

FARMING IN THE CITY?

9.7 billion people in 2050, which will require production that is 50% higher than today. From that increase, it is estimated that the 30% will come from new growing grounds, from which the 70% remaining of the production increase and the efficiency of the current cultivated land.

6.5 billion will be living in urban spaces in 2050.

Agriculture is the most important cause of the desapirience of fragmentation of habitats and the consequence of the loss of forest and biodiversity, besides the main source of nitrogen deposit and phosphor in the ecosystems.

2.000km is the travel average of a lettuce before it ends in the final cumpsumption place

20% of the CO2 emissions are produced by the transport sector

The agricultural sector is responsible for **70%** of the global water resource.

40-60% of the plant matter of the green leaf crop it never ends in the consumer due to the losses of recolectation, transport, storage and packaging

The nutritional properties of the collected products slowly disappear from the moment they are taken from the ground.

200.000 people die per year caused by the use of pesticides.

Lack of the global sources(energetic, hybrids and spatial) and penalty of their use

Climate change will increase the global shortage of resources, especially water and energy. Many countries will begin to take action by penalizing their excessive use.



EUROPAN 16: LIVING
CITIES
METABOLIC
VITALITIES
& INCLUSIVE
VITALITIES

An approach to the city as an expression of life and behaviour of its inhabitants. Under a constant search of an unreachable equilibrium .Temporary scene of personal and social events. Place in which different processes are developed simultaneously in different scales. Feast of life.

Triggerings



MADRID.

PRODUCING
NEIGHBORHOODS

The project proposed by Madrid is originally intended to solve specific problems. However, it also allows a more generic reading that gives a global logic to all project interventions, despite being areas with particular problems and opportunities.

GREENMAD

URBAN VOIDS

We understand "urban voids" like city spaces without use, underdeveloped or empty meaning, "Voids" because lacking something and "urban" belong to the city.

Urban opportunities of intervention.

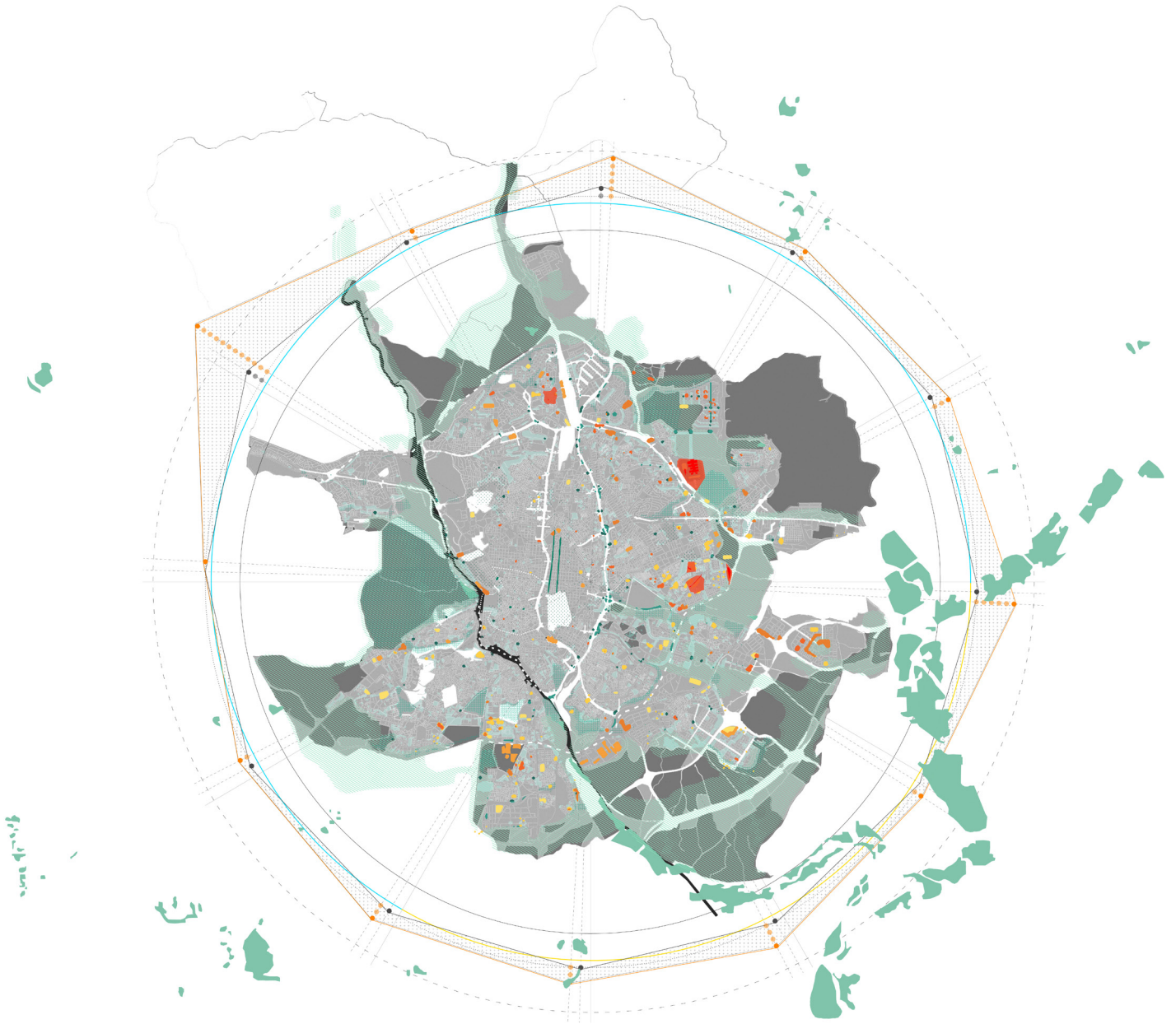
Urban voids are the perfect opportunity for the implantation of the production spaces, since they are located in high density residential areas.

Voids types.

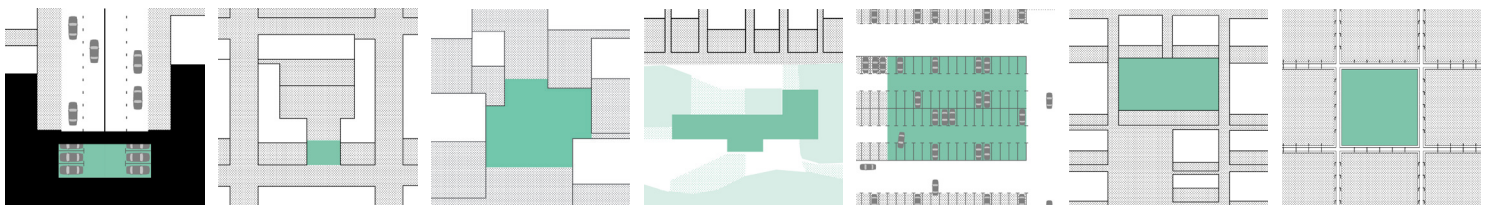
In the search of urban voids for the development of productive spaces it leads us to seven types.

Intervention on the present city.

The enforcement methodology of the hybridization of the field idea and the city about the development of one new plan or present urban grid would result in different projects relying on the same idea. It acted on the present city, specific types are produced for the city of Madrid and developed four of the five proposed parcels.



VOID TYPES



0. 3 ha	1. 1/2 ha	2. 1/2 ha	3. 50 m2	
•	•	•	•	Productive area:
•	•	•	•	Components:
•	•	•	•	- electricity generator
•	•	•	•	- water filtering system
•	•	•	•	- fertigation equipment
•	•	•	•	- irrigation controller
x	•	•	•	- climate system
x	•	•	•	- structure and façade
x	•	•	x	- rainwater collection tank
x	x	•	x	- excess water from the crop tank
x	x	•	•	- growing in channels
•	•	•	•	Type of crop:
•	•	•	•	- green vegetables
•	•	•	•	- vegetables
•	•	•	•	- aromatic plants
•	x	x	x	- fruits
•	•	x	x	Substratum:
x	x	•	x	- layer 40% sand, 40% silt, 20% clay.
x	x	x	•	- coconut fiber substrate in sack
				- culture systems NFT
A	A	A	A	Resources:
N	N	N o A	A	Irrigation: Artificial o Natural
N	N + A	N + A	A	Lighting: Artificial o Natural
S	S	N	N	Conditioning: Artificial o Natural
				Pesticide: Yes o No
8	8	6	2	Example of growing lettuce in 1 ha:
8	6	4	2,5	Water per lettuce: mm
	1	1	15	Consumption:
6	3	2,5	1	- irrigation hours / day
80 000	100 000	120 000	400 000	- ventilation hours / day
				Duration 1 cycle month
				Production: lettuce, ha/cycle

AGRICULTURAL INNOVATION

The technological revolution has changed the way we cultivate. It is not necessary to cultivate in the ground, the fertilization processes should be done in impervious soils, far from natural grounds. It is possible to produce more in less space, only we need buildings and technical installation of "green habitability"

Basic concepts:

+Greenhouse is an installation covered and artificial closed with transparent material. In order to protect the plants from adverse weather conditions.

+Hydroponics is an irrigation system by which the root crops are balanced nutrient solution dissolved in water with all the chemicals necessary for the growth of plants, which can be grown directly on the mineral solution, or in a substrate or medium inert.

+Vertical farming is the practice of growing crops in vertically stacked layers. It often incorporates controlled-environment agriculture.

Other innovations:

+E-commerce and market linkages

+Precision farming

+Smart machines

+Recycling water

+IoT and big data

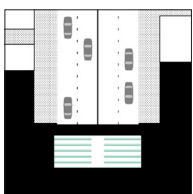
0. Traditional farming

1. Greenhouse

2. Hydroponic Greenhouse

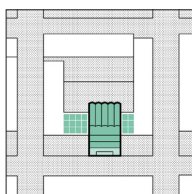
3. Vertical Farming

7 NEW URBAN TYPES



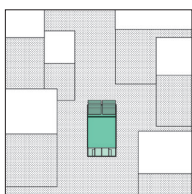
UNDERGROUND PARKING.

Understanding the production of the alimnts inside the city with a needed infrastructure.



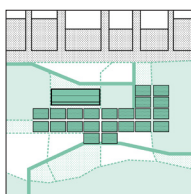
EMPTY URBAN PLOTS

These plots, whit out construction/ unbuilt, exist in all the cities, n o r m a l l y with complex geometries.



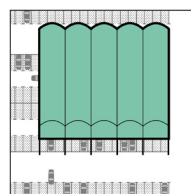
PEDESTRIAN AREAS.

Plazas, streets, open spaces without meaning or function. Where a new use is possible.



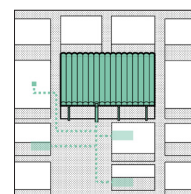
VOIDS IN PARKS

Long extension of lawn or open space with any function. Close to urban parks or big gardens.



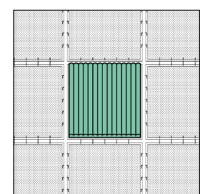
OPEN-AIR CAR PARKS

Large extension of hard paving, using it solely to save vehicles. Places without any significant appeal.



ROOFTOPS

Big smooth surfaces without use in all modern urban plans. With perfect sunlight conditions.



PERIPHERIES NOT CONSOLIDATED.

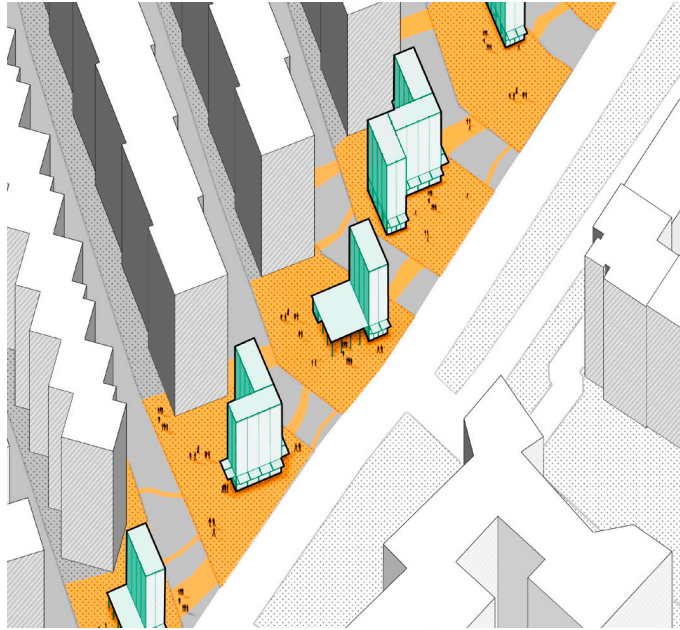
Periphery spaces with a reticular urban plan unbuilt, perfect places for temporary occupation.

TIPO POP-UP / POP-UP TYPE

SAN BLAS

The San Blas district was born to give shelter to people who came from the countryside. Ending up forming a public project. Nowadays it is immersed in a renovation process. Taking advantage of the recent appearance of the Wanda Metropolitan Stadium and the HQ of different enterprises, the objective is to revitalize the Arcos del Jalón street placing a series of icons that transform it to an open market and community area restoring the city.

Thanks to the infrastructure of the district, the vertical farming unit can be grouped forming typologies. Doing so, a circular economy is formed.



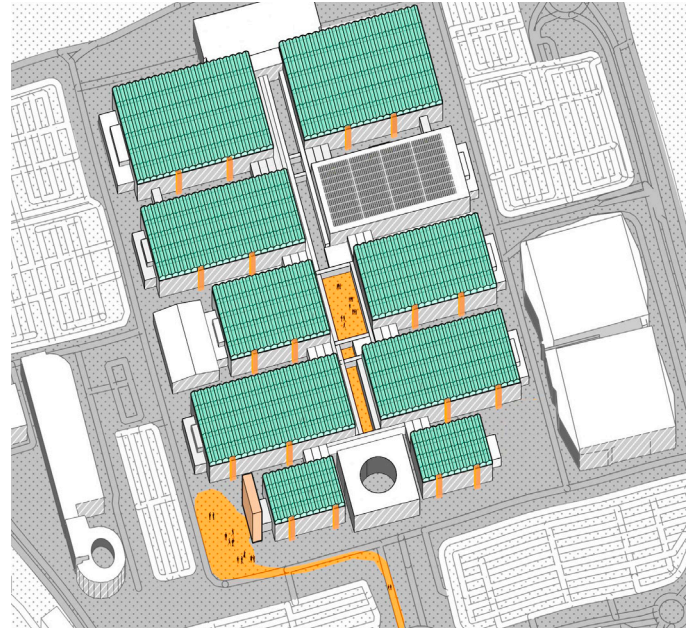
TIPO GRAN CUBIERTA / BIG-ROOF TYPE

IFEMA

In comparison with the previous districts, Ifema is known for its temporal but massive usage of non-residents. Being 200.000 m² left without any kind of production.

Ifema, as the international and technological landscape of Madrid, should be the leader of the green European movement. So through the proposal it would make 5.8 million lettuces annually, surpassing the fairgrounds visitors.

All of this would be done without changing the existing structure and using all the covered space to plant. In addition, a new unit is presented as the cover for Ifema, where a new gastronomic space would also be added offering local products.

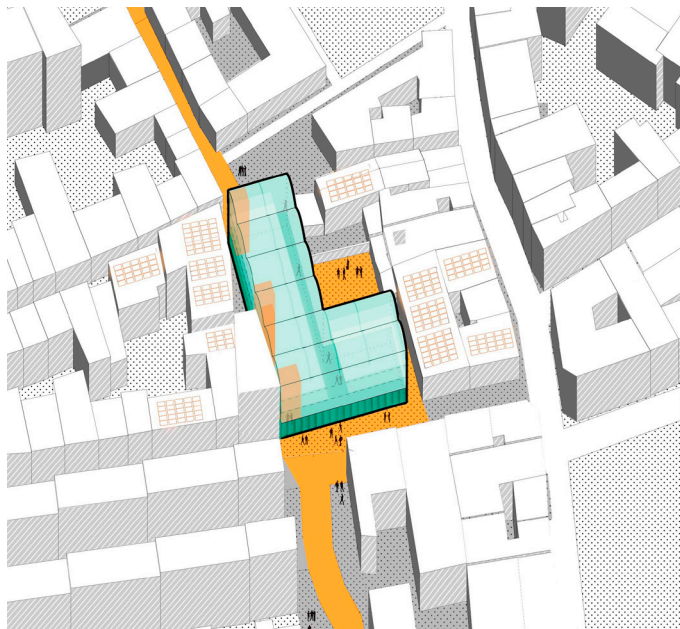


TIPO GREEN-SPACE / GREEN-SPACE TYPE

FUENCARRAL

The historical quarter of Fuencarral, old city of Madrid, is known for preserving urban elements as the complex urban structure. Adapting to this plot and following the pedestrian priority, a light unit of new types of crops (hydroponic) is proposed. This one uses clean renewable energy and produces more than it consumes.

This infrastructure would generate new job positions and would teach the people of the district. On the other hand, local businesses would benefit from the local vegetables.



TIPO HUERTA JARDÍN / KITCHEN GARDEN TYPE

LAS ROSAS

Is about a newly built district that has the inconvenience of being the limit of Madrid and being close to the M-40. Continuing the green project of the 'Bosque Metropolitano', the objective is to get rid of the border and create a green kind looking space at the end of this city. Trying to encourage people to be there, with planting grounds that enhance teamwork and with tree-spaces and greenhouses with didactic and diverting uses.

Creating a green space that can evolve with time and people, being a new ending for Madrid.

