IWMI
International Water Management Institute

Al Murunah
Pilot implementation
Technical Brief

Al Murunah: Building Climate Resilience from the Ground Up with Scalable, Resilient Nature-Based Water Solutions Pilot Projects in the MENA Region

Al Murunah Project

- Led by the **International Water Management Institute (IWMI)**
- In partnership with the **International Union for Conservation of Nature (IUCN)**
- Supported financially and technically by **UK International Development.**
- In coordination with the **Ministries of Water, Environment and Agriculture** in project countries (Egypt, Jordan, Lebanon and Palestine)

Figure 1. Map of Al Murunah implementation countries
Source: Authors (2025)

A Systems Approach to Climate Resilience in MENA

Al Murunah develops innovative and scalable pilot projects that tackle systemic water, agriculture, and sustainable development challenges. Because of short-term funding cycles, governance gaps and political risks in fragile and climate-vulnerable settings, pilot projects are often implemented in isolation from local systems and rarely designed for long-term uptake. Al Murunah has taken a different approach: supporting households, embedding innovation in community institutions, coupling technical and governance interventions and aligning implementation with policy systems from the outset.

With pilots in Egypt, Jordan, Lebanon and Palestine (Figure 1), the project shows how broader resilience strategies can inform local action to create long-lasting and equitable impact.

Each pilot addresses acute climate risks, including water scarcity, land degradation and systemic governance challenges. Pilot sites are selected based on common factors: geographic fragility, policy relevance and community readiness. Together, they provide a proof of concept for scaling inclusive adaptation models for resilient nature-based water solutions (RNBWS) in the Middle East and North Africa (MENA) region.

What Makes Al Murunah Pilots Different

Al Murunah pilots are not about testing innovations in isolation. They embed technical interventions within households and community systems to address climate change challenges, strengthen governance, build local ownership and align with national priorities from day one. They reflect shared priorities and real constraints: poor soil and water quality, increasing costs and inequitable access to resources and limited access to extension

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officers and other services. They are co-developed with community actors, implemented through institutional platforms including cooperatives and water user associations and paired with policy engagement strategies to enable uptake and replication. This integrated, systems-based approach makes Al Murunah's pilots not just proof of concept, but scalable models for resilience in fragile and climate-vulnerable regions.

The Challenge

The Al Murunah pilots were developed in response to shared but context-specific vulnerabilities across fragile and climate-stressed settings in the Middle East and North Africa. Each location experiences unique stressors shaped by climate shocks and governance gaps and therefore requires tailored yet scalable models of intervention, that place water, communities and nature at the center of climate resilience.

In Egypt, smallholder farmers in the Nile Delta face severe water stress due to rising salinity and outdated irrigation systems. Poor drainage and land degradation limit productivity, while women remain underrepresented in formal agricultural institutions despite their critical roles in production, processing and value chains.

In Jordan, recurrent drought, degraded springs and failing irrigation canals drive production loss and strain smallholders. Over-extraction and erratic rains deplete soil and groundwater, while limited institutional capacity hampers long-term water security and farmer support.

In Palestine, climate shocks are compounded by the occupation's restrictions on access to land and water. Communities in Wadi Al-Fari'a, Ras Al-Fari'a and the Fari'a Refugee Camp face declining spring flows, limited irrigation access, challenges with wastewater and fragility in public service delivery.

In Lebanon, migration pressures, watershed degradation and institutional collapse compound rising water scarcity and flash-flood risk. Erosion and deforestation threaten towns and farms, while limited state capacity hampers efforts to protect groundwater and sustain agricultural livelihoods.

What we have done and achieved on the ground

Land Health Management

Egypt

- Solar irrigation introduced and drainage systems improved
- Restored degraded, saline land for productive use
- Women-led artichoke processing cooperatives launched
- Governance embedded through new Water User Association and local cooperatives

Spring Rehabilitation

Jordan

- Rehabilitated two springs and associated irrigation canals
- Registered 24-member cooperative and supported their links with water managers and agricultural markets
- Designed plot-specific climate-smart farming plans and a 4,000 m^2 demo farm
- Contributing to the update of Nationally Determined Contributions

Spring Rehabilitation

Palestine

- Rehabilitated a spring and associated irrigation area
- Establishing a water user association to improve water governance and agricultural production systems
- Developing a community space around the spring that includes an agrobiodiversity garden and women and youth market space
- Supported community cohesion and cooperation

Flash-Flood Management

Lebanon

- Developed technical design for gabion walls (natural flood infrastructure), afforestation plan and demonstration farm incorporating agro-ecological approaches and solar irrigation
- Developing watershed flash-flood management plan
- Led capacity-building for community and national stakeholders on NbS

Capacity-building

Al Murunah+

- Delivered curriculum to strengthen household planning, budgeting, decision-making and resilience to shocks
- Capacity-building on nature-based solutions, climate-smart farming and agro-ecological approaches
- Designed economic interventions for smallholder households to improve financial access for women
- Designed curriculum for local opinion leaders who are pivotal to inclusive and equitable climate adaptation

Al Murunah's approach centers not only on introducing effective innovations, but also on embedding them within the governance structures, social systems and policy architectures that enable sustainable, inclusive adaptation.

Our Approach to Designing Pilots

Each pilot follows a structured, step-by-step process that begins with participatory diagnostics, awareness-raising about nature-based solutions and cross-sector dialogue (Figure 2). Local government and non-government stakeholders jointly generate and select intervention options, then work with IWMI and partners on the technical design and implementation, advising on site selection, irrigation layouts and other plot-level details. Each pilot integrates tools and processes for gender-transformational change at the household and community level, as well as governance and institutional strengthening. IWMI and partners support community stakeholders in long-term pilot sustainability planning and assess resilience outcomes from the pilots. Policy actors are involved in pilot implementation, enabling bottom-up learning and policy alignment.

General site selection is done by national stakeholders; specific site selection is done by local stakeholders and the project team.

Figure 2. The pilot designing process.
Source: Authors (2025)

Building Resilience Across the Middle East and North Africa region

Implementation in fragile and conflict-affected settings requires continuous adaptability, trust-building, implementation and institutional flexibility. Security constraints in Palestine and Lebanon limit timings and types of works as well as movement and can delay and complicate procurement. In Jordan, regional instability has affected implementation timelines and modalities, while in Egypt, social norms can initially limit women's participation.

Al Murunah's response is to maintain conflict sensitivity and adapt delivery approaches: accessing international and local information on mobility and security contexts, being flexible in planning and delivery mechanisms, sustaining engagement and responsiveness to local leadership and communities and adopting low-cost scalable technologies and practices. Training and construction are scheduled to align with key agricultural seasons to keep works and field activities in step with cropping cycles.

Next Steps: Scaling Resilience from Local Pilots to National and Regional Models

The Al Murunah pilots show that climate resilience in fragile settings can be achieved when solutions are locally designed, institutionally embedded and technically sound. At the heart of these pilots are three pillars that make them inherently scalable (Figure 3).

The technologies and practices tested avoid complexity and are low-cost and adaptable to different agro-ecological and social contexts. But technical solutions alone do not drive change. Each pilot invests in households and builds strong local institutions that anchor resilience measures in governance systems that communities trust and can sustain. This is built upon participatory diagnostics, risk mapping and locally generated data that feed into national adaptation platforms to ensure alignment with policy priorities and public investment frameworks.

The pilots have already shown pathways for replication and scaling. But realizing this potential requires dedicated investment. The pilots will provide financial evidence of improved agricultural and water productivity, stronger resilience to climate impacts, improved ecosystems and increased incomes for women and vulnerable households.

These outcomes make the solutions attractive to climate adaptation funds, development finance institutions and private sector investors seeking measurable social and environmental returns. By creating clear investment cases for nature-based and community-driven solutions, Al Murunah is bridging the gap between pilot projects and long-term, system-wide resilience.

Ultimately, scaling is not about replicating individual technologies, but about transferring a proven process. The pilots demonstrate how to diagnose climate and fragility risks, co-design solutions with local actors, embed them in inclusive institutions, link them to policy frameworks and mobilize financing for sustained impact.

With strategic support, this approach can be adapted to fragile and conflict-affected settings across the region, offering an investible, scalable model for climate action that protects communities, restores ecosystems and contributes to global resilience goals.

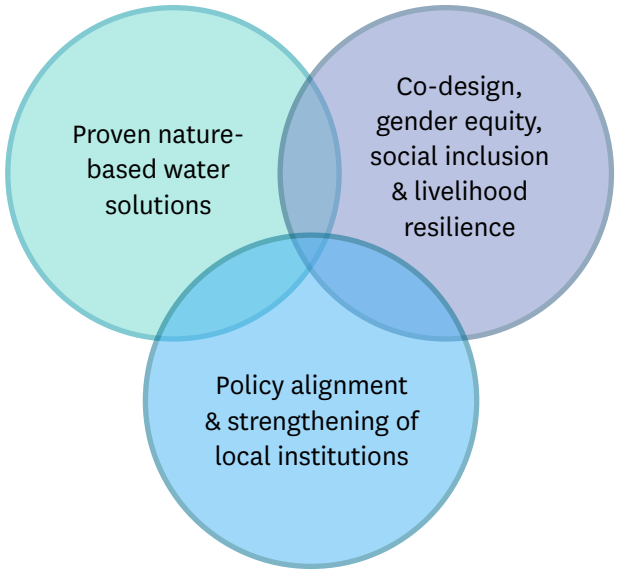

Figure 3. The three pillars of scalable Al Murunah pilots.
Source: Authors (2025)

Authors

Isis Palay, Consultant, International Water Management Institute (IWMI), Nairobi, Kenya
Stephen Russell Fragaszy, International Researcher – Water Climate Change and Resilience and Al Murunah Project Lead, IWMI, Cairo, Egypt
Elizabeth Stifel, Princeton in Asia Fellow, IWMI, Colombo, Sri Lanka
Wasudha Prabodhani Abeyrathna, Project Coordinator, IWMI, Colombo, Sri Lanka
Sawsan Gharaibeh, Regional Researcher - Gender and Social Inclusion and Al Murunah+ Project Lead, IWMI, Cairo, Egypt

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Project

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Contact

Stephen Fragaszy, Al Murunah Project Lead (s.fragaszy@cgiar.org)

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International Water Management Institute (IWMI)

Headquarters
127 Sunil Mawatha, Pelawatte, Battaramulla, Sri Lanka

Mailing address:
P. O. Box 2075, Colombo, Sri Lanka
Tel: +94 11 2880000
Fax: +94 11 2786854
Email: iwmi@cgiar.org
www.iwmi.org