

Algeria Policy Brief

Expanding Managed Aquifer Recharge Amid Governance and Social Challenges

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

AG-WaMED Project (PRIMA / European Union)



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Executive Summary

Algeria is increasingly affected by climate variability, recurrent droughts, and a structural imbalance between water availability and demand. In this context, the government has prioritized non-conventional water (NCW) strategies, particularly managed aquifer recharge (MAR) and the mobilization of meteoric surface water, with some initiatives in wastewater reuse. These solutions are supported by a legal framework (Water Law 05-12, Decree 07-149) and significant state investment.

However, NCW expansion faces persistent challenges, including centralized governance, financial limitations, regulatory complexity, and strong social resistance to wastewater reuse. At the same time, Algeria benefits from institutional capacity, research expertise, and international partnerships, which provide an opportunity to scale NCW adoption.

In Algeria, NCW strategies are primarily based on aquifer recharge and stormwater harvesting, complemented by a limited but evolving framework for wastewater reuse.

National and Institutional Context

Water governance in Algeria is highly centralized. The Ministry of Water Resources (MRE) sets national policies, while the Agences de Bassins Hydrographiques (ABHs) are responsible for basin-level management. In practice, these agencies face budgetary restrictions, limited autonomy, and weak coordination with regional and local actors.

The legal framework is relatively advanced, with the Water Law 05-12 and specific decrees regulating wastewater reuse. Nevertheless, implementation remains inconsistent. Regulations are often restrictive, requiring costly studies and limiting reuse to certain crops. Meanwhile, traditional water practices such as foggaras are declining, and rural depopulation further undermines the sustainability of local water management systems.

Policies and Strategies on Water and Land

NCW is formally included in Algeria's National Water Plan (PNE) and desert agriculture policies. Large-scale MAR projects have been promoted, with pilot experiences supported

by international organizations such as the EU and UNESCO. In parallel, wastewater reuse is legally recognized, but remains limited in practice due to regulatory and cultural constraints.

The government has also invested in dams and infrastructure to enhance recharge and storage capacity. However, technical limitations, lack of maintenance, and the high costs of operation continue to restrict their impact.

Barriers to the Adoption of NCW

Despite a strong policy framework, Algeria faces persistent obstacles to scaling NCW. In governance, centralized decision-making and institutional fragmentation hinder effective coordination. Financially, limited budgets and weak integration of research into policy constrain innovation. Legally, regulations for wastewater reuse are complex and restrictive, often discouraging adoption. Technical barriers include outdated infrastructure, poor maintenance, and insufficient training in advanced groundwater management. Finally, cultural and religious perceptions reinforce social resistance to the use of treated wastewater, creating a strong behavioral barrier.

Summary of key barriers:

- Centralized governance and limited local participation.
- Underfunded institutions and weak research–policy links.
- Restrictive regulations for wastewater reuse.
- High costs of infrastructure and maintenance.
- Outdated systems and technical limitations.
- Lack of training in groundwater modeling and integrated management.
- Strong cultural resistance to wastewater reuse.

Drivers for the Upscaling of NCW

Algeria also presents significant enabling factors. The state plays a strong role in financing and promoting NCW, particularly through subsidies and infrastructure projects. MAR is explicitly integrated into national strategies such as the PNE, reflecting high-level political support. Institutions like the MRE and ABHs provide continuity and technical oversight.

Research institutions and pilot projects generate evidence of technical feasibility and environmental benefits, while international cooperation (EU, UNESCO, SAFIR) supports knowledge transfer. Furthermore, traditional water heritage can be revitalized and integrated with modern NCW systems, providing cultural legitimacy.

Summary of key drivers at:

- Strong political support and state financing.
- MAR integrated into national strategies.
- Established institutional actors (MRE, ABHs).
- Research capacity and pilot experiences.
- International cooperation and partnerships.
- Traditional practices that can complement modern approaches.

Conclusions and Recommendations

Algeria illustrates a key paradox: a strong state-led strategy and legal framework coexist with limited local participation and weak social acceptance. Bridging this gap is essential to ensure that NCW can contribute effectively to long-term water security. The following recommendations are proposed:

- **Reform governance structures** to promote multilevel coordination and local stakeholder participation.
- **Simplify and harmonize regulations** on wastewater reuse and MAR.
- **Expand financial incentives** for farmers and user associations.
- **Invest in rehabilitation of infrastructure** and modern monitoring technologies.

- **Strengthen training and capacity-building** in groundwater and integrated management.
- **Address cultural resistance** through communication campaigns and demonstration projects.

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**.