Green JOBS
RFCS RESEARCH PROJECT
6
news
March 2025

Competitive advantage of post coal mining areas: Hydrogen

In recent years, hydrogen has gained increasing attention as a key pillar in the global shift towards a decarbonized energy system. Europe, in particular, is leading the way, investing in large-scale hydrogen projects and setting ambitious targets to reduce emissions and accelerate the green transition. Green hydrogen—produced from renewable energy sources—is seen as a critical solution for hard-to-decarbonize sectors such as industry, transport, and heating.

As demand grows, identifying optimal sites for hydrogen production becomes essential. Former coal mining areas offer a unique opportunity. These regions, once at the heart of fossil fuel extraction, hold valuable infrastructure, water resources, and available land—ideal conditions for renewable energy and hydrogen production facilities.

Transforming these sites from coal to clean hydrogen hubs not only supports energy transition goals but also offers a pathway for economic and social regeneration. By embracing hydrogen, coal regions can become symbols of a sustainable future—where past industrial landscapes are reimagined as centers of innovation, green employment, and clean energy.

Deliverable 2.6 of GreenJOBS project provides a more specific deployment on this topic. More information through the following link: https://greenjobsproject.uniovi.es/wp-content/uploads/2024/09/D2.6-Green-Hydrogen-Deployment-CORRECTED.pdf

Partners

UNIVERSIDAD DE OVIEDO (UNIOVI)

GŁÓWNY INSTYTUT GÓRNICTWA (GIG)

FUNDACIÓN ASTURIANA DE LA ENERGÍA (FAEN)

DMT-GESELLSCHAFT FÜR LEHRE UND BILDUNG mbH (DMT-THGA)

MAGELLAN & BARENTS (M&B)

WEGLOKOKS KRAJ S.A. (WEGLO)

HULLERAS DEL NORTE, S.A. (HUNOSA)

PREMOGOVNIK VELENJE d.o.o. (PV)

GreenJOBS

International Workshop in Gliwice (Poland)

Presentation at the **International Workshop** on Mining and Post-mining Issues during the Energy Transition with the tittle "Reuse of underground coal mines at the end of their lifetime through emerging renewable energy technologies and circular economy principles". (Gliwice, December 5th, 2024).

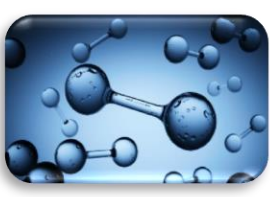
4th Meeting of the Council of The Silesian Voivodeship

The GreenJOBS Project was presented at the **4th Meeting for a Just Transition of the Council** with the presentation "use of competitive advantage of mines removed from exploitation to create "Green" JOBS Analysis for KWK Bobrek" (Dabrowa Górniza, Poland, February 4th, 2025).

Resource Management Week 2025

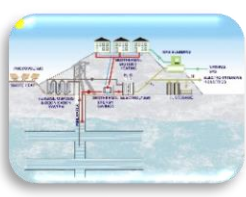
Prof. Alicja Krzemien participated in the 20th Session of the UNECE Group of Experts on Coal Mine Methane and Just Transition with the speech "Repurposing end-of-life underground coal mines by deployment emerging renewable energy and circular economy technologies to promote sustainable local economic growth and maximise the number of green, quality jobs (Geneva, Switzerland, March 24-25th, 2025).

Hydrogen Projects in Asturias Region



In Asturias, Spain, EDP is actively involved in several green hydrogen projects, as part of its broader strategy to transition towards cleaner energy sources. One of the most significant projects is transforming the Aboño thermal power plant into a green hydrogen facility. This project, known as the **Asturias H2 Valley**, aims to repurpose the existing infrastructure to produce green hydrogen, reducing greenhouse gas emissions by 99.98% and contributing to the decarbonization of the regional economy. The Aboño plant will initially have an electrolysis capacity of 150 MW by 2026, with plans to expand to 500 MW by 2030.

In addition to the Aboño project, EDP is also developing the **GH2 Soto** project in Soto de Ribera, Asturias. This project has recently completed its environmental processing and will involve an initial investment of over 20 million euros to develop 5 MW of electrolysis capacity. The project aims to produce 600 tons of renewable hydrogen annually, reducing CO2 emissions by approximately 6,000 tons annually. The project includes plans for a hydrogen refueling station to support mobility, particularly in road transport, by providing hydrogen for vehicles.



Simultaneously, the **Mine-to.H2 project** is an innovative initiative to repurpose the former coal mine "Pozo Fondón" in Langreo, Asturias, Spain, into a green hydrogen production facility. Led by HUNOSA, this project involves the installation of a 2.5 MW green hydrogen plant, scalable up to 5 MW, which uses mine water for electrolysis and electricity from a photovoltaic installation located in a former open-pit coal mine. The produced green hydrogen will be used primarily for the passenger road transport sector, with plans to supply intercity buses equipped with fuel cell technology, connecting major Asturias such as Oviedo, Gijón, and Avilés. The initiative is funded with 18 million euros, half of which comes from European RFCS funds.

Asturias is positioning itself as a benchmark in green hydrogen with multiple projects that transform industrial infrastructures into sustainable production centers.

Another significant initiative in Asturias is the **H2Asturias** project, led by ArcelorMittal. This public-private partnership involves the construction of a pilot hydrogen plant at ArcelorMittal's facility in Gijón, known as GasLab. The plant will focus on testing and accelerating hydrogen recovery technologies, contributing to the decarbonization of Asturias' industry.

Green Hydrogen in Asturias. Reuse of coal mines as potential areas to approach for renewable sources

As part of the broader efforts for the reindustrialization and revitalization of former mining areas, several initiatives focus on repurposing closed mining shafts in central Asturias, particularly in towns like Mieres and Langreo.

These former coal mines possess unique features that make them ideal for hosting innovative technologies that integrate renewable energy generation and efficient energy use. Much like other mining regions globally, northern Asturias must embrace an energy transition driven by clean and renewable sources. Setting up a hydrogen production plant meets these goals while also stimulating regional development through the creation of green jobs.

The area is home to numerous mining wells that offer excellent potential for hosting such initiatives or even replicating them in the future.

Energy Storage: Batteries

The need for energy storage is currently one of the greatest challenges Asturias is facing in its energy transition process. Identifying the most suitable locations, as well as achieving consensus and acceptance from local communities, are proving to be the main hurdles for the battery projects proposed for implementation.

Photovoltaic Plants in coal waste heap

The presence in Asturias of large areas of land from disused coal mine slag heaps represents a significant opportunity for locating photovoltaic plants essential for green hydrogen production.
Several projects for their installation have recently been submitted, both in the central area and in the southwestern part of the region. This is also a challenge for the development of the current power grid, which must evolve to meet future demands.

Asturias and similar European coal mining regions currently undergoing energy, social, and economic transition are strong candidates for the implementation of a model based on renewable and sustainable energy sources.

Co-funded by the European Union. This project has received funding from the Research Fund for Coal and Steel under Grant Agreement No 101057789.

European Commission

Research Fund for Coal & Steel