

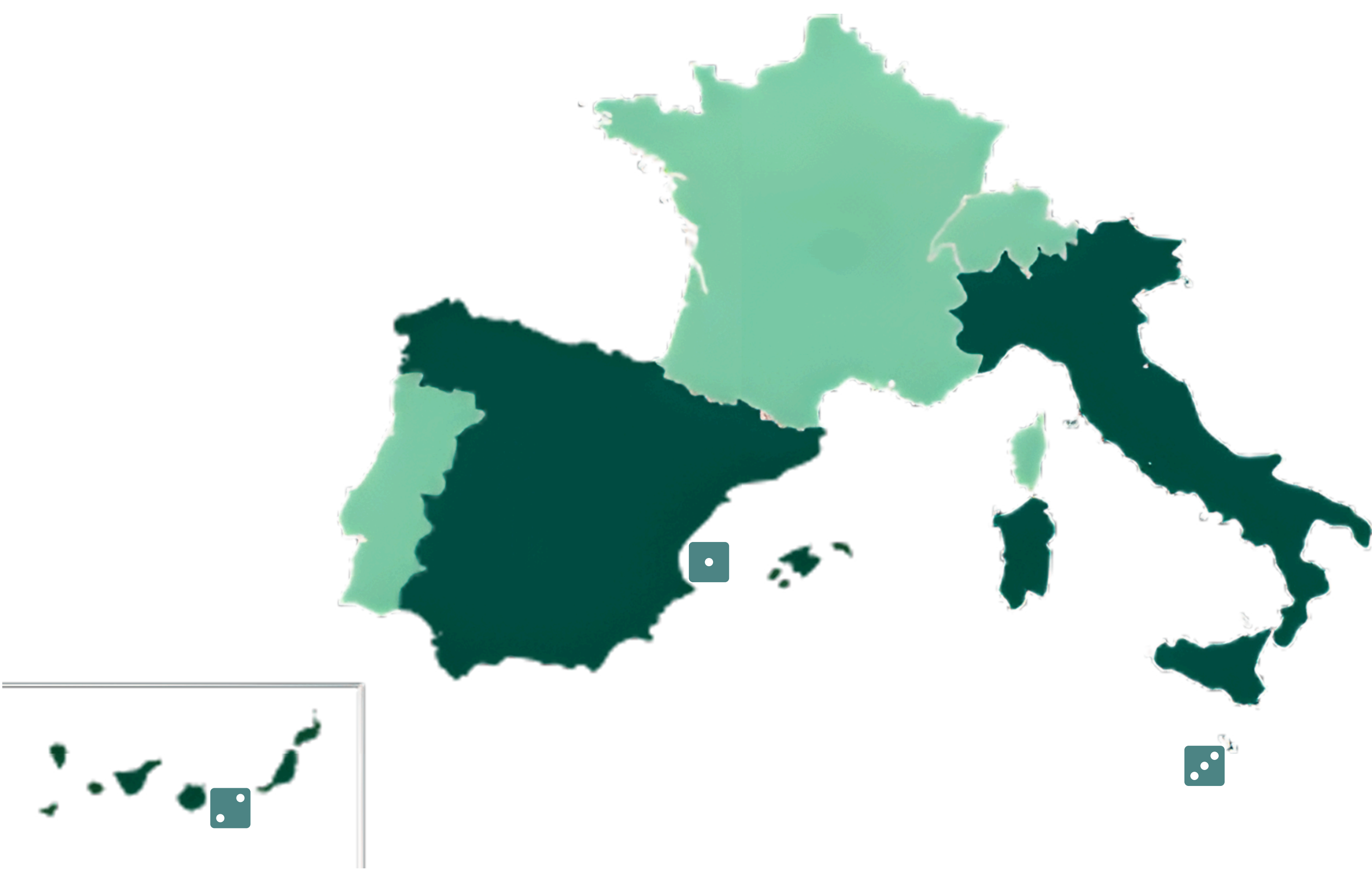


# CIRCULAR ECONOMY APPLIED TO NITRATE REMOVAL: HYDROGEN GENERATION AND WASTE RECOVERY IN DRINKING WATER

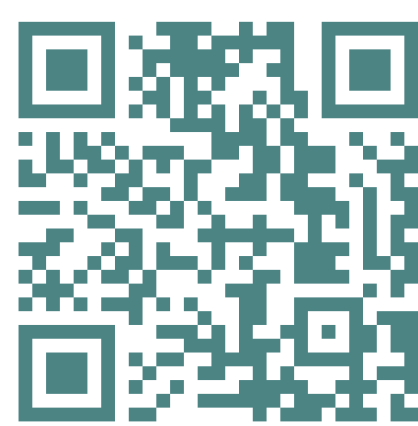
LIFE ELEKTRA AIMS TO DEVELOP AN ELECTROCHEMICAL DENITRIFICATION TECHNOLOGY ON AN INDUSTRIAL SCALE THAT ENABLES THE REMOVAL OF NITRATES FROM CONCENTRATED STREAMS. THIS WILL RESULT IN A ZERO-LIQUID DISCHARGE PROCESS, ALLOWING THE EXPLOITATION OF VARIOUS IONIC COMPOUNDS OF INDUSTRIAL INTEREST AND THE RECOVERY OF A HYDROGEN STREAM FOR ENERGY USE, COMPLEMENTED BY PHOTOVOLTAIC PANELS.



## CASE STUDIES



- GANDIA**  
2 Reverse Electrodialysis Water Treatment Plants with Granular Activated Carbon filters supply 32,000 m<sup>3</sup> of water daily, increasing to 40,000 m<sup>3</sup> during summer. Nitrates exceeding EU standards in aquifers are treated, with water sourced from the electrodialysis process.
- GRAN CANARIA**  
Water in La Aldea de San Nicolas for human consumption comes from groundwater and desalinated seawater. Water demand for domestic and tourism for 2021-2027 is estimated. Nitrate concentrations are high due to pollution from agriculture and urban development discharges.
- MALTA**  
Bingemma pumping station takes groundwater for drinking water supply with flow rates of 18-38 m<sup>3</sup>/h and pressures of 1.4-3.5 bar. The water has high nitrate content, averaging 124 mg/l in 2021.



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