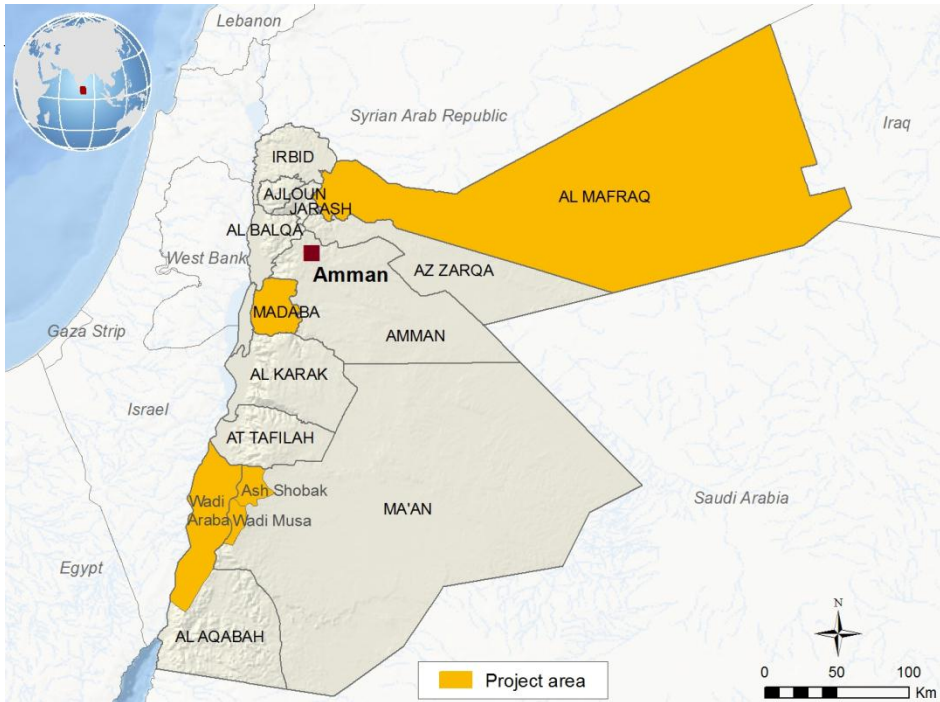


JORDAN

Irrigation Technology Pilot Project to Face Climate Change



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ISSUES

Jordan is one of the world's most water-scarce countries. Water scarcity is a leading constraint in the agriculture sector. The region is heavily dependent on seasonal rainfall, and drought years reduce yields sharply, contributing to the food insecurity of smallholder farmers. Climate change impacts are expected to further exacerbate water scarcity in Jordan, negatively affecting agriculture, a sector that is the main consumer of water in the country.

Nationwide, 60 per cent of Jordan's agricultural land is rainfed, and the remaining 40 per cent irrigated. The irrigated agriculture contributes 90 per cent of the total value of production. This demonstrates the vast productive advantage that irrigation water brings to agricultural land in Jordan.

The shift towards irrigated agriculture to meet the country's need for food needs to be managed very carefully in light of the country's scarce water resources. Currently, irrigated agriculture consumes about 60 per cent of the country's water resources. This share is expected to decrease as water will be prioritized for domestic and industrial uses. Research results in Jordan indicate that an increase of temperature by 2°C would increase irrigation demand by 18 per cent while a 10 per cent reduction in precipitation would result in an increase of approximately 5 per cent in irrigation demand.

According to the Fourth Assessment report of the Intergovernmental Panel on Climate Change countries in the Middle East such as Jordan are likely to see a warmer climate, a decrease in mean annual runoff, and an increase in the number of extreme drought events. All of these are likely to affect the water resources of Jordan, including the groundwater resources.

In 2009, the renewable freshwater resource available per capita in Jordan was about 130 cubic meters per year. This is less than one seventh of the widely



The Global Environment Facility (GEF) brings together 183 countries, the private sector, civil society organizations and international institutions to address global environmental problems. The GEF-IFAD partnership promotes win-win solutions to deliver both global environmental benefits as well as significant gains for rural poor people.



Investing in rural people

PROJECT SUMMARY

Total cost: US\$4.5m

GEF Grant: US\$1.98m

Government of Jordan: US\$1.3m

Beneficiaries Contribution: US\$1.2m

Project period: 4 years (2014-2018)

Executing agency: National Center for Agricultural Research & Extension (NCARE)

Beneficiaries: 371 selected farms in the Jordan Valley & Ghore el Safi

Project objective: To reduce the vulnerability to climate change of the agricultural system in Jordan, particularly from its impact on water resources, by testing innovative and efficient water-use technologies.

recognized "water poverty line" established at 1,000 cubic meters per capita per year. This sobering observation underlines the fact that water must be well-managed and used as efficiently as possible.

As climate change is expected to have significant impacts on water supplies in Jordan, there will be greater competition for water among different sectors. This could leave low quality water for agriculture and create serious challenges in soil and water management. As the country faces deteriorating water and environmental quality as well as water shortages, increasing the efficiency of water use in agriculture becomes of paramount importance.

ACTIONS

The IFAD-GEF supported project aims to increase the resilience to climate change of agriculture in Jordan, focusing on water as a key natural resource for agricultural production in the country. The proposed project will promote technically reliable, economically competitive, clean and sustainable irrigation technology for the agricultural sector in different agro climatic production regions in Jordan. The project is structured under two main components:

Identification, implementation and expansion of irrigation technologies in Jordan. The project will test on pilot sites in the Jordan Valley and Highlands irrigated areas. The key activities are: i) on-farm system design and preparation of required infrastructure, ii) procurement of innovative irrigation technology, iii) technical installation of irrigation technology on selected farms, iv) on-farm continuous technical support on demonstration farms, v) monitoring of results and evaluation of system effectiveness.

Training, capacity building and communication. This component will focus on training professionals, farmers and local stakeholders on the installation, use and maintenance of the new technologies. Also, extension services providers will be a target of the proposed training programme. Training sessions will be tailored to the needs and capabilities of the beneficiaries. An

awareness campaign on water use efficiency will also be carried out. Furthermore, government authorities (at both national and local level) will be trained on the potential of the proposed technologies, as an adaptation to climate change measure in the country.

The technologies selected for scaling-up in the project were prioritised based on the following criteria: i) relevance to Jordanian agriculture; ii) capable of realizing more efficient water use; iii) cost-effectiveness; iv) allows for the utilisation of brackish water, grey water and solar energy in irrigation.

IMPACTS

- The NCARE Institute is mapping the target sites to have a precise and shared baseline to better understand the development of the project. All maps are prepared using the latest GIS software and will constitute an important knowledge sharing tool to be disseminated on Google Earth and similar geographical browsers.
- Currently, the project is in the initial stages of implementing seven water-use efficient irrigation technologies on 300 hectares of farm land.

It is expected that through the use of efficient irrigation technologies it will be possible for farmers to utilize water that is not presently being used for irrigation such as salty, brackish, and mixed water, thereby allocating more fresh water for human consumption.

Furthermore, irrigation technologies will reduce farmers' vulnerability to drought conditions by securing a fixed quantity of water for crop production. Finally, efficient irrigation makes it possible to increase the extension of agricultural lands and to enhance productivity of the existing ones.

CONTACTS

Tarek Kotb
Country Programme
Manager

IFAD
Via Paolo di Dono, 44
Rome, Italy
Tel: +390654592965
t.kotb@ifad.org

Rami Salman
Climate and Environment
Specialist (NEN)

IFAD
Via Paolo di Dono, 44
Rome, Italy
Tel: +390654592291
r.salman@ifad.org



International Fund for
Agricultural Development
Via Paolo di Dono, 44
00142 Rome, Italy
Tel: +39 06 54591
Fax: +39 06 5043463
E-mail: ifad@ifad.org
www.ifad.org
www.ruralpovertyportal.org

ifad-un.blogspot.com
 www.facebook.com/ifad
 instagram.com/ifadnews
 www.twitter.com/ifadnews
 www.youtube.com/user/ifadTV