

# **ECONOMIC FEASIBILITY AND SUSTAINABILITY INCLUDING BUSINESS MODEL FOR FANTONI FARM (BOLOGNA)**

## **Total Concept**

**Prepared and presented by:**

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## **Observations**

- field is about **6 hectares**
- located in a peripheral part of the city of Bologna
- Boundaries are: to the East a public path, to the North a field of pasture with a hayloft about 4 m tall and some wild plum trees, to the South another pasture with a lone wild plum tree, to the West a woodland of wild plum, walnut and oak
- Strongest winds and storms coming from up the valley, South-West. The West is well protected against wind, the South slightly, all other sides are fully exposed - Full morning and mid-day sun, shade from the West on the evenings. Winter sun partly shaded by hayloft and trees on the South side.
- Water will come from the fields above and along the path when it rains.
- Free of cattle traffic other than horses which their manure will be used.
- part of the agricultural land of the farm hosts 108 urban gardens
- The building is organized on two levels: on the ground floor there is a large kitchen, on the second floor some rooms and a toilet (they will all be available for disabled people too)
- Even though we don't know the PH of the soil we are thinking that the soil is thickly established grass and some weeds such as dandelion, plantain, wild strawberry, ... indicating acid soil. The soil could be rich in clay.
- workshops will be available for kids, business trips, startup business and whoever is Interested to spend a unique day.
- part of the agricultural land beside 108 urban gardens will also be glass greenhouses that will serve as a outdoor workshop, and the aquaponics system.
- Mini bar and food catering will also be part of the Fantoni Farm. By opening a mini bar and doing food catering (all the products will come fresh from the farm) there will be open job places.

## **Vision**

Our idea is that the abandoned building of “FantoniFarm” should be transformed into an innovative center for holding innovative agriculture events where individuals, different institutions from agriculture or similar areas of studies can have the chance to gather up and share their ideas, inventions or creations. These gatherings are held in from of trainings, workshop, or maybe in a similar form as TED talks. The advantage of this center is that the building is located near the largest food park (F.I.C.O), which is visited by more than 3.5 million

people per year. Inside six hectares of productive soil, participants could practice their acquired knowledge from this innovative center.

**Student and kids Involvement:** they will learn about the fundamentals of aquaponics and organic farming and the importance of having access to fresh, nutritious produce. The container is entirely farm operated with faculties and local farmers providing support as needed.

This building can be powered from renewable energy like solar panels or wind turbines placed on the fields around the farm. It will be a Green building, renewable energy systems, cohousing communities, an independent organic farm, open-space preservation, and will be use a social entrepreneurship

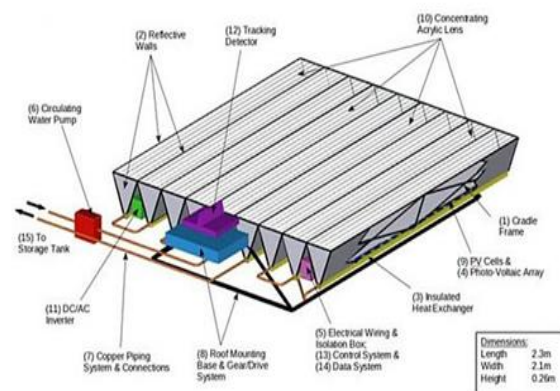
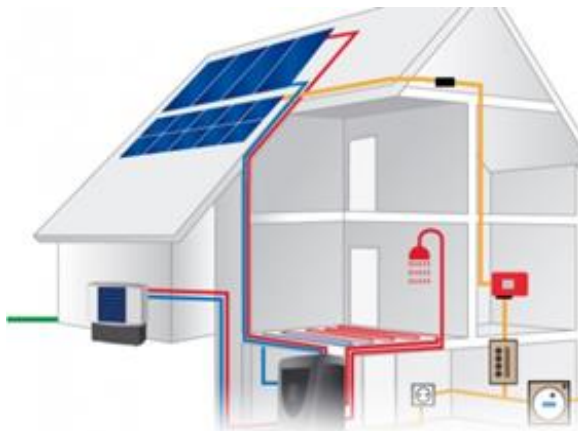


**The Fantoni Farm from inside.**

The hallway and other unusable space can be used as a marketing space where food products could be advertised.

## Plan

How the solar panels will work



The building could be used for implementing the projects we mentioned on **“Economic feasibility and sustainability including Business model”** Inclusion of children of age 6 to 14 should be considered, where they could attend Environmental Education Activities.

### **How the Volunteers and social workers will work with kids.**

We want a truly sustainable food system so we must address food waste as one of the biggest problems that we are facing. We will be able to demonstrate to work camp and volunteers and kids ways to start a forest garden or permaculture from a plain field in addition to doing so from an orchard, and we will have an example of forest garden and a place that looks completely unlike an orchard to intrigue guests and visitors.

**Through this project we want to achieve:** Starting a resilient and low-maintenance forest garden on the field by planting out the tree layer and some hedge shrubs, with species that are mostly native or naturalized, cheap or free to get (transplants and hardwood cuttings from Bologna or elsewhere, local tree nurseries and growers of ornamentals), of little to no maintenance and yielding some products of use (nuts, sticks, berries, flowers, fruits, ...) which we could forage once in a while or leave to the local wildlife, and it will be attractive for kids and for the eye.

**Follow-up** In future years, a more extensive shrub layer and new herbaceous, ground-cover and climber layers could be designed and implemented and new technology, following the advice of Martin Crawford's Creating a Forest Garden book to design the forest garden in stages starting with the tree layer. Other than that, maintenance will be minimal and is expected to include some weeding, replacing of dead trees and perhaps light mulching on the coming growing session together with strimming or scything the grass a couple of times. Some trees might need to be coppiced or pruned lightly after a few years in case they start throwing too much shade on other trees or on the neighboring meadow. In case food crops are harvested, some fertilizing with compost, manure or sheet mulches might be necessary that's why we will have the cattle, unless more Nitrogen-fixing and nutrient- accumulating plants are included in the next layers.

We will also have the chance to update the new technology to more fully include this field in future revisions. Possibilities include joining more professional aquaponics or hydroponics will be in consideration.

### **The conclusion:**

## **What will be achieved through this project?**

#### **Synergies in environmental goals:**

- reducing nutrient losses in value chain (water quality/eutrophication; sustainable mining, processing, farm, diet)
- nutrients/biogas recycling
- precision (crop) farming; restoring soil organic carbon

**Reducing costs:** resulting in higher net income for farmers

**Less primary resources:** < import dependency (phosphate rock, natural gas)

**Distributed employment:** > nutrient recycling in biomass, sewage, manure in rural areas

**Innovation:** EU world leader in technologies, quality, systems



## URBAN FARM DESIGN

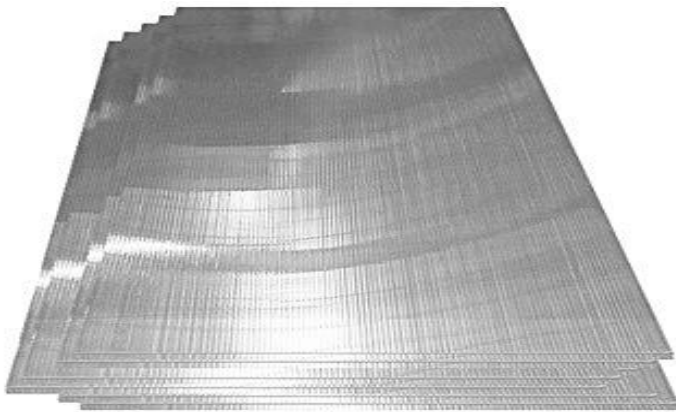
**Location: Fantoni Farm, Bologna**

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**A representation of the Innovations for a sustainable agriculture in Fantoni Farm**



There will be several of glass with wood or iron frame greenhouses with straight eave configuration which will serve as workshop for kids to work on them. They will have double insulated and tempered glass. This is a safety glass that will crinkle when it is broken to protect people from getting cut. They will use more energy to heat or cool, as they do not have the insulation factors that polycarbonate has. But we will get hot spots in a glass greenhouse by putting polycarbonate in the roof while retaining the glass sidewalls. Then we will get the protection and insulation in the roof, but still maintain the beautiful view with the glass sidewalls.



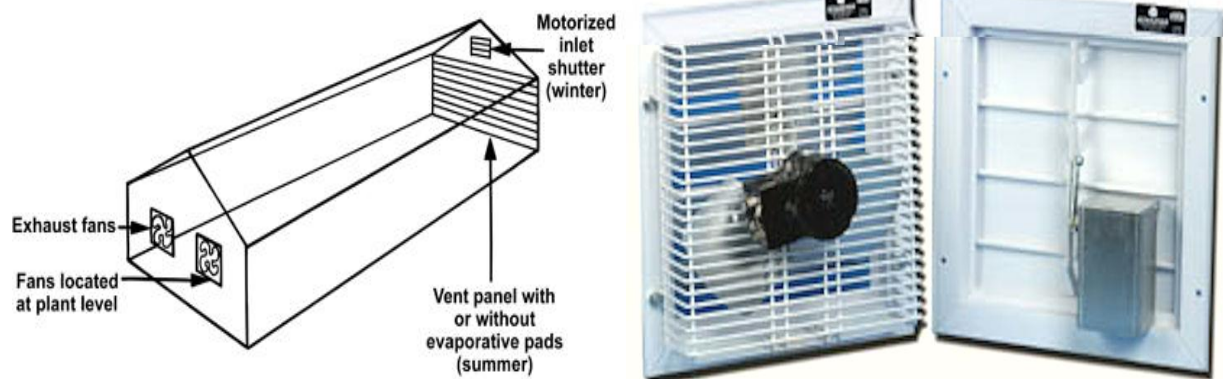
**Polycarbonate sheets thickness 4mm-650mm wide x 1200mm long UV- light-resistant sheets**





**How it will be put at the glass greenhouse**

### **Greenhouse Ventilation Design;**



The greenhouse ventilation systems consist of an appropriately sized exhaust fan, 1 or 2 intake shutters and a thermostat.

### **Greenhouse Automation:**

Instead of walking out and opening and closing the vents every day, it will be done when needed. Warm air rises. Opening the roof vents is one of the easiest ways to vent hot air out of the greenhouses. Although, during the hottest months of the year, this alone will probably not be sufficient to cool the greenhouses. That's why we will probably need an electric ventilation system and probably a shade cloth.



These openers have a wax cylinder inside of them. They are based on contraction and expansion. When the wax gets hot, it expands and pushes the greenhouse automatic vent openers to the open position. When the wax cools, it contracts and pulls the vents close. They are installed with several screws into the existing greenhouse frame. You simply replace manual vent arm. No batteries or electricity required,

#### **Some of the greenhouse will have Solar Powered Greenhouse Vent:**



When there is no electricity available, the intake shutter comes equipped with a solar powered opener. This opener is a wax cylinder that operates on the principle of contraction and expansion. When it is warm, the wax will expand and open the vent. When it is cool, it will contract and close the vent.

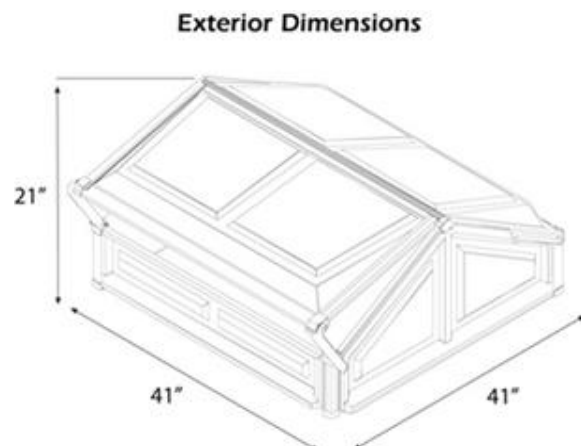
#### **Greenhouse Shelving;**

Greenhouse benches will be available in fiberglass frames. The fiberglass benches have UV protected interlocking tops with drainage holes. The UV protection will keep the tops from breaking down in the sunlight. We recommend a narrower bench, say 2' or 3' deep for most hobby size greenhouses that will be used for kids. This makes it a whole lot easier to work the plants from one side of the bench.



-A prototype of how the greenhouses will look like inside.

**Greenhouse Season Extender:**





### **Double Cold Frame with Flowers**

We will use these in the late winter to grow lettuce, cabbage, cilantro, radishes, beets, carrots, broccoli, cauliflower, spinach etc. If they need some extra heat we can place a heavy blanket, hay, a burlap bag of leaves, etc over the top of the closed frames.



### **Black Weed Barrier:**

The Ground Cover is UV protected for longevity. There is a line every 12" for plant placement in nurseries.



The polypropylene black weed barrier is tightly woven and helps retain soil moisture and keeps weeds at bay. Water will drain through this material, so there is no standing water left on the surface. This fabric can be used for multiple purposes. It is excellent for no wanted weeds to grow, this way we won't need to use herbicide.

### **Reduce Water Requirements:**

With many municipalities implementing strict and expensive water policies, saving water can have a huge impact on the resources used. Plants in containers are much more subject to drying out. The large surface area of containers leads to evaporative loss and often requires substantially more water than plants that can retrieve excess water from the ground. We will



choose a soil mix containing coir fiber, significantly reduces watering needs. We want to add peat moss. Peat is a diminishing resource and it quickly sheds water if allowed to dry out at all. Watering each container slowly and individually will also conserve water. Slow deep watering is absorbed better than a quick drenching. Watering slowly requires more time, but there are some interesting and low-tech drip systems that work well in greenhouses.

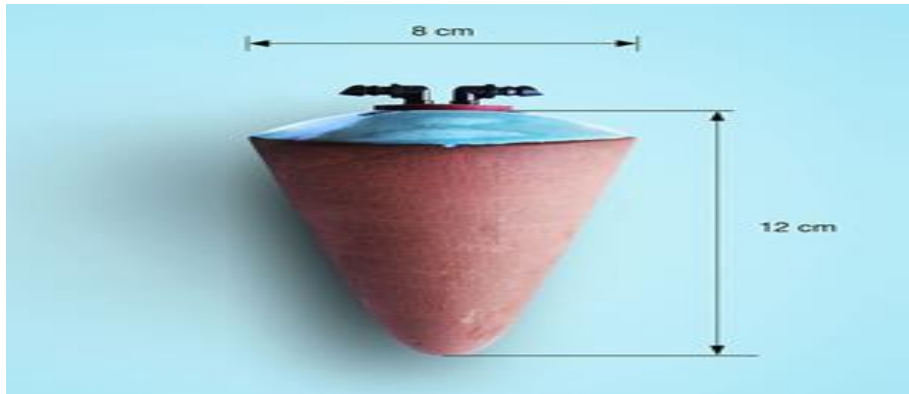


**Peat, also known as turf, is an accumulation of partially decayed vegetation or organic matter.**



As organic matter we will also use compost. During this process people at Fantoni Farm will recycle various organic materials otherwise regarded as waste products and will produce a soil conditioner. Compost will be rich in nutrients. The waste products will mainly come from the minibar or food cattering.

Watering Solution Systems that will be used and will be taught to the kids and on workshops.

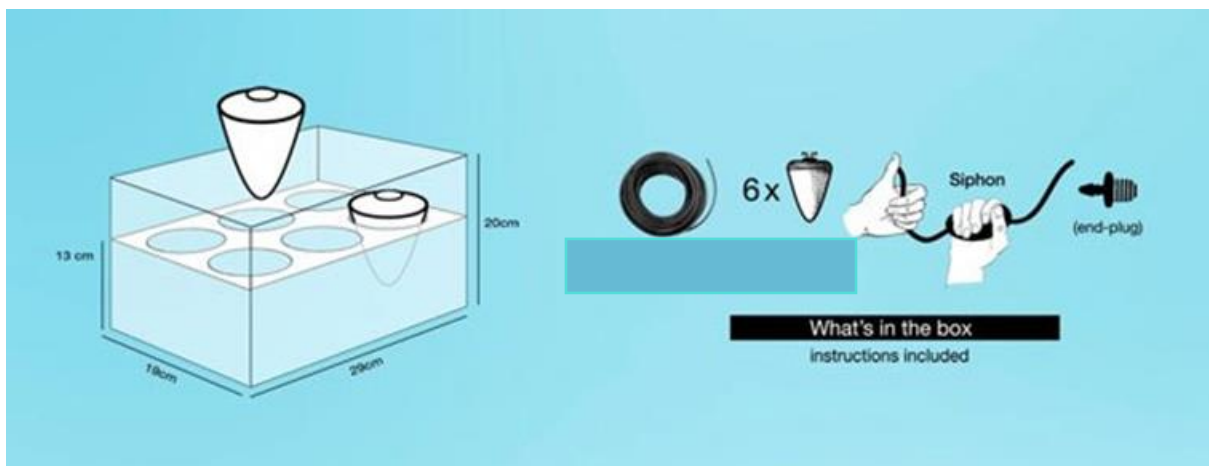


## 1.Low-Tech Egyptian Artisan Clay Pots



The system consists of a set of six clay pots whose unglazed bases let water pass through while the glazed tops help minimize evaporation. The pots get connected to a reservoir which maintains the water level for up to a month.

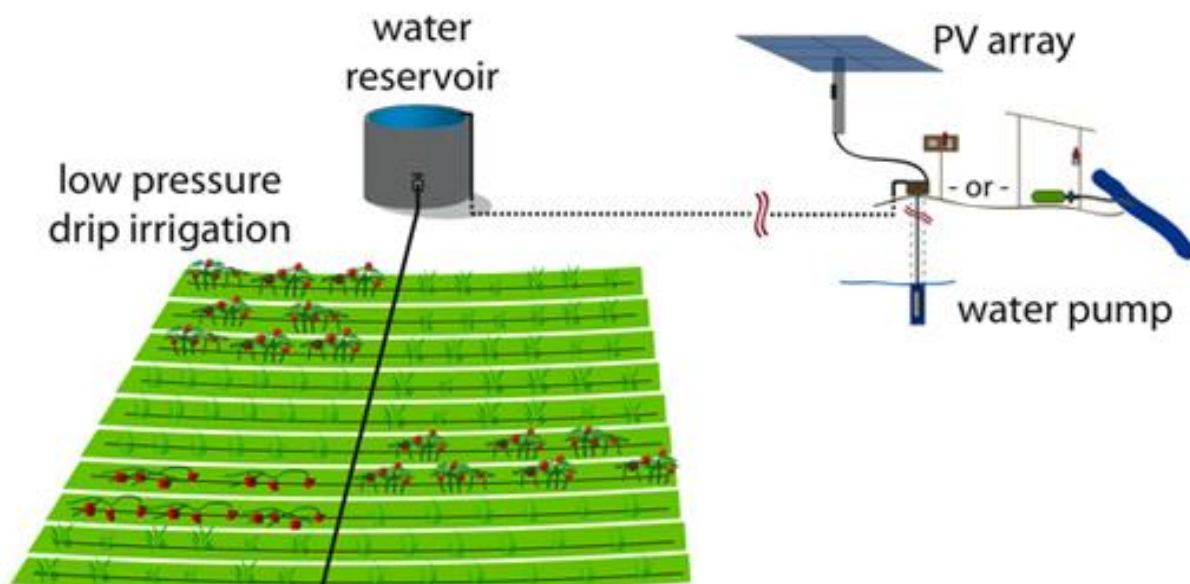
It works like this: As the water evaporates from the plant's leaves, it draws water from the soil, then as the soil begins to dry. The plant's roots will naturally seek out the water source and cling to the clay pot, drawing up all the water they need.





And to conserve even more water, we will use renewable water sources such as rain drainage to the water tank

Another Water System will be Solar photovoltaic water pumping system for irrigation:



### Pest Control:

Insect problems in a greenhouse can quickly become an infestation if not managed properly. There will be several natural and non-toxic methods for controlling insects.

**Permaculture** will also be included on the project. Through Permaculture we will teach kids and whoever is interested the relationships they can find in nature and can how can be applied to all aspects of human habitation, from agriculture to ecological building, from appropriate technology to education and even economics. Permaculture will also be included on the project. Through Permaculture we will teach kids and whoever is interested the relationships they can



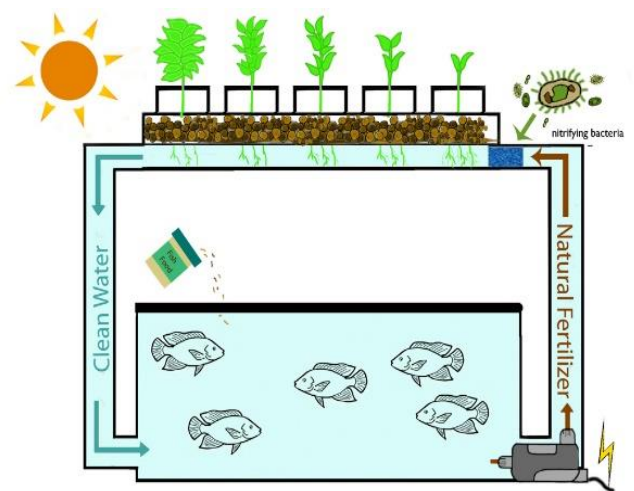
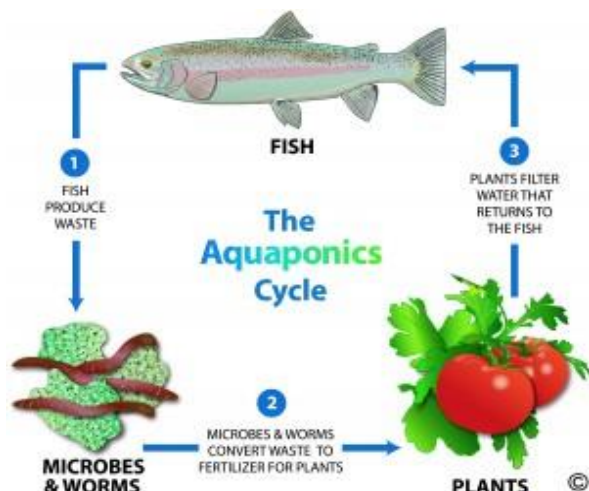
find in nature and can how can be applied to all aspects of human habitation, from agriculture to ecological building, from appropriate technology to education and even economics.



**An example of how DIY permaculture will look like.** The techniques and strategies used to apply these principles will vary widely depending on climatic conditions and resources that are available. The methods may differ, but the foundations to this wholistic approach will remain constant. By learning these principles, the kids could acquire valuable thinking tools that help them become more resilient in an era of change.

**Mixing the modern agriculture with traditional agriculture is the main anthem of our project for Fantoni Farm.**

Aquaponics is a proven system for raising fish and growing plants that also provides an excellent way to teach children a variety of lessons. Whether they will want to focus on learning key topics like science, technology, engineering, and math (STEM) or sometimes the volunteers may only want to focus on responsibility, self-sufficiency, or nutrition, aquaponics for kids this will be always the perfect solution.



These benefits combined with the organic plants and fresh fish produced by the system make teaching kids about aquaponics a very rewarding experience especially after they learned a lot about greenhouses and permaculture.

The Building of Fantoni Farm will be reconstructed with these kind of bricks which will termoisolate the building. Hempcrete is a bio-composite made of the inner woody core of the hemp plant mixed with a lime-based binder. The hemp core or “Shiv” has a high silica content which allows it to bind well with lime. This property is unique to hemp among all natural fibers. The result is a lightweight cementitious insulating material weighing about a seventh or an eighth of the weight of concrete. Fully cured hempcrete blocks float in a bucket of water. It is not used as a structural element, only as insulating infill between the frame members though it does tend to reduce racking.



There will also be a place for animals like horses while in the near future we can add chickens and sheep too, they will be an attraction for the visitors for kids and we will use horse manure as fertilizer.

### Manure Per 1,000 Pounds of Live Weight

	Excrement per year	Manure with bedding per year	Nitrogen per year	Phosphoric Acid per year	Potash per year	Value per year
	Tons	Tons	Lbs.	Lbs.	Lbs.	
Horse . .	8.9	12.1	153	81	150	\$42.15
Cow . . .	13.5	14.6	137	92	140	39.00
Sheep . .	6.2	9.6	175	88	133	46.05
Calf . . . .	12.4	14.8	150	105	102	40.35
Pig . . . .	15.3	18.2	331	158	130	80.60
Fowls . .	4.3	4.3	293	119	72	68.15

### City/District functionality (social and environmental value of the project):

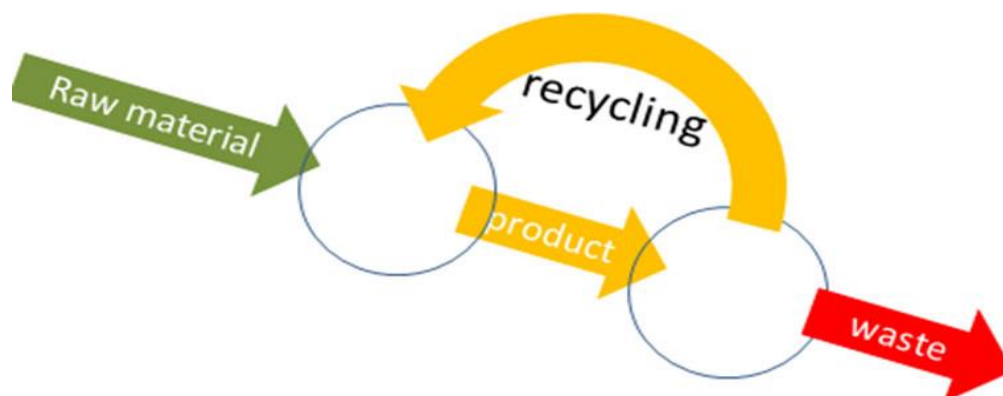
The Environmental value of the project category includes:

- (1.) Maximize material and energy efficiency,
- (2.) Create value from waste
- (3.) Substitute with renewables and natural processes.
- (4.) Adding New Technology systems

**Maximize material and energy efficiency**-will be about laying the focus on doing more with fewer resources. By doing so, the farm generates less waste, emissions and pollution.



**Create value from waste**-means that waste streams, emissions and discarded products should be processed into other products and processes and thereby making best use of under-utilized capacity. An example is making the compost, or industrial symbiosis, sharing assets.



**Substitute with renewables and natural processes**-the farm will reduce the impact on the environment and simultaneously increase business resilience by addressing resource constraints associated with fossil fuels and contemporary production systems. Move from non-



renewable to renewable energy sources. Solar and wind power based energy innovations, slow manufacturing, green chemistry.

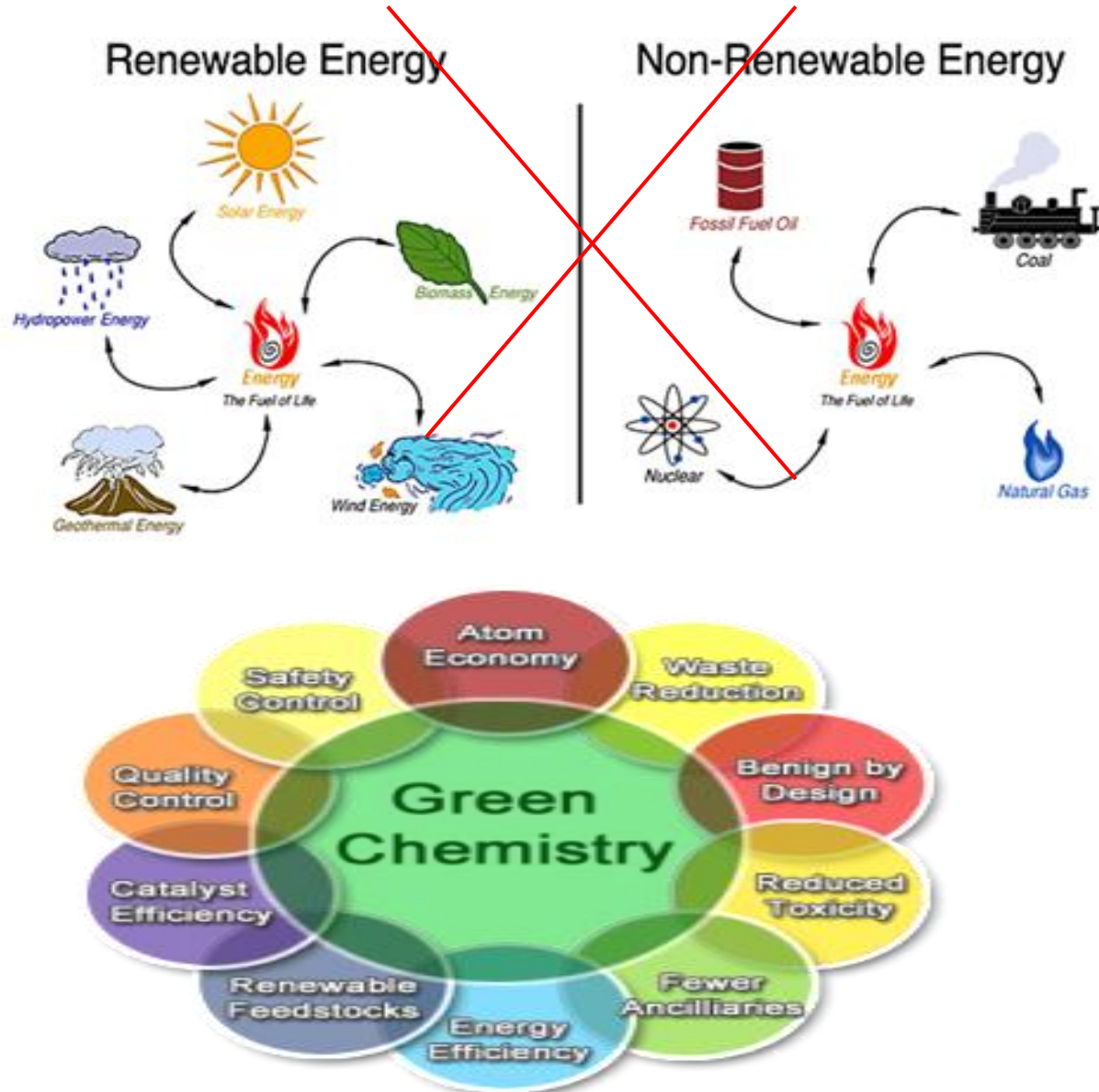


Figure 3. Principles of Green Chemistry.

### Principles of Green chemistry

**Adding New Technology systems**-Aquaponics will be an an interesting subject for anyone looking to grow plants with the benefit of using fish as the nutrient source. A system can be as small as to have one on the kitchen bench using goldfish and growing herbs. To a larger system in the yard next to glass greenhouses with silver perch growing lettuces, tomatoes, herbs etc. An Aquaponics system is made up of a tank containing the fish, and one or more grow beds for vegetable production. The aquaponics system will be for beginners it will be easy build and easy to understand.



### Social Category:

- (1.) Deliver functionality rather than ownership,
- (2.) Adopt a stewardship role and
- (3.) Encourage sufficiency as archetypes

By **delivering functionality**, rather than ownership the farm provides services that satisfy the stakeholders' needs, we will use oriented PSS-Rental Release shared. The workshops will be rented by businesses for trainings.



When the farm adopts a **stewardship role**, it will proactively engage with all stakeholders and local farmers to ensure a long-term relationship with a long-term health and well-being. It will be ethical trade, biodiversity protection.

Finally, the **organizational category** which will consist of:

- (1.) Repurpose for society/environment and
- (2.) Develop scale up solutions as archetypes

**Repurpose for society/environment** means that the project is more focused on delivering social and environmental benefits, instead of being focused just on economic profit maximization.

By **developing scale up solutions**, the project will aim to deliver sustainable solutions at a larger scale to maximize the benefits for the society and the environment like opening innovations platforms, incubators and entrepreneur support models.

**Sustainable actions will be:**

Reduce environmental impacts.

Help maintain high, stable levels of economic growth.

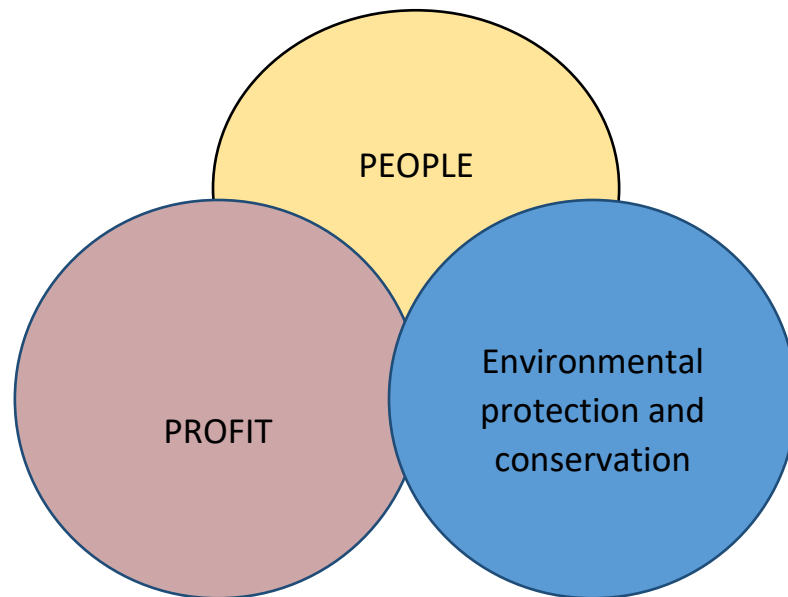
Help achieve "social progress", a broad set of actions that ensure organizational goals are achieved in a way that's consistent with the needs and values of the local community.



**For A Green Fantoni Farm: Economic feasibility and sustainability including Business model for Fantoni Farm (Bologna)**

We wanted to implement a sustainability strategy where we want to optimize environmental and social aspects in parallel to other strategic business opportunities but we also have financial goals. We wanted to focus on Financial and Social goals or Financial and Environmental goals. The Financial-Social goal can be seen as a basic CSR-goal, whereas Financial-Environmental can be defined as "greenwashing" we want that the sustainability to be one of key driver of the long-term success of our project.





The business model of our project in the Active Phase is moral, ethical, strategic and society driven. Our goal is not to build complex organization we want that the Fantoni Farm to be as simple as can be and acceptable from the society. Our conduct is based on the focus on the societal contribution of the products and/or services that Fantoni Farm will have. Furthermore, we are going to be focus on a cooperative supply chain, where companies will come to implement a strategy of engagement and cooperation.

As we mentioned in the first phase also the Fantoni Farm will have innovative center for holding innovative agriculture events where individuals, different institutions from agriculture or similar areas of studies can have the chance to gather up and share their ideas, inventions or creations. Also it will be a place where kids age 4-13 who can have or have signs and symptoms of ADHD. This is the most important part of the farm. A part of the farm will be build just for kids where volunteers and social workers will come and work with these kids. But how can Fantoni Farm help a child with ADHD?



The question is simple: By Gardening!

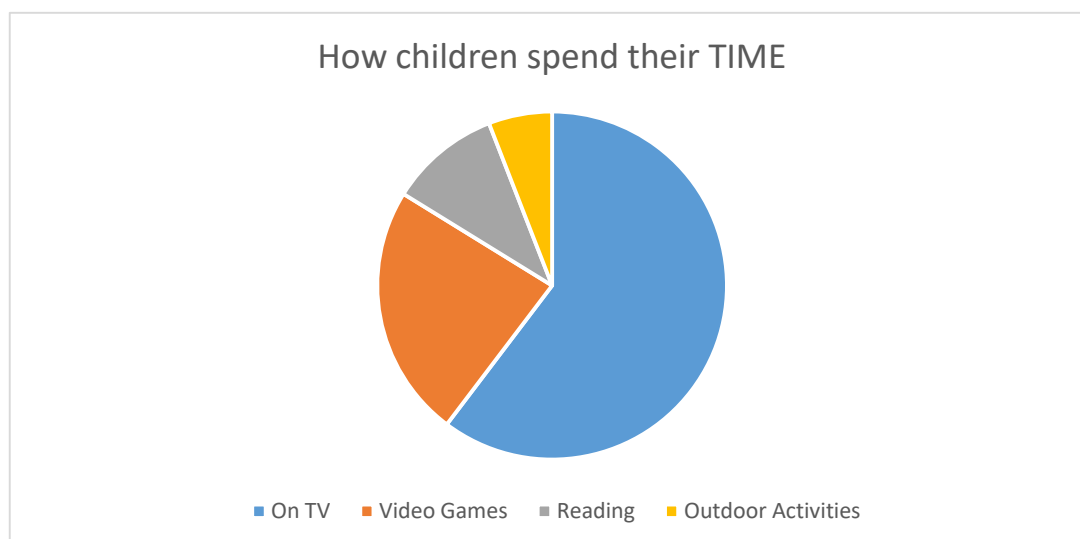
Gardening helps them to encourage silent outlets, using a brain break and monitoring distracting behaviors. Scientific research suggests that getting up close and personal with dirt can improve children's mental and physical health. Gardening can help kids burn off extra energy and control their impulses, develop strong immune systems, and willingly consume more fruits and vegetables.

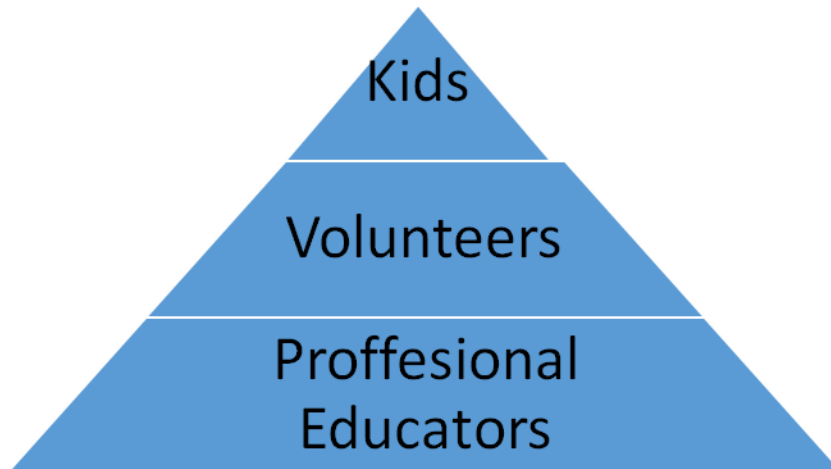
On the economic side this will be with benefit for Fantoni Farm, A survey of [96 families in the Midwest and Europe](#) asked parents which activities appeared to decrease their child's symptoms and which seemed to increase them. Parents consistently chose "green" activities as having a positive effect on their child's symptoms. So parents are able to give an amount of money to take kids out of the city and to spend little more of their time in an outdoor setting.

### Finding a space for gardening?

Lot of families are lucky to have a dedicated outdoor space for plants. But even parents who don't have a back yard will have now an option. We already know that just the city Bologna has Minors (children ages 18 and younger) totaled 12.86 percent, so the chances that the parents can bring their children are high, especially when Fantoni Farm will be a perfect place with perfect conditions for the children. Through this we want also to engage students to work during their free time as volunteers on Fantoni Farm this will be for them a very good opportunity especially for students that study psychology and social science but also for agricultural students. **As volunteers** they will

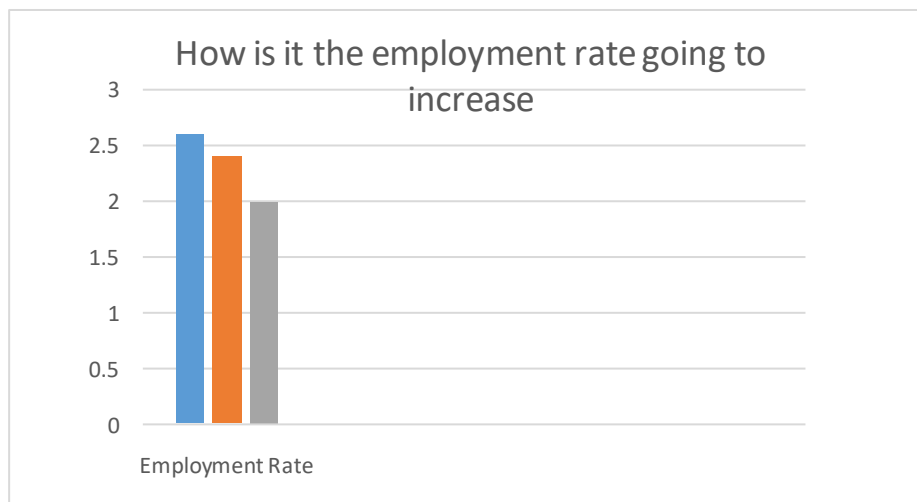
help to organize, cater, or work at fundraising activities such as bake, vegetable sales, act as a playground monitor, help to plan and chaperone field trips, track meets and most important learn new ways of producing food through urban agriculture, and other events that take place away in Fantoni Farm.





### Who will be engaged in the Gardening activities

Volunteers who will work with kids where they state their dilemmas, challenges and targets they will have help from the educators/or social workers. The educators who will have more advantage to work in Fantoni Farm (with salary) will be the ones who come from the near area, in this way Fantoni Farm is going to improve the quality of life and encouraging the integration and economic development of the territory and of people. The other important thing that we have searched and study for this project is the employment rate. By **employment rates** we mean the available labour resources (people available to work) will be used. We calculated as the ratio of the **employed** to the working age population. The working age population who will be able to work in Fantoni Farm refers to people aged 18 to 64.



The hallway and other unusable space can be used as a marketing space where food products could be advertised. The food products that are going to be advertised will be mainly organic foods. By that we will support local products, start-up business, and local farmers.

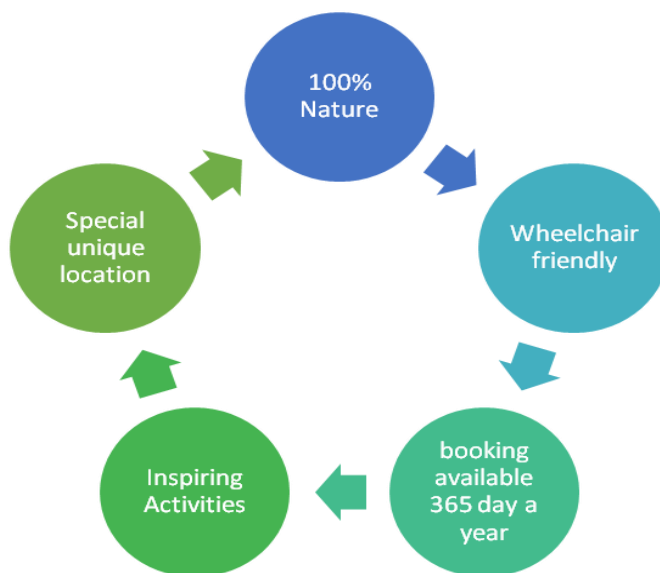




**An example of how outdoor market is going to be and what kind of products will be advertise in the hallway and other unusable spaces.**

The business gatherings that will be held in from of trainings, workshop will be mostly with people who work in different companies or NGO who can rent one of the Fantoni Farm workshop room for a day or how they see it necessary.

These original accommodations will right in the middle of the pasture, between the trees, flowers, horses. It's the perfect place for meetings, creative brainstorming sessions or just work in peace and quiet. After all, it's perfectly quiet and the view of the landscape with horses and beautiful gardens that little kids will create, will make them feel like they're truly away from your day-to-day work life. We also will offer catering services. Of course, we will take your preferences into account for catering, for catering we will need 2 or 3 waitress that will be young women or men who come from the near area.



### **Babysitting service;**

The farm has so much to do for kids, that mums and dads have enough time to themselves to enjoy a good book or the wonderful view of the meadows. Soo they can bring the children with themselves, and the educators and volunteers who work there will take care of the kids while

the parents give sessions or trainings in the other part of the farm. The babysitting service will be available at their request:

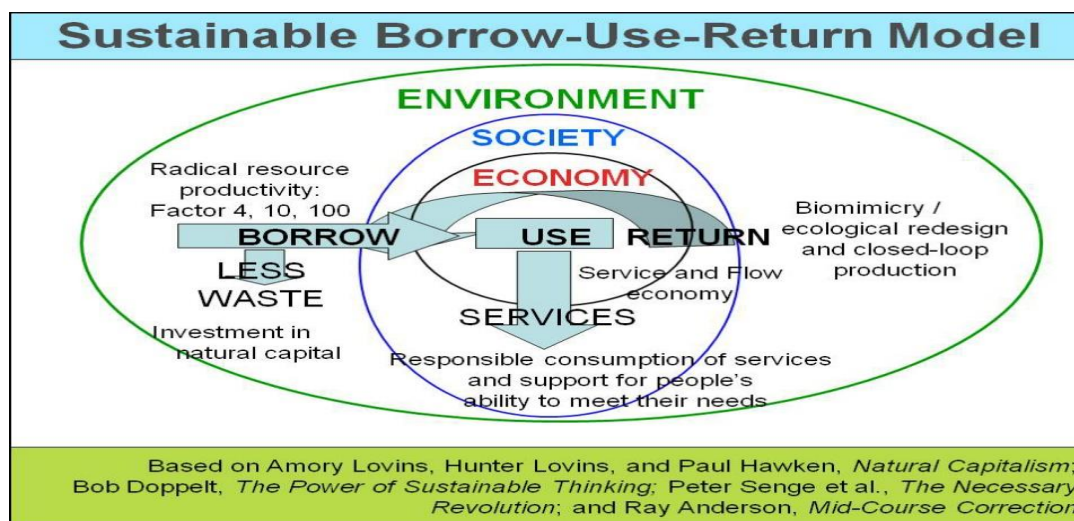
**Disabled access:** The farmhouse is wheelchair-friendly. The holiday home has a high-low kitchen, an adapted bathroom on the ground making it suitable for the disabled too.

The farmhouse will also have supplying additional aids, and people who will be able to help the disabled people.

Other important aspects of this phase are, for example, the implementation of new (sustainable) business models; sustainable business models will be more focused on services, leasing and circular economics. The most important aspect is that the farm will be society and sector oriented.

**Introduction on Business Model of Fantoni Farm:** how will our project define the competitive strategy is by designing products or services that the local farmers are going to offer to the market, what they charge for it, how much it costs to produce, how it differentiates itself from their competitors by the value proposition and how they integrate their own value chain with those of similar firms in the value network. The incomes will come from renting the workshop area, from selling the products that will be made by kids in small attractive markets inside Fantoni Area, also the food that will be cooked for catering will come directly from the farm **"Farm To Table System"**, through the capabilities of the Farm and abilities of people to acquire we will combine and utilize valuable resources in unique ways that deliver the desired value proposition to customers.

The main goal of the Fantoni Farm is that nothing is going to be wasted everything will have a purpose and will be used. For this project we wanted to use a Sustainable Business Models. SBM's are a new paradigm within the world of business models; SBM's are the result of a very specific way of BM innovation. Through SBM's we aim to generate profit by providing products and/or services that directly and/or indirectly reduce the pressure on the (social) environment while still generating profits equal to or greater than traditional business models that are mainly focused on sales of goods and/or services. Furthermore, with our SBM profit is not only a financial gain, but also a social gain such as increased employment or job creation.



An example of how our SBM will look like. The reason why we chose SBM is because is **future ready**. For instance, it will succeed in a place such as Fantoni Farm it uses volatile energy and has commodity prices.

**Because a business model can be executed in different ways, our strategy matters too. We know how we will be competitive and how we will create the required conditions to be part of a sustainable society.** To achieve this we will use **The Net Positive concept**. Net Positive is a new way of doing business which puts back more into society, the environment and the global economy than it takes out, the net positive concept is exactly what our team has looked for.

Through our business model we want to approach share an ambition for business, start-up business and local farmers to grow their brand, have strong financial performance and attract the brightest talent. We want to be spread across the private, public and not-for-profit sectors. We also want to put innovative urban agriculture ideas in these project by doing that we want to inspire kids teaching them how to plant, water, harvest, and cook pesticide-free fruits, herbs, and vegetables. Fantoni will become a urban farm that offers educational field trips kids—many of whom have never seen how food is grown.

**Our aim goal for Fantoni Farm is to become a thriving organization (place) that deliver benefits that extend far yet so close beyond traditional and organizational boundaries.**



**Below there are pictures of how outdoor Markets will look like and hallway where food products will be advertising (more information and details will be on Proof of Concept):**





**-One of the most important things of selling the product will be their packaging too. On Fantoni Farm everything will be Plastic Free, we will use reusable packaging.**



**Only organic food free of pesticide and other chemicals will be served to the consummators.**



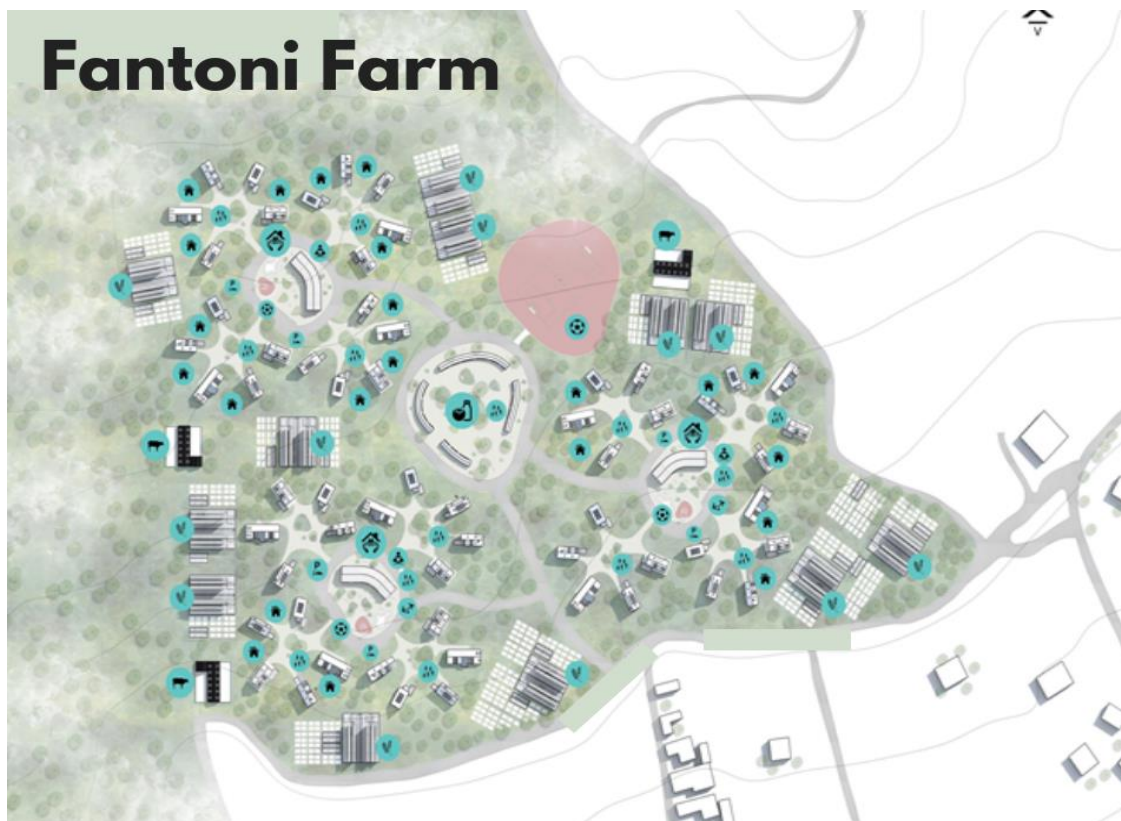
**An example of what “Farm To table” catering system will look like. The food will also come from 108 urban gardens that are located at the Fantoni Farm.**



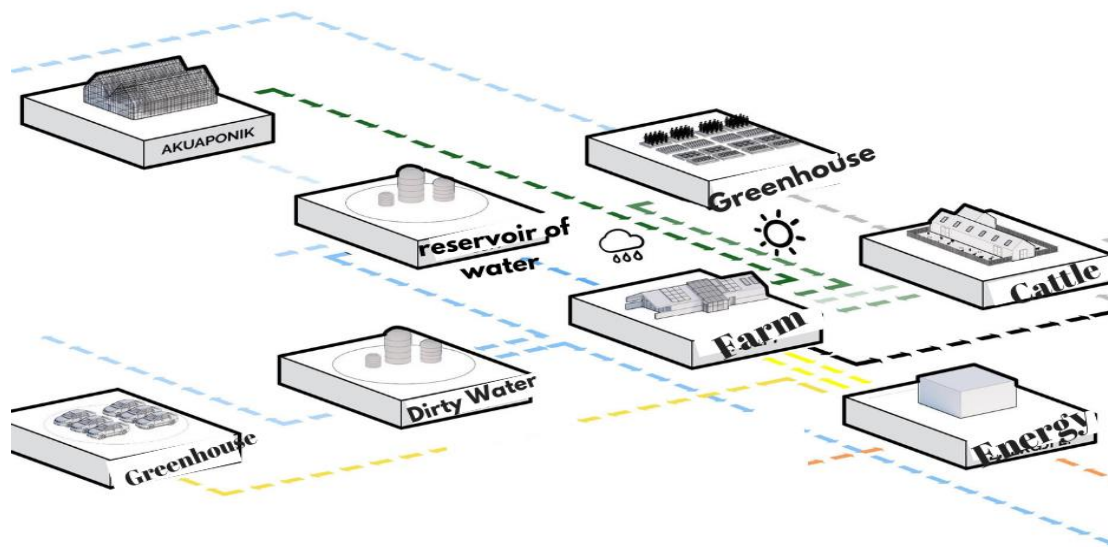
**By this system we will support local farmers and their products that they are going to plant on Fantoni Farm area.**

**Annexes (including design, renders, growing technologies uses)**

**The project of Fantoni Farm:**







## The entrance of Fantoni Farm

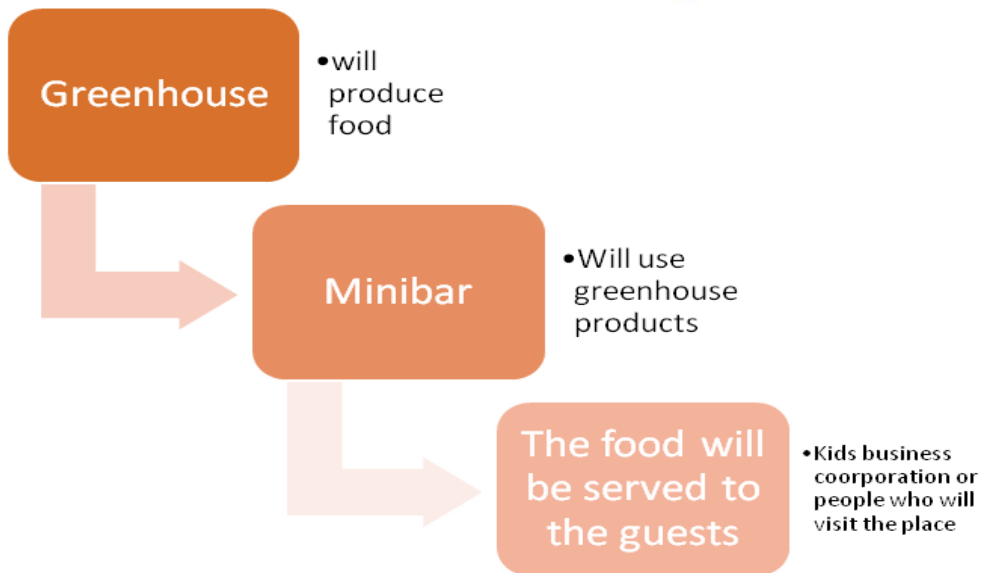
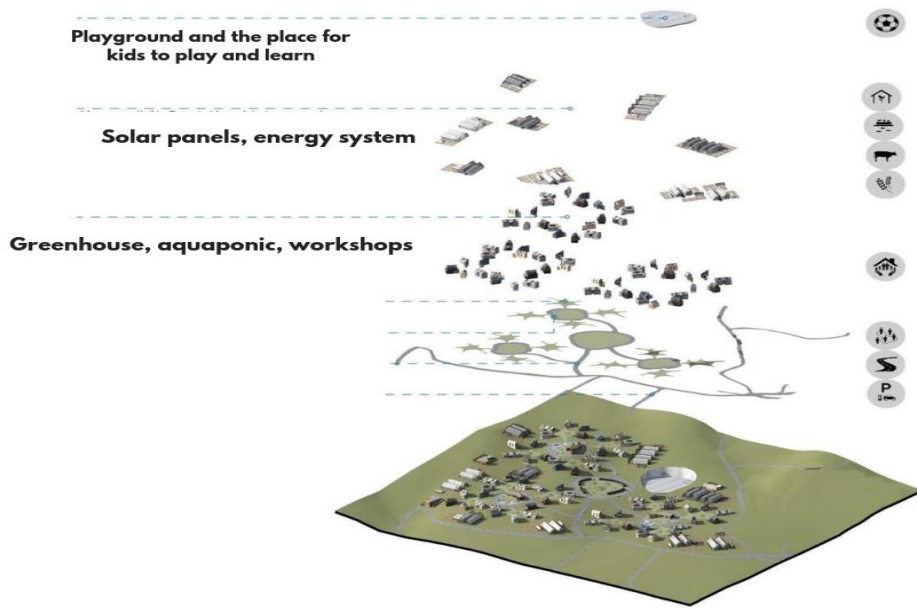


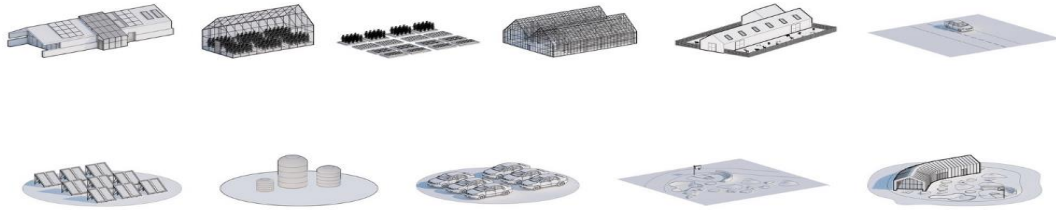




**GreenHouses, aquaponics and the place where kids will play and learn**







**The cattle where horses will stay.**









**How Fantoni Farm park will look.**



**Fantoni Farm Parking.**



Growing technologies uses will be on 2 ways Modern and Traditional.



Small aquaponics system



DIY of Aquaponic for small places

**Traditional Way:** will consist be permaculture and vertical farming with stuffs that aren't used anymore

