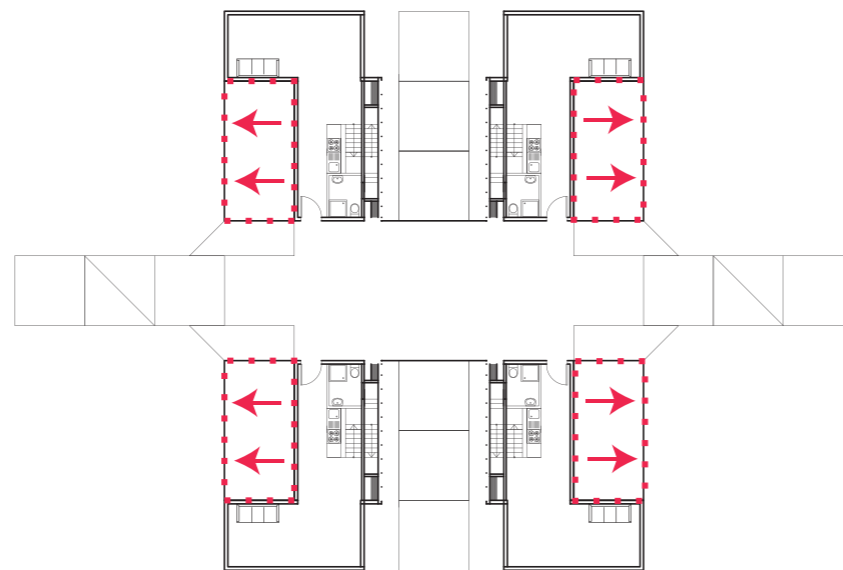


## EXPANSION

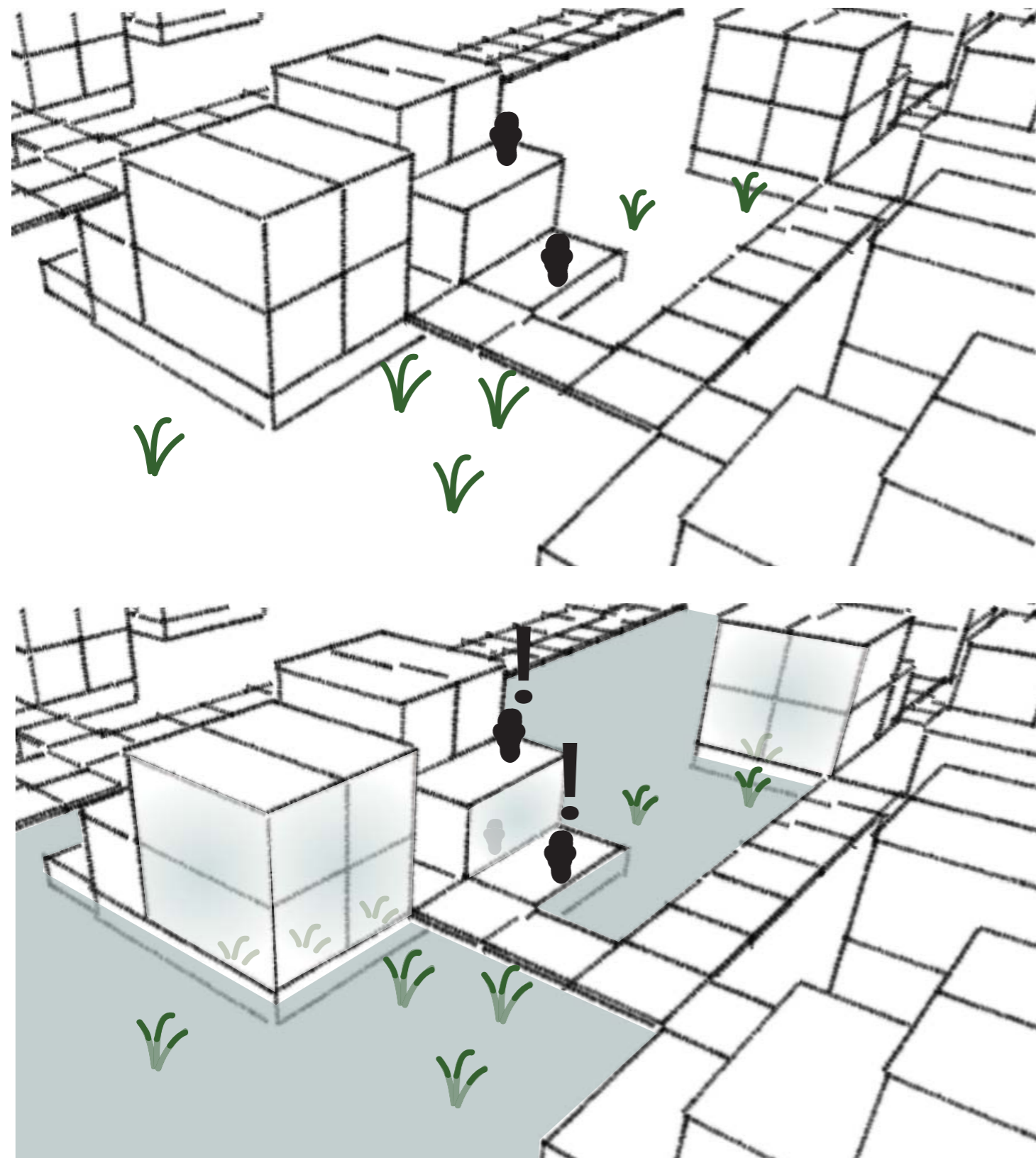
## COMMUNAL SCALE



## BUILDING SCALE



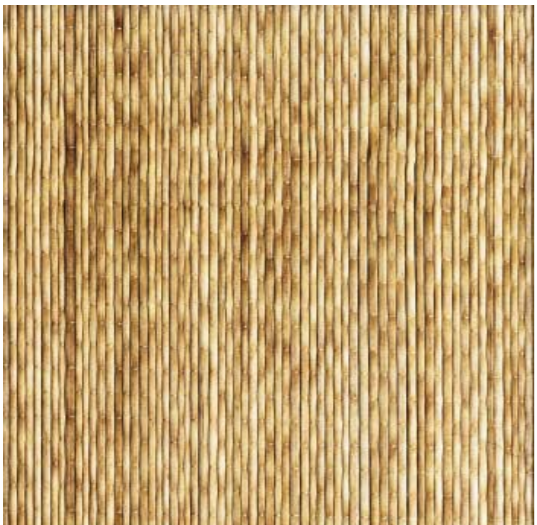
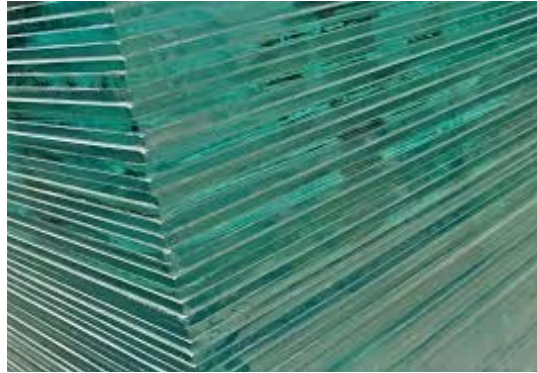
# CONCEPT



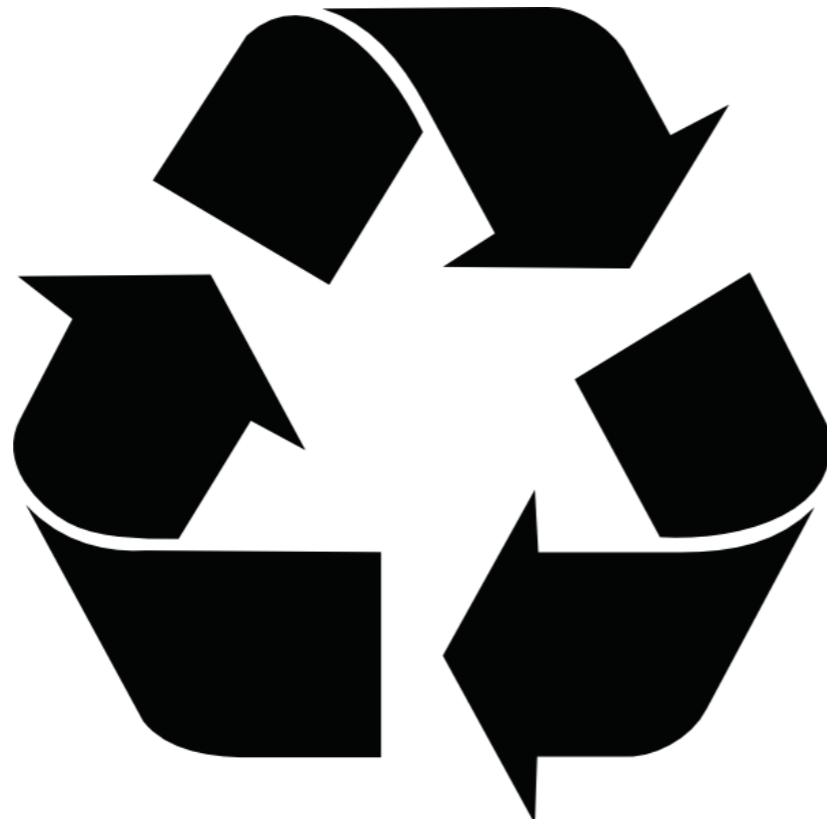
## AWARENESS DYNAMICS DELTA



# CONCEPT



USE OF RECYCLED,  
RECYCABLE  
AND LOCAL MATERIALS







# CASE STUDY



VILLA VERDE, ELEMENTAL  
CONSTITUCIÓN, CHILE

BUDGET: ? US \$204 /SQM

484 HOUSES + 3 COMMUNITY CENTERS

SITE: 85,000 M2

## TYPE 1

INITIAL AREA: 56.44 M2, 11526 US \$

FINAL AREA: 64.90 M2, 13260 US \$

## TYPE 2:

INITIAL AREA: 56.88 M2, 11628 US \$

FINAL AREA: 85.10 M2, 17340 US \$

COMMUNITY CENTER: 95.90 M2, 19584 US \$

37% MINIMUM OF GROUND BUILD

48% MAXIMUM OF GROUND BUILD

57 HOUSES PER HECTARE

FOR PROTOTYPE:

INITIAL AREA: 54 M2

FINAL AREA: 90 M2

COMMUNITY CENTRE: 180 M2



QUINTA MONROY, ELEMENTAL  
IQUIQUE, CHILE

BUDGET: US \$204 /SQM

UNITS: 93 HOUSES

SITE: 5000 M2

CONSTRUCTED AREA: 3500 M2

INITIAL AREA HOUSE : 36 M2, 7344 US \$

FINAL AREA HOUSE: 70 M2, 14280 US \$

INITIAL AREA APARTMENT: 25 M2, 5100 US \$

FINAL AREA APARTMENT: 72 M2, 14688 US \$

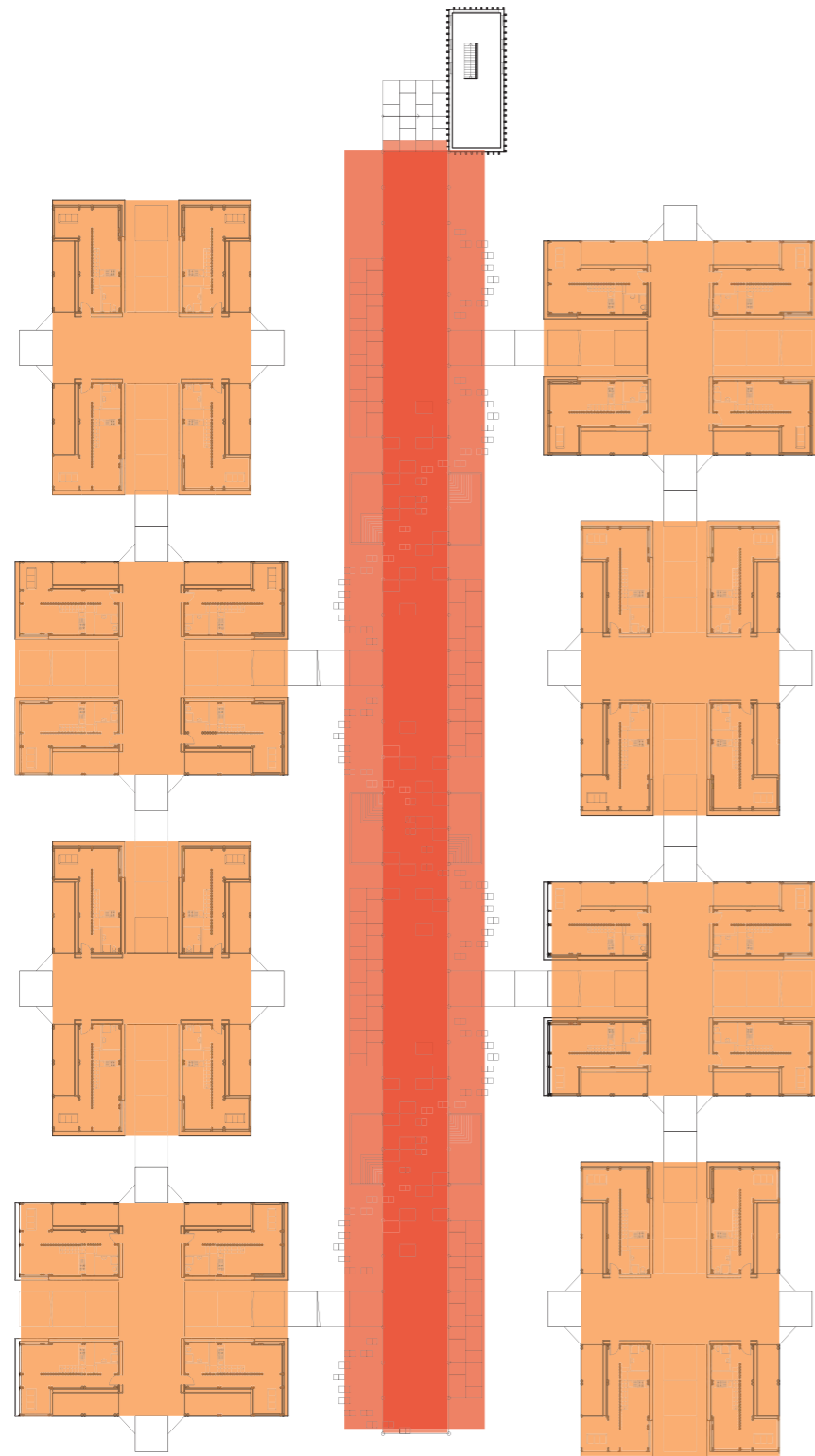
70% OF GROUND BUILD

186 HOUSES PER HECTARE

BUDGET: US \$204 /SQM

40 HOUSES PER HECTARE





## COMMUNAL FUNCTIONS

### SOCIAL HOUSING

BUILT IN CLUSTER PER FOUR HOUSES. ONE HOUSE FLOORPLAN IN 54 SQUARE METER (INDOOR AND OUT-DOOR AREA)

A CLUSTER PLUS COMMUNAL AREA IS 288 SQUARE METERS

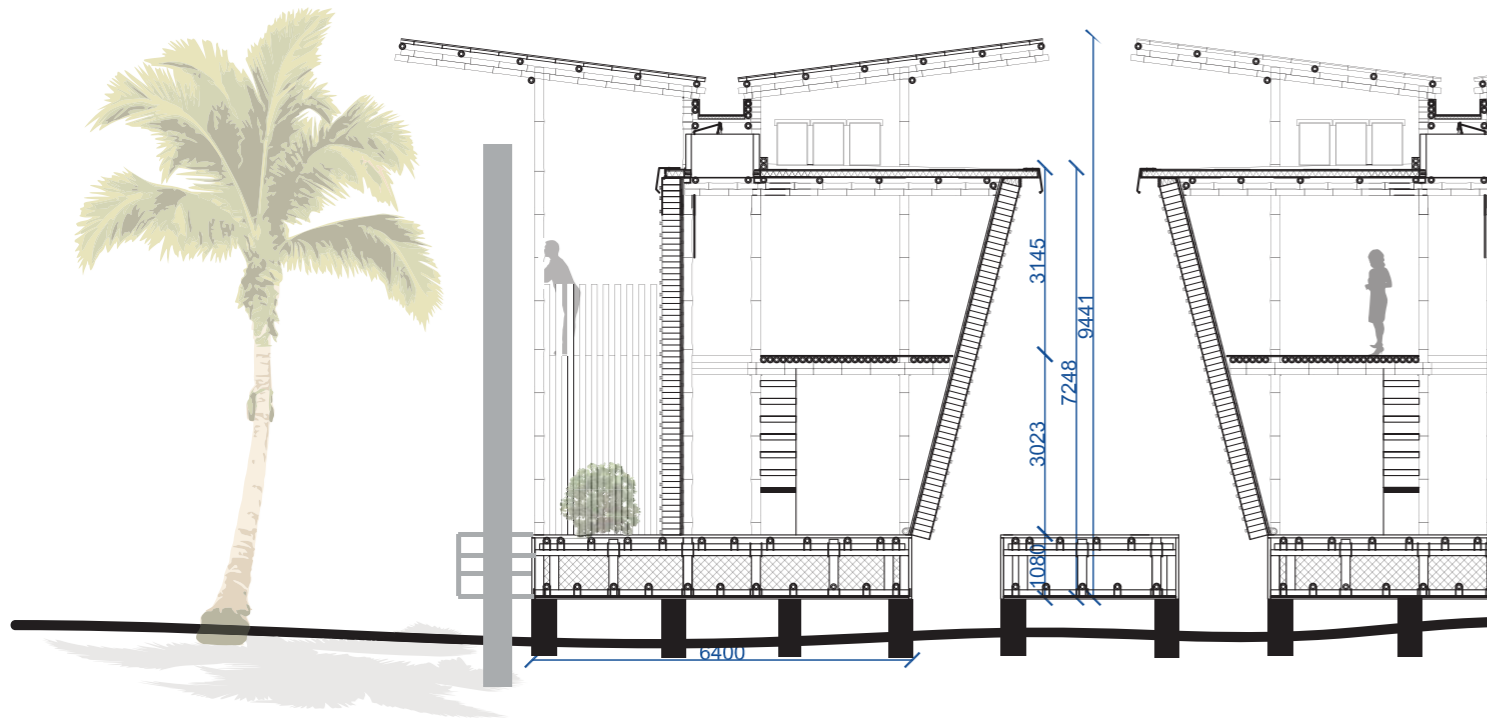
THE AMOUNT OF CLUSTERS AT A PUBLIC ROUTE CAN VARIATE, FOR THE DESIGN I USED EIGHT CLUSTERS OF FOUR HOUSES

### PUBLIC ROUTE

THE PUBLIC ROUTE CONSIST OUT OF TWO PARTS. ONE PART HAS A CONNECTIVE FUNCTION, IT CONNECTS THE URBAN TISSUE WITH THE DELTA, IT IS A STRAIGHT ROAD FOR PEDESTRIANS ONLY ACCESSABLE FOR CARS IN AN EMERGENCY SITUATION.

AT BOTH SIDES OF THIS ROAD A STROKE OF WATER RELATED ELEMENTS ARE DESIGNED. THESE ELEMENTS ARE SEEN AS SMALL OUTDOOR LIVINGROOMS WHERE PEOPLE MEET AND INTERACT WITH THEIR ENVIRONMENT.





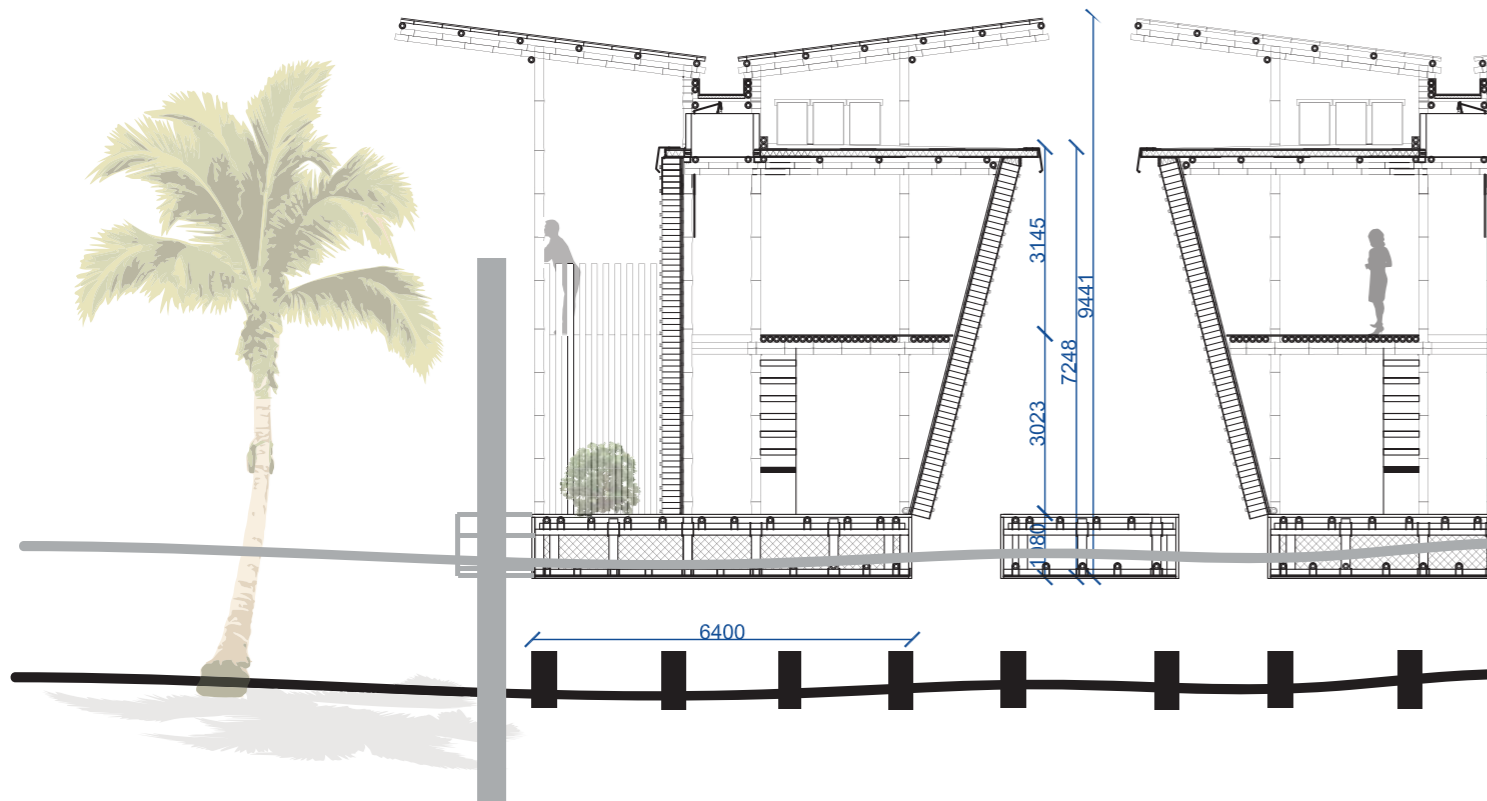
## AMPHIBIOUS PROTOTYPE

CHARACTER OF ADAPTING RISING WATER DURING A FLOOD

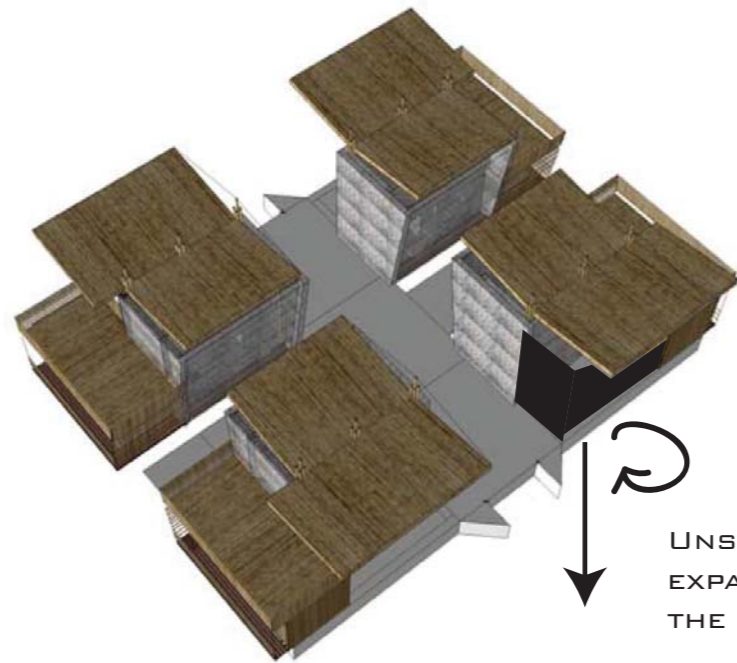
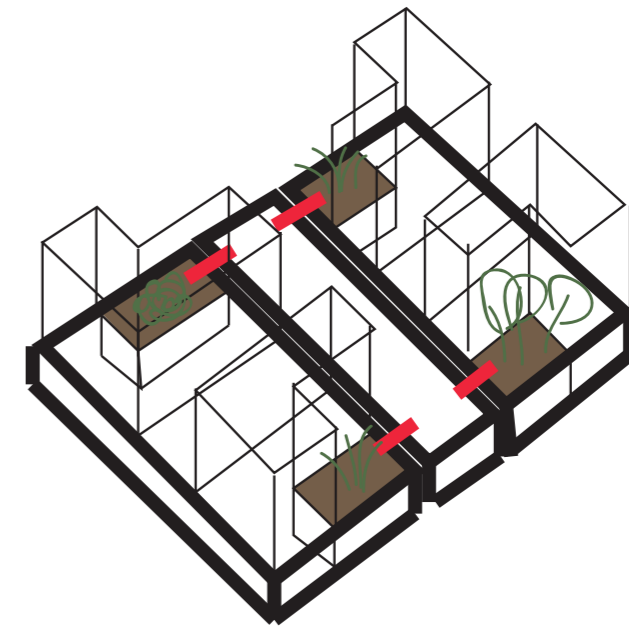
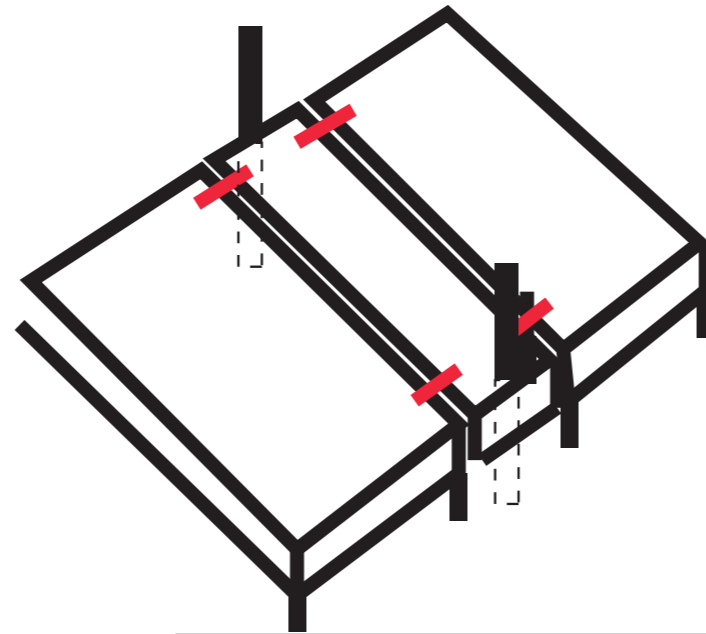
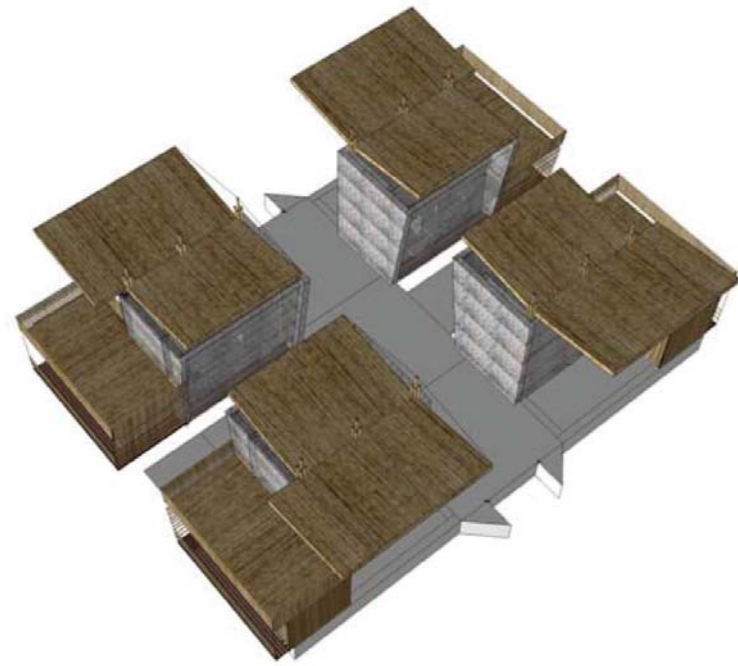
IN THIS CASE PEOPLE ARE NOT HARMED BY RISING WATER, NEITHER ARE THEIR HOUSES AND BELONGINGS.

THE HOUSES ARE SUSTAINABLE BECAUSE IT CAN ADAPT A POSSIBLE HIGHER WATER LEVEL THAN EXPECTED AT THE FIRST PLACE.

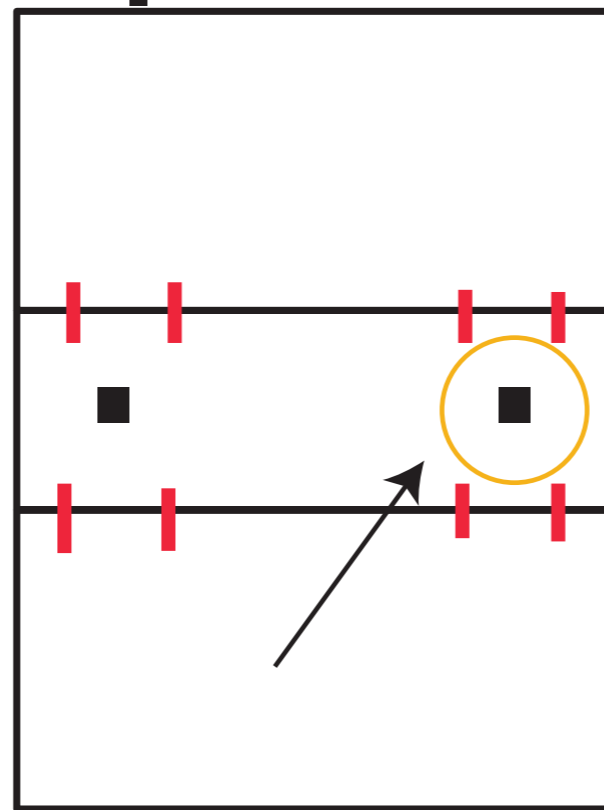
CHANGES OF THE ENVIRONMENT ARE VISIBLE WHEN THE HOUSES RISE WITH THE WATER LEVEL, THIS MAKES PEOPLE AWARE OF THESE CHANGES.



## STABILITY



UNSTABLE BY  
EXPANSION OF  
THE DWELLING



STABILISATION  
ELEMENTS



# SOCIAL HOUSES

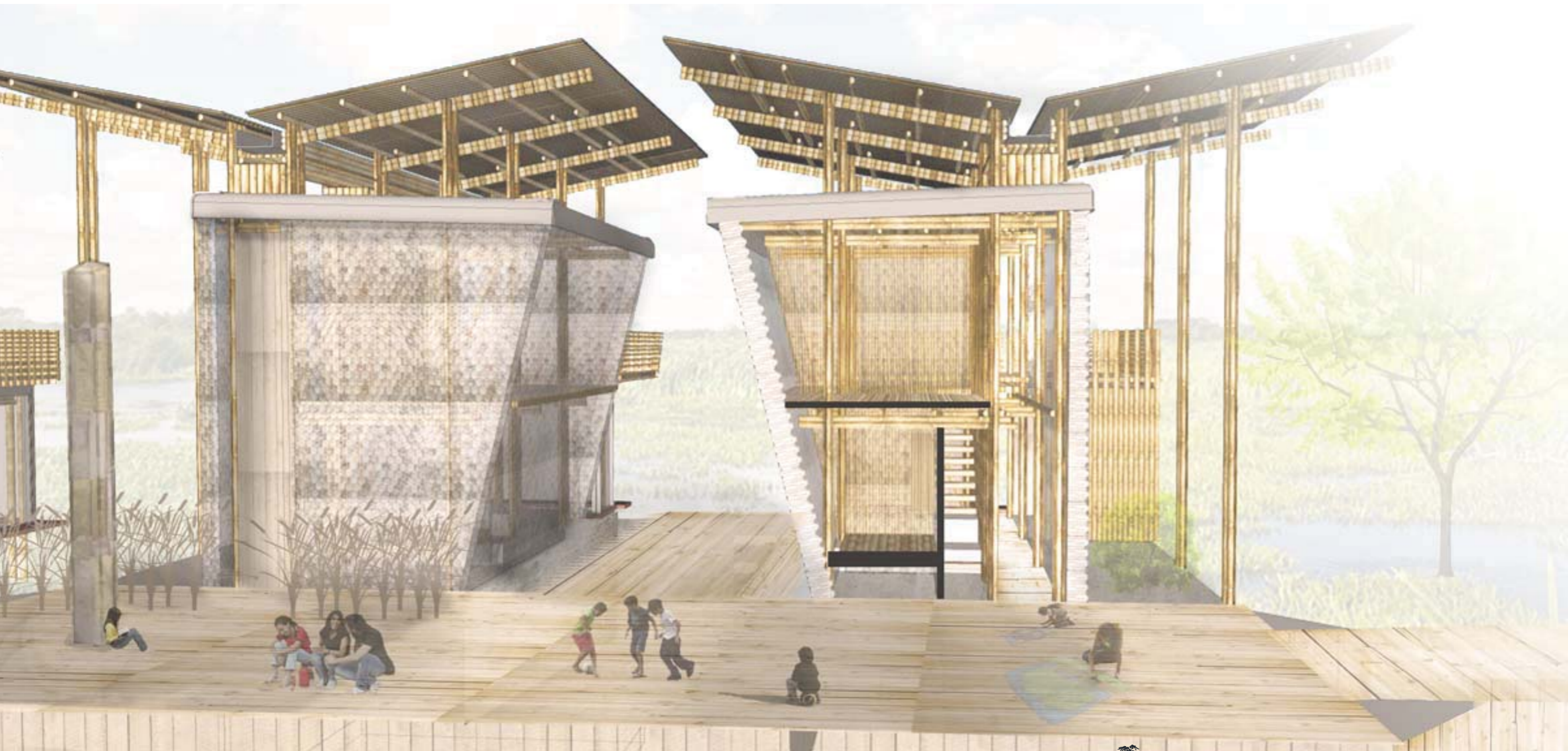
## STABILITY



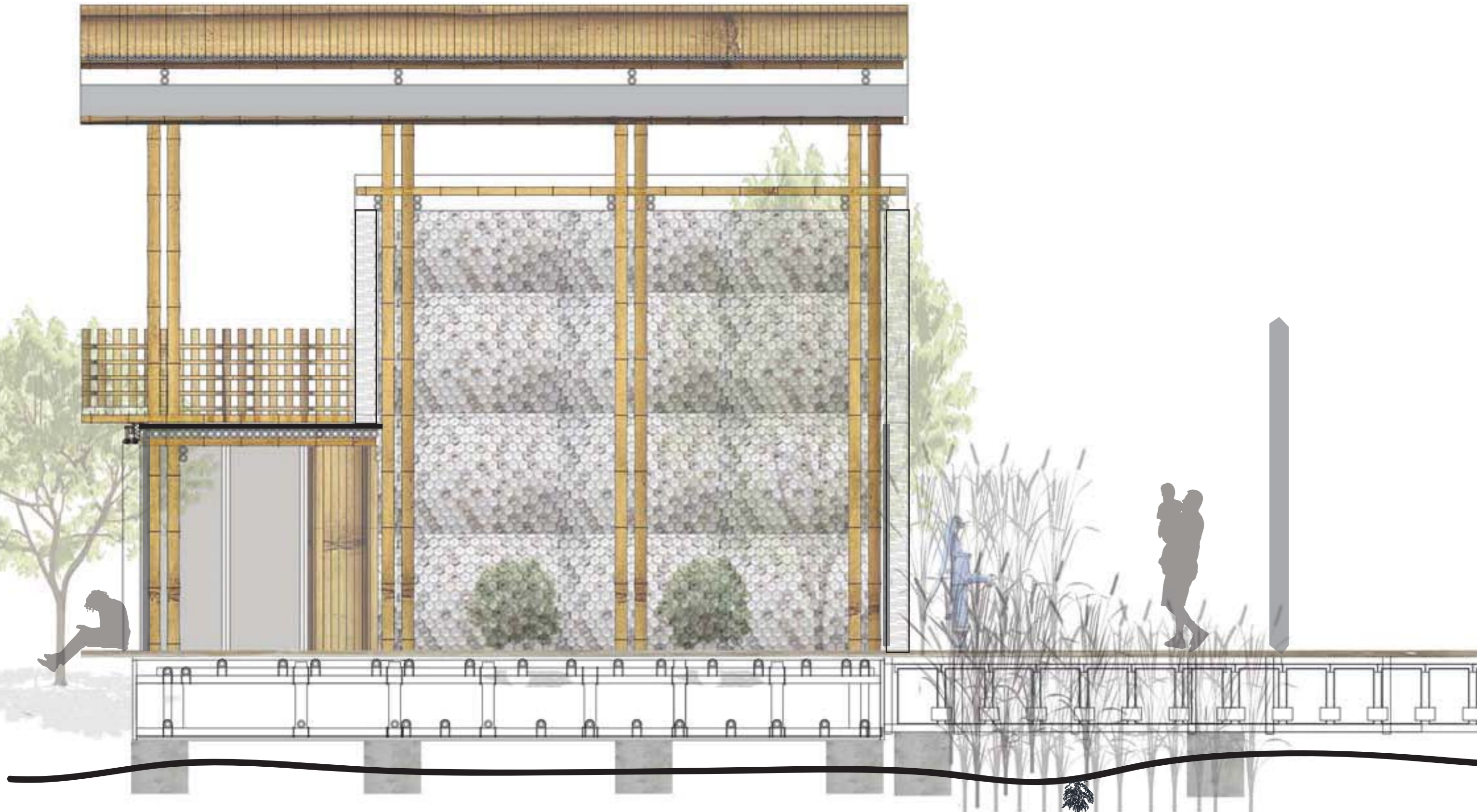
SOURCE: THE LIFT HOUSE, PRITHULA PROSUN, WATERLOO, ONTARIO, CANADA, 2011



COMMUNAL AREA  
INTERIOR SPACE



## INTERACTION INDOOR OUTDOOR

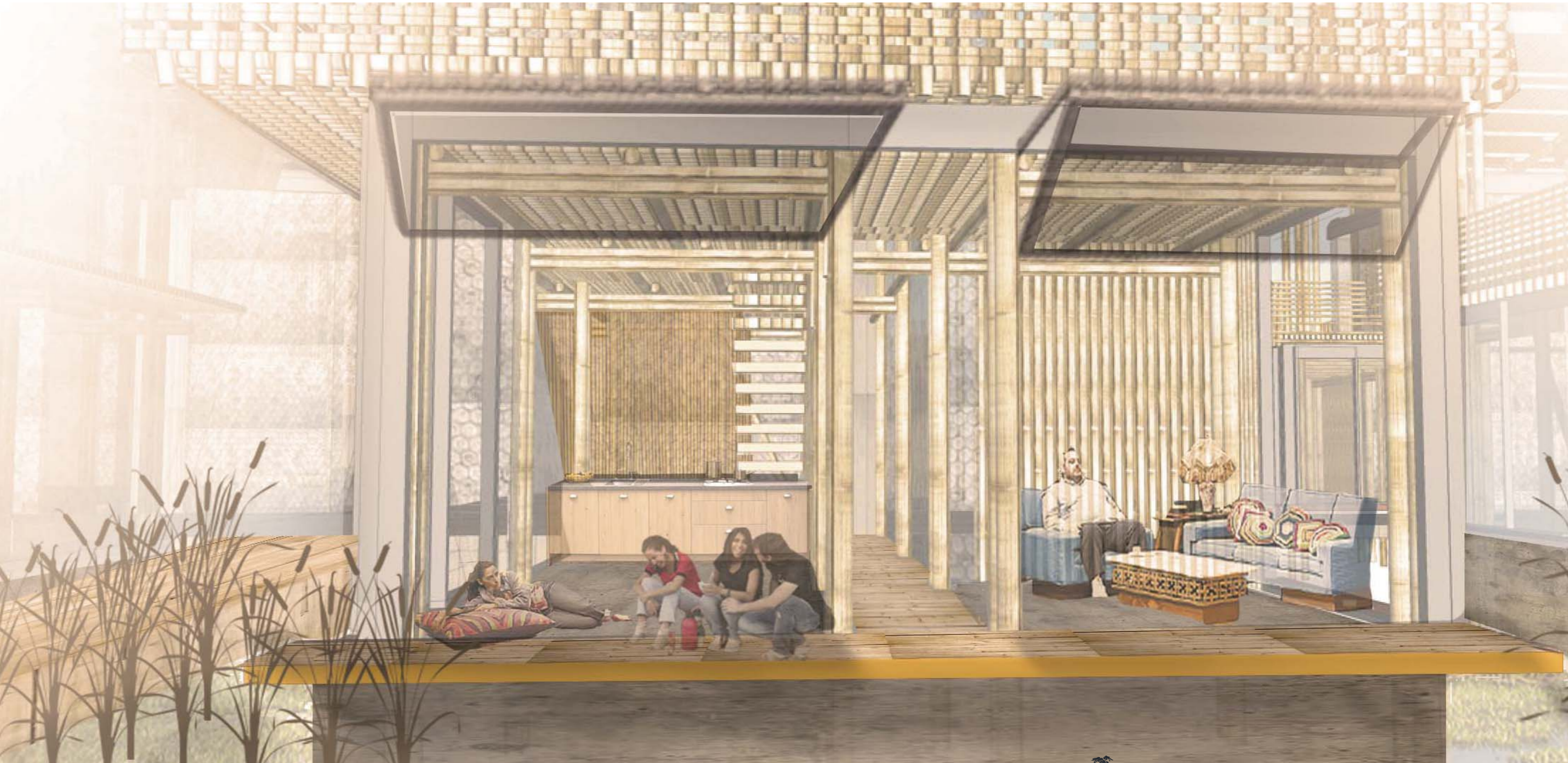


## CONNECTION WITH ENVIRONMENT

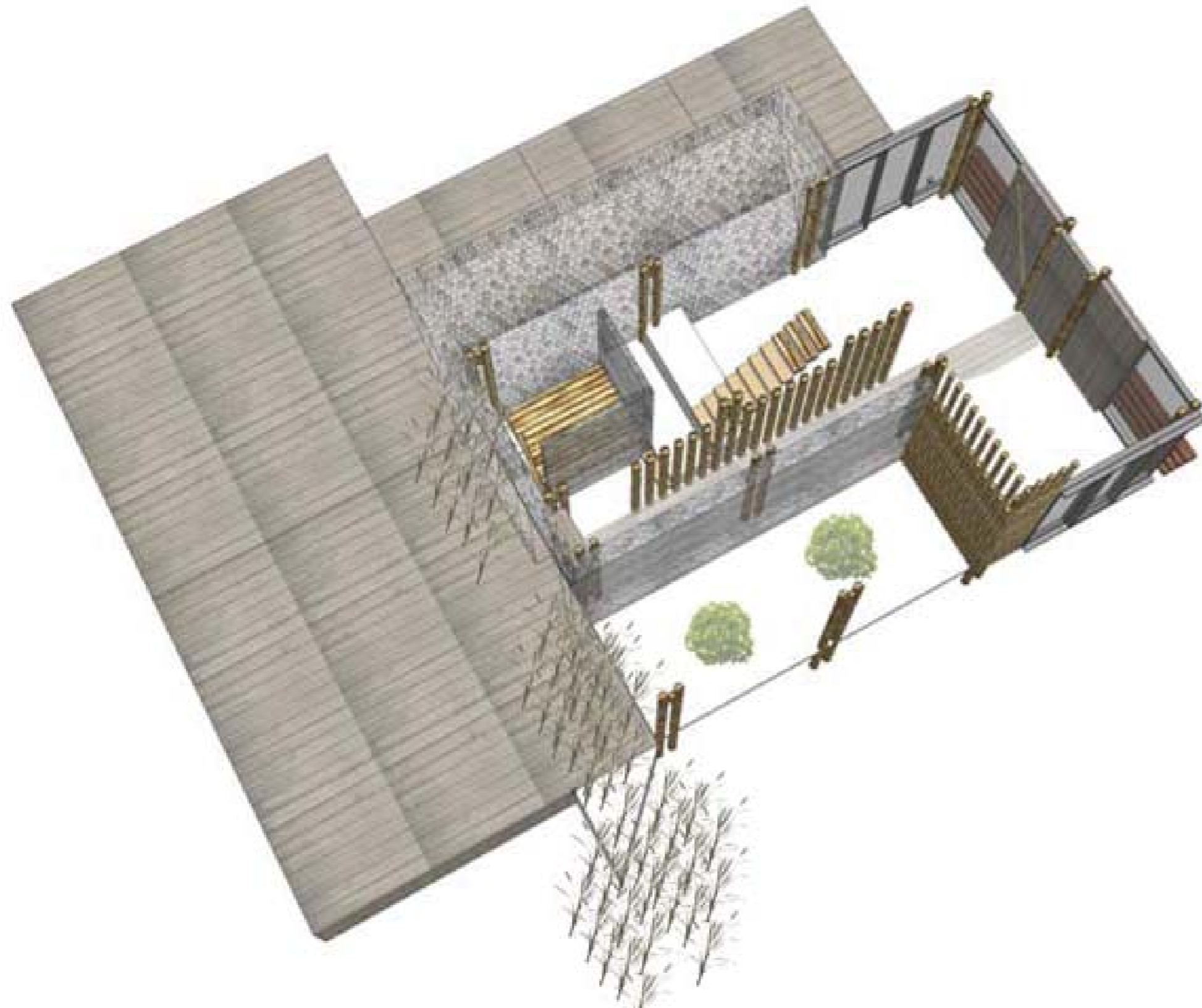




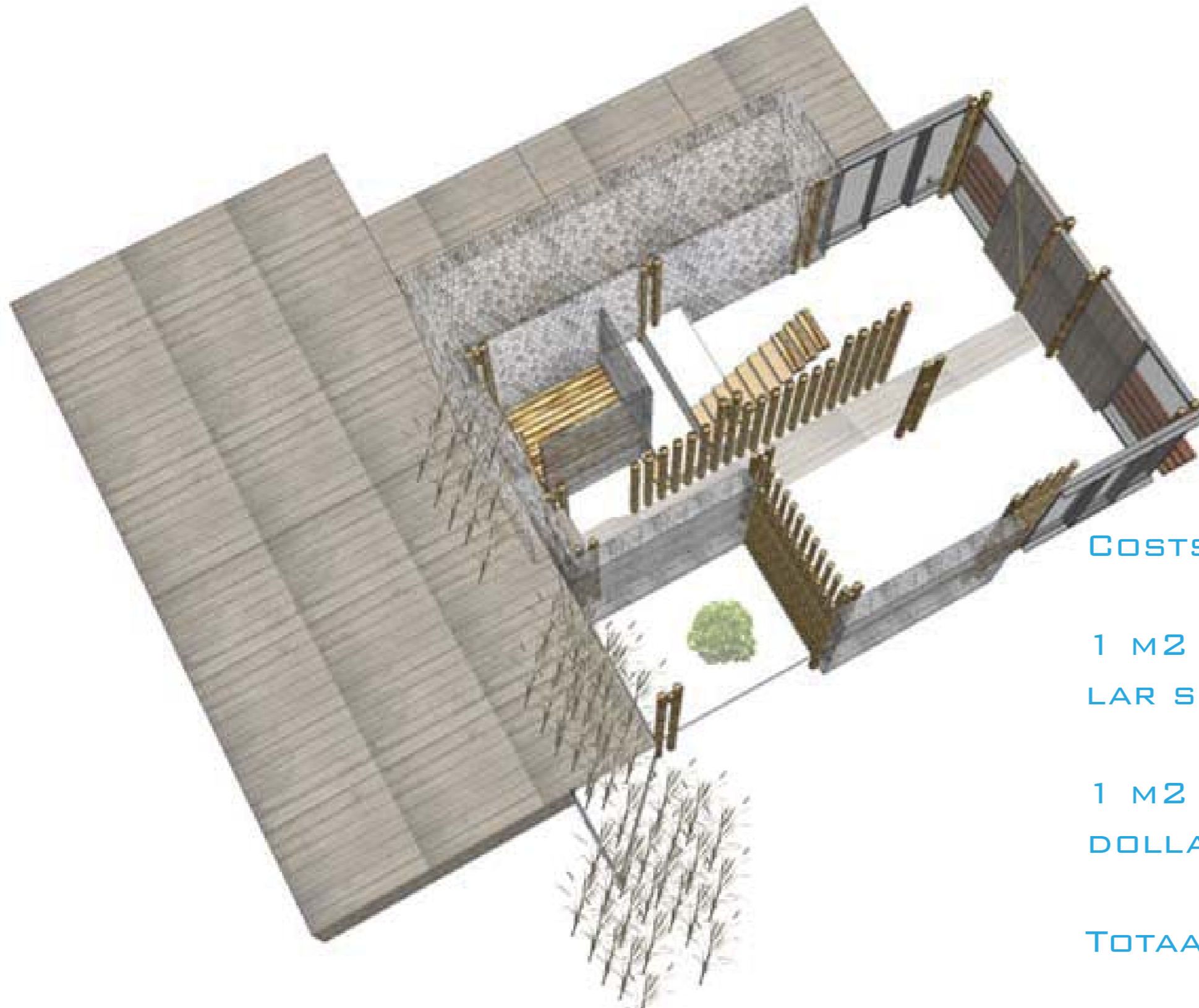
INTERACTION INDOOR OUTDOOR  
FROM LIVING AREA



## CONNECTION WITH ENVIRONMENT



## EXPANSION



### COSTS

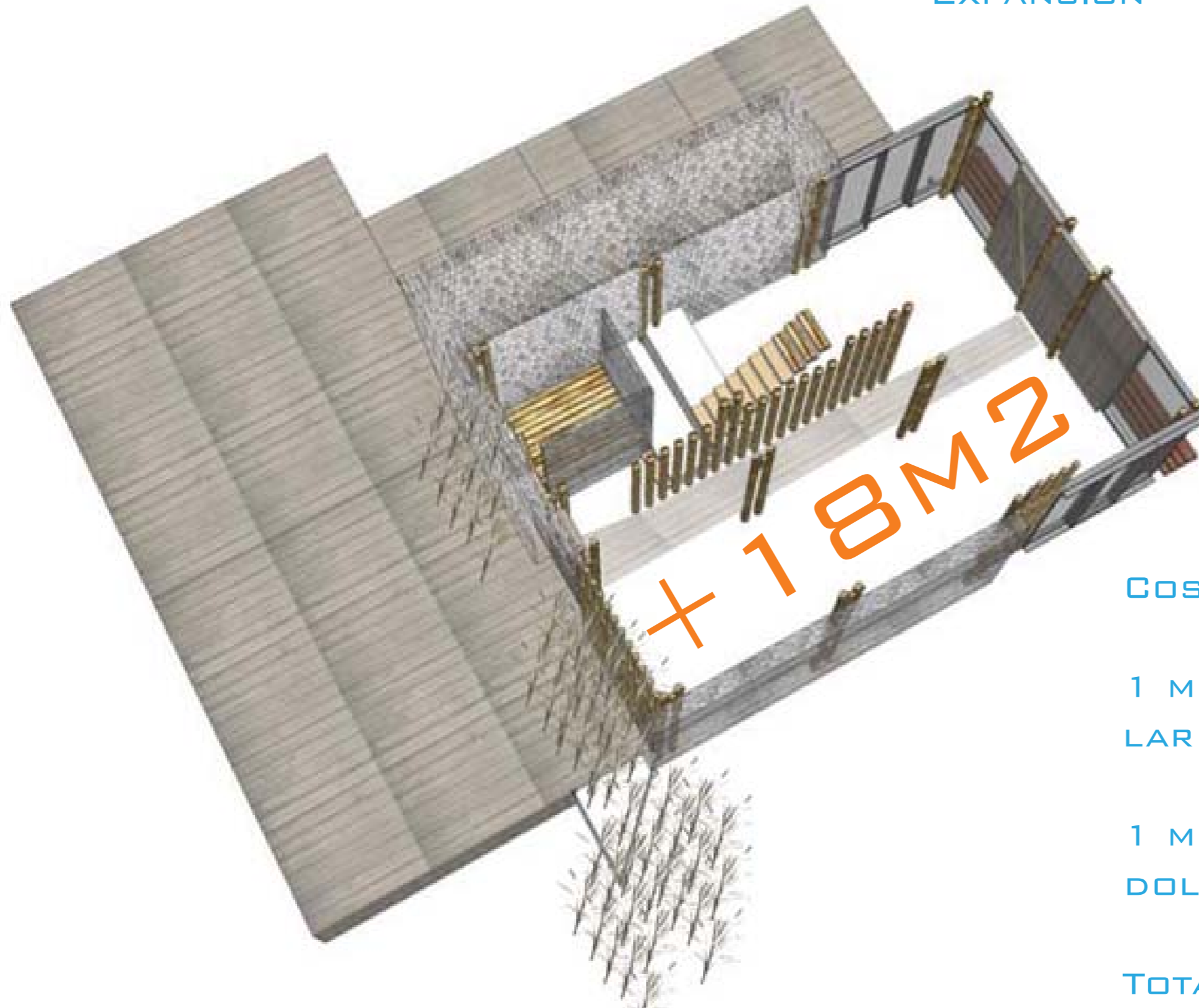
1 M2 FACADE POLLIBRICK = 51 DOLLAR SQM

1 M2 FACDE/FLOOR BAMBOO = 50 DOLLAR SQM

TOTAAL = 1350 DOLLAR FOR 27SQM



## EXPANSION



## COSTS

1 M2 FACADE POLLIBRICK = 51 DOLLAR SQM

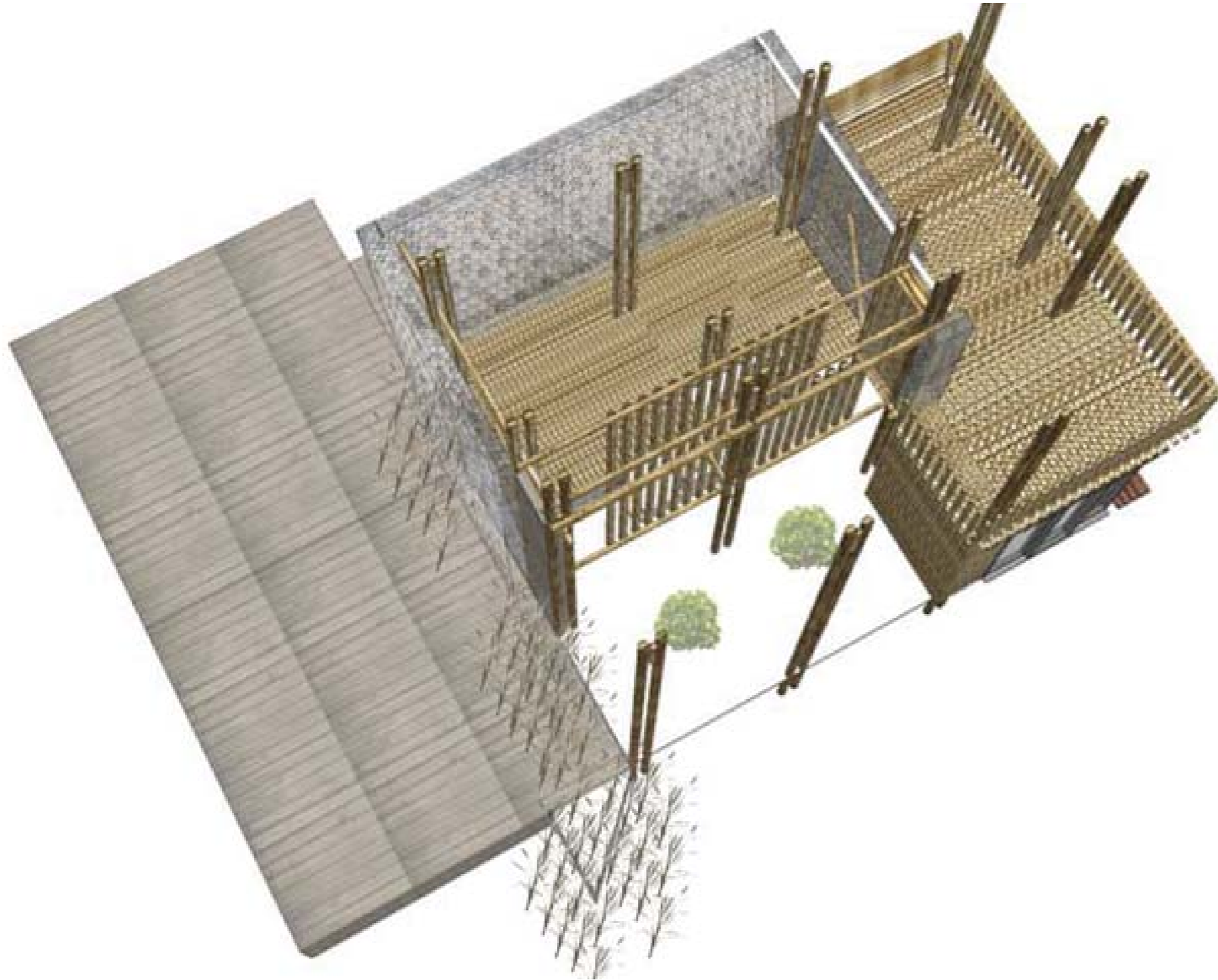
1 M2 FACDE/FLOOR BAMBOO = 50 DOLLAR SQM

TOTAAL = 2250 DOLLAR FOR 45SQM

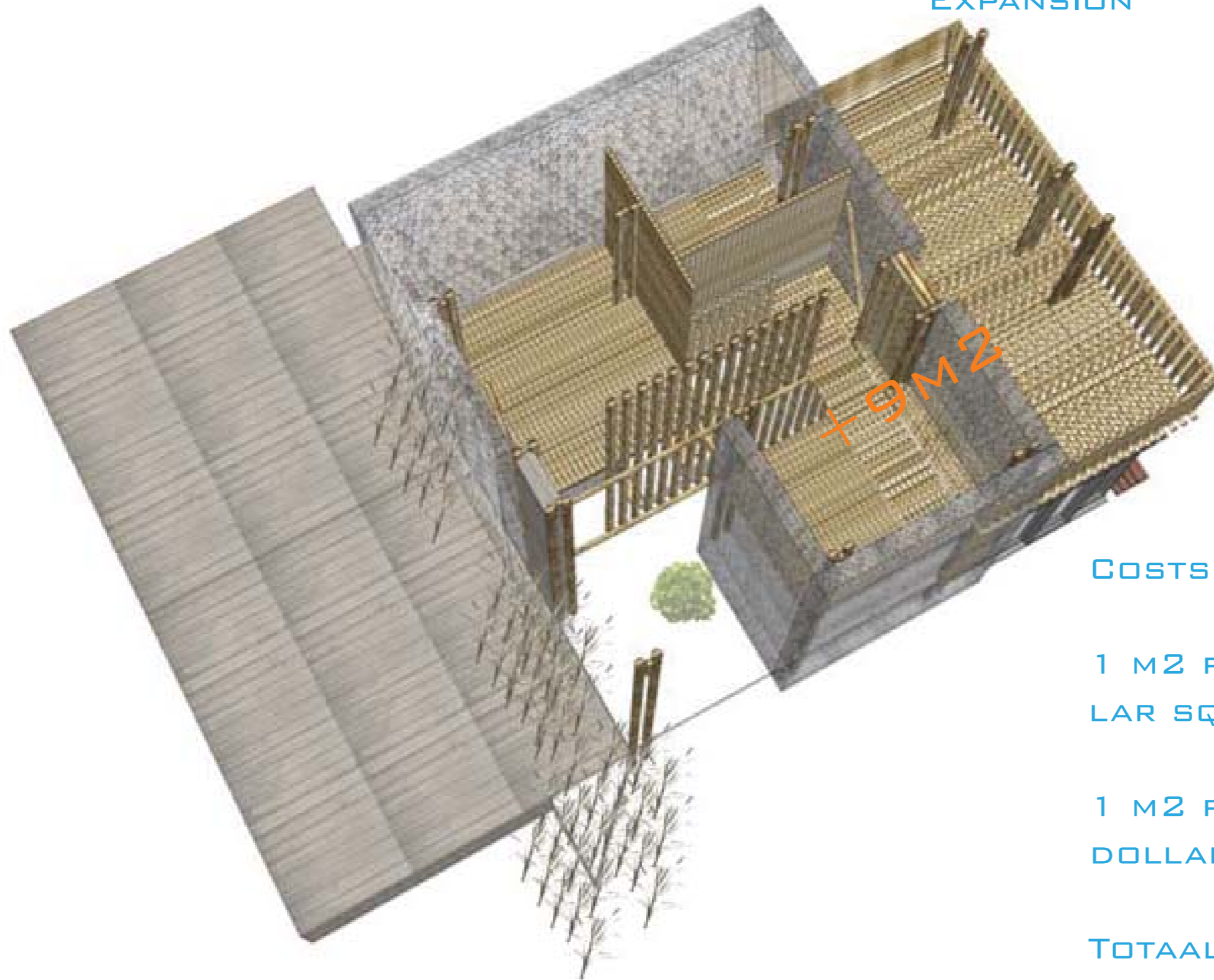


# SOCIAL HOUSES

## EXPANSION



## EXPANSION



## COSTS

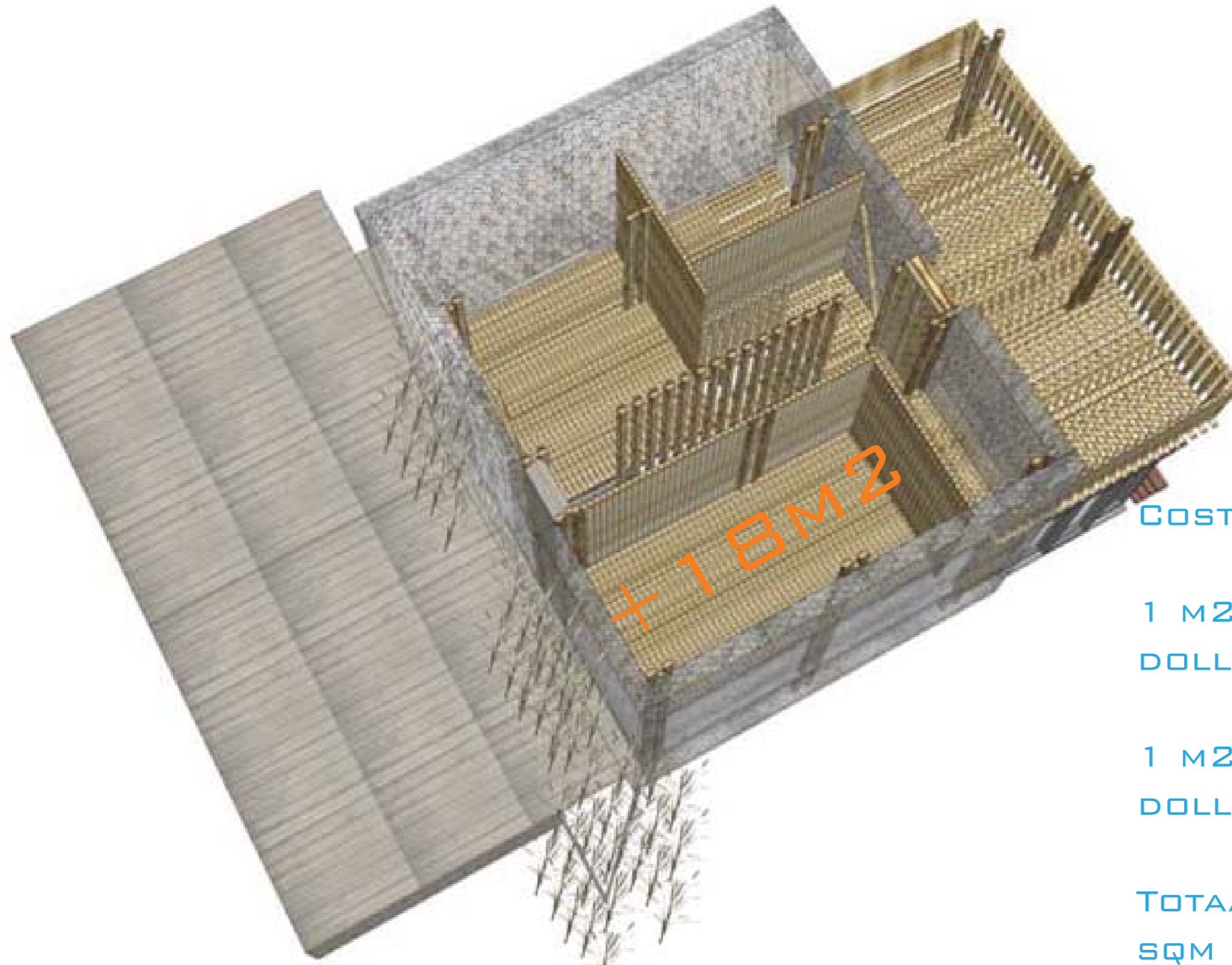
1 M2 FACADE POLLIBRICK = 51 DOLLAR SQM

1 M2 FACDE/FLOOR BAMBOO = 50 DOLLAR SQM

TOTAAL = 3150 DOLLAR FOR 63 SQM



## EXPANSION



### COSTS

1 M2 FACADE POLLIBRICK = 51  
DOLLAR SQM

1 M2 FACDE/FLOOR BAMBOO = 50  
DOLLAR SQM

TOTAAL = 3600 DOLLAR FOR 72  
SQM



# ARCHITECTURAL DESIGN



## MATERIALIZATION EXPANSION

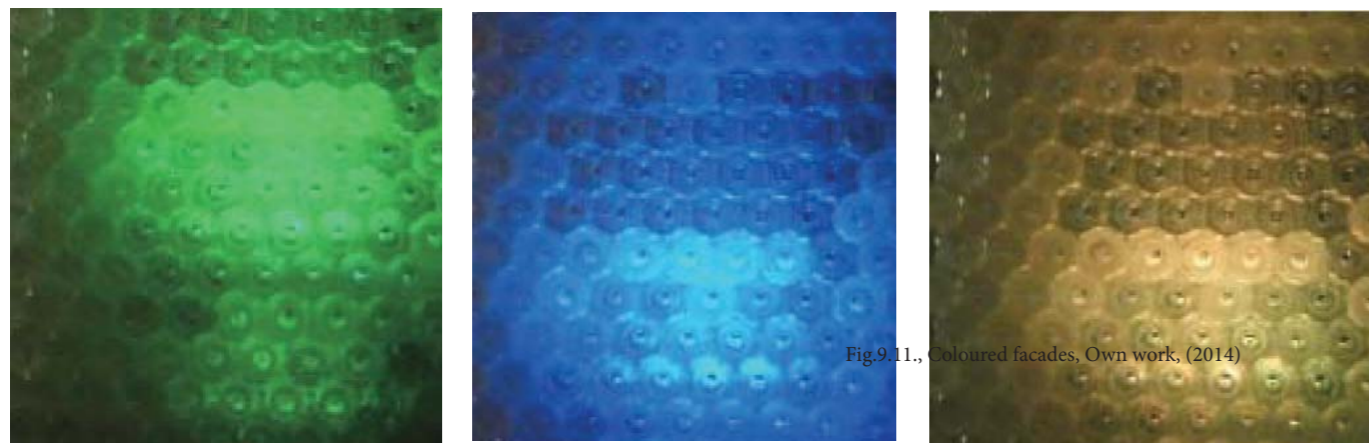


Fig.9.11., Coloured facades, Own work, (2014)





# SOCIAL HOUSES

## MATERIALISATION EXPANSION



## START SITUATION

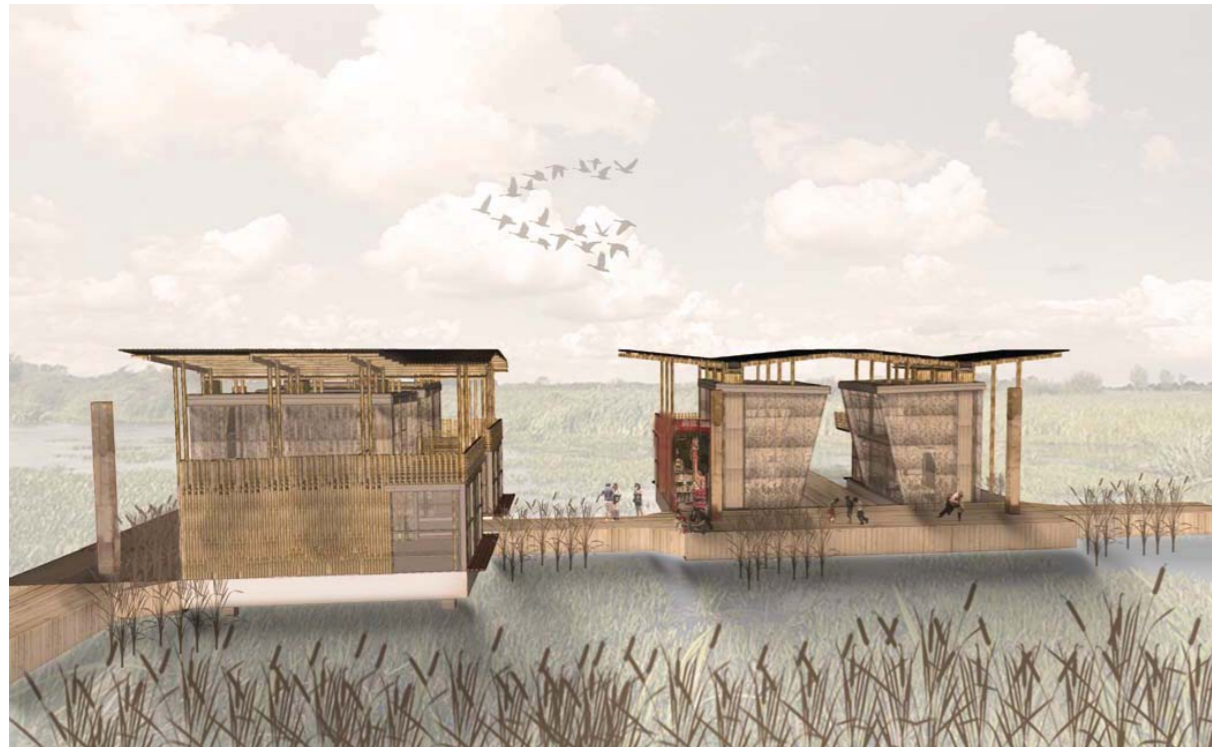


## EXPANSION DWELLING WITH BAMBOO



# ARCHITECTURAL DESIGN

## MATERIALIZATION EXPANSION



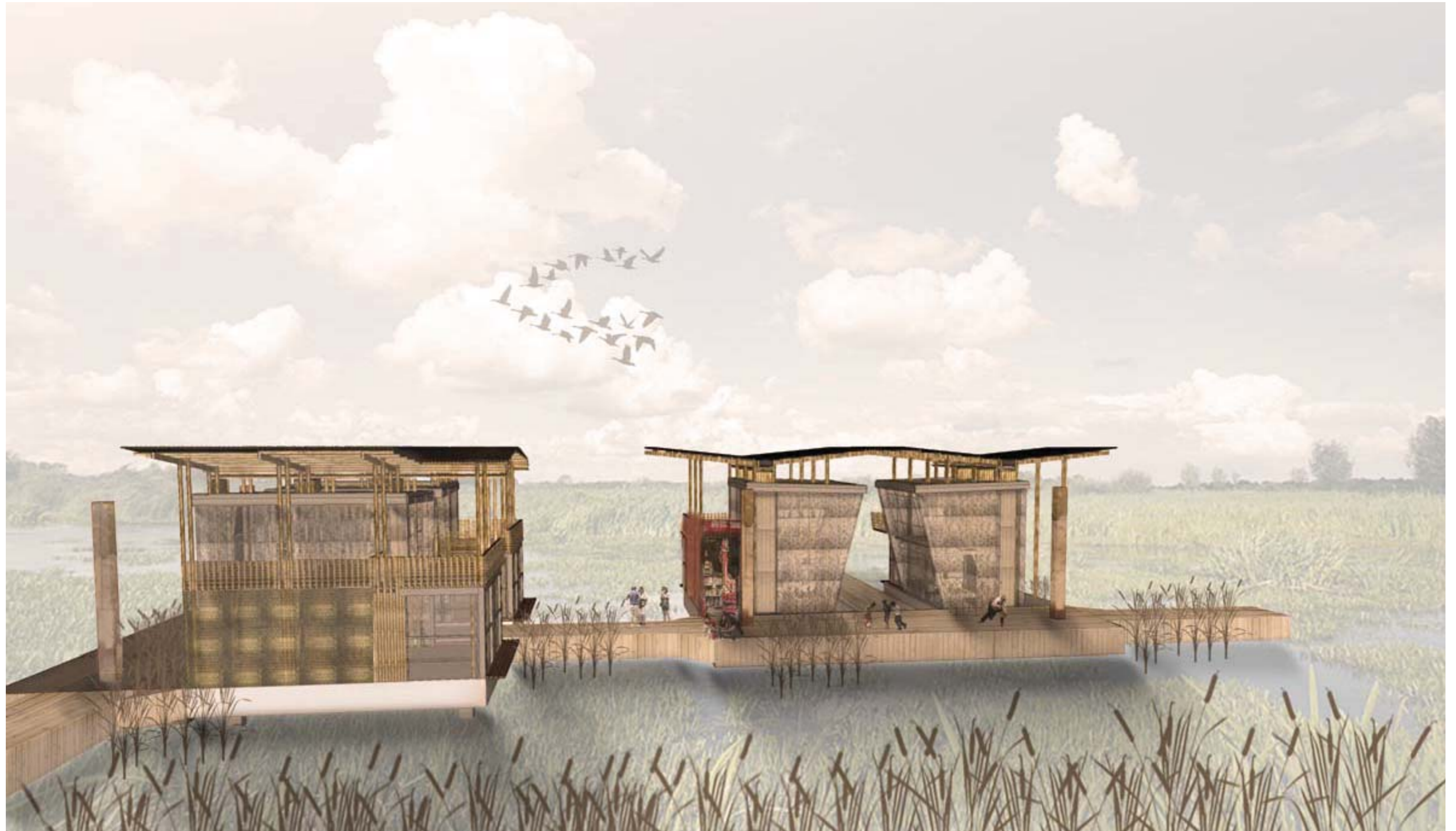
EXPANSION DWELLING WITH BAMBOO AND COMMERCIAL ACTIVITY



EXPANSION DWELLING WITH GLASS AND POLLI BRICKS AND A COMMERCIAL ACTIVITY



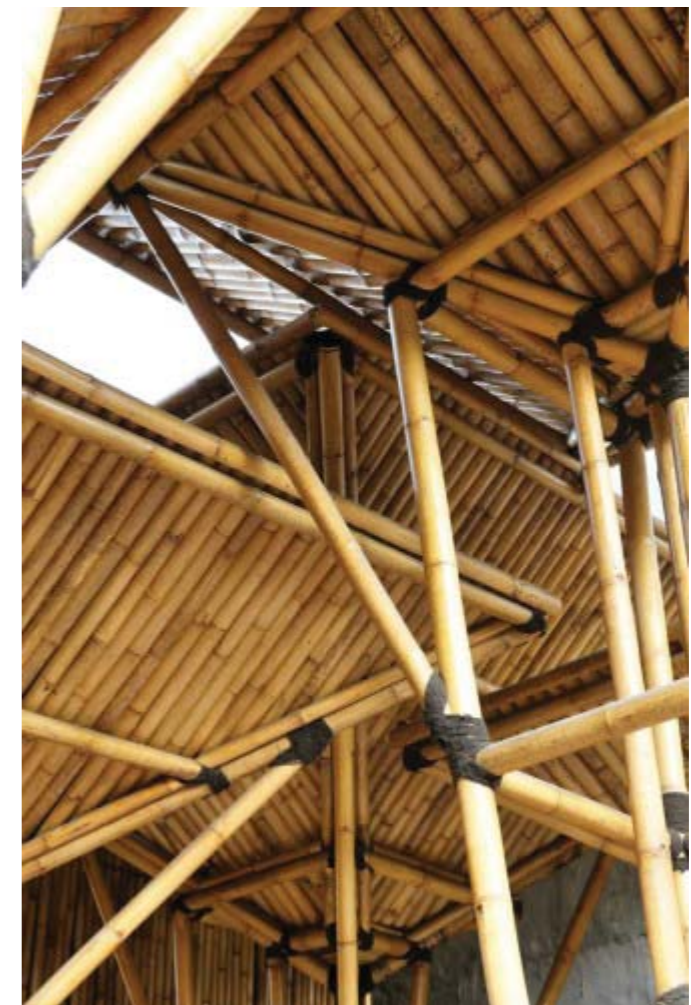
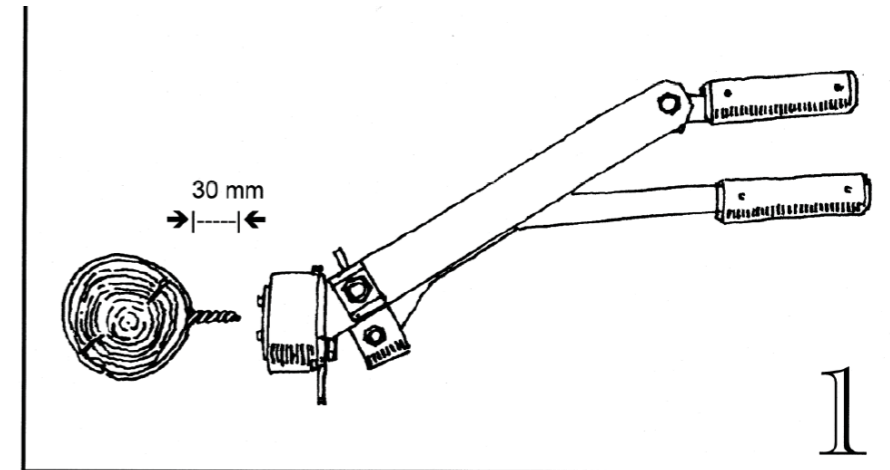
EXPANSION



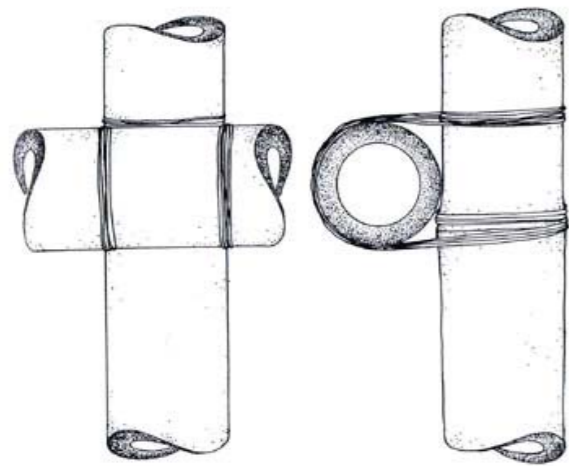
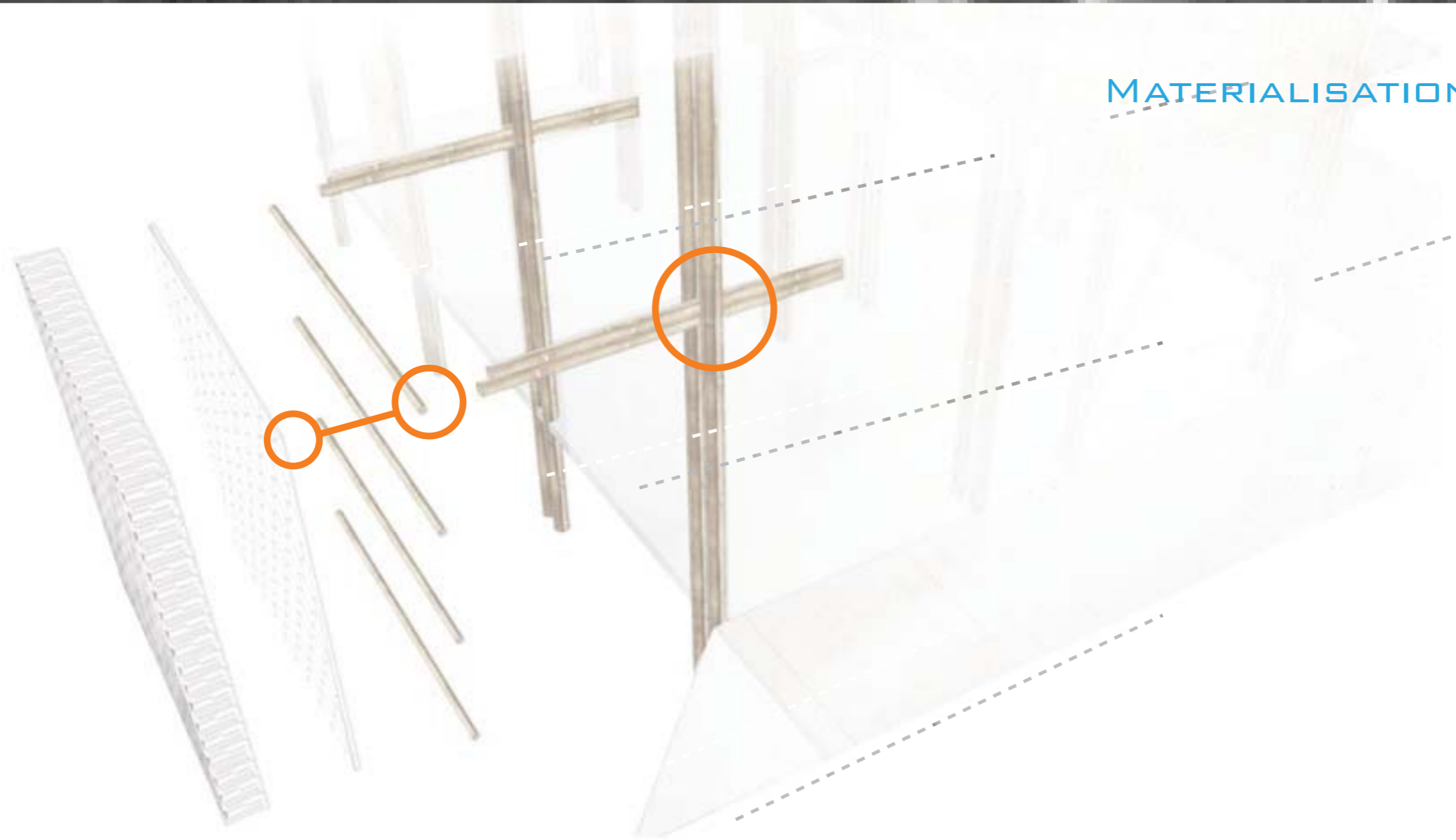
COMMUNAL AREA



# foto constructie maquette



## MATERIALIZATION EXPANSION



Plemenka Supic, (1937)



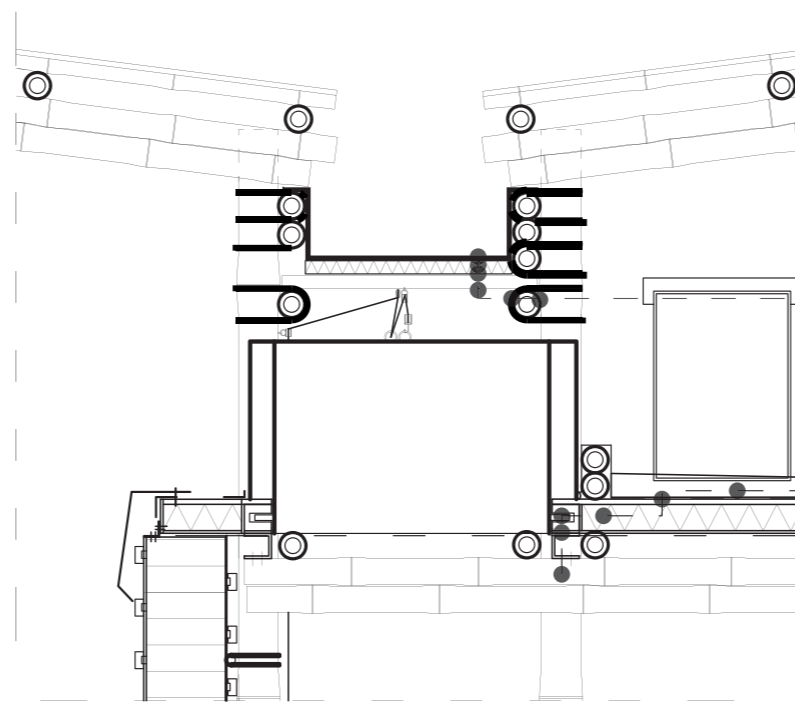
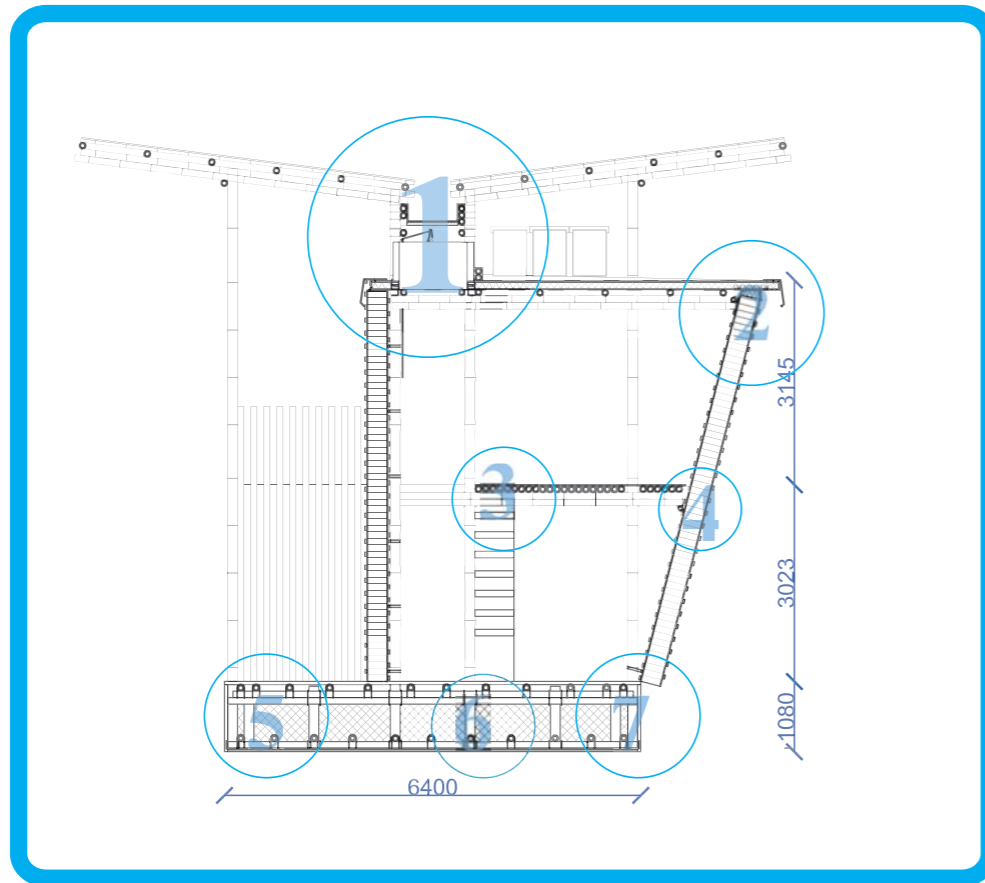
Joint with rattan lashing (Dunkelberg 1985)



Brian (2013)



# SOCIAL HOUSES



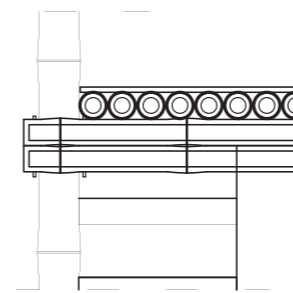
**DETAIL 1  
ROOF**  
STORMWATER  
DRAINAGE  
INSULATION  
VAPOR TIGHT FOIL  
BAMBOO BEAM  
IRON WIRE JOINT  
BAMBOO COLUMN

**DETAIL 2 BAMBOO FACADE  
CONSTRUCTION  
ROOF**  
IRON WIRE JOINT  
IRON CHICKEN WIRE  
TO JOIN POLLI  
BRICK TO CON-  
STRUCTION POLLI  
BRICK  
UV PROTECTIVE  
PLASTICK PANEL  
POLLI BRICK TAPS

BAMBOO BEAM  
VAPOR TIGHT FOIL  
ALUMINIUM ROL  
ELEMENT  
INSULATION  
WATERPROOF FOIL  
BAMBOO STROKES

BAMBOO  
LEAVES  
WATERPFOOF  
FOIL  
INSULATION  
WATERPROOF  
FOIL  
SLOPE OF  
PLASTIC

**DETAIL 3  
FLOOR**

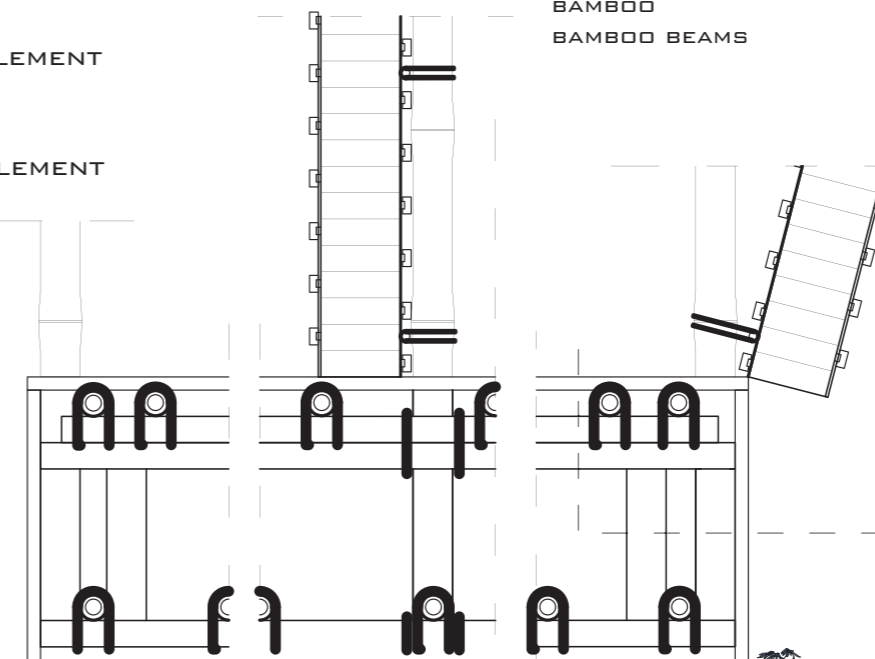


BAMBOO SLICES FLOR PANELS  
BAMBOO  
BAMBOO BEAMS

**DETAIL 4  
FLOOR &  
FACADE**

**DETAIL 5  
BUOYANCY ELEMENT**

**DETAIL 6  
BUOYANCY ELEMENT  
& FACADE**

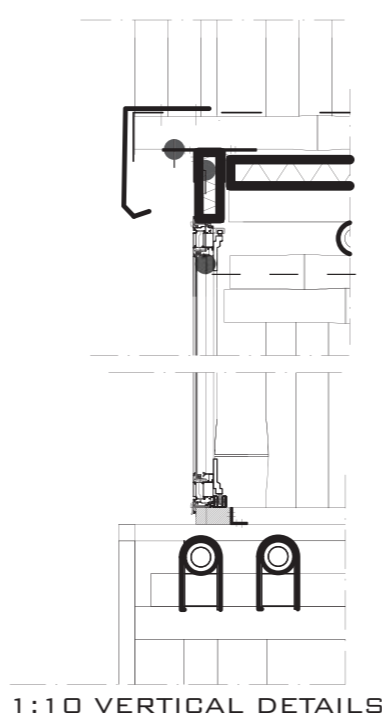
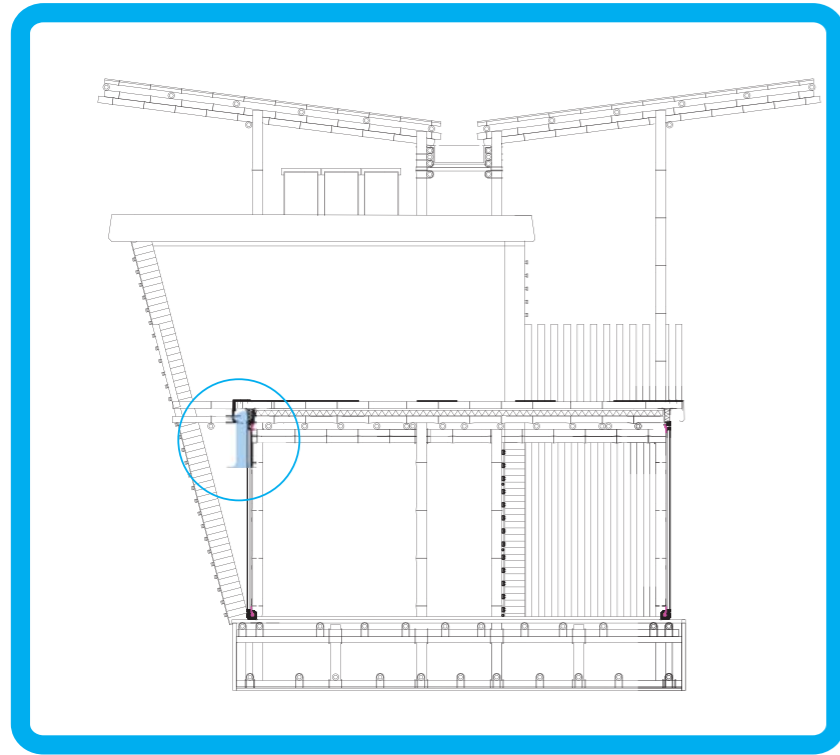


**DETAIL 7  
BUOYANCY ELEMENT  
& FACADE**

BAMBOO SLICED  
FLOOR PANELS  
WATERPROOF PLASTER  
BAMBOO BUONCY  
FOUNDATION FRAME  
OF BAMBOO  
PET BOTTLES



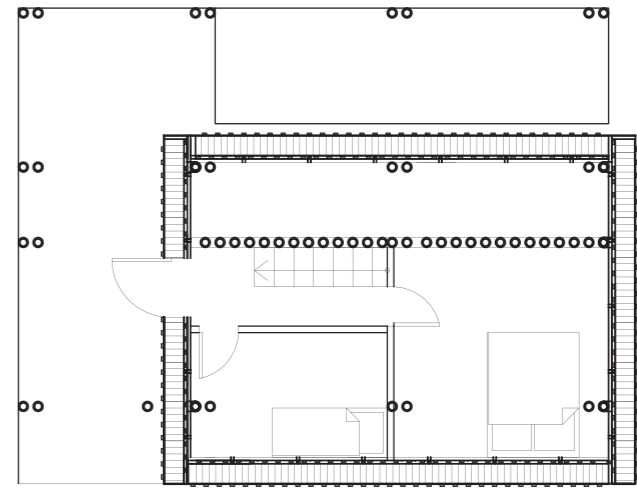
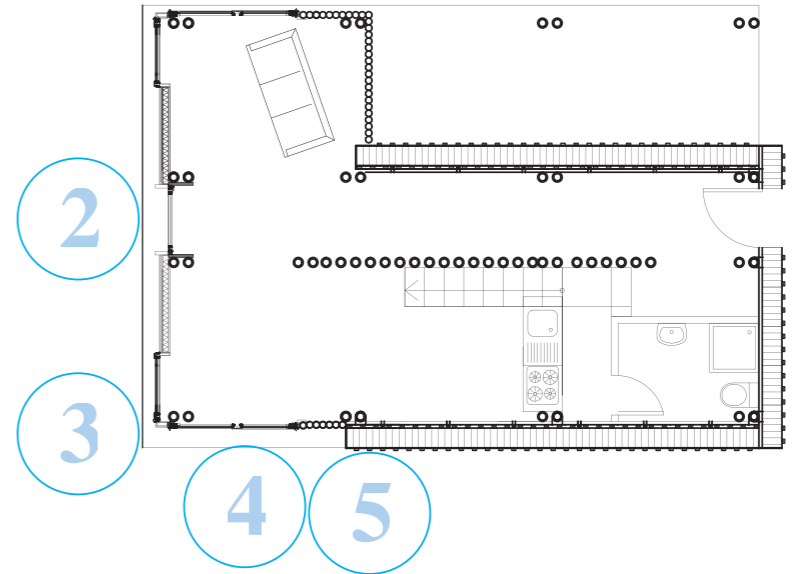
# ARCHITECTURAL DESIGN



DETAIL 1  
FOLD FACADE

- L PROFILE STEEL MOUNT ELEMENT OF ALUMINIUM INCLUDING INSULATION
- ALUMINIUM WINDOW FRAME

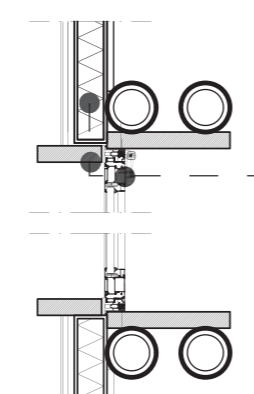
1:10 VERTICAL DETAILS



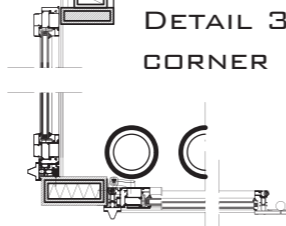
1:50 FLOORPLANS



FOLDING FACADE  
SOURCE: SOLARLUX



DETAIL 2  
DOOR INSULATION ELEMENT WITH WOODEN FRAME WOODEN SEAL ALUMINIUM WINDOW FRAME

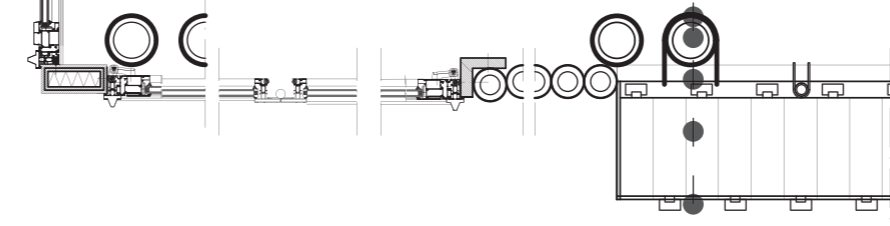


DETAIL 3  
CORNER

DETAIL 4  
FOLDING FACADE

DETAIL 5  
POLLI BRICK FACADE

- UV PROTECTIVE PLASTIC PLATE
- POLLI BRICK
- FRAME OF BAMBOO AND IRON WIRE
- BAMBOO COLUMN
- JOINT OF IRON WIRE





# SOCIAL HOUSES

## CLIMATE

WINTER

SPRING

SUMMER

AUTUMN

CHARACTERISTIC

MILD, OCCASIONAL FROST

WARM, PRESSIVE HUMIDITY

RAIN

OCCAISIONALLY VERRY HEAVY

OCCAISIONALLY VERRY HEAVY

OCCAISIONALLY VERRY HEAVY

OCCAISIONALLY VERRY HEAVY

AVERGADE TEMPERATURE

3 A 8 C

17 C

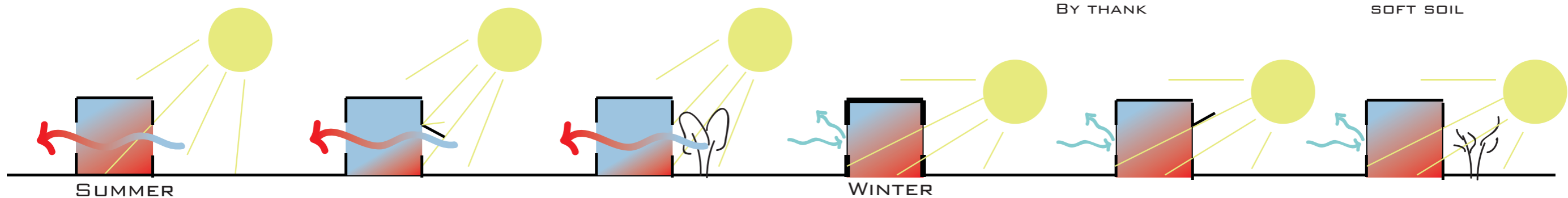
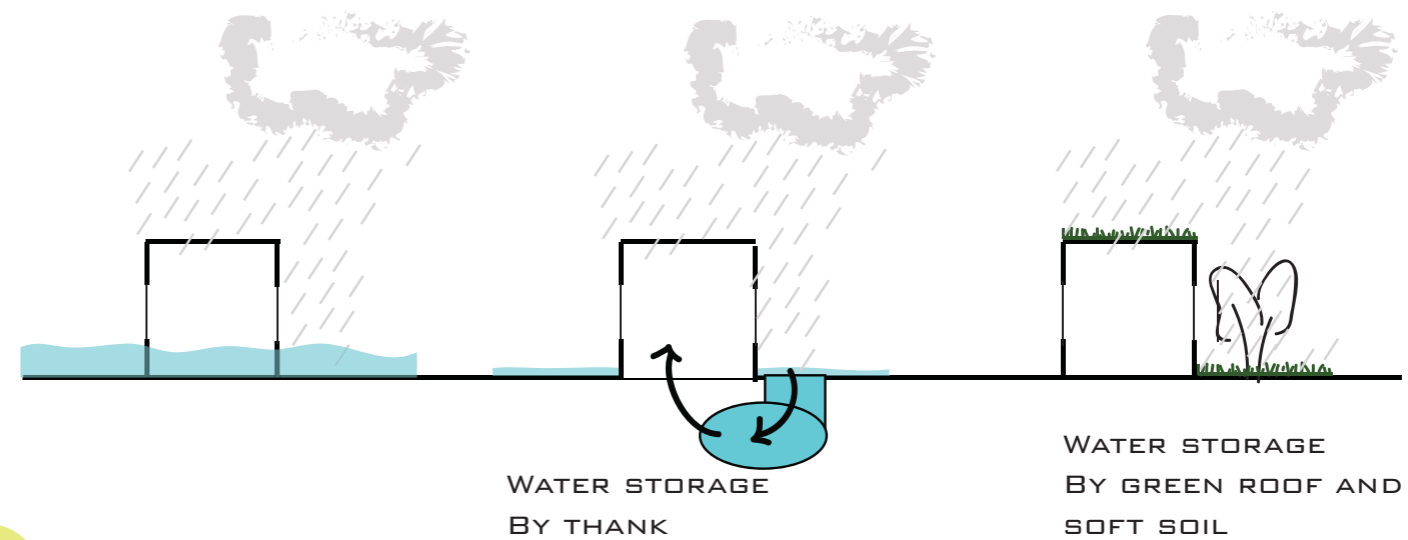
28 C  
MAX 40 C  
IN EVENING COOLER

18 C

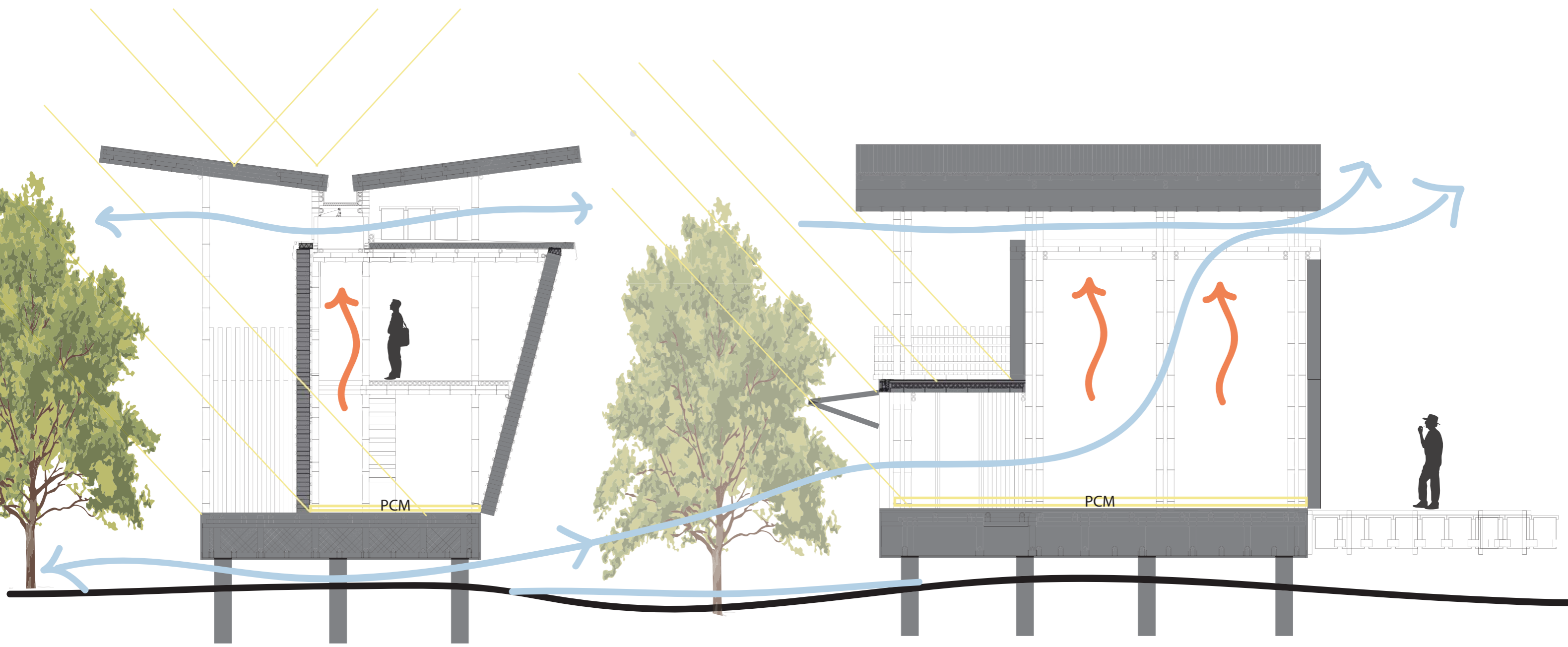
### CONCLUSION

RAINFALL DURING WHOLE YEAR, IMPORTANT TO THINK ABOUT DRAINAGE SYSTEM OR WATER STORAGE.

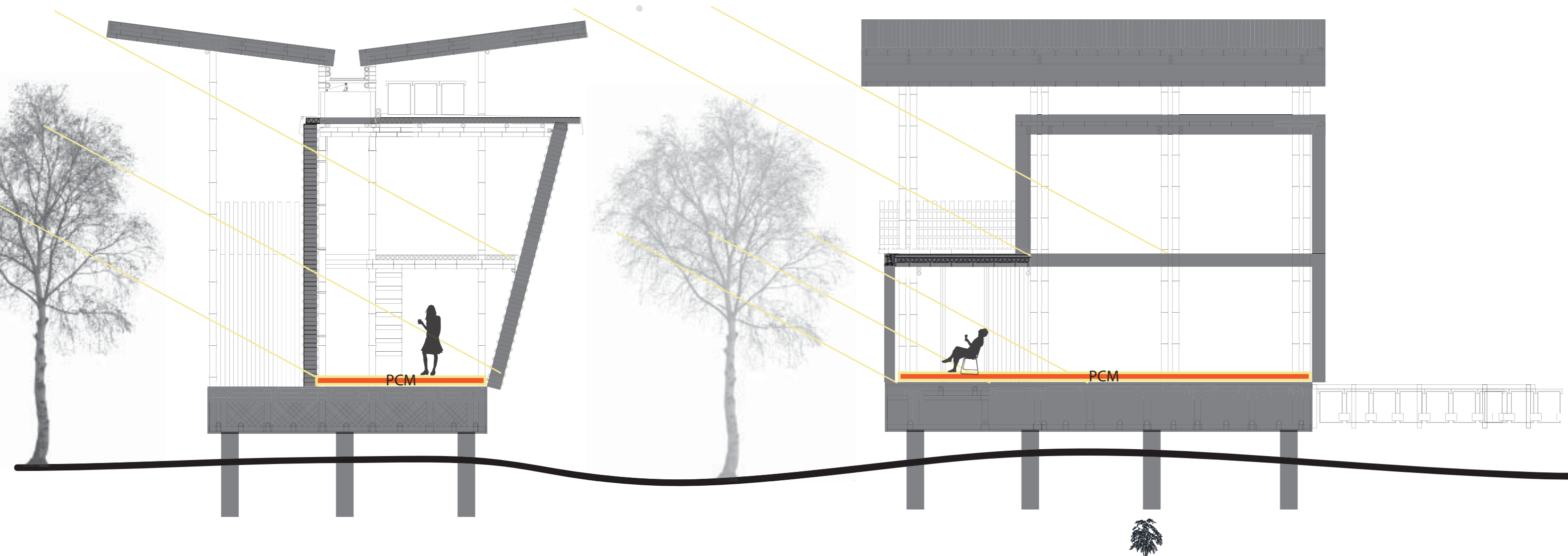
TEMPERATURE IN SUMMER HIGH, HEAT DISSIPATION BY FACADE.



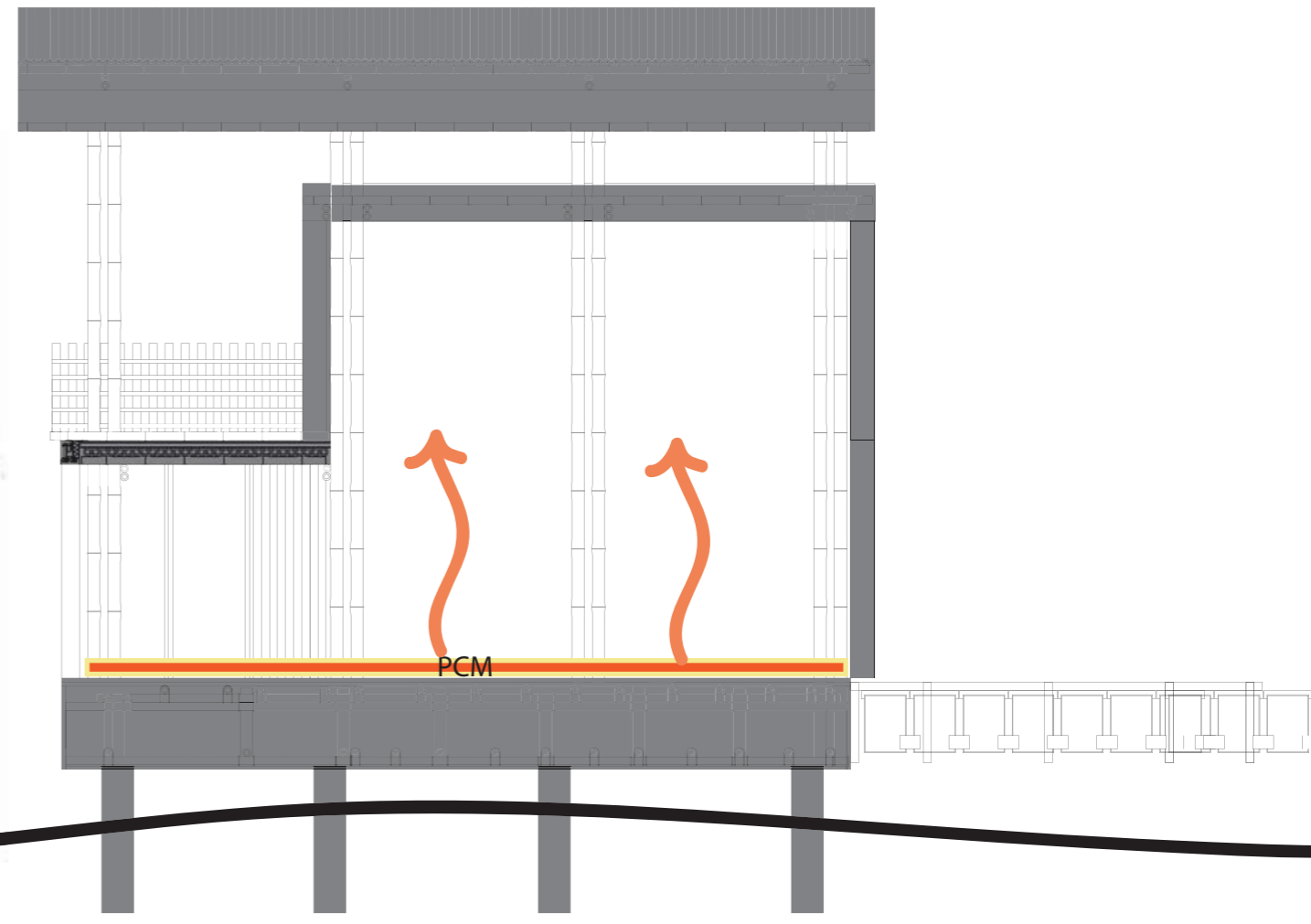
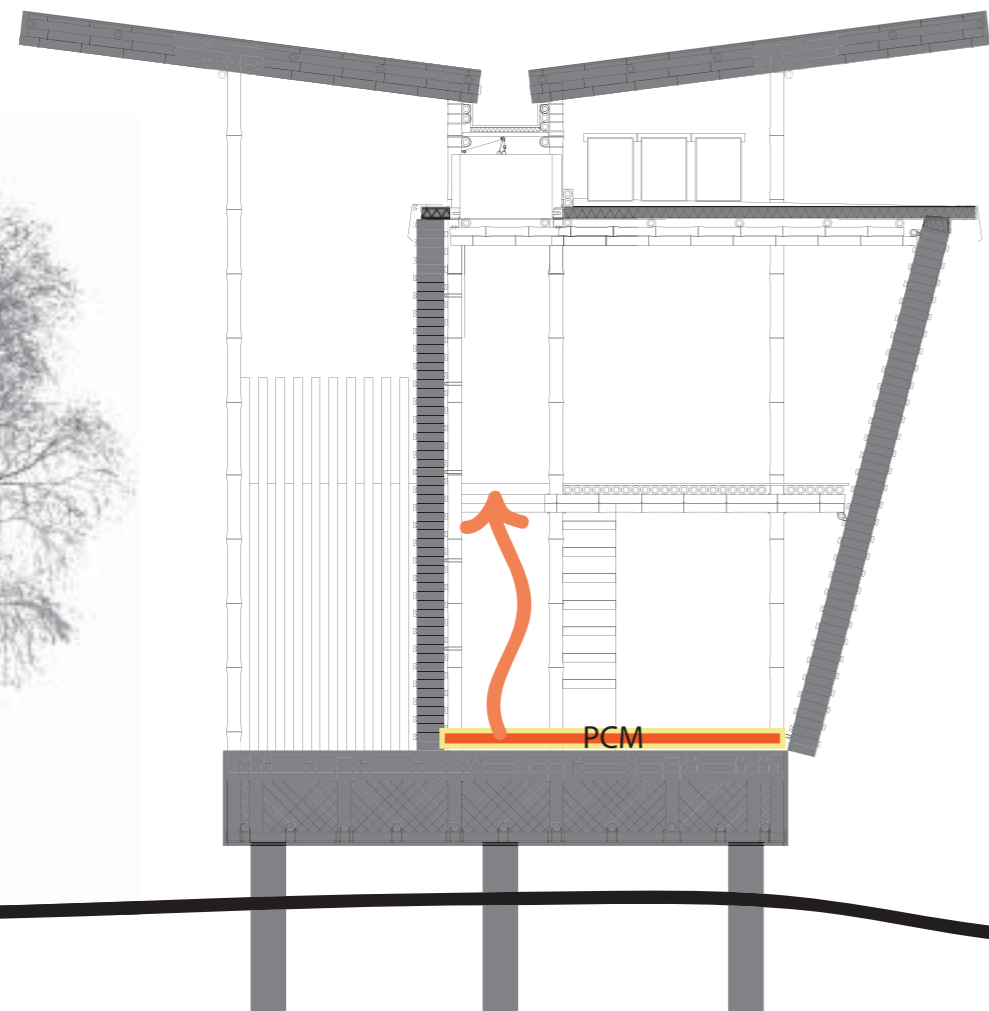
## CLIMATOLOGICAL CONCEPT SUMMER



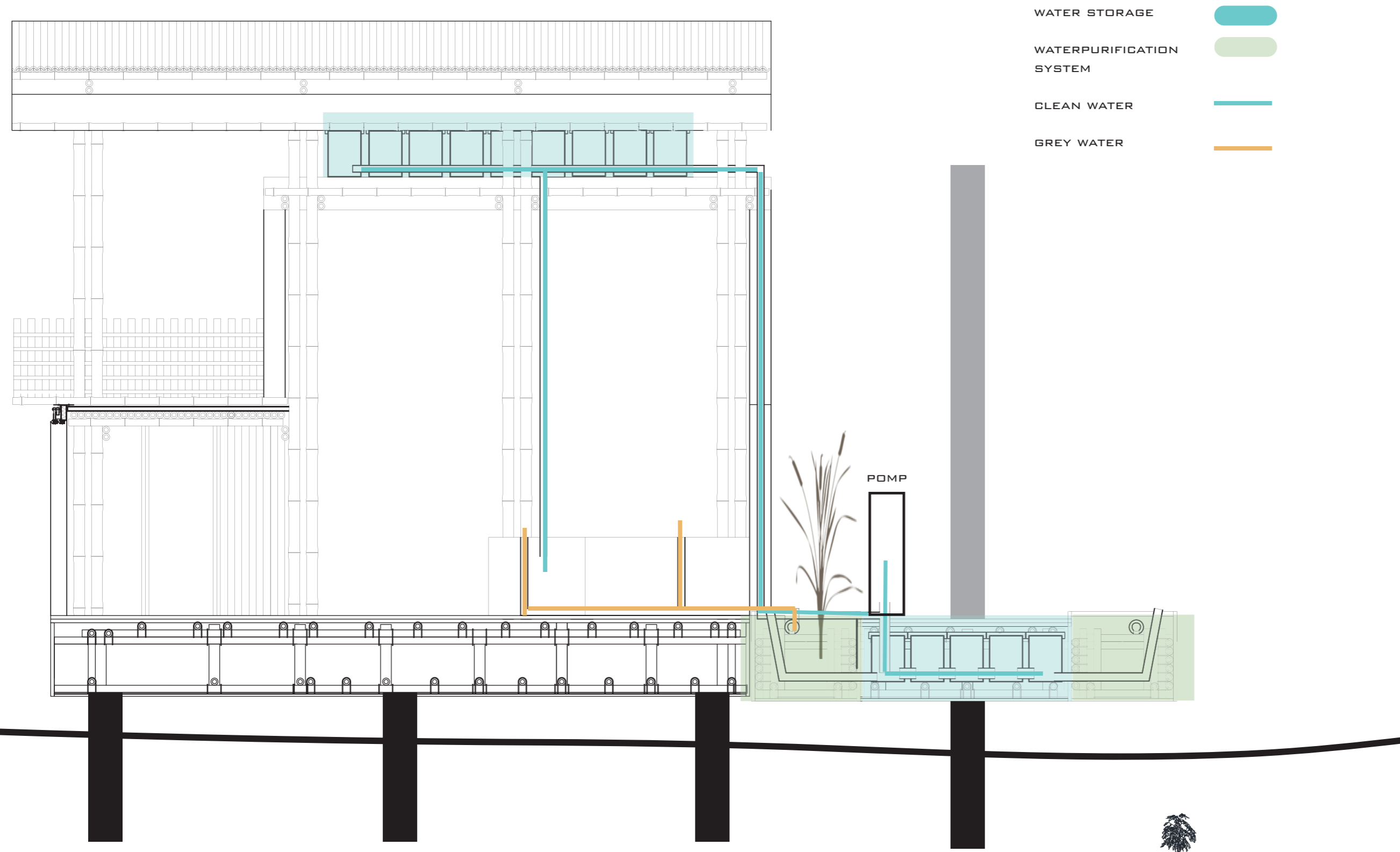
## CLIMATOLOGICAL CONCEPT WINTER DAY



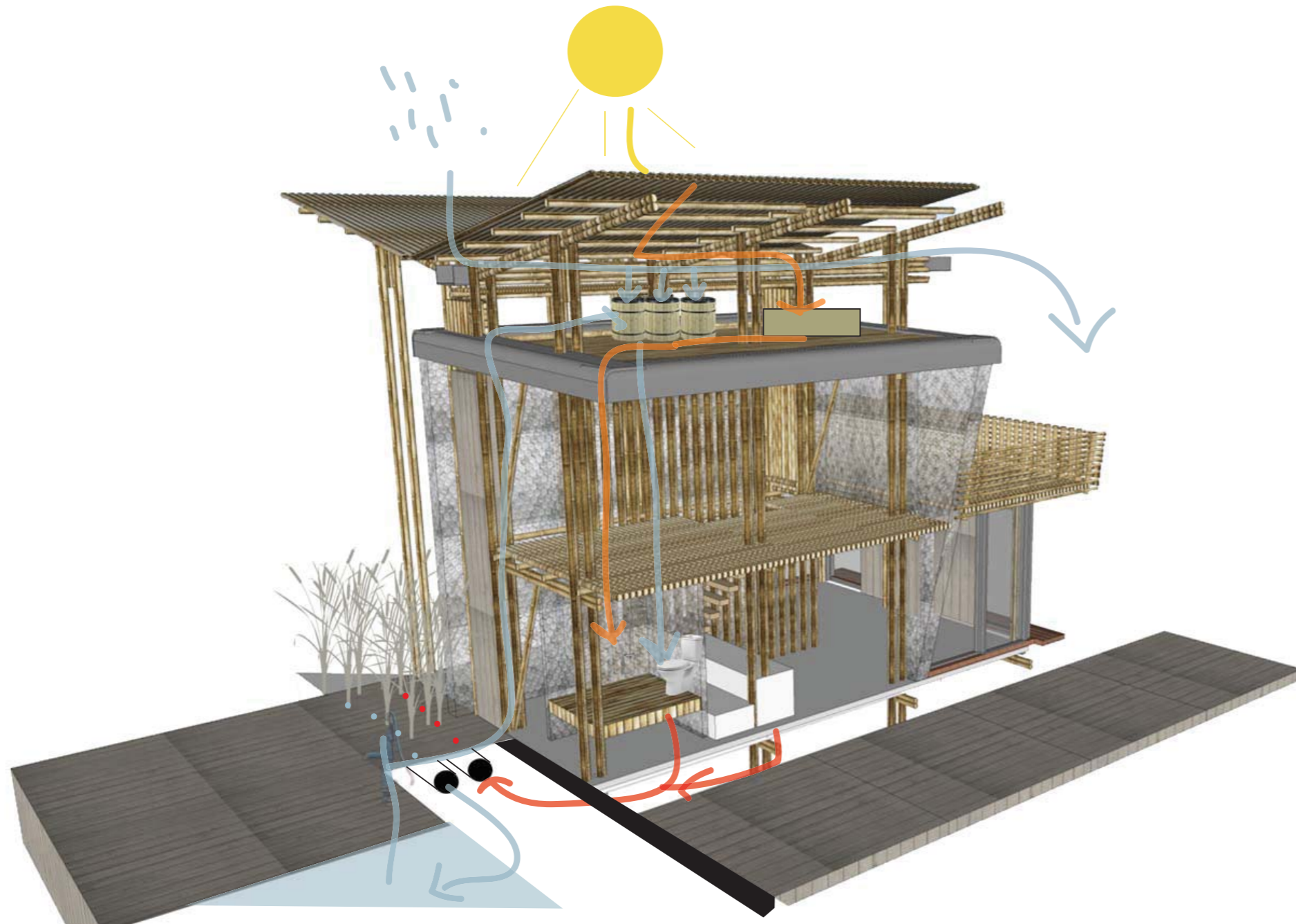
## CLIMATOLOGICAL CONCEPT WINTER NIGHT



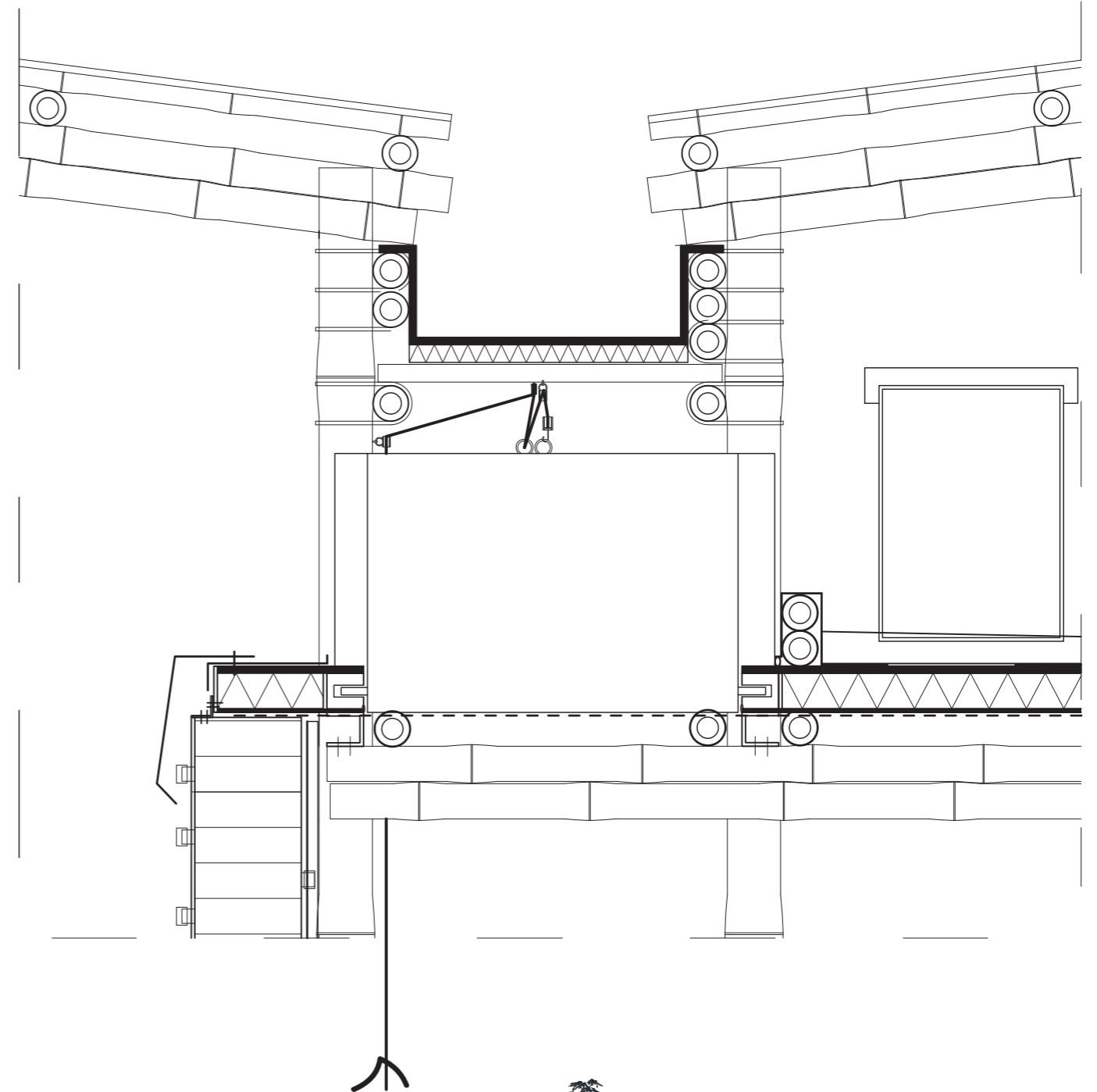
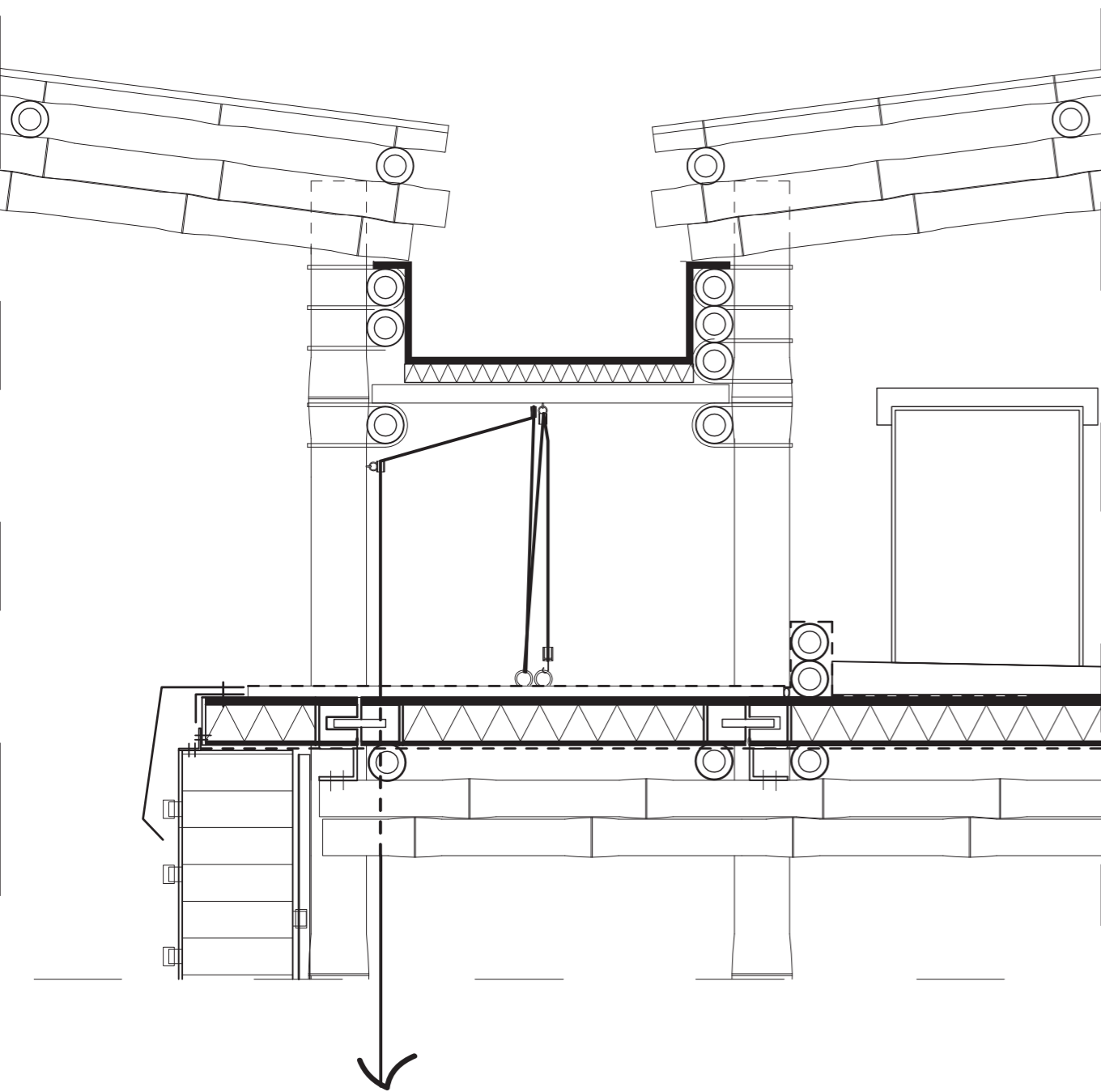
## CLIMATOLOGICAL CONCEPT WATER PURIFICATION SYSTEM



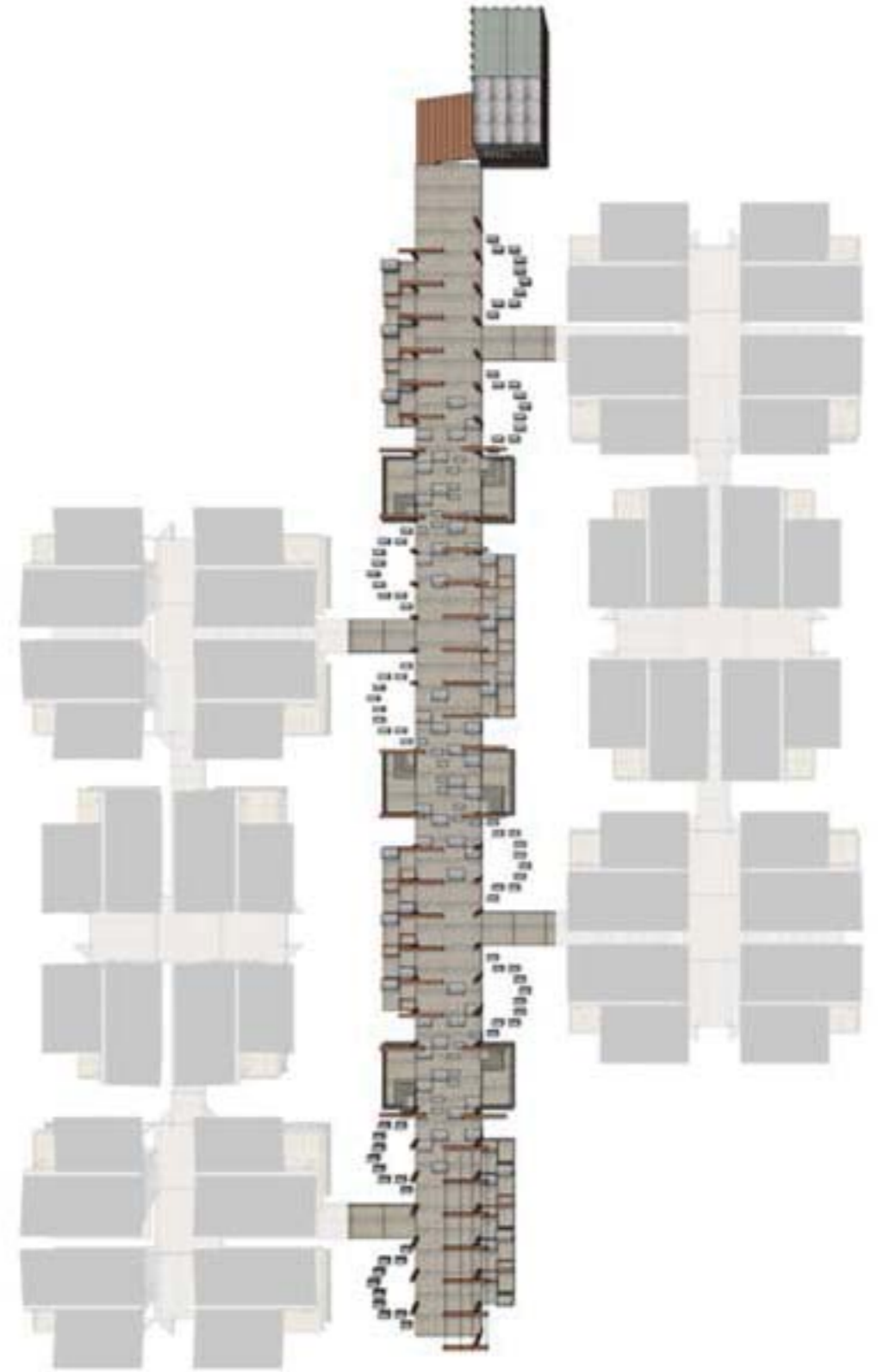
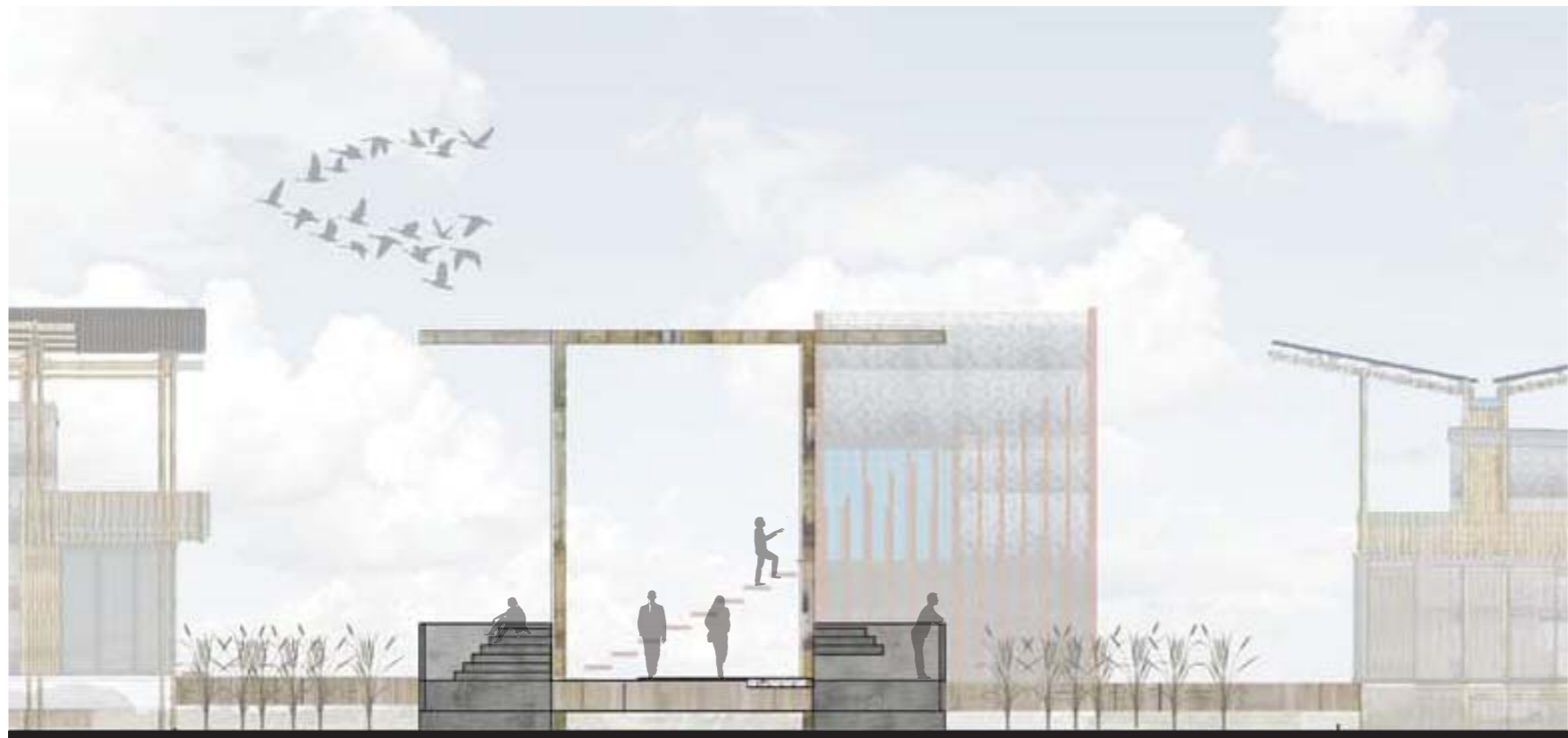
## CLIMATOLOGICAL CONCEPT SUN ENERGY



## ROOF GAP SYSTEM

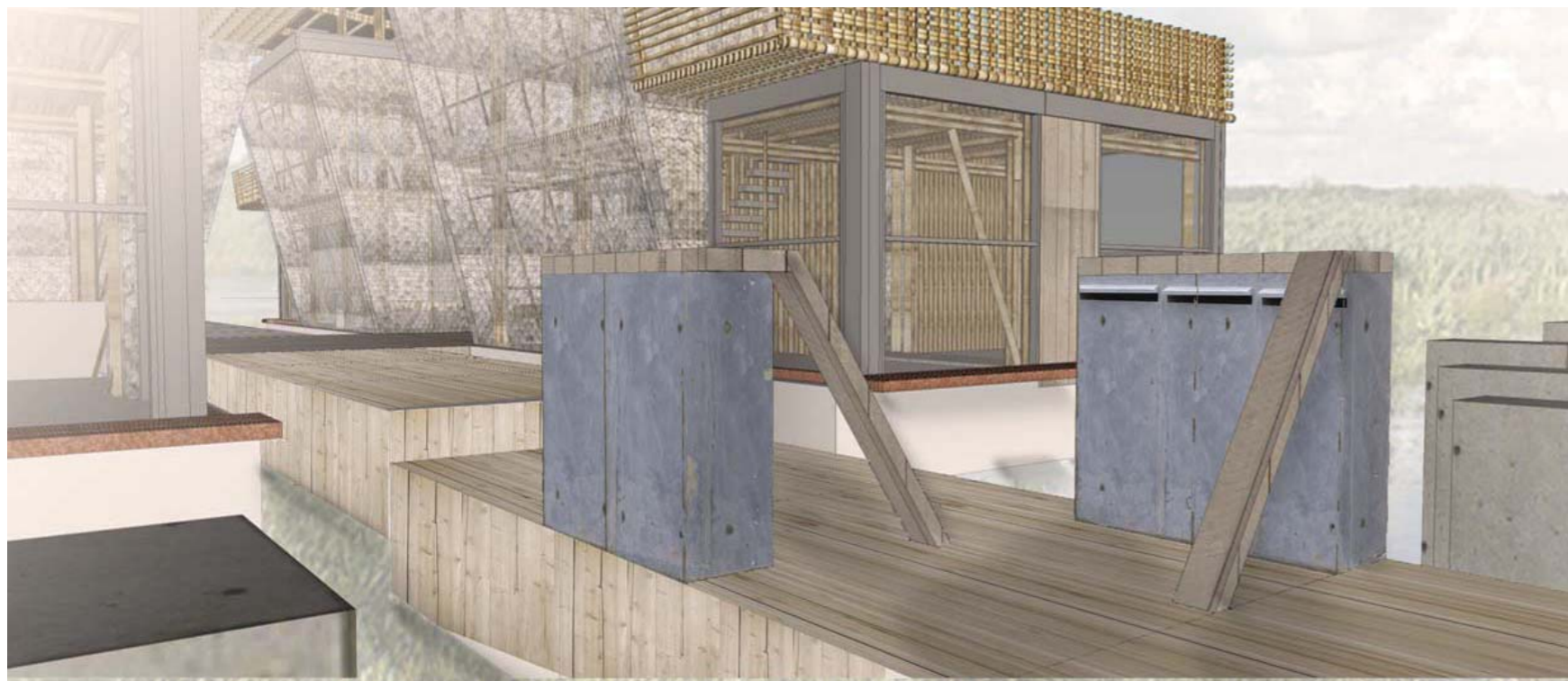


# PUBLIC ROUTING

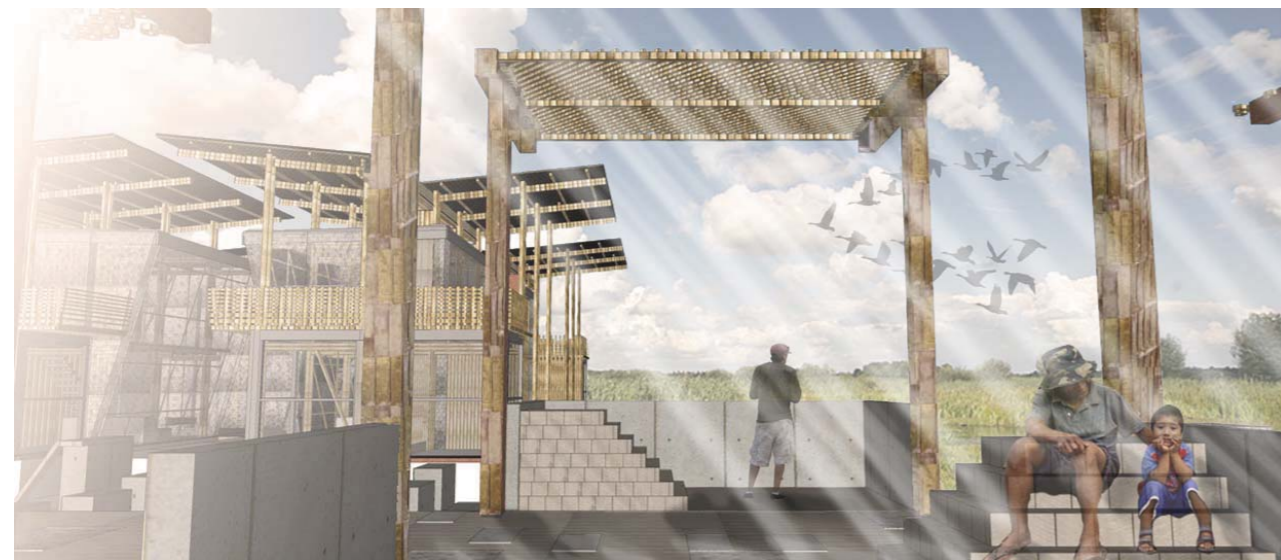




## OBSTRUCTION PUBLIC/ COMMUNAL



# PUBLIC AREA



## STAND-IN



# PUBLIC AREA



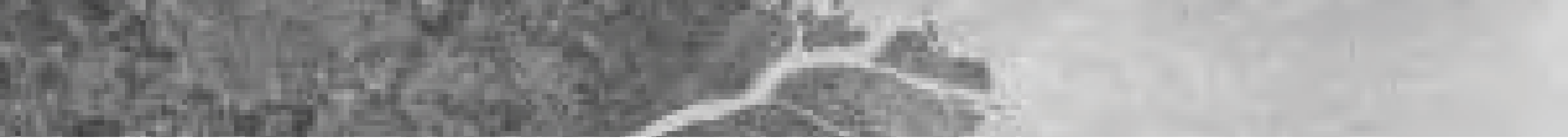
# BLOCKS



# PUBLIC AREA

## NIGHT VISION





STEPPING STONES



# PUBLIC ROUTING



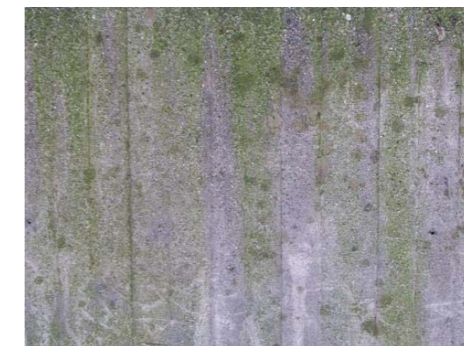
# PUBLIC BUILDING



# PUBLIC AREA

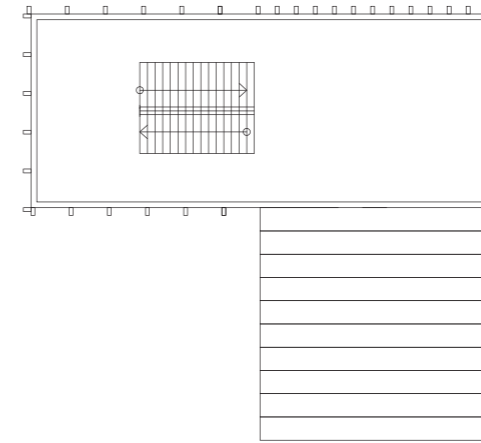
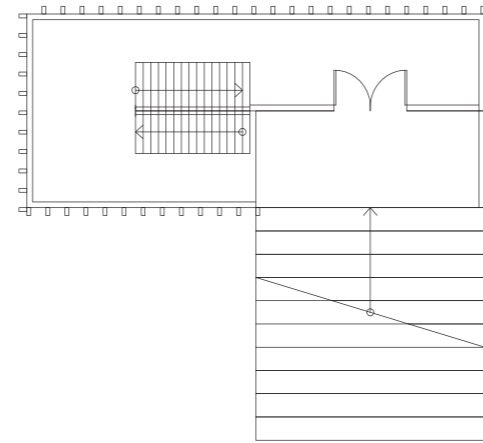
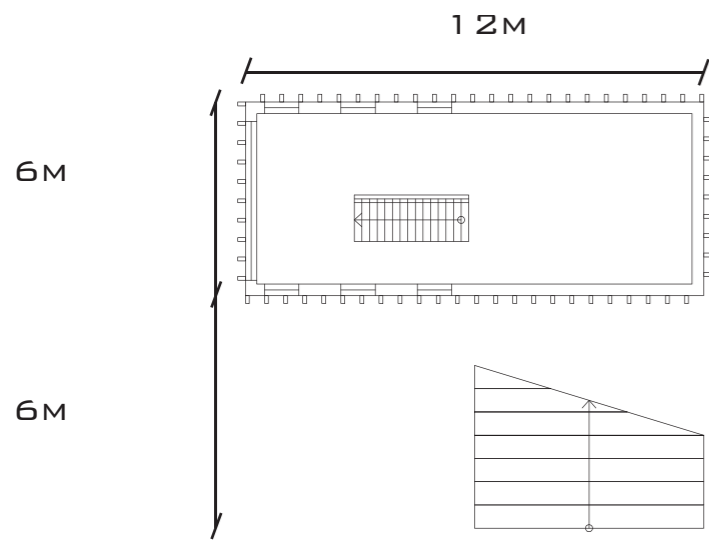


## MATERIAL CHANGES





## PUBLIC BUILDING FLOORPLAN



GROUND FLOOR

FIRST FLOOR

SECOND FLOOR

- ROUTING
- INFORMATION CENTRE

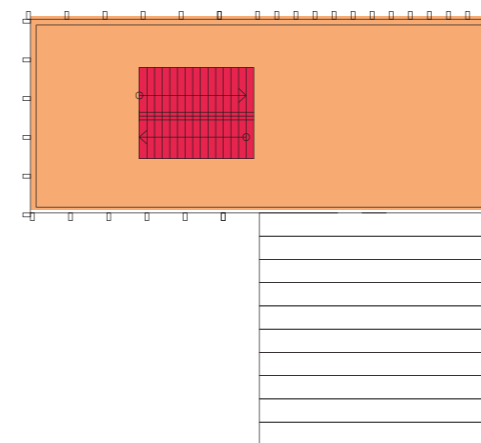
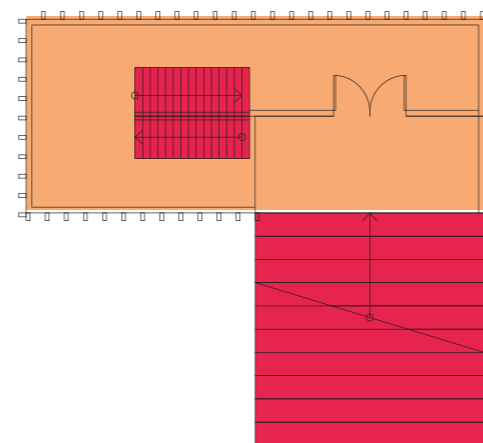
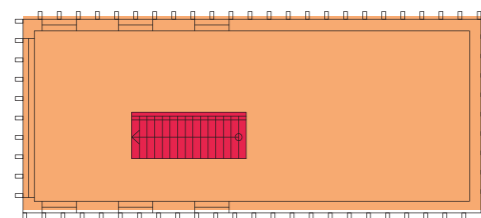
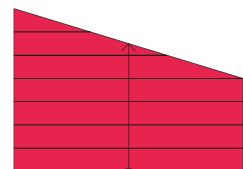
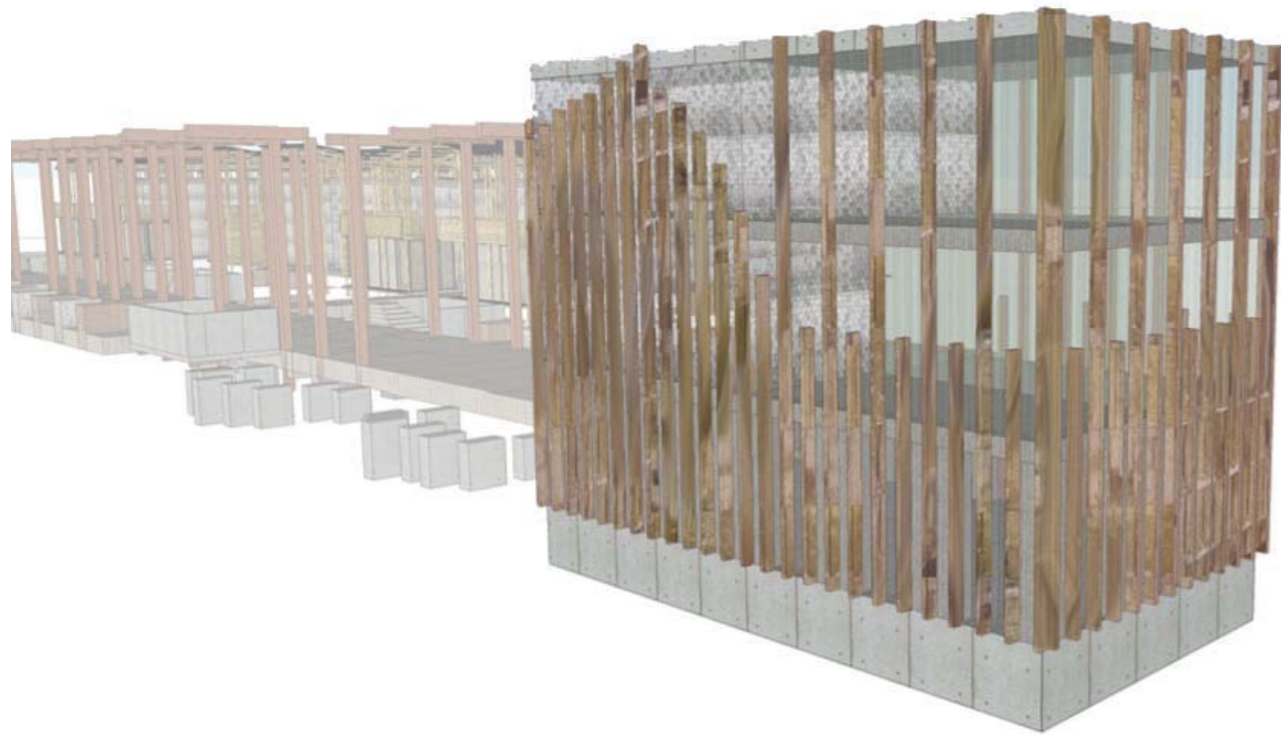


Fig.11.2., Floorplan public building, Own work, (2014)



FACADES PUBLIC BUILDING



An aerial photograph of a river delta, showing a network of channels and distributaries. The text is overlaid in a bright blue color. The background is a grayscale aerial view of the river system, with a large body of water on the right side.

Thank you for your attention!!!

Questions?