

# HEAVENN

## HYDROGEN ENERGY APPLICATIONS FOR VALLEY ENVIRONMENTS IN NORTHERN NETHERLANDS



Project ID	875090
PRR 2024	Pillar 6 – H <sub>2</sub> valleys
Call topic	FCH-03-1-2019: H <sub>2</sub> valley
Project total costs	EUR 99 720 599.49
Clean H <sub>2</sub> JU max. contribution	EUR 20 000 000.00
Project period	1.1.2020–31.12.2025
Coordinator	Stichting New Energy Coalition, Netherlands
Beneficiaries	Bytesnet Groningen BV, Cemtec Fonden, Emmtec Services BV, Energy BV, Energie Beheer Nederland BV, Engie Energie Nederland NV, European Marine Energy Centre Ltd, European Research Institute for Gas and Energy Innovation, EWE GASSPEICHER GmbH, Fundación para el Desarrollo de las Nuevas Tecnologías del Hidrógeno en Aragón, Gemeente Emmen, Gemeente Groningen, Gemeente Hoozevee, Green Planet Real Estate BV, Groningen Seaports NV, H2Tec BV, Hincio, HyCC BV, Hydrogen Ireland Natural Resources Association Company LBG, HyEnergy Consultancy Limited, HyEnergy TransStore BV, Lenten Scheepvaart BV, Logan Energy Limited, Nederlandse Aardolie Maatschappij BV, Nederlandse Particuliere Rijnvaart-Centrale Coöperatie UA, Nobian Industrial Chemicals BV, NV Nederlandse Gasunie, PitPoint. Crew BV, PitPoint.Pro BV, Qbuzz BV, Rijksuniversiteit Groningen, Shell Nederland Verkoopmaatschappij BV, TotalEnergies Gas Mobility BV, TotalEnergies Marketing Nederland NV, UVO Vervoer BV

<https://heavenn.org/>

### PROJECT AND GENERAL OBJECTIVES

Heavenn is a large-scale demonstration project bringing together core elements – production, distribution, storage and local end use of H<sub>2</sub> – into a fully integrated and functioning hydrogen valley that can serve as a blueprint for replication across Europe and beyond. The main goal is to make use of green H<sub>2</sub> across the entire value chain, while developing replicable business models for wide-scale commercial deployment of H<sub>2</sub> across the entire regional energy system.

### NON-QUANTITATIVE OBJECTIVES

- Safety issues will be covered by permit-issuing procedures.

### PROGRESS AND MAIN ACHIEVEMENTS

- The salt barge hull is actively sailing in the Netherlands. It uses a container swap solution to refuel on hydrogen. Salt cavern testing is ongoing and has been successful so far.
- A large proportion of the mobility applications (i.e. vehicles) have been ordered or purchased and will be delivered this year.
- Data collection is being taken over by a new partner, which will start collecting data as soon as they become available.
- Gasunie successfully conducted the first static tests and demonstrated that H<sub>2</sub> can be safely stored in salt caverns. The connection specification study was completed, covering various options. This study considered different market situations/developments and the scalability of the design, resulting in a plot plan and capacity range definition. The designs and site layout plans of subsequent

H<sub>2</sub> caverns are in progress.

- The Eemshaven area is in the process of matchmaking for the pipeline, looking for customers and purchase agreements. The HyCC factory is on the way to a financial investment decision (FID). The Hydrogen Hub has requested a final co-financing subsidy and will then take its FID. The hydrogen refuelling station here is operational and used by the partner UVO.
- In Hoozevee, the construction of houses powered by hydrogen has begun. Research is ongoing to find the right solution to fuel the data centre, and the size and type of fuel cell required.
- The Emmen EMMHY pipeline is in place. Emmtec is ready to start using hydrogen, but no contract is in place.

### FUTURE STEPS AND PLANS

- The critical assessment of deliverables is planned. Since the grant agreement, a number of changes have occurred. The tasks and deliverables will be critically reassessed and updated if necessary.
- Partners are still waiting for co-funding. If co-funding is secured, they will accelerate all actions. The consortium is also waiting on a definitive project extension so that they can take a FID.
- Much effort will be put into connecting the various hydrogen valley projects, sharing experiences and lessons learnt, creating synergies and thus strengthening each other.

### PROJECT TARGETS

Target source	Parameter	Unit	Target	Target achieved?
Project's own objectives and AWP 2019	Cluster 1: salt barge and refuelling	t H <sub>2</sub> per year	80	
	Cluster 2: salt cavern storage	t H <sub>2</sub> per year	–	
	Cluster 2: heating of buildings for Gemeente Hoozevee, Bytesnet Groningen and others	t H <sub>2</sub> per year	155	
	Cluster 3: Emmen	t H <sub>2</sub> per year	–	
	Cluster 4: mobility	t H <sub>2</sub> per year	260	
	WP 5: impact analysis and business models	t H <sub>2</sub> per year	–	
	WP 6: research aiming towards future H <sub>2</sub> roll-out	t H <sub>2</sub> per year	80	