





Situation in the Northern Netherlands: Slochteren gasfield





- -6.0%
- 0.0%

Northern Netherlands & Hydrogen: a Perfect Match

- Existing gas infrastructure
- Existing and growing offshore **wind** power potential
- Two large chemical **industrial** areas aiming to become more sustainable
- Decarbonisaton of urban **mobility**, partly driven by local emission reduction goals
- Regional **ambition** (business and political) to become an integrated hydrogen economy

Green Hydrogen Economy in the Northern Netherlands



Green Hydrogen Economy in the Northern Netherlands

Hydrogen fueling stations

Hydrogen innovation center

Goal: an integrated green hydrogen infrastructure: production, transportation, end use, research and replication.

HEAVENN is recognized by the European Commission as the first Hydrogen Valley of Europe – recently won award for Hydrogen Valley of the Year

Financial scope: 85-95 million (subsidies and cofinancing)





• Main Objectives

Strategic Objective

• Establishing a H2 ecosystem in NN region, integrating H2 initiatives in a systemic approach, to demonstrate sector coupling and FCH uses cases at a regional level

- 100% Green H2 production
- Integrating in total eleven FCH applications from four sectors
- Industrial demand: initial 2.800 tpa rising to 7.200 tpa
- Heat and power demand: 315 tpa rising to > 500 tpa
- Mobility demand: 350 tpa rising to > 700 tpa

om four sectors 200 tpa 00 tpa



Partners in HEAVENN



Co-funded by the European Union



Supported by



provincie Drenthe



Co-funded by the European Union















Hydrogen heating in Hoogeveen – tiny house demo



Thank you for your attention!

Jochem Durenkamp o heavenn@newenergycoalition.org o <u>https://heavenn.org</u>





This project has received funding from the Fuel Cells and Hydrogen 2 Joint Undertaking (now Clean Hydrogen Partnership) under Grant Agreement No 875090. This Joint Undertaking receives support from the European Union's Horizon 2020 research and innovation programme, Hydrogen Europe and Hydrogen Europe Research.

ΗΕΛΥΕΝΝ

Cluster 1: Chem Park Delfzijl + Eemshaven



Activities clustered around Chem Park Delfzijl + Eemshaven Infrastructure, trailer fill facility (Hydrogen hub), salt barge Antonie + fueling of ship

Warner John St.





Harm Lenten • 2e DGA bij Lenten Scheepvaart B.V. 6 mnd • 🕥

Minister Harbers van Infrastructuur en Waterstaat geeft kick-off voor de bouw van ons Waterstof Elektrisch Vrachtschip Antonie! #FCHJU #Heavenn #Newenergycoalition #Hydrogen #Binnenvaart #TVM #NPRC



Minister Harbers geeft startsein voor bouw eerste binnenvaartschip op groene waterstof | Change Inc.

change.inc • Leestijd: 2 min.

+ Volgen ...



Cluster 2: built environment



Housing and buildings heated buildings (tests with hydrogen



Salt cavern storage testing





Contents

- Introduction project HEAVENN
- Why Northern Netherlands?
- Structure: The 4 clusters & work packages
- Communication, outreach
- Lessons learned & best practices



Cluster 3: Emmen



GZI Next: HRS, R&D Electrolyser, admixing for steam generation, pipelines, use by industry







Stap voor stap gaat de ontwikkeling van GZI next vooruit. Met de realisatie van een vulpunt weer aan een randvoorwaarde voldaan om een waterstofcluster van de grond te krijgen. Er is een vulpunt, er komen bussen, Gasunie is bezig om de waterstofleiding tussen GZI en GETEC Park Emmen te leggen. (zie https://lnkd.in

/ewAdSref)

Nu nog de electrolyser en industriële vraag. Meer achtergrond:

https://Inkd.in/em3FdFKk

#waterstof #GZI #GZINext #Drenthe #iemandandersalverder #EZK #HEAVENN







Drentse primeur: eerste commerciële waterstofvulpunt voor vrachtverkeer



24 juni, 15:05 • 3 minuten leestijd



Buschauffeurs zelf tanken bij het waterstofvulpunt © RTV Drenthe / Petra Wijnsema

Op het GZI-terrein in Emmen is vandaag het eerste Nederlandse waterstofvulpunt voor bussen en vrachtwagens in gebruik genomen dat openbaar toegankelijk is. Qbuzz is de eerste en grootste afnemer. Het busbedrijf heeft 10 -mede door de provincie Drenthe gefinancierdewaterstofbussen aangeschaft om op de langere lijnen in het







Cluster 4: Mobility



Multi-fuel HRS landside on Groningen Airport Eelde



Verduurzaming Groningen Airport Eelde gaat verder met komst waterstoftankstation

4 oktober, 14:14 • 1 minuut leestijd



Het waterstoftankstation op de luchthaven van Eelde © TotalEnergies

Alles wijst erop dat Groningen Airport Eelde een waterstoftankstation (HRS) krijgt. Hiervoor is een intentieovereenkomst opgesteld, die ook is getekend door TotalEnergies Marketing Nederland en New Energy Coalition.



Work package 4,5,6: research and replication

Work Package 4: gathering data from clusters and learning lessons (in early stage because there is not yet much data)

Work Package 5: Lessons Learned from previous projects, **best practices from HEAVENN**

systems, scaling up

- Work Package 6: Research: roadmap, integration, modeling of







Evrim Ursavas • 2e Associate Professor of Energy and Logistics at Rijksuniversit... 2 mnd • 🚱

Our study at the first Hydrogen Valley of Europe is out! The energy transition needs new business and economic models. In our latest project within the HEAVENN program we provide insights on how hydrogen storage can facilitate the energy transition. #hydrogen #hydrogeneconomy #waterstof #energietransitie #energytransition #storage #hydrogenvalley #renewableenergy University of Groningen Faculty of Economics and Business - University of Groningen

Vertaling weergeven



Albert Schrotenboer • 2e 2 mnd • 🕥

New paper alert! **#ORMS #EnergyTransition**. Curious about how green hydrogen storage can help the energy transition forward? In new work, we study the daily decisions of green hydrogen energy systems! Part of ...meer weergeven

Vertaling weergeven



+ Volgen •••

+ Volgen

A Green Hydrogen Energy System: Optimal control strategies for integrated hydrogen storage and...

sciencedirect.com • Leestijd: 2 min.



D 2.17 Design specifications of the FC-powered Barge boat.

Specificaties voor de H2 aandrijving van het WEVA1 schip. D 2.17 Design specifications of the FC-powered Barge boat.





WEVA1

The first Hydrogen – Electric Cargoschip Antonie





HEAVENN Deliverable 2.13 Preliminary Engineering design Study and Site Design at Bytesnet data centre site





Behind the scenes during the webinar 'Roadmap towards a GW hydrogen plant' given by HyNetherlands (part of ENGIE) and HEAVENN this afternoon.

#webinar #hydrogen #hydrogenplant

Vertaling weergeven





HyNetherlands 100MW

Final report ENGIE Energie Nederland

Author: J.J. Bolt Reviewed by: K. Witvrouwen Approved by: G. Bartholomé Reference number: Proposal-SEP-210586200_FINAL Document number: 20220804/JJB/KWF



International delegations & conferences

HEAVENN 1 mnd • S

Honda meets HEAVENN - 天国

Today we welcomed our visitors from Honda to tell about our project and Europe's first hydrogen valley with presentations from Green Planet Pesse, Gasunie, HyNorth, EnTranCe | Centre of Expertise Energy and Bytesnet

Thank you for your visit!

Thank you René Schutte, Arjen van Wijk, Marcel Koenis, Edward Doorten, Hendré Sijbring, Werna Udding and Patrick Cnubben for your presence and contributions

Thomas Brachmann

Vertaling weergeven











Lessons Learned from HEAVENN:

Biggest challenge: large ambitious project designed in 2019 in a fairly "new" industry (green H2 for decarbonization) means a lot of changes, insights, new knowledge. Some goals are no longer as relevant.

Due to time frame: lots of unforeseen circumstances such as Covid, war in Ukraine/Russian energy dependence leads to great unrest in energy markets, materials scarce and expensive.

Co-financing must be arranged prior to starting.

Very clear agreements in consortium agreement – to protect partners.

In Europe: rules for state-aid make governments hesitant to contribute.



Best Practices from HEAVENN

A combination of different partners helps the project: big partners provide stability and resources, small partners provide agility and inspiration.

Everyone needs to be on board and feel responsible. This will project your project when times are difficult.

Clear project structure (Clusters and WPs) helps distribute responsibility.

international interest

hydrogen become the energy superhero!

- Focus on creating the project with the partners, make sure all share in the vision.
- Being one of the first, biggest valleys has helped us spread the message: great
- We are in HEAVENN to learn and teach, inspire and cooperate to help green

