

INNOVATION FUND

Deploying innovative net-zero technologies for climate neutrality

GH2A: GREENH2ATLANTIC

The Innovation Fund is 100% funded by the EU Emissions Trading System

| Project Factsheet

The GreenH2Atlantic (GH2A) project will develop, install and operate a first-of-a-kind 100 megawatt (MW) electrolyser in Sines, Portugal. The project will produce over 11 300 kilograms a year of renewable hydrogen (H₂) while avoiding 100% relative greenhouse gas (GHG) emissions. The project's novel artificial intelligence enhanced hydrogen management system will enable the efficient integration of multiple renewable energy assets, while guaranteeing hydrogen delivery to the local refinery and injection into the natural gas grid. GH2A will demonstrate hydrogen's competitiveness in real operating conditions, using electrolysis technology beyond the state-of-the-art.

GH2A will reconvert a decommissioned coal fire power plant into a hydrogen hub. By reusing the existing assets (including sea water intake, outlet infrastructures, electrical equipment and existing buildings and warehouses), GH2A will minimize its local impact and reduce construction timings, saving 22 000 tonnes of concrete and 900 tonnes of steel.

COORDINATOR

HYTLANTIC SA

LOCATION

Portugal

CATEGORY

Energy intensive industries (EII)

SECTOR

Hydrogen

AMOUNT OF INNOVATION FUND GRANT

EUR 61,987,272

EXPECTED GHG EMISSIONS AVOIDANCE

842,979 tonnes CO₂ equivalent

STARTING DATE

01 June, 2024

ENTRY INTO OPERATION DATE

31 May, 2027

FINANCIAL CLOSE DATE

31 May, 2025

* Calculated vs. the 2021-2025 ETS benchmark of 6.84 tCO₂e/tH₂, not taking into account additional carbon abatement due to substitution effects in the H₂ end use application, i.e. conservative estimate.

The hydrogen produced will be blended into the natural gas grid at a scale sixteen times greater than the current state of the art. This will avoid 765 000 tonnes of CO₂ equivalent over the first ten years of operation, equivalent to the annual emissions of 20 000 Portuguese citizens. The reconversion of the former power plant will allow the concept to be replicated worldwide, promoting circular economy, and reducing GHG emissions.

GH2A will be vital for upscaling renewable hydrogen use by the industry which is key to EU decarbonisation policies. GH2A aligns with Portugal's strategy of 80% renewable share of electricity by 2030. Renewable hydrogen will be produced to comply with the Renewable Energy Directive and its delegated acts on renewable fuels of non-biological origin (RFNBO), using newly built renewable sources. The project will thus enable increased penetration of renewable energy into the grid by timing the electrolyser to coincide with periods of high renewable energy generation. GH2A serves as a catalyst for the widespread adoption of hydrogen across the EU and will spearhead the development of

a robust value chain. The project will therefore contribute to the REFueLEU goal of reducing fossil fuel consumption in industry and transport, and it will contribute to the goals of the European Hydrogen Strategy in terms of domestic renewable hydrogen production by 2030.

GH2A will create 5 700 jobs across the hydrogen supply chain in Portugal and Europe. This business model will contribute to a Just Transition by alleviating the socio-economic impact of closing fossil fuel plants across Europe. The renewable hydrogen that will be produced by GH2A will be transported through a centralised “backbone” pipeline in Sines, Portugal. This critical infrastructure will support the development of Sines as a hydrogen hub by providing an off-take route to future projects. GH2A partners with local academia, through initiatives such as HyLab, contributing to research and development, ensuring that lessons learnt and challenges faced by this large innovative decarbonisation project are captured and shared widely.

| Participants

HYTLANTIC SA

Portugal