



World Forum on  
Urban Forests  
Mantova 2018

*PS \_3.2 Changing  
spaces and places*

# PRODUCTIVE GREEN ROOFS AS A MULTI BENEFIT TOOL FOR CAIRO'S INFORMAL SETTLEMENTS

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SCIENCES  
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ENGINEERING

Research Institute for a Sustainable Environment







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# INFORMAL SETTLEMENTS

Proposed Studies







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# THE POTENTIAL

The Future Vision







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# THE ATTEMPT

## “Sustainable Community Gardens Owned by Successful Communities”

**Objectives:** - Implementation of **5 Sustainable Community Gardens**  
- Training of **30 community members**

**Target Area:** Matariya informal Settlement, Cairo

**Project partners:** GIZ-PDP, the European Union and the German Government, In collaboration with: AyB (Alashanek Ya Baladi) NGO

**Project timeline:** 1 April 2017 – 30 September 2018



European Union



german  
cooperation  
DEUTSCHE ZUSAMMENARBEIT



Participatory Development  
Programme in Urban Areas



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alashanek ya balady  
Association for Sustainable Development





# THE ATTEMPT



Select 5 location  
in Mattariya



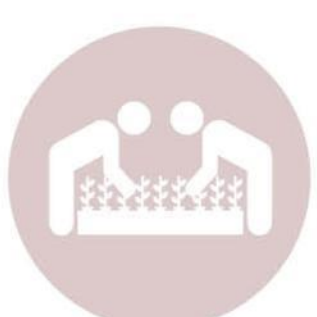
Create  
"Community Gardens"  
Team



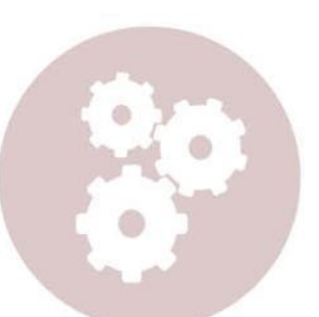
Train  
30 community  
members



Propose a  
community  
garden design



Implement  
5 community  
gardens



Assist  
&  
Followup

## Project Rationale

### Selection Criteria :

#### Technical Criteria (checklist)

- Accessibility
- Safety (guard rails & parapets)
- Conditions
- Solar exposure
- Water & Drainage sources
- Roof insulation

#### Social Criteria

- Interest in agriculture
- Time dedication for the trainings, implementation and management
- Gender equality (50 % at least women)

### Evaluation



### Selected Locations:

#### Schools:

El Amal school for deaf & mute  
Mattariya school for girls

#### Public Entities:

Mattariya Public library  
Mattariya Educational Authority premises

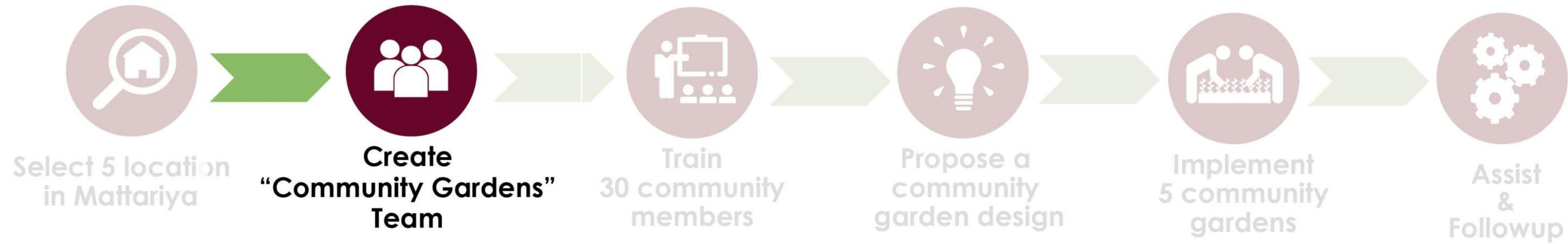
#### NGOs:

CARITAS





# THE ATTEMPT



## Methodology

- Create **Memorandums of Understanding (MoUs)** with the 5 locations **to clarify** all project **objectives** and **role identifications**.
- Each location is to select **6 members** to be **trained** and be **in charge** of the **implemented garden**.





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# THE ATTEMPT



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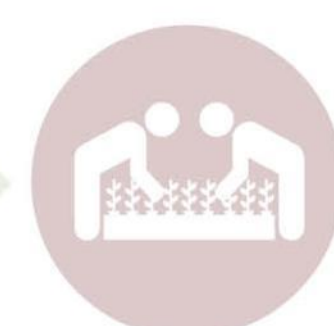
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## Garden implementation & Management

(Theoretical & Practical)

## Social & Green Entrepreneurship



Project Rationale





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# THE ATTEMPT



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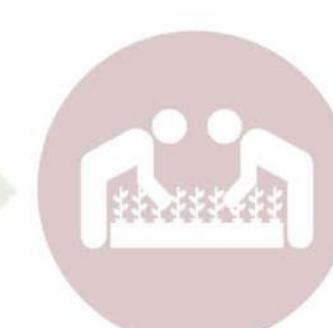
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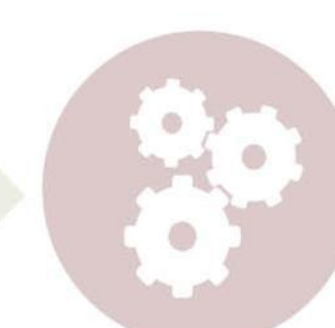
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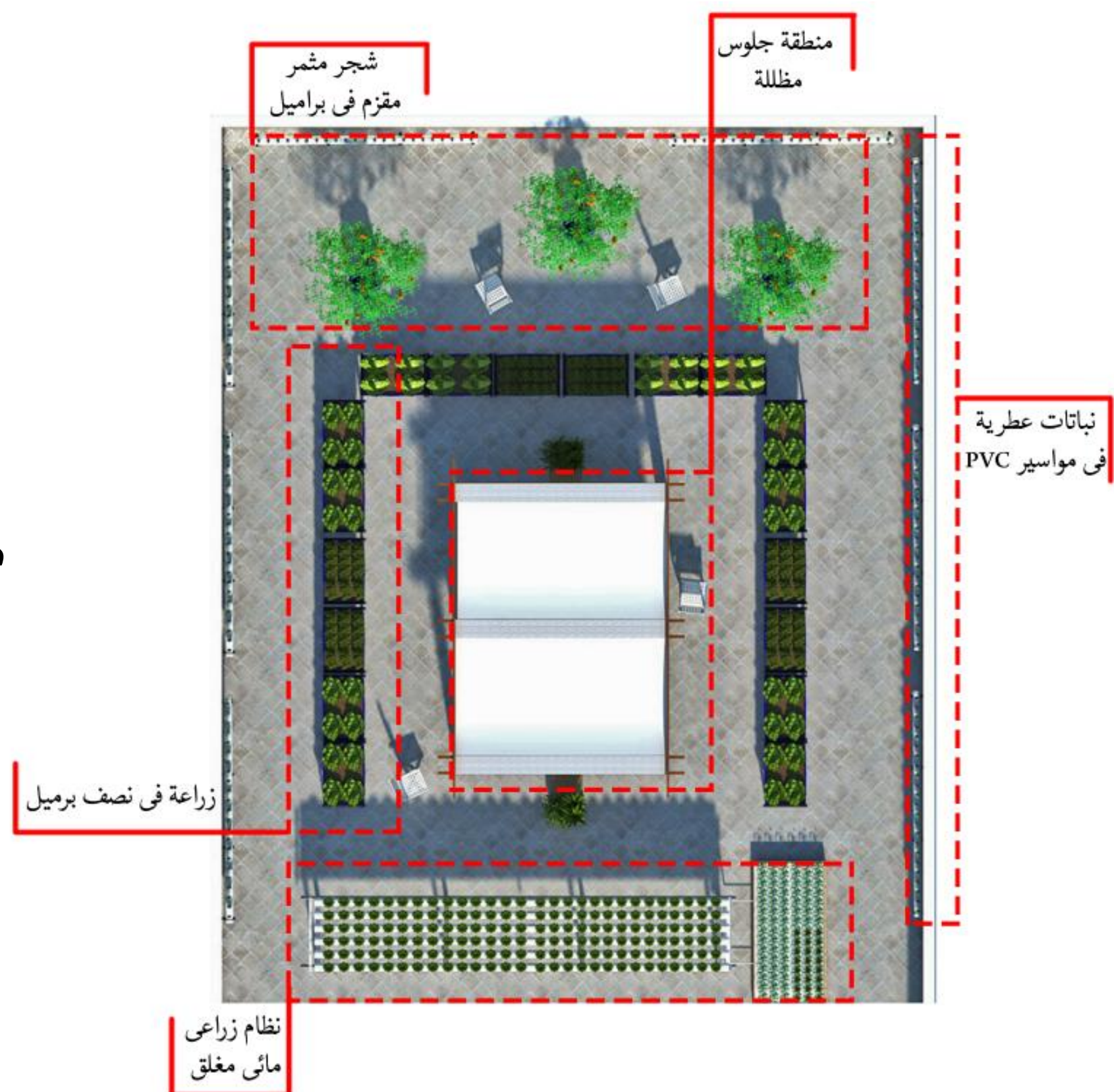
Implement  
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Assist  
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Methodology: "Include community members in early decision making"

Project Rationale







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# THE ATTEMPT



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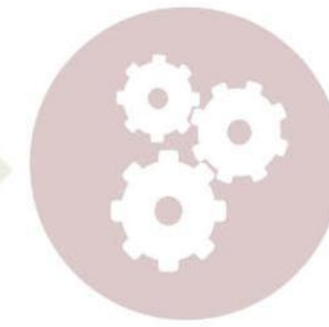
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Methodology: **"Collaborative implementation"**

Technical experiences



Social bonding



Project Rationale





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# THE ATTEMPT



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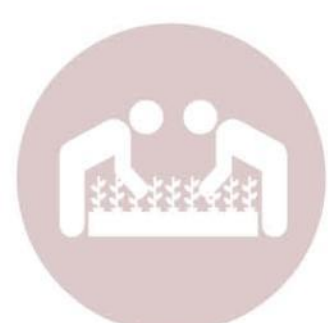
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## Methodology:

- Periodical follow up visits
- Whatsapp groups
- Best Practices Manual



مشروع الحدائق المجتمعية المستدامة التي تمتلكها المجتمعات الناجحة  
دليل أفضل ممارسات الزراعة الحضرية في منطقة المطرية



المشروع ممول من الإتحاد الأوروبي والحكومة الألمانية





# THE ATTEMPT

Garden Components

## Soil less planting systems

### Containers systems



Half Barrel



6 seedlings or seeds



Tree Barrel



1 tree



PVC pipes



9-10 seedlings

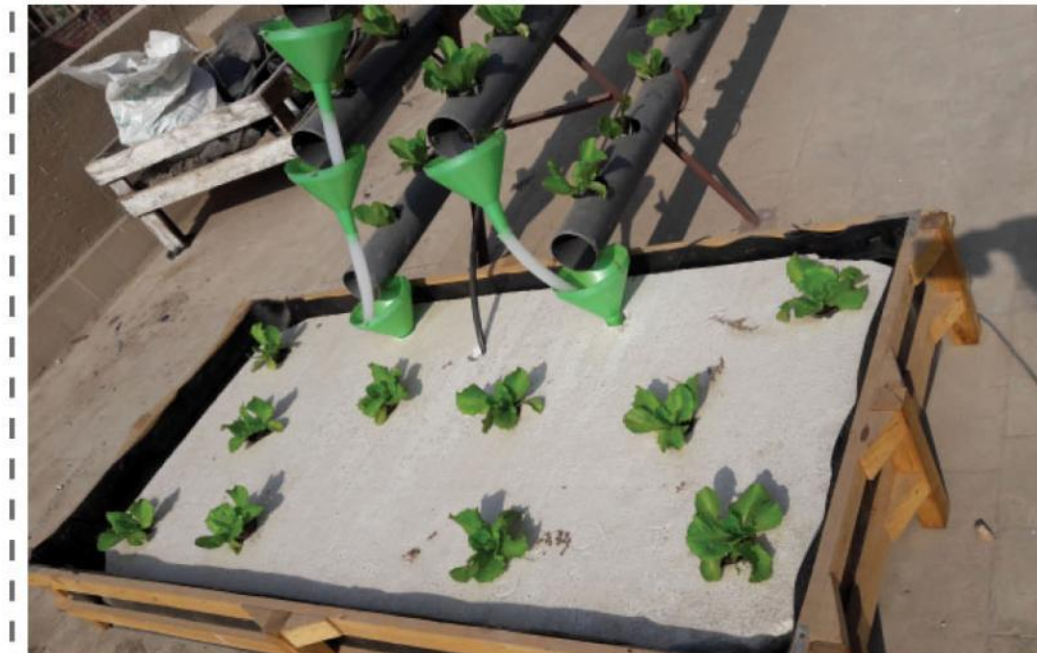
Drip irrigation network



### Hydroponic systems



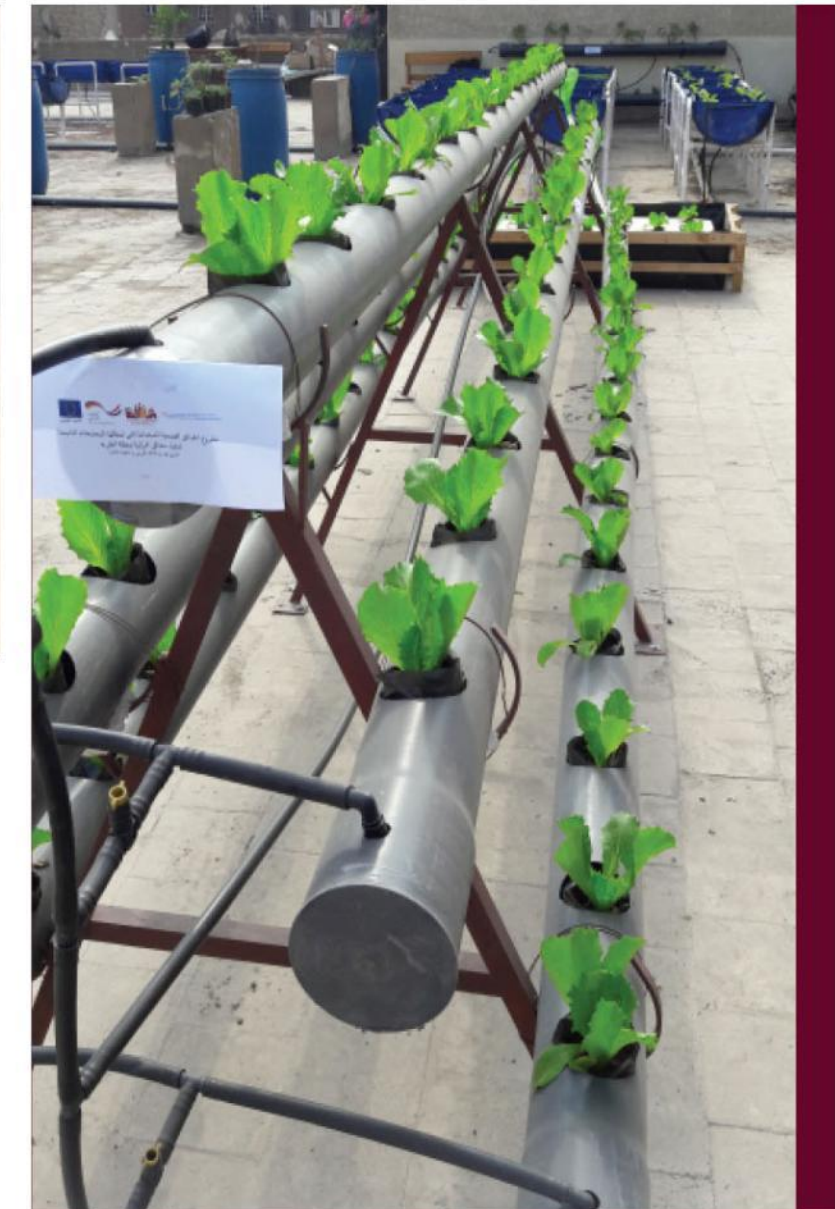
#### Deep Water Culture



10 seedlings

100 seedlings

#### N.F.T system



Water recycle







# THE ATTEMPT

Garden Components

## Hardscape Elements



Benches



Pergolas



“to facilitate, promote and encourage more activity and contact  
Within the implemented gardens “











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# THE ATTEMPT

## “El Amal School For Deaf “

- 18  
  
Half Barrel
- 3  
  
Tree Barrel
- 8  
  
PVC pipe
- 1  
  
Hydroponic Benches
- 3  
  
Benches
- 1  
  
Pergola



Proposed Design



November 2017



December 2017



February 2018





# THE IMPACT



## Economic

- **Produce and sold** hydroponically grown lettuce, Tomatoes, eggplants, cabbage, peppers, mint, thyme, dill, rosemary
- **Revenue saved** to buy new seedlings for upcoming planting cycle
- **community initiatives** to expand their farm



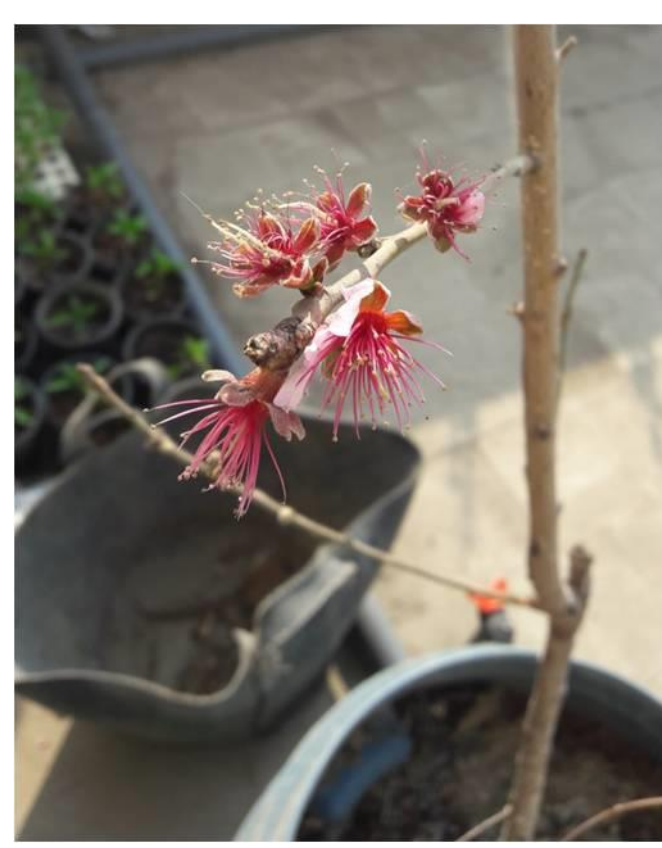
## Social

- **Awareness raising** among schools communities about different rooftop farming techniques
- **Students engaged** in farming activities
- **Social events** were created on the roof.
- increased **community bonds** between members of different locations & adjacent families



## Environmental

- (still not fully quantified) (biodiversity ?)

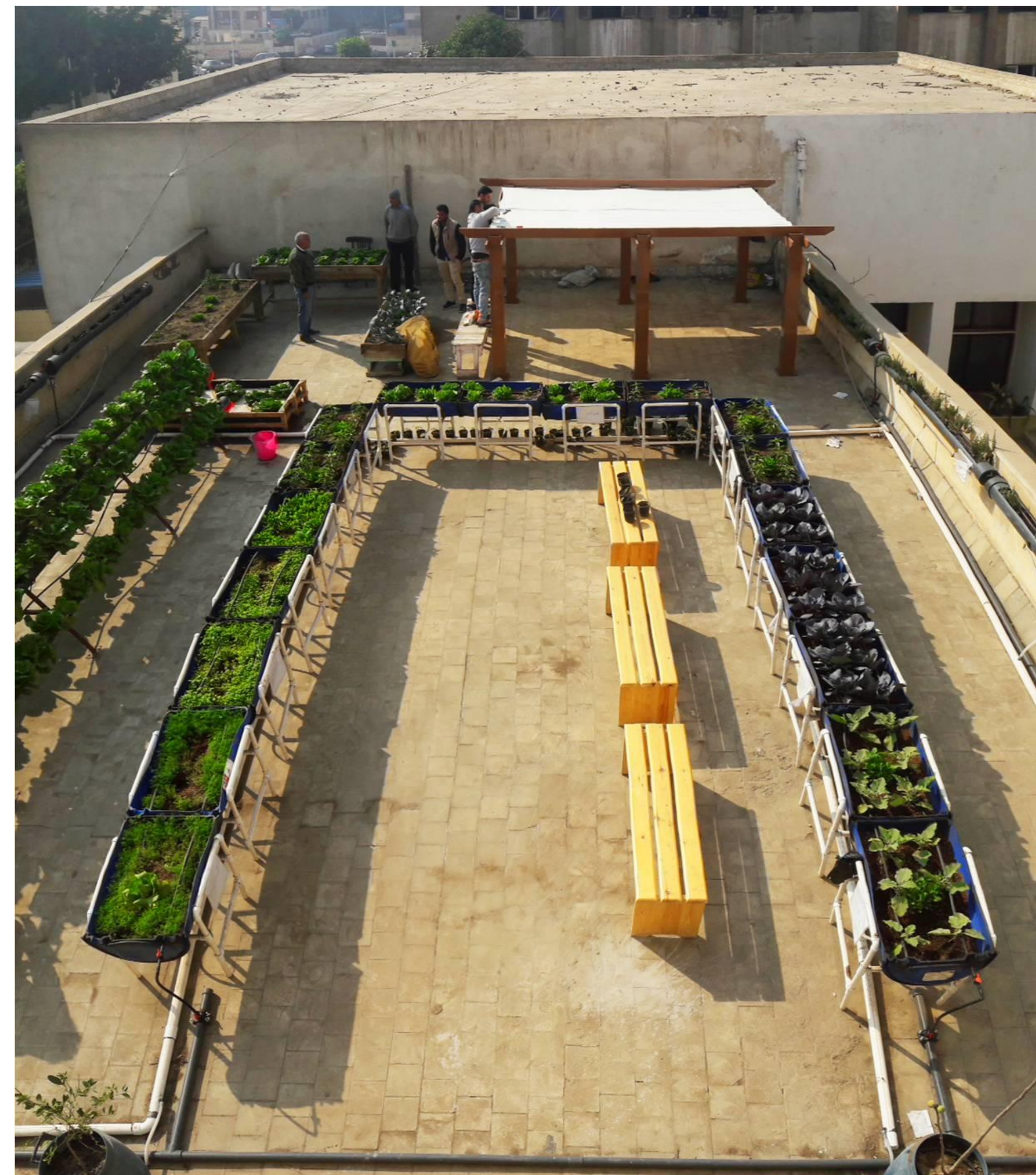






## Findings, recommendations & future studies

- Sustainability of rooftop farming projects depends on a vital factor, alongside the technical infrastructure  
**(Interest in agriculture - Knowledge - Dedication to activity)**
- **Economic profit** from rooftop farming activity is subjected to various aspects **(farm area - technique used - crops planted - Marketing)**
- New soilless agriculture techniques **(Hydroponics)** are **space efficient, water efficient** and could **maximize yielding** capacity per square meter.
- **Impact assessment** of rooftop farming projects is still a missing component (help acquire a **holistic understanding** of the **feasibility** of rooftop farming projects in informal areas)







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# Thank You

## Questions & Comments



*“ The farm has motivated us, it keeps us going and now we feel we can keep getting better. The students now enjoy the greener landscape as well as the agriculture classes conducted in the farm. I am looking forward to teaching more students about making mini-models of the farm at their homes.”*

**Mrs.Eman (El Amal School)**