

DESAL+ LIVING LAB

Supporting the Knowledge Economy in Desalination in the Canary Islands

Platform coordinated by:



Members:



Consejería de Economía,
Industria, Comercio y Conocimiento
Agencia Canaria de Investigación,
Innovación y Sociedad
de la Información



Interreg

Fondo Europeo de Desarrollo Regional



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DESAL+ LIVING LAB - LOCATION

The Macaronesian Region comprises 4 archipelagos on the north of the Atlantic Ocean, in front of the coastline of the continents of Europe and Africa.

From north to south, this Region comprises:

- **Azores** (Portugal)
- **Madeira** (Portugal), including the Savage Islands
- **the Canary Islands** (Spain)
- **Cape Verde** (Africa)



DESALINATION IN THE MACARONESIAN AREA

Over 700,000 m³/day (approx. 1% of the desalination capacity installed worldwide).

Largely dependent on fossil fuel imports

Over 350 desalination plants in operation



Over the 50% of the inhabitants and 14 million tourists supplied with desalinated water.

Also used for agricultural and recreational purposes.

The highest density of desalination plants in km² in the world

OPPORTUNITIES FOR R&D&i IN DESALINATION

- +50 years of experience operating desalination plants
- Wide variety of plants, with a large array of technologies, design conditions and locations
- Availability of desalination infrastructure and pilot plants for testing purposes
- Excellent availability of natural resources: sun, wind and sea
- High number of researchers, engineers, technicians and qualified plant operators



CANARY ISLANDS: SPECIAL TAX ZONE (ZEC)

Key advantage for foreign R&D companies, benefiting from the following tax advantages:

- **Company Tax:** the entities located in the ZEC area are subject to the Company Tax applicable in Spain **at a reduce rate of 4%**.
- **Non-residents are exempt from the Income Tax (IRNR)**
- **Property Transfer Tax and Stamp Duty (ITP-AJD):** the entities based in the ZEC area are **exempt from such taxes and duties in the following cases:**
 - Purchase of goods and rights for the development of the business activity of the ZEC entity within the geographic area of the ZEC.
 - Corporate transactions carried out by ZEC entities, except for the winding up.
 - Legally documented actions related to transactions performed by these entities within the geographic area of the ZEC.
- **VAT applicable in the Canary Islands (IGIC):** at the ZEC, the provision of goods and services within the entities based in the ZEC area, as well as the import of goods manufactured by such entities, are exempt from the value added tax applicable in the Canary Islands (IGIC).

DESAL+ LIVING LAB DESCRIPTION



DESAL + LIVING LAB is **an open research ecosystem** with both experimental and real-world environments mainly located in the Canary Islands. This platform has also collaborators in Cape Verde, Madeira y Mauritania.

Tests, experiments and demonstrations can be carried out in order to promote and mature the commercial potential of a technology, product and/or service.

DESAL + LIVING LAB has established the **conditions, infrastructure and protocols required to gain access to desalination plants**, enabling the collaboration and cooperation of universities, research centres, manufacturers, companies, operators and end-users by using all the resources available within the ecosystem.

R&D&i PRIORITY LINES

(2018-2025) (1/3)



SL1. **Advance** (predictive and preventative) maintenance of the facilities to ensure efficiency across their useful life



SL2. **Automation, big data processing** and the implementation of **artificial intelligence** to improve efficiency and control the process costs



SL3. **Pre-treatments**: Actions intended to maintain and/or improve the water quality at the entrance of the reverse osmosis membranes

R&D&i PRIORITY LINES

(2018-2025) (2/3)



SL4. **Membranes 4.0:** Testing and operations with critical elements to maximise the useful life of reverse osmosis membranes



SL5. **Desalinated water-energy nexus:** Improvement of the energy efficiency of the desalination process and direct use of renewable energies



SL6. **Desalinated water quality:** Improvement of the quality of desalinated water for multiple objectives, especially for agricultural purposes

R&D&i PRIORITY LINES

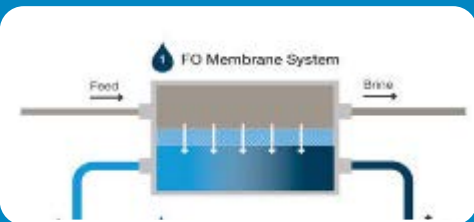
(2018-2025) (3/3)



SL7. Brine and the circular economy: Solutions and process intended to increase the value of brine and/or the path to minimise the discharge of brine as much as possible



SL8. Green chemistry. New processes, developments or operational approaches to reduce the use of chemicals in desalination or to replace them with more sustainable chemicals



SL9. Emerging desalination technologies: New desalination technologies alternative or supplementary to reverse osmosis

DESALINATION INFRASTRUCTURE FOR R&D

The platform provides desalination infrastructure (+10 facilities) and testing areas unique in the world (+3) for desalination R&D purposes in a real environment as a test bench to do research, develop, test and validate water desalination solutions, the use of renewable energies and the water-energy nexus.



INITIATIVES AND PROJECTS

The DESAL+ Living Lab platform is developing projects and services related to:

- Technical studies and reports
- Laboratory analysis and tests
- Testing in pilot plants
- Development of prototypes
- Implementation in real environment
- Software development
- Training
- Technical consulting and planning
- **Pre-commercial public procurement - R&D services**

