Al Murunah المرونة

Building Climate Resilience through Enhanced Water Security in MENA

Egypt Resilient Nature-Based Water Solutions Pilot

Located 25 kilometers from Alexandria in the Nile Delta's western region, Izbat Al-Hamra, a community known for its artichoke production, faces numerous agricultural challenges. Severe **water supply shortages at the end of canals**, **increasing soil salinity**, and **declining crop productivity** threaten both livelihoods and sustainability of currently used agricultural practices. As resources become scarcer, the very fabric of community life is at risk, with environmental stress acting as a threat multiplier to social stability. In response, the Al Murunah project is establishing a pilot in Izbat Al-Hamra that embraces a multi-sectoral, multi-dimensional, and integrated approach.

Pilot objective: Boost agricultural productivity and maintain soil health by improving irrigation efficiency, reducing salinity impacts, and promoting women-led value chains through resilient nature-based water solutions.

Innovations in Water and Farming Systems

Farmers will implement **piped surface water irrigation systems** that will dramatically improve water efficiency, complemented by **solar-powered irrigation** that replace diesel pumps, reducing both operational costs and carbon emissions. **Laser leveling equipment** flattens fields, improving crop production and ensuring adequate water distribution. Improved **field drainage systems** will prevent water-logging and mitigate soil salinity after irrigation. With guidance, farmers will practice **inter-cropping** with salt-tolerant crops and will implement **organic and bio fertilization techniques and salinity treatments** to promote soil health.

Market and Economic Development

The pilot targets key artichoke value chains with a particular focus on economic empowerment. The pilot **established women-led artichoke processing facilities**, providing women with opportunities to convert and market artichoke scraps as livestock feed. The intervention also developed an **institutional and capacity-building framework,** fostering **private sector partnerships** to enhance the role of small and medium enterprises in improving marketing opportunities for smallholder farmers, thereby helping to develop a market for small and medium-scale farmers.

Social and Institutional Transformation

The pilot established a **water users association (WUA)**, which brings together 15 members to manage, distribute, and maintain water resources in the pilot area. The pilot also supports the local **agricultural cooperative** with guidelines to manage the laser-leveling tractor, helping them oversee the long-term use and maintenance. The pilot also established a multi-level governance framework that includes a **local task force** and a **National Project Advisory Committee (NPAC)**. The task force facilitates dialogue with targeted policy analysts, practitioners, and stakeholders at all levels, promotes inclusive engagement by identifying training needs and opportunities, and serves as a liaison to the NPAC. The NPAC offers strategic policy guidance, engages on workplans, provides oversight, and addresses implementation challenges.

Anticipated pilot impacts


Resilient food systems


Energy Transition

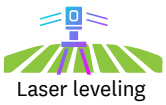

Improved capabilities


Inclusive rural development

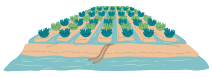

Strategic alignment with climate adaptation and sectoral policies

Optimize irrigation and combat salinity


Piped surface water irrigation systems


Laser leveling


Cropping with salt-tolerant crops


Field drainage system


Solar-powered irrigation

Organic fertilizers and salinity treatments

Develop small-scale processing facilities (Nawalla), engage women and youth, capacity building


Women-led artichoke processing


Capacity building


Partnerships and revolving fund


Declining crop productivity


Water-supply interruptions


Soil salinity


Livelihoods and sustainability

Strengthen governance, empower local associations, and connect stakeholders


Water User Association (WUA)


Local task force


National Project Advisory Committee (NPAC)

Capability Building

Targeted training programs strengthen technical and organizational skills on the following:

- Smallholder farmers receive support in soil and water management.
- Crop production, and farming practices.
- Female entrepreneurs are trained in agri-processing, marketing, and sales.
- The water user association (WUA) and cooperatives build capacity in administration and finance. National officials weave Resilient Nature-Based Water Solutions (RNBWS) into policymaking and decision making practices.

Anticipated Impacts and Scaling Potential

Improved water and soil management as well as soil salinity control are expected to boost crop yields, reduce input costs, and increase resilience to climate variability. Effective water demand management will reduce agricultural water consumption while maintaining efficiency, significantly impacting Egypt's water scarcity challenge if replicated. Low-cost salinity management solutions are essential for the financial viability of agribusinesses in both the Old and New agricultural lands. The project in Egypt offers a scalable, community-driven approach to adaptation that advances national targets for resilient food systems, energy transition, and inclusive rural development.

Strategic Alignment with Climate Adaptation and Sectoral Policies

This the project in Egypt supports Egypt's National Climate Change Strategy 2050 and National Adaptation Plan by addressing water stress, soil salinity, and agricultural livelihoods. It aligns with the Sustainable Agricultural Development Strategy 2030 and the objectives of the newly formed National Committee for Food and Nutrition Systems through its focus on water-efficient technologies, sustainable land use, and women-led value chains.

Water User Association (WUA)

Local Task Force

- Government Entities: Beheira Directorate, Ministry of Irrigation and Water Resources, Advisory Irrigation Department, Agricultural Extension Department
- Agricultural Extension Department
- Research & Technical Institutions: Agricultural Research Center (ARC)
- Community Stakeholders: Community leaders, youth, and women

National Project Advisory Committee (NPAC)

- Ministry of Agriculture and Land Reclamation (MALR)
- Ministry of Water Resources and Irrigation - Planning Sector
- SWERI, the Agricultural Research Center (ARC)
- National Council for Childhood and Motherhood
- Arab Organization for Agricultural Development (AOAD)
- International Water Management Institute (IWMI)
- Center for Environment and Development for the Arab Region and Europe (CEDARE)

Images (1) Artichoke farm in Izbat Al-Hamra, and (3) test wells at Al Murunah pilot site at Izbat Al-Hamra, Egypt—photos by Wasudha Abeyrathna/IWMI. Image (2) Al Murunah field visit to Izbat Al-Hamra, Egypt in January 26, 2025—photo by Nada Al-Tantawi/IWMI.

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IWMI
International Water Management Institute

CEDARE

IUCN

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