

A LIVING ORGANISM

THE DROWNED WORLD OF MEKONG DELTA



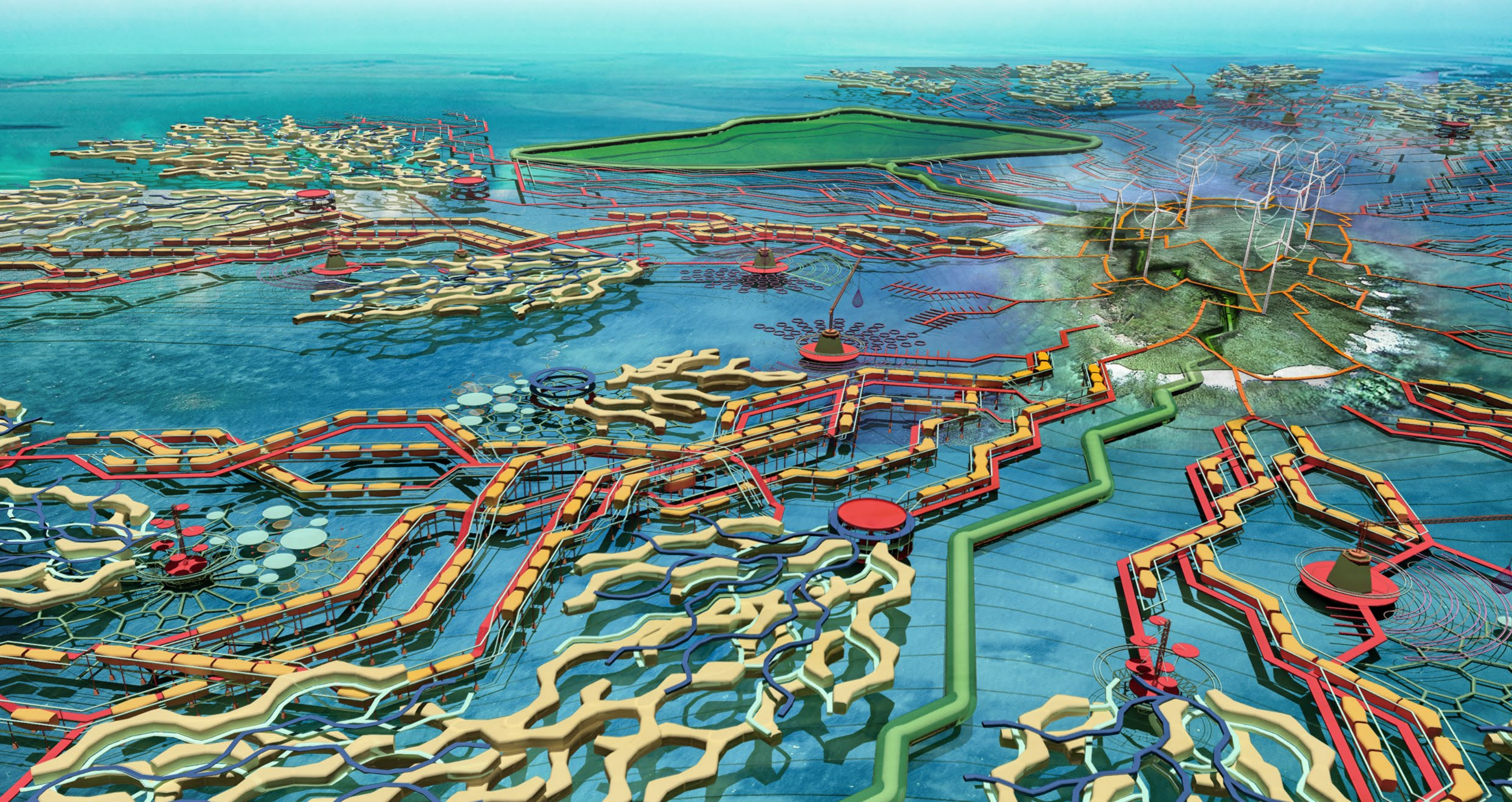
Using tools like fiction, infrastructure, and integrated hybrid systems, this project attempts to imagine new socio-ecological realities for humanity at the mercy of climate change. Using Mekong Delta as a testing bed, I have developed a fictional narrative regarding a new system of living that empowers marginalised communities living at the threshold of climate change. Formerly a leading rice exporter in Southeast Asia, Mekong Delta is facing issues of salinity intrusion and sea level rise, threatening their productivity. Occupying their new reality, the Mekong Delta community would build an alternative world upon the foundations of aquaculture, aquaponics and water desalination.

TYOLOGY
Large-scale system

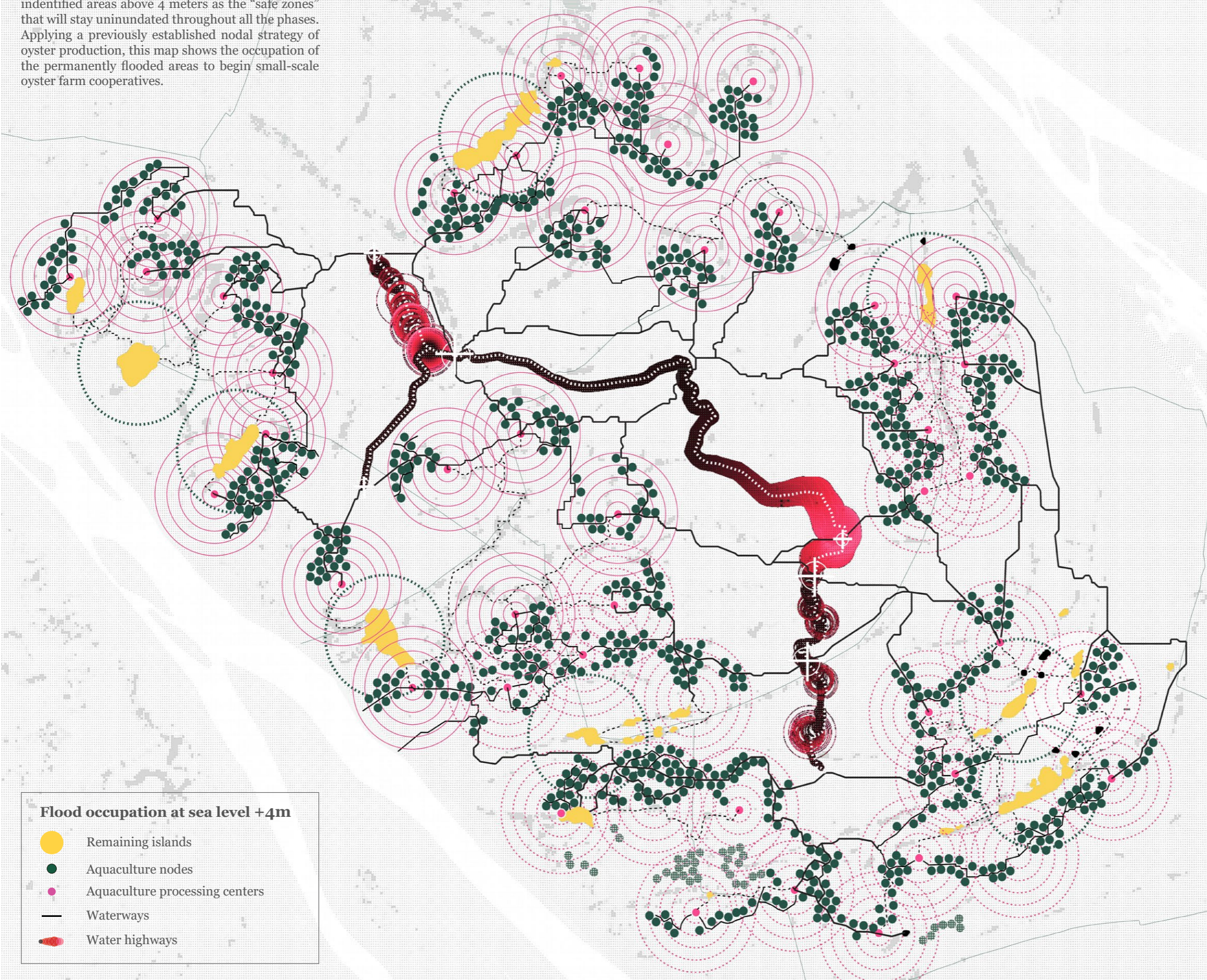
SUTD TERM 9-10
Master of Architecture Thesis
Individual Work

BEST THESIS AWARD
Sustainability Category

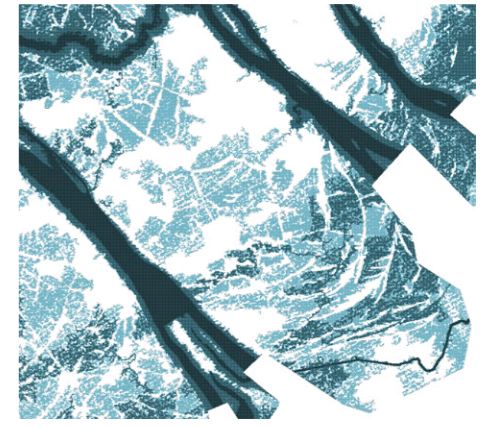
INSTRUCTORS
Eva Castro & Federico Ruberto



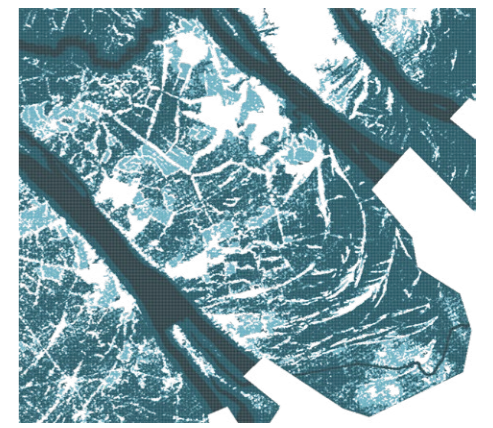
By overlapping the flood simulations on the right, the site's topography and existing settlements, I have identified areas above 4 meters as the "safe zones" that will stay uninundated throughout all the phases. Applying a previously established nodal strategy of oyster production, this map shows the occupation of the permanently flooded areas to begin small-scale oyster farm cooperatives.



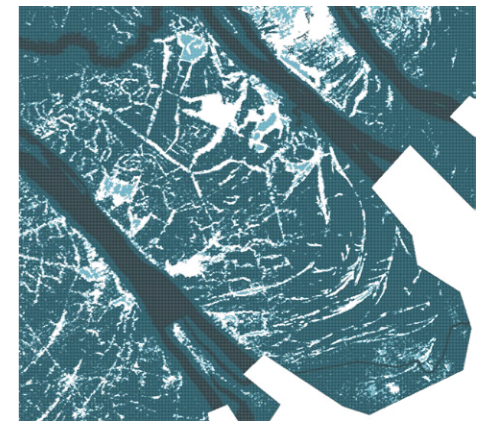
- Flood occupation at sea level +4m**
- Remaining islands
 - Aquaculture nodes
 - Aquaculture processing centers
 - Waterways
 - Water highways



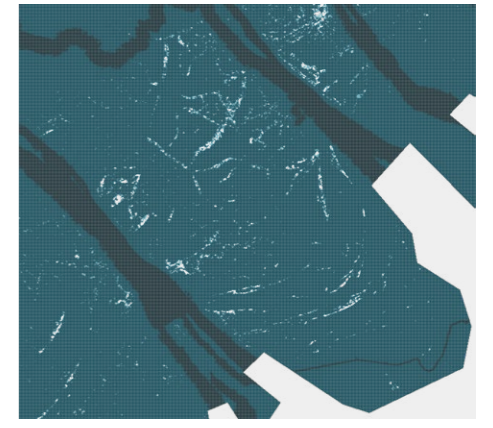
PHASE 0 - YEAR 2020
Simulated flood depth: 1m



PHASE 1 - YEAR 2050
Simulated flood depth: 1.5m



PHASE 2 - YEAR 2100
Simulated flood depth: 2m



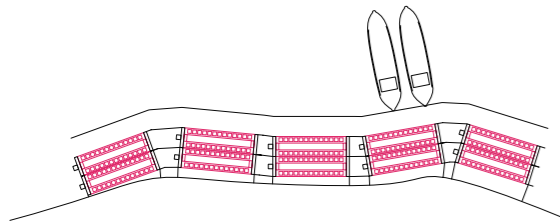
PHASE 3 - YEAR 2500
Simulated flood depth: 5m

PROTOTYPICAL STUDIES

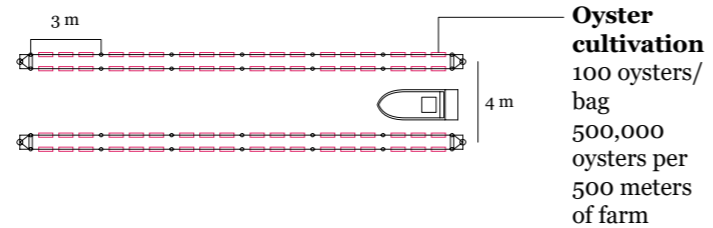
Aquaculture

CULTIVATION - PLAN

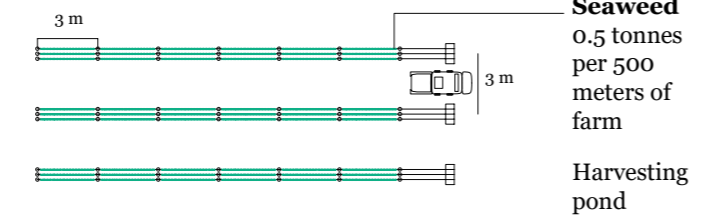
Seed Node (Oyster)



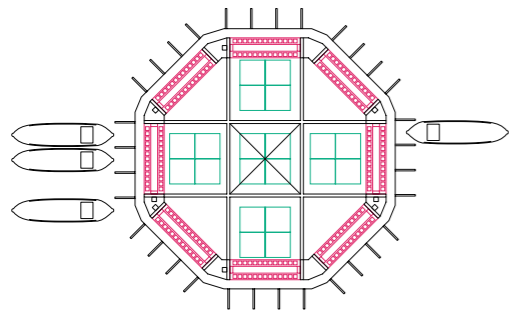
Oyster Farm



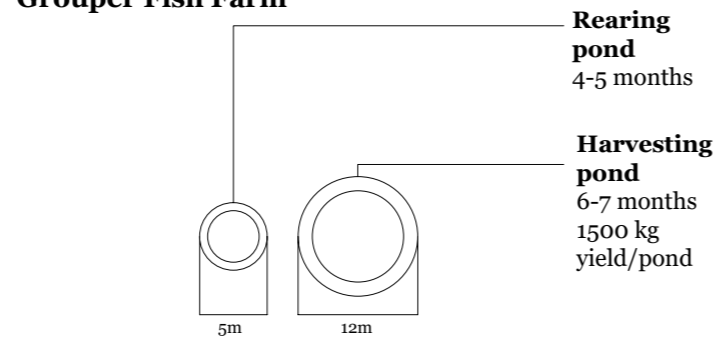
Seaweed Farm



Seed Node (Oyster + Seaweed)



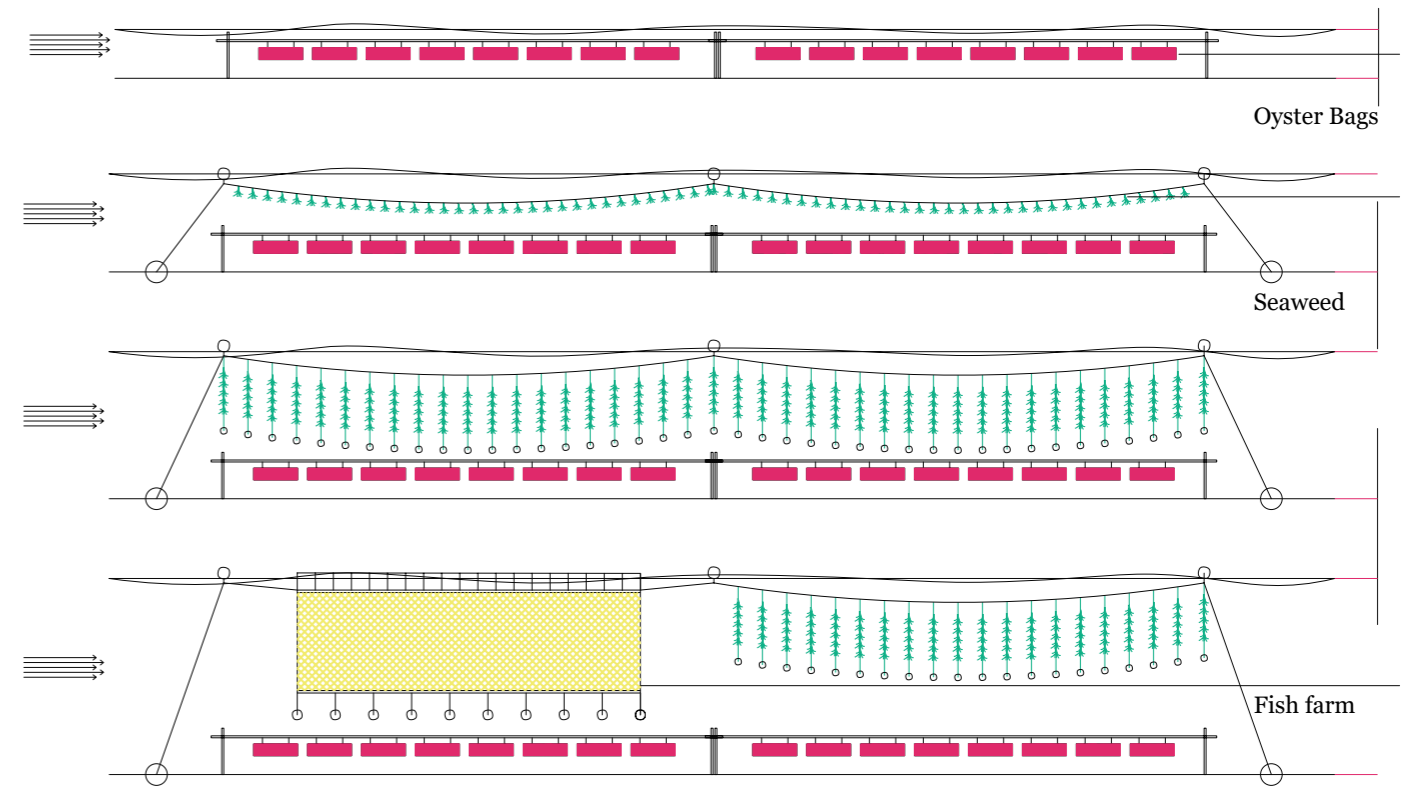
Grouper Fish Farm



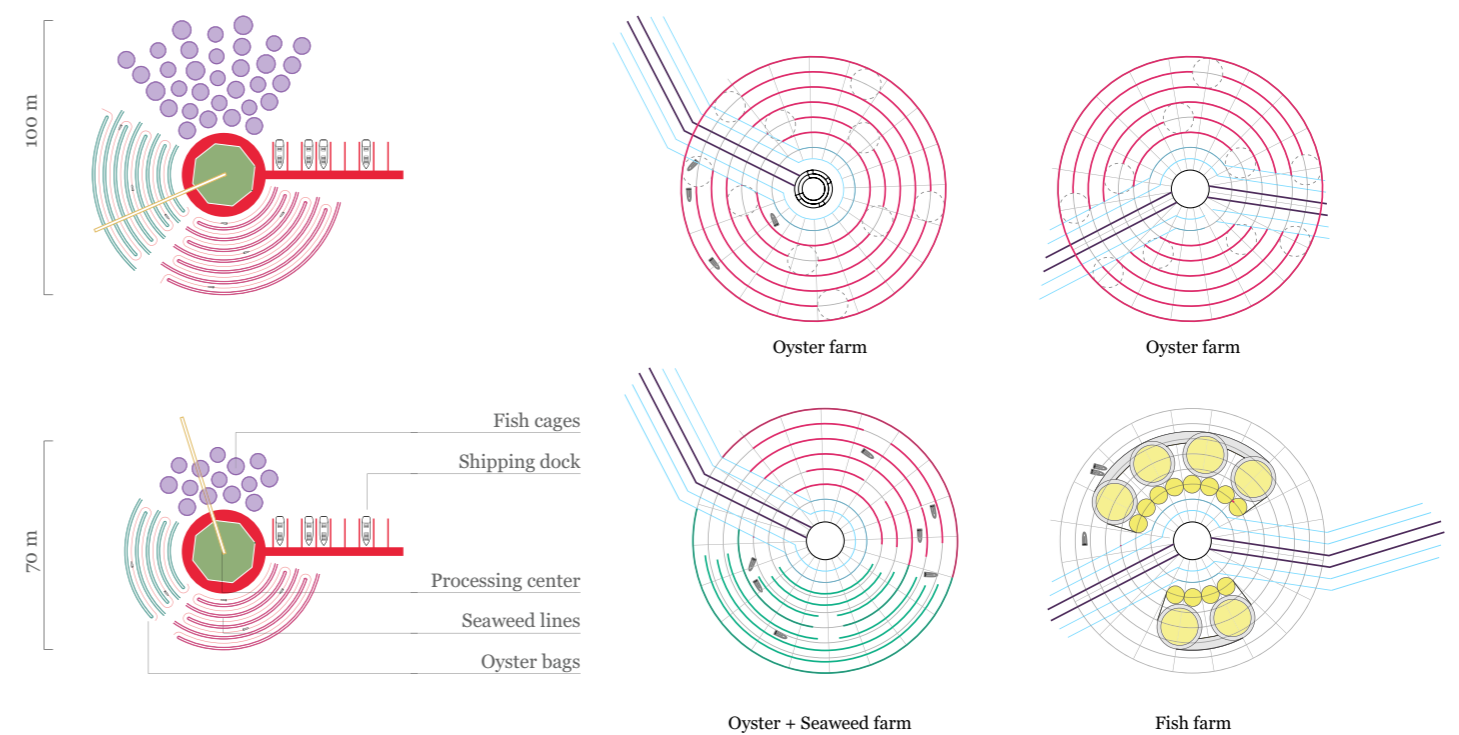
TRANSPORTATION

	Functions	Dimensions	Min Route width	Turning radius
FLUPSY	Cargo boats	5m x 1.5m		R = 10m
MAIN FARM	Oyster harvesting boats	4m x 1.5m		R = 8m
	Seaweed harvesting machine	3m x 1m		R = 6m
SATELLITE FARMS	Small harvesting boats & personal commuter boats	2m x 1.5m		R = 4m

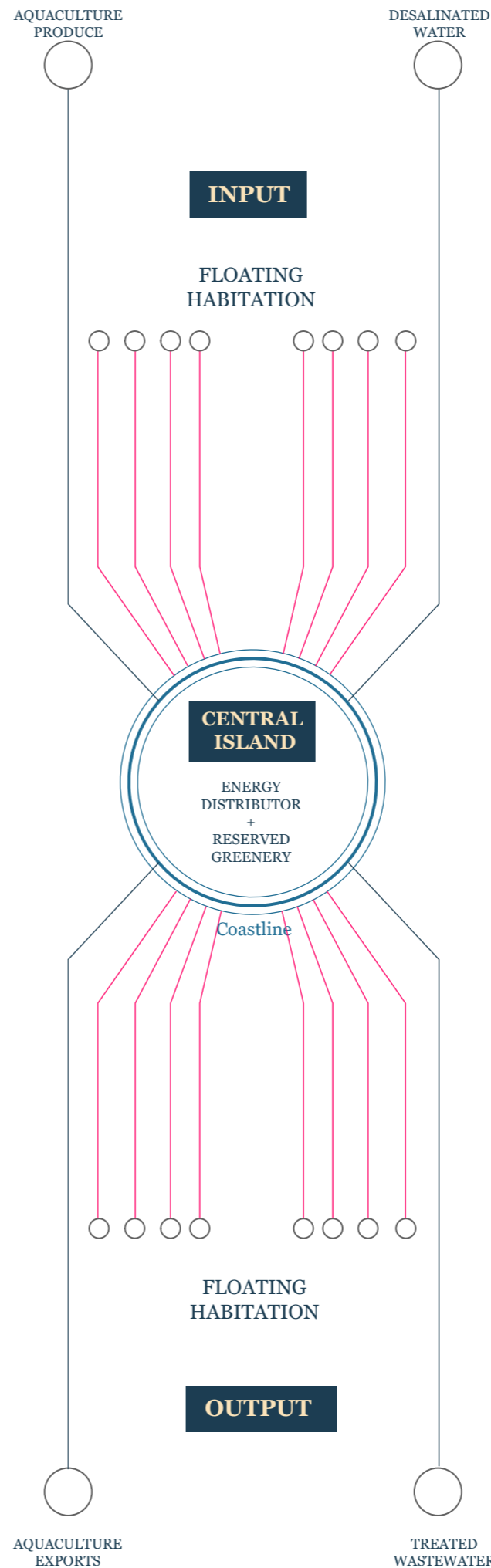
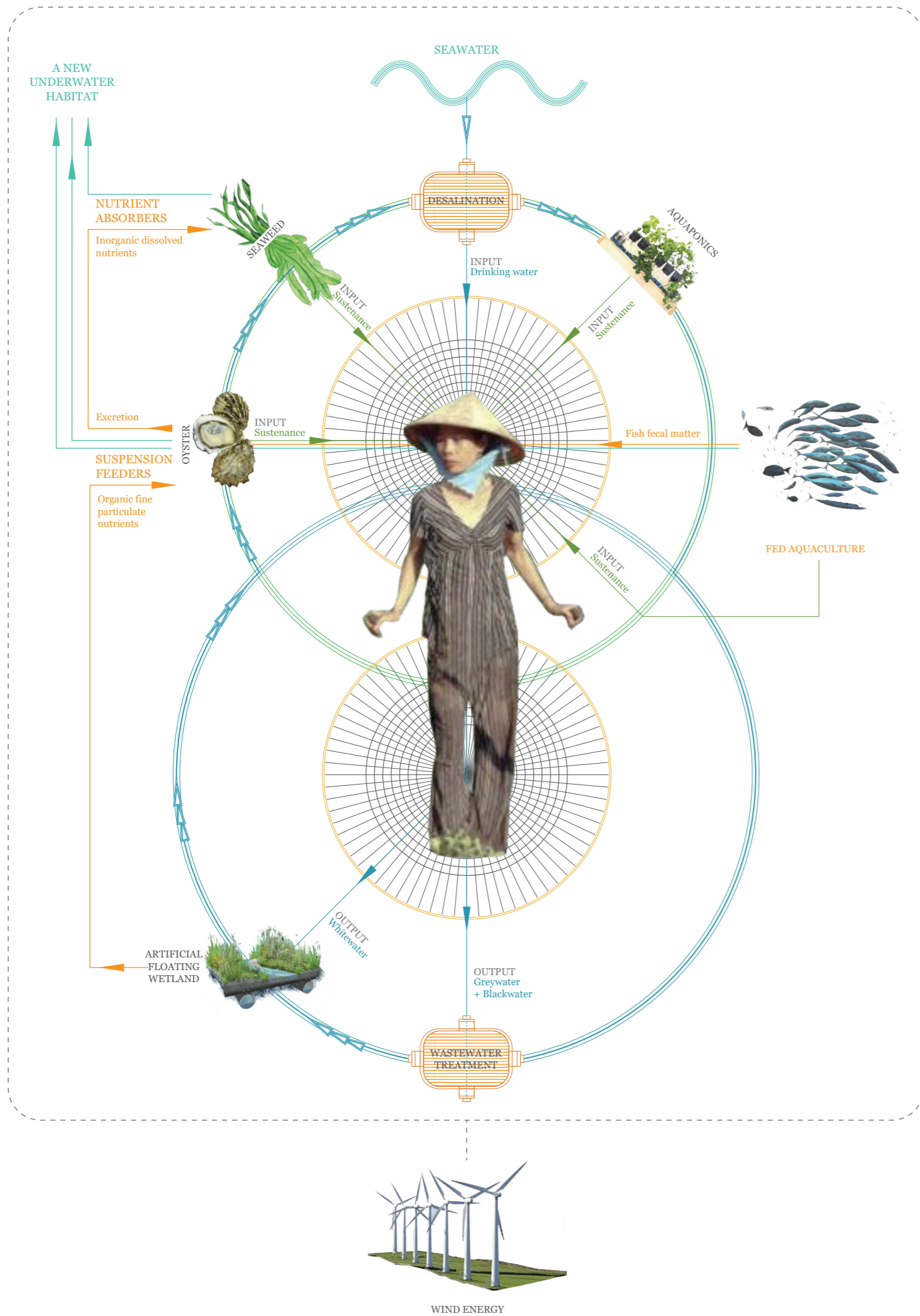
CULTIVATION - SECTION



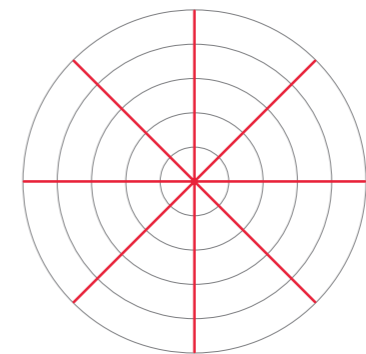
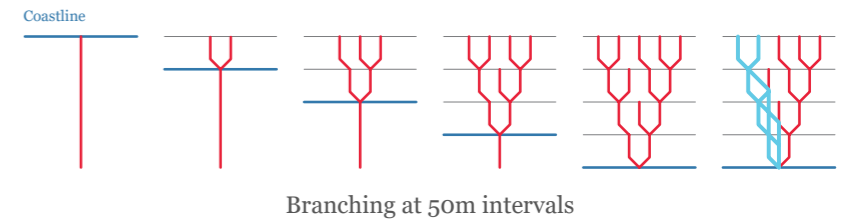
INTEGRATED AQUACULTURE



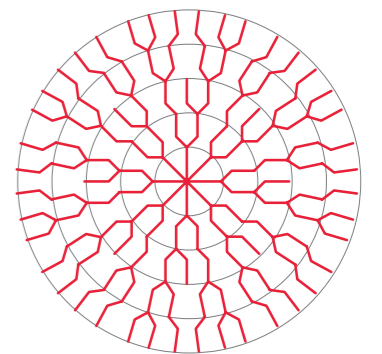
Formal exploration of aquaculture productions



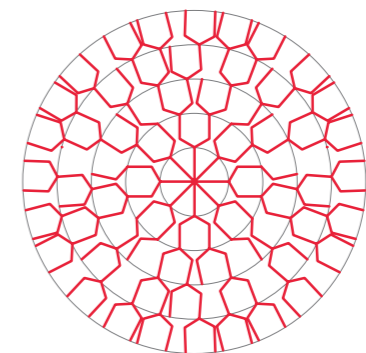
A LIVING ORGANISM
Island Prototype



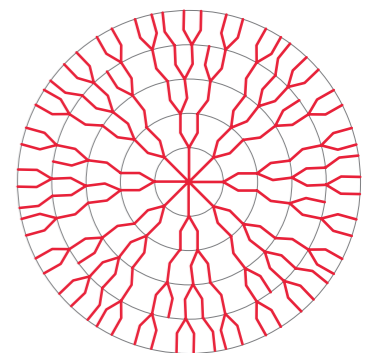
0° angle



45° angle

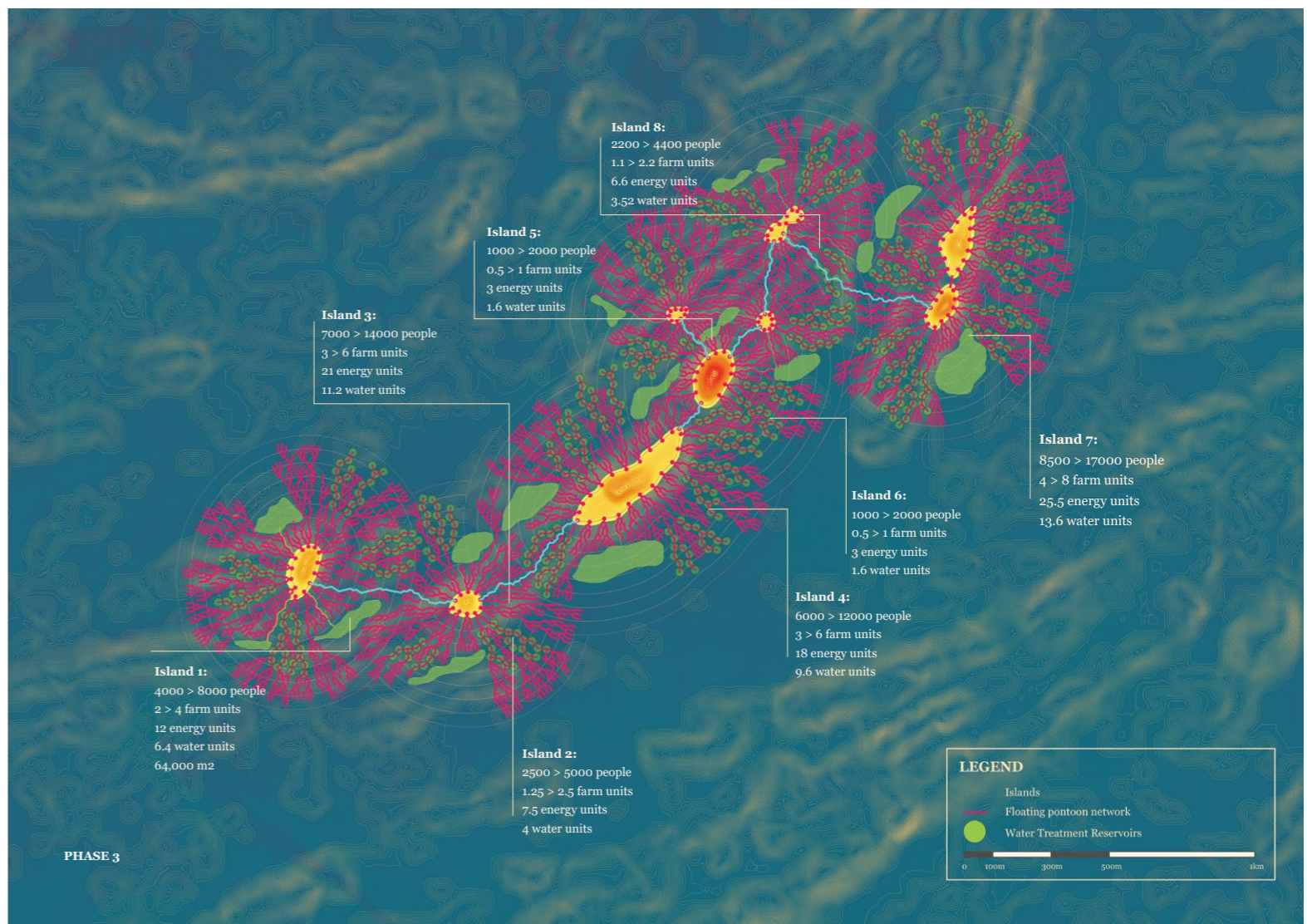
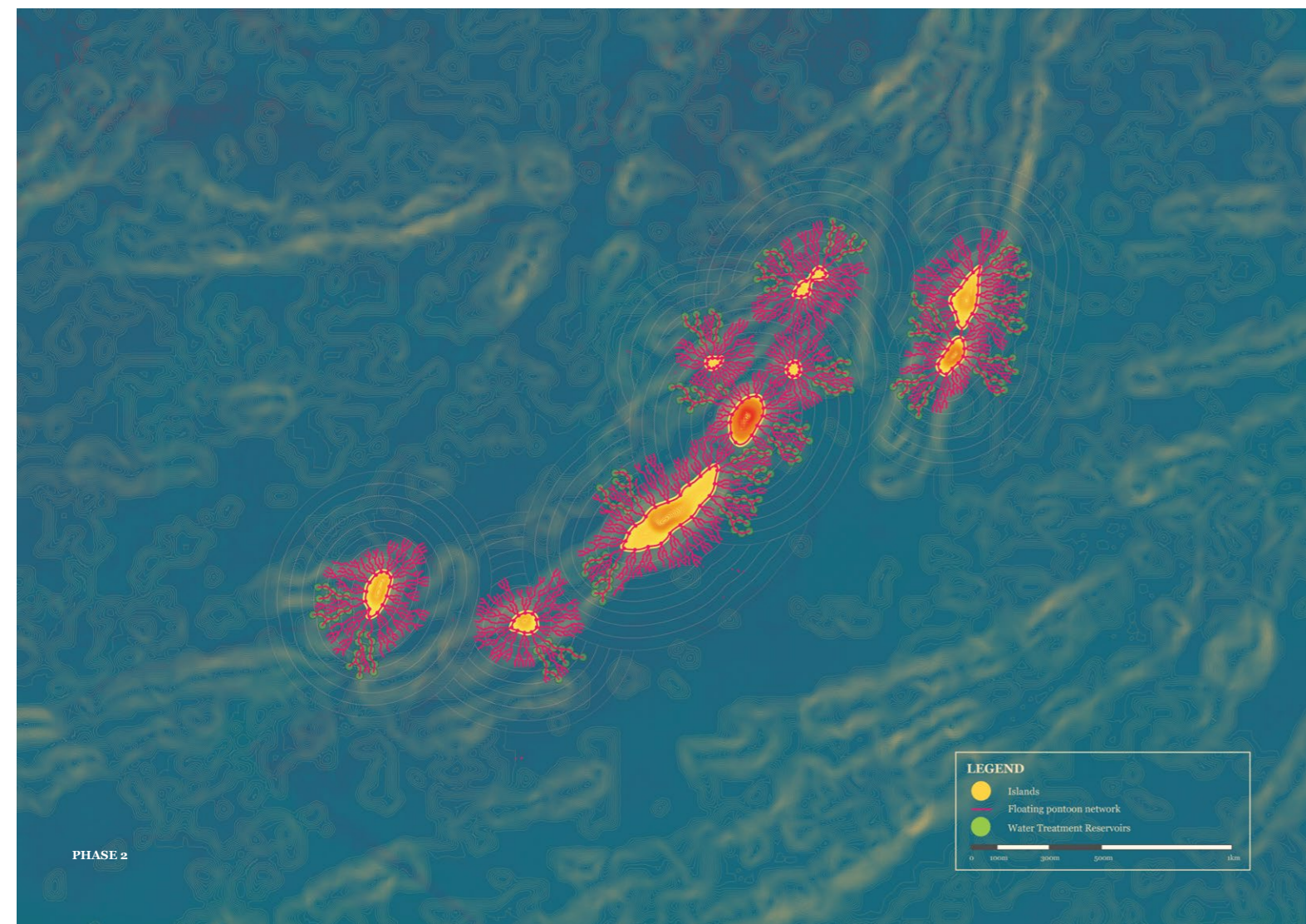
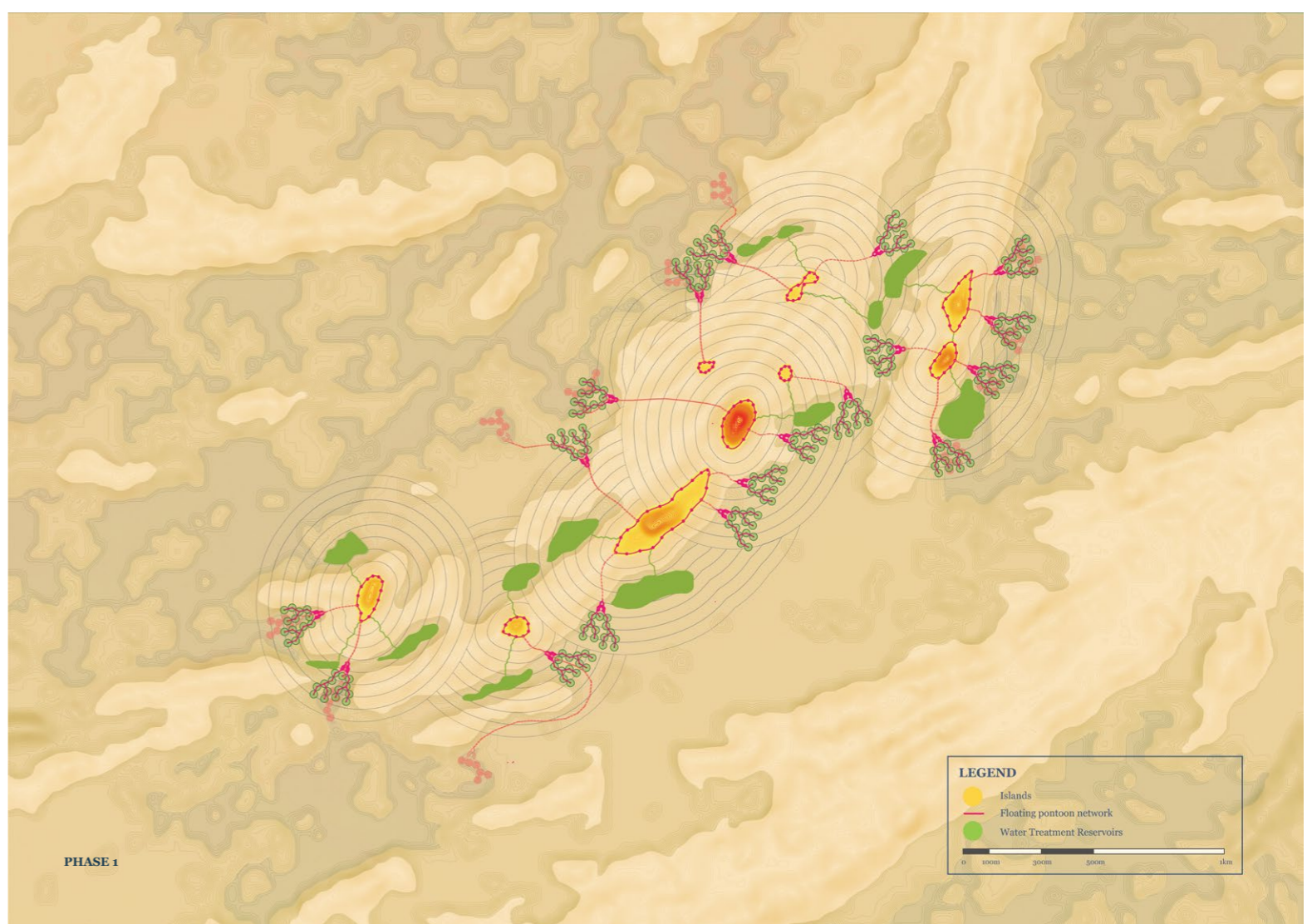
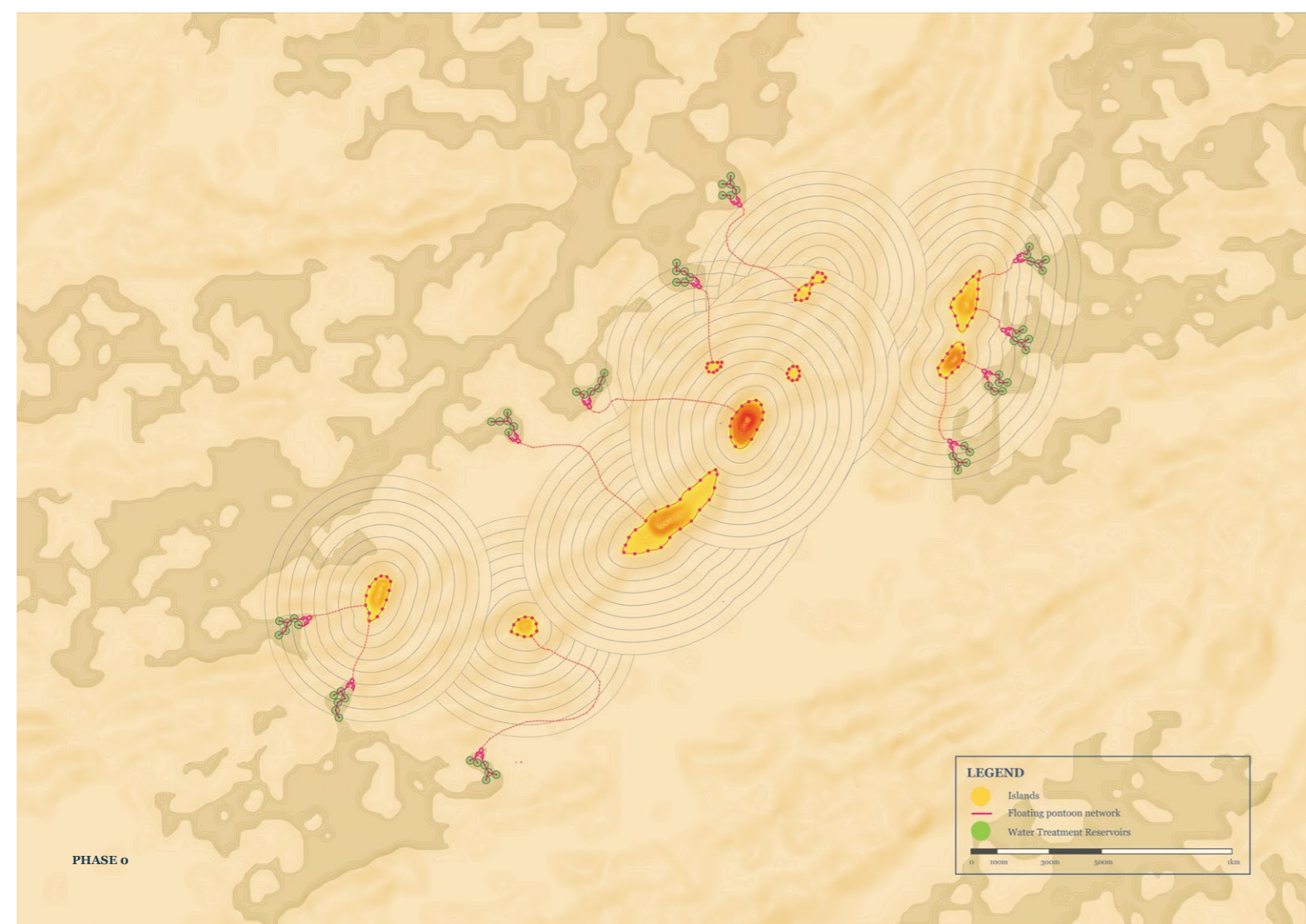


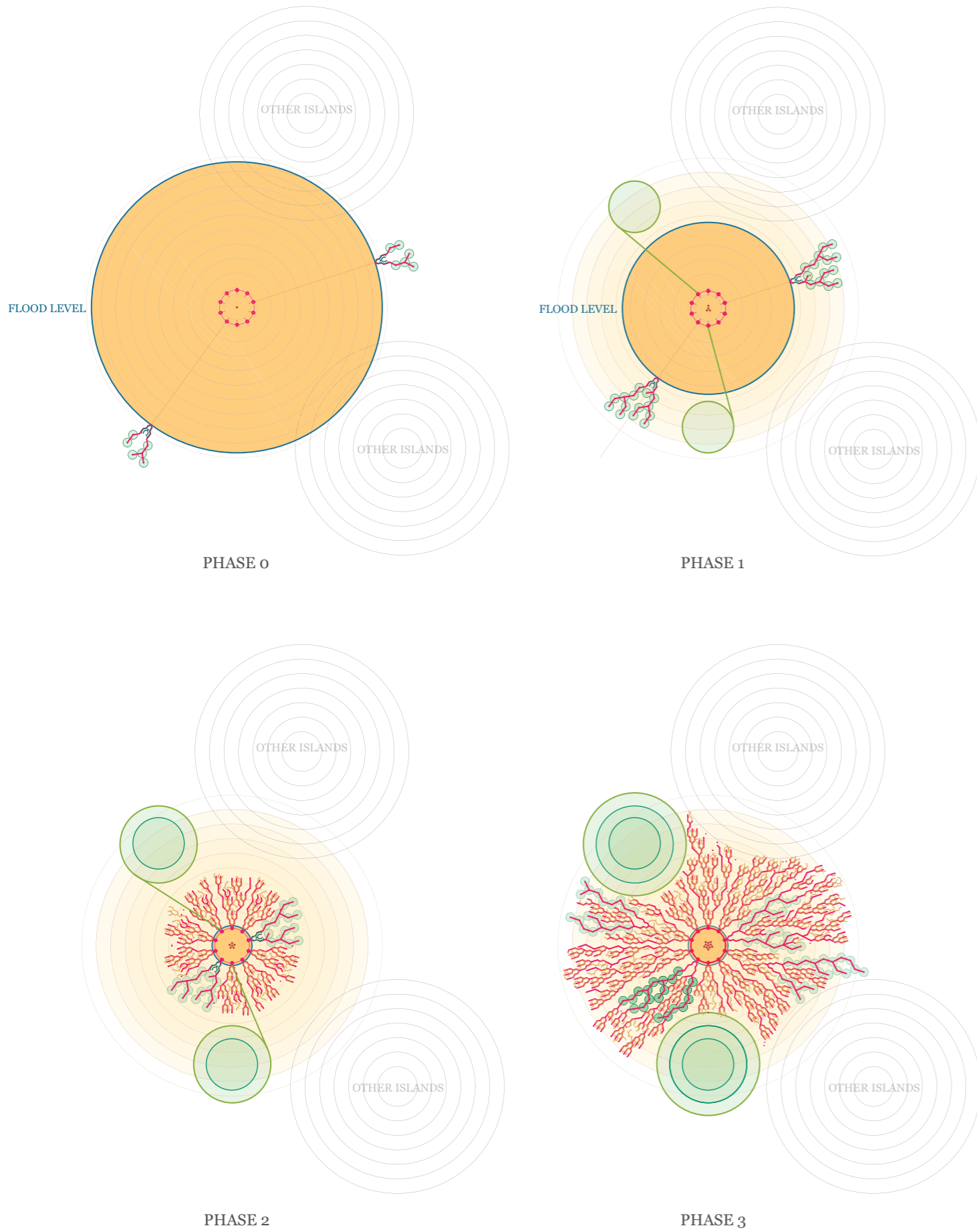
60° angle



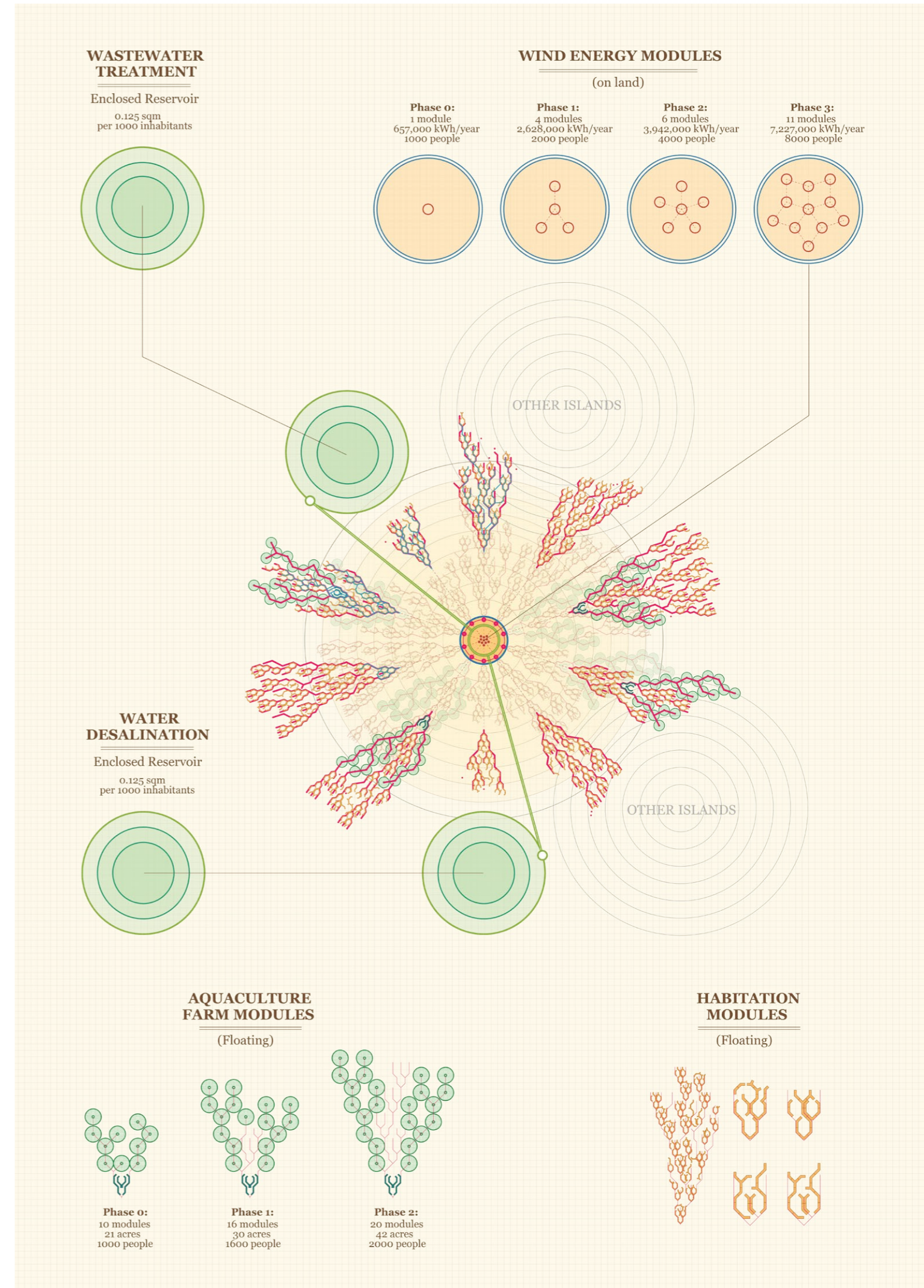
30° angle

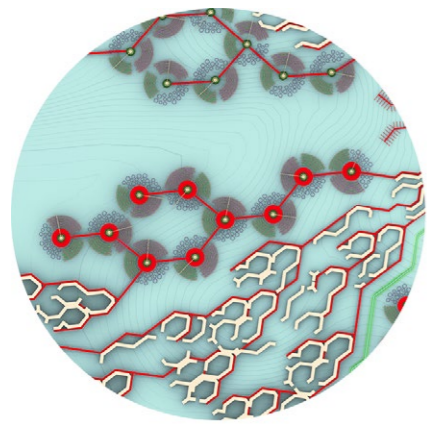
Inspired by the circulatory network of the human body, I developed a concept in which the remaining islands of Mekong Delta are geared with the kit of parts necessary to sustain a living organism. With the islands acting as the "heart" of the system, housing the last piece of reserved greenery available in the region, as well as accommodating the wind energy generators and distributors. Surrounding this island, floating above the water would be the habitation modules, along with aquaculture production modules and water treatment facilities, all of which are dependent on their aquatic environment in order to function. These disparate elements will be woven together by a "vein network", physically connecting as well as providing services needed for them to function. The next few sections will go over the design of this branching vein network.



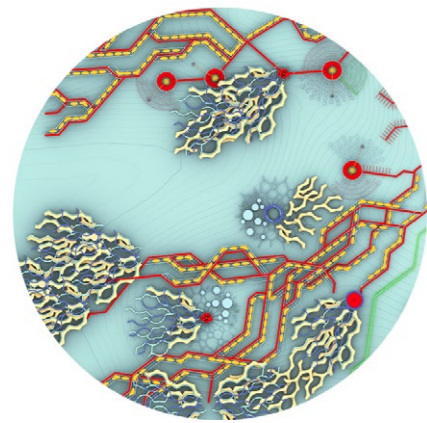


As the sea level rises and the shoreline retreats ever deeper inland, the remaining yet shrinking islands will have to accommodate greater numbers of displaced people. The productive systems as well as circulatory networks as designed would grow together with the growing population, providing sustenance as well as shelter for the new community.

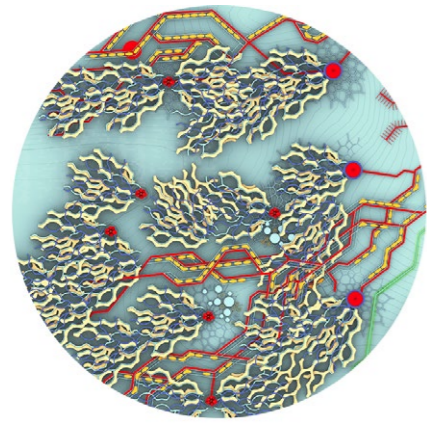




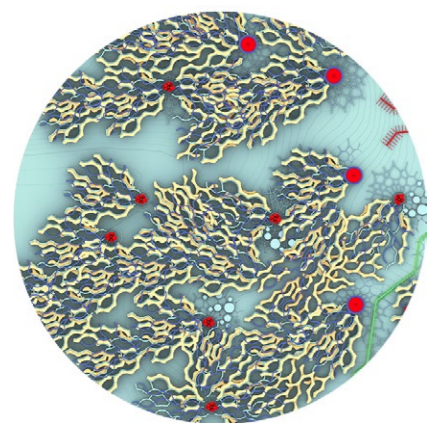
Intensive Production
Stage 1



Semi-Intensive Production
Stage 2



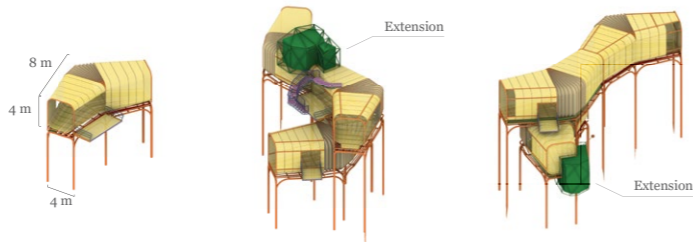
Habitation + Production
Stage 3



Habitation + Social
Stage 4

KIT OF PARTS

HABITATION MODULES

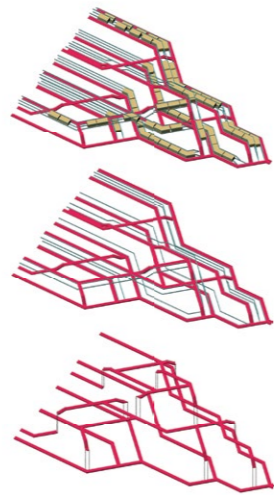


Habitation
2-3 inhabitants per module

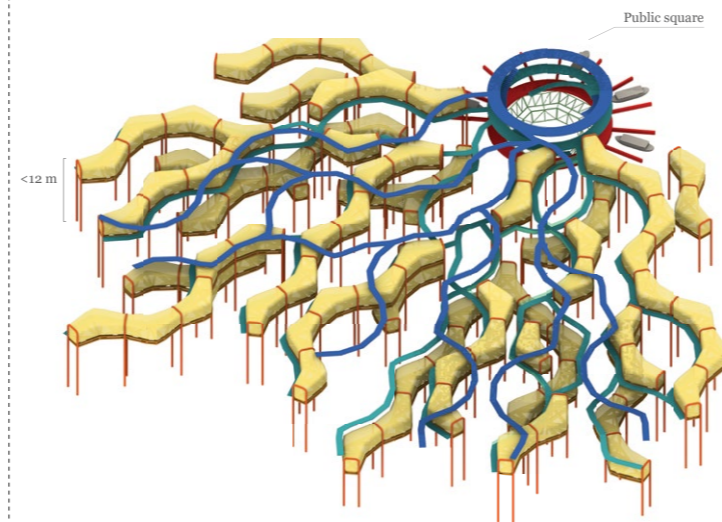
Living Quarters
<90 habitation modules per square
max. 3 levels
<270 inhabitants per square

Productive Machinery
max. 3 level
10 constructed modules per 100 m

PRODUCTIVE MACHINERY



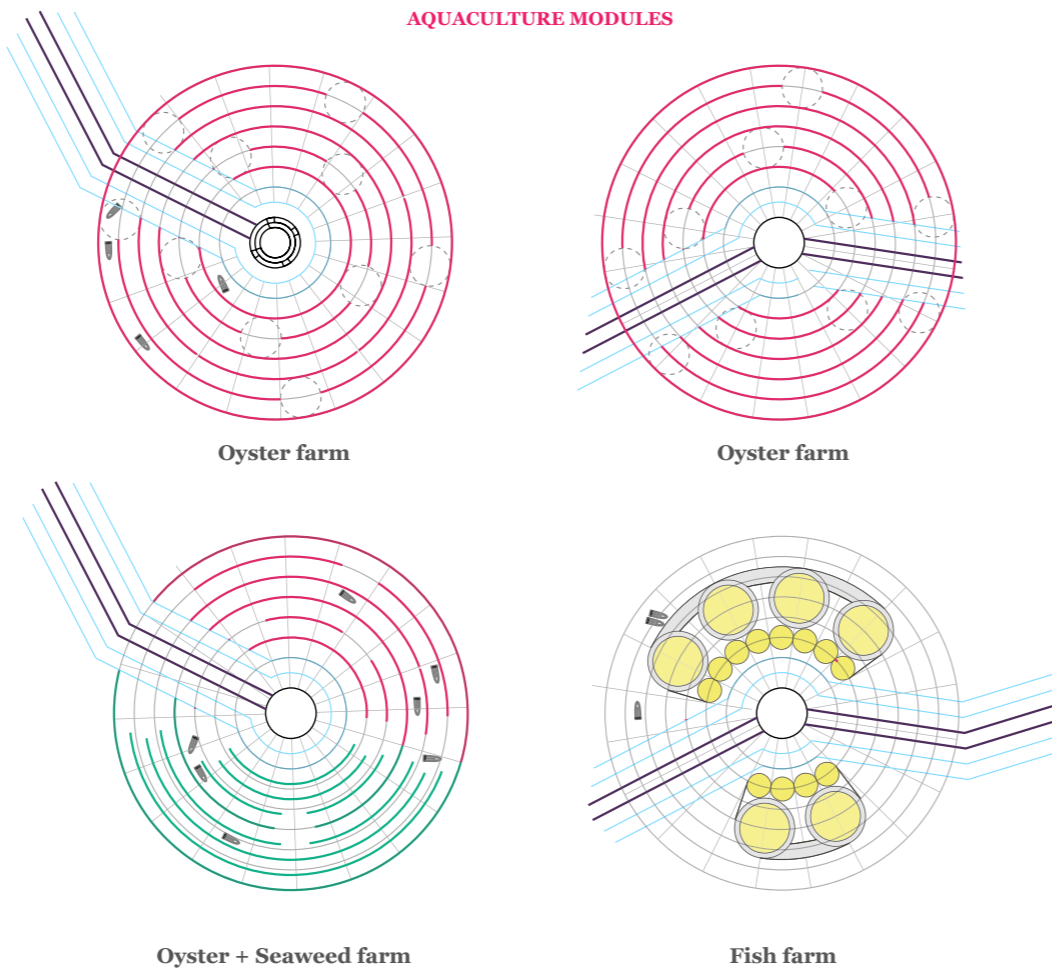
LIVING QUARTERS



<12 m

Public square

AQUACULTURE MODULES



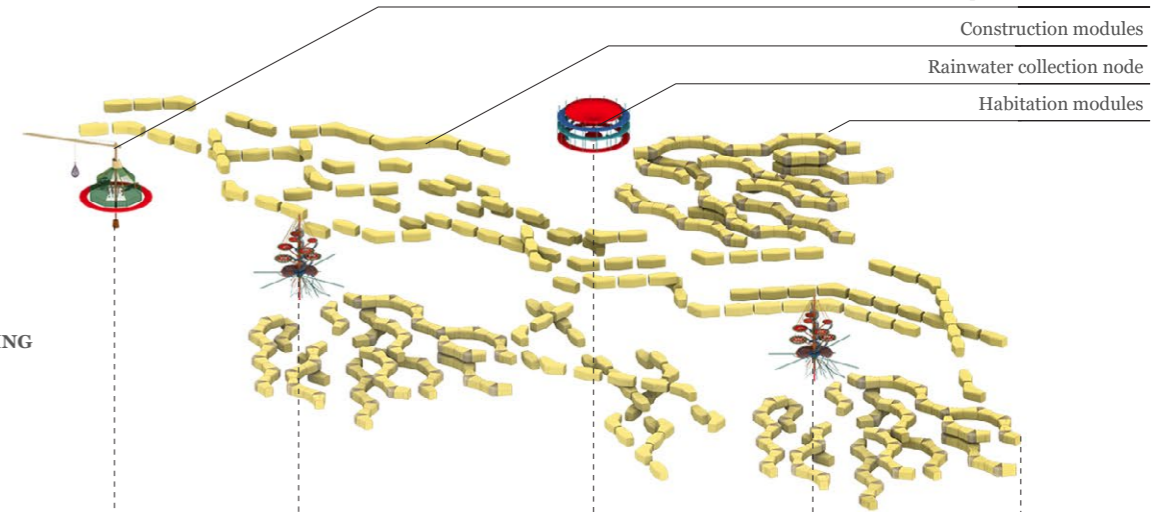
Oyster farm

Oyster farm

Oyster + Seaweed farm

Fish farm

MASSING



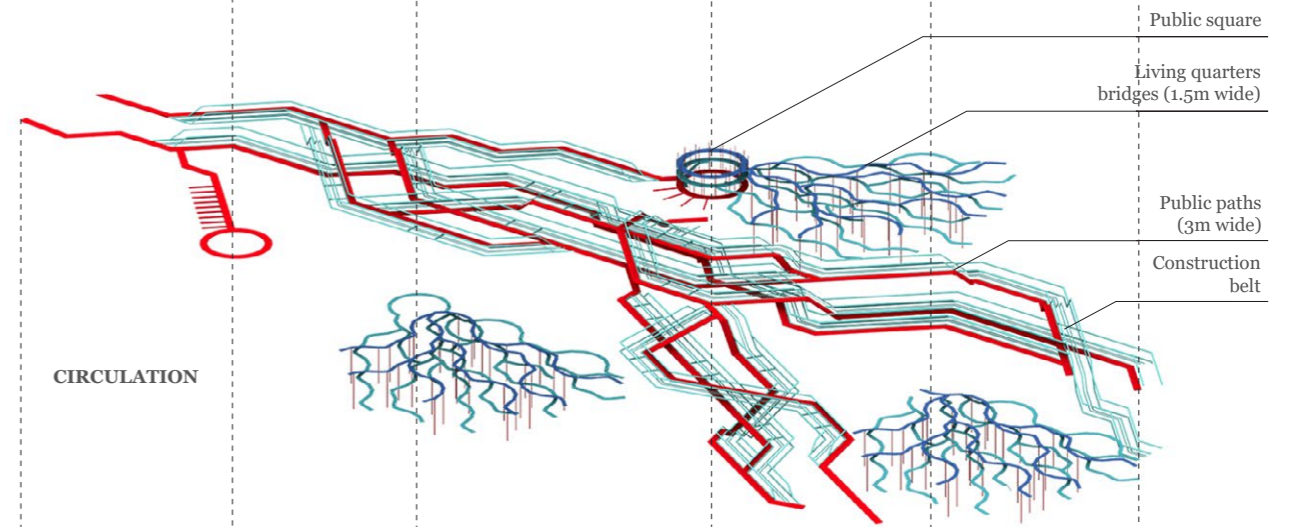
Aquaculture farm node

Construction modules

Rainwater collection node

Habitation modules

CIRCULATION



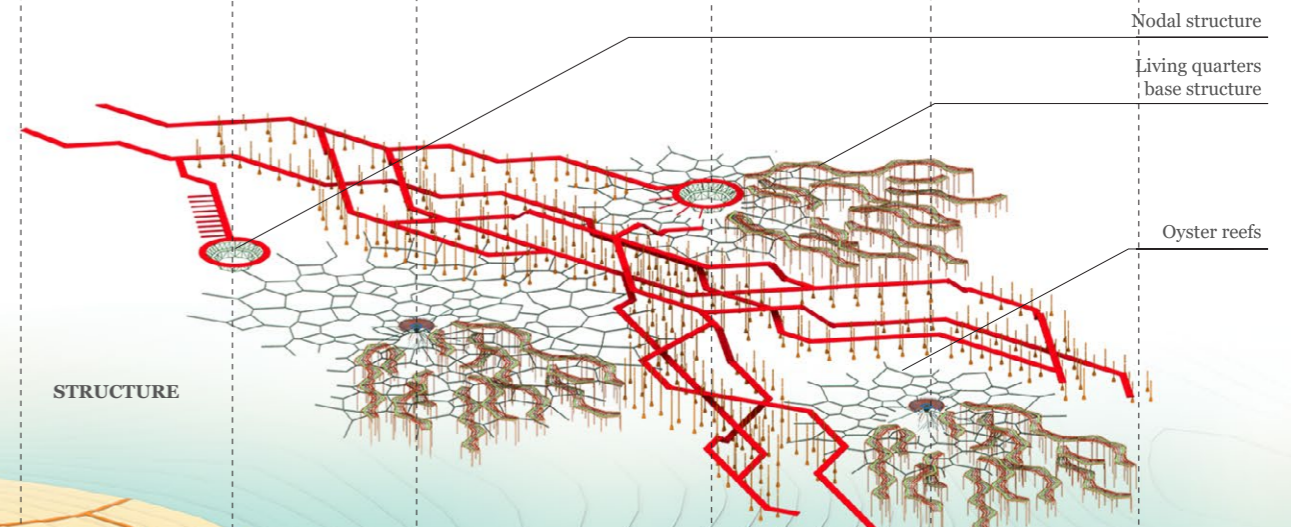
Public square

Living quarters
bridges (1.5m wide)

Public paths
(3m wide)

Construction
belt

STRUCTURE

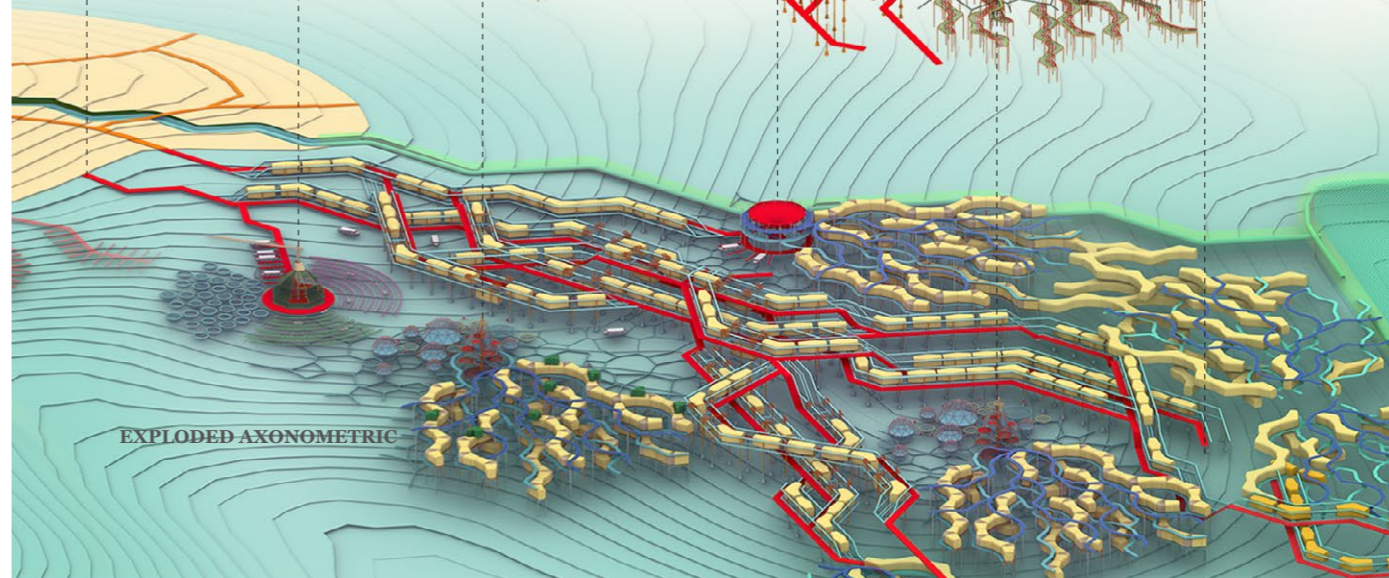


Nodal structure

Living quarters
base structure

Oyster reefs

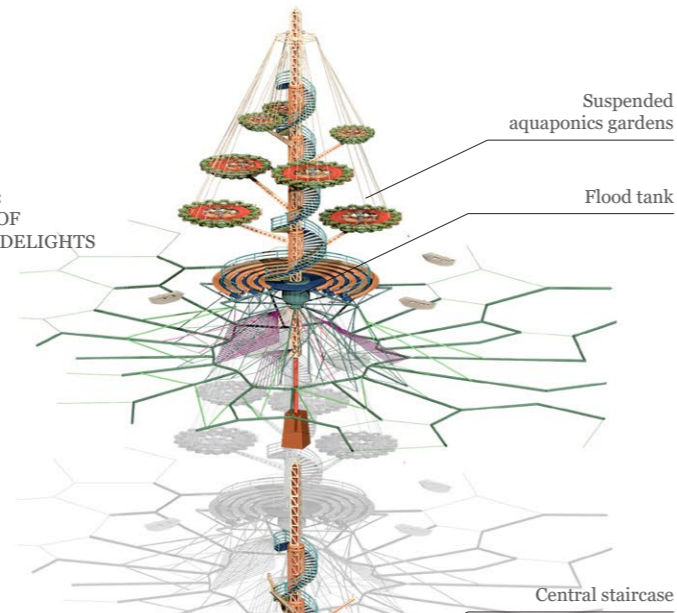
EXPLODED AXONOMETRIC



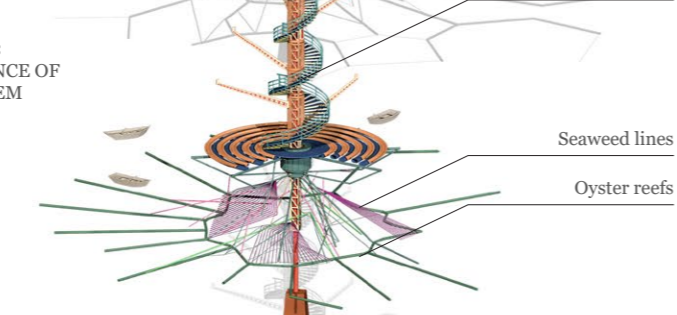
INFRASTRUCTURAL EVOLUTION

The persistence of climate change renders the necessity to construct new narratives of socio-ecological relations in the community. This does not refer to concepts of “sustainability” or “green architecture” that promise to slow down the process of global warming. Rather, it is a way of rethinking our productive systems and lifestyles with respect to the changing quality of this new technonature that we are confronted with. The future is here, and instead of delaying the inevitable, I propose a narrative in which we begin to occupy these new realities, turning what was meant to be a tragedy into an opportunity to regenerate the community as well as the environment around it.

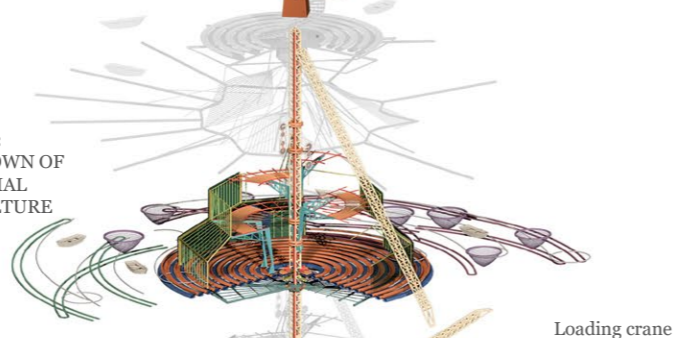
STAGE 4:
GARDEN OF
AQUATIC DELIGHTS



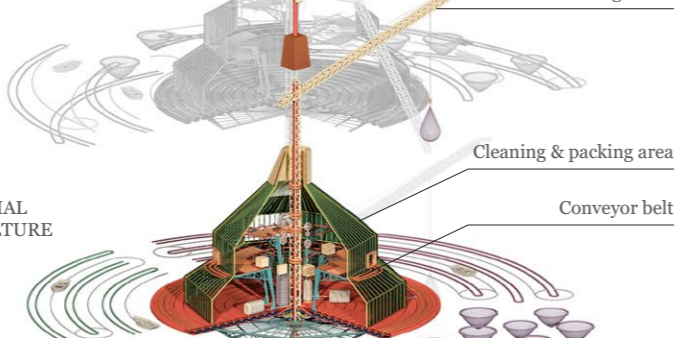
STAGE 3:
EMERGENCE OF
ECOSYSTEM



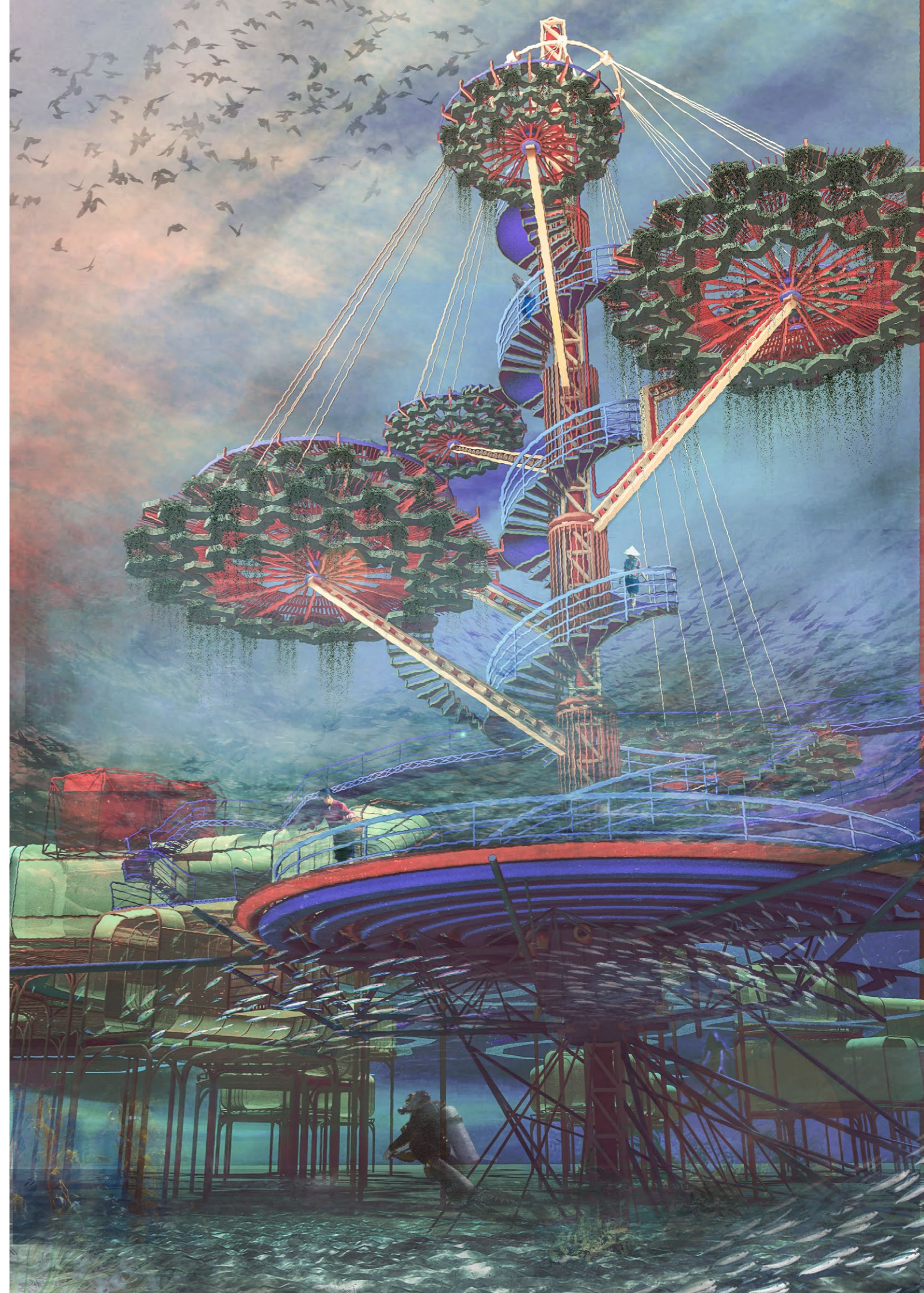
STAGE 2:
BREAKDOWN OF
INDUSTRIAL
AQUACULTURE



STAGE 1:
INDUSTRIAL
AQUACULTURE

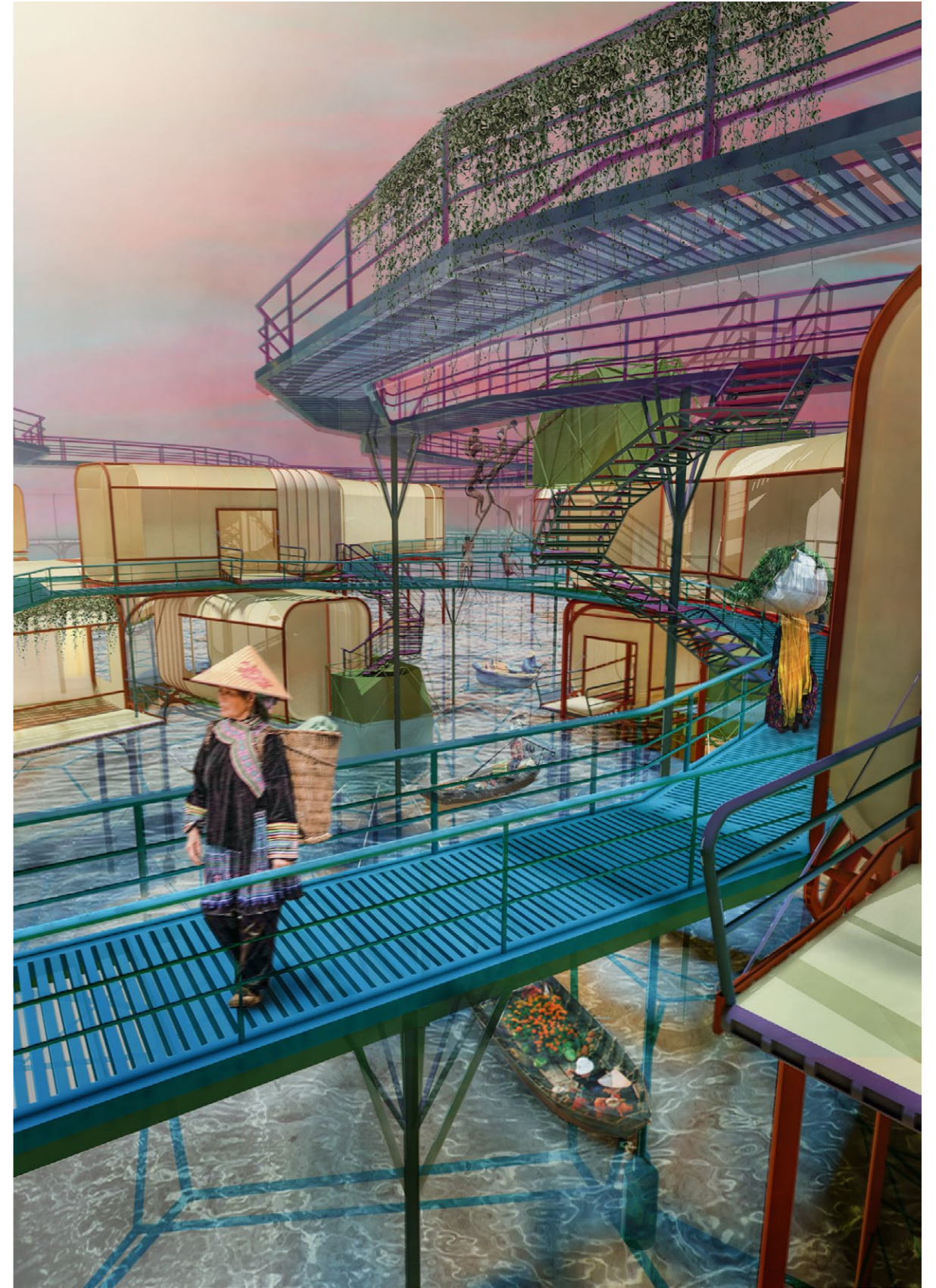


STAGE 0:
TRADITIONAL
FISH FARMING

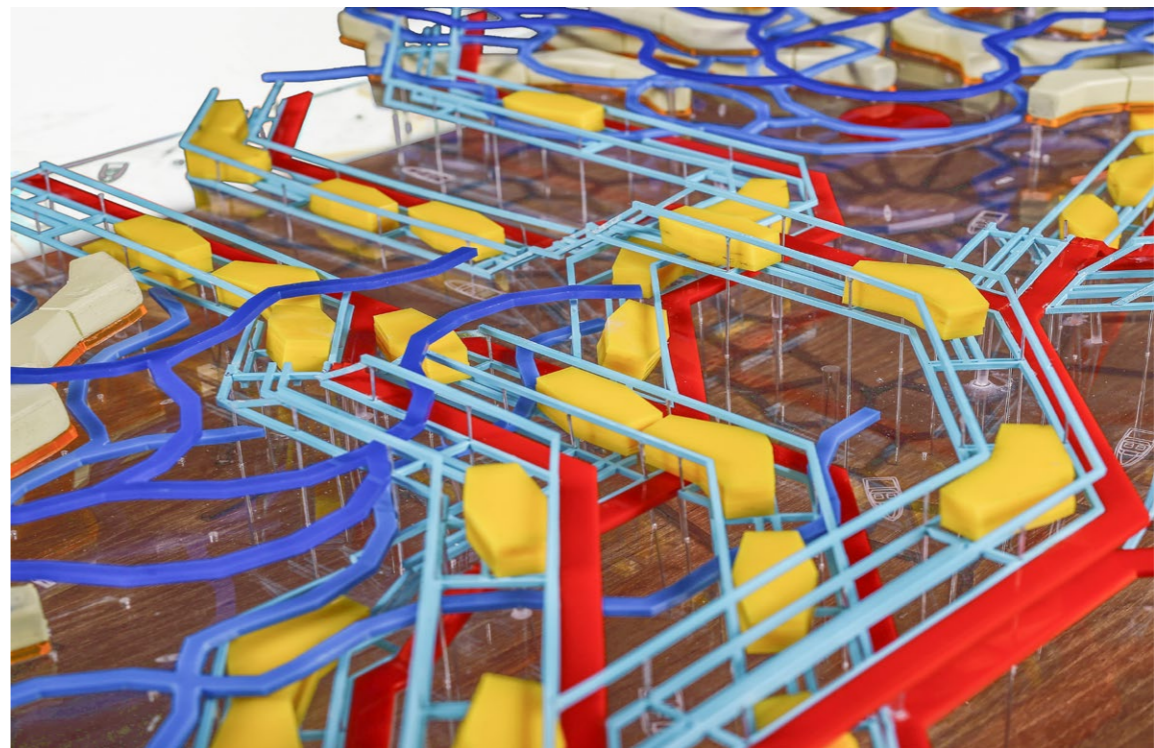
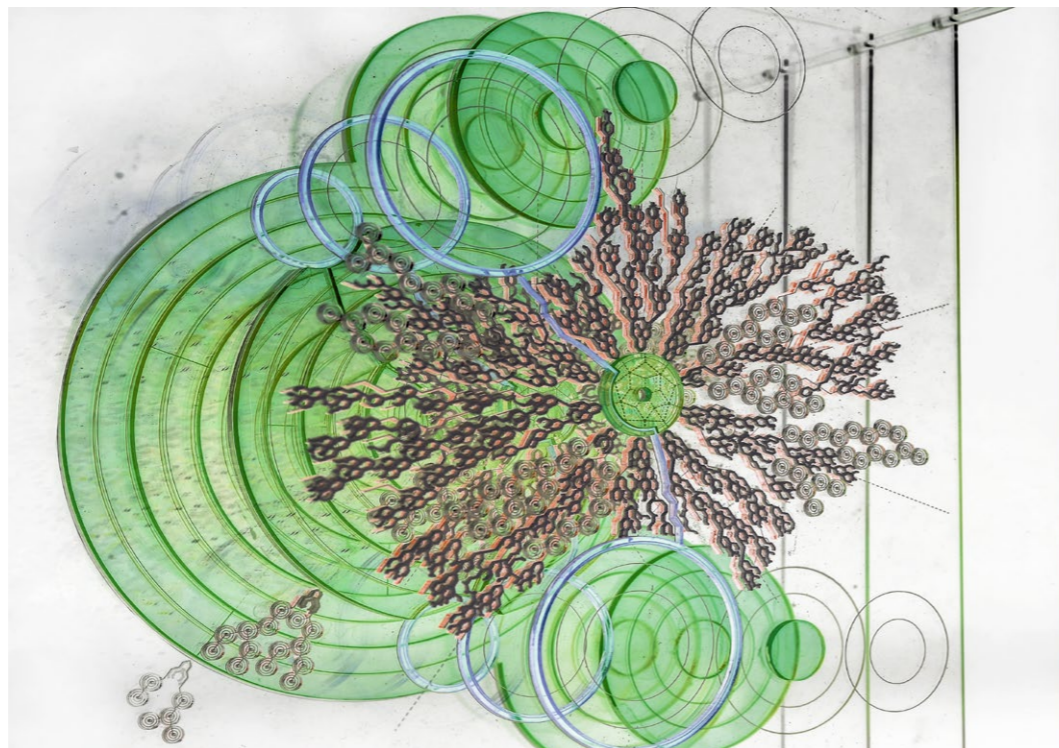
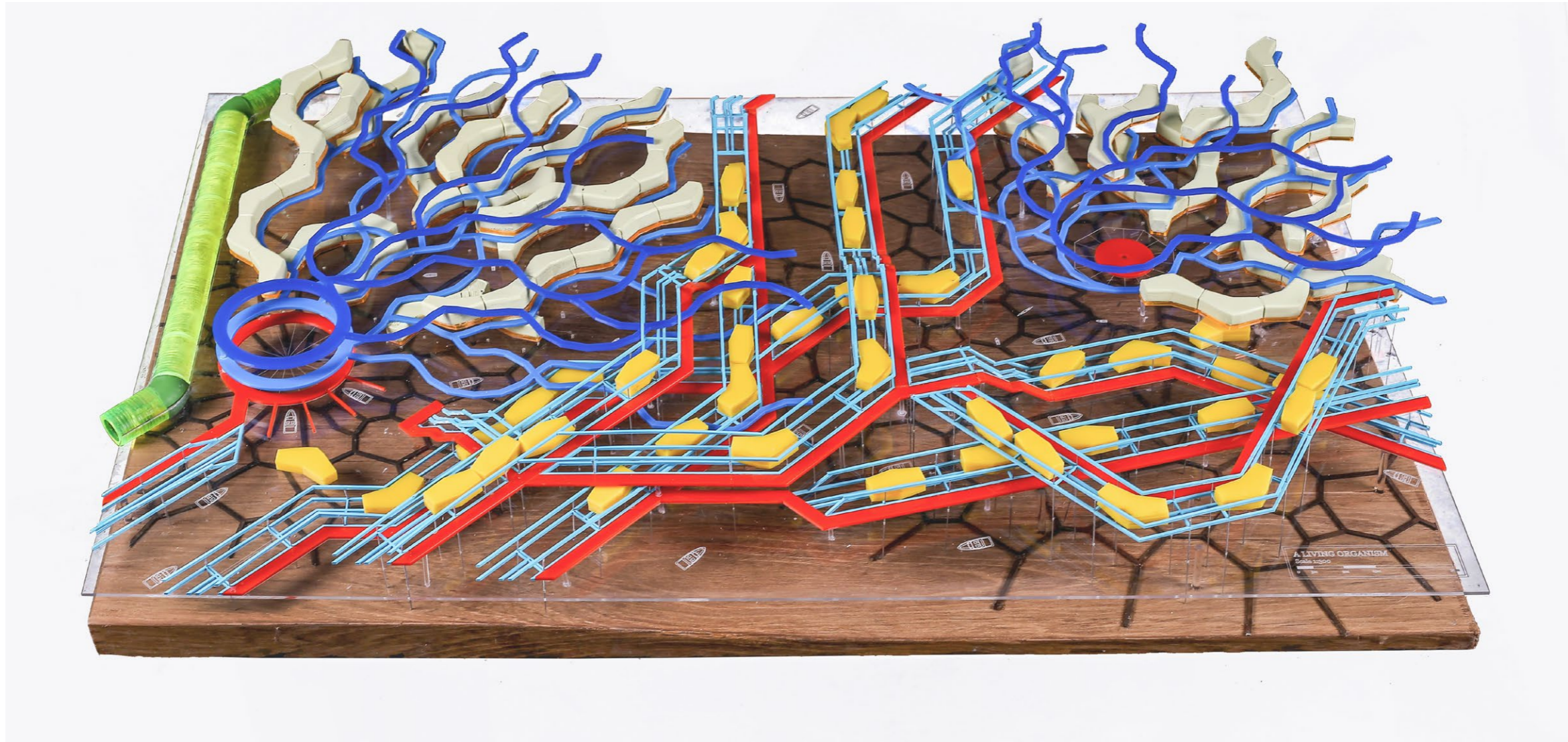




PRODUCTIVE MACHINERY



LIVING QUARTERS



PHYSICAL MODELS
Wood and plexiglass