BONEX pilot on sustainable agriculture in Jordan

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Background

The Demonstration Pilot is located within the Wadi Mujib, which is a watershed of 6,727 km2 with an average rainfall of 135 mm (with high variation depending on the location and topography; from 50 mm to 600 mm). Main crops in the region are vegetables and olive trees.

In general, Jordan is one of the most water stressed countries and water scarcity increasingly constrains economic and social development. In addition, Jordan is also highly vulnerable to climate change. Jordan has less than 90 m3/ capita/year of annual renewable water, significantly below the water poverty line of 500 m3/ capita/year. Its total national water supply equated to 147 m3/capita/year before the refugee crisis. The steady population growth caused by the refugees has aggravated the problem. The current domestic supply capacity is around 126 liters/capita/year.

Climate change is expected to exacerbate challenges facing Jordan’s natural resource endowment in years to come. With annual precipitations decreasing at a rate of 1.2mm per year and temperatures increasing by 0.03 degrees per year, Jordan will most likely experience periods of droughts with longer periods of dry days, which will affect the agriculture sector and leave the country to deal with serious and complex environmental problems.

Aims and Goals

As higher levels objectives, BONEX Demonstration Pilot in Jordan will help develop a sustainable model for investments opportunities for various types of investors and entrepreneurs along the agri-food value chain, hence contributing to poverty alleviation and shared prosperity, and social stability at a basin that have little alternative economic opportunities. By promoting water-efficient agriculture and efficient use of land, the proposed model would also help diffuse potential tensions around scarce natural resources. By promoting the inclusion and active participation of women and youth the proposed model would also contribute to strengthening social cohesion. Finally, BONEX

Demonstration Pilot in Jordan will serve as expansion/replication model in other areas.

Actions taken

The pilot consists of:

- two hydroponic production systems (46.5 m x 9 m, 418.5 m2 each) powered by solar PV system
- and two other traditional-farming greenhouses established (control).

The hydroponic irrigation system is drip irrigation with soilless growing medium which is tuff (locally available).

The water is collected from Al Wala valley stream, filtered, and circulated in a closed loop throughout the hydroponic green houses.

The fertilizers are supplied and dozed based on a self-adjusting system.

Main Achievement to date

The pilot is operative since May 2023. Crops cultivated so far have been cucumbers and peas. Dhiban Youth Cooperative, a CBO composed by 13 male and 10 female youth, is operating the pilot. Members of the cooperative took part into capacity building measures and workshops in the frame of the BONEX project.

Initial results reveal that the soilless system grants for appreciable water savings (around 25%) and significant increase in production (more than triple for the first agricultural cycle) in comparison to the traditional system, vis-à-vis comparable operational cost.

In addition, the system is energy neutral, being operated via an off-grid PV system and its operation is gender friendly, as 5 female and 1 male youth are specifically assigned to work on it.

Partners
German Jordanian University International Union for the Conservation of Nature

Lessons, replicability and scalability potential

The Pilot is part of the BONEX project (Boosting the Nexus Framework Implementation in the Mediterranean), which aims to provide practical and adapted tools, examine concrete and context-adapted technological innovations, enhance policies and governance and facilitate **WEFE Nexus practical implementation that balances the social, economic, and ecological trade-offs.**

Innovative WEFE Nexus solution approaches will be iteratively developed and tested in 7 carefully selected Demonstration Projects (DP) covering a diversity of Mediterranean Region contexts, challenges, and technologies to ensure that results are truly replicable and that wide socio-ecological and cultural diversity of the Mediterranean Region is considered.

For Jordan, a series of workshops aims at giving visibility and discuss the suggested

intervention among national and local stakeholders, to spread awareness among farming communities and policy makers alike and to test upscaling and replicability.

The Demonstration Pilot of BONEX in Jordan is a soilless substrate culture (hydroponics) located in Dhiban area within Wadi Mujib watershed (central Jordan).

Demonstration activities delivers a smart agricultural technique characterized by saving water, equipped with solar powered drip irrigation and fertigation system adapted to the rural MedReg context improving end-users adoption, market uptake and policy integration of WEFE Nexus in an area that is still at a low level of technology development and sustainable approaches, high poverty rates , and characterized by acute land degradation and very scarce water resources.

Additionally, the Demonstration Pilot is operated managed by a youth cooperative that was formed by 13 male and 10 female unemployed youth.

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Keywords
Soilless agriculture Youth Engagement Resilient food system Water Saving Renewable Energy Consumption

Country
Jordan

Start year
Sat, 01/01/2022 - 12:00

Acknowledgement of funding source
PRIMA

Total funding
100 - 500k €

Environmental
High

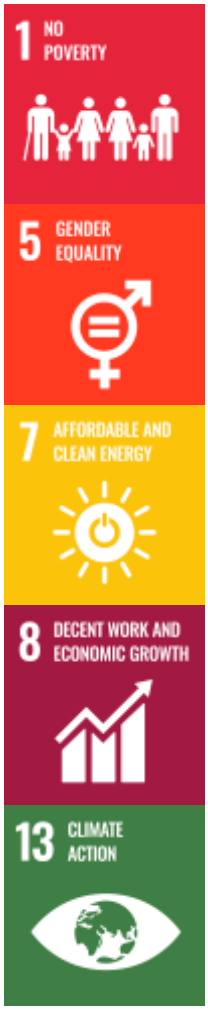
Social
High

Technological
Medium

Financial
Medium-Low

Institutional
Medium-High

SDGs



Featured Image

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Nexus Dimensions
Ecosystems
Energy
Food
Water

City
Dhiban, Madaba

Visibility
Public

Source URL: https://beta.toolbox.venthic.com/demo/bonex-pilot-sustainable-agriculture-jordan