AG-WaMED

Spain Policy Brief

Towards a National Strategy for the Use of Non-Conventional Water Resources in Spain

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

AG-WaMED Project (PRIMA / European Union)

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PRIMA PARTNERSHIP FOR RESEARCH AND INNOVATION IN THE MEDITERRANEAN AREA

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Executive Summary

Spain is a European frontrunner in the use of non-conventional water (NCW), with decades of experience in desalination and wastewater reuse. These resources play a key role in reducing dependence on scarce freshwater supplies and adapting to climate change impacts.

However, the sector continues to face economic challenges—particularly high energy costs—together with institutional fragmentation, political disputes, and cultural resistance. At the same time, Spain benefits from a robust regulatory framework, strong institutional capacity, EU financial support, and regional leadership in innovation. These elements make the country a strategic reference for scaling NCW across the Mediterranean.

In Spain, NCW strategies are primarily based on desalination and wastewater reuse, which together form the backbone of the national approach to water diversification.

National and Institutional Context

Water scarcity is a structural feature of Spain, particularly in the southeastern basins (Murcia, Valencia, Andalusia) and the Canary Islands, where water demand systematically exceeds available renewable resources. To address this imbalance, Spain has invested heavily in desalination plants and wastewater reuse systems, which today represent a significant share of the national water supply.

The governance framework is multi-layered. At the national level, the Ministry for Ecological Transition and Demographic Challenge (MITECO) leads policy formulation, while the River Basin Authorities (Confederaciones Hidrográficas) manage planning and implementation at the basin level. Regional governments play a decisive role, especially in financing and operating infrastructure. Spain's legal framework is anchored in the EU Water Framework Directive,

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complemented by the National Water Plan and basin-scale hydrological plans.

Policies and Strategies on Water and Land

Over the past decades, Spain has progressively incorporated NCW into its core water management strategy. Desalination is a key element of the National Water Plan, with major facilities concentrated in coastal regions. Wastewater reuse has also been promoted, particularly for agricultural irrigation in water-scarce areas.

In addition, climate change adaptation strategies explicitly highlight the role of NCW in reducing vulnerability to droughts and ensuring water security. Spain has also leveraged European funds—from the CAP to NextGen EU recovery funds—to finance infrastructure projects and research on water efficiency.

Despite these advances, the gender dimension remains weakly articulated in water policies. While some rural development initiatives supported by the CAP have begun to address women's participation in agriculture and access to resources, gender mainstreaming has not yet been systematically integrated into water governance or NCW strategies.

Barriers to the Adoption of NCW

The adoption of NCW in Spain is constrained by multiple obstacles. Institutional fragmentation and limited coordination among central, regional, and local governments hinder coherent decision-making. Political tensions—particularly disputes over water transfers—complicate long-term planning. From an economic perspective, high desalination costs linked to energy consumption make NCW less attractive to users, especially in agriculture, where farmers often lack sufficient incentives. Regulatory frameworks, while robust, impose stringent quality and safety standards that may slow implementation. Furthermore, reliance on energy-intensive technologies raises concerns about sustainability in the

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context of decarbonization. Finally, social perceptions and behavioral barriers remain significant: while large-scale operators are comfortable with NCW, many small farmers are unaware of reuse opportunities, and cultural resistance persists among consumers regarding the use of recycled water.

A specific barrier is the weak integration of gender considerations into water policies. Women's participation in water governance remains limited, and gender-responsive measures are not systematically included in NCW-related programs. While rural development initiatives under the CAP have begun to promote equal access to land and employment, opportunities for linking NCW with gender equality remain underdeveloped.

Summary of key barriers:

- Fragmented governance and weak intersectoral coordination.
- Political disputes over water allocation and transfers.
- High desalination costs and limited incentives for farmers.
- Strict EU regulatory standards.
- Energy-intensive technological dependence.
- Lack of awareness among small farmers.
- Cultural resistance to the use of recycled water.
- Weak integration of gender in water and agricultural policies.

Drivers for the Upscaling of NCW

Spain also benefits from a unique set of enabling factors. A shared national vision positions the country as a global leader in desalination and reuse. The political framework is strongly supportive, with national and EU institutions actively promoting NCW. The River Basin Authorities bring decades of technical expertise, while EU funding mechanisms continue to finance infrastructure and innovation. Spain's legal and regulatory framework is not only solid but also harmonized with EU standards, offering legal certainty for investments. In

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addition, universities and research centers contribute advanced knowledge and innovation, further reinforcing Spain's leadership. The country is also actively embedded in Mediterranean cooperation networks, sharing knowledge and technologies with neighbors. Finally, regional governments such as Murcia and Valencia have pioneered successful NCW projects, serving as role models for other territories.

Summary of key drivers:

- Strong political and EU support.
- Established leadership in desalination and reuse.
- Experienced River Basin Authorities.
- Access to European financing.
- Robust and harmonized regulatory framework.
- Advanced research and innovation capacity.
- Mediterranean and international cooperation networks.
- Regional champions (Murcia, Valencia).

Gender Dimension

The integration of gender considerations into Spain's water governance remains limited and uneven. While national policies rarely mainstream gender, rural development initiatives linked to the Common Agricultural Policy have started to promote equal access to land and employment opportunities. Women's involvement in decision-making within water authorities and irrigation associations is still modest, but there are opportunities to build stronger synergies between gender equality policies and NCW strategies, particularly in the agricultural sector. Enhancing women's participation in innovation and resource management could support more inclusive governance and facilitate wider acceptance of reclaimed water in rural communities.

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Conclusions and Strategic Recommendations

Spain's experience demonstrates both the potential and the limitations of NCW as a strategic tool for water governance. Building on existing achievements, the following **strategic recommendations** are proposed:

Strategic recommendations:

- **Consolidate the integration of NCW into national and basin-level water planning**, ensuring that desalination and reuse are fully incorporated into long-term strategies.
- **Guarantee the energy sustainability of desalination**, prioritizing the use of renewable energy sources and improving energy efficiency.
- **Promote cultural change and social acceptance**, through public awareness campaigns, farmer training, and the dissemination of successful experiences at the regional level.
- **Foster regional leadership** by scaling up innovative practices from Murcia, Valencia, and other pioneering territories.

Operational recommendations:

- **Strengthen economic incentives** for the use of reclaimed water in agriculture.
- **Enhance intersectoral coordination** across levels of government and between water, agriculture, and energy policies.
- **Facilitate access to EU funding** for smaller actors and municipalities.
- **Integrate the gender dimension** into water and agricultural policies, ensuring that women have equal access to opportunities created by NCW.

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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**.

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