Narratives

Niharika Shekhawat

Narratives

by Niharika Shekhawat
is a collection of Urban Activism and Humanitarian design works during the 2019-20
Urban Design course
at Columbia University GSAPP

Contents

MS Architecture and Urban Design
Columbia University GSAPP

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Resilient Living Shoreline

Summer 2019
Critics : Tricia Martin, Nans Voron
Neighborhood scale : Sunset Park, Brooklyn
Team : Niharika Shekhawat, Jaime Palacios, Minjung Lee

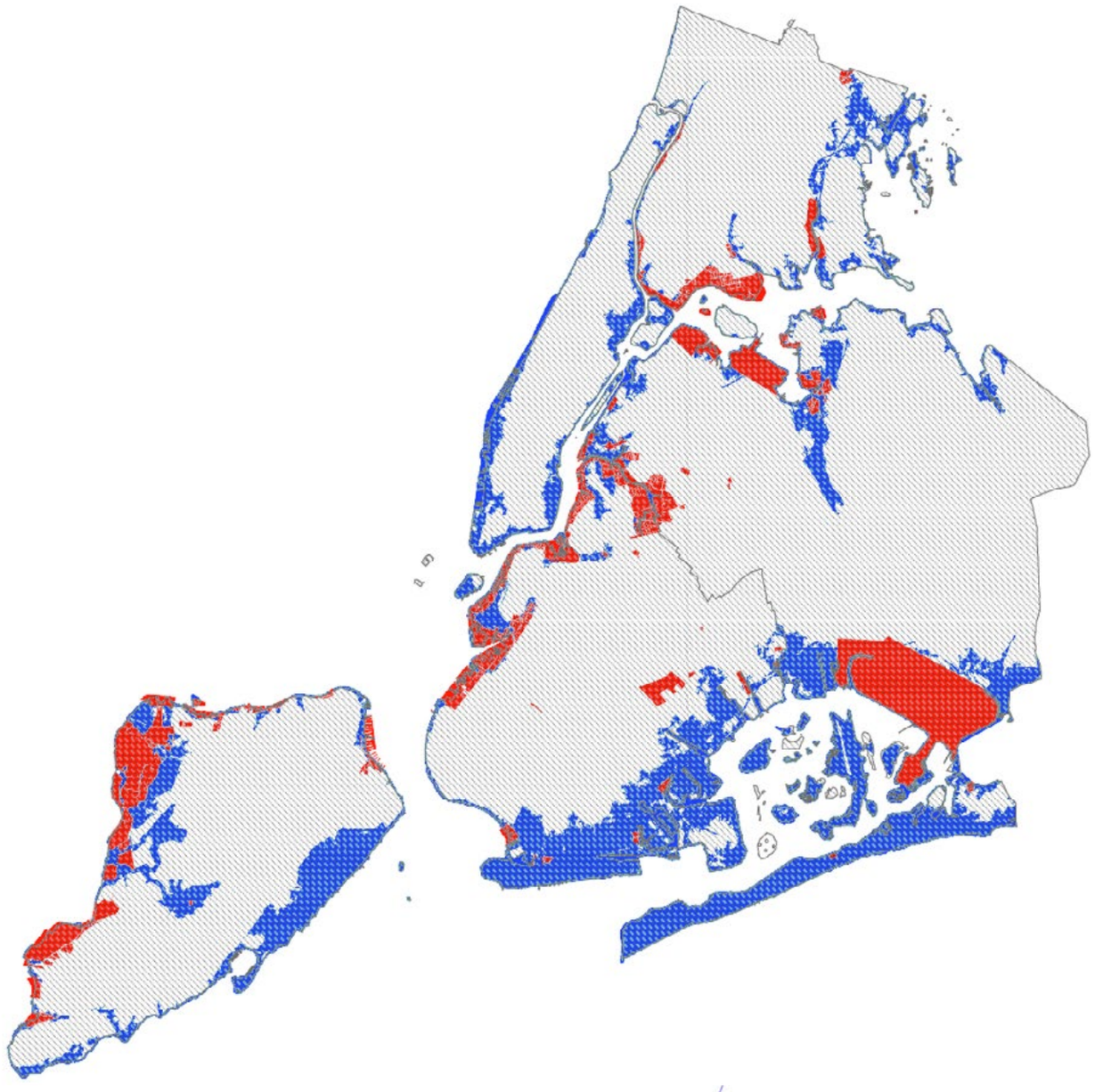
NYC has 21 Industrial Business Zones. 18 of these are located in waterfront sites. The Southwest Brooklyn IBZ is located in a historical marshland. About 55% of the IBZ is located under the flood zone. Global warming, increasing sea levels and extreme weather conditions threaten this manufacturing zone, as well as the prosperity of the community.

Project is about providing a resiliency framework to protect the waterfront IBZ through the lens of Ecology, Community and Economy: A Resilient IBZ.

New York City is the largest regional economy of the United States. Manufacturing is a major contributor to its growth. There was an n industrial decline in the mid 90's and, in response, in 2006 New York City created Industrial Business Zones to protect manufacturing areas and continue to provide good paying jobs for the working class.

Sunset Park, a neighborhood located in the South West of Brooklyn where one third of the population lives below the New York City government poverty rate, is home to an IBZ. Although, the area is currently underutilized, it holds hopes and opportunities for the generations to come. However, the IBZ is at risk.

The Southwest Brooklyn IBZ is located in a historical marshland. About 55% of the IBZ is located under the flood zone. Global warming, increasing sea levels and extreme weather conditions threaten this manufacturing zone, as well as the prosperity of the community. So, how can we make a Resilient IBZ that advocates for ecology, protects the economy, and safeguard the future of the local people? The key is on its waterfront.



IBZ in region where water table at 11 ft from ground

Estimated 81% building loss in waterfront IBZ zone

55% of IBZ under flood plain

73% a have education over high school degrees

Lack of green/ congregation spaces

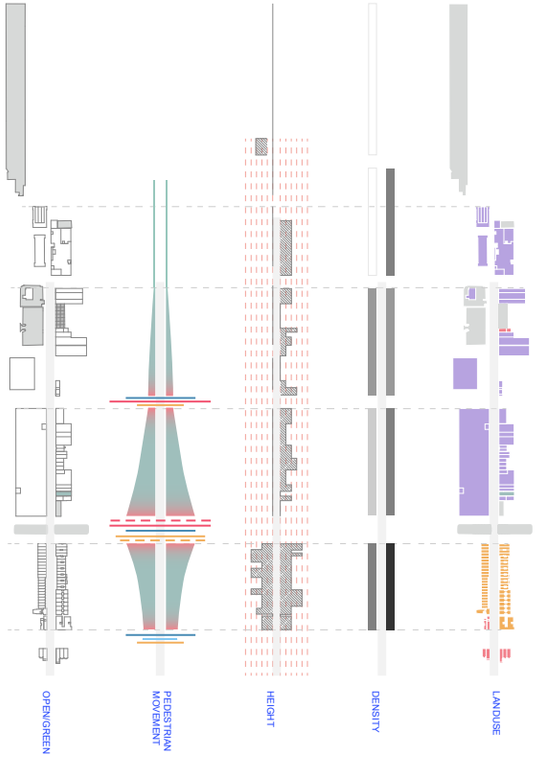
29% under NYCgov poverty line

WHY?

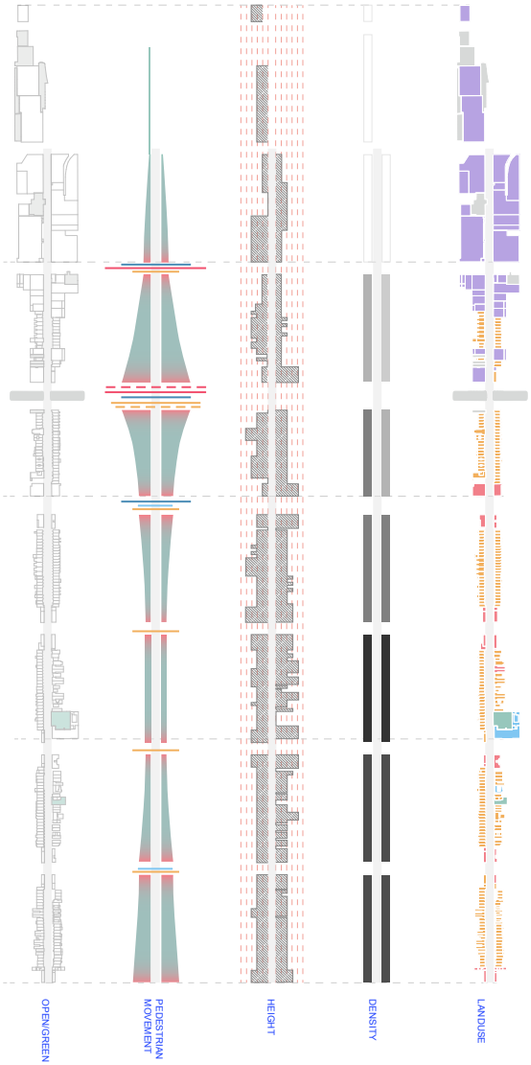
Potential infrastructure for IBZ.

Expansion of existing industries such as garment, film, and food production.

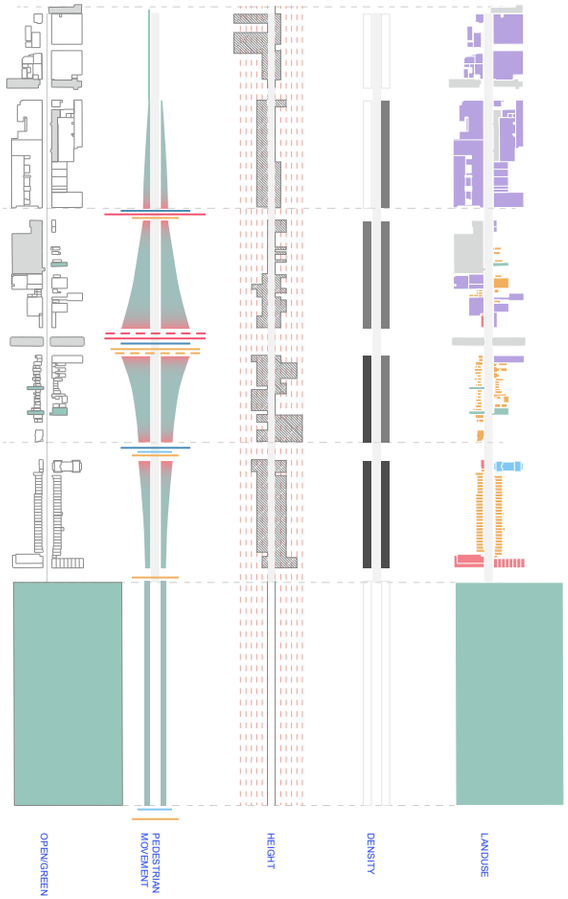
Existing SIMS and BAT facility



58TH STREET

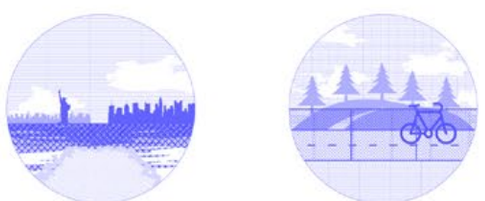


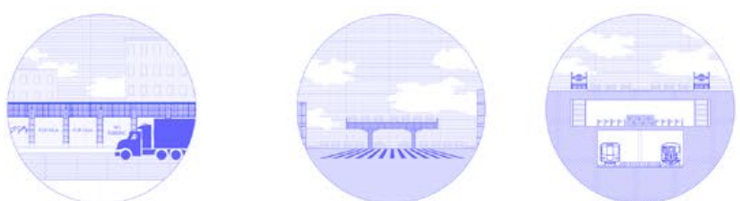
51ST STREET



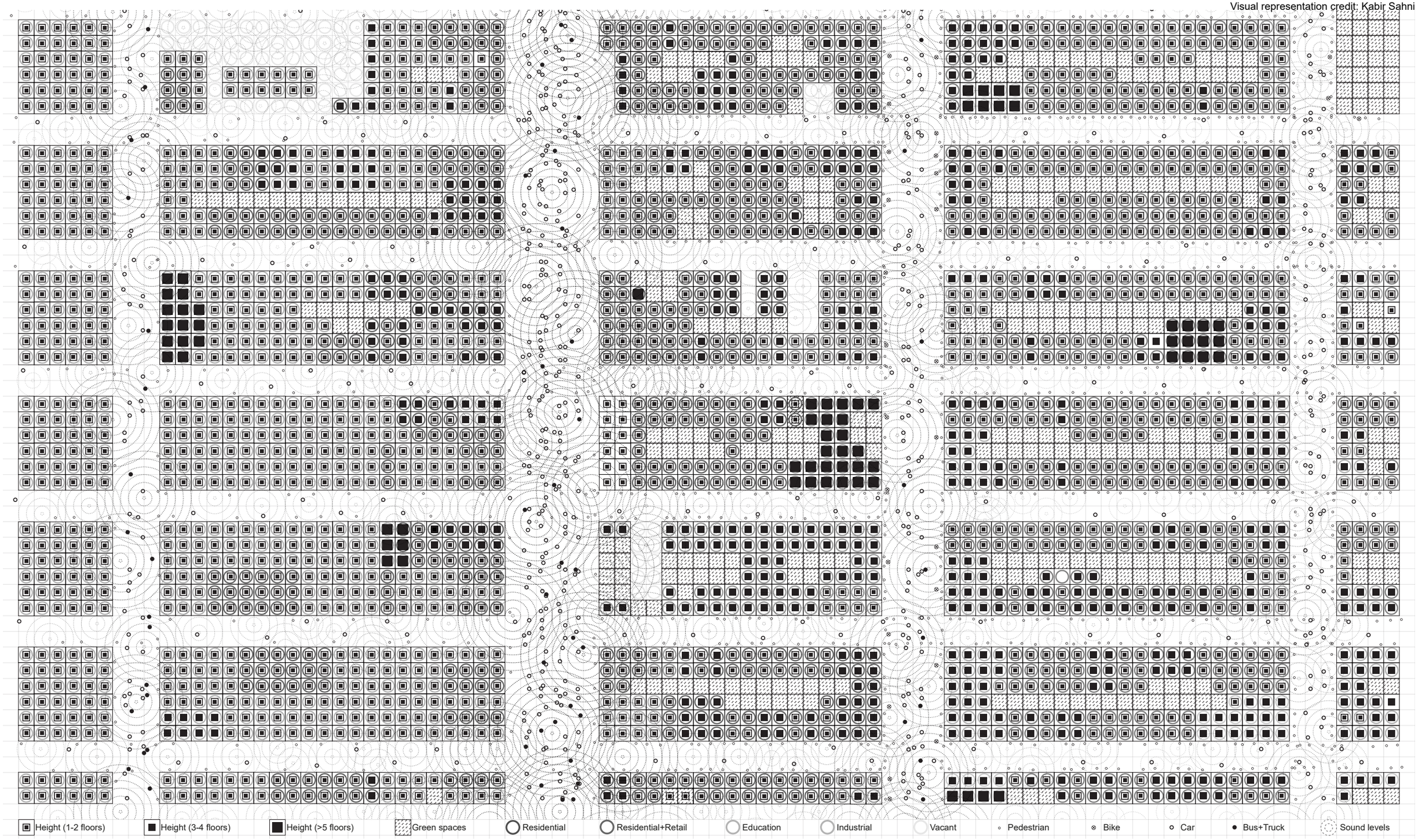
43RD STREET

Analysis of the streets to understand current conditions





Visual representation credit: Kabir Sahni



Analysis of the streets to understand current conditions

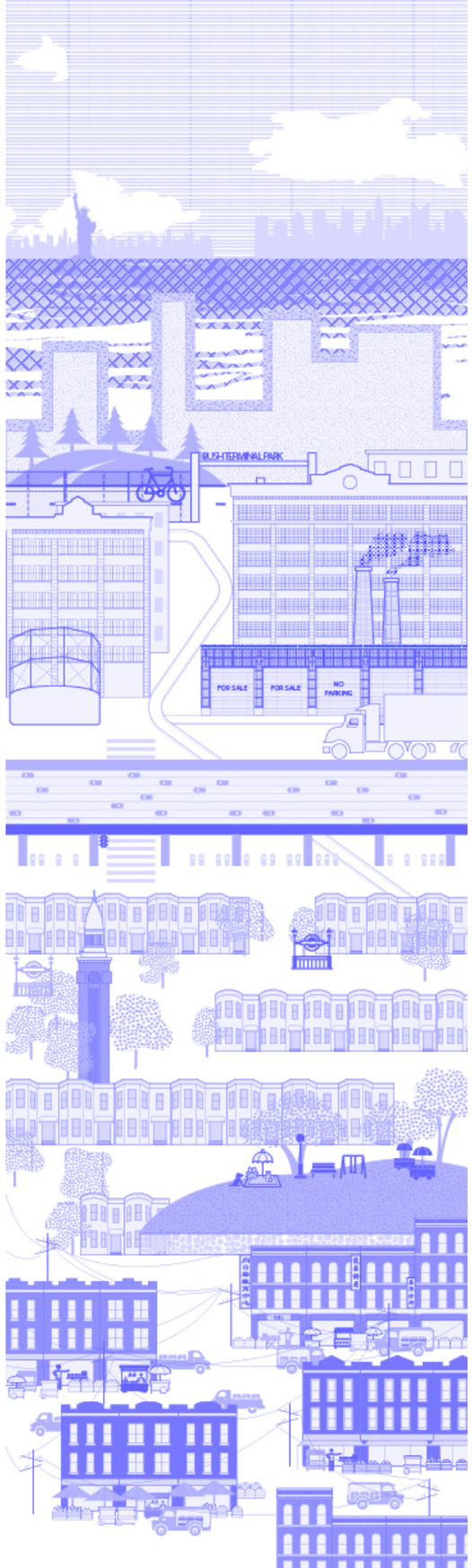
Living shorelines stabilize the shore, and reduce erosion and storm damage. They increase the flood storage capacity and strengthen the ecosystems. Hard infrastructure decays, while living shorelines naturally grow stronger over time. We are proposing to connect to the existing greenway, and use this connection as a barrier for sea level rise and inland water overflow.

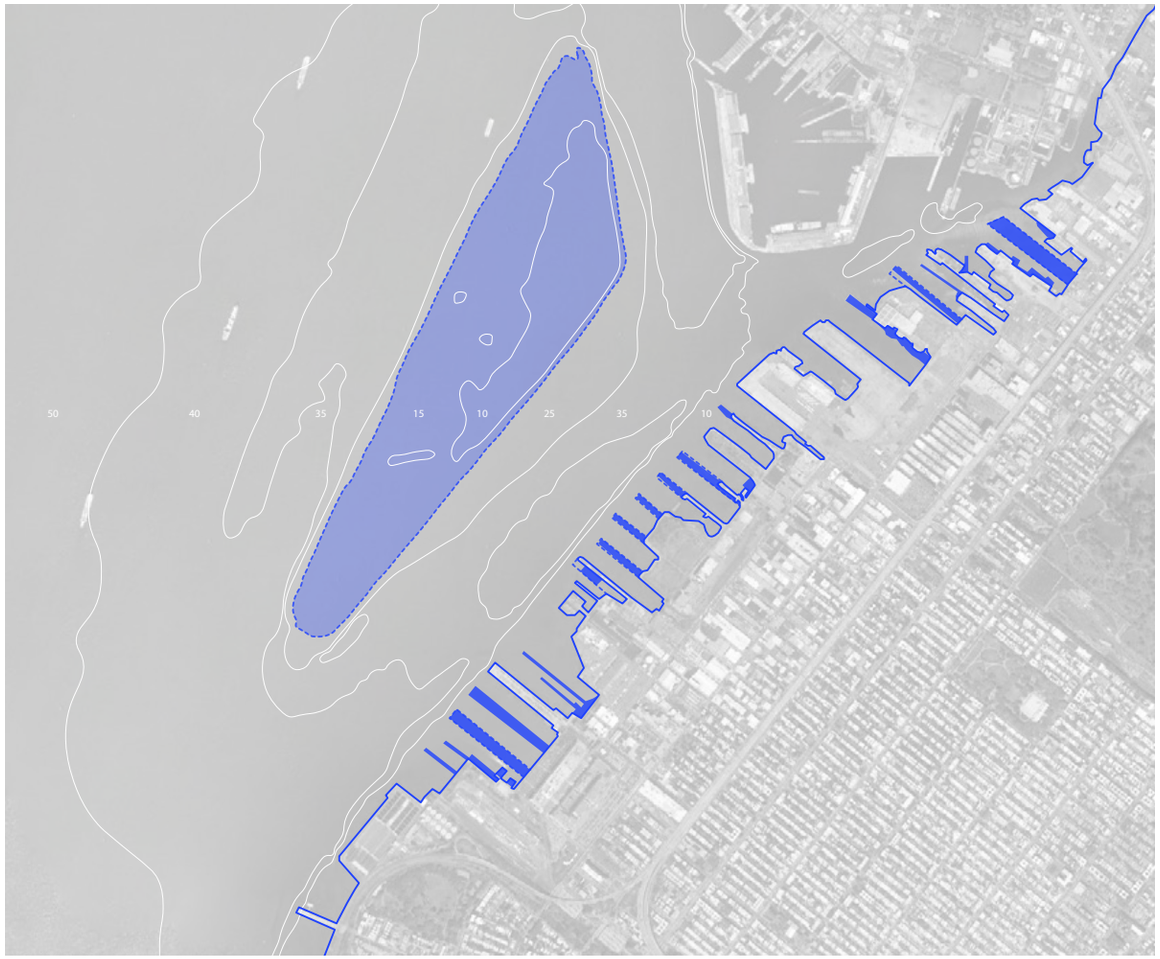
The first step is to raise awareness by taking advantage of the local resources and using the current infrastructure assets. Educational facilities and training centers will inform the local community about the program and provide a series of green job opportunities.

To restore the bio-network, we need to nurse oysters, seagrass, and salt marsh. The nursery itself will start working as a natural purifying system. To manufacture the needed resources, recycled materials from the Sims Recycling Facility will be processed and developed on site, powered by our wind farms.

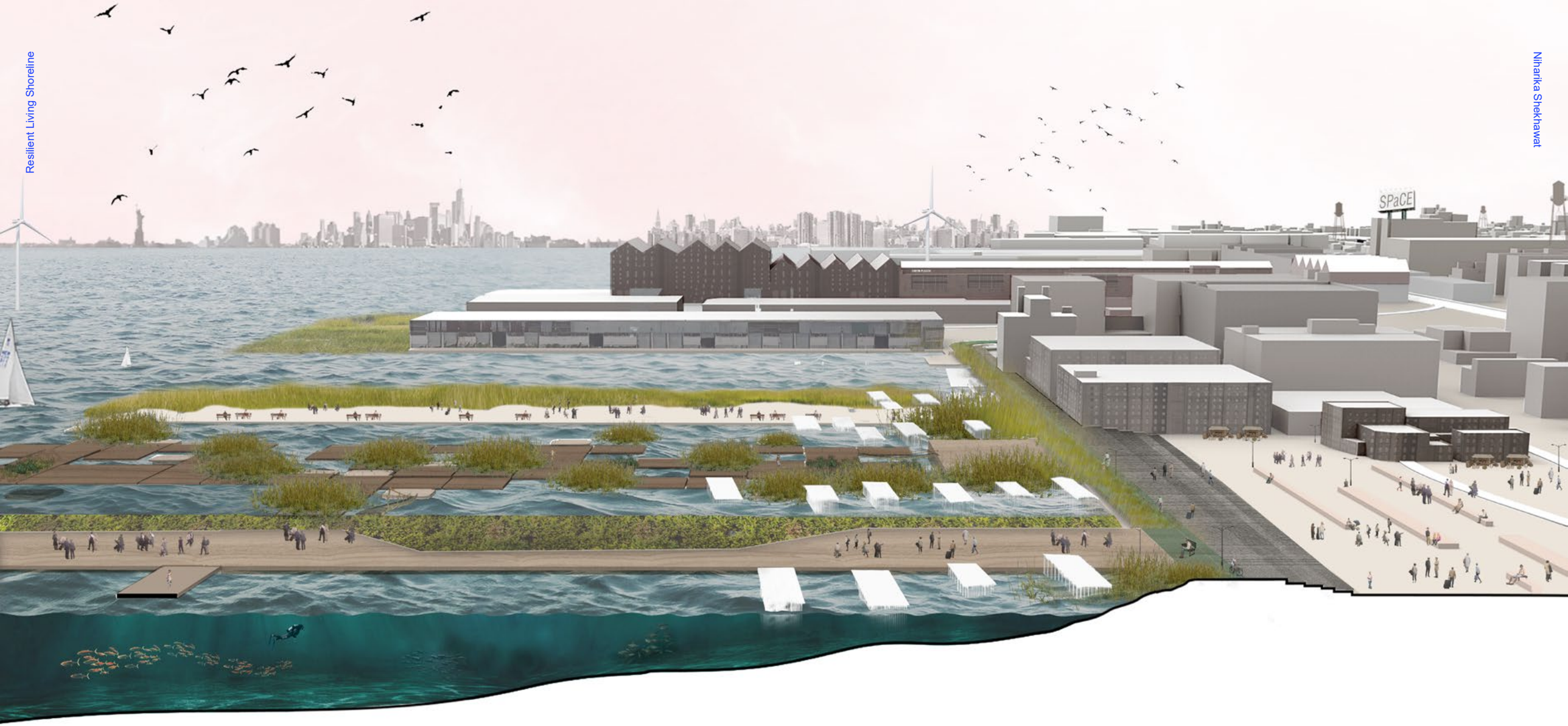
Manufacturing will help the community thrive by providing better jobs, giving access to local products, and reducing their energy expenses. The work of the community will safeguard the industrial business zone, and it will attract new industries that add value to the community: an economy of sharing.

We envision a protected IBZ that becomes stronger over time. A place that supports the community by securing its economy. An IBZ that advocates for environmental and social justice. A Resilient IBZ.

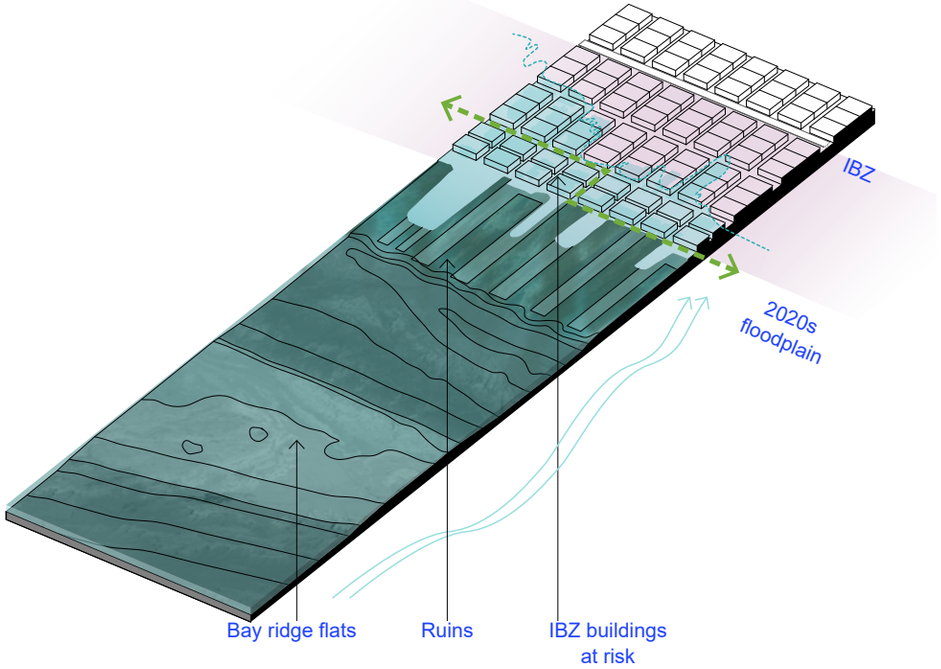


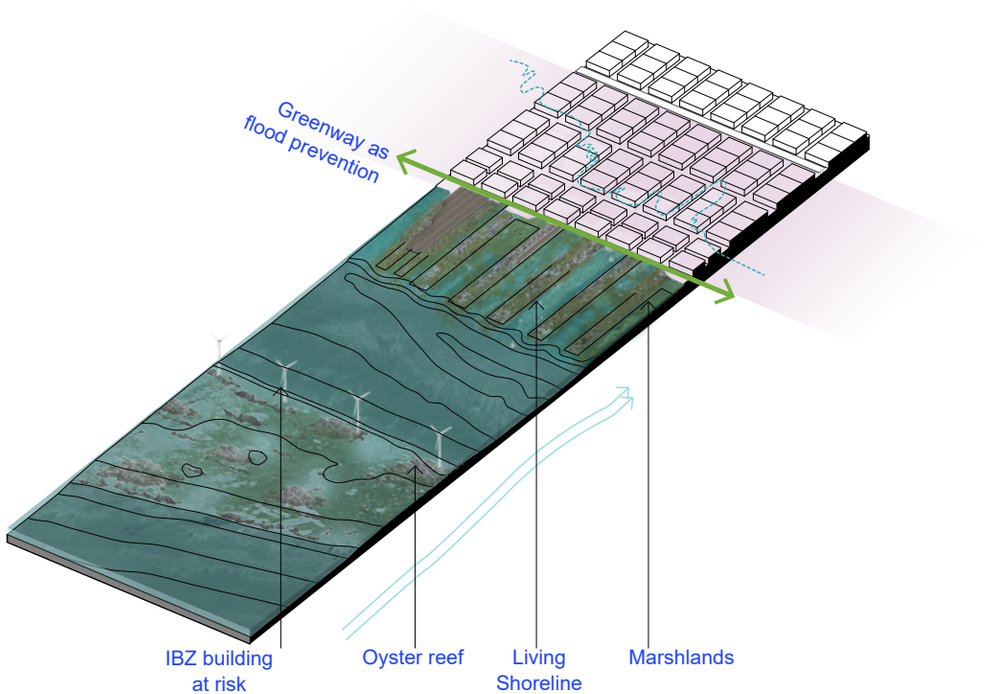


Bay Ridge flats
Ruins as assets visualized by bathymetric mapping



A resilient Industrial business zone protects resource of the community

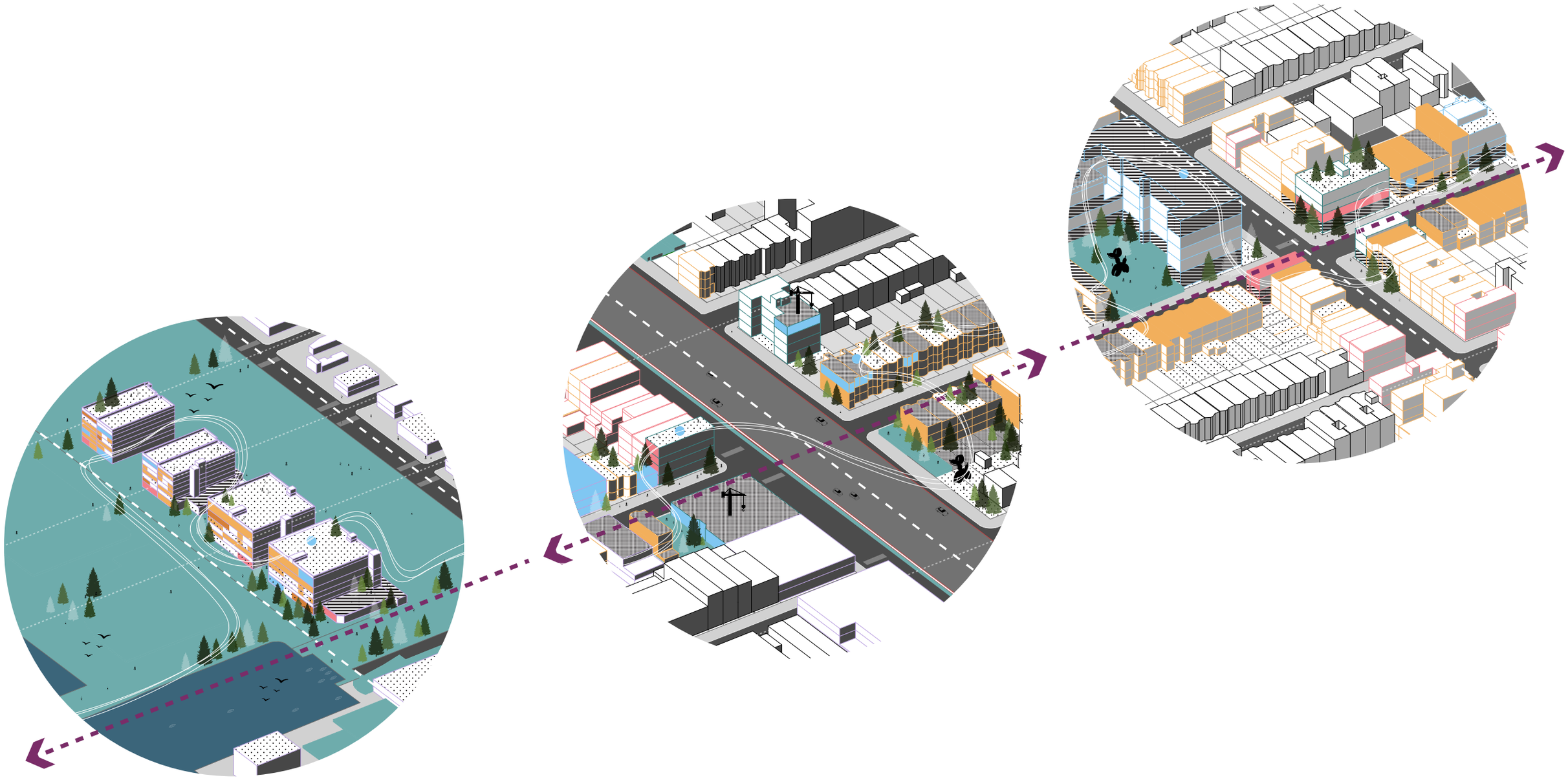




Strategies for resiliency
Living Shoreline for Flood prevention

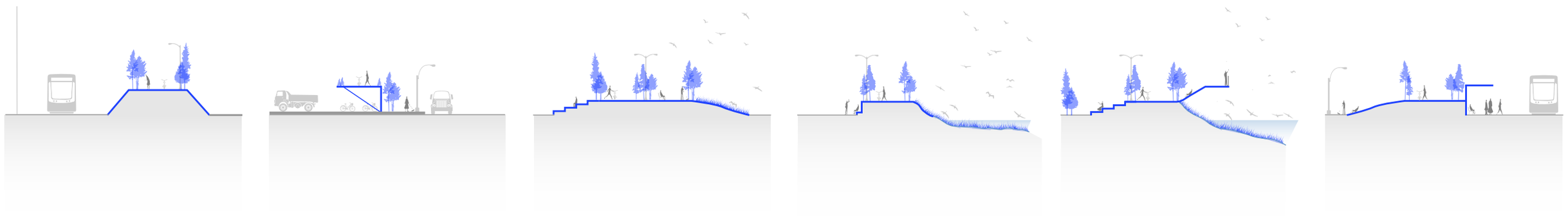
A resilient Industrial business zone protects
resource of the community

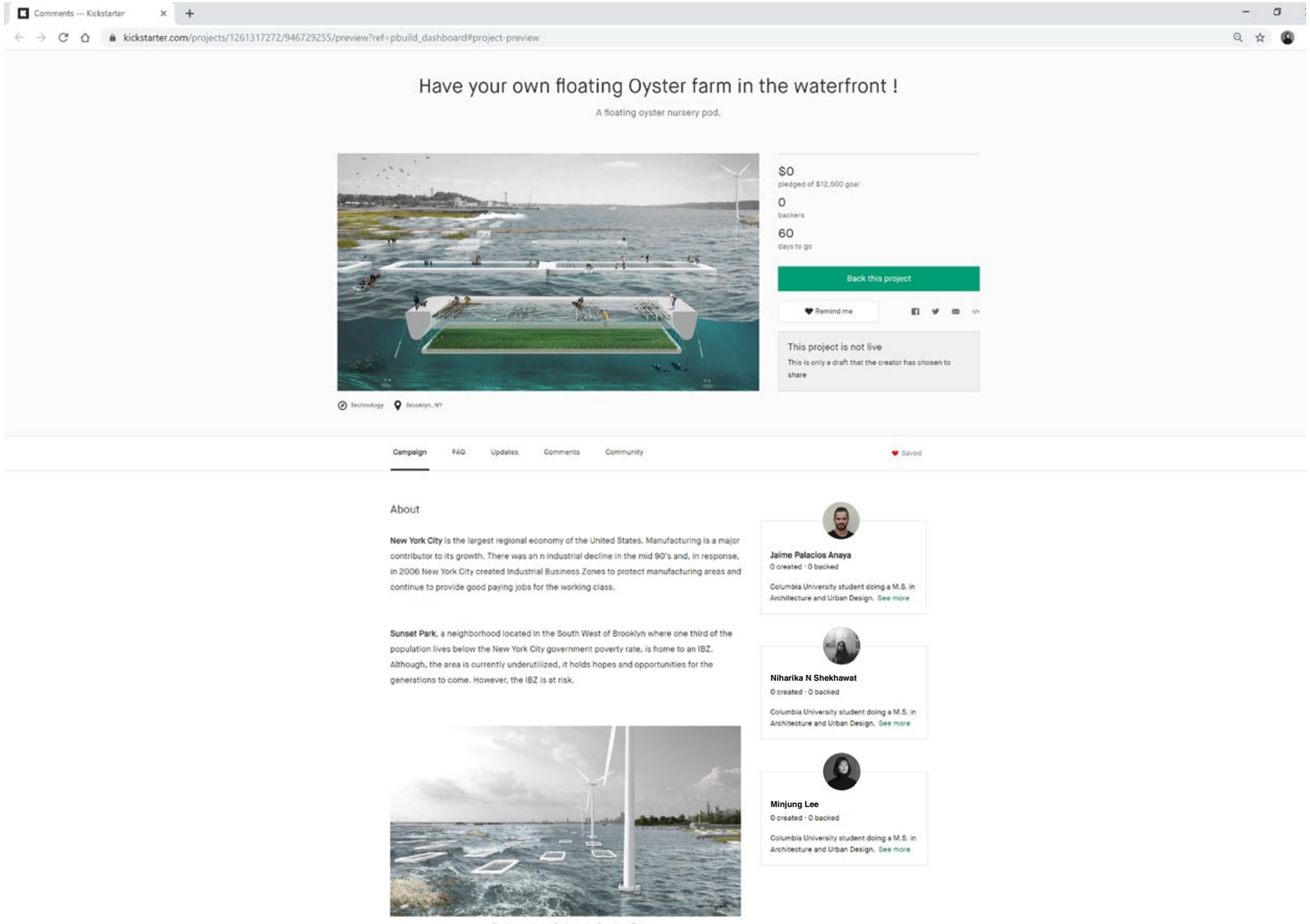
Wind power sustains the resiliency of the various components of the project



Integration of waterfront to the neighborhood for symbiotic revitalization

The Greenway acts as a soft wateredge and protects the shoreline, while also connecting the IBZ to the rest of the Brooklyn





Floating Oyster pod kit

"Grow your own oysters to help the waterfront"

One adult oyster filters and cleans about 50-60 gallons of water a day.

Protect your waterfront property and enhance local habitat while cleaning the water. This installations typically cost less than others using recycled plastic frame from local resources.

The floating Oyster pod is an easy way to grow your own oysters and help the waterfront. Engage kids and grandkids with local aquatic animals and have family or neighbors over for fresh homegrown oysters.

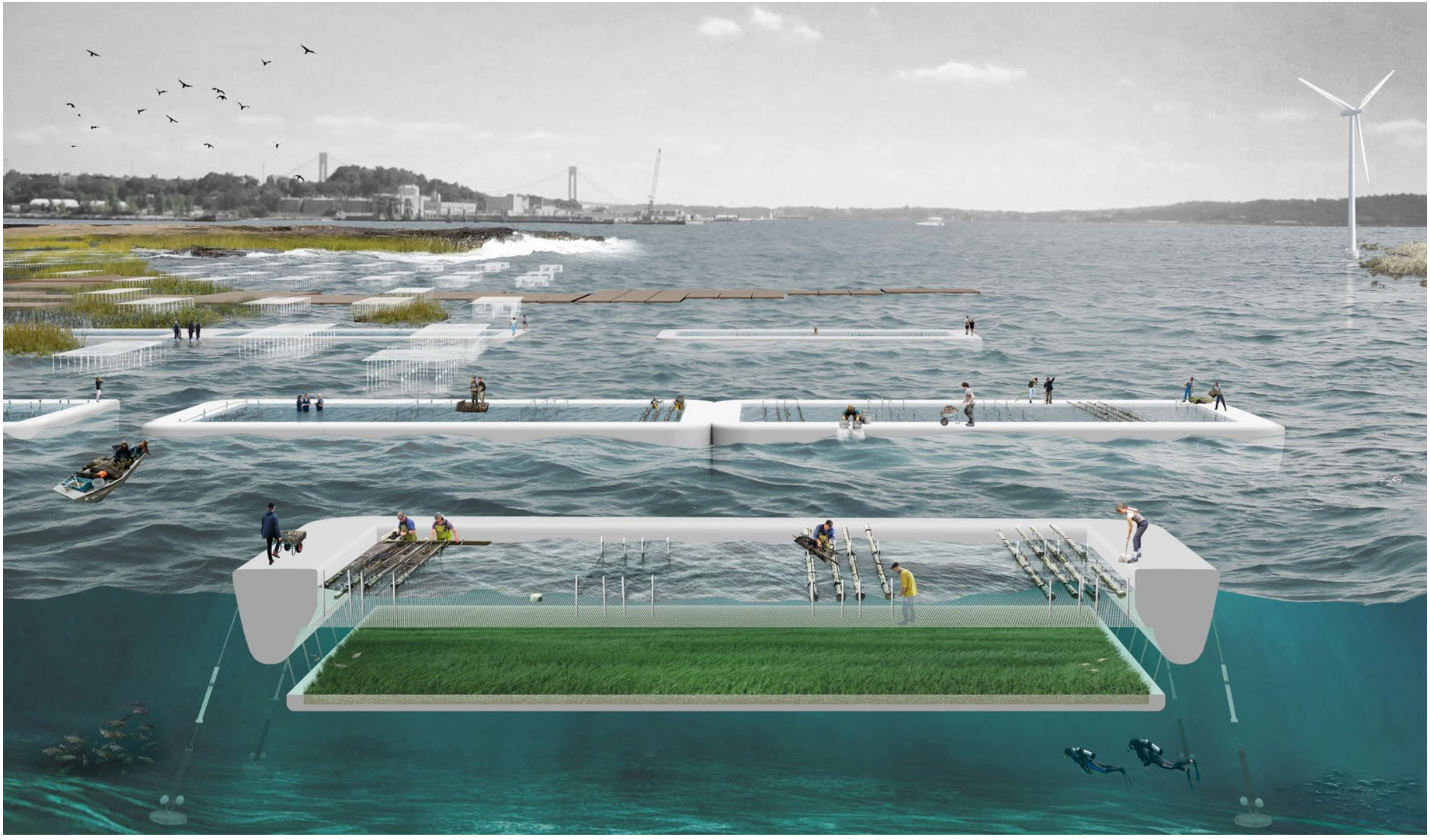
Floating oyster pod kits (One 18 square feet reef contains approximately 600 oysters)

: 1 Oyster float + 600 [3/4 inch] Seed oysters ($84.00)= $250.00

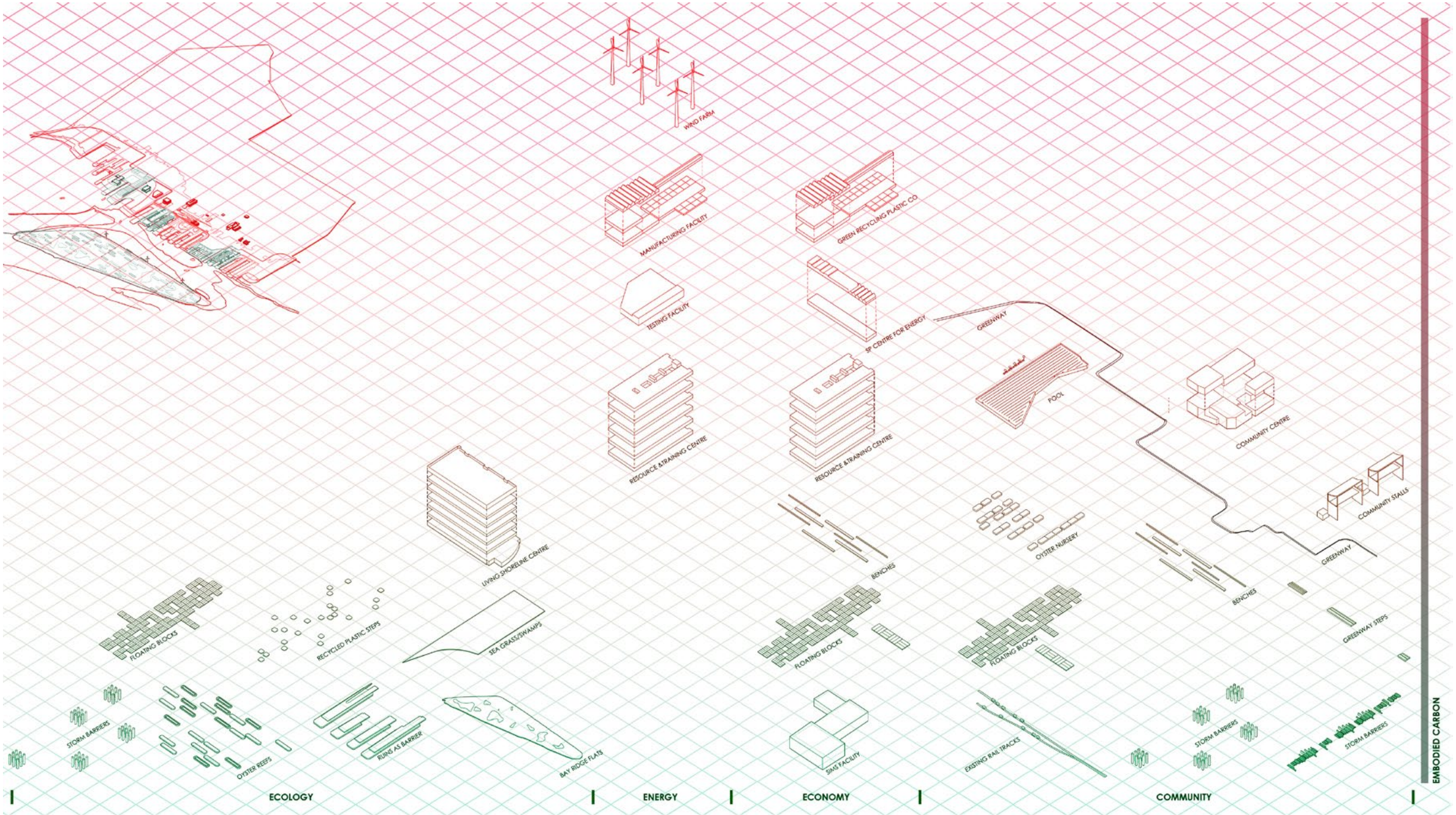
- Training, Lecture, Transport, Maintenance, Instruction

$250 x 50 Oyster floats = $12,500

Oyster farming



Oyster farms/Chinampas clean the water,
making it habitable for social activities



Embodied Carbon calculation of the design elements

Dispersing Wellness

Fall 2019
Critics : Kaja Kuhl
Regional scale : Hudson Valley, NY
Team : Niharika Shekhawat, Mansoo Han, Ting Zhang, Shailee Shah
Re-imagining the Green New Deal

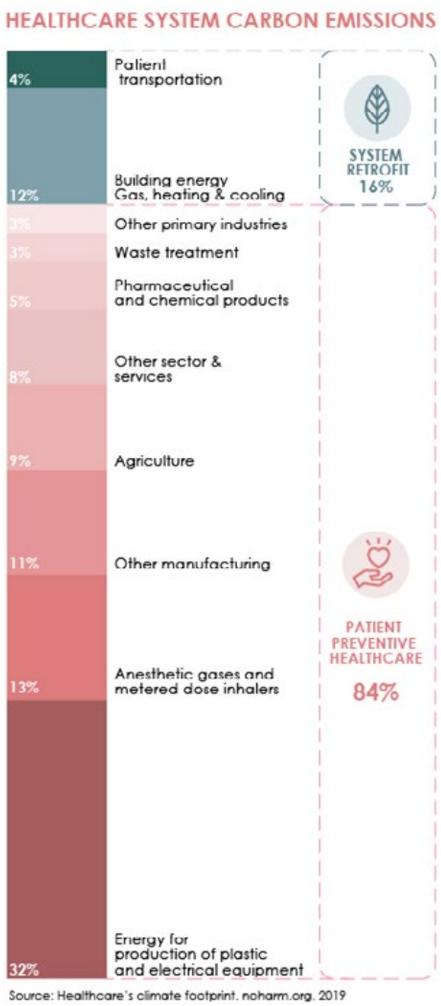
The goal of the project is to substantially lower the carbon footprint and reduce health disparities within the urban/rural context by dispersing wellness through social infrastructure in the Hudson Valley. Within the healthcare industry, 84% of CO_2 comes from health system supplies and services and 16% from the building facilities itself. The idea is to change the perspective of health services. Hospital acts as a promoter of community well being in urban area and disperses wellness through additive typologies of social infrastructure in rural areas.

The project challenges and changes the perspective of the current healthcare system from being a measure of cure to an extension of health and wellbeing of the community. The goal of the project is to substantially lower the carbon footprint and reduce health disparities within the urban/rural context by dispersing wellness through social infrastructure in the Hudson Valley.

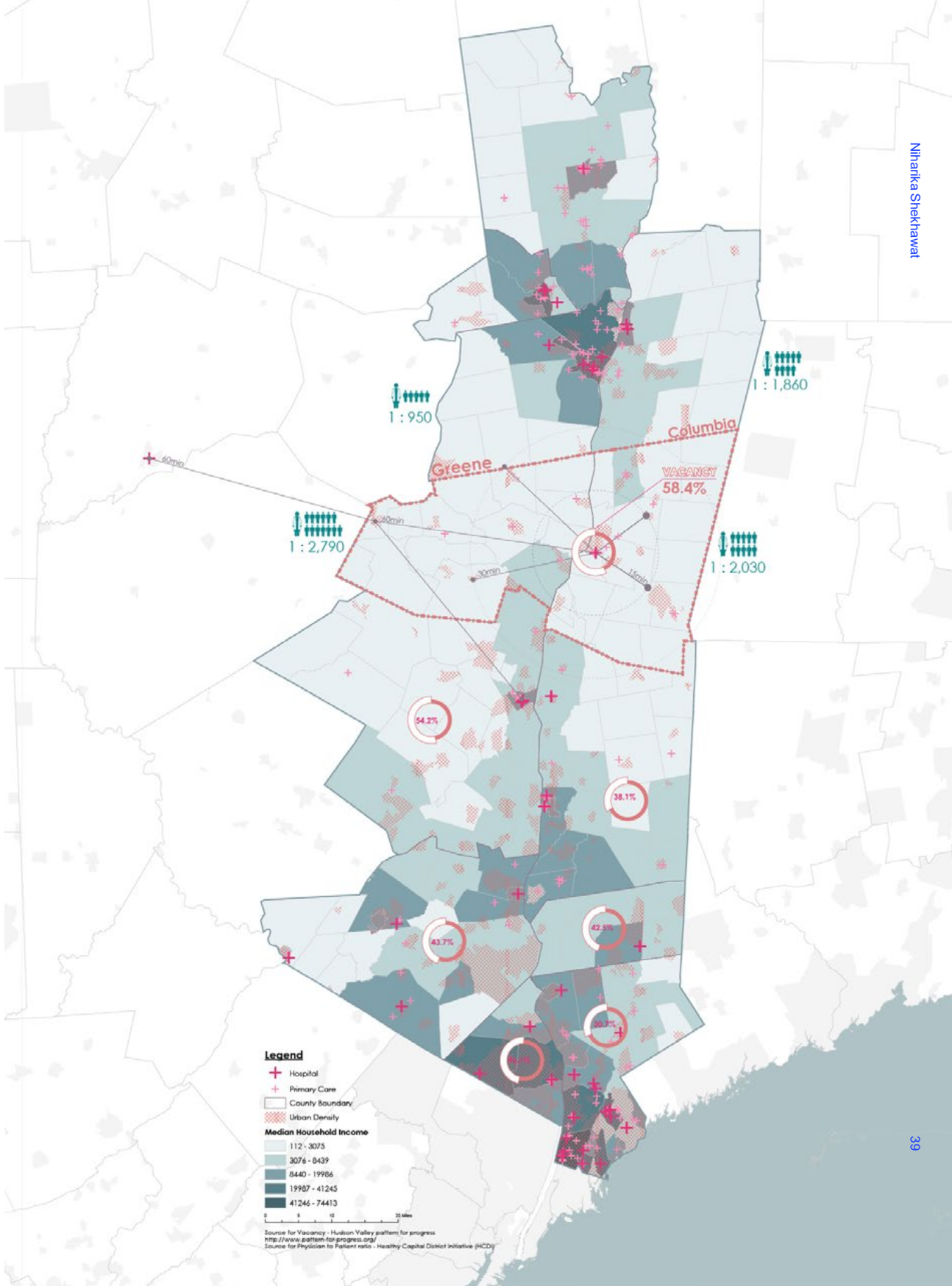
The healthcare industry accounts for 10% of the total greenhouse gases generated. We have two major issues that are often ignored of the healthcare system - High carbon footprint and lack of accessibility(physical and monetary) that in turn makes people sicker and more dependent on health facilities in the long run.

The healthcare facilities provide health services but are high polluters of the environment, in turn making people sicker and more dependent on health facilities in the long run.
Another cycle is the lack of physical and monetary access to healthcare that makes people conditioned to living with the discomfort of disease which further enhances the gap as it propels them to get treated only in “when needed” scenario with high expenditure.

In the Hudson Valley, we see that the concentration of hospitals in urban areas is much higher whereas the rural areas lack services to healthcare. Therefore, there is a huge health care disparity in terms of accessibility between the urban and rural areas. The base maps represents median household income, we see that the areas that have higher income have more access to health facilities whereas low income, which are more rural areas lack health facilities completely. The geography of the region drives people’s health seeking behavior in Hudson Valley, residents especially from the rural areas are the most disadvantaged and travel up to 1.5 hours one way for basic health needs.



Source: Healthcare’s climate footprint. noharm.org. 2019



The project focused on the twin counties - Columbia and Greene County. These counties have the lowest access to healthcare facilities but also the lowest physician to patient ratio and higher travel distances for health needs. As we have identified that 84% of the carbon emissions can be reduced through patient preventative healthcare, we look into the health profiles of these counties. In Columbia and Greene county, we see that there is an increase in the ageing population and is projected to rise by 2040. According to the health assessment, there are two main health issues in the county - First, high number of chronic diseases such as obesity. We also see that the community in these regions consume less fresh vegetables, engage less in physical activities and has limited access to fresh food supermarkets. Second, high number of substance use in the middle aged population that also results in mental health issues and social isolation within the ageing population in the rural areas.

Network and flow of services

Niharika Shekhawat

METRO NORTH
RAILROAD

200m

COLUMBIA MEMORIAL HOSPITAL
HUDSON, COLUMBIA COUNTY

HUDSON CITY

600m

HUDSON CITY

400m

200m

CMH

TRAINED NURSES

TRAINED
LIBRARIANS

HEALTH SERVICES

DOCTORS

TRAINED FIRE
FIGHTERS

MOBILE UNIT

WELLNESS
DELIVERY

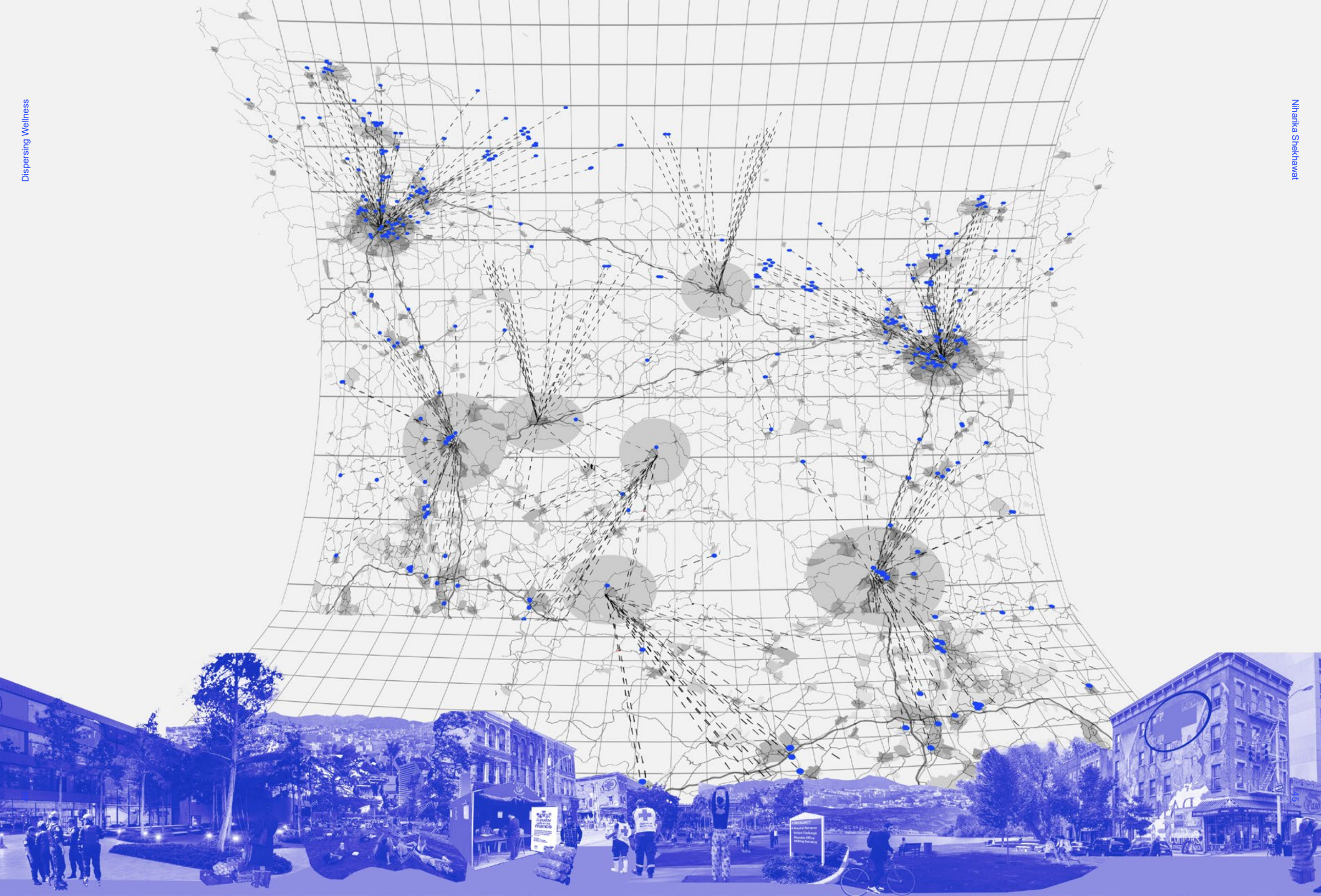
HEALTH SERVICES

METRO NORTH
RAILROAD

SHED
PRATTSVILLE, GREENE COUNTY

TO RURAL AREA

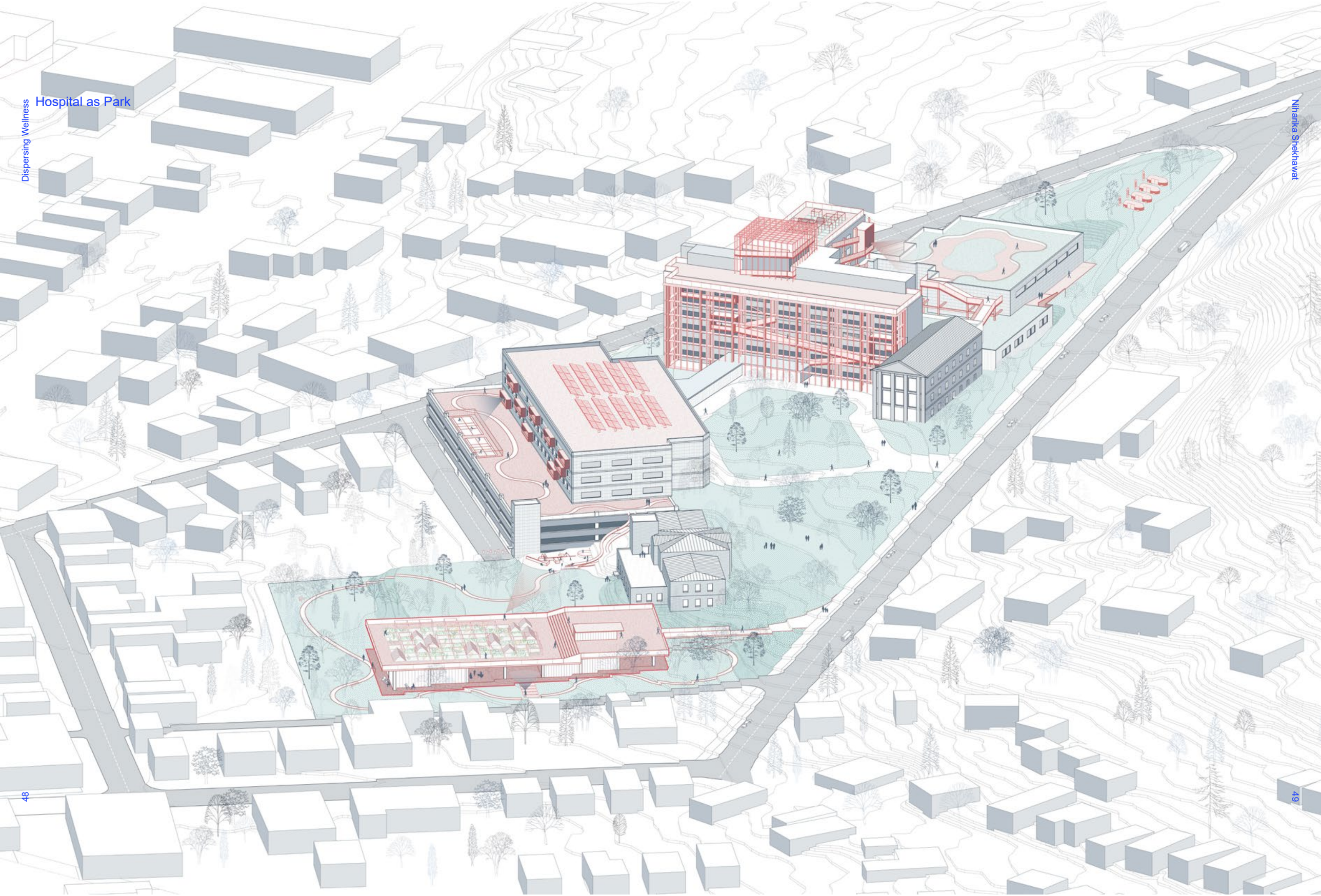
TRAINED NURSES

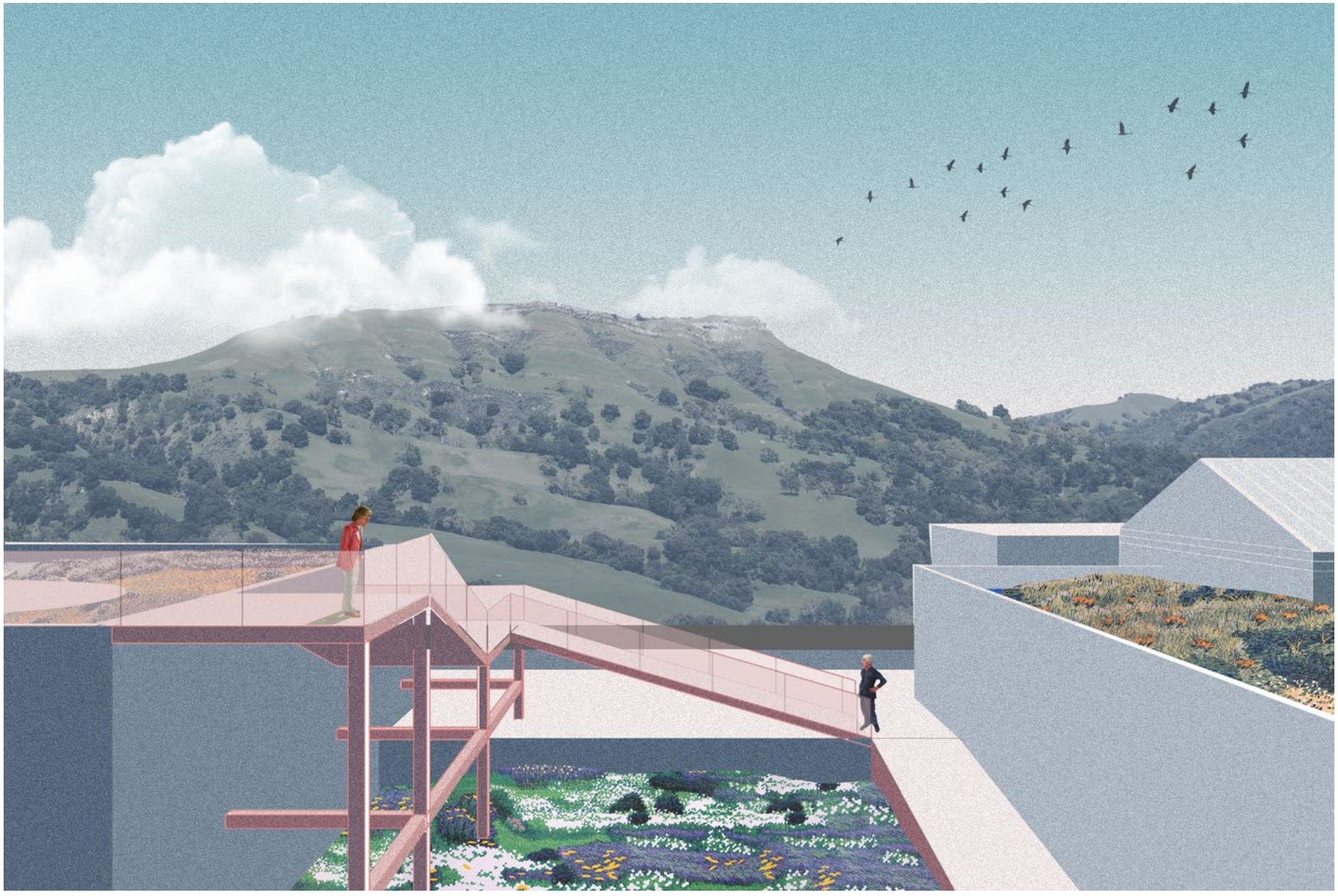


To respond to the issues of the healthcare system, we propose two strategies that would substantially lower the carbon footprint and reduce health disparities in the Hudson Valley.

The first strategy is to extend health services in the rural area by adding health services to public institutions such as fire stations and public libraries. In the twin counties, Columbia Memorial Hospital serves as a sole healthcare provider. As we can see, libraries and fire stations are fairly dispersed in the region. As major health issues in the region are chronic and can be treated through preventative measures, through this strategy we can reduce the carbon impact but also provide health services as closer proximity.

Hospital as Park

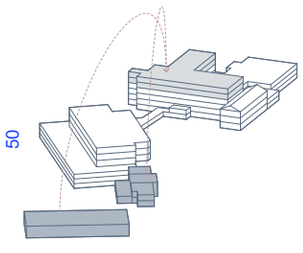


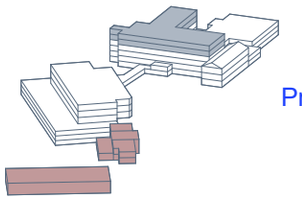


Urban Areas

At Columbia Memorial Hospital in Hudson, Columbia County, we focus on the retrofit of the hospital. We reimagine the hospital as not a place for cure of disease but also as a center of dispersing wellness. Therefore, we propose ‘Hospital as a Park’ strategy considering that in the site analysis we find that there are not many places that promote wellness in the area. We intend to make the space inviting not just for the people that are sick but also reimagine the space as a form of public space. The overall strategy is to repurpose not fully utilized building by cluster hospitals operational programs into the main functions building and reprogramming other two buildings. The parking lots on site are converted to green spaces. The park will also have an ongoing health fair where the mobile health vans will be stationed. Residents can get their routine health check up while at the park during scheduled times of the day.

To tackle the energy systems that can reduce 12% of the carbon emissions. We proposed to retrofit the facade of the hospital - a double skin facade to make it more energy efficient in terms of heating and cooling. The double skin facade is connected through a series of ramps that form a connection between the buildings. All the buildings have been converted to have farm gardens and solar panels on the roof that help achieve up to 50% of the carbon emissions reduction in the energy systems of the facility.

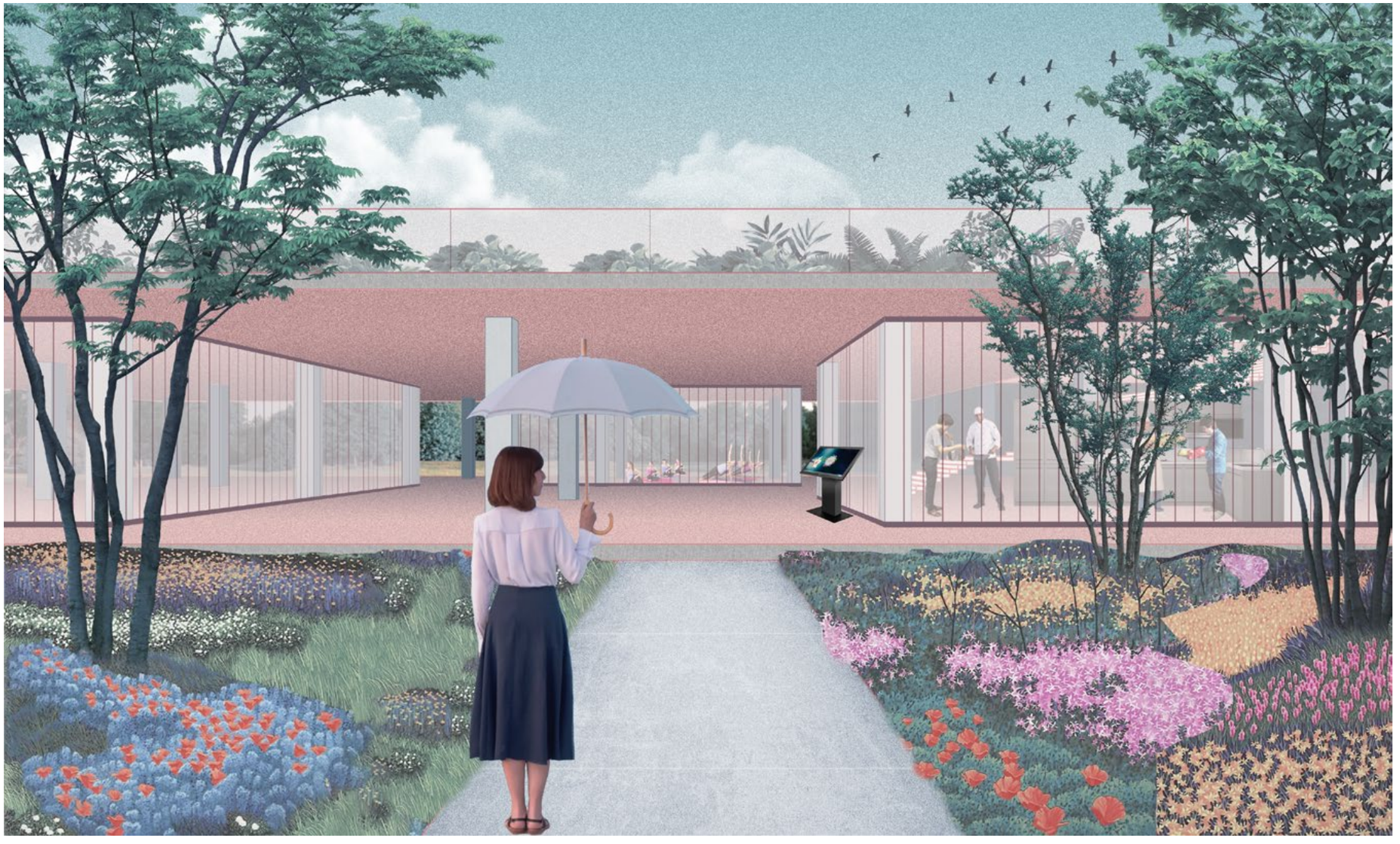




Program Transition

Community Pavilion

Niharika Shekhawat

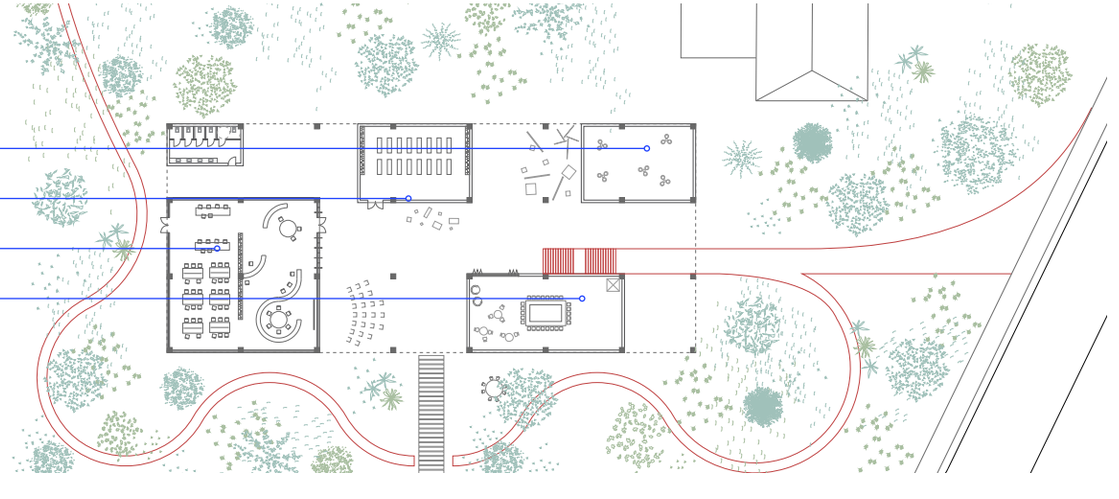


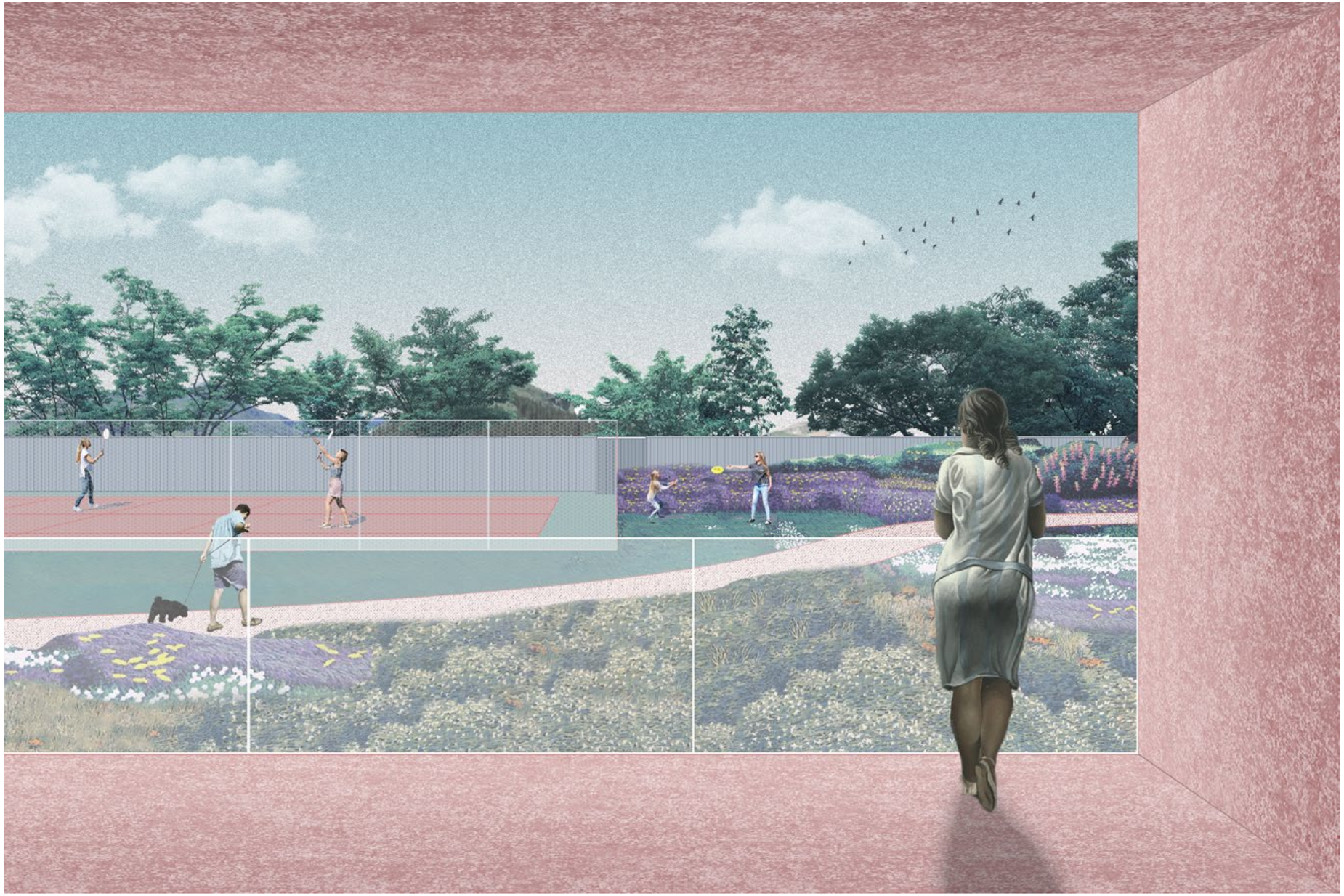
Telehealth center

Community Gym

Training Center

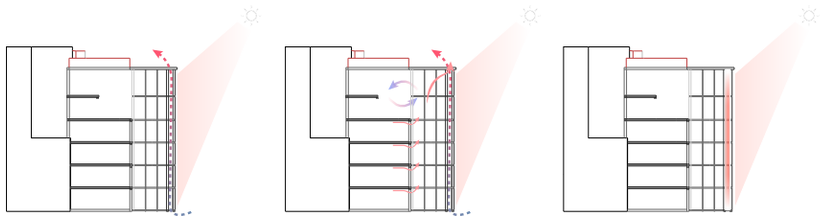
Public Kitchen





The second strategy is the mobile network that would make health services more accessible - scheduled health professional servicing rural areas but also distribution of medications, fresh food and wellness services.

As the Columbia Memorial Hospital is a major stakeholder in this process of transition, the idea is to change the perspective of health services. It acts as a promoter of community well being in Hudson and disperses wellness through an additive typology that empowers the role of social infrastructure to spread a wellness network in rural areas.

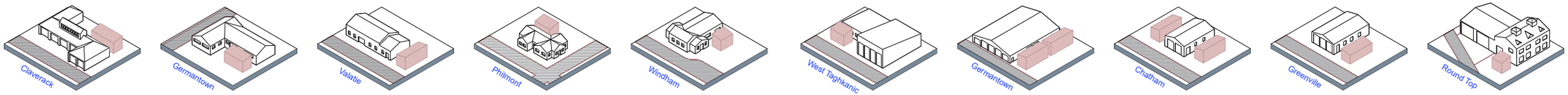


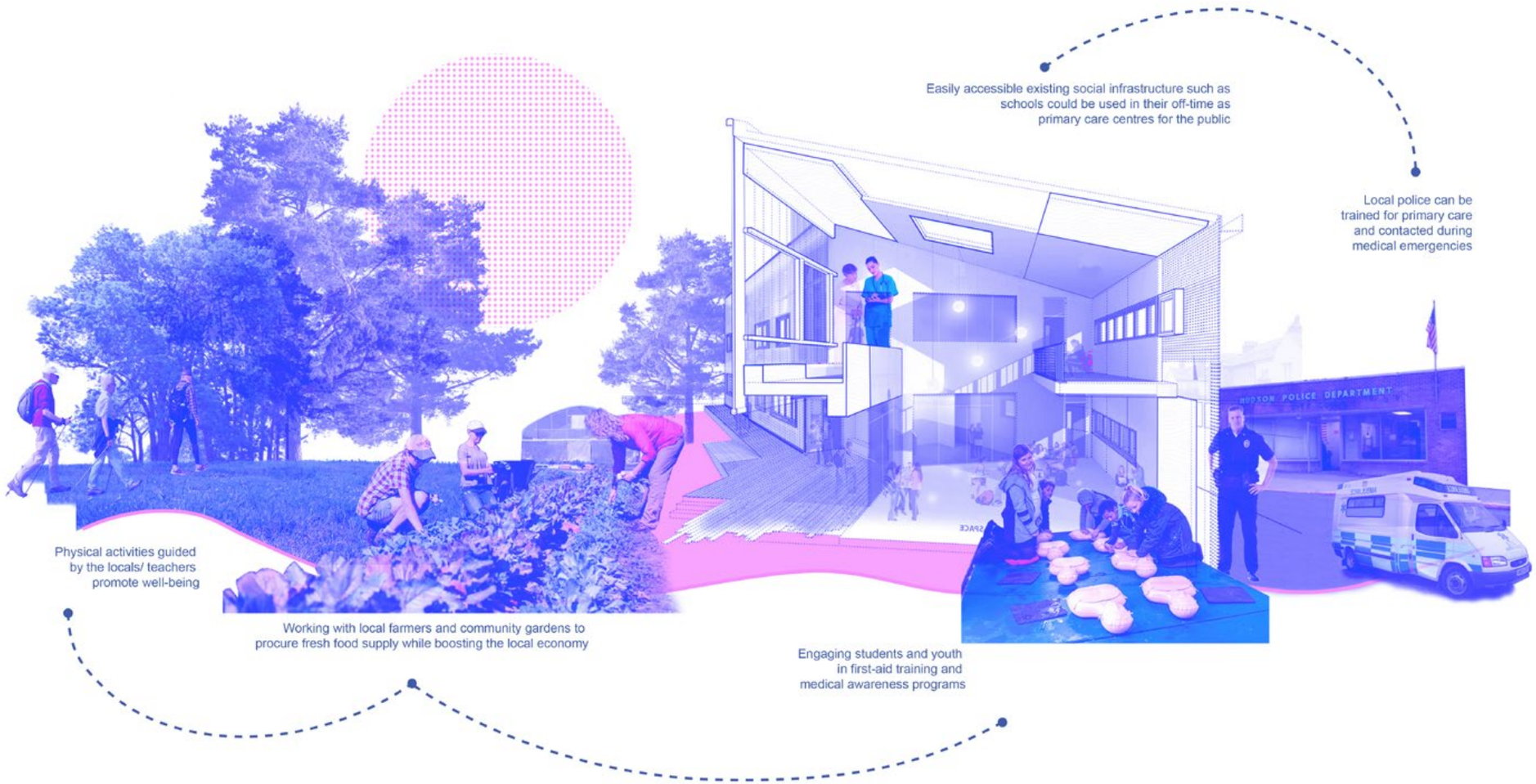
Double facade skin

Prattsville, Greene County

Rural Area

We propose a shed typology that becomes an attachment to public institutions such as a fire station in Prattsville, Greene county. The Shed is designed to be energy-positive space that provides a high performance, healthy communal environment, while minimizing energy use through careful daylighting and natural ventilation, employing photovoltaic panels to generate substantially more power than consumed. The modular shed can be easily built on site as it has standardized dimensions of 8x16ft and uses 2x4 planks





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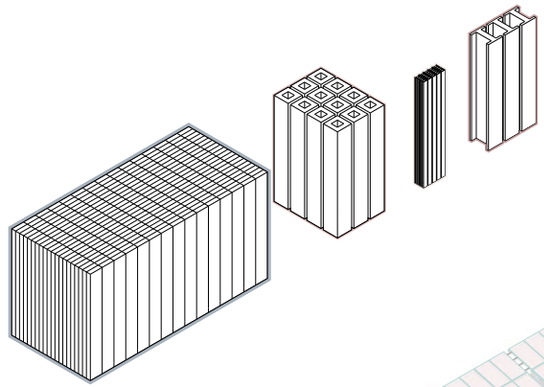
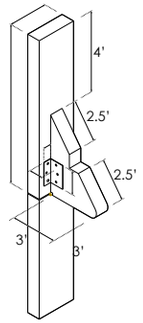
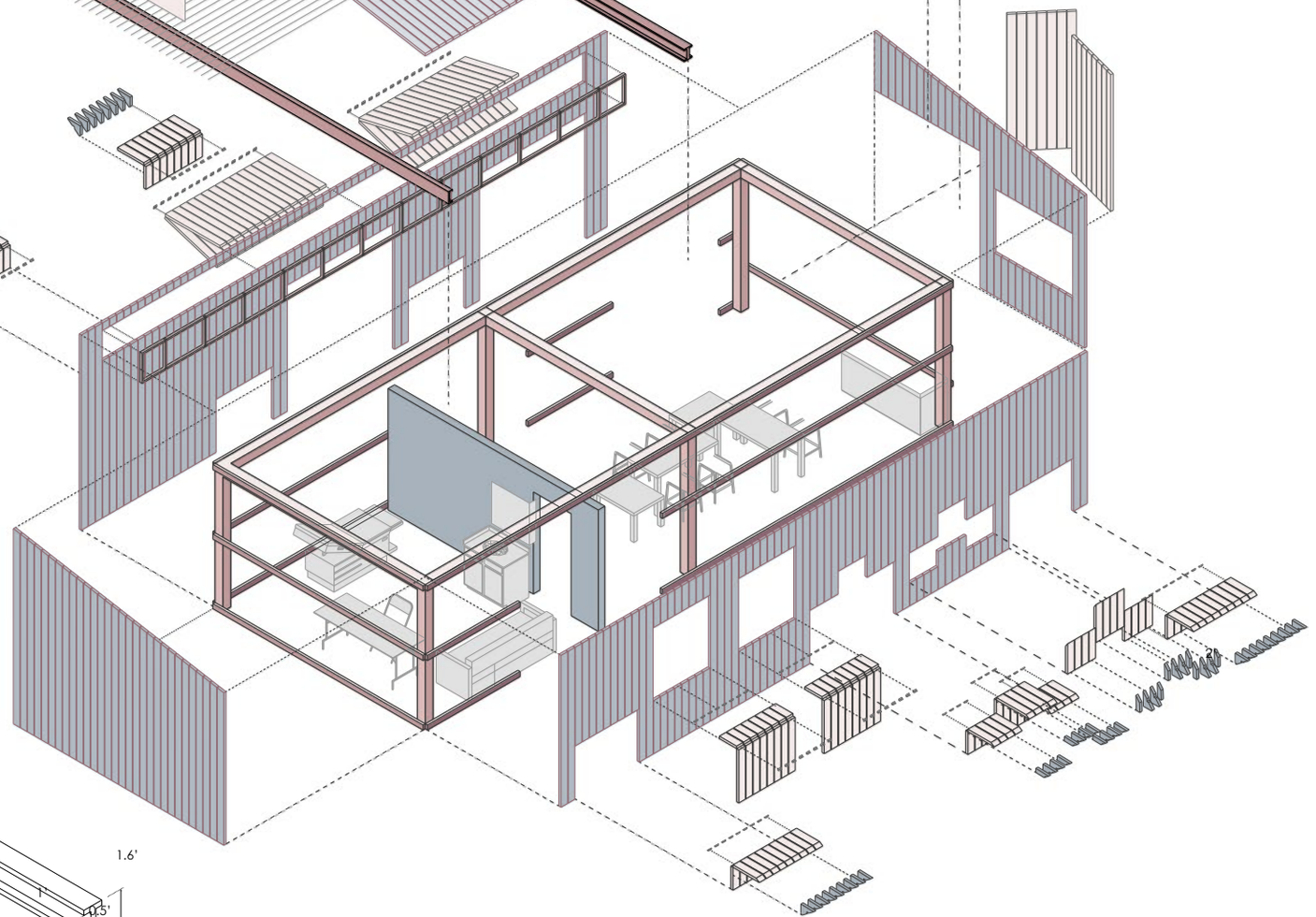
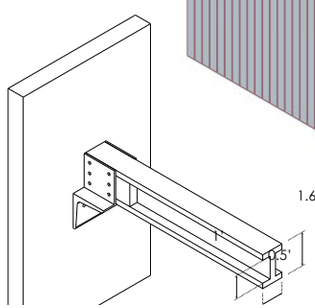


8 X 8 X10ft Column - 12
2 X 6 X 8ft Panel - 300
2in X 36in Plain Steel
C-channel bar with 1/8 in - 30
I beam - 3







Rural area health shed will comprise of a storefront health center serviced by a trained firefighter where residents can go for their routine check ups. In the case of Prattsville where the major health issue is social isolation, the shed also serves a communal living room space where programs such as home theatre movie, knitting activities programs that facilitate connections can be carried out. Through the extension of health services in public institutions and dispersing a wellness network in each neighborhood, we strive to make healthcare accessible to all but also promote the healthy living. The mobile health with a certified doctor make routine rounds to these rural areas for further services.

Therefore, by reimagining a dispersion of health services and promoting preventative healthcare programs, we can substantially lower the environmental impacts of the healthcare sector and create an equitable and sustainable model by dispersing wellness.

Dispersing Wellness

Niharika Shekhawat

Unearthing Neve Sha'anan

Spring 2020
Critics : Kate Orff
Rift Valley scale : Tel Aviv-Yafo, Israel
Team : Niharika Shekhawat, Antonia Medina bell, Candelaria Mas Pohmajevic, Shailee Shah

Niharika Shekhawat

Unearthing Neve Sha'anan is about its marginalized community and buried natural assets. The goal is to celebrate the transitional character of Neve Sha'anan. Building on the efforts of its community, we will develop a path to residency and civic participation through a Neve Sha'anan Action Lab.

White City

Rothschild boulevard

N-S divide

Ayalon

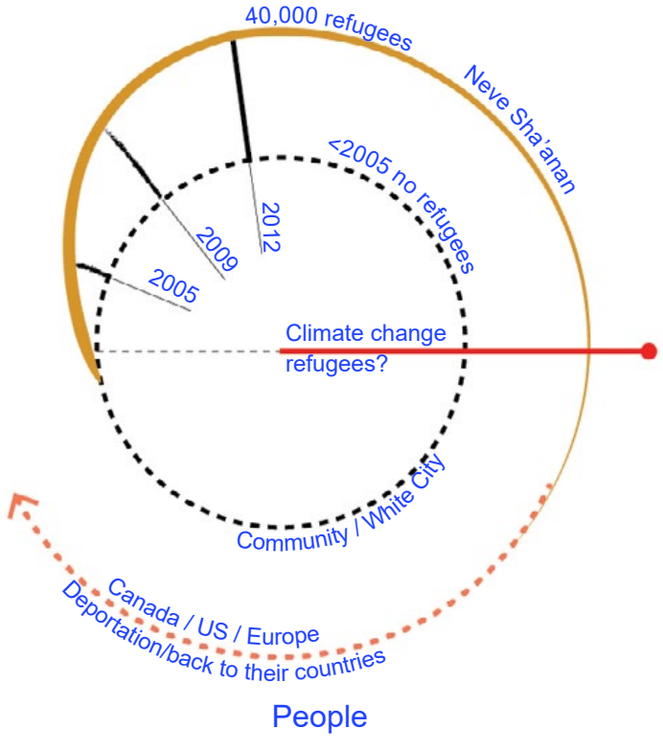
500m

Levinsky Park

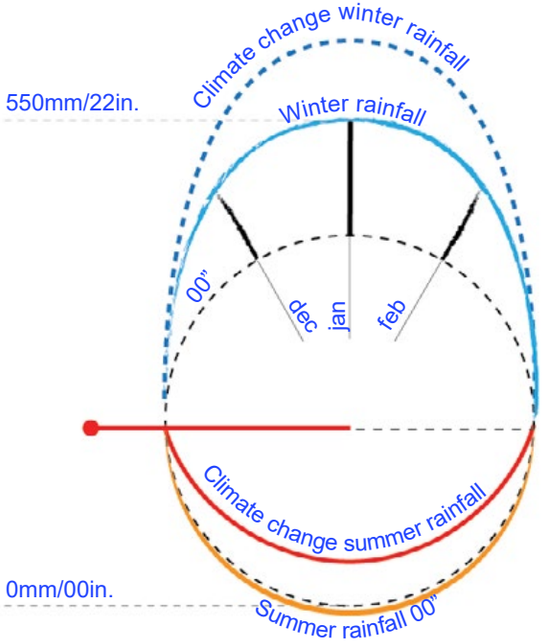
Neve Sha'anan

Central Bus Station

Jaffa



People



Water

The migrant workers, asylum seekers and the Ayalon are perceived as the two migrants of Tel Aviv-Yafo. Both people and water are contained between bureaucratic boundaries of legality and channeling. They are siloed behind the facades of Neve Sha'anan and the walls of the Ayalon Highway. Tel Aviv experiences extreme fluctuations of drought and flood conditions throughout the year. We will work with water and people to empower them through collaborative urban design.

People enter via Central Bus Station

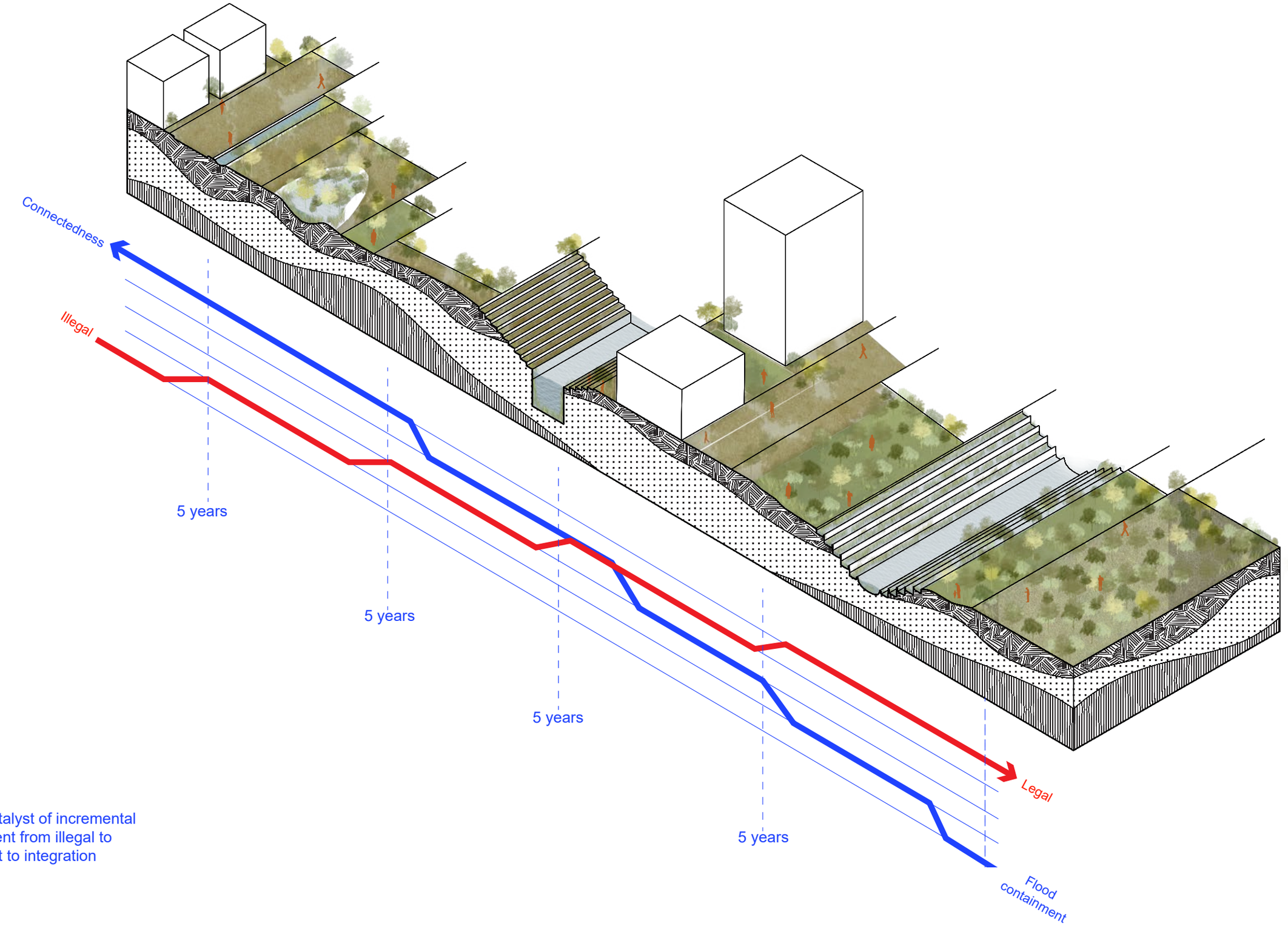
Water enters via concrete channels

"***Family businesses*** and restaurants, with ***unbelievable history***."

"These children don't know that they are seen as ***outsiders***"

"They ***don't have legal status***. They live in this ***survivor mode***. "

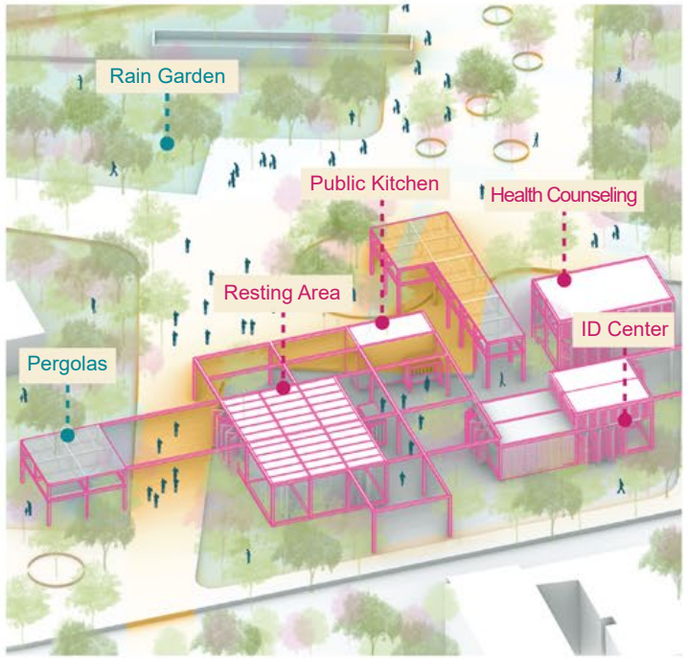
"Before they pedestrianized this street, ***it was chaos***"



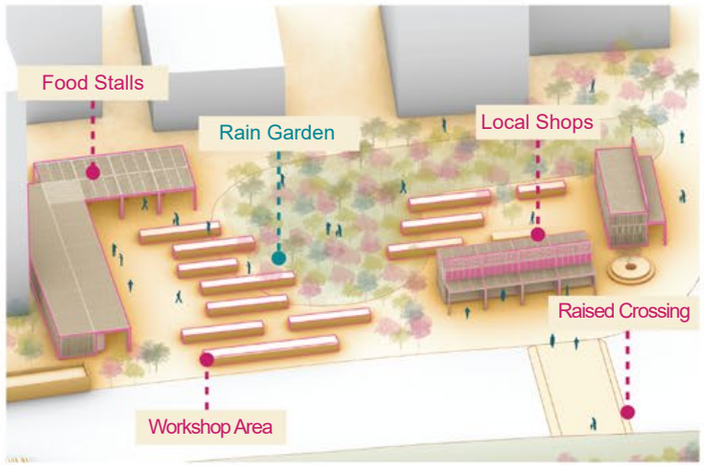
Unit of change acts as a catalyst of incremental change by creating a gradient from illegal to legal, and from containment to integration

Neve Sha'anan Action Lab connects residents and municipal stakeholders to create empowering public spaces. This public-private partnership supports the migrant workers and asylum seekers of Neve Sha'anan to actively participate as stewards in their neighborhood.

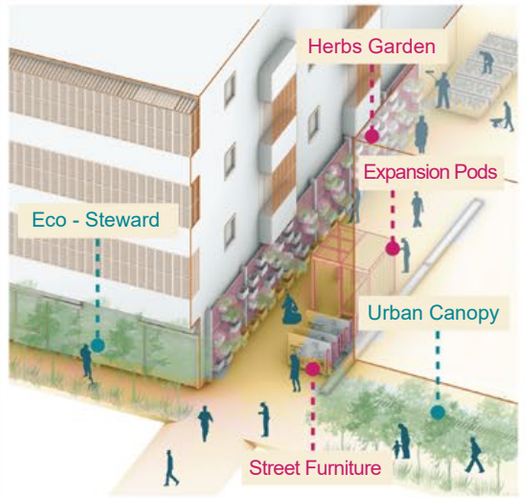
3. COMMUNITY SHELTER



2. MARKETPLACE



1. COOLING HUB



The community will partner with local NGOs, which will be funded by the municipality and privates to develop a toolkit to rebuild the neighborhood, as shown in our diagram.

Parking lots will be transformed into shaded spaces for the community allocating programs to spur local economies, such as markets and food stalls.

Community effort will be utilized to build a transitional shelter in Levinsky Park, soil rebuilding by ecological stewards

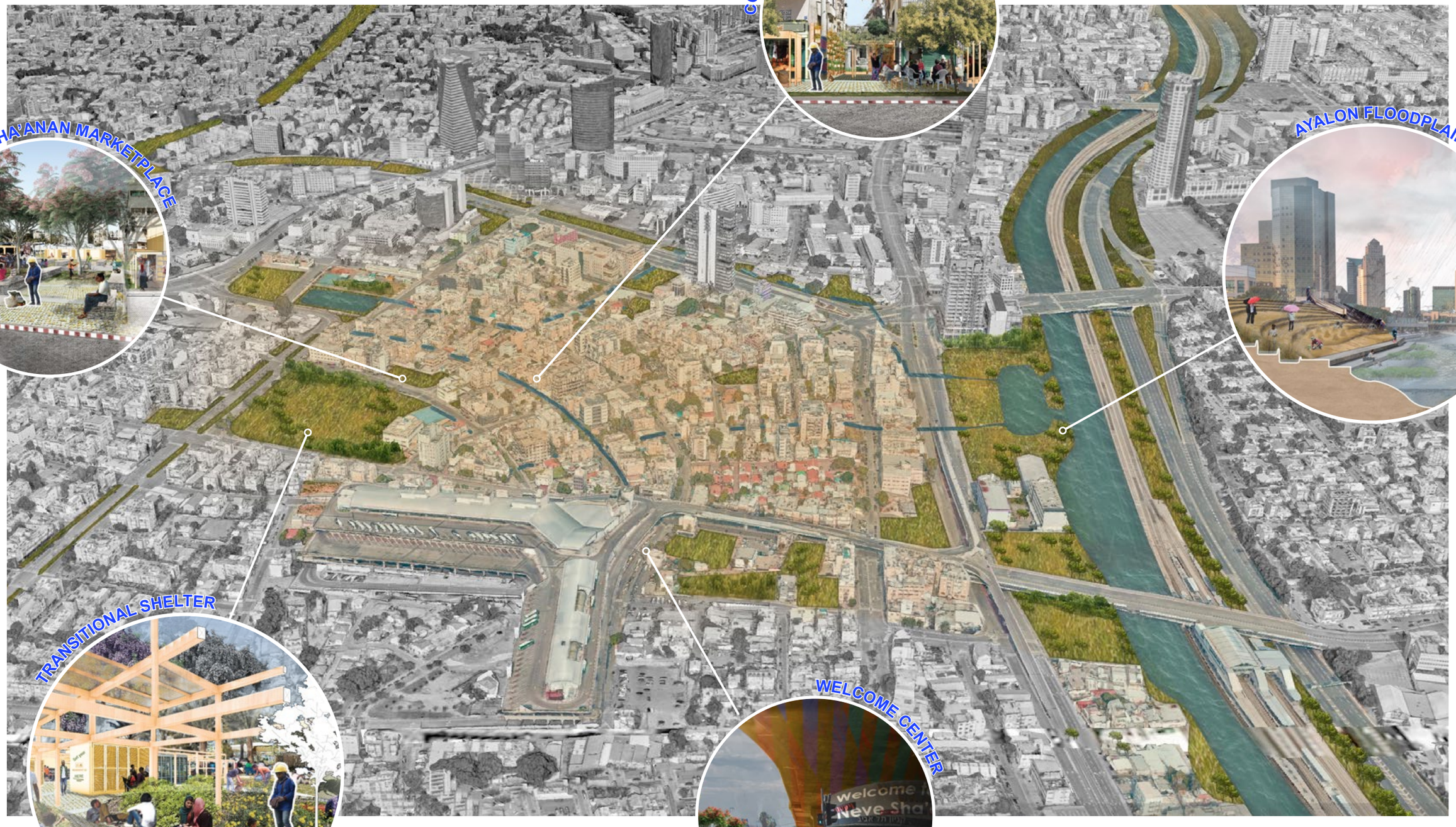
Empowering Tel Aviv through collaborative design by a paradigm shift. Through Neve Sha'anan Action Lab, migrant workers and asylum seekers will be integrated in the city fabric by providing their services to the whole community. The collaborative spirit of this proposal will empower locals and newcomers alike in an innovative grassroots- public/private partnership. The climate stewards will transform Levinsky Street into an urban ecological corridor through Soil Rebuilding, Tree planting and ultimately, by recovering the Ayalon River. The migrant workers will acquire their residency in Tel Aviv.


JUTE WEAVING


SOIL RECOVERY


BUILD ROOT SYSTEM


CUT & FILL FLOODPLAIN



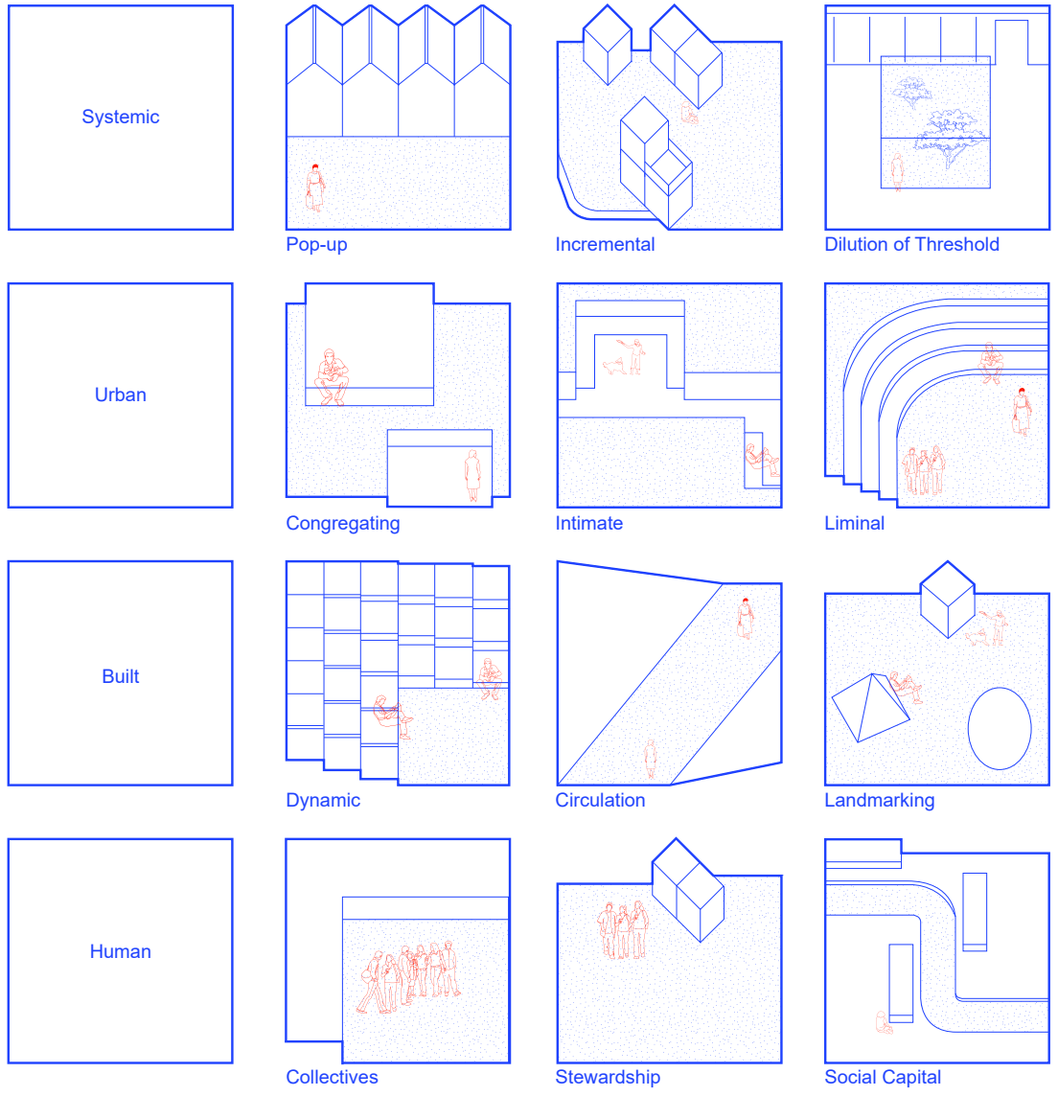
Through a strong workforce, the migrants, asylum seekers and locals will unbuild the Ayalon Highway and recover the river edge. The space will be transformed into an expanded floodplain for the winter, through the Action Lab, the Neve Sha'anan community will render Tel Aviv-Yafo into a resilient and more equitable city.

Redefining refugee city

Speculative City
Spring 2020
Critics : David Moon
Rohingya refugee camp, Kutupalong

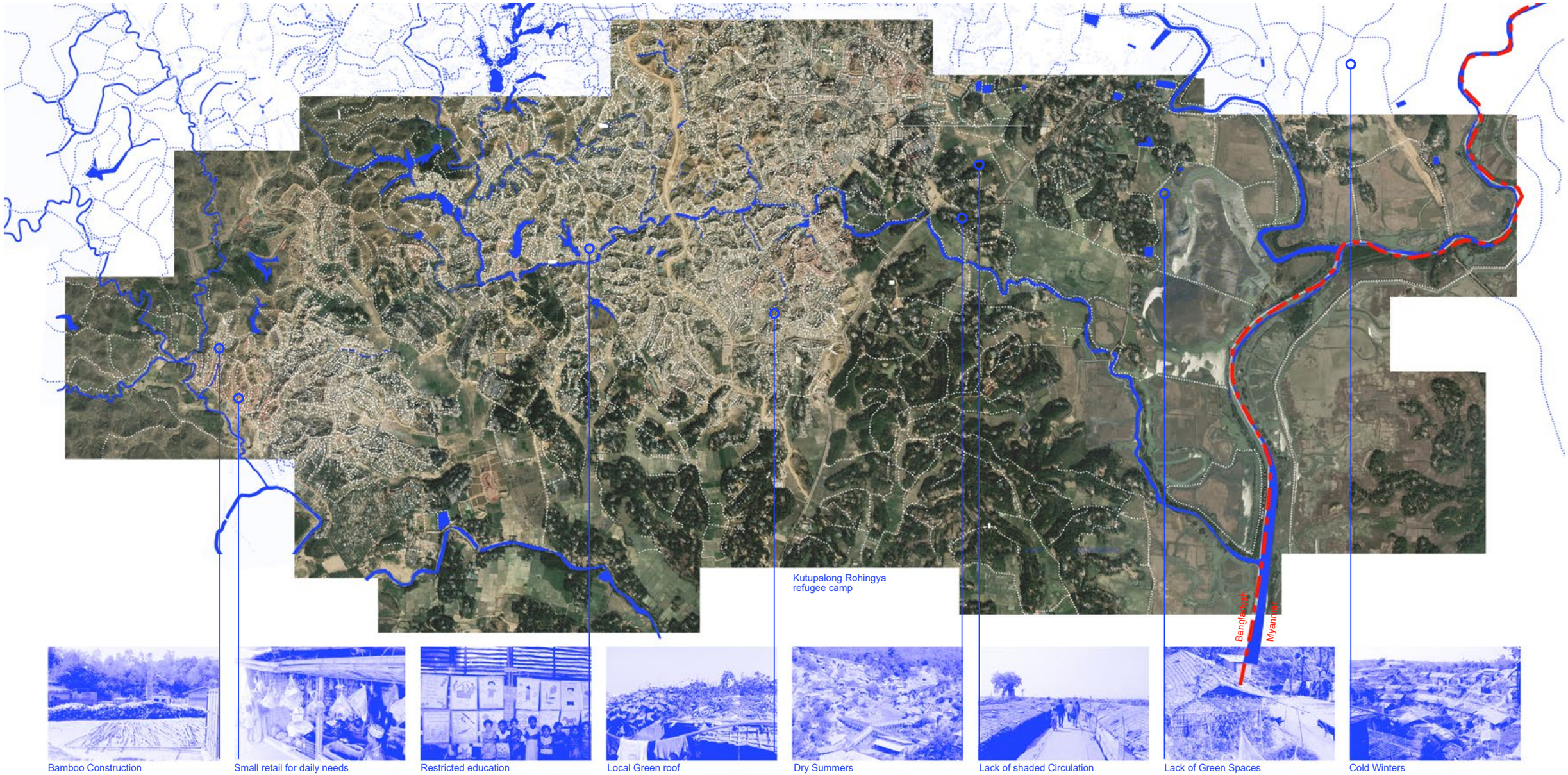
Niharika Shekhawat

Designing for refugees is one of the most sought after trends followed by many architects and designers. There has been so much focus on the speed and ease of construction for these “camps” that designers have forgotten the basic humane aspects of “living”. Most of the world’s refugee camps are designed as temporary facilities and designers have not focused on the journey and mental health of the refugees for whom they design for, therefore the booklet speculates on the need to Redefine the Refugee City as a vibrant city, with thriving economies, judicious system of governance and a step away from seeing them as temporary camps or settlements.




Redefining
Refugee
City
Systemic
Urban
Built
Human
Pop-up
Congregating
Dynamic
Collectives
Incremental
Dilution of Threshold
Intimate
Liminal
Circulation
Landmarking
Stewardship
Social Capital


Niharika Shekhawat,
M.S. AUD, Columbia GSAPP
"We are trying
to keep alive.
But it is nothing
like home.
We are not
living"
-Rohingya Refugee
in Kutupalong,
Cox's Bazar,
Bangladesh



The Rohingya refugee population in Bangladesh is one of the largest refugee populations in the world. In 2017, there were 1.2 million people in need of humanitarian aid. United Nations Secretary-General António Guterres described the situation as “the world’s fastest-developing refugee emergency and a humanitarian and human rights nightmare.” The recent influx of Rohingya refugees and haphazard construction of sprawling camps roused local concerns: both communities are competing for resources and there has been widespread destruction of forests and agricultural land

It is critical for us to speculate such habitable spaces for the migrant populations and respond to the social integration of people with each other. Encourage a sense of belonging and identity by creating socio-cultural bonds amongst the people. These cities are dynamic and should adapt to the changing nature of factors that affect it. Once the communities thrive we further their social fabric by integrating them to the host communities. We need to stop seeing these “refugee settlements” as “camps’, but as the next ‘cities’ and centres of vibrancy by Redefining the Refugee City

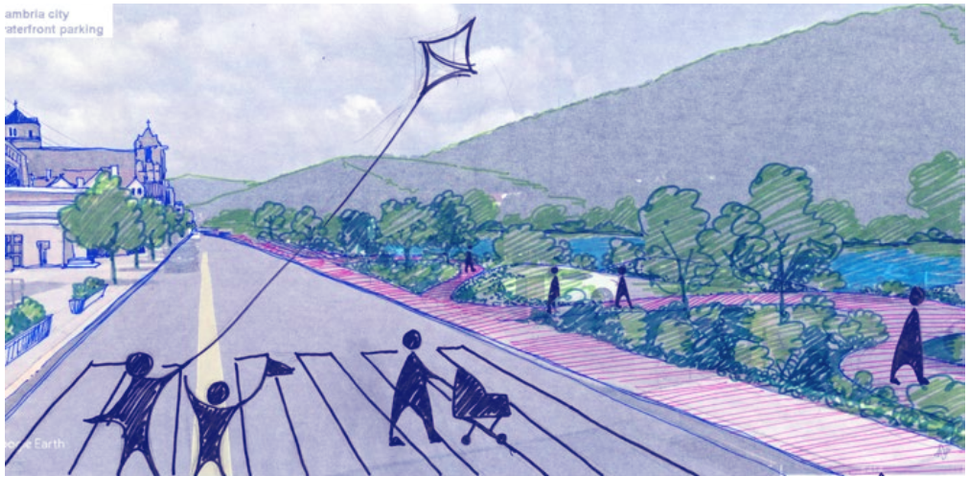
Resilient cities and landscapes

Fall 2019
Critics : Kate Orff
Workshop : Johnstown, PA

Niharika Shekhawat

Workshop in Johnstown to imagine it as a place for making. Creative place making and River arts walk to create a resilient, community oriented creative district serving as a magnet for influx of people and resources were some first steps ideas that came out of this workshop.

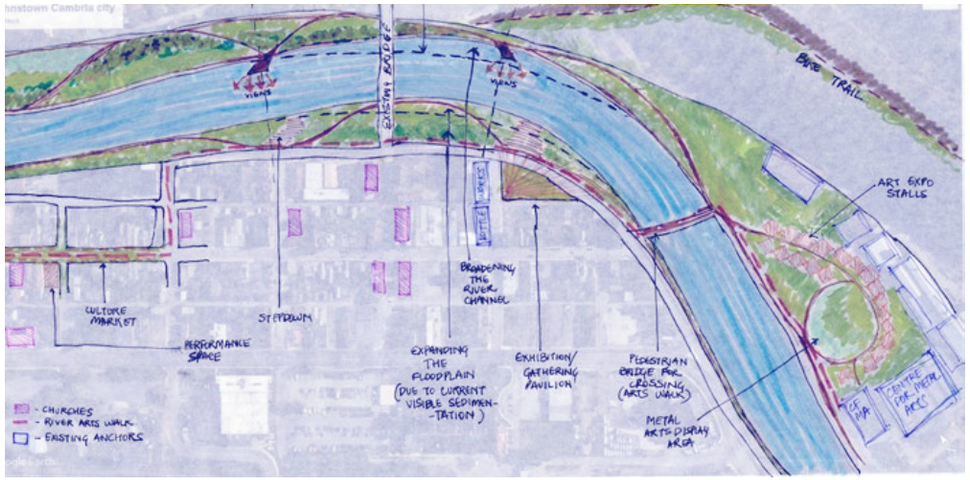

DRINKING WATER
HOW?
GOAL
HOW?
DRINKING WATER SYSTEM HOW?
HOW WILL CLIMATE CHANGE IMPACT DRINKING WATER?
HOW?
HOW will Climate impact Transit?
ENERGY DISTRIBUTION
1
2
WASTE
how will climate impact it?
FREIGHT:
how does it do it?
inputs:
IMPACT OF CLIMATE CHANGE ON FREIGHT IN NYC
THE MOVEMENT OF GOODS AND HUMANS IS PROMOTED BY:
STREET REPAIR
TRAFFIC SIGNAL MANAGEMENT
STREETS
WETLANDS AND WATERFRONTS
CATEGORIES
WHY ARE THEY IMPORTANT?
LOST?

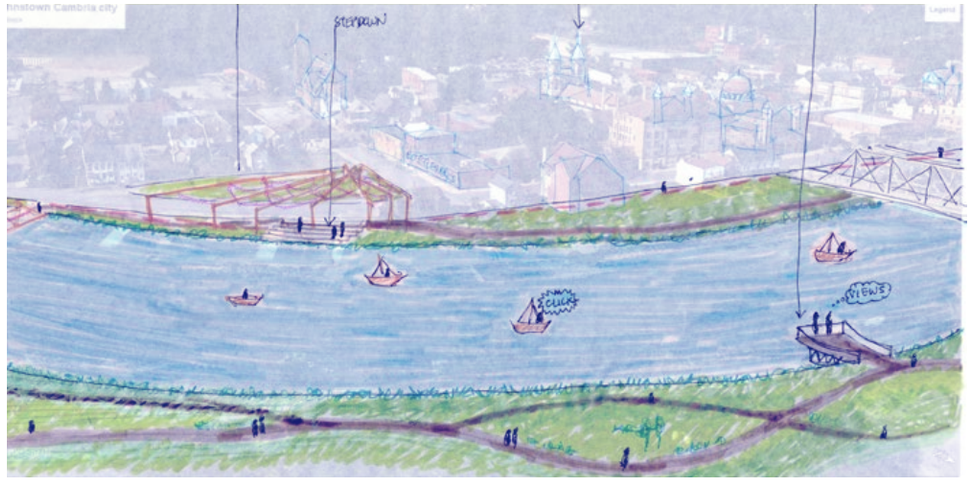

ambria city
aterfront parking


ambria city residential area


Johnstown Cambria city
Arts block
Legend
Google Earth


Johnstown Cambria city
Arts block
Legend
Google Earth


EXISTING BRIDGE
VIEWS
VIEWS
BIKE TRAIL
ART EXPO STALLS
BROADENING THE RIVER CHANNEL
CULTURE MARKET
STEPDOWN
PERFORMANCE SPACE
EXPANDING THE FLOODPLAIN (DUE TO CURRENT VISIBLE SEDIMENTATION)
EXHIBITION/ GATHERING PAVILION
PEDESTRIAN BRIDGE FOR CROSSING (ARTS WALK)
METAL ARTS DISPLAY AREA
CENTRE FOR METAL ARTS
- CHURCHES
- RIVER ARTS WALK
- EXISTING ANCHORS

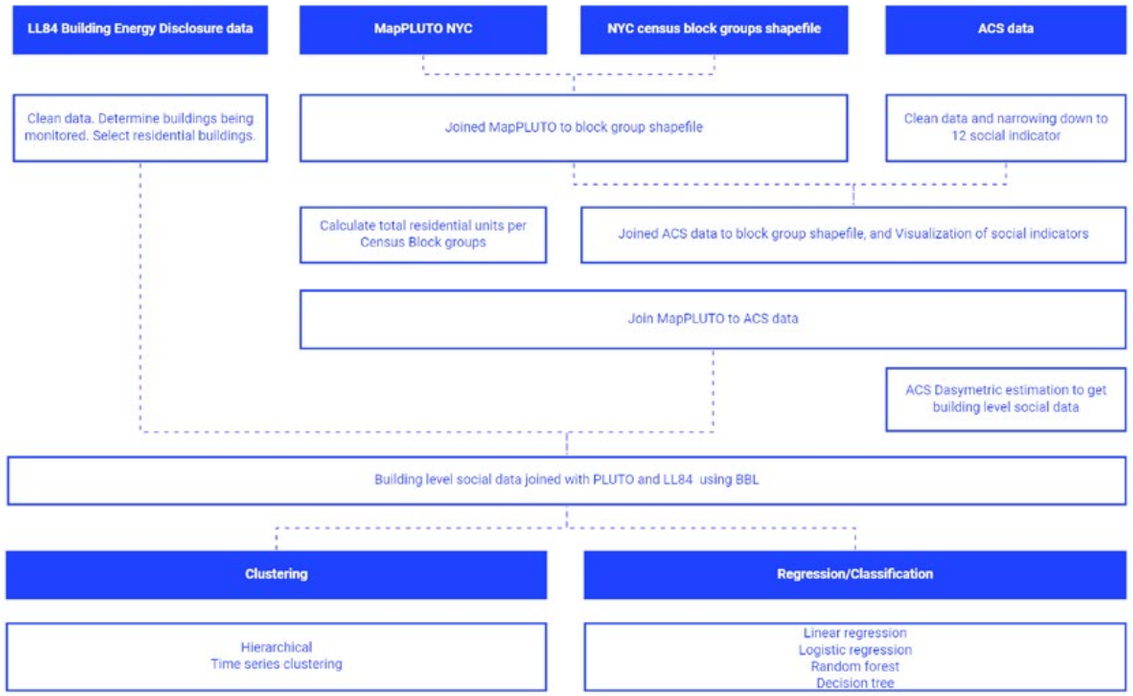

STEPDOWN
VIEWS

Energy use change in buildings

Spring 2020
Critics : Boyeong Hong
Team : Niharika Shekhawat, Kate Galbo, Savannah Wu
Machine Learning coding for energy disclosure of buildings in NYC

Niharika Shekhawat

An Analysis of Built & Social Factors that Influence Energy use from 2012-2017 Using LL84 Energy Disclosure Data. Buildings in New York City continue to be the largest contributor to greenhouse gas emissions (GHG), accounting for 66% of total citywide emissions followed by transportation (30 percent) and waste (4 percent).

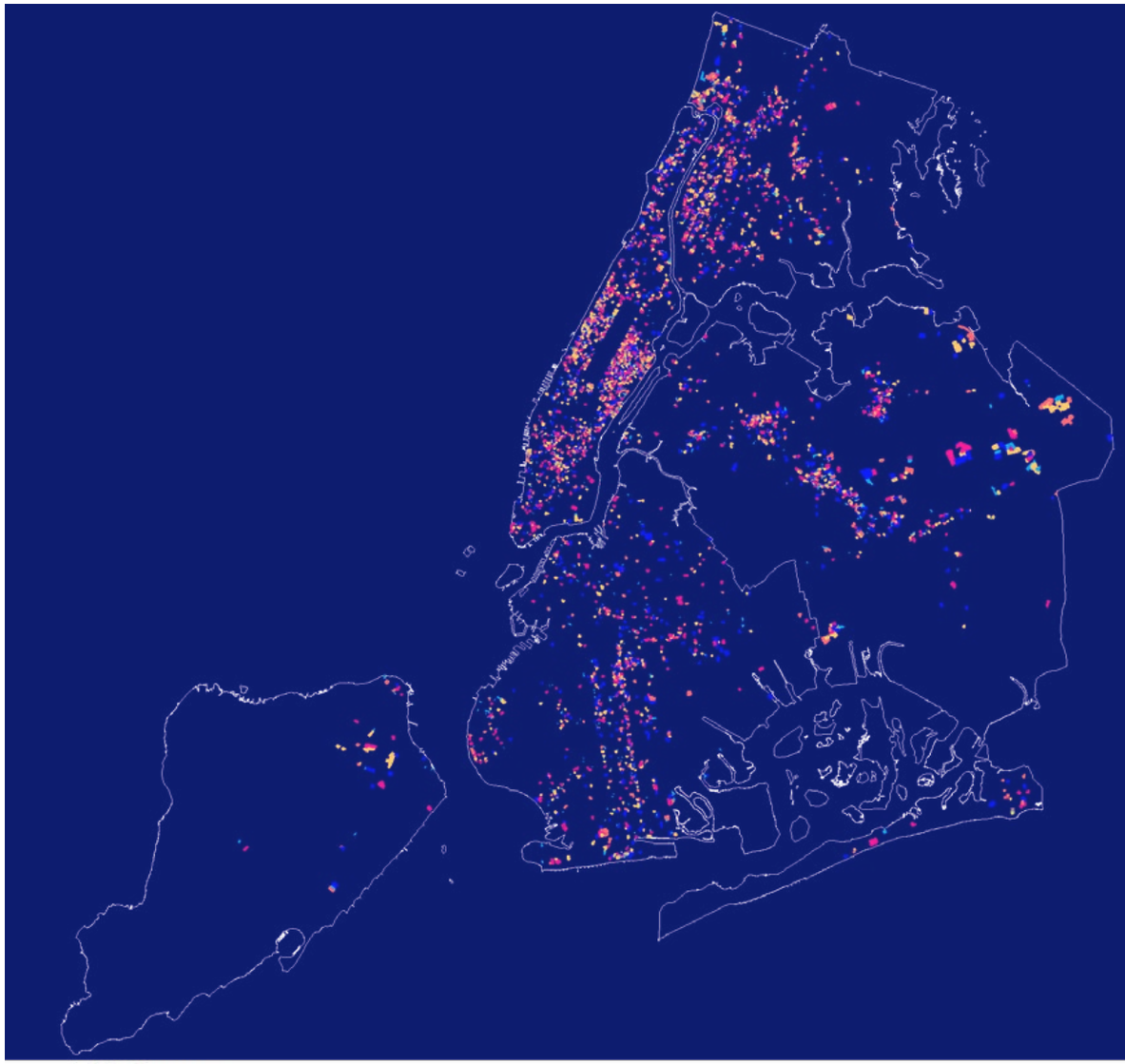


In May 2019, New York City Council tried to combat this through Local Law 97 (the building emissions law) requiring 40 percent citywide emissions reductions by 2030 (from a 2005 baseline) for most buildings greater than 25,000 square feet, which covers over 57,000 buildings across the city.

Local Law 84 requires buildings to submit energy and water benchmarking data - private buildings over 50,000 SF (25,000 SF since 2017) and public sector buildings over 10,000 SF.

Niharika Shekhawat

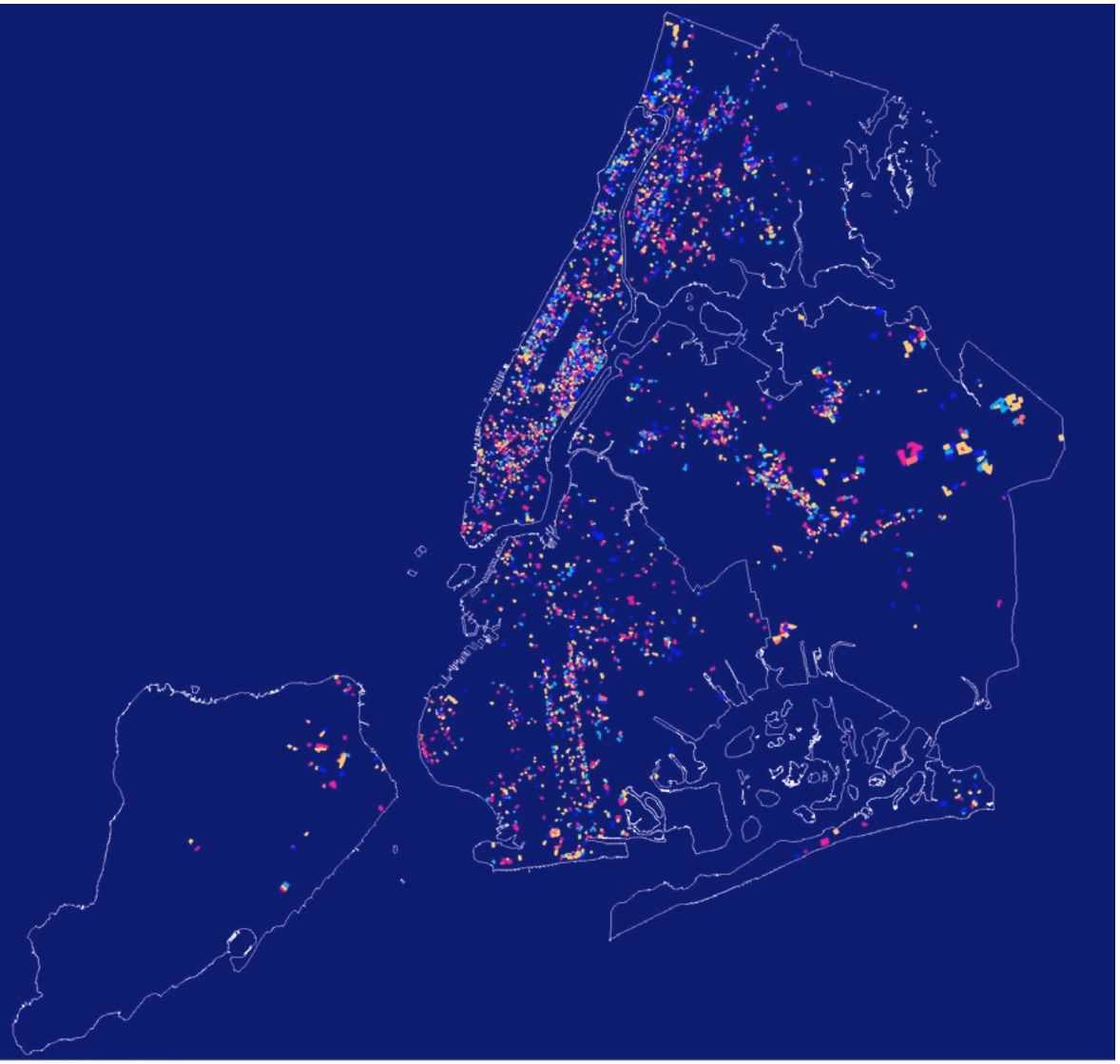
Energy use change in buildings



EUIChange

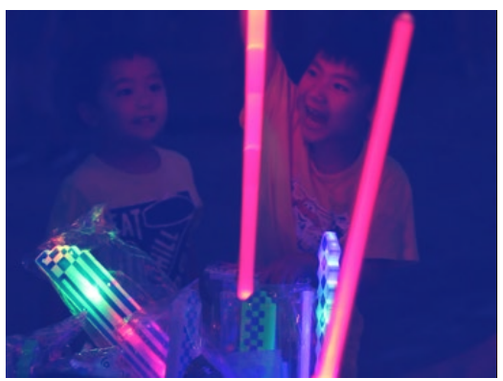
- -76.28% - -19.93%
- -19.92% - -9.42%
- -9.41% - 0%
- 0.01% - 15.8%
- 15.81% - 262.06%

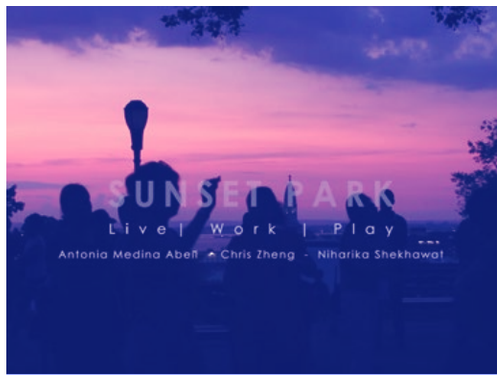
Niharika Shekhawat



GHGChange

- -85.75% - -31.51%
- -31.5% - -17.75%
- -17.74% - 0%
- 0.01% - 10.89%
- 10.9% - 340%





Live Work Play

Summer 2019
Critics : Cassim Shephard
Film making : Sunset Park, Brooklyn
Team: Niharika Shekhawat, Antonia Medina, Chris Zheng

The film shows the daily lives of the people of Sunset Park. Speaking to many people in the neighborhood with fascinating stories. Mom and pop shop owners with some having flourishing businesses because of really good food and loyal customers, also some of them losing their businesses due to gentrification. The narrative of the lives of people of sunset park and how it had changed over time was captured in this film. From block parties to open park movies many beautiful and close knit stories are represented.

Niharika Shekhawat