

Egypt Policy Brief

Egypt: Expanding Rainwater Harvesting Between Centralized Policies and Local Realities (Wadis El-Kheir and Naghamish)

Non-Conventional Water (NCW) for Water and Land Governance

AG-WaMED Project (PRIMA / European Union)



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Executive Summary

Egypt is one of the most water-stressed countries in the Mediterranean, with limited per capita water availability, rapid population growth, and high dependence on the Nile River. In this context, the country has promoted non-conventional water (NCW) solutions, particularly rainwater harvesting, cisterns, small reservoirs, and localized aquifer recharge, as part of broader adaptation strategies to climate variability.

While the government shows strong commitment and international donors provide significant financial and technical support, implementation remains constrained by institutional fragmentation, uneven territorial allocation of resources, high costs, and sociocultural barriers.

In Egypt, NCW strategies are primarily based on rainwater harvesting and small-scale aquifer recharge, with complementary efforts in wastewater reuse and desalination that remain incipient.

National and Institutional Context

Egypt's water governance is marked by a centralized model in which the state and its ministries dominate decision-making. The Ministry of Water Resources and Irrigation (MWRI) retains a leading role, supported by overlapping agencies with sometimes unclear mandates. This contributes to bureaucratic inefficiencies and weak horizontal coordination.

At the local level, associations of water users and irrigators exist but lack legal authority, limiting their influence. Traditional Bedouin knowledge in desert regions plays an important role in locating cisterns and managing harvesting systems, yet this expertise is not systematically integrated into national strategies. Regional disparities are evident: while the Nile Basin receives most investment, arid regions such as the northwest remain marginalized, exacerbating inequalities in access to water.

Policies and Strategies on Water and Land

The government has endorsed NCW through legislation such as **Law No. 147/2021** and **Law No. 4/1994**, while also promoting programs with international support (FAO, UNEP, WFP, WB). Cisterns and small reservoirs are at the core of local strategies, especially in rural desert areas, where they are seen as critical tools for reducing vulnerability to drought.

Despite this, the legal framework is **fragmented and complex**, creating difficulties for licensing and project approval. Regulations are often designed at the central level without sufficient attention to local needs or contexts.

Barriers to the Adoption of NCW

The adoption of NCW in Egypt is limited by a broad set of barriers that cut across institutional, technical, economic, and social dimensions. Governance challenges stem from the highly centralized decision-making system, where ministries operate with overlapping mandates and slow bureaucratic processes. This reduces local agency and weakens the role of water users' associations.

Financial barriers are significant: the construction of cisterns may cost up to 30,000 EGP per unit, making them inaccessible without external subsidies. International donors provide crucial funding, but dependence on external aid raises questions about long-term sustainability.

Institutional and normative barriers include complex licensing procedures and regulations that are not adapted to local realities. Infrastructure is often poorly maintained, while technical know-how for modern harvesting techniques remains limited.

Finally, cognitive and behavioral barriers are strong: farmers and local communities tend to rely on traditional practices, showing limited interest in new approaches. Gender inequalities further constrain adoption, as women—who

play a central role in rural water management—are often excluded from decision-making processes.

Summary of key barriers:

- Centralized governance and bureaucratic inefficiency.
- High costs of cisterns and dependence on external funding.
- Complex licensing and fragmented regulations.
- Poor maintenance and limited technical capacity.
- Resistance to modern approaches, reliance on traditional practices.
- Gender inequalities in participation and decision-making.

Drivers for the Upscaling of NCW

Despite these constraints, Egypt also shows significant enabling conditions. At the political level, there is a shared vision and strong governmental commitment to the construction of cisterns and reservoirs, recognized as key tools against drought. This vision is reinforced by international donors, which provide both financial resources and technical expertise.

Legislation provides a supportive framework, while research centers and universities contribute to training and capacity building in water management. Locally, Bedouin councils (Omda) and agricultural cooperatives mobilize communities and act as intermediaries with national authorities.

Traditional knowledge remains a valuable asset: Bedouins have centuries-old expertise in locating cisterns and managing water harvesting, which, when combined with modern tools such as GIS and remote sensing, can enhance efficiency and acceptance.

Summary of key drivers at a glance:

- Strong political support and shared vision around cisterns.

- International donor funding and technical assistance.
- Supportive legal framework (Law No. 147/2021, Law No. 4/1994).
- Research institutions generating expertise and training.
- Local leadership and agricultural cooperatives.
- Integration of traditional and modern knowledge.

Conclusions and Recommendations

Egypt demonstrates both the potential and the limits of NCW adoption in a context of structural water scarcity. While strong governmental and donor support exist, effective scaling will require addressing governance, financial, and cultural barriers, while ensuring inclusive participation. The following recommendations are proposed:

Recommendations:

- Strengthen water users' associations with clear legal authority.
- Simplify and harmonize licensing and regulatory frameworks.
- Expand targeted subsidies to reduce cistern installation costs.
- Improve maintenance systems and invest in technical training.
- Promote gender-sensitive policies to ensure inclusive participation.
- Combine traditional Bedouin knowledge with modern technologies to enhance both legitimacy and efficiency.

References and Project Credits

This policy brief is part of the **AG-WaMED Project (PRIMA / European Union)**, aimed at strengthening water and land governance in the Mediterranean through the adoption and scaling-up of **non-conventional water resources**.