

# INNOVATION FUND

Driving clean innovative technologies towards the market

BIOZIN - Conversion of waste and residue BIOmass from Norwegian forestry and sawmills to advanced low carbon fuels for Zero emission transportation INdustry

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

## **Project summary**

The BIOZIN project aims to build the world's first commercial-scale drop-in biofuel (i.e., renewable hydrocarbon biofuels with fuel infrastructure compatibility) production facility in Amli, Norway, utilising Shell's proprietary IH2® (Integrated Hydropyrolysis and Hydroconversion) technology. BIOZIN will use an innovative process that can convert any sustainable organic waste, such as residues from forestry and sawmills into renewable transportation fuels using a continuous catalytic thermochemical process. BIOZIN will annually produce 30. 11 and 55 kilotonnes (kt) of zero-emission jet fuel, diesel and gasoline, respectively, as well as 70 kt of biochar. The project will result in a 96% relative greenhouse gas (GHG) emission avoidance during the first ten years of operation.

#### COORDINATOR

Biozin Holding AS (BZHAS)

#### BENEFICIARIES

Bergene Holm AS (BHAS), A/S Norske Shell (Shell)

#### LOCATION

Amli, Norway

#### SECTOR

Refinery, Biofuels

#### **GHG EMISSION AVOIDANCE**

2.57 Mt CO<sub>2</sub> eq

#### **AMOUNT OF THE INNOVATION FUND GRANT**

EUR 75 000 000

#### **RELEVANT COSTS**

EUR 564 725 243

#### **TOTAL PROJECT COSTS**

EUR 3 293 893 108

#### **ESTIMATED CAPEX**

EUR 1 271 520 475

#### **STARTING DATE**

1 January 2023

### **PLANNED DATE OF ENTRY INTO OPERATION**

1 October 2026



# IH<sup>2®</sup> Technology: The Future of Transportation Fuel Technology

The IH2® process offers a unique direct route to convert biomass into pure hydrocarbons with high energy efficiency, by virtue of integrated catalytic hydropyrolysis of biomass and hydroconversion. The process will produce second-generation, advanced light-hydrocarbon fuels from sustainable woody waste that offer integral infrastructure compatibility, have an established large market, and can be easily transported. IH2® liquid products meet the EU's requirements for the transportation of fuels and have high energy density and low acidity. The technology is highly scalable and, after the start-up phase, the IH2® process is selfsustaining, since it will use sustainable biogenic feedstock - no longer requiring natural gas or the addition of hydrogen.

### Boosting the regional and national sawmill and forestry industry, while securing a green energy supply for Europe

Shell's IH<sup>2®</sup> technology has the potential to significantly lower the carbon intensity of fuels.

It also provides the opportunity for refineries and petrochemicals companies to become lower in carbon intensity by using the fuels produced by the BIOZIN project. The annual feedstock-intake capacity of the BIOZIN plant is around 800 000 m<sup>3</sup>. However, since IH<sup>2®</sup> is a feedstock-flexible technology, it is able to use a wide range of biomass wastes, such as algae, aquatic plants and cellulosic fractions of municipal waste, including most types of plastic. Consequently, over the long-term, it could also impact other industries and countries.

The BIOZIN consortium will improve cost efficiency, reinvigorate asset-intensive industries and, thus, stimulate economic growth. Related industries supplying biomass feedstocks will also benefit from the project, since it will facilitate the commercialisation of hitherto unutilised resources. The project will also annually save the emissions equivalent to a roundtrip by aeroplane between Oslo and Paris for 1 million people.

The BIOZIN project is strongly supported by the Amli municipality in South Norway. Since 25% of Norwegian forest harvest exports are produced in this region, they could instead be utilised by the local and regional industries. In total, the value chain activities related to the BIOZIN project are expected to create about 400 jobs.

