The Third Agricultural Revolution: Toward a connected, inclusive and sustainable agriculture

Arras, June 2016
Where are we heading to?...
2050 = 9.1 Billion people
We have destroyed land and produced Climate change
Over 80% of our arable land is in use
Consuming resources and land... On the other hand, we have plenty of water space that we could transform into a productive tissue...
since **25** out of 35 world Megacities have a physical access to water (seas, lakes or rivers)
“We want to bring Agricultural production closer to where it is actually consumed, reducing food mileage and making it more fresh and accessible to the people”
Why?
- Megacities fast growing pace & population
- By 2030, food demand is predicted to increase by 50% (70% by 2050) - United Nations
- Increased wealth and shifting diets
- Avoid huge amount of food imports + reducing food mileage
- Limited land availability (land scarce) and land premium prices
- A more controlled, cleaner and sustainable farming aquaculture high volume production and aquaponics
- Year-round high yield production, not depending on external/weather conditions
- Guarantee local food quality control
We aim for a complementary alternative from importer-consumer

Producers-quality controllers

-Singapore, Gulf, US (fish), HK, etc
-Climate: Bangladesh (floodings), Droughts (California)
-Overpopulation: China, India

-Annual production, policulture
-Self-sufficiency
-Modularity/flexibility
-Materials life cycle
21st century opportunities

Collaborative

Districts-neighborhoods

Farmers - new Jobs

Autonomous platforms

BIG DATA
But HOW?.....
Via a combination of different existing technologies available in the market into a single Floating Farm module.
Inspired by the traditional Fish Farms grid configuration
Cluster of 6 modules
a productive arrangement
Project main structure / Components

Materials cycles within a cradle to cradle approach / Biosphere-technosphere

Integrated multi-trophic aquaculture (IMTA) provides the by-products, including waste, from one aquatic species as inputs (fertilizers, food) for another.

- Possibility to have collective Platforms in which citizens grow their own food, also other controlled within IoT
- Lightweight resistant structure and low impact local materials according to location. Cradle to Cradle approach
- Services / Machinery (desalination, biodigesters, storage, slaughter)
- PV roof level
- Hydroponic level
- Aquaculture level
- Water level
- Maintenance corridors
- Photovoltaic plant (PV)
- High-efficiency
- Lateral skylights (natural light for crops)
- Pontoon floating structure
- Integrated multi-trophic aquaculture (IMTA) Controlled non-pollutant systems
- Perimetral protection mesh (Birds, agents)
Roof level Photovoltaic / CSP solar power plant. towards self-sufficiency
Middle Level
Crops-Production
Some Products examples for a potential Market
(Crops type could vary according to the project geographical location)
Lower level
Fish Farms

Aim of an Integrated Multi-Trophic Aquaculture (IMTA)
THE FIRST STEPS:
Towards a smaller scale prototype

35m x 60m footprint (2100 m²)

Preliminary studies (output, costs, etc)
Pontoons: CLT floating structures
Structure studies
Prototype studies: Middle level: Crops

Level-1-Hydroponics

Staff areas
(Office, Breakfast room, WC's/changing rooms)

Hydroponic
Total crop production area = 1110 sqm
Prototype studies: Hydroponics system
Prototype studies:
Lower level: Fish
“Learn from yesterday, live for today, hope for tomorrow. The important thing is not to stop questioning”

Albert Einstein