

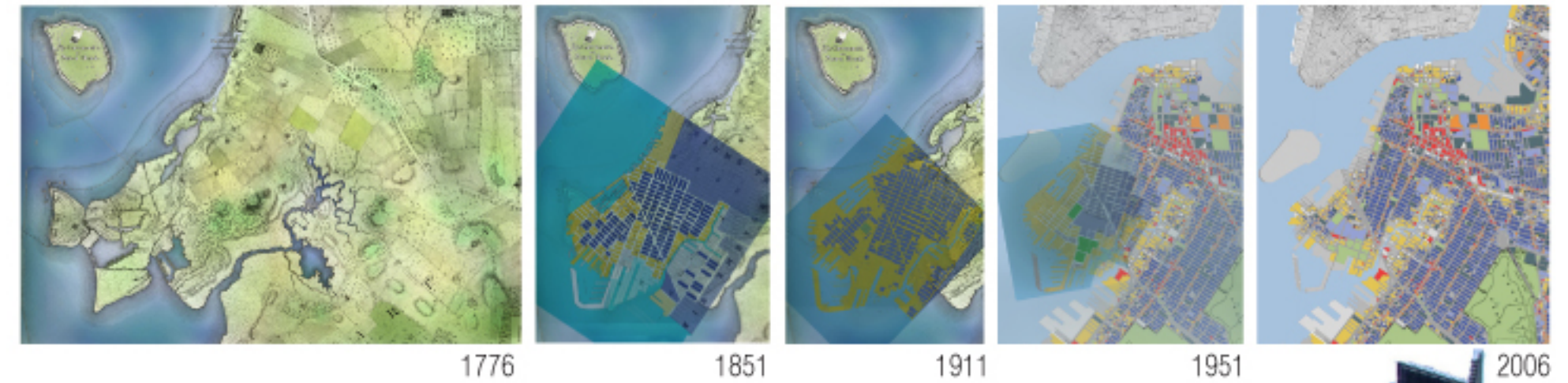
# Shed Urbanism

Gowanus, Brooklyn

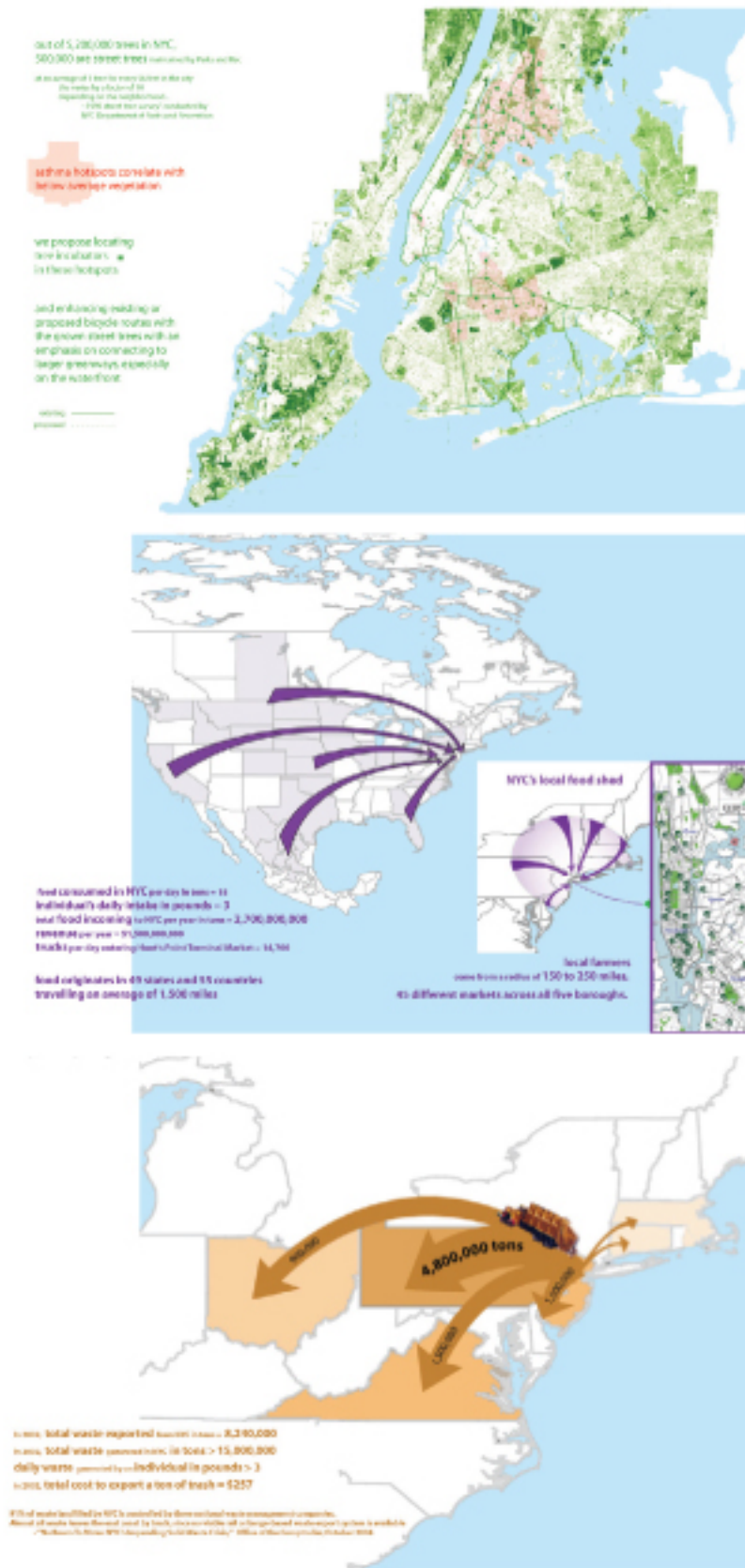
## Site Analysis:

The Gowanus Canal is a post-industrial site on the Brooklyn waterfront that is now being re-valued as a waterfront neighborhood. Gravel, scrap metal, and heating oil businesses still operate here, although it's becoming one of the hottest art scenes in the city and controversial rezoning has business interests up-in-arms. Two major bridges cross the canal: the Gowanus Expressway (278) and the F-line. The "Smith and 9th" stop directly over the canal is the highest subway stop in all of NYC. A legacy of pollution hinders re-development, most notably on "public place," a city-owned 11.5 acre brownfield along the canal. Many community groups are invested in a greener Gowanus, including canoeing and diving groups, and the City Council has approved the 197A plan put forward by the Gowanus Canal Community Development Corporation.

We analyzed the eco-historical evolution of the Gowanus Canal, mapping natural features with the encroachment of urban fabric over time. We visualized the permeability of the site in terms of sight-lines and water access - where, among the maze of fences, elevated infrastructure and property lines was it possible to see the water, or get access to the water.







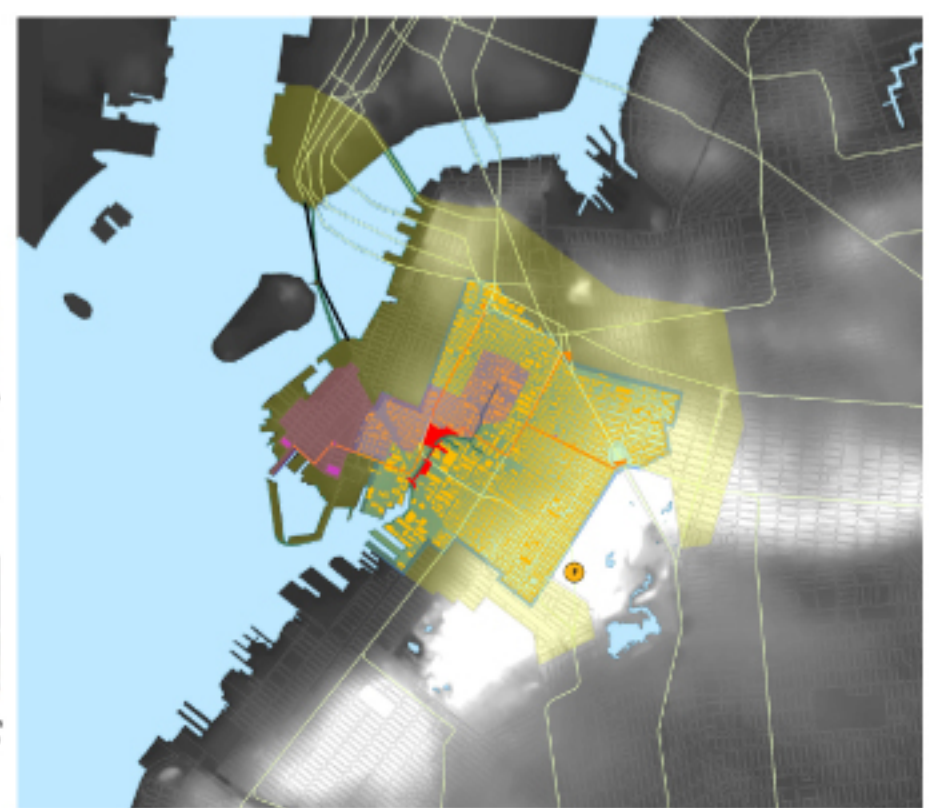
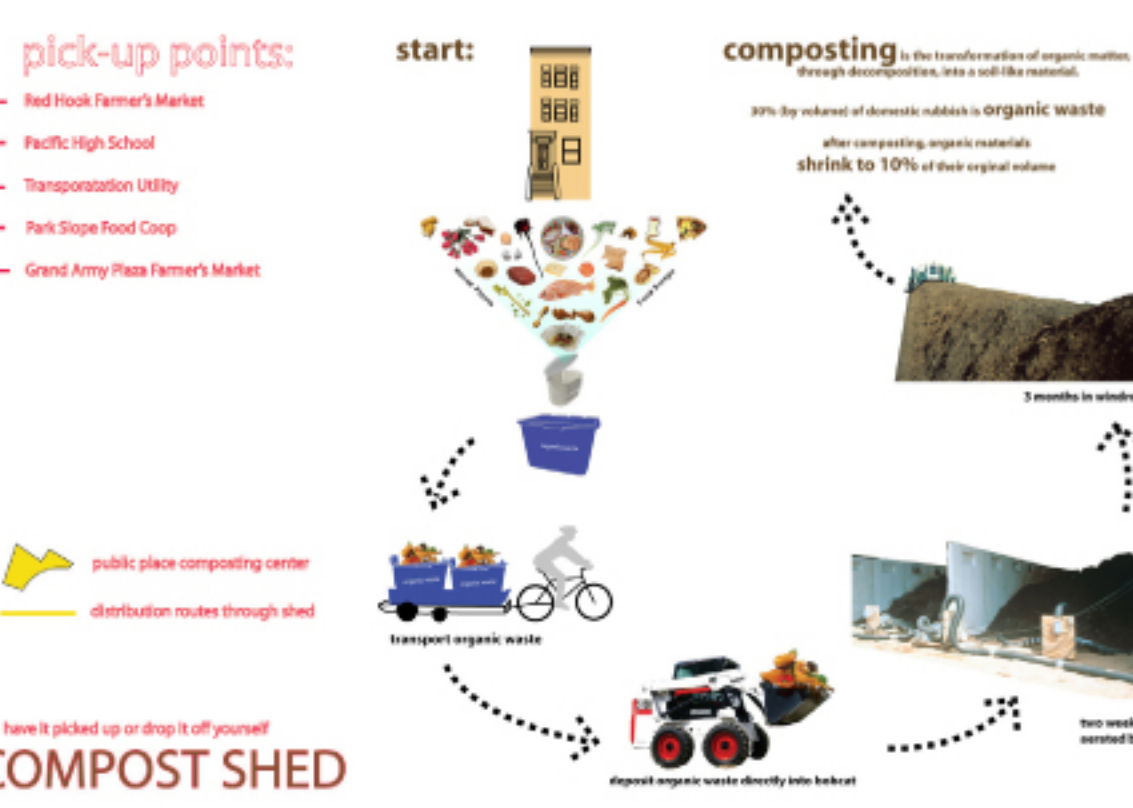
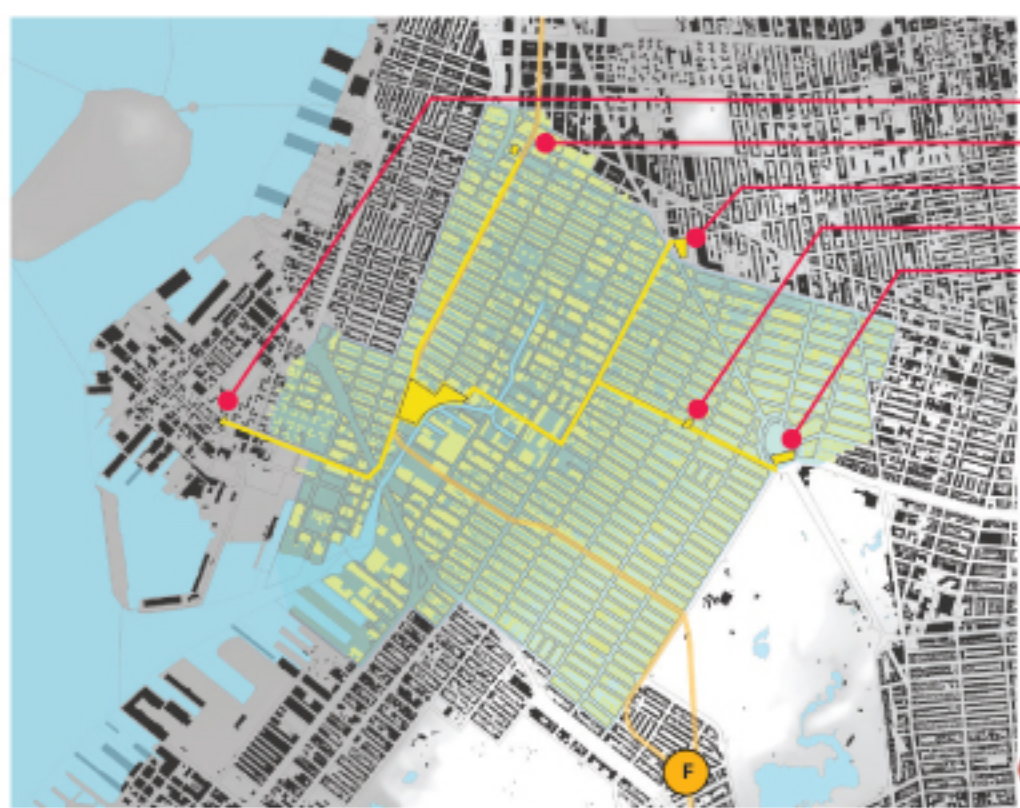
# Shed Urbanism

Gowanus, Brooklyn

Urban Systems Hypothesis  
Beginning with the topographic notion of watershed, the area of land that drains downslope to the lowest point in a landscape, we defined a *shed* as a catchment area of material, information and energy flows. We identify urban life-support processes and trace their sheds across states and continents. We argue that public space happens where people encounter sheds. Our design interventions experimentally shrink these sheds to localize production and consumption, and incubate a more participatory and conscious culture.

- Step-by-step
- 1) Map New York City's water, waste, food, and vegetation sheds.
  - 2) Design a local system for these processes and diagram its impact on lifestyle.
  - 3) Overlay the localized sheds on an urban neighborhood.
  - 4) Label moments when people personally and physically encounter infrastructural systems so that they become conscious of participating in urban public space.

Reference: New Zealand's Resource Management Act of 1991 - the watershed unit was used as a basis for regional governments regarding resource management such as forests, water quality, development, energy, etc.







## chart of operations - PARK2PARK



- 
1. open up waterfront of PUBLIC PLACE by moving concrete batch plant to underused warehouse, as researched by the GCCDC
  2. transform interface of street and canal with permeable pavers, mini-parks and access to the water
  3. anchor east side of canal by adding elevator to SMITH/9th F train station as per council-approved 197a plan.
  4. provide multi-functional public infrastructure with a landform over the new subway station - industrial zones are good for night-time outdoor music.
  5. mediate runoff from ~10 acres parking lot by subtly re-grading to collect water in the parking rows and pass it through slow filters
- expand the 400' of public canal path we've to a half mile long pedestrian connection between place to the red hook red fields.



# Shed Urbanism

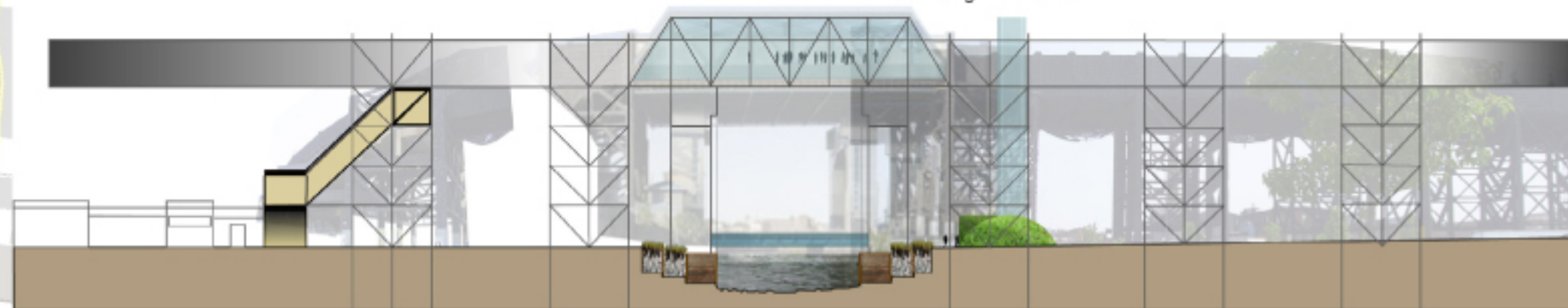
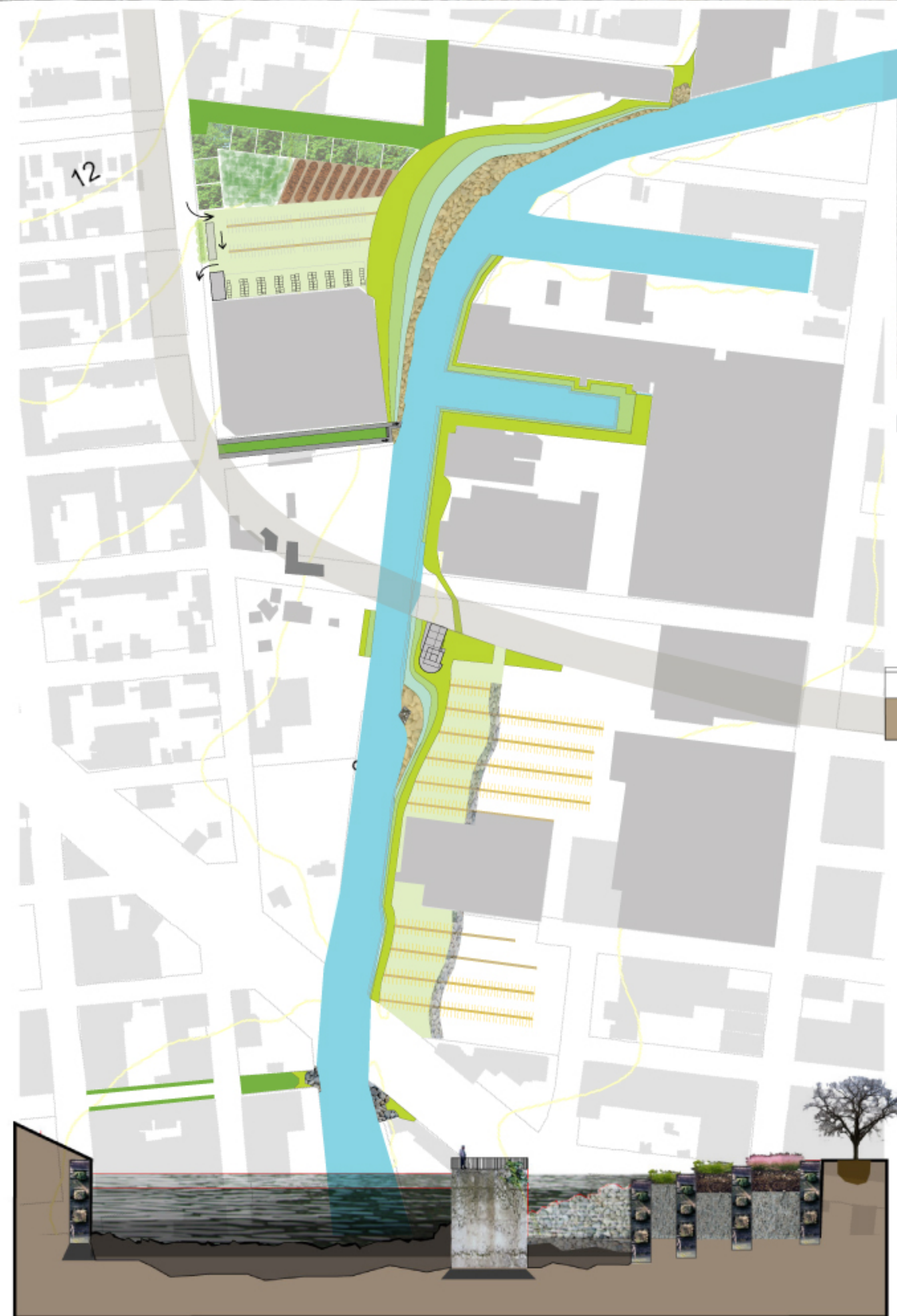
Gowanus, Brooklyn

### Chart Of Operations

As our hypothesis on shed urbanism hit the ground in Gowanus, we realized that the Gowanus Canal is additionally the site of great transportation linkages. Vehicular traffic, subway traffic and barge traffic all contribute to the importance of this site as a place of connection. The one dimension that was lacking connections was the pedestrian and the human-scale encounter with water, which is after all the reason for the historical importance of this waterfront site.

We measured the transportation times, i.e. the “reach” of this site, and the existing locations that are designed for un-vehicled humans, i.e., the parks. We designed in a path that connects park to park along the canal, which would have the secondary effect of transforming “park”ing to parkland.





# Shed Urbanism

Gowanus, Brooklyn

Urban Operator: the smallest intervention for the greatest effect

1) PATH - extend the only existing piece of canal-front promenade at Lowe's Superstore along the canal to the north and south

2) F-TRAIN PLATFORM - reskin to take advantage of views from MTA's highest subway stop.

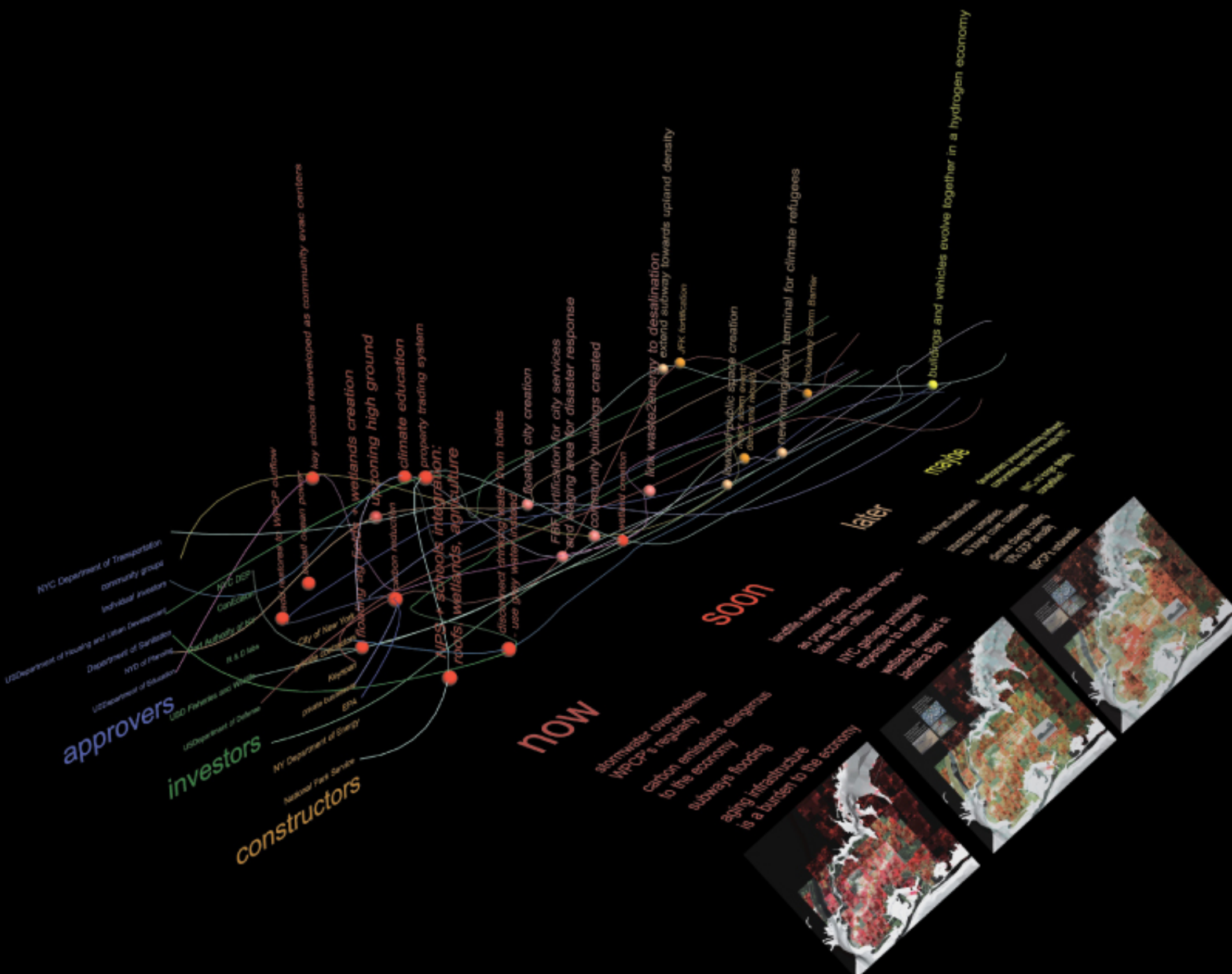
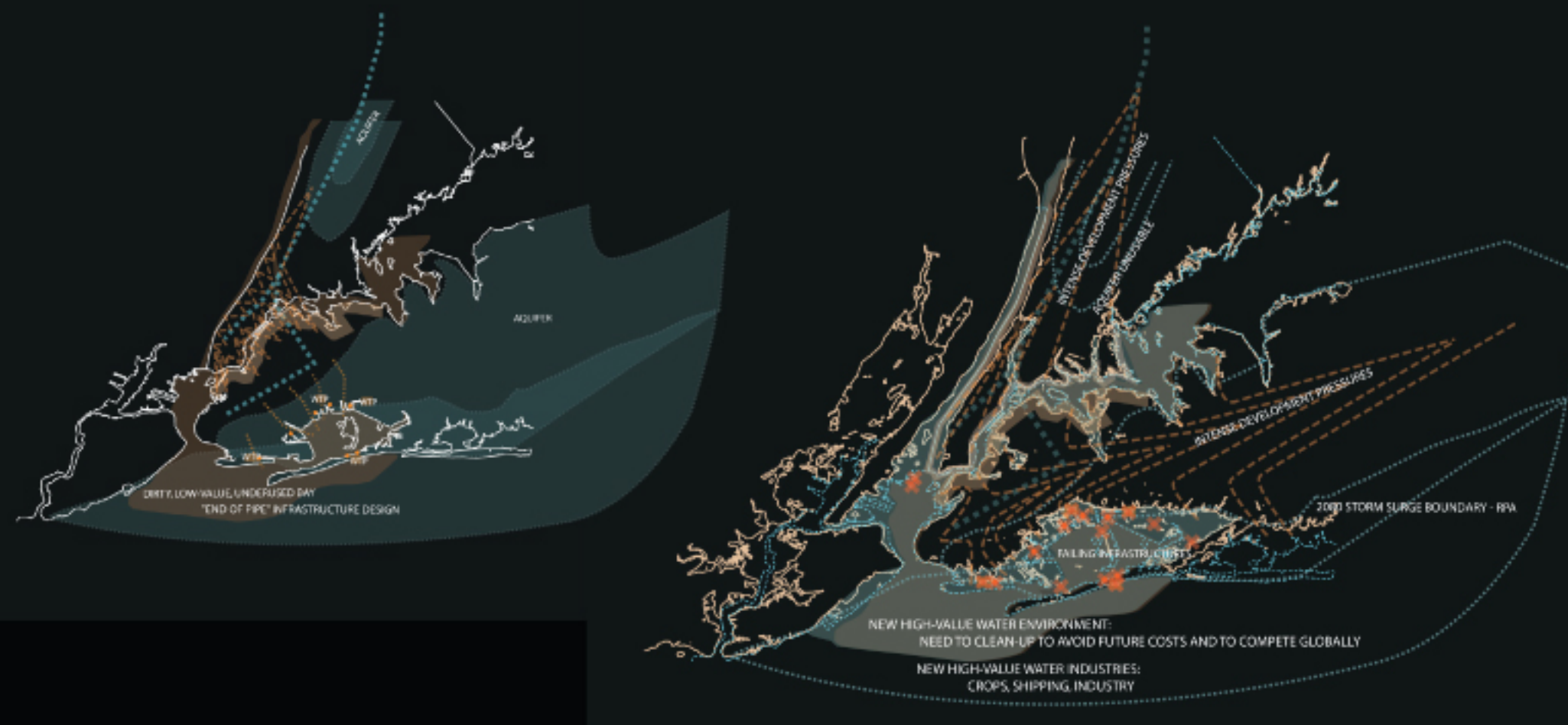
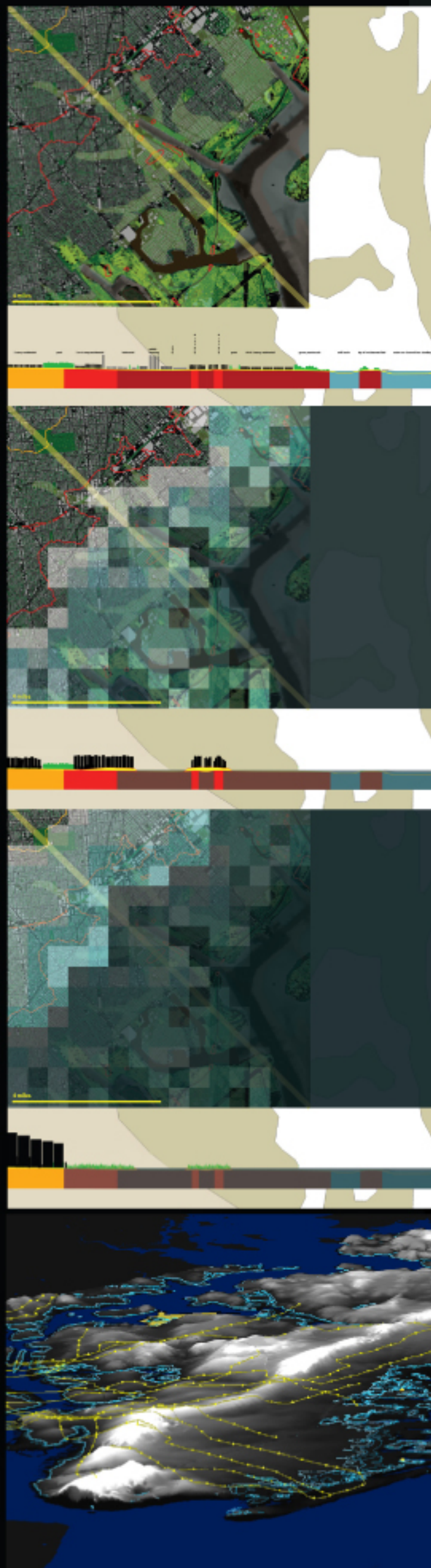
3) ELEVATOR - a beacon marking a new public place. universal accessibility called for by City Council approved 197A plan "to from and within" the neighborhood. Possible shared public/private investment between Lowe's and MTA.

4) LANDFORM BUILDING - green hillside allows for amphitheater-style seating for outdoor events. Subway access is secured through indoor ticket counter. Additional office space for water-based community organizations.

5) softened, planted CANAL EDGE with step access to the water. Parking lot is subtly re-graded to channel and filter stormwater before reaching the canal







# Sponge City

Scenario for a Climate Change Resilient New York City  
Jamaica Bay, Brooklyn

Team: Elizabeth Barry, Marissa Gregory, Ling Li  
Client: National Parks Service - Gateway National Park

Jamaica Bay is on the front lines for climate change in New York City. Low-elevations and storm-exposed ocean frontage characterize this at-risk ecosystem. Sea level changes will be felt here first.

*Now Soon Later Maybe* is our framework to present the timing of urban infrastructure failures combined with the proposed partnerships among approving agencies, investing agencies and constructing agencies to make key interventions.

Trajectories of urbanization and climate change for the next 100 years:

- 1) intensified global coastline urbanization
- 2) aging, fragile infrastructure and the need for decentralization and flexibility.
- 3) sea level rise - 1 degree Celsius warmer = 25 meter rise

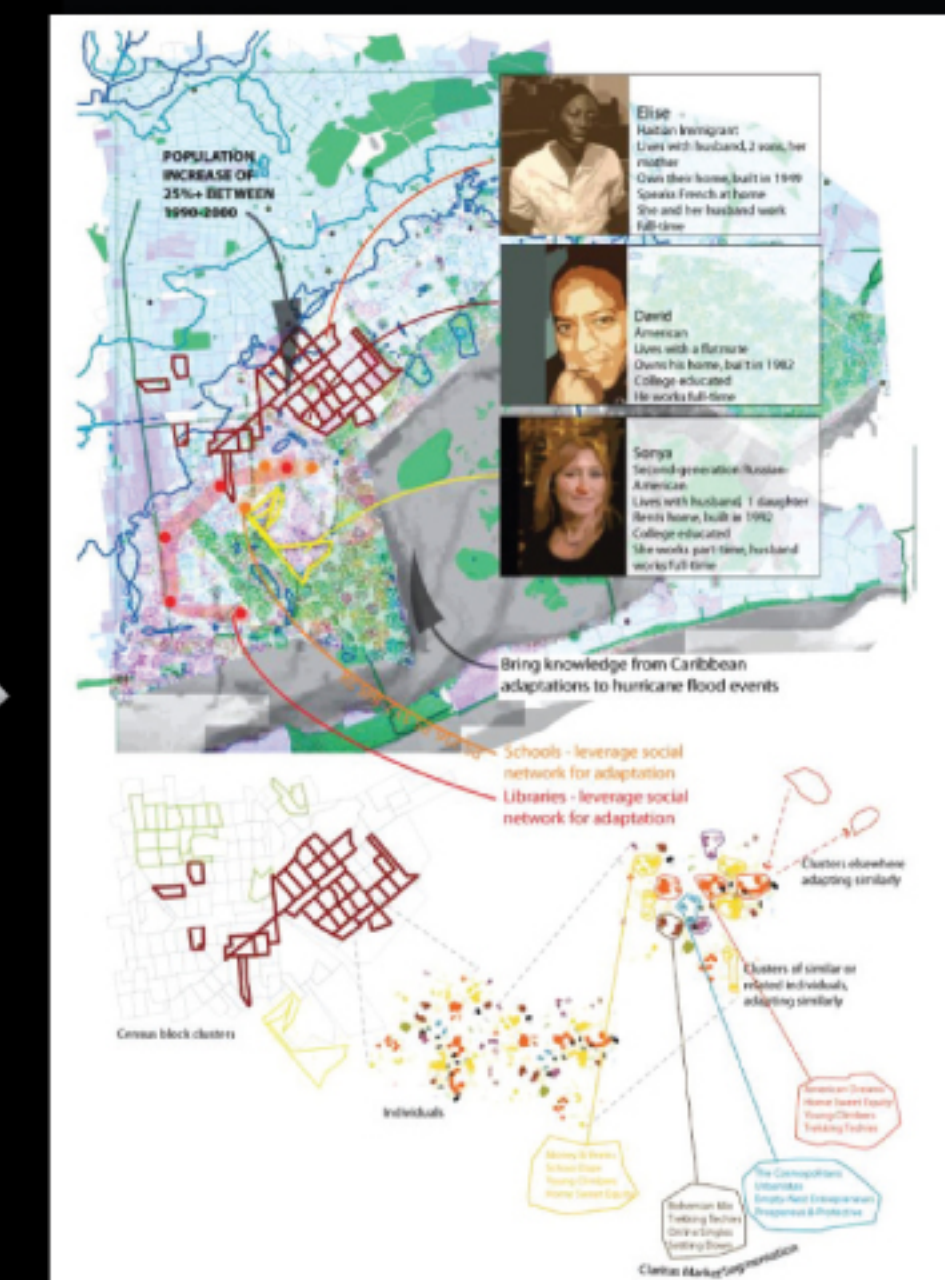
Sources: The Stern Report, 2006

CIESN Metropolitan East Coast Assessment, 2000

NASA GISS, at the Columbia University Earth Institute

RPA's regionally adjusted GIS data on storm surges

American Community Fact Finder, US Census and PRIZM





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Sponge City, Fall 2006  
Elizabeth Barry



2

Sponge City, Fall 2006  
Elizabeth Barry



### Dynamic Zone characteristics:

- Projected to flood every 43 years in 2020, every 19 years in 2050, and every 4 years in 2080
- some areas will be constantly under water, some will be regularly inundated.
- new urbanisms will be created in this flux area - change in inevitable, so creating touchstones for those affected and providing opportunities to trade out is important.

### Insertions:

- Evacuation Centers focused on transportation infrastructures - Schools / NPS relationship: expand NPS operations to school rooftops = a more dispersed and urbanistically-integrated park system
- reinforce JFK Airport
- flood-resilient residential development - compact, moveable, with lower-level soft story.
- embed "Salter's Duck"-type wave infrastructure to draw energy from wave's crashing over the Rockaways.
- reinforced landfills to survive inundation. new industrial area above.
- floating wetlands to absorb/filter runoff and adapt to sea level rise
- staging area for civic response system for storm events (Police, Fire, National and Coast Guards)
- wetlands nursery
- ferry docks connecting to upland transportation networks
- floating agriculture areas
- move Liberty Island and Statue to Floyd Bennet Field

### Operations:

- community buildings
- porous changing landscape - new public space and wetlands at waterfront to absorb impact of flooding
- new waterfront aqua-industries using wave-generating power or saltwater sources
- Density transfer to Opportunity Zone when flooded, or pre-flood if located adjacent to existing or historic wetlands
- porous streets capturing and filtering water
- creative reuse of structures and ecosystems that become flooded: aquaculture, urban spelunking, eco-devastation tourism, settlement ponds, tidal pools, recycling outmoded peices of infrastructure to create wave breaks and artificial reefs.

### Mid Zone characteristics:

- the middle ground, not projected to flood before 2080
- existing density will be modified per market demands to environmentally-responsive standards

### Insertions:

- evacuation areas as schools and arenas
- Immigration Center to process climate refugees

### Opportunity Zone characteristics:

- the high ground - not projected to flood before 2080
- increased density in bioclimatic highrise construction
- selected based on: proximity to public open space, mass transportation, large-city-owned properties and low-existing build out.
- vertical and horizontal public space - vertical zoning
- new transportation systems integrated with potable water distribution, electrical distribution, outdoor cultivated public space.

### Insertions:

- Cemeteries
- public space corridors aligned with water piping and transportation

### Operations:

- density bonuses for small carbon, water, electrical footprints: FAR is determined by dynamic modeling to establish environmental footprint.
- density bonuses for transfer of location absorption
- distributed urban agriculture - on roof and upper stories, hydroponic walls, etc.
- distributed public space - at ground, or elevated continual public space through highrises
- distributed green space - throughout 3-dimensional urban

### Fabric:

Minimum carbon, water and electrical footprint standards and public space easements are required of the developer. Each residential, office, commercial or industrial unit must have access to private open space, the planting of which will be necessary to fulfill carbon requirements. Units transferred are developed areas that have been flooded, or have high potential for flooding within the Dynamic Zone and are ineligible for insurance coverage. Property rights are traded to the city in exchange for equivalently valued units in developed property within the developed zone. Transferees are required to participate in city-organized, NPS-managed wetlands construction for a number of hours in proportion to the property value they would have lost.

# Sponge City

Scenario for a Climate Change Resilient New York City  
Jamaica Bay, Brooklyn

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### ZONES:

Opportunity Zone: 15 meters above sea level and higher

Intermediate Zone: 4.2 to 15 meters above sea level

Dynamic Zone: sea level to 4.1 meters above sea level.

Water Zone: sea level and below

The performative model and accompanying text depicts the characteristics of each zone and our corresponding design insertions. We specify additional non-physical operations such as the transfer of development rights to encourage people to proactively move out of the flood zone and density bonuses for small carbon and water footprints on higher ground.

Sources: The Stern Report, 2006

CIESN Metropolitan East Coast Assessment, 2000

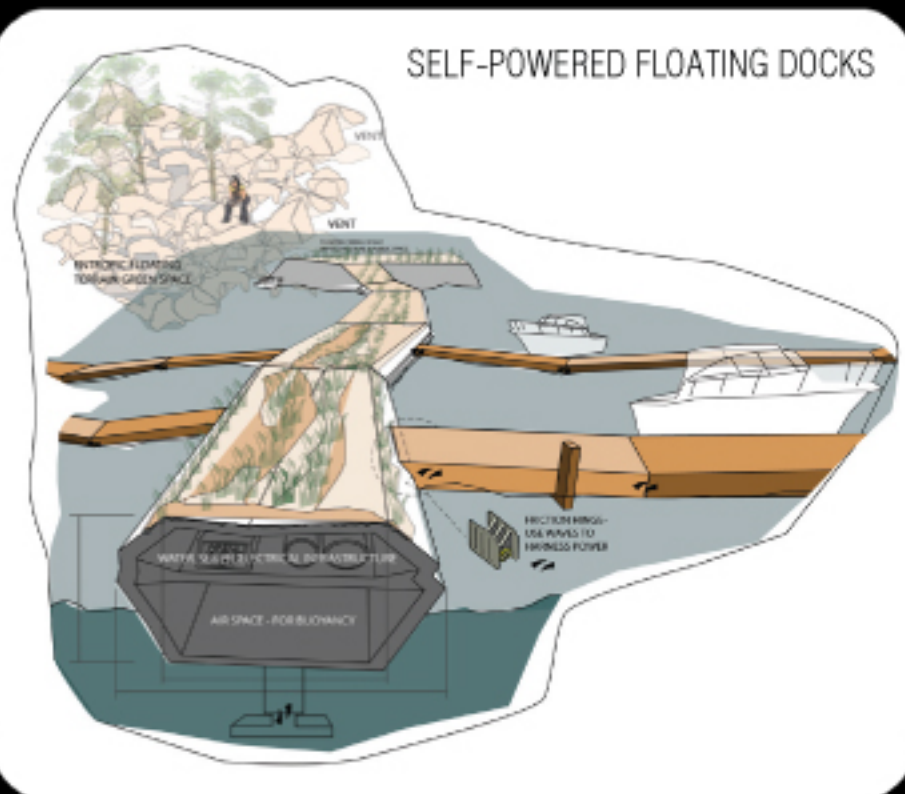
NASA GISS, at the Columbia University Earth Institute

RPA's regionally adjusted GIS data on storm surges

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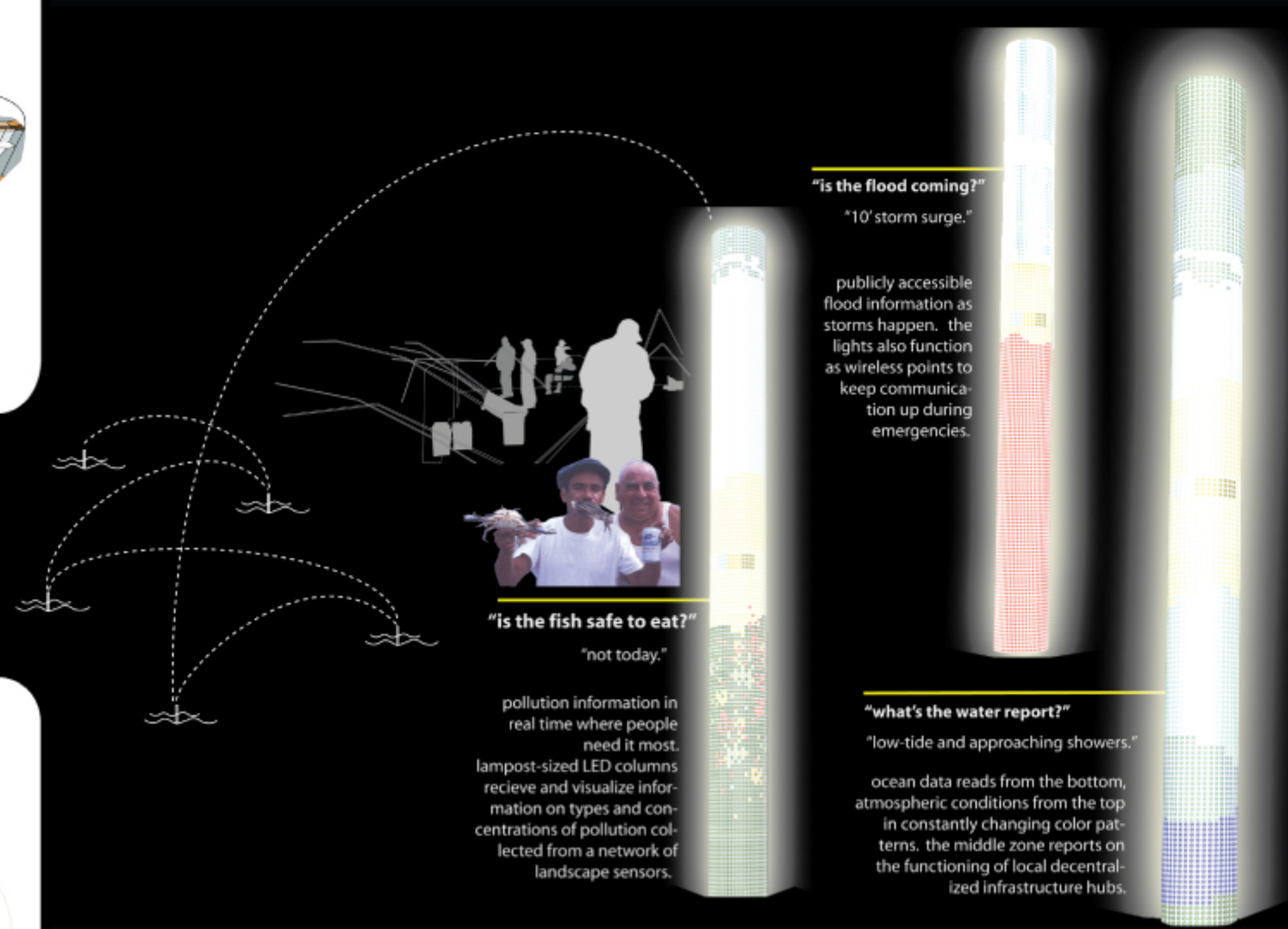
SELF-POWERED FLOATING DOCKS



CEMETOWER



DYNAMIC ZONE - MODULAR FLOODABLE RESIDENTIAL



"Is the flood coming?"  
"10' storm surge."

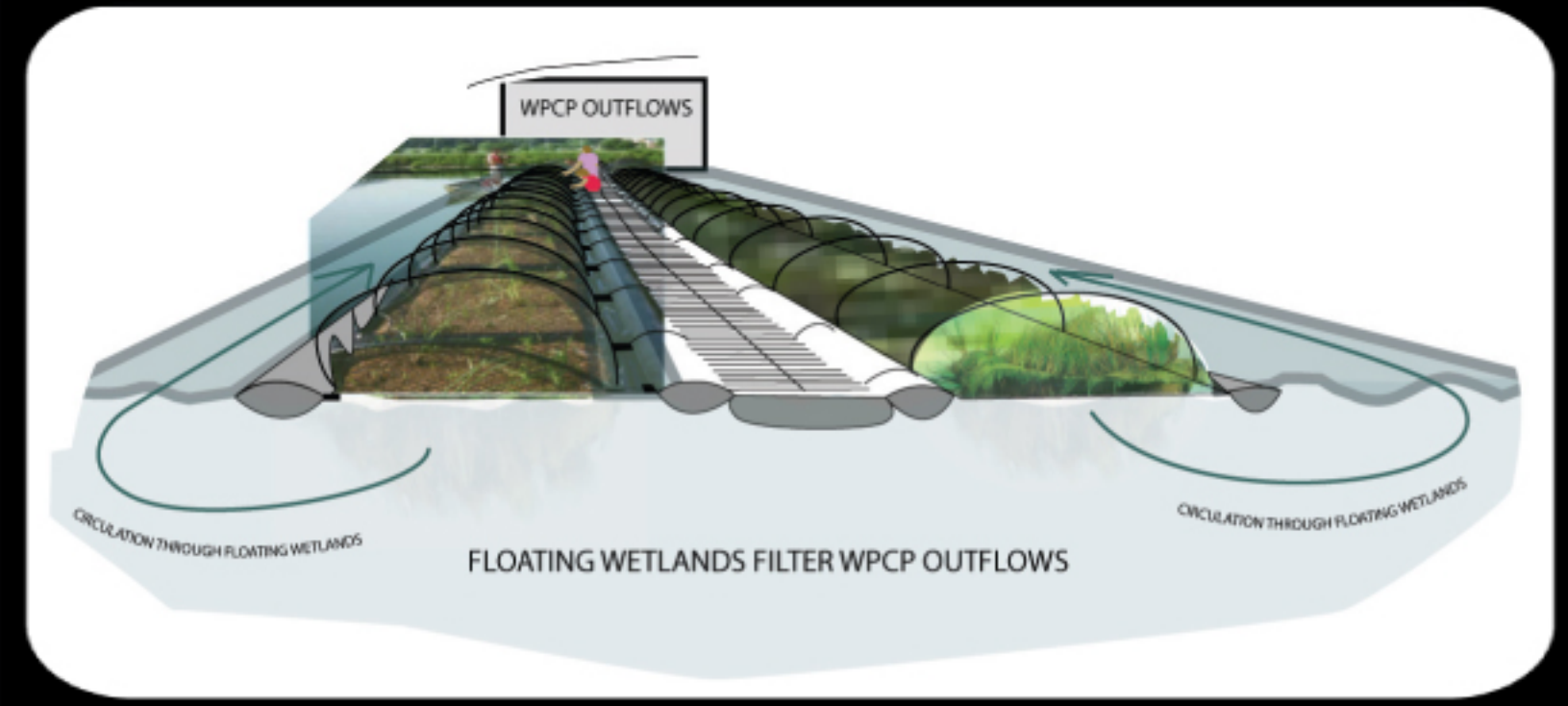
publicly accessible flood information as storms happen. the lights also function as wireless points to keep communication up during emergencies.

"Is the fish safe to eat?"  
"not today."

pollution information in real time where people need it most. lampost-sized LED columns receive and visualize information on types and concentrations of pollution collected from a network of landscape sensors.

"What's the water report?"  
"low-tide and approaching showers."

ocean data reads from the bottom, atmospheric conditions from the top in constantly changing color patterns. the middle zone reports on the functioning of local decentralized infrastructure hubs.



FLOATING WETLANDS FILTER WPCP OUTFLOWS

# Sponge City

Scenario for a Climate Change Resilient New York City  
Jamaica Bay, Brooklyn  
Team: Elizabeth Barry, Marissa Gregory, Ling Li  
Client: National Parks Service - Gateway National Park

We approached the shift to decentralized infrastructure through the lens of "MANY | MINI".

**Selected Design Interventions:**  
Block-sized municipal waste-to-energy (WTE) and desalination water tower for populations of 300,000 can be sited throughout Brooklyn and Queens. The most concentrated form of renewable energy is found in sub-surface ocean waves and can be harnessed with fields of simple mechanical generators. The salt marshes of Jamaica Bay which are currently drowning due to many factors will best served by simple floating frames that will support the Bay-cleaning wetland plants no matter what sea level. In the lowland areas, we identify an inverted street/block condition that will result in building on the more stable street and allowing block interiors to flood. Floating docks to accommodate newly-arriving climate refugees can also harness wave action to generate their own power.

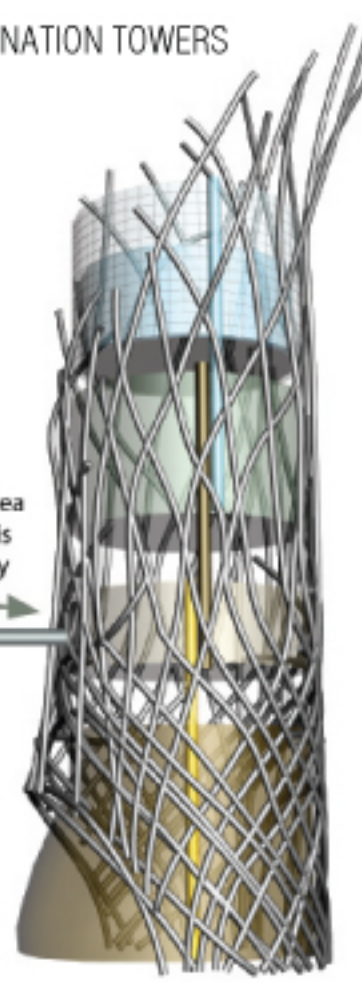
The Data Lights are designed to maximize the public's ability to be informed of and respond to disaster. With cheap sensors distributed in the bay and wireless connectivity, ever-changing LED's bring information to the streets and sidewalks of Jamaica Bay.

## WASTE-TO-ENERGY + DESALINATION TOWERS

glowing tanks of clean water  
decentralized infrastructure sized for populations of 300,000 people

desalination  
the elevated transit lines also carry sea water to the inhabited areas. water is pumped by mechanical wave energy first to the settling tank

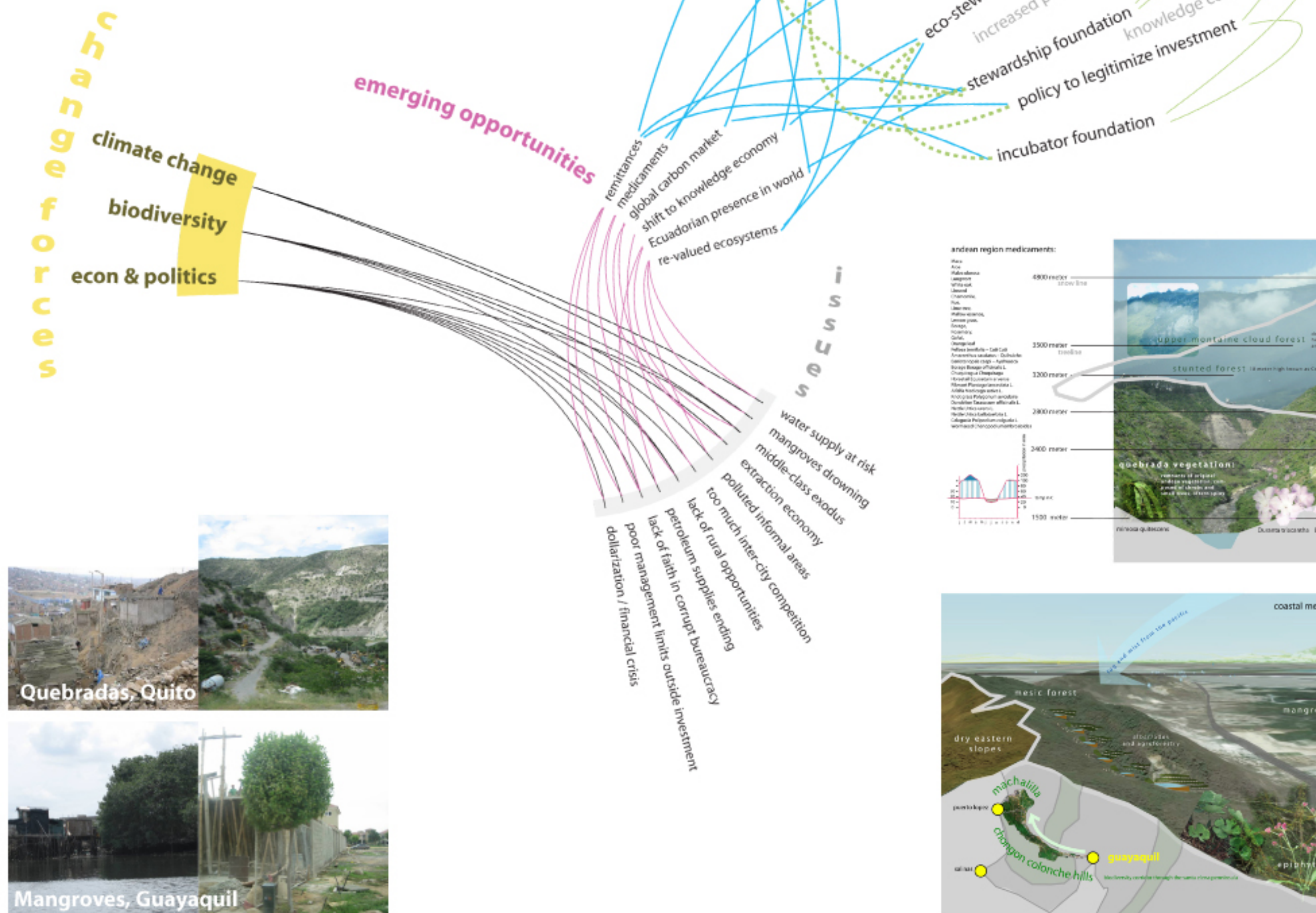
trucks offload municipal solid waste here and send electricity upstairs





## Reading this diagram:

Shown at left are the **massive change forces** at play in the world.  
Following the lines to the lower right, these change forces land in Ecuador as **local issues**.  
We identify **opportunities** emerging from these issues.  
We start here to build a **network of interventions** to increase productive capacity.  
The yield is **interconnected growth**.



# Re\_Source Value

System for Interconnected Growth  
Quito and Guayaquil, Ecuador

We question the either/or definition of people vs. nature and propose instead that people are nature and our cities are ecosystems. We offer a system of re\_sourcing values to create better functionality of our city systems, provide for continued growth and development and protect opportunities for future development.

## The values being re\_sourced in our proposal are:

**Productive capacity** of functioning native ecosystems, threatened by development pressure to become oversimplified.  
**Indigenous knowledge** of endemic species, valued in the medicament-producing science economy.  
**Water** an existing and potential scarcity affects productive capacity and development potential.

Presently, the ecosystems on which the cities are built have been reduced in their ability to function because of heedless development. East of Quito, a new airport is being created in a valley that was until recently primarily agricultural. The boom of suburban development in the valley has altered the agrarian landscape, and will likely intensify with the economic engine that the airport provides. The opportunity to leverage this development for a new mode of growth is significant. The quebrada / ravines that run through this high elevation landscape are home to rare pre-settlement Andean vegetation, and merit protection.

The Chongon Colonche Hills stretch westward from downtown Guayaquil and provide a haven for biodiversity in the country. Although considered a "dry tropical forest", it is actually quite moist and is a source of fog water catchment that serves the entire peninsula. The southern face of the range near the city is the site of significant limestone extraction quarries, while the northern face consists of chert and is unquarried. As the city of Guayaquil grows north, it is also expanding west onto the hill, primarily with informal development though large, expensive developments also exist along its southern side.



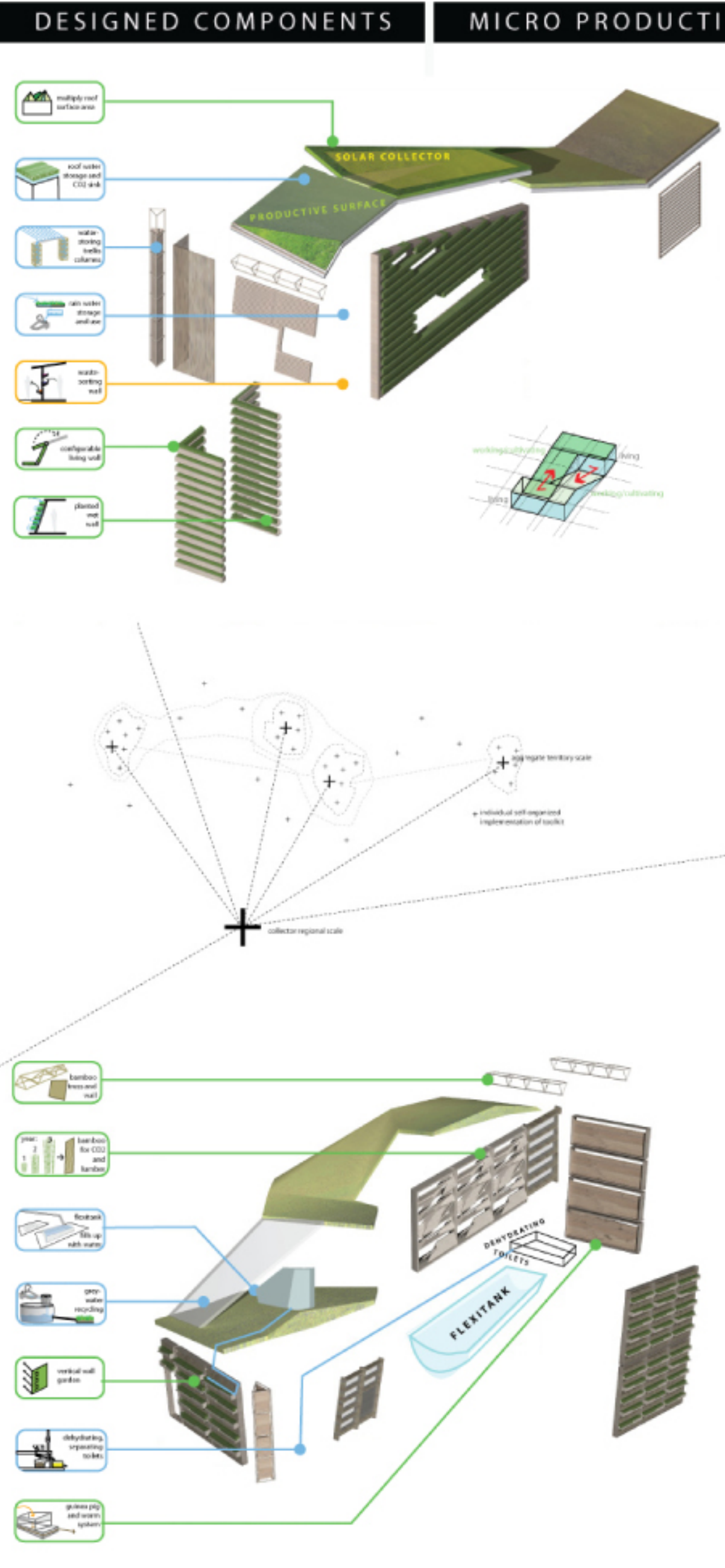
INFO MANUAL

re\_source value:  
system for interconnected growth

a manual

re\_source value:  
system for interconnected growth

a manual



WORK

re\_source value:  
system for interconnected growth

a manual

LIVE

re\_source value:  
system for interconnected growth

a manual

WORK

re\_source value:  
system for interconnected growth

a manual

LIVE

re\_source value:  
system for interconnected growth

a manual

# Re\_Source Value

System for Interconnected Growth  
Quito and Guayaquil, Ecuador

We choose to create a manual of interventions to distribute to the people living in each city. To begin with, we studied how complex adaptive systems in nature are classified; the three main factors are biomass, biodiversity, and stable hydrology. In addition, the rate of exchange of knowledge classifies complex human systems.

This manual presents a synthetic version of these classifications that addresses urbanism. **Plant production** (a combination of biomass and biodiversity), **water**, and **knowledge** are areas where design intervention can increase the complexity - and therefore resilience (ecologically, economically...) of the urban ecosystem.

Each page of this guide is color-coded at the top to indicate which factor is addressed and which level of simple-to-complex is best-suited for each type of intervention.

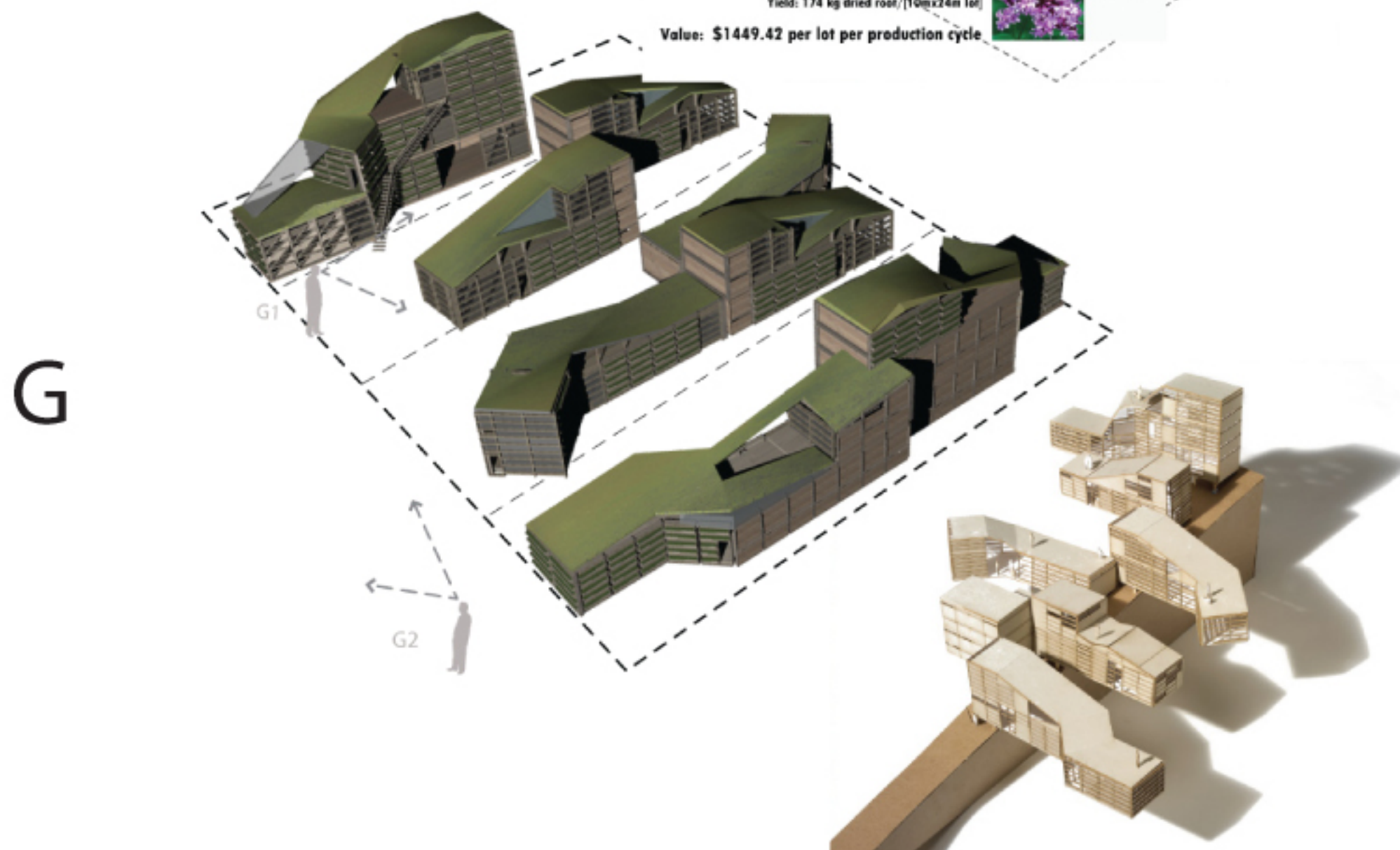
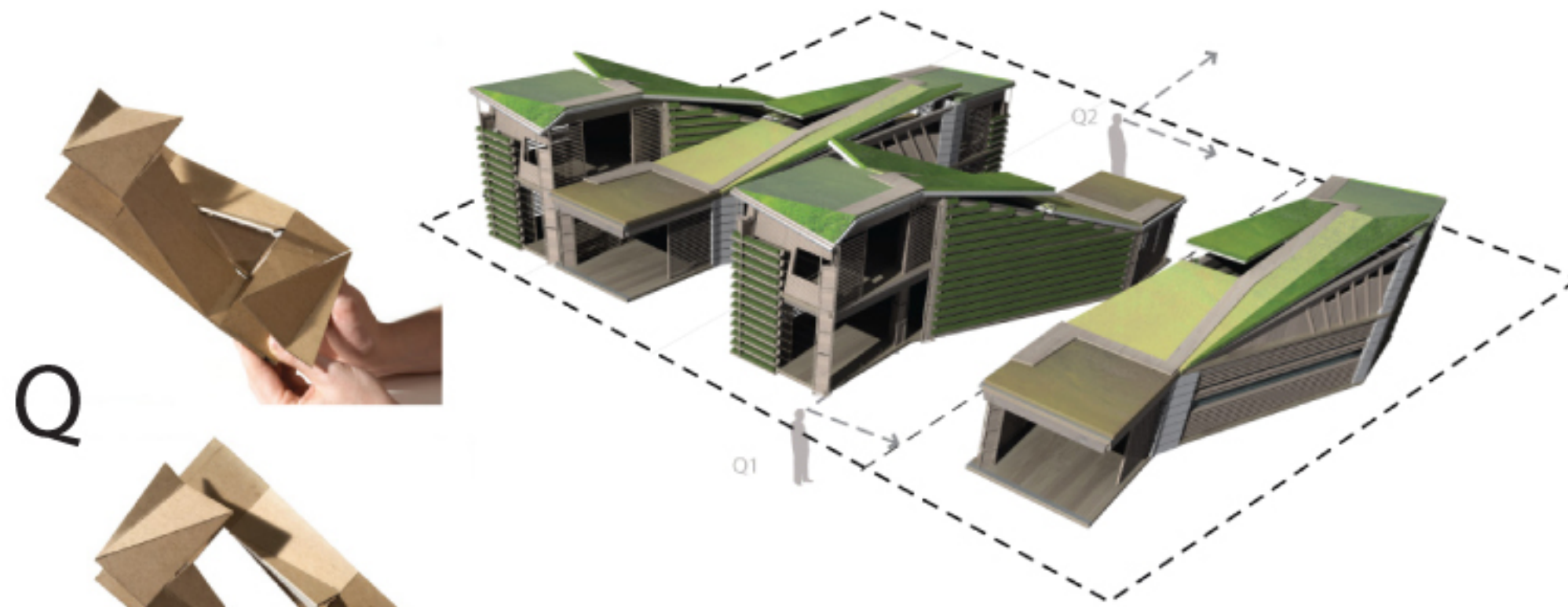
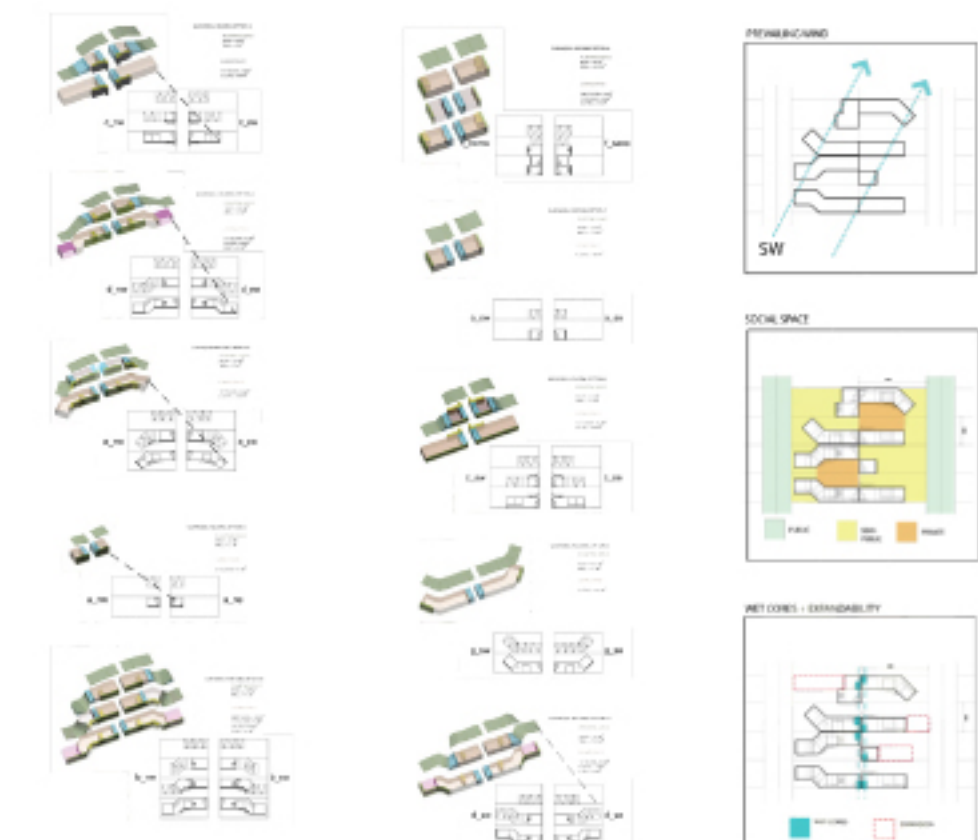
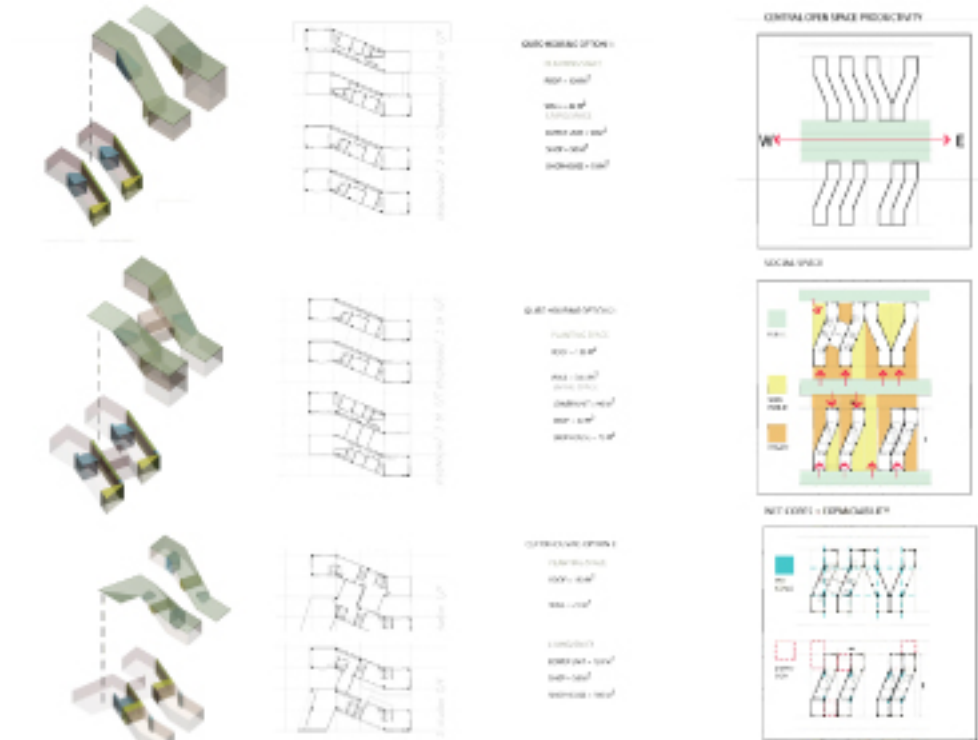


Guayaquil manual



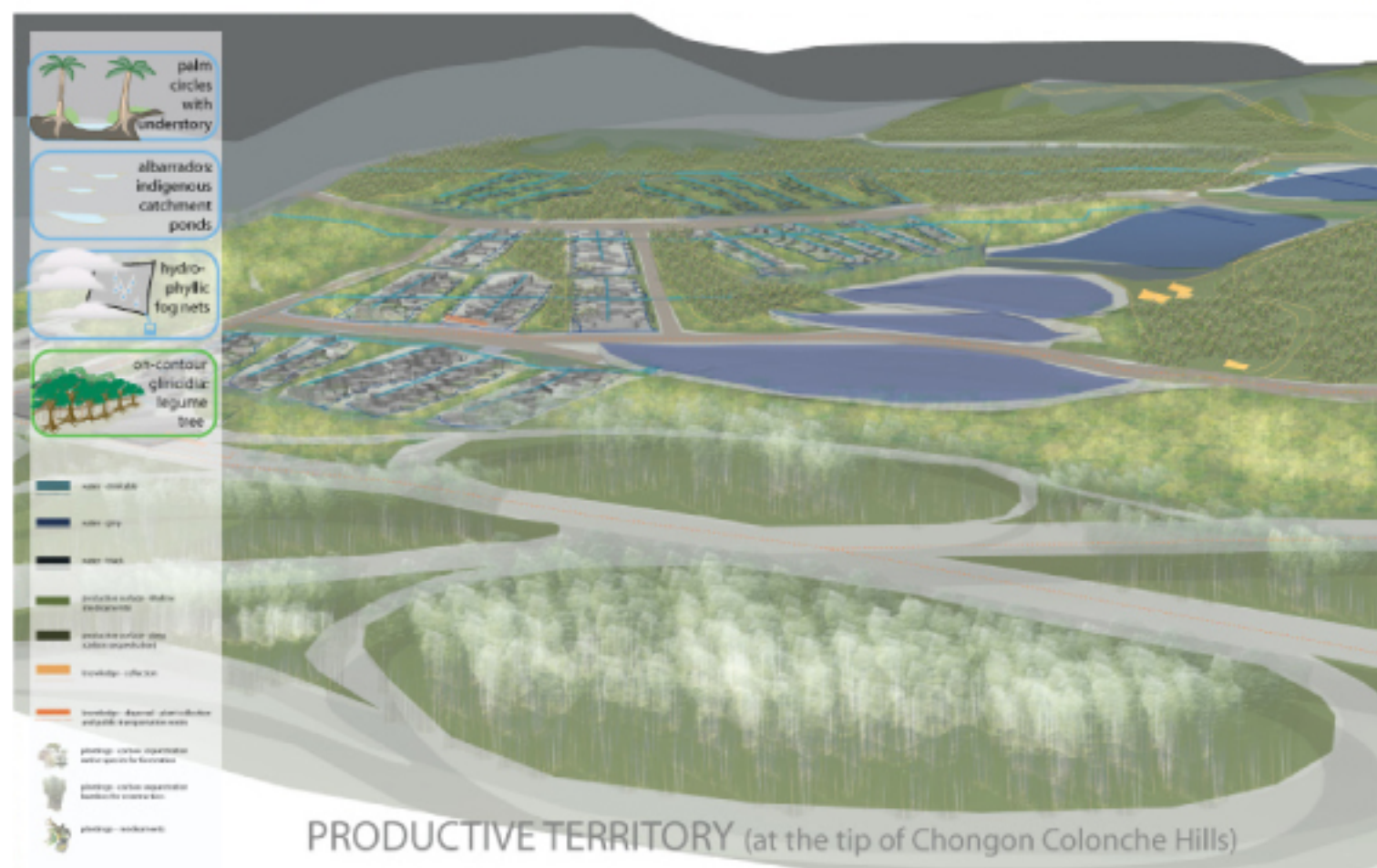
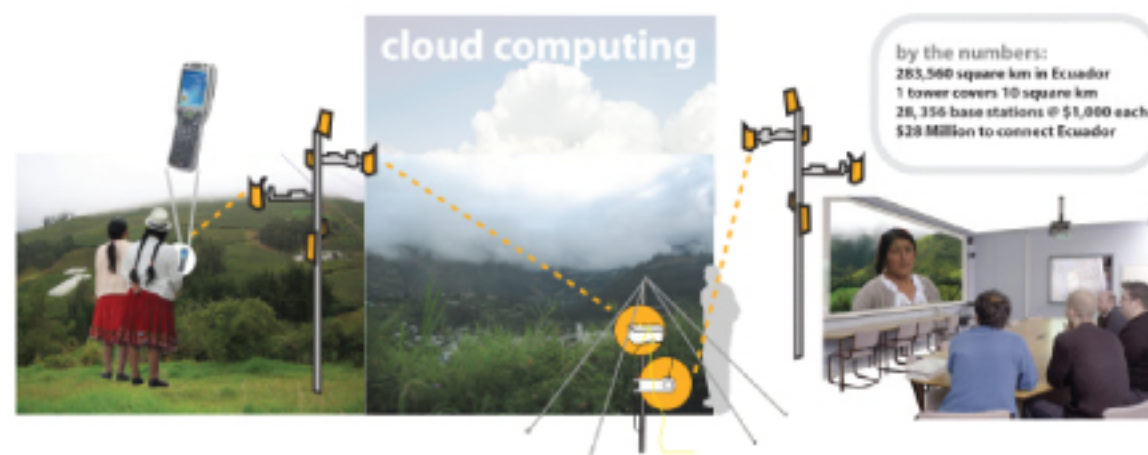
## Re Source Value

System for Interconnected Growth  
Quito and Guayaquil, Ecuador

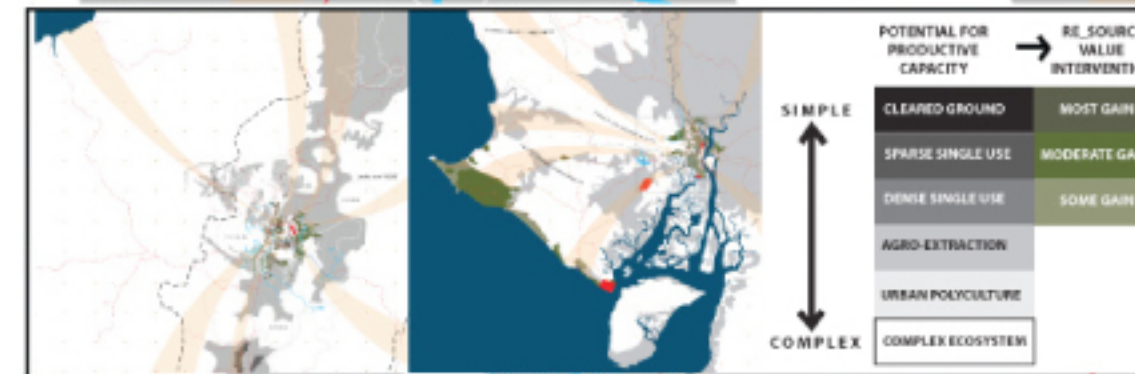




## PRODUCTIVE TERRITORIES



## OPPORTUNITIES MAPS



# Re\_Source Value

System for Interconnected Growth  
Quito and Guayaquil, Ecuador

The interconnected, multi-scalar design approach builds from a grassroots educational manual into lot-sized micro-industries.



Varieties of bioclimatic housing options aggregate to combinatorially-assembled social spaces at the neighborhood scale.



Territories support a research center in the free trade zone near each new airport. Indigenous knowledge (human capital) is harvested from remote areas of Ecuador through a wireless system of connectivity. This serves to stabilize remote regions of Ecuador which have been until now disconnected from the new economy and to more strongly position Ecuador's biodiverse wealth in the global marketplace. Ecuador's self-built cities are now also self-growing an economy that is integrated with national economic goals.

