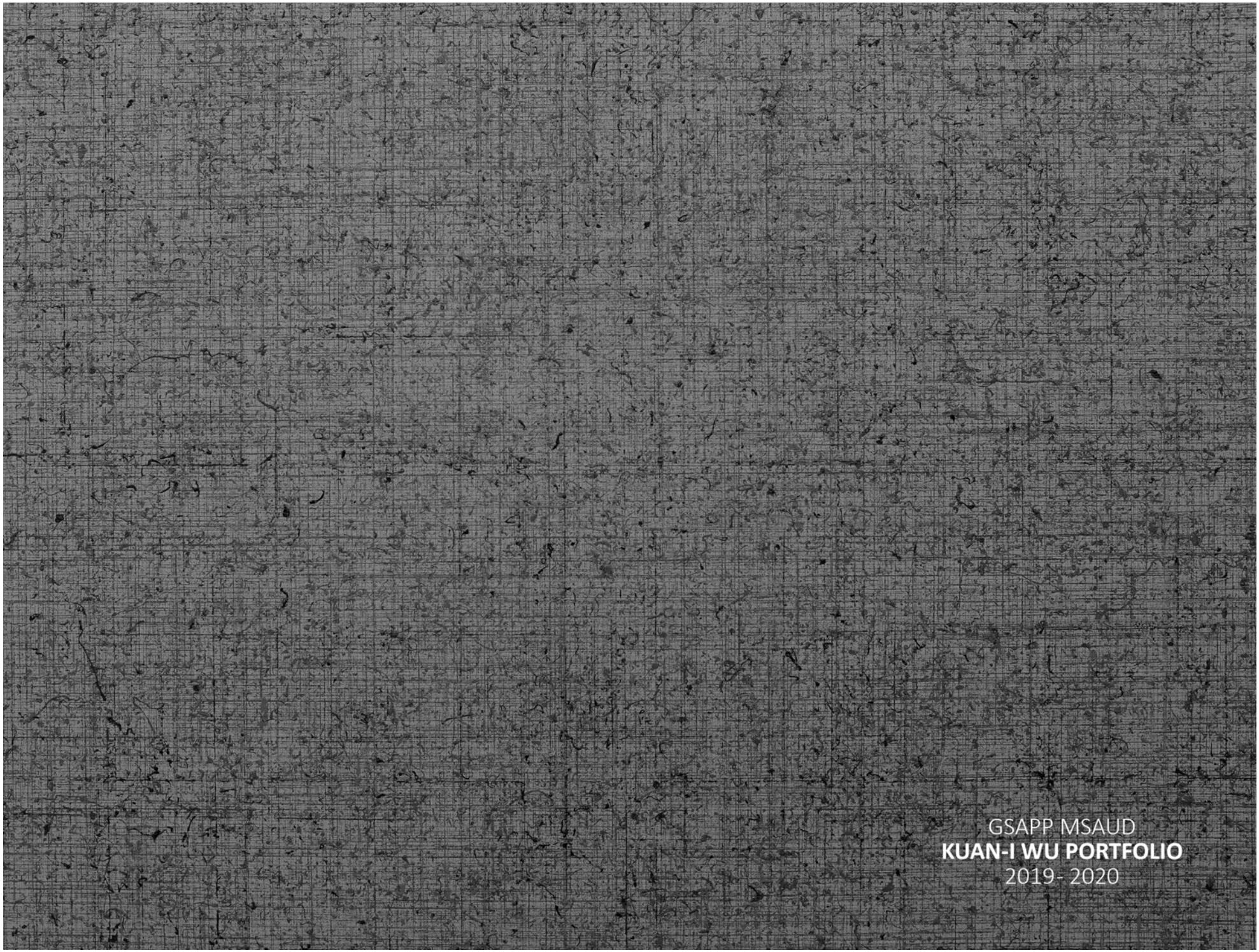


GSAPP MSAUD

KUAN-I WU PORTFOLIO

2019- 2020

CONTENT

WELL-HOUSE RENAISSANCE

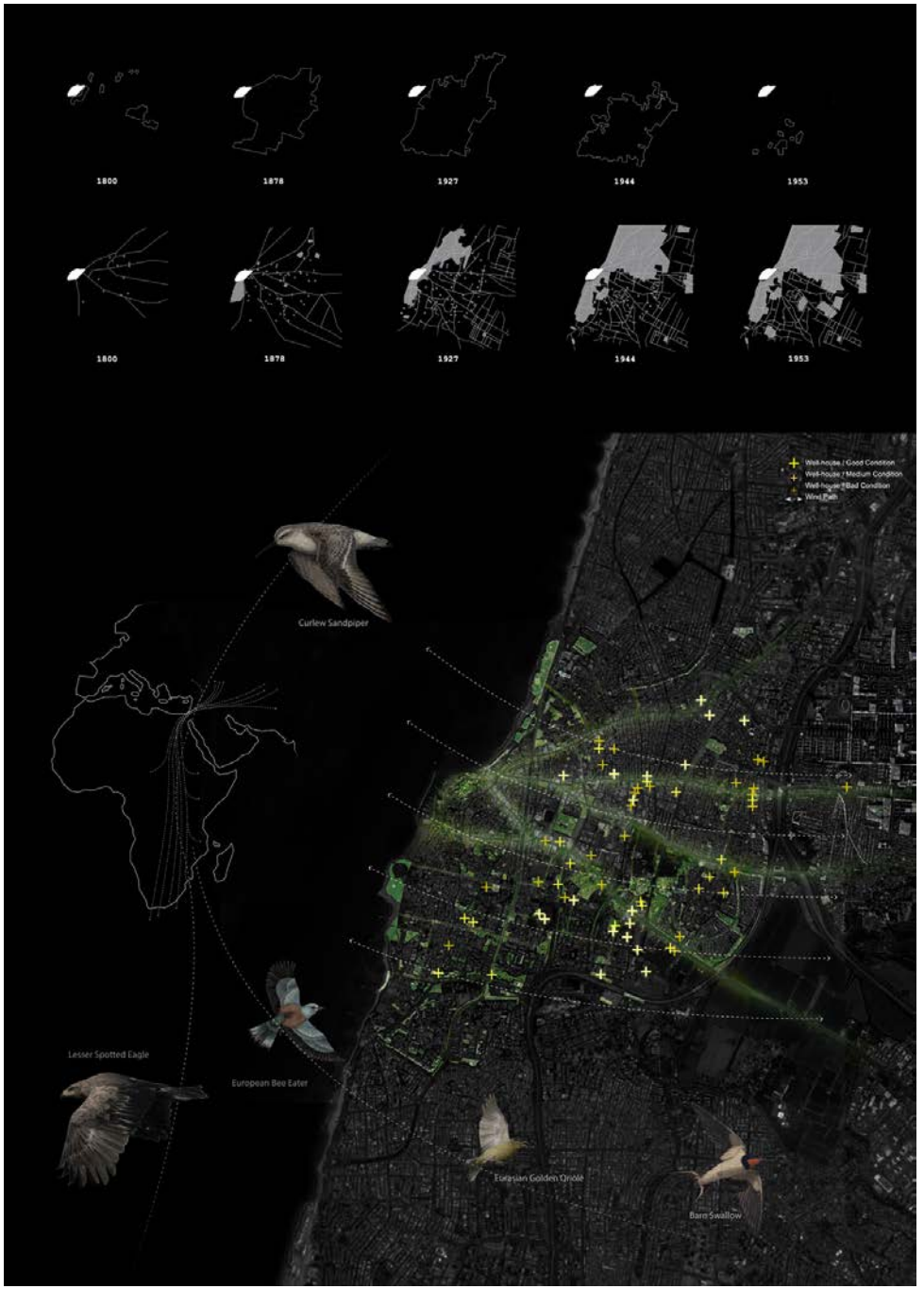
21st CENTURY SOCILA AND CLIMATIC INFRASTRUCTURE

MSAUD Instructor: Kate Orff
Location: Tel Aviv- Yafo, Israel
Collaborator: Danwei Pan, Tian Hao, Zixuan Zhang

Well-Houses and orange orchards are symbols of Jaffa's history. They catalyzed the agricultural production and enriched social life outside the city in the 19th century. However, these well-houses are forgotten by people today.

The 21st Century Well-House has the potential to become new climatic and social infrastructure, helping neighborhoods confront these issues: Climatic Vulnerability and Social Vulnerability. Since well-houses were located on high points of topography, with wells reaching deep underground, we take advantage of the topography to incorporate other historic climatic technologies of Persian origin: Badgir (wind tower) and Qanat (underground irrigation channel) to direct water and wind. We are reinventing a new cooling strategy that has not been implemented in Tel Aviv before, to create a circulation system of wind and water.

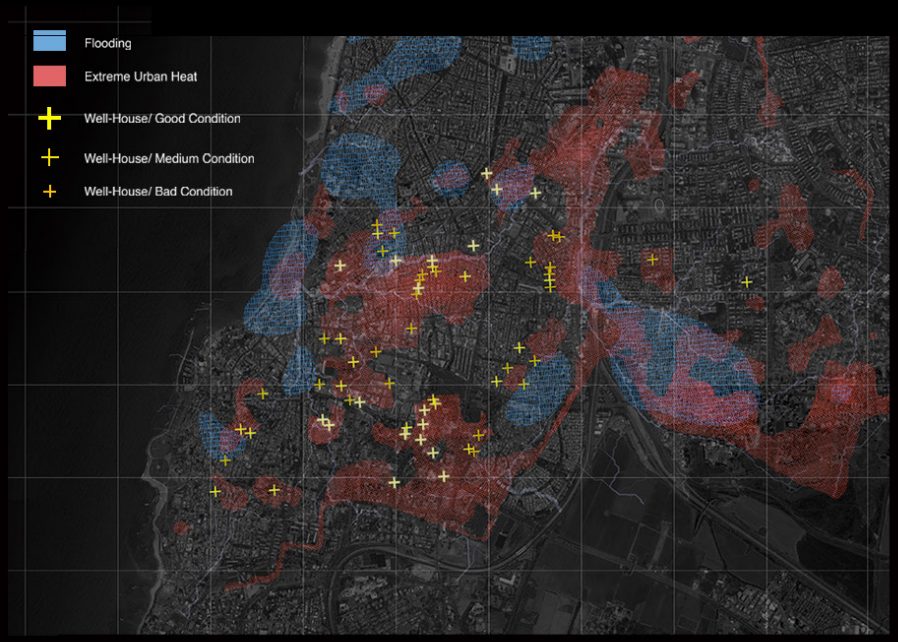
We envision the green corridors, essential routes used to export Jaffa oranges, funneling sea breeze from the Mediterranean into the neighborhoods and channeling water to lower grounds to recharge the aquifer. The green corridors also provide habitat for migratory birds.

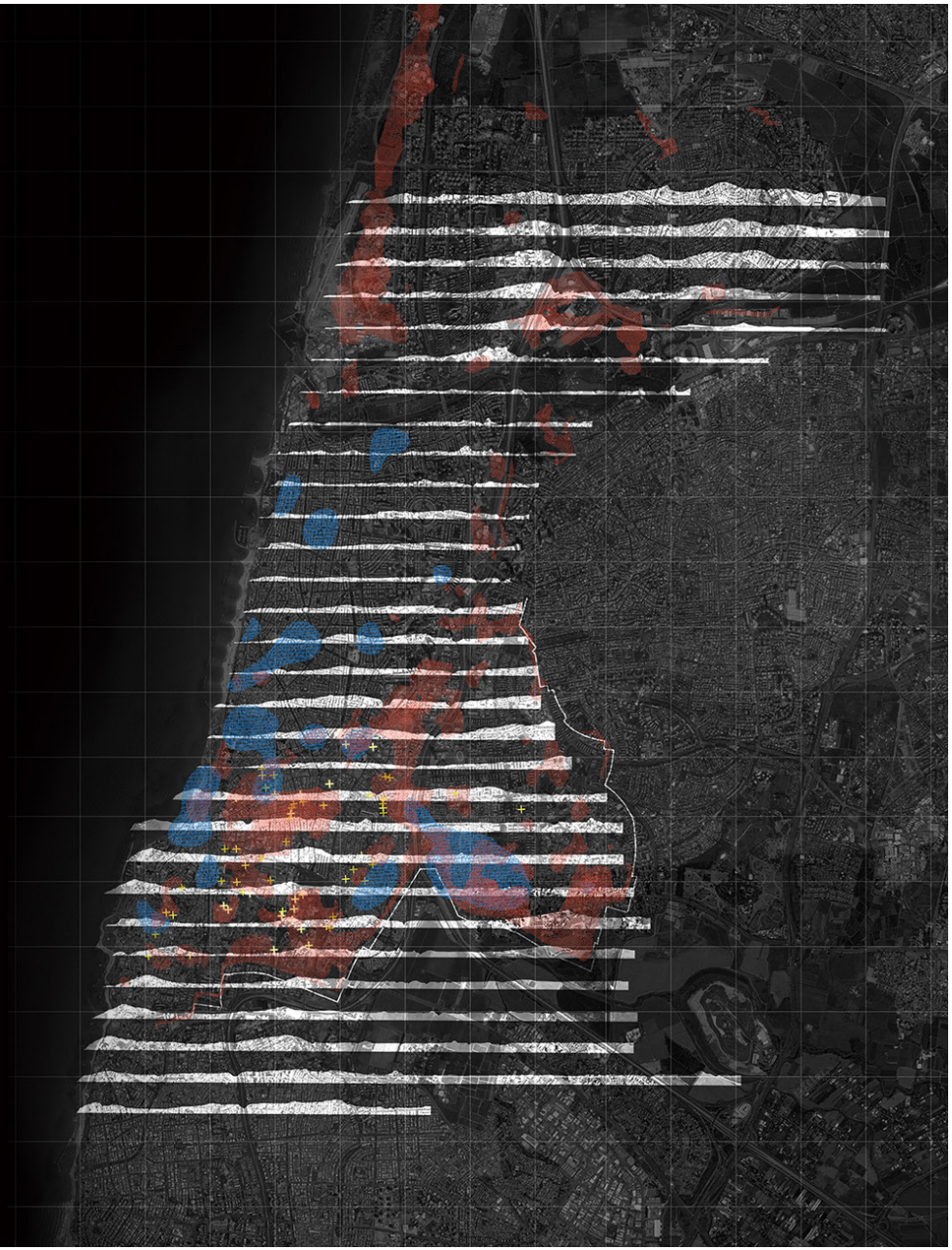


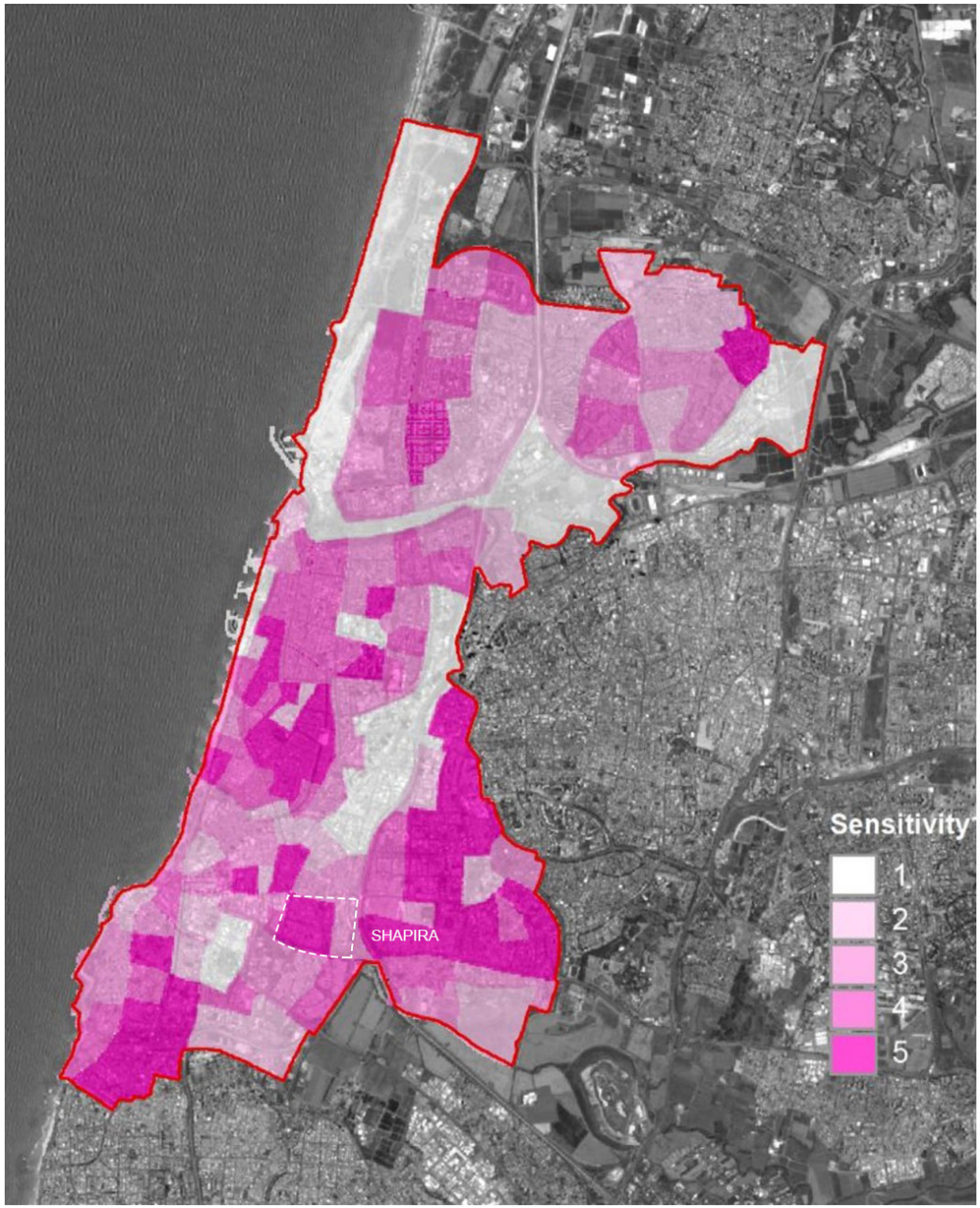
WELL-HOUSE IN 19TH CENTURY

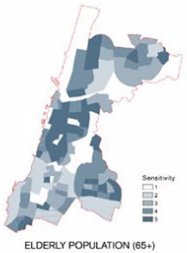
Source: Documentary «JAFFA, the Orange's Clockwork 2009»
Source: Prof.Amnon Bar Or

WELL-HOUSE TODAY

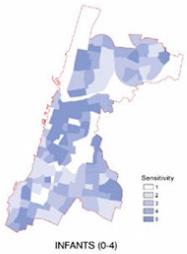




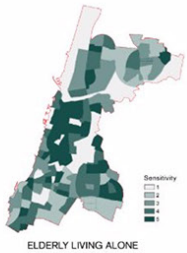




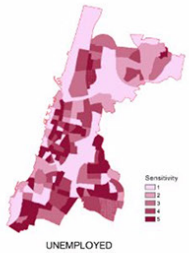
ELDERLY POPULATION (65+)



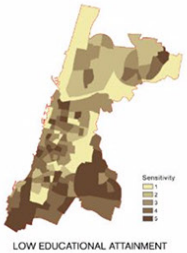
INFANTS (0-4)



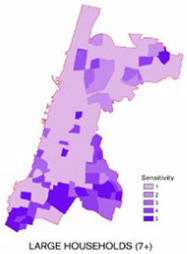
ELDERLY LIVING ALONE



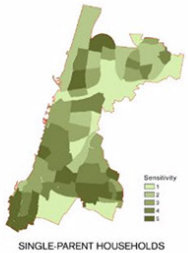
UNEMPLOYED



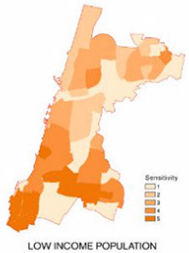
LOW EDUCATIONAL ATTAINMENT



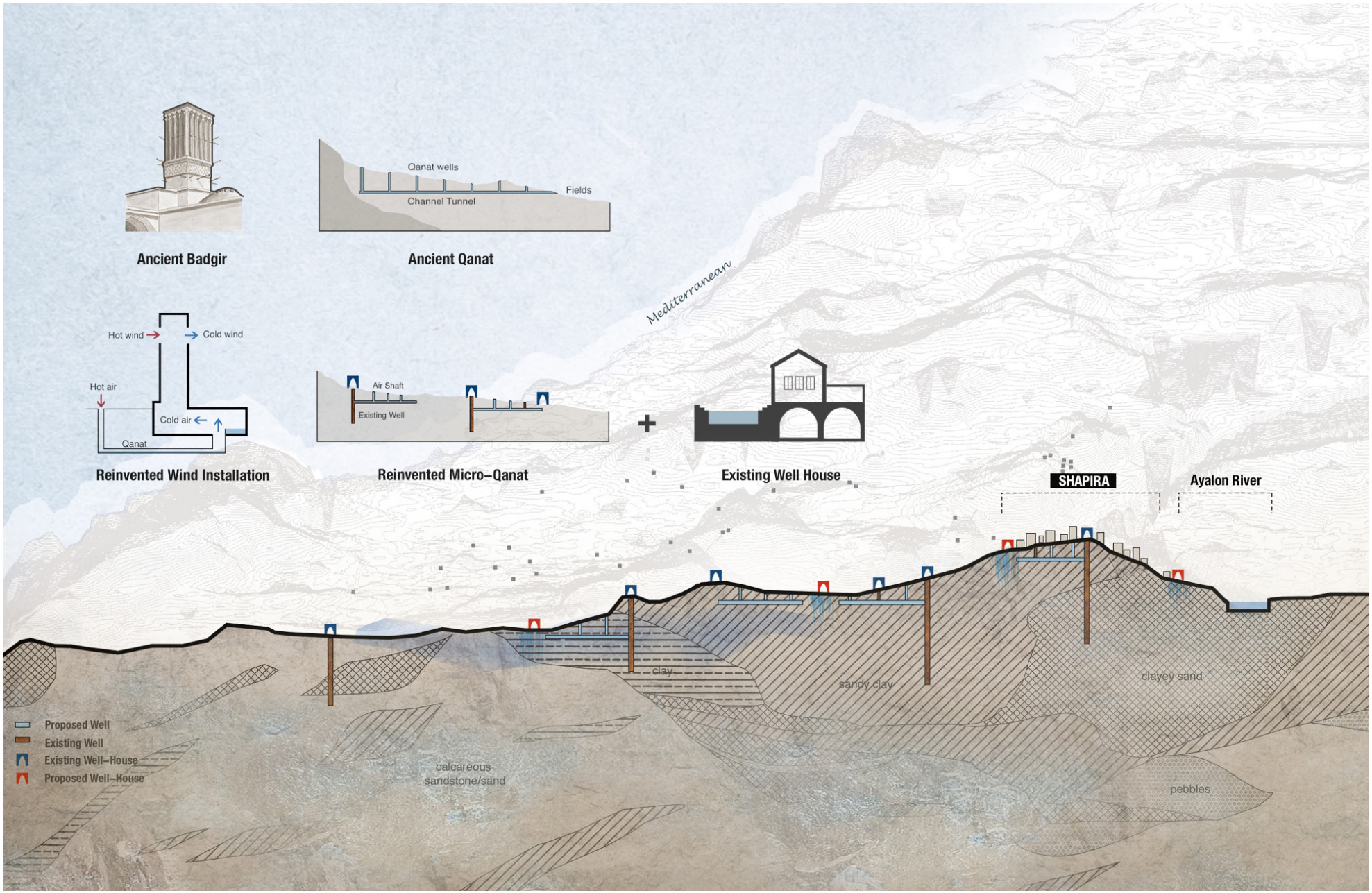
LARGE HOUSEHOLDS (7+)



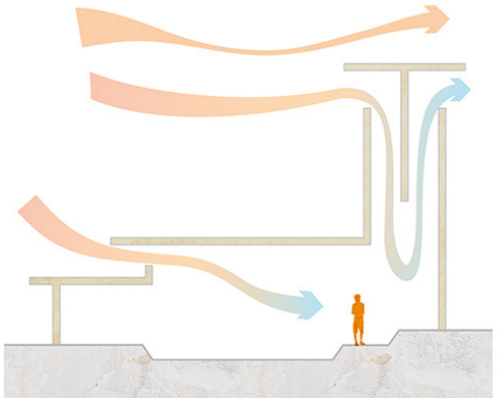
SINGLE-PARENT HOUSEHOLDS



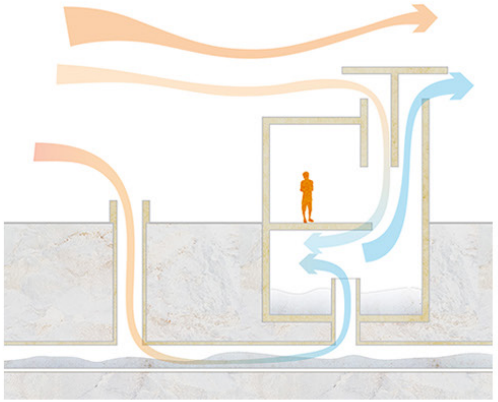
LOW INCOME POPULATION


Ancient Badgir
Qanat wells
Fields
Channel Tunnel
Ancient Qanat
Mediterranean
Hot wind
Cold wind
Hot air
Cold air
Qanat
Reinvented Wind Installation
Air Shaft
Existing Well
Reinvented Micro–Qanat
Existing Well House
SHAPIRA
Ayalon River
clay
sandy clay
clayey sand
calcareous sandstone/sand
pebbles
Proposed Well
Existing Well
Existing Well–House
Proposed Well–House

OVERALL PRINCIPLE

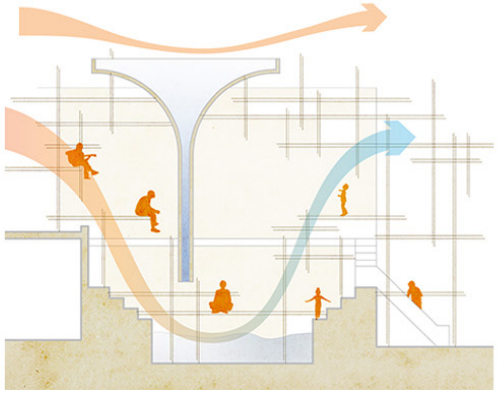


WIND TOWER

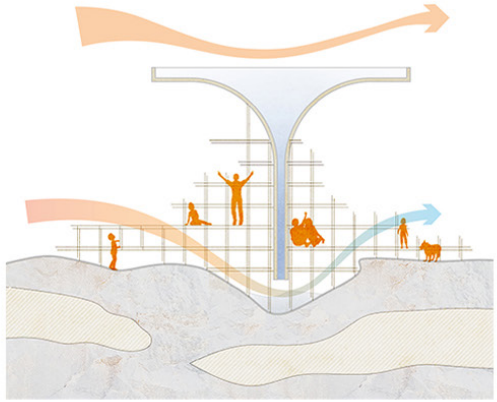


QANAT SYSTEM

WELL HOUSE

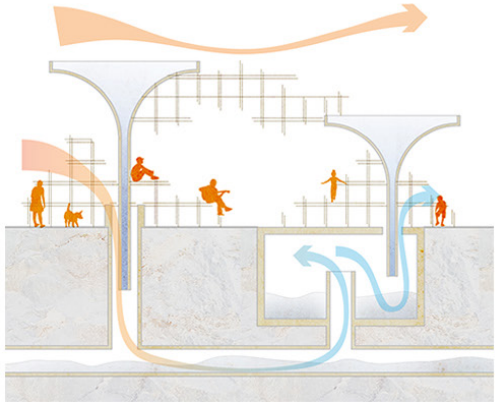


WELL HOUSE with POOL

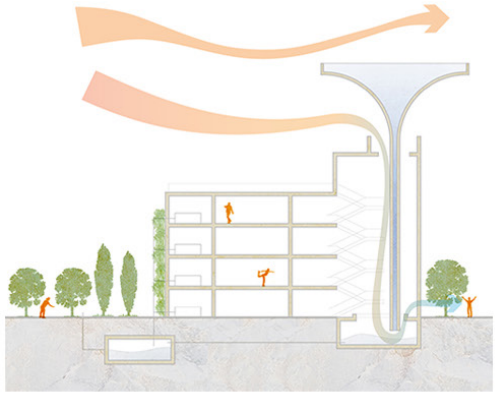


COOLING INSTALLATION

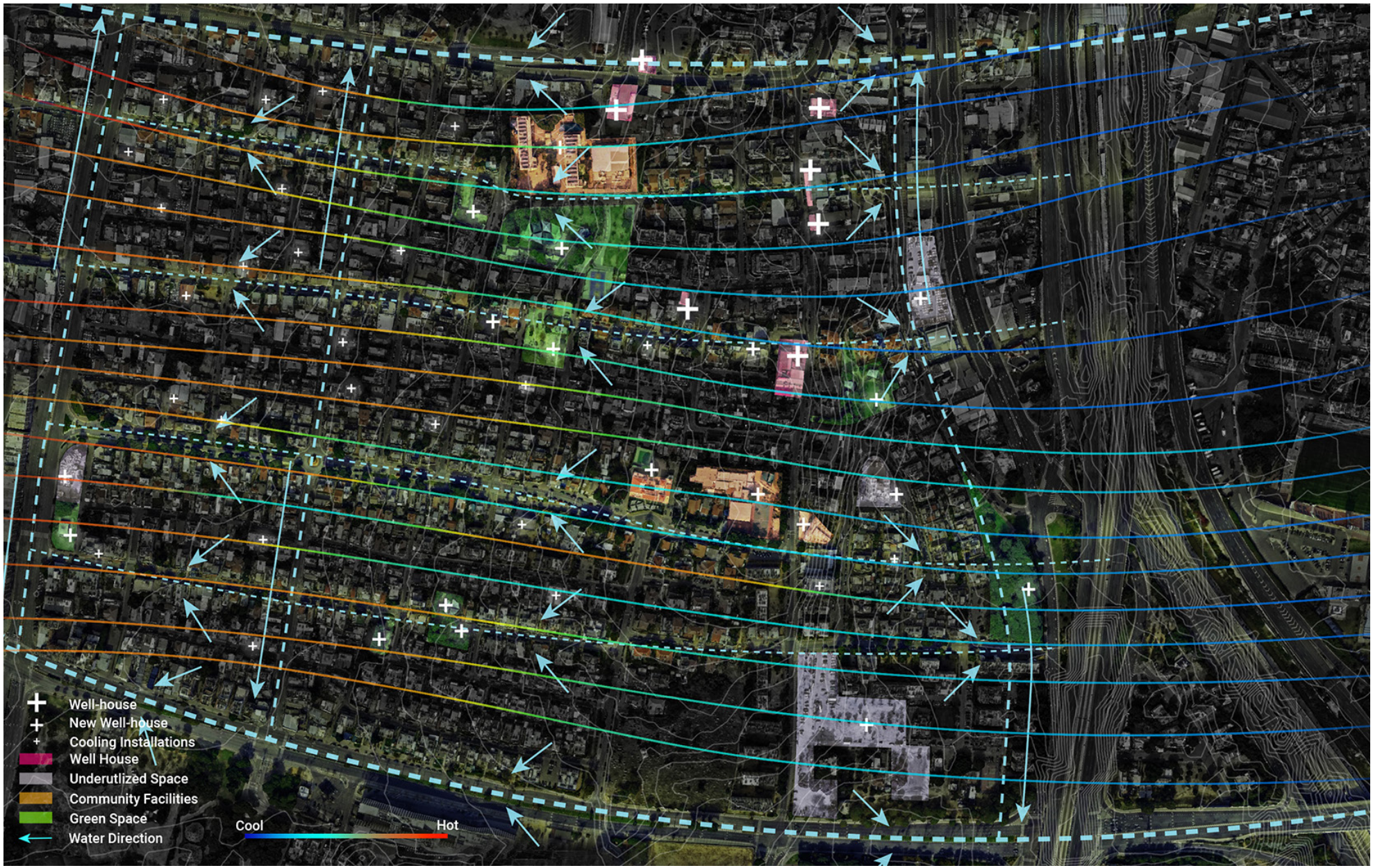
NEW WELL HOUSE



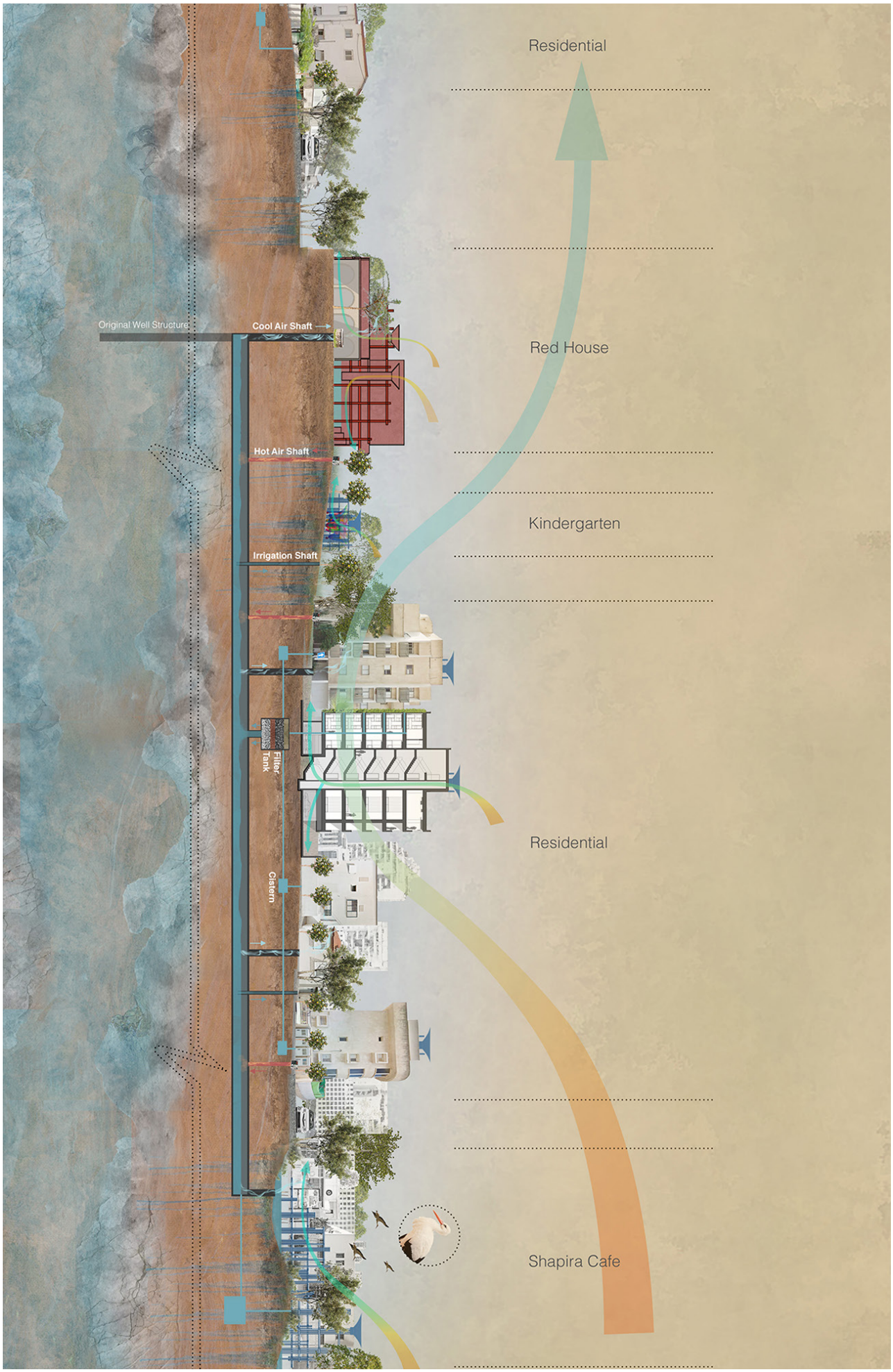
WELL HOUSE with WELL

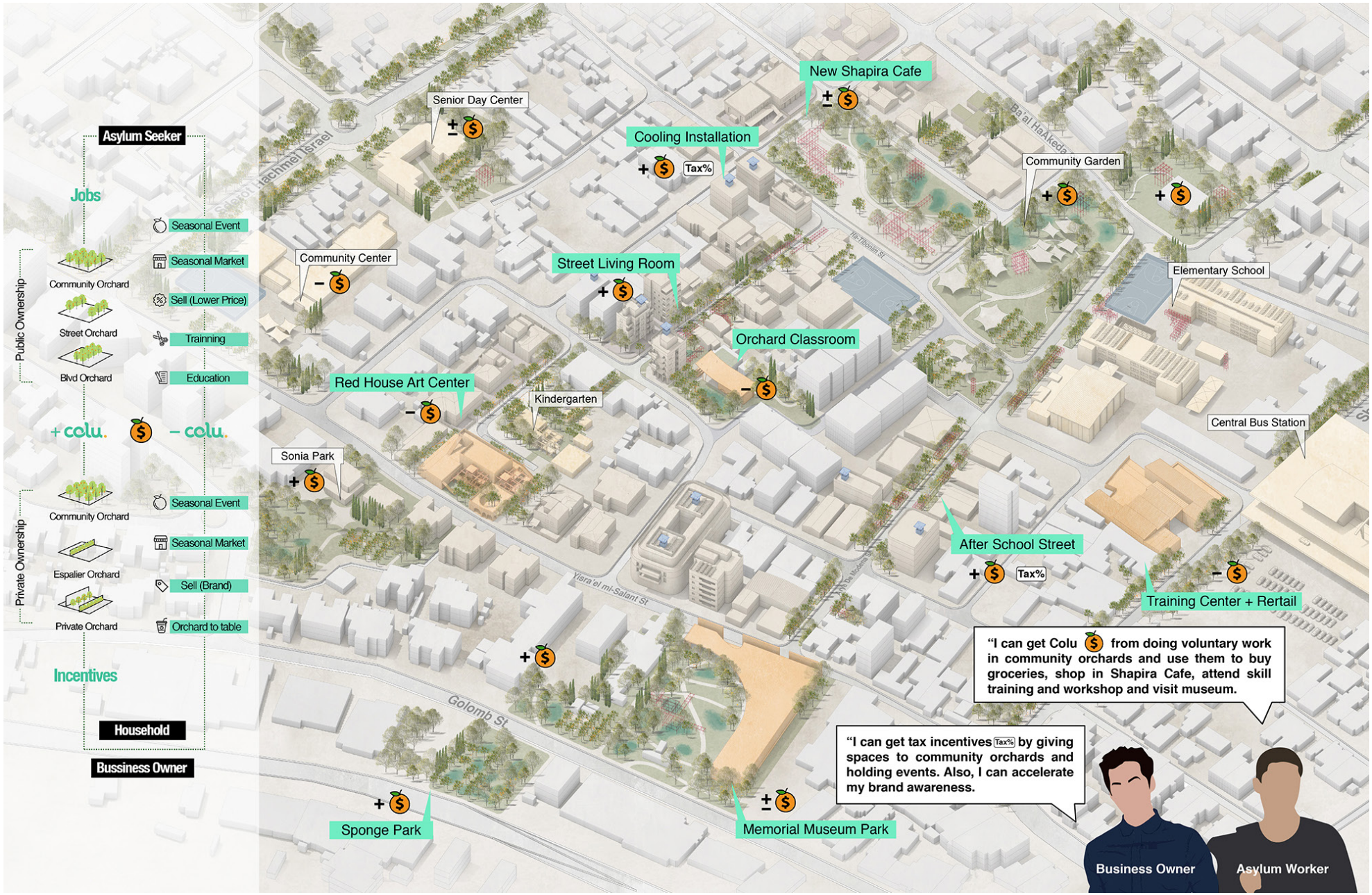


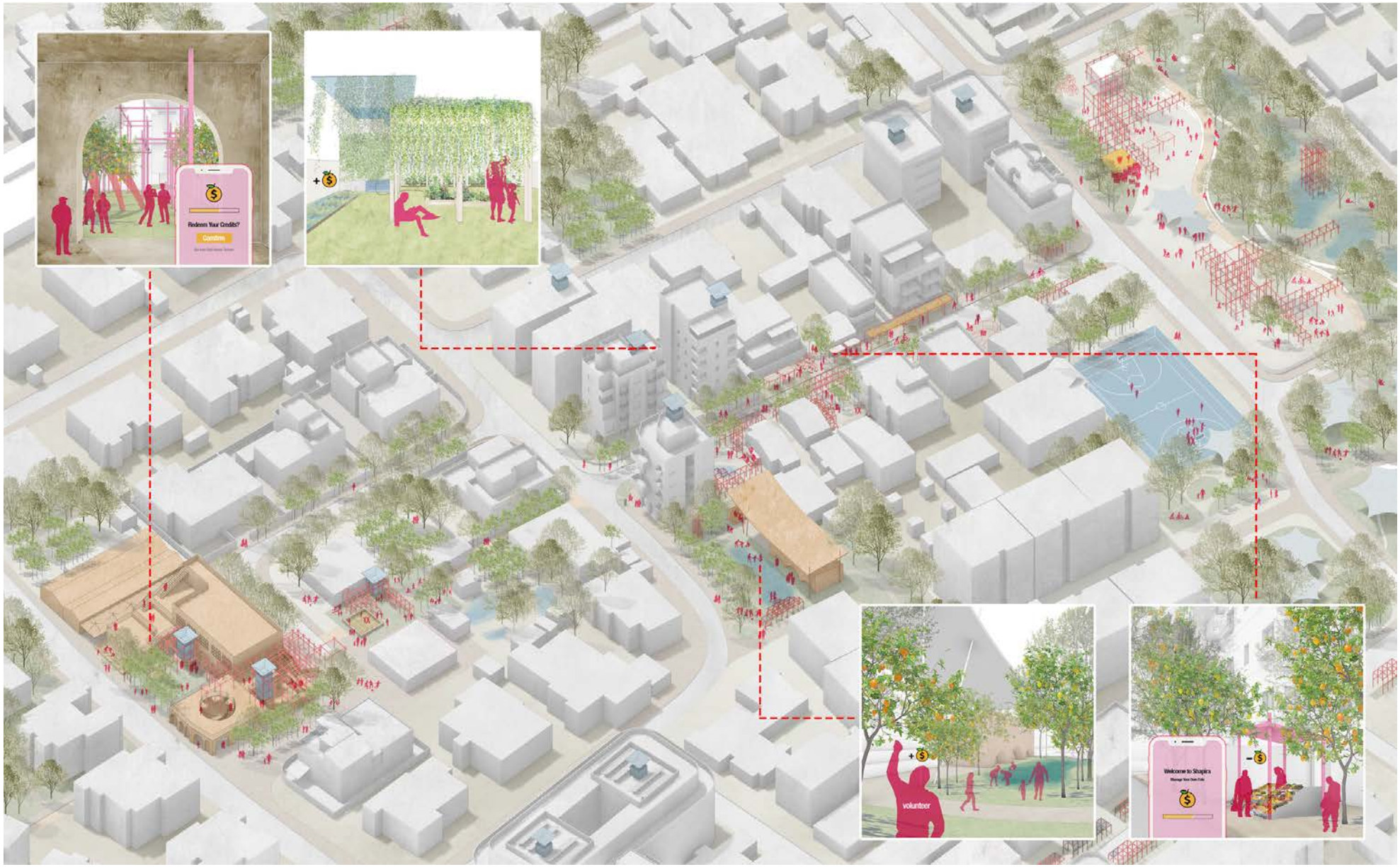
COOLING STAIRCASE & REUSE GREY WATER


Well-house
New Well-house
Cooling Installations
Well House
Underutlized Space
Community Facilities
Green Space
Water Direction
Cool
Hot


Shalma Rd
Sderot Har Tsiyon
Mesillat Yesharim St
Sderot Hachmei Israel
Yerahmiel Shmuel St
Kibbutz Galuyot Rd
Micro Qanat System
Existing Well House
New Well Hosue(Cooling Installation)
Higher Residential(>5F)


Residential
Original Well Structure
Cool Air Shaft
Red House
Hot Air Shaft
Kindergarten
Irrigation Shaft
Filter Tank
Residential
Cistern
Shapira Cafe


Asylum Seeker
Jobs
Public Ownership
Community Orchard
Street Orchard
Blvd Orchard
+ colu.
– colu.
Seasonal Event
Seasonal Market
Sell (Lower Price)
Trainning
Education
Private Ownership
Community Orchard
Espalier Orchard
Private Orchard
Seasonal Event
Seasonal Market
Sell (Brand)
Orchard to table
Incentives
Household
Bussiness Owner
Senior Day Center
New Shapira Cafe
Cooling Installation
Tax%
Community Garden
Community Center
Street Living Room
Elementary School
Orchard Classroom
Red House Art Center
Kindergarten
Central Bus Station
Sonia Park
After School Street
Tax%
Training Center + Rertail
Golomb St
Sponge Park
Memorial Museum Park
"I can get Colu from doing voluntary work in community orchards and use them to buy groceries, shop in Shapira Cafe, attend skill training and workshop and visit museum.
"I can get tax incentives Tax% by giving spaces to community orchards and holding events. Also, I can accelerate my brand awareness.
Business Owner
Asylum Worker


Redeem Your Credits?
Confirm
+
volunteer
Welcome to Shapira
−


FRESH ORANGE JUICE


Cool Air Shaft
Irrigation Shaft
Hot Air Shaft

CARBON SEQUESTRATION

INSERT REFORESTATION SYSTEM in KINGSTON, NY

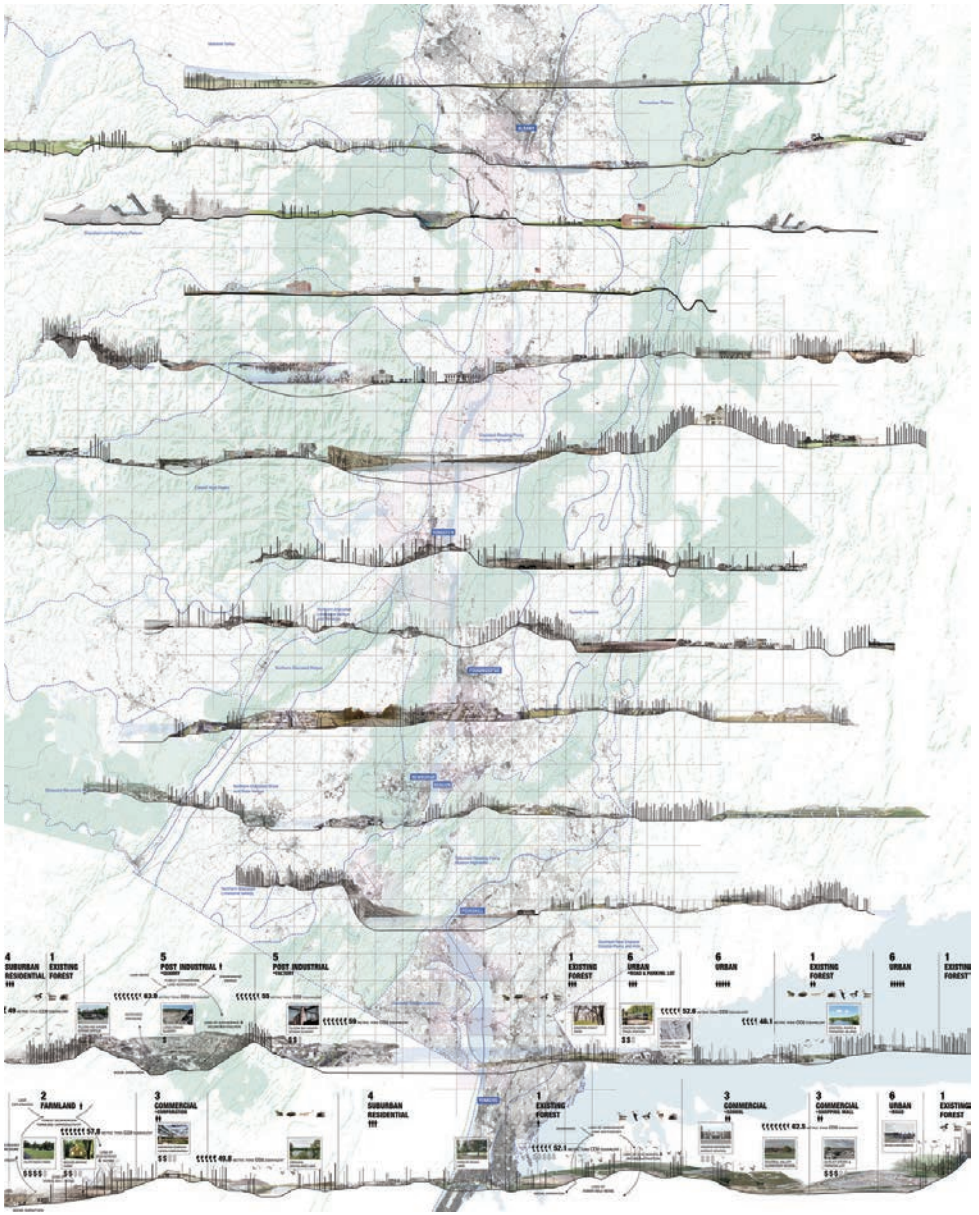
MSAUD Instructor: KajaKuhl
Location: Kingston, NY, USA
Collaborator: Tian Hao, Menghan Zhang

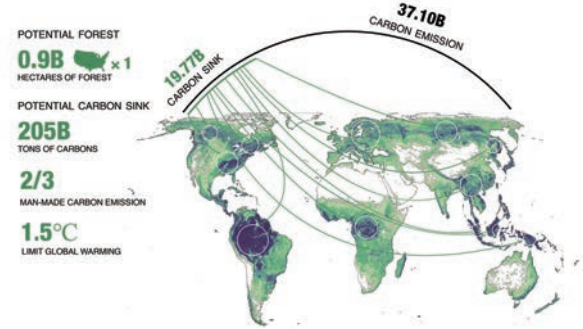
Tree, as carbon machine, can store huge amounts of carbon in its body, estimated to 217kg per year. Reforestation, as one of the most cost-efficient nature based solutions toward climate change, can offset 30% of the carbon emission.

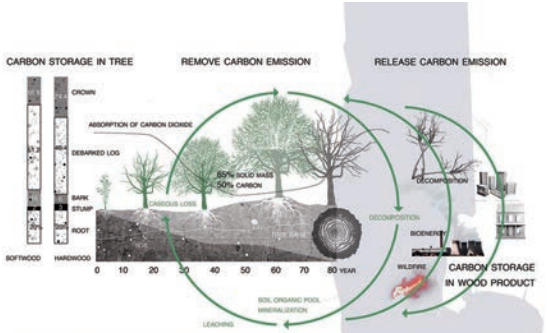
Currently in the Hudson Valley, there are 74% of land is forested. However, there are still parts of forest are fragmented by urban development and human disturbance, which decrease the amount of carbon sequestration, and negatively affecting biological diversity in the Hudson River Estuary corridor, as well as the wood product business.

Our project is to reforest all the unutilized and inefficient land in Kingston with the purpose of better function carbon sink. At the same time, supply local lumber and wood material to the community with green jobs.

We identified four different type of land that has the most potential for reforest and regenerate trees, they are: Abandoned Quarry, Commercial Area, Urban Blocks and Street, farmland, and Natural Forest.

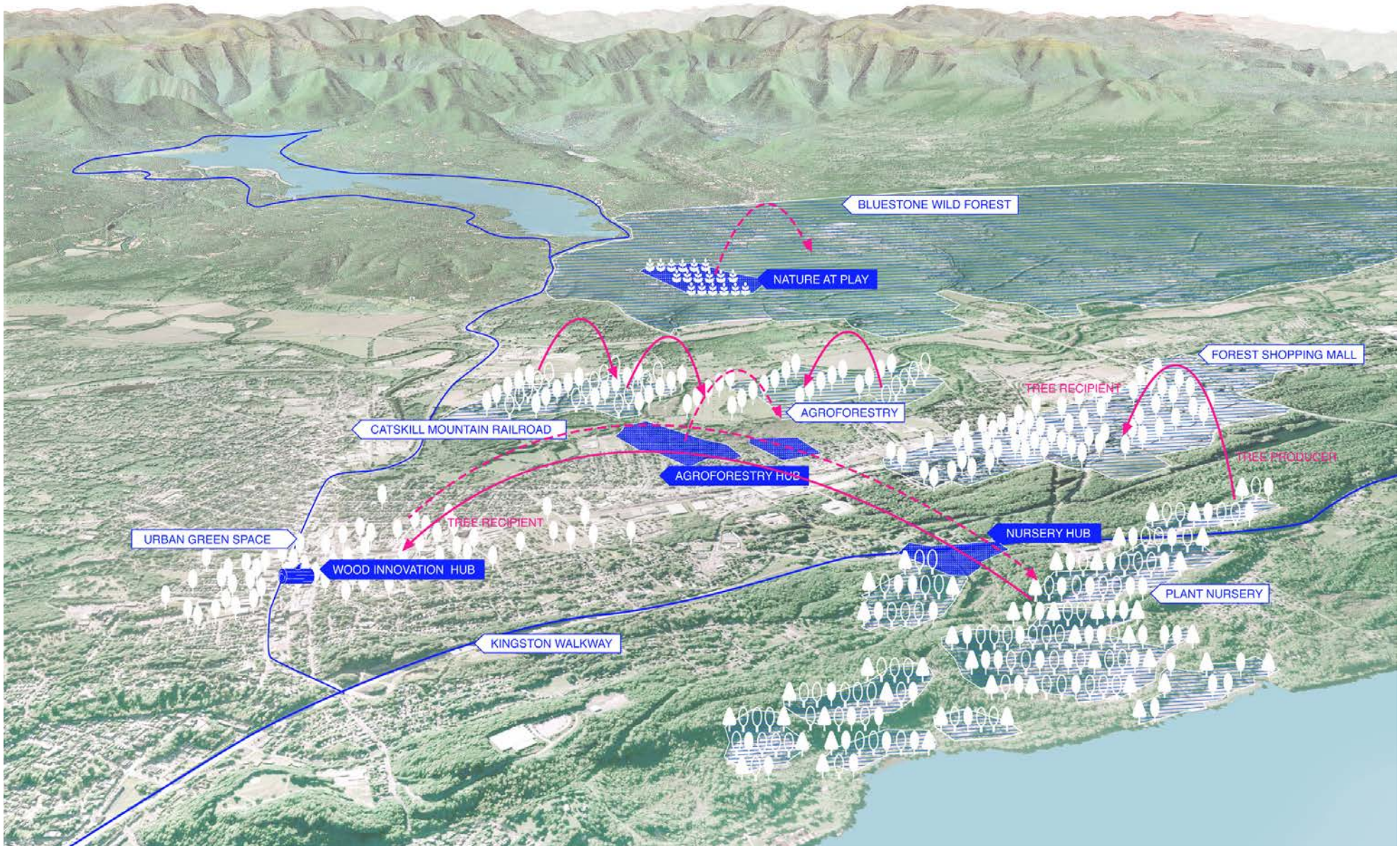




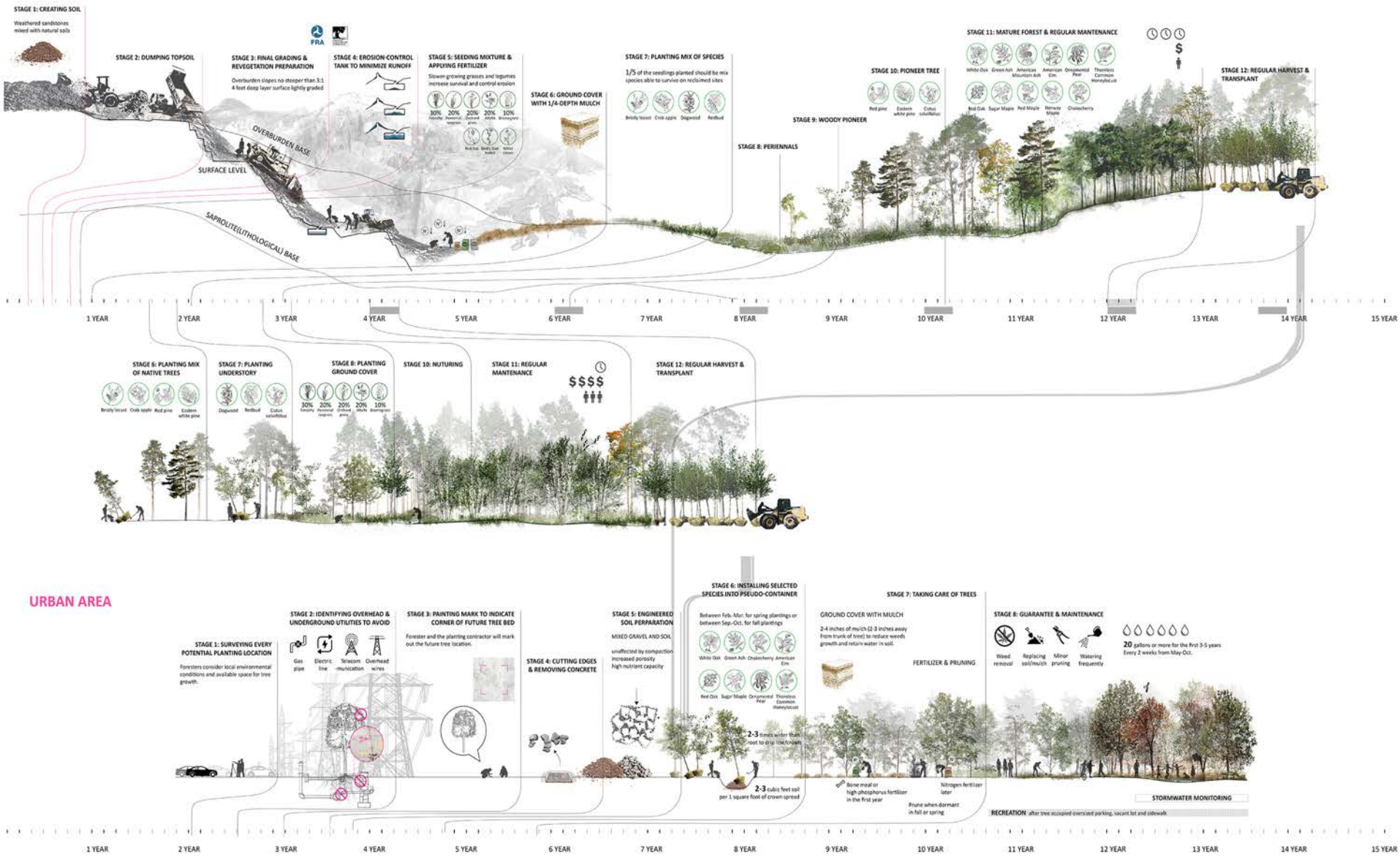


CARBON SEQUESTERED PER TREE (KG) =TREE FRESH BIOMASS X 65% (DRY MASS) X 50% (CARBON %) X 3.67 X 120%

ESTIMATED 217KG CO_2 PER TREE PER YEAR

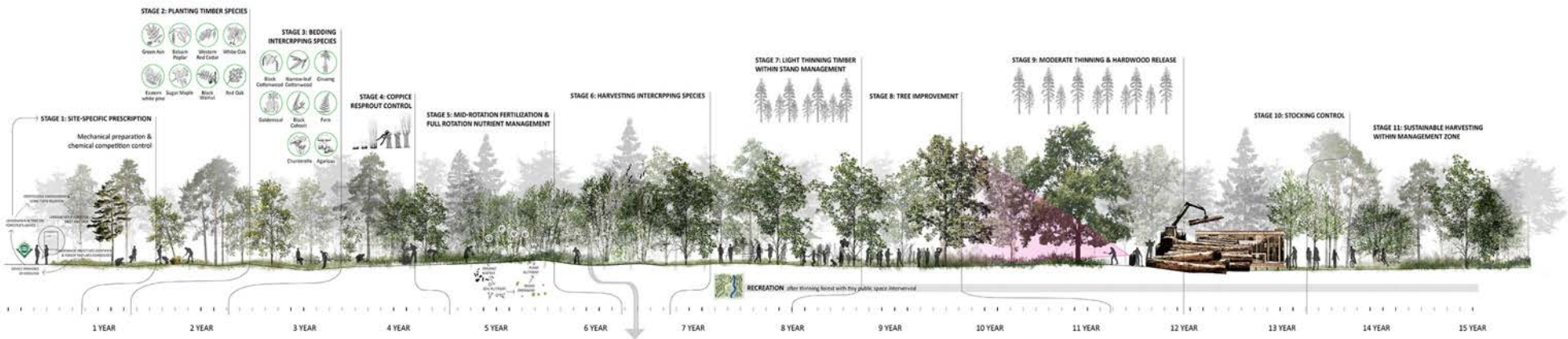

BLUESTONE WILD FOREST
NATURE AT PLAY
FOREST SHOPPING MALL
TREE RECIPIENT
AGROFORESTRY
CATSKILL MOUNTAIN RAILROAD
TREE PRODUCER
AGROFORESTRY HUB
TREE RECIPIENT
URBAN GREEN SPACE
NURSERY HUB
WOOD INNOVATION HUB
PLANT NURSERY
KINGSTON WALKWAY

POST-INDUSTRIAL (QUARRY)

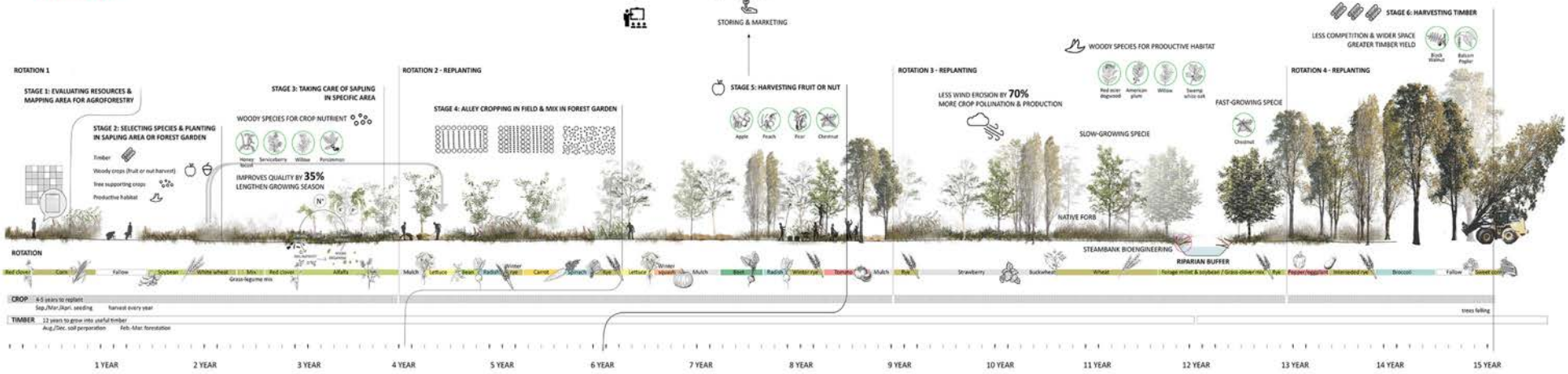


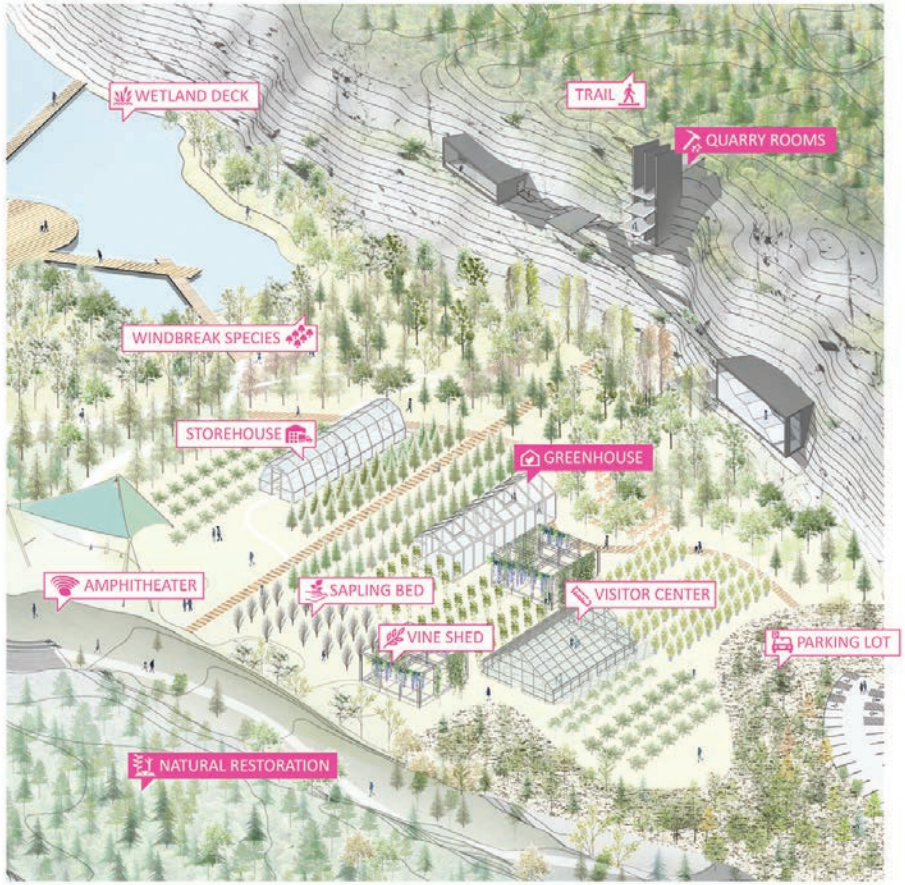
URBAN AREA

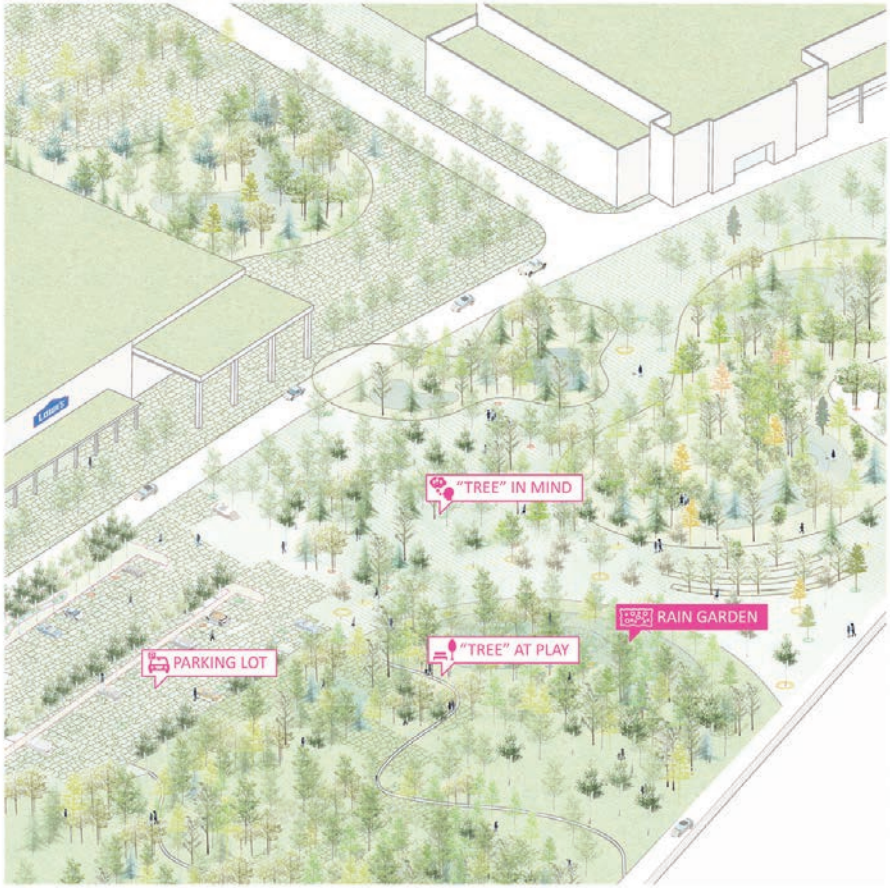
FOREST

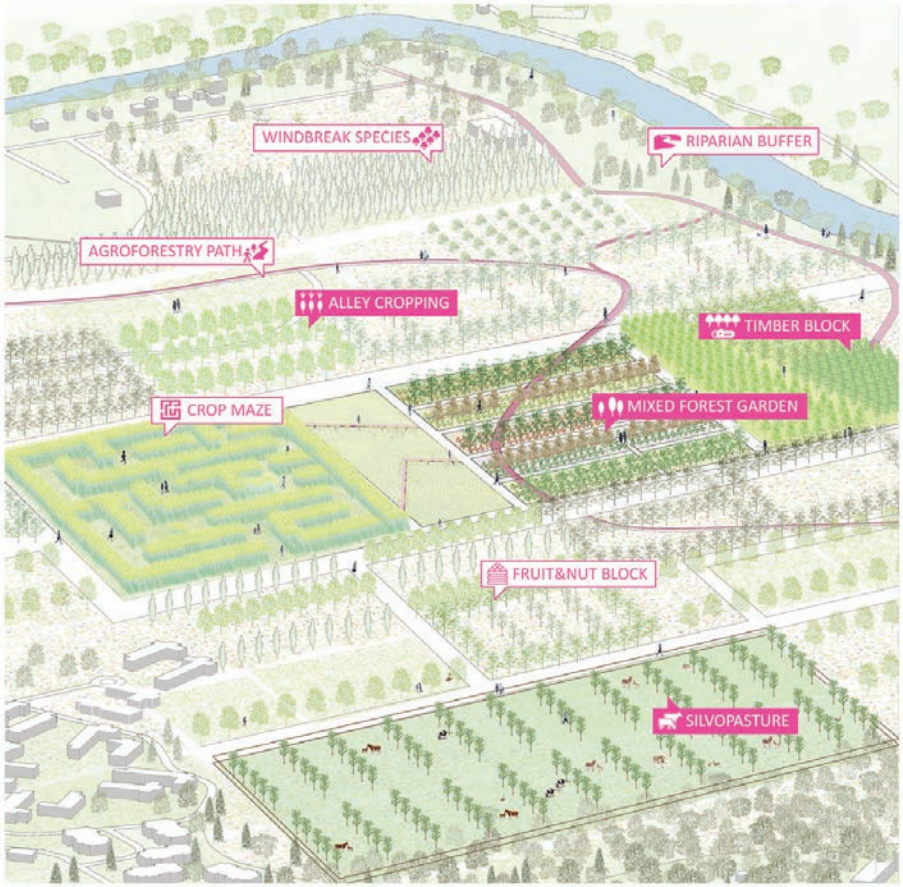


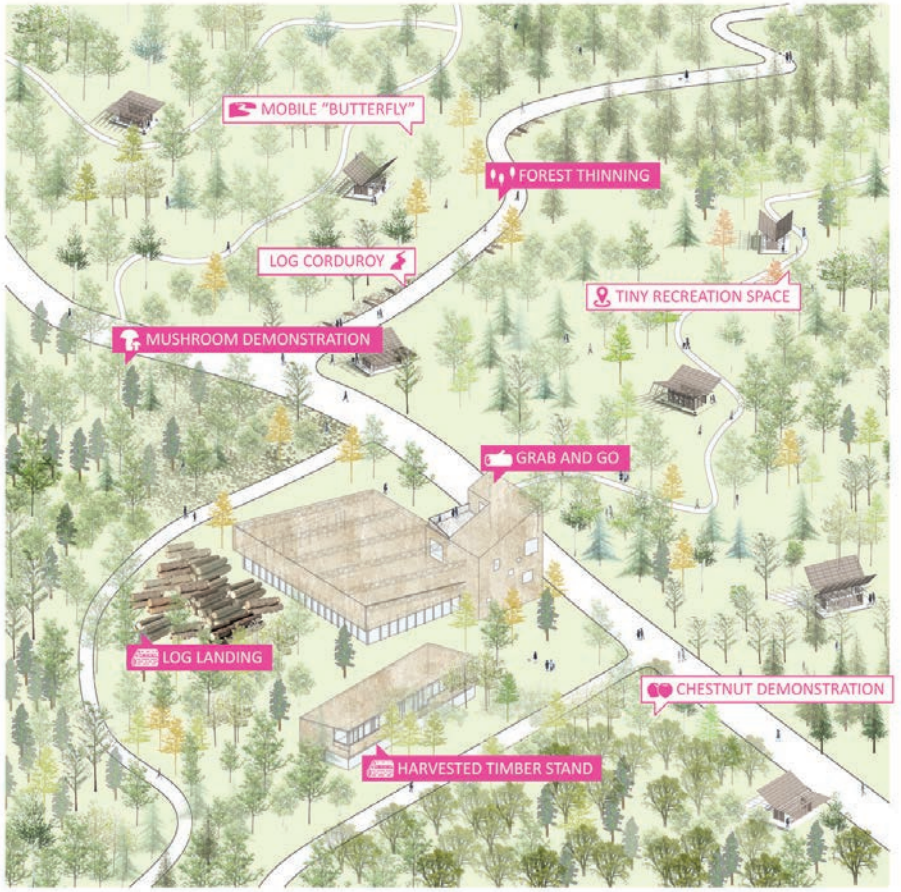
FARMLAND



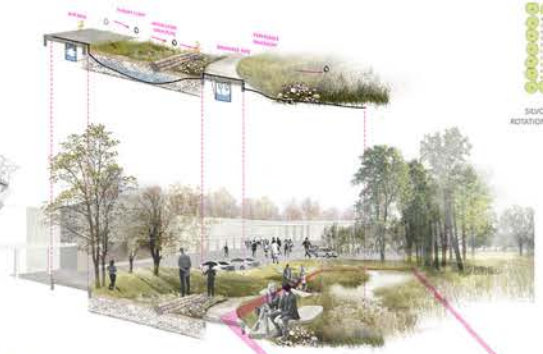

WETLAND DECK
TRAIL
QUARRY ROOMS
WINDBREAK SPECIES
STOREHOUSE
GREENHOUSE
AMPHITHEATER
SAPLING BED
VISITOR CENTER
VINE SHED
PARKING LOT
NATURAL RESTORATION

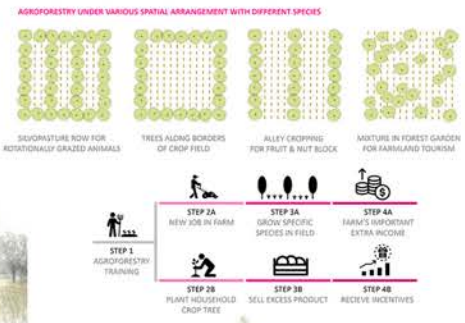

"TREE" IN MIND
RAIN GARDEN
PARKING LOT
"TREE" AT PLAY

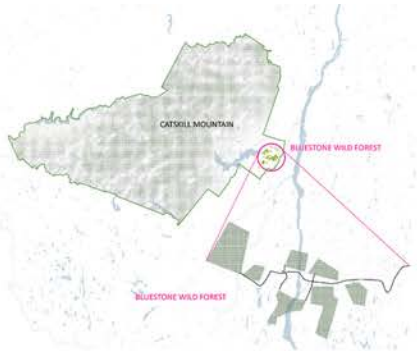

WINDBREAK SPECIES
RIPARIAN BUFFER
AGROFORESTRY PATH
ALLEY CROPPING
TIMBER BLOCK
CROP MAZE
MIXED FOREST GARDEN
FRUIT&NUT BLOCK
SILVOPASTURE


MOBILE "BUTTERFLY"
FOREST THINNING
LOG CORDUROY
TINY RECREATION SPACE
MUSHROOM DEMONSTRATION
GRAB AND GO
LOG LANDING
CHESTNUT DEMONSTRATION
HARVESTED TIMBER STAND


TOURISM TRAIL
QUARRY ROOMS
TREE TRAIL




AGROFORESTRY UNDER VARIOUS SPATIAL ARRANGEMENT WITH DIFFERENT SPECIES
SILVOPASTURE ROW FOR ROTATIONALLY GRAZED ANIMALS
TREES ALONG BORDERS OF CROP FIELD
ALLEY CROPPING FOR FRUIT & NUT BLOCK
MIXTURE IN FOREST GARDEN FOR FARMLAND TOURISM
STEP 1 AGROFORESTRY TRAINING
STEP 2A NEW JOB IN FARM
STEP 2B PLANT HOUSEHOLD CROP TREE
STEP 3A GROW SPECIFIC SPECIES IN FIELD
STEP 3B SELL EXCESS PRODUCT
STEP 4A FARM'S INPORTANT EXTRA INCOME
STEP 4B RECIEVE INCENTIVES


CATSKILL MOUNTAIN
BLUESTONE WILD FOREST
BLUESTONE WILD FOREST

GARNERING PALISADES

PROGRAMMABLE EXTENSIONS of AN EXISTING TOPOGRAPHICAL ELEMENT

MSAUD Instructor: MartinVoron
Location: Hoboken, NY, USA
Collaborator: Hala Abukhodair, Lino Caceres, Xinyue Liu

Even though stormwater events occur 4-10 times during the year, they could represent up to 85% of the city budget, in direct damage to both private and public property, and due to the climate crisis, they will only become more frequent. These challenges are linked directly to the disappearance of a pre-existing marshland, due to land development. Compromising the biome's capacity to absorb stormwater, which flows away from existing pervious grounds.

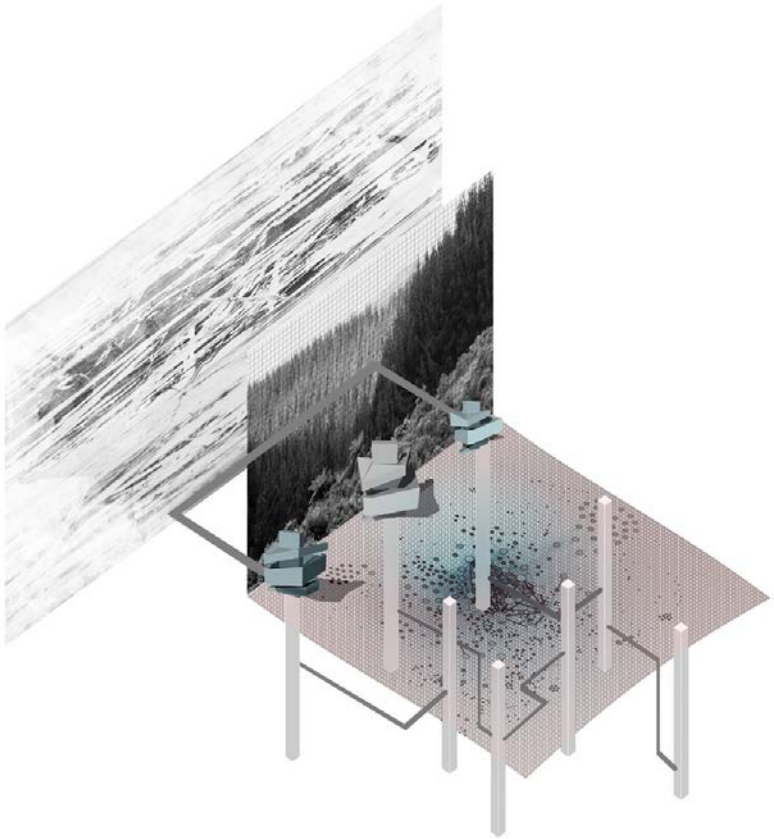
Our Project focuses on two main strategies:

Strategy 1 Connect our harvesting system to nearby catch basins and absorb the surface runoff before it overflows the sewage system.

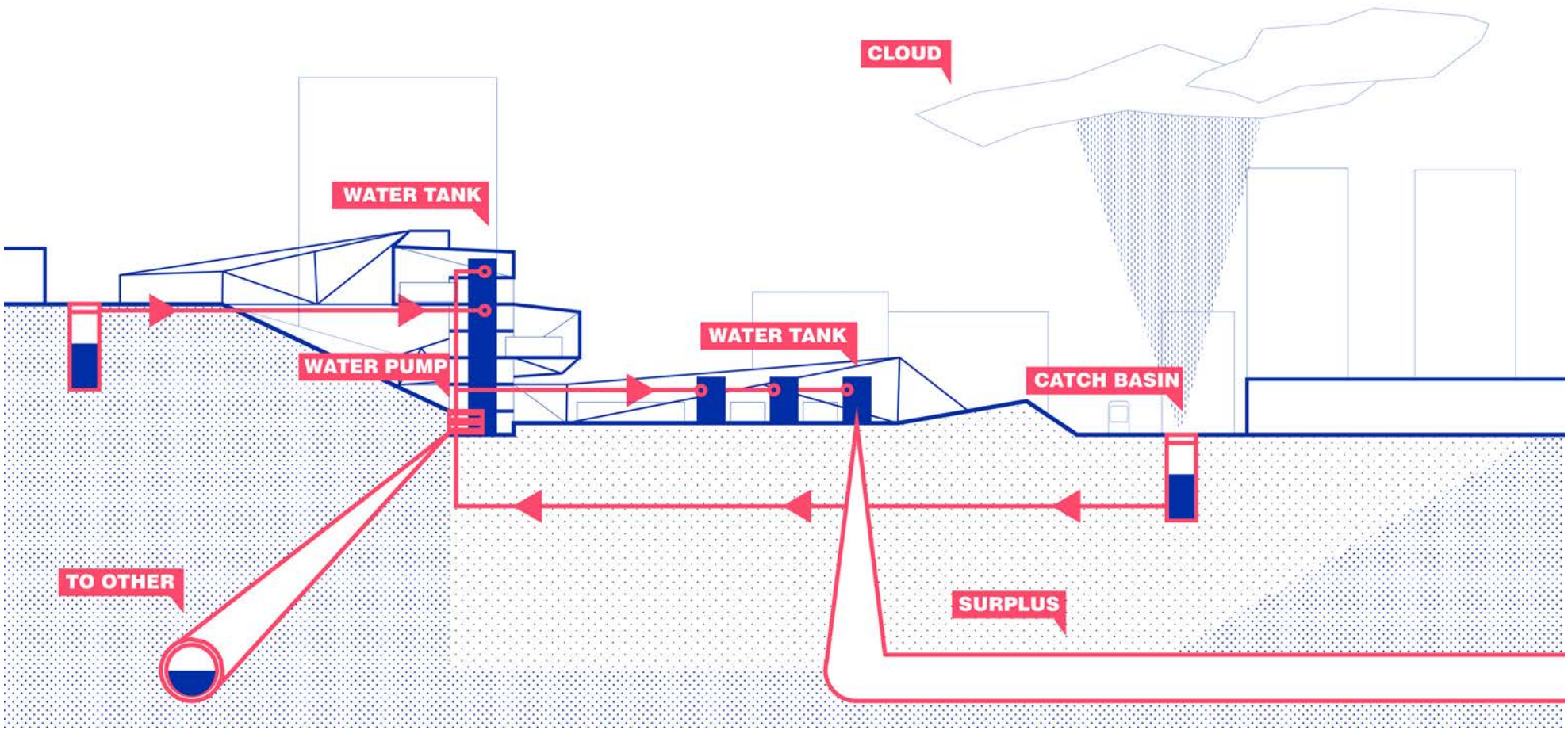
Strategy 2 Recognize program voids and existing infrastructure of our harvesting sites, to allocate the current programmatic needs in our extensions.

REPROGRAM

HARVEST



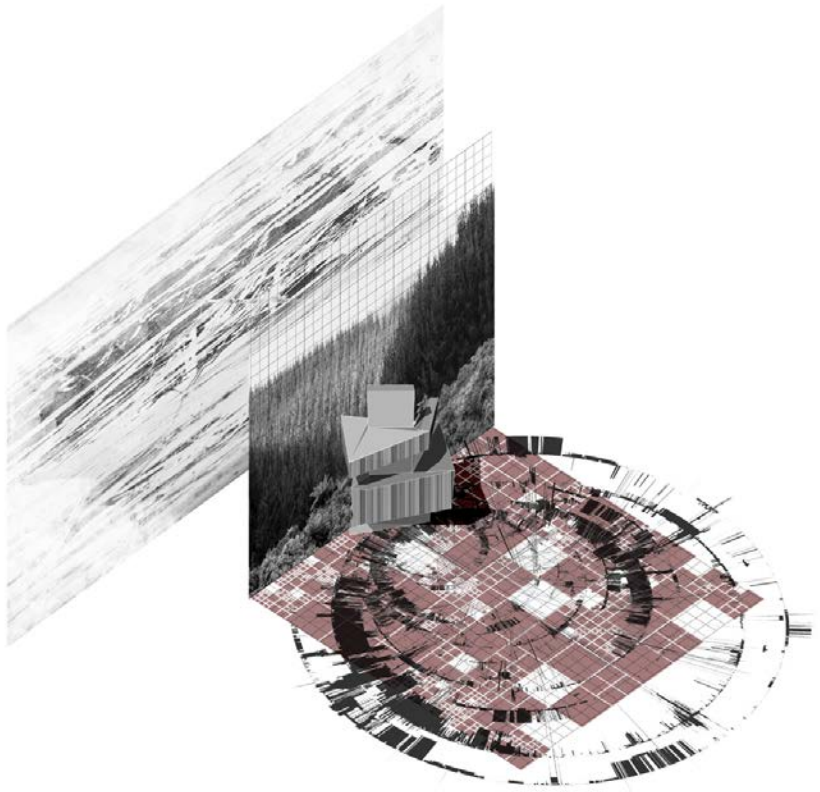
+ HARVESTING SYSTEM



+ STRATEGIES

REPROGRAM

HARVEST



+ REPROGRAMING SYSTEM