

Low Energy Solutions for Drinking Water Production by a Revival of Electrodialysis Systems

Challenge

The balance between drinking water demand and availability has reached a critical level in many regions of the world. Factors such as climate change and water over-abstraction are currently exacerbating the water stress of almost one billion people worldwide who worry about obtaining enough water daily. With seawater making up 97.5% of the world's water resources, low energy desalination solutions are crucial in providing sufficient levels of good quality drinking water for the growing world population.

Project Objectives

REVIVED water aims to contribute to overcoming the drinking water challenge by establishing ElectroDialysis (ED) as the new standard for desalination of seawater. The goal is to produce safe, affordable and cost-competitive drinking water with significantly reduced energy consumption compared to state-of-the-art reverse osmosis (RO) technology. The **REVIVED water** project will focus on developing several new innovative ElectroDialysis systems and assessing them in different real environments, ranging from brackish water desalination to industrial-scale seawater desalination.

REVIVED Water's ED Systems and Applications in Different Pilot Testing Locations

ED System	Multistage ED system	Multistage ED system + Reverse ED (RED)	RO systems + RED or ED
<i>Brackish water desalination in developing countries: UAE, Eritrea, Ethiopia, Djibouti, Somalia, India, Ivory Coast and Panama</i> <i>Tap water softening in Europe: The Netherlands, Germany</i>	<i>Industrial scale seawater desalination: The Netherlands</i>	<i>Further reduction of energy consumption for seawater desalination</i> The Netherlands	<i>Market introduction ED-RO without the need to replace the extensive RO infrastructures already developed around the world</i>

Expected Results

- Development of new innovative ED systems based on Reverse ED (RED) and ED components (membrane, electrodes, stacks) for water desalination applications to significantly reduce their energy consumption compared to current state-of-the-art energy technologies.
- Assessment of several pilot ED systems in different real environments.
- Sustainable provision of safe and affordable drinking water all over the world, covering applications ranging from large industrialised plants to small, stand-alone systems for developing countries.

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REVIVED water Consortium

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