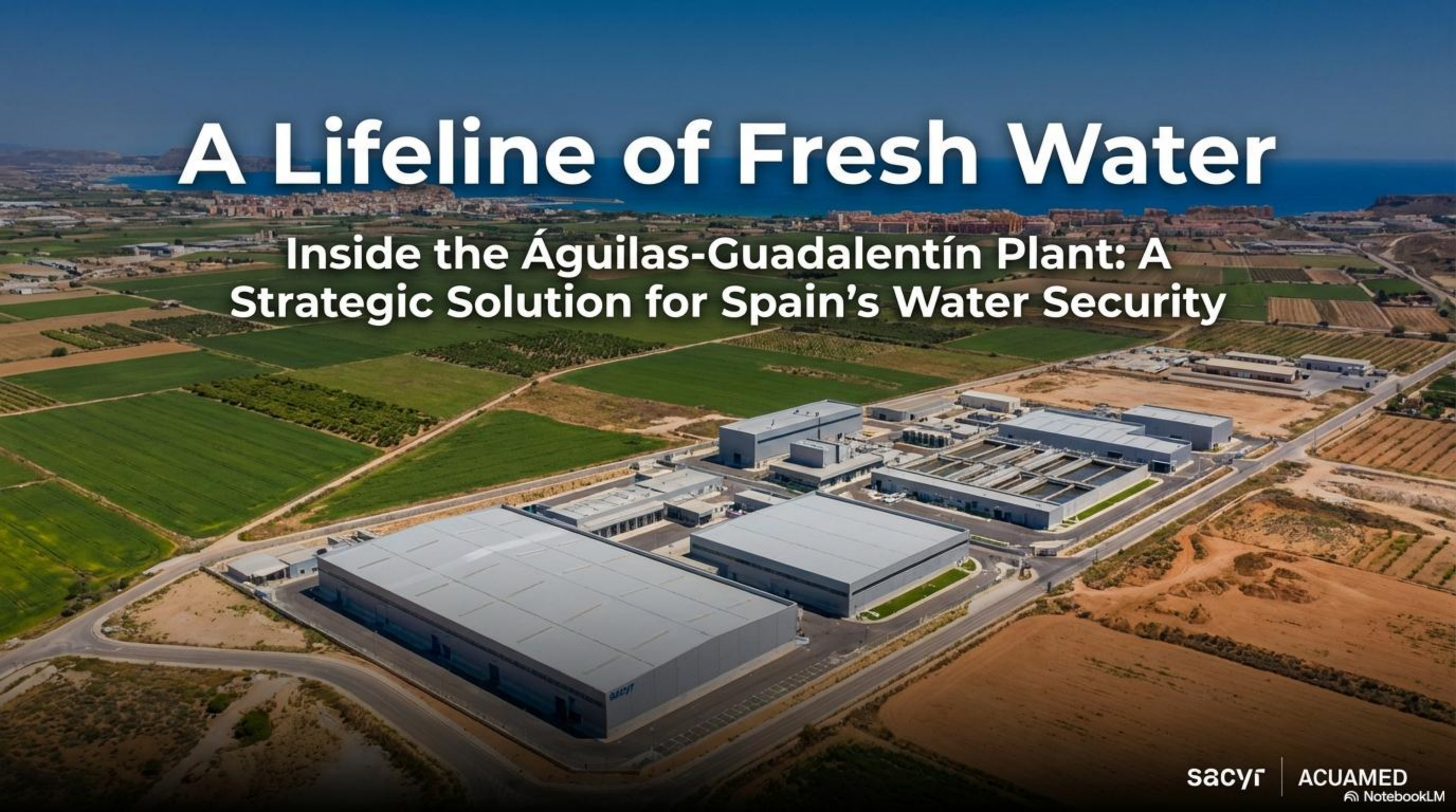
A Lifeline of Fresh Water

Inside the Águilas-Guadalentín Plant: A Strategic Solution for Spain's Water Security



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A Thirsty Land of Plenty

Southeast Spain, a vital agricultural hub for Europe, faces chronic water scarcity that threatens its economy and environment.

- Highlights the region (Murcia, Almeria, Alicante) as one of Europe's most important high-yield, export-oriented agricultural zones.
- Explains the fundamental problem: intense water demand from agriculture and urban centers combined with critically low rainfall.
- Specifies the consequence: over-exploited and stressed natural water sources, particularly the region's aquifers.

A Modern Oasis Engineered for Security

The Águilas-Guadalentín plant is a state-of-the-art facility providing a reliable, drought-proof source of fresh water, ensuring regional water security.

Introduces the plant as a strategic state infrastructure and one of the world's most advanced desalination facilities, operated by ACUAMED and built by Sacyr.

Emphasizes its primary mission: to supply water for irrigation, industry, and urban use while reducing pressure on natural aquifers.

210,000

m³ of fresh water per day

Design Capacity

Sustainable and eco-efficient systems

Technology

Second largest desalination plant in the world

Global Standing

The Journey of Water: From Sea to Farm in Four Steps

A sophisticated four-phase process transforms seawater into high-quality fresh water, optimized for efficiency and environmental protection.

1. Pre-Treatment

Initial filtration to remove impurities.

2. Reverse Osmosis

High-pressure separation of salt from water.

3. Energy Recovery

Recapturing and reusing energy.

4. Remineralization

Adding minerals to perfect water quality.

Steps 1 & 2: Creating Purity at Scale

A rigorous dual-filtration system prepares the water for a double-pass reverse osmosis process that removes salt and specific elements like boron.

Pre-Treatment

A robust double filtration system (gravity and pressure) removes sand, sediment, and organic matter, protecting downstream components.

Reverse Osmosis

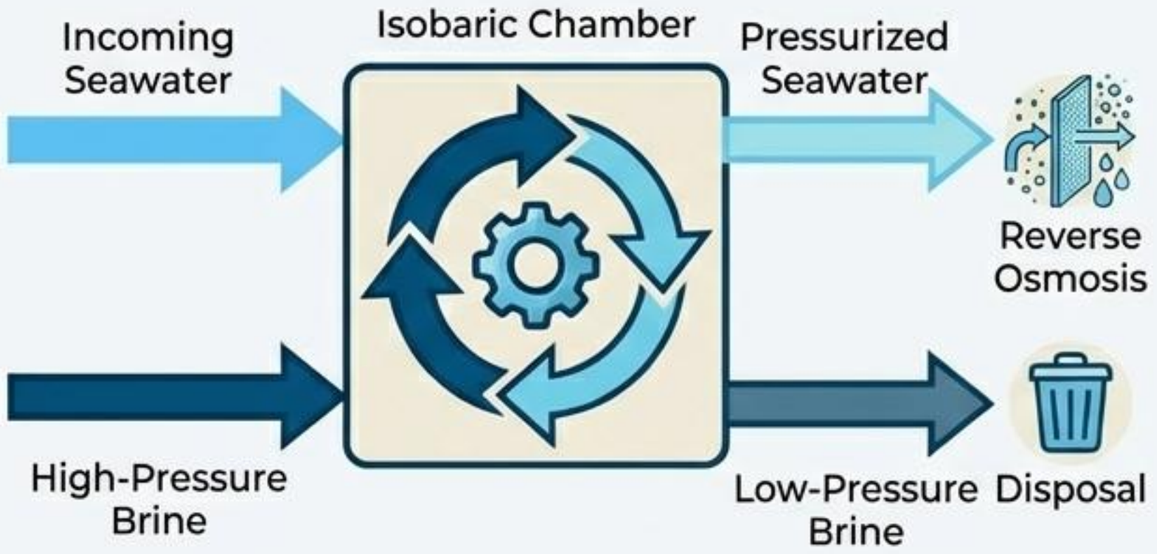
High-pressure pumps force pre-treated water through microscopic membranes in a "double pass" system to ensure high purity and remove elements like boron.

Steps 3 & 4: Optimizing for Efficiency and Quality

World-class energy recovery minimizes the plant's footprint, while a final remineralization step ensures the water is perfectly suited for its end use.

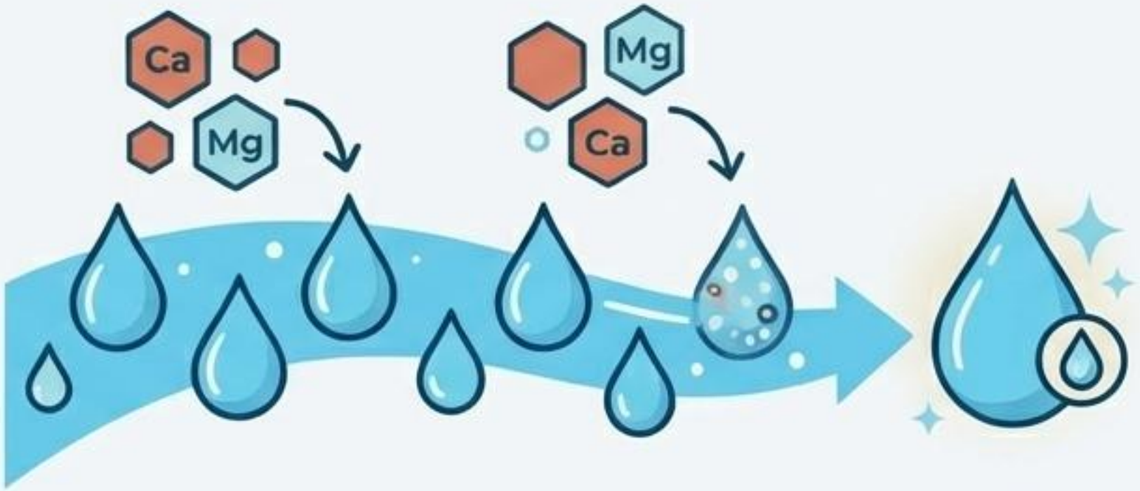
Energy Recovery

Isobaric chambers capture high-pressure energy from the outgoing brine and reuse it, significantly reducing overall power consumption. This is a key "eco-efficient" feature.



Remineralization

Essential minerals are carefully re-introduced to the pure water to stabilize its composition, making it ideal for both agricultural irrigation and human consumption.



The Impact by the Numbers

The plant delivers a massive and measurable impact, supporting tens of thousands of hectares of agriculture and a significant regional population.

210,000 m^3/day

Design Production Capacity

60 hm^3/year

Current Annual Production

16,000 Hectares

Irrigated High-Yield Farmland

130,000 People

Population Served (Equivalent)

A Lifeline for the Region's Economy

The plant is a vital resource for a diverse range of users, from high-yield farms in key agricultural valleys to towns and industries across Murcia.

Primary Beneficiary:
High-yield, export-oriented agriculture across Alicante, Murcia, and Almeria.

Key Agricultural Zones Served:

- Valle del Guadalentín
- Campo de Lorca
- Mazarrón
- Puerto Lumbreras
- Águilas

Other Users:
Provides a secure water supply for urban and industrial consumers, strengthening the entire regional economy.

THE WORKS
THE WORKS AHEAD: SECURING THE FUTURE

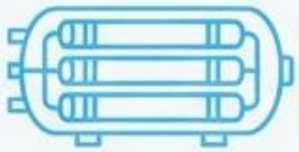
To meet rising demand and further enhance water security, major plans are underway to **expand existing capacity and build a new, complementary facility.**

1. **Enhance:** Upgrading the current plant for higher output.
2. **Expand:** Building a new, independent plant to serve additional needs.

Plan A: Boosting Capacity to 70 hm^3/year

A series of targeted technical upgrades will increase the current plant's annual production from 60 to 70 hm^3/year, strengthening supply for the Guadalentín Valley.

Improvements to intake and pre-treatment systems.



Expansion of reverse osmosis racks and energy recovery systems.

Upgrades to post-treatment and existing pumping lines.

Increase in electrical capacity and modernization of automation and control systems.

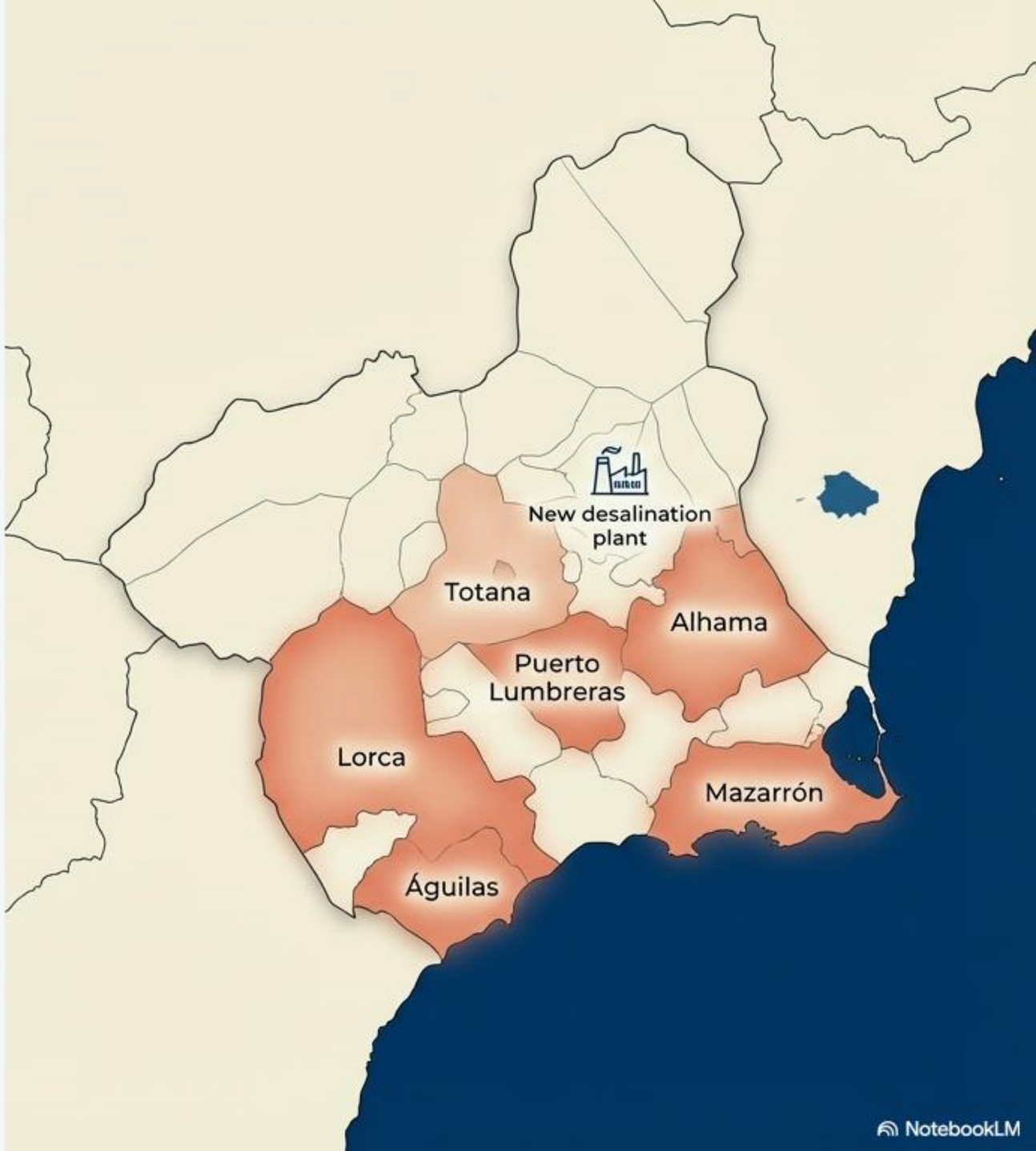
Plan B: A New 50 hm^3/year Independent Plant

A **second, independent** plant is planned to secure water for underserved municipalities and agricultural areas, aligning with long-term regional water strategy.

Capacity: 50 hm^3 per year.

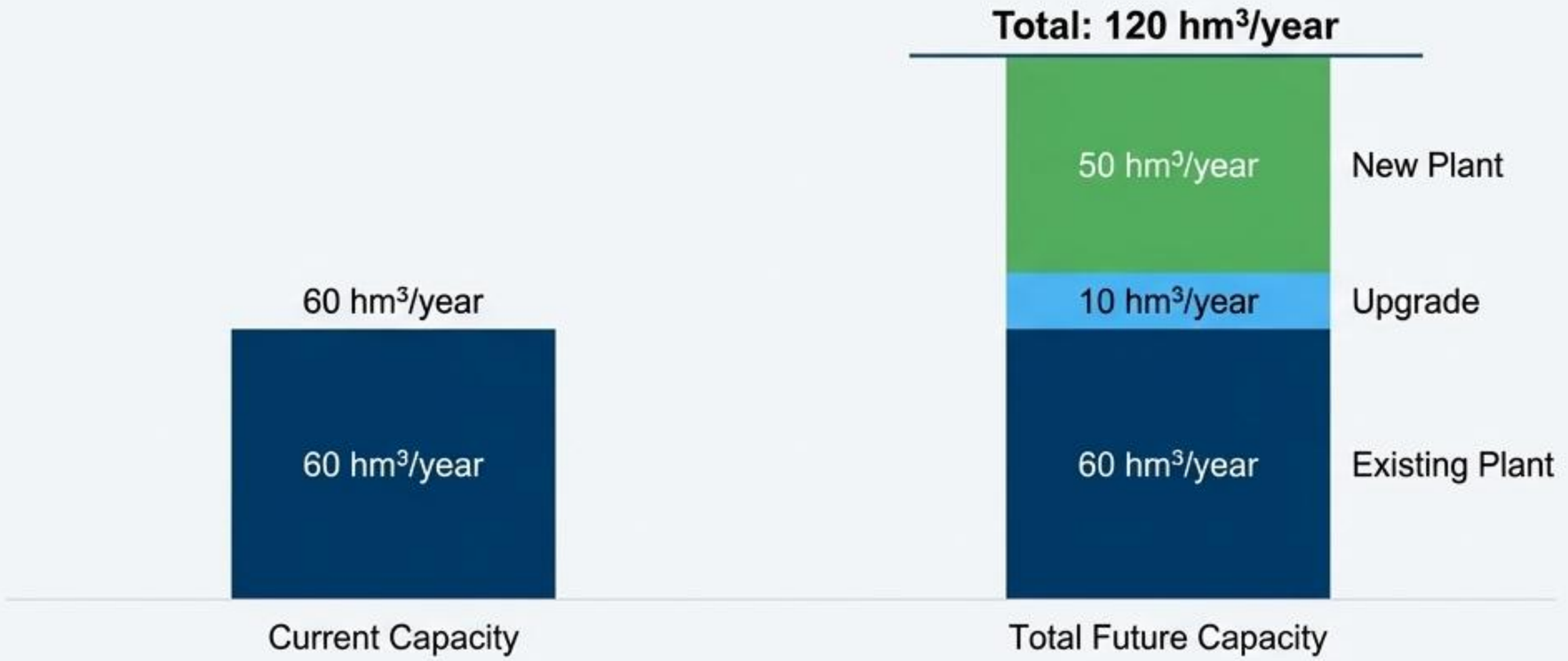
Primary Goal: Secure water for municipalities with chronic deficits: Águilas, Lorca, Puerto Lumbreras, Totana, Alhama, and Mazarrón.

Strategic Context: A key project within the **Segura River Basin Hydrological Plan (2022-2027)**, fulfilling the national plan for new desalination in Murcia.



Vision 2027: A Combined Future of Water Security

Together, these two projects represent a comprehensive strategy to combat water scarcity, reduce reliance on overexploited aquifers, and support sustainable growth.



Total New Capacity: +10 hm^3 (Upgrade) + 50 hm^3 (New Plant) = **60 hm^3/year** of additional desalinated water.

Strategic Mandate: Fulfilling the mandate of the Segura River Basin Hydrological Plan for increased desalination.

A Blueprint for Resilience

The Águilas-Guadalentín plant is more than infrastructure; it is a vital engine for economic prosperity, environmental protection, and climate change resilience in Spain.

Economic Engine:
Underpins the region's vital agricultural economy.

Environmental Guardian:
Eases pressure on fragile, overused natural water sources.

Future-Proof Model:
A benchmark for how innovation and strategic investment can secure water for generations to come.

About & Sources

Sacyr Agua: Responsible for the design, construction, and operation of the plant.

ACUAMED: Responsible for the strategic management of the plant as a state infrastructure.

For More Information

Sources:
https://sacyragua.com/en/-/desaladora-aguilas-guadalentin
https://www.ferrovial.com/en/business/projects/seawater-desalination-plant-in-aguilas-guadalentin/