European Commission

CHEMICALS

INNOVATION FUND

Deployment of net-zero and innovative technologies

GAIA: Green Ammonia in Asturias

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

| Project Factsheet

The project aims to become the first European industrial ammonia plant entirely based on renewable hydrogen and power. GAIA uses cutting-edge technologies to produce green ammonia and nitrogen, such as an innovative Haber-Bosch process and air separation units, allowing it to adapt to the flexible renewable profile of green hydrogen generation. At the same time, a 12-megawatt (MW) solid oxide electrolyser cell (SOEC) will produce green hydrogen using waste heat from the ammonia unit. The project will produce approximately 180 000 tonnes of green ammonia annually in Avilés, Spain. The ammonia will be used to produce low-carbon fertiliser and potentially as a maritime fuel. A relative greenhouse gas (GHG) emission reduction of almost 100% is estimated compared to the reference scenario (all the ammonia consumed in the fertiliser plant is of fossil origin).

GAIA will be a pioneer in the advancement of green ammonia production, offering significant potential for scalability and operational flexibility, as well as

COORDINATOR
FERTIBERIA CORPORATE SL

LOCATION
Spain

CATEGORY
Energy intensive industries (EII)

SECTOR
Chemicals

AMOUNT OF INNOVATION FUND GRANT
EUR 75,151,250

EXPECTED GHG EMISSIONS AVOIDANCE
2,844,716 tonnes CO2 equivalent

STARTING DATE
01 April, 2025

FINANCIAL CLOSE DATE
30 September, 2026

ENTRY INTO OPERATION DATE
30 September, 2028

CALL NAME
InnovFund-2023-NZT

** 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.*

incorporating variable load operation modes of the Haber-Bosch system. It will also contribute to environmental sustainability by integrating a 12 MW SOEC technology, a hygroscopic cycle technology (HCT) refrigeration system and treated water reuse. The first-of-a-kind facility will showcase sustainable practices in producing green ammonia and contribute towards the decarbonisation of fertiliser production. GAIA will achieve an absolute GHG emission avoidance of 2.8 million tonnes of CO2e during its first ten years of operation.

GAIA will contribute to the European Green Deal's goals. Producing green ammonia reduces Europe's GHG emissions and enhances the use of renewable energy in the industry. Produced domestically, green ammonia also contributes to Europe's energy independence, reducing its reliance on imported fossil fuels and enhancing energy security. GAIA's alignment with circular economy principles and sustainable transition, will support food security through decarbonised fertiliser production, fostering a competitive European green ammonia market.

The project will contribute to the region's economic growth by stimulating local employment with new qualified job opportunities and strengthening social cohesion. The project has been designed considering the whole supply and value chain and its potential in terms of scalability and replicability. It will showcase the technology commercially, setting a precedent for sustainable practices in green ammonia production. GAIA's implementation will offer valuable insights for broader adoption and other ammonia producers looking to decarbonise their operations while enhancing the farming sector's resilience.

| Participants

FERTIBERIA CORPORATE SL	Spain
FERTIBERIA SA	Spain
DESARROLLOS RENOVABLES DE LA FRONTERA SL	Spain

Additional information on the [EU Funding & Tenders Portal](#)**.**