

A photograph of a lush rooftop garden in an urban setting. The garden features various plants, including leafy greens, yellow daisies, and blue flowers, arranged in rows separated by white plastic mulch. In the background, a modern city skyline with several high-rise buildings is visible under a clear sky.

# URBAN AGRICULTURE & RESILIENCE

*November 6<sup>th</sup>, 2019*

# Urban agriculture's contribution to urban resilience

**LOCAL FOOD  
PRODUCTION**

**CIRCULAR  
ECONOMY &  
LOCAL  
RESOURCES  
EFFICIENCY**

**SOCIAL COHESION**

**CLIMATE CHANGE  
& RISK DISASTER  
REDUCTION  
STRATEGY**

# Urban agriculture's contribution to local food production

- To counterbalance the distancing between cities and food
- Revival of urban food policies to relocalize part of cities' food system
- Some examples :
  - Havana (Cuba): one of the rare cities to have developed an urban agriculture model focused on food self-efficiency
  - Kinshasa (Republic of the Congo): market gardens produce 75,000 to 85,000 tons of vegetables a year or 65 % of the city's supply
- Average contribution to food production: 1-3%
- Limited potential in terms of food security



Urban agriculture in Havana

# Urban agriculture's contribution to local resource efficiency

- Cities offer agriculture access to its unused resources:
  - Vacant spaces
  - Waste heat (2-3 degrees Celsius warmer than surrounding countryside)
  - Waste streams (food waste and organic waste)
  - Runoff water
- Urban agriculture can contribute to a food circular economy:
  - Reducing fertiliser use and energy consumption by productive reuse or urban organic waste
  - Reusing urban wastewater



According to the EMF, achieving these three ambitions in cities could generate annual benefits worth USD 2.7 trillion by 2050

# Urban agriculture's contribution to social cohesion

- Empowering vulnerable people through income and employment
- Example of the Quito's participatory urban agriculture project (AGRUPAR):
  - 4,500 vulnerable farmers
  - Home consumption for vulnerable families
  - Contribution to the livelihoods of disadvantaged inhabitants
  - Support of more than 21,000 people, of which 84% were women
- Raising awareness and re-integrating nature into the city



AGRUPAR project in Quito (Ecuador)



Gardening workshop at Citizen Farm - Singapore

# Urban agriculture's contribution to climate change and risk reduction strategy

Multiple benefits of urban agriculture such as:

- Reduction of heat islands
- Carbon capture
- Infiltration of rainwater, keeping low-lying zones free from construction so that floods have less impact, reduction of stormwater
- Reduction of methane emissions from landfill and reduction of energy use (fertilisers) thanks to productive reuse of organic waste



Rooftop gardens in Toronto



## Origins of the project

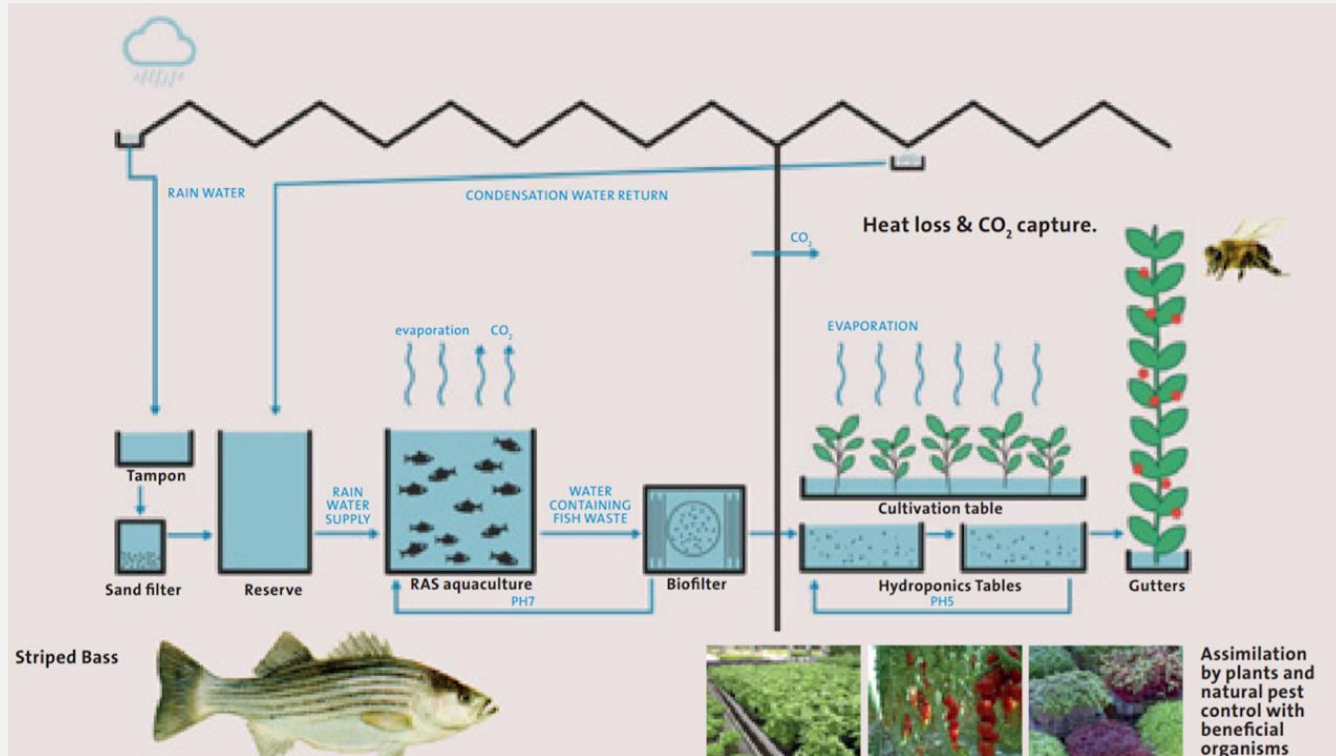


**Aquaponics system:** combination of recirculating aquaculture (RAS) system for fish production with hydroponics for soilless plant production thereby recycling dissolved nutrients derived from metabolism of the fish.

**Bio-intensive micro-farming:** intensification of the biological cycles mechanisms on small surfaces, to make them productive on short and long term. It is the most intensive farm system for a natural and sustainable production in a small cultivated area.



# The BIGH aquaponic farming model



# The example of the Abattoir Farm in Brussels



# Bio-intensive micro-farming in permaculture

## Bio-intensive micro-farming

- farming methods to obtain short and long term productivity on small surfaces
- intensive

## Permaculture

- an ecosystems approach
- biomimicry



## Veolia pilot farm in Lille (North of France)



# Land valuation and technological synergies



# Enhancing urban assets

## Solid waste treatment plant of Romainville



Solid waste treatment plant of Romainville in the 1920's



Solid waste treatment plant of Romainville, 2019



Urban farming project on the roof of the solid waste treatment plant of Romainville. Planned for 2023



# Urban farming by Veolia

## Social impact



Lille Concorde. 5000 inhabitants (Google Earth)

# Urban farming by Veolia Social impact



## Urban farming & urban agriculture to increase the attractiveness of cities

