Renewable Energies for Agricultural and Rural Development in Tunisia

Descriptive Summary

The REFAT (Renewable Energies for Agricultural and Rural Development in Tunisia) project aims to contribute to national efforts to promote renewable energies in the agricultural sector and potable water production. Aligned with the initiatives of the Tunisian Ministry of Agriculture, Hydraulic Resources, and Fisheries (MARHP), the project aims to

- Support the development of an incentive framework for more efficient energy production and consumption in agricultural farms in Tunisia;
- Promote renewable energies to reduce the energy cost of water pumping for potable water.

The project consists of two components:

- Component 1: Promotion of renewable energies and sustainable water management for agriculture (pilot startups ,training and studies);
- Component 2: Installation of a 500KW photovoltaic power station at a potable water pumping station of SONEDE in Gabès.

Background

The REFAT project aims to respond to several critical environmental and social challenges affecting Tunisia:

Environmental Challenges:

- **High Energy Consumption in Water Management:** Traditional irrigation and drinking water systems in Tunisia rely heavily on fossil fuels, leading to significant greenhouse gas emissions. REFAT aims to reduce this dependency by integrating renewable energy sources, such as photovoltaic solar pumping stations, to power small-scale irrigation and drinking water production.
- **Water Scarcity and Salinity:** Many rural areas face challenges related to water

scarcity and the salinity of available water resources. REFAT plans to implement pilot desalination plants to treat slightly salty water for small-scale irrigation, ensuring a more sustainable and usable water supply for agriculture.

Social Challenges:

- **Limited Economic Opportunities for Young Graduates:** There is a need to create employment opportunities for young graduates in Tunisia. REFAT addresses this by training 26 young graduates in renewable energy, sustainable practices, and entrepreneurship, facilitating the creation of 10 start-ups focused on serving small Tunisian farmers.
- **Capacity Building for Regional Development Agents:** To support small farmers effectively, it's essential to enhance the skills of regional development agents. REFAT provides training for 10 agents from the Regional Development General Commission (CRDA) on renewable energies and sustainable agricultural practices, enabling them to better assist the farming community.

By addressing these environmental and social challenges, REFAT contributes to the sustainable development of Tunisia's agricultural sector, promoting both ecological balance and socio-economic growth.

Aims and Goals

REFAT has three key objectives:

- Reducing the energy consumption of water supply in small-scale irrigation and drinking water production in remote areas;
- Integrating renewable energies sources adapted to the specific territorial needs;
- Promoting the economic, social and environmental viability of small Tunisian farmers.

Actions taken

The REFAT project "Renewable Energies for Agricultural and Rural Development in Tunisia" revolves around the following key axes:

1. Dissemination of solar-powered irrigation systems and installation of low-energy water treatment demonstrators in small agriculture (solar desalination of slightly brackish water and phytoremediation in rural areas);
2. Integration of photovoltaic solar energy to reduce the high energy consumption of potable water production systems;
3. Capacity building for key stakeholders involved in promoting renewable energies within the water-energy-food nexus.

Main Achievement to date

Here are the key achievements:

From an energy perspective:

- Achieved energy savings of 44 Ktoe through the integration of renewable energies in small-scale irrigation.
- Achieved energy savings of 133 Ktoe by meeting 30% of the electricity needs in the water sector with renewable energy for the period 2018-2030.

From an environmental perspective:

- Avoided GHG emissions of 136 KtCO2 from small-scale irrigation and about 856 KtCO2 from the water sector.

From a social perspective:

- Supported developing a local economy and create 48 direct jobs per year.

Quantitative Results

- 1 photovoltaic power plant of 500 kW for potable water pumping in rural areas.
- 2 pilot slightly saline water desalination stations for small-scale irrigation and 1 pilot phytoremediation station.
- 10 pilot photovoltaic solar pumping stations for small-scale irrigation.
- 26 young graduates trained in renewable energies, sustainable practices, and entrepreneurship to serve Tunisian farmers.
- 10 General Commissariat for Regional Development (CRDA) officers trained in renewable energies and sustainable agricultural practices to support small Tunisian

farmers.
- 10 startups in the fields of renewable energies and sustainable practices to serve small Tunisian farmers.
- 2 studies: (1) potential markets for sustainable technologies for agriculture, (2) proposal for mechanisms to promote renewable energies in the agricultural sector.
- 1 B2B workshop on sustainable techniques and technologies for small-scale agriculture.

Partners
MARHP MATTM MEDREC

Lessons, replicability and scalability potential

The REFAT project offers several key lessons in sustainability, scalability, and replicability:

Sustainability:

- **Integration of Renewable Energy:** By implementing photovoltaic solar pumping stations for small-scale irrigation, REFAT significantly reduces reliance on fossil fuels, leading to long-term environmental benefits and cost savings for farmers.
- Capacity Building: Training 26 young graduates in renewable energy, sustainable practices, and entrepreneurship ensures that local communities possess the knowledge and skills to maintain and expand sustainable agricultural practices.

Scalability:

- Pilot Implementations: The successful establishment of 10 photovoltaic solar pumping stations across various regions demonstrates the feasibility of scaling such installations to other areas with similar needs.
- Market Studies: Conducting studies on potential markets for sustainable technologies

in agriculture provides insights into the demand and viability of expanding these solutions nationally.

Replicability:

- Standardized Training Programs: Developing comprehensive training for both young graduates and regional development agents creates a replicable model for capacity building in other regions.
- Support for Start-Ups: Facilitating the creation of 10 start-ups focused on renewable energy and sustainable practices illustrates a replicable approach to fostering local entrepreneurship aligned with project goals.

Overall, REFAT's approach underscores the importance of combining technological solutions with capacity building and market analysis to achieve sustainable, scalable, and replicable outcomes in agricultural and rural development.

Affiliation
The Mediterranean Renewable Energy Centre – MEDREC

Keywords
Water Irrigation Energy environment Agriculture Social

Country
Tunisia

Start year
Mon, 01/01/2018 - 12:00

End year
Fri, 01/01/2021 - 12:00

Acknowledgement of funding source
Contribution from the Ministry of Agriculture (Tunisia): €222,800 Contribution from the Ministry of the Environment (Italy): €1,973,000

Total funding
1M - 5M €

Environmental
Medium-High

Social
Medium-High

Technological
Medium

Financial
Medium

Institutional
High

SDGs

YouTube
https://youtu.be/RipXu_ku8ek?si=2GxQIj5G-k0qoDuZ

Website
https://www.medrec.org/fr/refat

E-mail address
Contact@medrec.org

Nexus Dimensions

Ecosystems
Energy
Food
Water

City
Kasserine, Gafsa, Sidi Bouzid, Kairouan, Sousse

Source URL: https://wefe4med.eu/demo/renewable-energies-agricultural-and-rural-development-tunisia