

# A SUSTAINABLE FOOD HUB IN LAS PIÑAS

The thesis entitled "A Sustainable Food Hub to Enhance Community Nutrition Through Urban Crop Production in Las Piñas" proposes urban crop production as the main solution to alleviate fragilities in the urban food system. Along with this solution, is a food systems approach and a focus on community nutrition enhancement.

## MAIN ISSUE/S & PROBLEMS

**RAPID URBANIZATION & EXISTING FOOD SUPPLY CHAIN**

**FRAGILITIES OF THE URBAN FOOD SYSTEM**

Malnutrition;  
Unstable Food Supply;  
Negative Environmental  
Impacts of Traditional Farming

Urban food systems continue to face challenges along with urbanization. With this, the negative climate change effects have compounded and exacerbated the issues faced by urban communities. In the context of Metro Manila, rapid urbanization and the current state of the food supply chain have been identified as causes of fragility in urban food systems.

Rapid urbanization results in a dietary shift to nutrient-poor foods as it becomes more convenient and accessible. In turn, negative health effects due to undernutrition are becoming more prominent in urban dwellers. As for the food supply chain, its current state is characterized by: food production sourced in rural areas which are vulnerable to natural disasters; traditional food production that has significant negative environmental impacts; inefficient farm-to-market roads; and inaccessible food products due to high price points. Furthermore, the perceived issues in the urban food system are narrowed down to three major problems: malnutrition, unstable food supply, and negative environmental impacts of the existing urban food system.

## SOLUTION



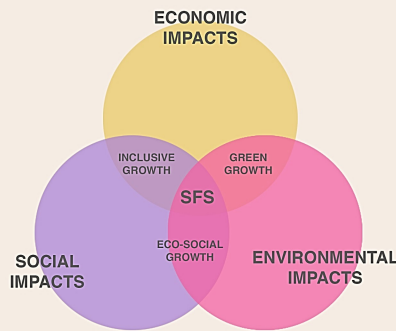
**URBAN FOOD SYSTEM IN THE PHILIPPINES**

PRODUCTION · IMPORTATION · DISTRIBUTION  
RETAIL · CONSUMPTION



**URBAN CROP PRODUCTION**

FOOD SYSTEMS APPROACH  
COMMUNITY NUTRITION ENHANCEMENT



SUSTAINABLE FOOD SYSTEM (FAO, 2014)



FOOD SYSTEM (FAO)

## MAIN GOALS

- Improve access to food crops which is a component of an individual's dietary
- Provide a stable and resilient supply of vegetable produce
- Reduce negative environmental impacts in the existing urban food system

+ Design spaces for nutrition promotion and education

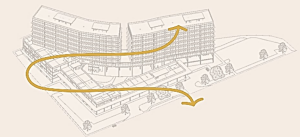
Create spaces that foster economic opportunities and growth as well as technical support regarding urban agriculture in the community

Design spaces that promote universal access, affordable, and healthy and environmentally sustainable diets

Integrate technological advancements for energy efficient urban food production and strengthening of biological diversity of crops

**RESILIENT FOOD SYSTEM (FAO, 2020)**

## CONCEPTS & PARTI DIAGRAMS



FLOW



INTERCONNECTED



PERMEABLE

## USER ANALYSIS



Residents of Las Piñas - District 1  
Population: 296,090

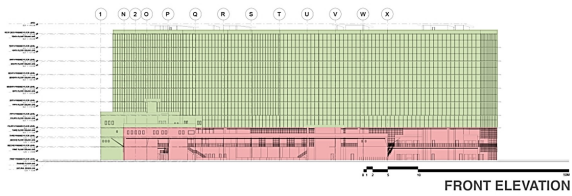
Residents of the following barangays:  
(Population: 124,917)  
Ilaya  
B.F. International  
Daniel Fajardo  
Elias Aldana  
Zapote

Public health concern on various age groups for stunting; underweight; wasting; anemia; iodine status; physical inactivity

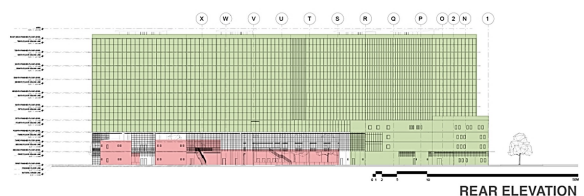
Dietary deficiencies in nutrients due to the majority of food consumed being refined rice and other low nutrient-dense foods

Inadequacy of the following nutrients: iron, folate, riboflavin, calcium, vitamin c, thiamin, and vitamin a  
Intake of cereal and cereal products and vegetables were low in Metro Manila

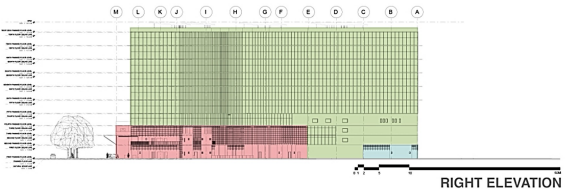
110 grams of veggies consumed (recommended amount is 170 grams daily)



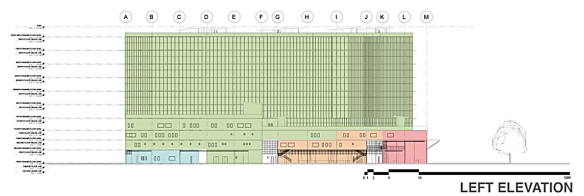
FRONT ELEVATION



REAR ELEVATION



RIGHT ELEVATION

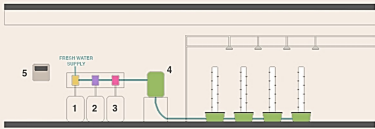


LEFT ELEVATION

**LEGEND**  
 ● Food Production & Processing  
 ● Nutrition  
 ● Retail & Consumption  
 ● Materials Recovery Facility

**LEGEND**  
 ● Food Production & Processing  
 ● Nutrition  
 ● Retail & Consumption  
 ● Materials Recovery Facility

**GROWING MEDIUM**  
 NUTRIENT SOLUTION SUPPLY LINE



SAMPLE SECTION

- 1 pH Buffer
- 2 Liquid nutrients Part A
- 3 Liquid nutrients Part B
- 4 Gravity Feed tank
- 5 Wadsworth Controller



ROCKWOOL AS GROWING MEDIUM

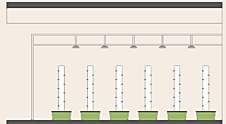
**VENTILATION**  
 BIOCLIMATIC DOUBLE SKIN FACADE



SAMPLE SECTION

- 1 Interstitial space - buffer zone
- 2 Daylight reflector
- 3 Aluminum framed glazing curtain wall
- 4 Low-e glass for curtain wall
- 5 Operable windows
- 6 Mechanized operable windows
- 7 Curtain wall hangers
- 8 Steel reinforcing for curtain wall frame
- 9 Natural ventilation during moderate temperatures

**LIGHTING**  
 LED LIGHTING

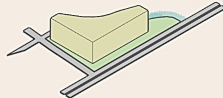


SAMPLE SECTION

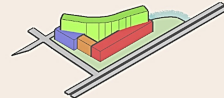
**RECOMMENDATIONS**

- Maximum power consumption: 125 W
- Input voltage: 230 VAC 50 Hz
- Working temperature: < 40° C / 104° F
- Luminous flux: 3400 LM X 4 pcs.
- Color temperature: 6000 K

**DESIGN MORPHOLOGY**



**INITIAL MASS**  
 Initial building volume protruded from the site



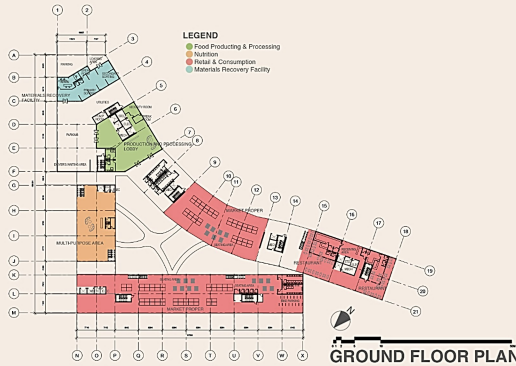
**PROGRAMMING**  
 Blocks extracted and arranged based on the programming and part diagrams



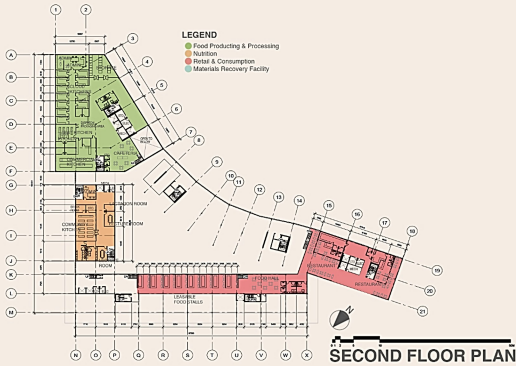
**CONCEPTS APPLICATION**  
 Applying the concept of permeability and opening up spaces to reduce bulk and let air flow through the building



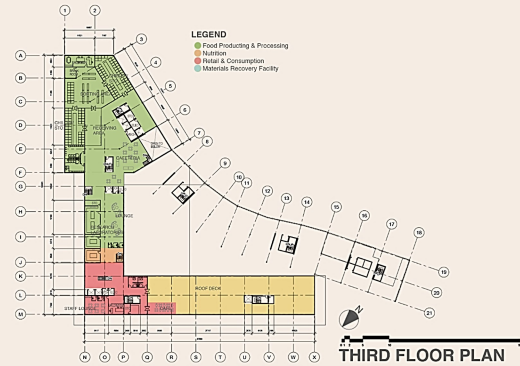
**FINAL DESIGN**  
 Integrating design goals and concepts as well as technology and building details



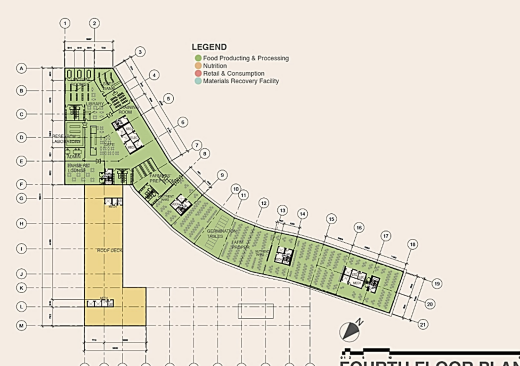
GROUND FLOOR PLAN



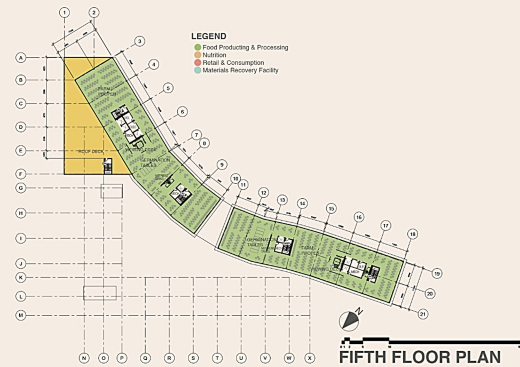
SECOND FLOOR PLAN



THIRD FLOOR PLAN



FOURTH FLOOR PLAN



FIFTH FLOOR PLAN



Viewing deck inside the aeroponic farm



Market



Community Farm



Promenade