FLUSHING/KISSENA CORRIDOR PARK SOCIAL-ECOLOGICAL SYSTEM
SUSTAINABLE STRATEGIC ACTION PLAN 2030-2050

- URBAN SOCIAL-ECOLOGICAL CONTEXT
- STRATEGIC ACTION PLAN FRAMEWORK
- STRATEGIC ACTION PLAN TOOLS
- FLUSHING/KISSENA PARK STRATEGIC ACTION PLAN 2030/2050
2. KISSENA/FLUSHING SOCIAL-ECOLOGICAL SYSTEM CHALLENGES

WORKSHOP (work in groups):

FLUSHING SOCIAL SYSTEM

KISSENA ECOLOGICAL SYSTEM

FLUSHING/KISSENA SOCIAL-ECOLOGICAL SYSTEM

KISSENA ECOLOGICAL SYSTEM

QUEENS COLLEGE CAMPUS
KISSENA FRESHWATER WETLANDS

95% OF THE NYC HISTORIC WETLANDS DISAPPEARED

https://welikia.org/
KISSENA FRESHWATER WETLANDS AND CREEK DISAPPEARED

ASH LANDFILL
RAILWAY LINE
UNDERGROUND SEWAGE + RAINWATER RUNOFF SYSTEM
Flushing/Kissena metabolism is a linear and open loop. Flushing/Kissena is no self-reliant.
SOCIAL-ECOLOGICAL SYSTEMS

FLUSHING/KISSENA SES = LINEAR SOCIAL-ECOLOGICAL METABOLISM

GROWING DEMAND
- ENERGY DEMAND
- FOOD DEMAND
- WATER DEMAND
- MATERIALS DEMAND

GROWING LOCAL EMISSIONS
- HEAT
- SEWAGE
- SOLID WASTE
- MATERIALS

GROWING GLOBAL EMISSIONS
- CARBON

GROWING GLOBAL SUPPLY
- GLOBAL ENERGY SUPPLY
- GLOBAL FOOD SUPPLY
- GLOBAL MATERIAL SUPPLY
- GLOBAL WATER SUPPLY
THESE ARE THE TWO MAIN GOALS TO DESIGN THE SUSTAINABLE ACTION PLAN FOR FLUSHING/KISSENA:

**GOAL 1:**
HOW TO TRANSFORM FLUSHING/KISSENA INTO A SELF-RELIANT SYSTEM?

**GOAL 2:**
HOW TO TRANSFORM FLUSHING/KISSENA INTO A RESILIENT SYSTEM?
FLUSHING/KISSENA METABOLISM CIRCULAR AND CLOSED LOOP
FLUSHING/KISSENA SELF-RELIANT SES SYSTEM
SUSTAINABILITY ACTION PLAN FRAMEWORK

SES ACTION PLAN

DATA/VISIT/MAPPING

CHALLENGES

GOALS

TOPICS

ENERGY  WATER  WASTE  FOOD/EDUCATION  MOBILITY  PUBLIC SPACE & SOCIAL

STRATEGIES

GLOBAL SUSTAINABLE INDICATORS: CARBON FOOTPRINT

LOCAL SUSTAINABLE INDICATORS: METABOLISM SELF-RELIANCE MOBILITY

Creation of an interdisciplinary team

Concepts & Framework

Analysis of territory & reference elements

Definition of critical points & opportunities

Goals

Strategic Actions

Indicators

Neighbourhood analysis (monitoring)

Assessment of improvements (evaluation)
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<thead>
<tr>
<th>Analysis Tools</th>
<th>SES Analysis Exercise</th>
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<td>Visit Kissena Park/Discussions with the KPCA</td>
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<td>Comparison NYC Plan 2030</td>
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<th>Mapping Tools</th>
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<td>Mapping Challenges</td>
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<td>Mapping Strategies</td>
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<th>Governance Tools</th>
<th>Multi-Scale Governance</th>
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<td>World Café Workshop</td>
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<td>Multi-Criteria Evaluation (Spider-Grid)</td>
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<th>Indicators Tools</th>
<th>SES Urban Sustainability Indicators Estimation</th>
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<td>Self-Reliant Indicators (Energy, Water, Food, Waste, Materials, Mobility, Etc.)</td>
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FLUSHING/KISSENA PARK CORRIDOR SOCIAL-ECOLOGICAL SYSTEM

STUDENT FINAL RESEARCH PROJECT

HOW TO PROMOTE THE FLUSHING/KISSENA SOCIAL-ECOLOGICAL SELF-RELIANCE

Kissena Creek, Queens

Two sources of water for daylighting:
1) Inflow from Kissena Pond, in Kissena Park (left)
2) Drainage from the flushing system (right)
THE PARK VISIT
Flushing/Kissena Corridor Park (NY)
Social Ecological System
Flushing/Kissena Corridor Park (NY)

Social Ecological System Challenges

- Water/Green Space
- Mobility/Energy
- Food Production/Waste

1. No recycling bins
2. Lack of green space in the street
3. Lack of healthy food options through community agriculture
4. Lack of local farmers markets
5. Lack of pollinators
6. No fruit-bearing trees
7. No local energy supply
8. No bike lanes
9. No disaster water supply or water catchment facilities
10. Lack of green space made available to the public
11. Waste in the wetlands
12. No local food production
13. No lighting
14. No native trees-high density of trees planted
15. Litter in the park
16. Queens College—No education connection
WATER & GREEN SPACE challenges

1. Lack of green space
2. Lack of green streets
3. Lack of permeable surfaces to absorb stormwater
4. How to deal with flooding areas
5. Waste in wetlands is harmful to the ecosystem
Goal 5 of the ONENYC plan is that New York City will mitigate neighborhood flooding and offer high-quality water services. We will use this plan as a guideline by:

Expanding green infrastructure and smart design for stormwater management in neighborhoods across the City.

The NYC Green Infrastructure Program, led by the Department of Environmental Protection (DEP), is investing over $900 million over a ten year period in green infrastructure practices such as curbside gardens.
ONE NYC / PLAN NYC 2030

• Bioswales and Stormwater Greenstreets
Bioswales and Stormwater Greenstreets
What is a Bioswale?

A bioswale is a ditch that allows for rainwater to soak into the earth slowly, rather than flooding streets or going into the ocean.

Here’s how it works:

1. Stormwater runoff from streets and parking lots enters the bioswale through a gradual slope.
2. Once the water enters the bioswale, it slowly seeps into the soil.
3. The water slowly filters through the roots of native plants, where a majority of automobile pollutants are removed.
4. The water enters a secondary filtration level usually made of sand, gravel, or rock.
5. Lastly, the purified water slowly makes its way to the local aquifer.
WATER & GREEN SPACE
SPIDER GRID

GOVERNANCE
ENERGY
MOBILITY
WATER
GREEN SPACES
FOOD PRODUCTION

SES KISSENA FLUSHING 2015
SES KISSENA FLUSHING 2030
SES KISSENA FLUSHING 2050
WATER & GREEN SPACE strategies

10. More green space would decrease flooding in problematic areas

9. Rain basins would store water and reduce flooding

2. More green space in the center of streets would decrease flooding

14. Large root trees could be used to absorb water and reduce flooding

11. Cleaning of wetland areas
MOBILITY & ENERGY
challenges

1. Lack of recycling bins
2. Lack of lighting in park
3. Lack of local renewable energy supply
4. Lack of bike lanes

Diagram:
- Map of the area
- Signs indicating challenges
- Images of the park and streets
1. No lights
2. No bike lanes
3. No recycling bins
4. No local energy supply
5. No local food production
MOBILITY & ENERGY strategies

1. Adding more and visible recycling and trash bins
2. Adding more bike lanes
3. Addition of solar panels in areas of Kissena Park
4. Adding lights in park
5. Parsons Blvd
6. Queens Blvd
7. Kissena Blvd
8. Queens Botanical Gardens
9. Kissena Lake
10. Kissena Park
11. Queens College
12. Will St
13. LIE
14. Queens College
1. New bike system
2. New solar and wind energy lights
3. New collective points
4. New hydro and thermal energy supply
5. New local food garden
ONE NYC / PLAN NYC 2030

NYC plans to reduce the amount of solid waste sent to landfills by 90% by 2030 (3.6M tons 2005 baseline), Kissena Park will aim for 75% by 2030 and 90% by 2050.

Achieved by:

- Composting of the organic waste from the local food gardens
- Expanding the recycling system by adding more recycling bins
- Providing incentives for recycling such as cheaper or even free food from the local agriculture
Hydro Power

- Each unit can generate about 8,000 kwh/year which is almost enough energy to power a home for a year.
- One of these can be put at the mouth of Kissena Lake and one can be put at the end of the stream flowing off of Kissena lake which empties into the sewage system.
- The average streetlight consumes about 150 watts of electricity. You Multiply (0.15) x (12 hrs) = 1.8KWh per day.
- Between both units they can power 4,400 lamps, and it would be off the grid power.
MOBILITY & ENERGY
SPIDER GRID
FOOD PRODUCTION & ORGANIC WASTE challenges

1. LACK OF POLLINATORS
2. LACK OF FRUIT BEARING TREES
3. LACK OF LOCAL FOOD PRODUCTION AND EDUCATION
4. UNUSED ORGANIC WASTE
5. LITTER IN THE PARK

Map showing locations around Kissena Lake and Kissena Park with additional images depicting the challenges.
Neighborhood Grant Winner 2013
Citizens Committee For New York City

Garden Hours
Open 8:00 A.M.
Close 8:00 P.M.

Evergreen Community Garden

GreenThumb

This site is a public garden which is maintained by neighborhood volunteers through GreenThumb. Founded in 1978, GreenThumb helps local residents transform vacant properties into attractive green spaces. If you want to join this garden, call (212) 788-8070.

For questions about Parks, please visit
You can also find out about events, whether they have access, or partner with our community survey by visiting www.nyc.gov/parks.
FOOD PRODUCTION & ORGANIC WASTE strategies

1. More pollinators
2. Addition of fruit bearing trees
3. Local food production and education
4. Access to local farmers markets
5. Create community compost program

[Map of area with locations marked]

Images of pollinators, compost pile, and farmers at market.
## SELF –RELIANT FOOD PRODUCTION & ORGANIC WASTE INDICATORS ESTIMATION

Tunnel Farming produces an estimated 8.2 lbs of food per square foot.

- **2030** – .75 Acres = 32,670 SF; \(32,670 \text{ SF} \times 8.2 \text{ lbs} = 267,894 \text{ lbs of local vegetables for the year} \)
- **2050** – 3 Acres = 130,680 SF; \(130,680 \text{ SF} \times 8.2 \text{ lbs} = 1,071,576 \text{ lbs of local vegetables for the year} \)

Fruit Trees produces an estimated .82 lbs of food per square foot.

- **2030** – 3 Acres = 32,670 SF; \(32,670 \text{ SF} \times .82 \text{ lbs} = 26,789 \text{ lbs of local fruit for the year} \)
- **2050** – 12 Acres = 522,720 SF; \(522,720 \text{ SF} \times .82 \text{ lbs} = 428,630 \text{ lbs of local fruit for the year} \)

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<tr>
<th></th>
<th>2016</th>
<th>2030</th>
<th>2050</th>
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<tbody>
<tr>
<td><strong>Pollinators</strong></td>
<td>None</td>
<td>4 Urban Beehives</td>
<td>20 Urban Beehives</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8 Butterfly Bushes (or comparable plant)</td>
<td>40 Butterfly Bushes</td>
</tr>
<tr>
<td><strong>Tunnel Farming</strong></td>
<td>None</td>
<td>0.75 Acre Tunnel Farming</td>
<td>3 Acres Tunnel Farming</td>
</tr>
<tr>
<td><strong>Fruit Trees</strong></td>
<td>None</td>
<td>3 Acres of Fruit Bearing Trees</td>
<td>12 Acres of Fruit Bearing Trees</td>
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<tr>
<td><strong>Compost</strong></td>
<td>None</td>
<td>Organic Waste Collection Program – 2 Local Businesses and a School Monthly Community Education and Collection Meetings</td>
<td>Organic Waste Collection Program – 12 Local Businesses and Area Schools Weekly Community Education and Collection Meetings</td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td>None</td>
<td>25 Interns - Work with Queens College to Utilize Interns to Help Fuel the Park’s Pollinator, Tunnel Farming, Fruit Trees, and Compost Strategies. Also to Set Up Student Powered Program to Run Community and School Education Park Programs, Supporting All Strategies</td>
<td>100 Interns – Have College Students Manage High School Interns and Expand Community Events and Education Programs</td>
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SCHOOL FLUSHING/KISSENA PARK FOOD PRODUCTION SELF-RELIANT ESTIMATION

• 10000 THOUSANDS STUDENTS IN PRIMARY, INTERMEDIATE, HIGH SCHOOL IN FLUSHING. 250 DAYS OF SCHOOL

• FOOD SCHOOL LUNCH DEMAND = 0.4 LBS VEGETABLES & FRUIT PER STUDENT/DAY

2016: FOOD SCHOOL SUPPLY PER YEAR = 0 LBS/LOCAL VEGETABLE/FRUITS
FOOD SCHOOL LUNCH DEMAND PER YEAR = 1.000.000 LBS PER YEAR

FLUSHING/KISSENA FOOD SCHOOLS SELF-RELIANCE = SUPPLY/DEMAND
0% IN 2016

FLUSHING/KISSENA FOOD SCHOOLS SELF-RELIANCE = SUPPLY/DEMAND
29.46 % IN 2030

FLUSHING/KISSENA FOOD SCHOOLS SELF-RELIANCE = SUPPLY/DEMAND
100 % IN 2050

IN 2050, THE FLUSHING NEIGHBORHOOD AND THE KISSENA PARK CORRIDOR
SELF-RELIANT GREEN HOUSE & WATER SUPPLY INDICATORS
ESTIMATION

- Greenhouse production = 20L of water/ 1m² of greenhouse
- Projected greenhouse = 100 m²

Demand = 100m² x (20L of water/ 1m²) = 2,000L of water/ day

Average flat roof collects 20.15 liters of rain water/ft²/ year
Collecting Roof Area = area of school building = 250ft x 150ft = 37,500ft²
Supply = 37,500ft² x (20.15 L/ ft²) = 755,625 L of rain water/ year
  = (755,625 L/ 1 year) x (1 year/ 365 days) = about 2,070 L/ day
Supply/ demand = (2,070 L/day)/(2,000L/day) = 1.035 = 100% Self-reliant

IN 2050, THE LAKE PRIMARY SCHOOL FLUSHING/KISSENA PARK CORRIDOR
WILL BE TOTALLY WATER SUPPLY SELF-RELIANT
COURSE ENHANCEMENT GRANT FOR EXPERIENTIAL LEARNING ACTIVITIES
2016 SPRING SEMESTER, URBAN STUDIES DEPARTMENT

THANK YOU!

CREDITS
Final Presentation on May 18th at 5 p.m. at the Godwin Museum at Queens College

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