



## A new project to improve hydrogen production through electrolysis

The RES2H2 project is formed by a consortium of four partners and financed with the PERTE funds for Renewable Energy, Renewable Hydrogen and Storage. The expected results will contribute to the fight against climate change by reducing greenhouse emissions, preventing water pollution and improving its treatment.

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improve the production of hydrogen from wastewater through developing electrolyzers that do not depend on highly purified and deionized water, and allow their implementation in different areas. That is the main objective of the project [hydrogen production from purified wastewater through electrochemical treatments \(RES2H2\)](#), a consortium formed by experts from ICFO, DAM Group and the companies Sixsenso, Technologies S.L. and APRIA Systems S.L.

The project, which will last 36 months and extend until July 2026, lays on the foundation that **water is the main component for hydrogen production based on electrolysis**, which requires

using highly purified and deionized sources. This requirement entails additional installation and operation costs, representing a major limiting factor for the implementation of electrolysis systems fed by wastewater.

To address that issue, the project seeks to improve the development of electrolyzers, less dependent on these resources, offering better performance in terms of energy efficiency and hydrogen productivity. As **ICFO Prof. F. Pelayo García de Arquer**, coordinator of the project, comments, "The RES2H2 project will explore a new perspective for green hydrogen generation. Our technology will allow us to generate hydrogen using renewable electricity from non-ideal water streams integrated into wastewater treatment plants. These new perspectives will be implemented thanks to the innovation of the different partners, covering catalyst design, electrochemical systems and water treatment and analysis."

As the RES2H2 project points out, **"It is important to look for alternatives and minimize costs, so we allow the implementation of hydrogen generation systems in different environments"**.

### **The project's environmental impact**

The project, funded by the PERTE NextGenerationEU recovery plan for Renewable Energy, Renewable Hydrogen and Storage, is constituted by **a group of organizations that cover the entire hydrogen value chain for the proposed solution**, facilitating an effective collaboration and technology transfer between the business sector and the scientific community.

The expected outcomes will contribute to the fight against climate change by reducing greenhouse gas emissions, helping to prevent water pollution and enhancing its treatment, reducing the use of natural resources, contributing to a circular economy and improving environmental sustainability in general.

In that sense, the consortium highlights that **the project aligns with the circular economy strategy of the European Union that promotes the reuse of treated water** due to its lower environmental impact compared to other alternative supply methods, such as water transfers or desalination, in addition to highlighting its potential to reduce water waste and increase water savings.

"An ideal way to reuse treated water is to use it as a raw material for the electrolysis of water to generate green hydrogen", as determined by the EU Regulation 2020/741. The widespread implementation of the proposed technology and the negative carbon footprint green hydrogen entails, together with its integration into the wastewater treatment systems throughout the Spanish territory, will contribute to improving society general quality of life **"providing both a sustainable energy vector and treated water effluents that comply with regulations, reducing eutrophication and toxicity of the ecosystem in general"**.

**\*\*\*Funded by the European Union - NextGenerationEU**

