The micro-gardens in Djibouti’s Républi or agricultural pratice in a context of scarcity of land and water using domestic wasterwater

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Context
- Arid Country with rainfall of 150 mm per year with drought in repetition
- 69 600 ha of arable land representing 3% of the territory to feed about 900 000 inhabitants
- Chronic food insecurity and malnutrition, severe malnutrition for children especially

Intervention area
- Region of Dikhil (As-Eyla and Sissalou)
- Region of Tadjourah (Adaïlou, Dafénaïtou, Guiori, Randa)
- Region of Obock (Orobor, Assassin, Oulma)

Funding:
- European Union

Start date implementation of micro gardens: October 2015
### Project to support non-state actors in Djibouti in the development of sustainable economic activities for food security and integrating the conservation of natural resources

**Country** | **City** | **Start Date-End Date** | **Water Sources** | **Uses**
---|---|---|---|---
Djibouti | Region of Dikhil (As-Eyla et Sissalou) | 2015-2018 | Domestic wastewater | Agriculture
Region of Tadjourah (Adailou, Dafénaitou, Guirori, Rand) | Obock (Orobor, Assasian, Oulma) |

### Sources

**Origin**
- Domestic

**Water reused (m^3/Y)**
- _1m^3/year/square meter_

### Uses

**Crops**
- Vegetables

**Irrigated Area (Ha)**
- 200 micro gardens of 5 square meter

**Cost of the Cubic meter (€/m^3)**
- 0 €

### Water Reuse Chain

**Treatment**
- No

**Disinfection**
- No

**Storage Capacity (m^3)**
- Basin and can of 25 liters

**Irrigation**
- Manual watering
Strategic focus: Horticulture production associated with household waste management and wastewater

Goals

⇒ Contribute to improve food and nutrition security and poverty reduction in rural areas for the benefit of the most vulnerable households.

Projects outcomes

⇒ 200 households
⇒ 200 micro-gardens of 5 square meter
⇒ Annually producing 6t of tomatoes, 22t of lettuces, 8t of cabbage, 7.5t of onions, 5.5t of eggplants
⇒ Monetary incomes of € 86,580

What are the expected productions per household?

⇒ Micro-gardens of 5 square meter/household
⇒ i) about 200 tomatoes (30 kg) per year;
⇒ ii) 36 lettuces every 60 days;
⇒ iii) 10 cabbage every 90 days;
⇒ iv) 100 onions every 120 days.
Which practices, technologies and institutional framework to create an effective, safe and cost effective water reuse chain?

**What paradigm shift with regard to the context?**

**Micro-garden in household as an alternative!**

Hydroponics using little space and supports made of recycled materials for the production of a wide variety of vegetables in concessions, using grey water.

**Success factors**

- Large household size: 11 people on average
- Large quantity of water used for washing and handwashing (Muslim majority population): 27 liters per day on average for households
- Modest water needs of micro-gardens: 3 liters per day for 1 square meter
- Practices of domestic livestock in almost all households
- Valorisation of household waste and animal feces in the constitution of production substrates
Any device for collecting grey water?

⇒ Creating washing areas and ablution appointed within households by households themselves

⇒ Creating a grey water collection basin
⇒ Storage in the basin or directly in 20 liters cans

Whats potentials risks the grey water uses?

⇒ Limited health risk due to the low fecal contact
⇒ Assimilation and utilization by plants of ions contained in these waters (phosphates, calcium, magnesium)

In what way is the method sustainable and vulgarisable?

⇒ Few constraints for watering because of availability of irrigation water (27l per day per household used for washing hands)

⇒ Available substrates and enriched with animals feces
⇒ Use utensils and recovery material used for the production
THANK YOU FOR YOUR ATTENTION