



HyEnergy
Consultancy

Hydrogen Valley Projects Update

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29TH MARCH 2023

GENCOMM, CORK

Agenda

- HyEnergy overview
- Skills
- Partners
- Hydrogen Valleys:
 - HEAVENN
 - Green Hysland
 - SH2AMROCK

HyEnergy

A specialist hydrogen energy company

- Unite the hydrogen and energy communities
- Ensure systems and technologies gain commercial acceptance by delivering low cost, clean, onsite energy solutions
- We work with a variety of stakeholders
 - industry, regional public sector organisations and national governments

Our projects include:



Ian Williamson - CEO



ENABLE H2



HEAVENN

€150m+

of funding and investments secured

30

Key Customers

50

Years of H2 Sector Experience

Our Activities

- + TECHNICAL, REGIONAL AND STRATEGIC STUDIES
- + FUNDED PROPOSAL PREPARATION
- + PROJECT MANAGEMENT
- + INVESTMENT DUE DILIGENCE
- + WEBSITE DEVELOPMENT
- + COMMERCIAL PROCESS AND MARKET CONSULTATION
- + MARKET REPRESENTATION

Some of our partners/customers...



Public project development: The sustainable jigsaw

- Key is to identify where is the best place to start...
- Geographic
- Focus on a single renewable resource or encompass multiple options
- Which technology offers best potential
- Scale
- Best fit partners
 - Local
 - Some with broader technical and funding experience
 - Large and small enterprises





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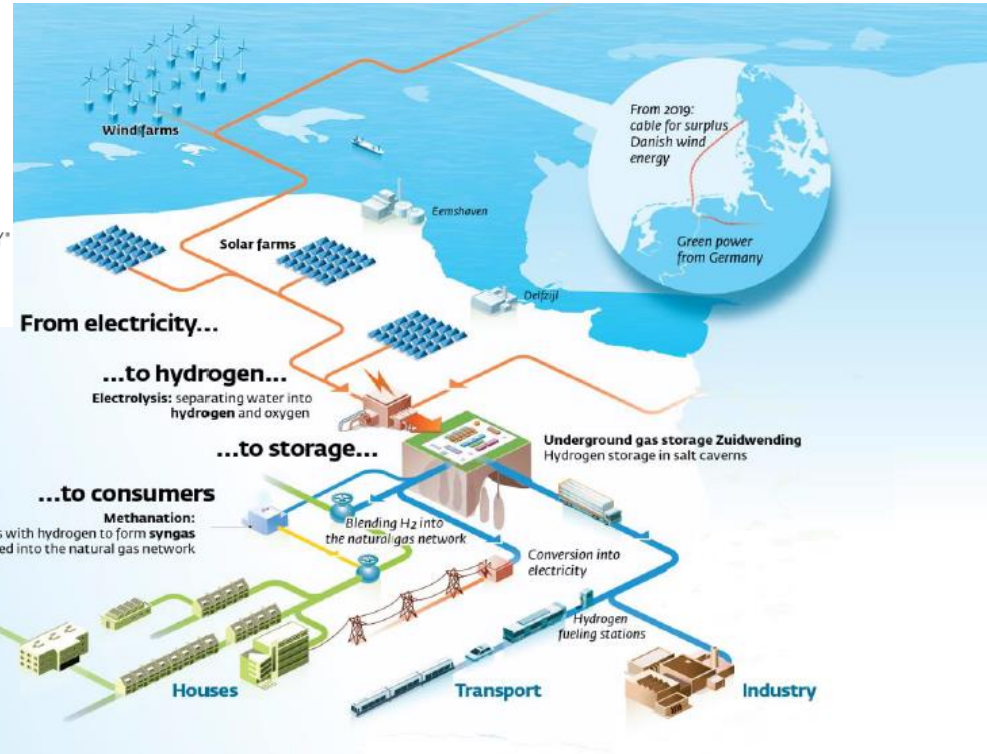
Hydrogen Valleys

EXISTING PROJECTS



HEAVENN – Northern Netherlands

Partners in HEAVENN



H2 Energy Applications (in)

Valley Environments (for)

Northern Netherlands

**Europe's Hydrogen Valley
of the Year 2022**

Project Overview

- Call year: 2019
- Call topic: H2020-JTI-FCH-2019-1: H2 Valley
- Project dates: 01/01/2020 – 31/12/2025
 - Likely 2 year extension
- % stage of implementation October 2022: approx. 40%
- Total project budget: 96,191,883 €
- Clean Hydrogen Partnership max. contribution: 20,000,000 €

Project Overview

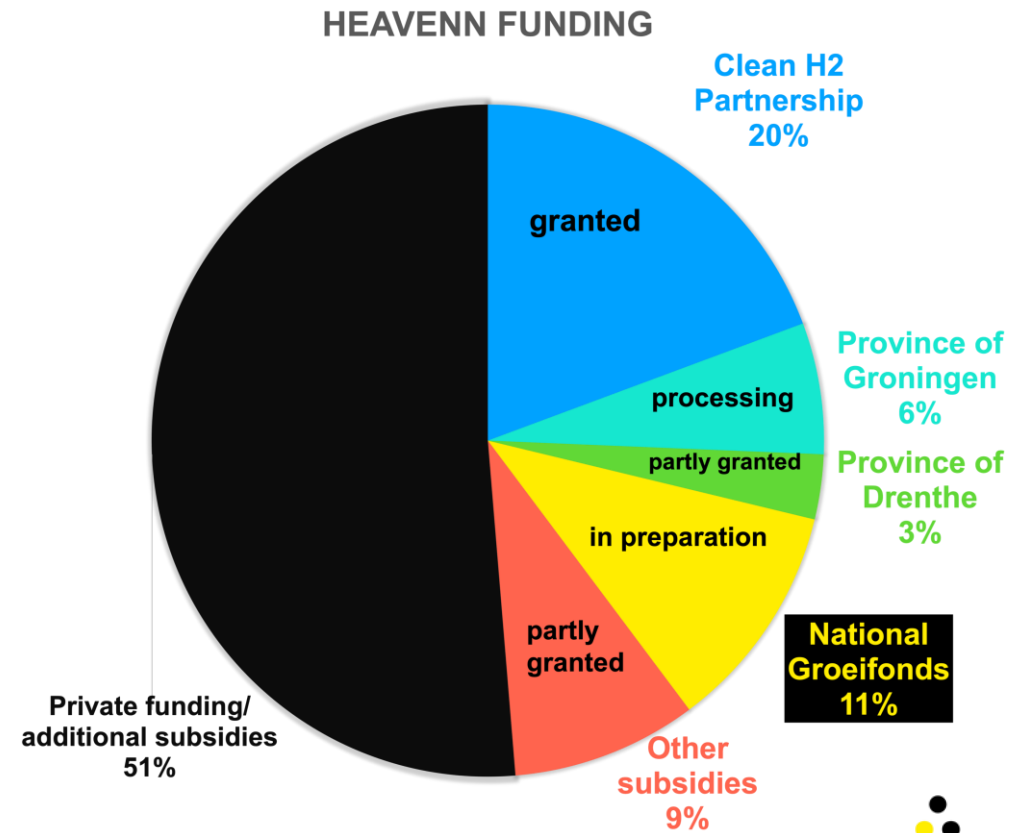
Total project budget: € 96m

- Clean Hydrogen Partnership max. contribution: 20mill€
- Other financial contribution: 76 m €



Complementary investment

- HEAVENN is also funded from other EU and national support agencies



HEAVENN



HEAVENN Summary

Main Objectives

Strategic Objectives

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

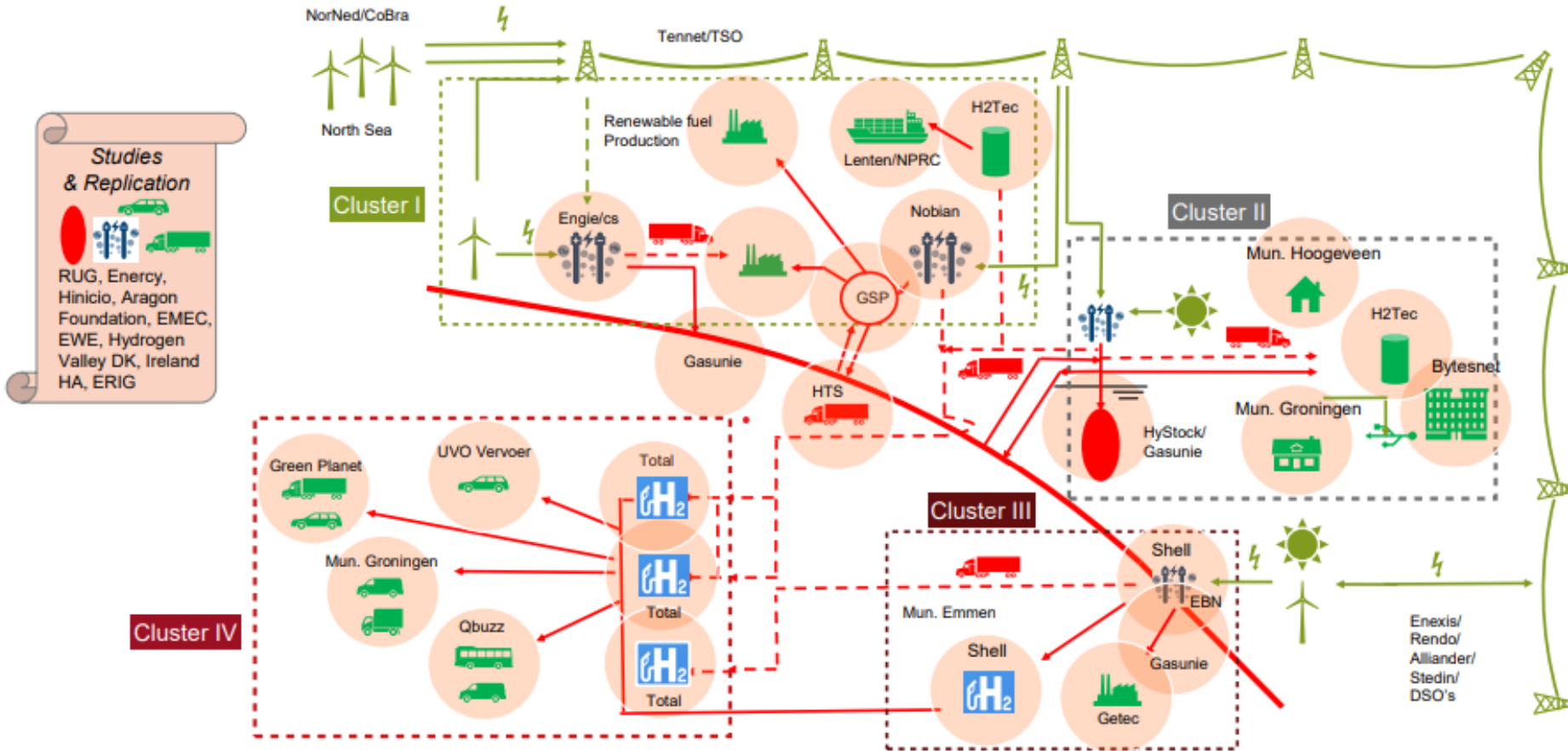
Integrating in total eleven FCH applications from four sectors

Industrial demand: initial 2.800 tons H₂ / year rising to 7.200

Heat and power demand: 315 tons H₂ / year rising to > 500

Mobility demand: 350 tons H₂ / year rising to > 700

HEAVENN – Project Map



Studies & Replication

RUG, Energy, Hincio, Aragon Foundation, EMEC, EWE, Hydrogen Valley DK, Ireland HA, ERIG



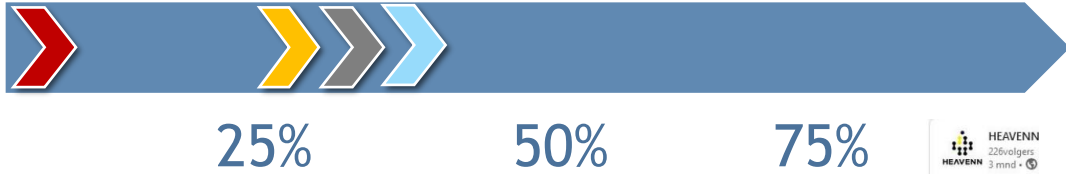
Europe's Hydrogen Valley of the Year 2022

Progress Cluster I - Chemical Park Delfzijl

New Electrolyser capacity of ~80 MW planned outside of HEAVENN, H2 distribution pipeline supplying H2 to produce green methanol and kerosene, dockside power supply, salt ship + HRS

Achievement to-date

- H2 pipeline
- Salt barge
- Ship HRS
- Electrical infrast.



Operation

- H2 pipeline**
 - Working on permits
- Salt barge**
 - Being built - progressing well
- Ship HRS**
 - looking for alternate plan since ship will be fuelled by container switch
- Electrical Infrastructure
 - WP2 finished, now to build



Activities clustered around Chem Park Delfzijl + Eemshaven Infrastructure, trailer fill facility, salt barge Antonie

HEAVENN
 226volgers
 3 mnd · 🌐

The Antonie is a new, yet to be built, fully electric cargo ship, which will be powered by green hydrogen. With this project, NPRC - partner of HEAVENN - wants to show that emission-free transport over water is the future. Read ...meer weergeven

Vertaling weergeven

NPRC
 4 mnd · 🌐

+ Volgen

Volgend jaar komt het eerste nieuwbouw waterstofaangedreven binnenvaartschip in de vaart. Met Project WEVA (Waterstof Elektrisch Vrachtschip Antonie) laten de betrokken partijen zien dat emissievrij vervoer ...meer weergeven

PROJECT WEVA
 VAREN OP GROENE WATERSTOF

Progress Cluster II

Storage & built environment

H2 storage (salt cavern), residential heating with H2



Salt cavern storage

- Research done, testing taking place

Hooerveen (H2 heating, 350 homes)

- Preparatory works, starting pilot

Bytesnet (fuel cell for data centre)

- everything ready for deployment

Groningen (H2 heating)

- Project aborted due to too low capacity



Progress Cluster III - Emmen

Infrastructure, electrolyser, HRS and gas turbine around Getec in Emmen



Achievement to-date

H2 pipeline
Electrolyser
HRS

Steam generation



25%

50%

75%

Operation

H2 pipeline

- Planning phase

Electrolyser

- Building a business case

HRS

- Operational

Steam generation (retrofitted gas turbines)

- Planning & testing phase



Home Nieuws Sport Podcasts Uitzending Gemist Dossiers Weer Z...

Drentse primeur: eerste commerciële waterstofvulpunt voor vrachtverkeer

Petra Wijnsema 24 juni, 15:05 • 3 minuten leestijd



Beschouffura jelt 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 gefinancierde- waterstofbussen aangeschaft om op de langere lijnen in het



Progress Cluster IV - mobility

Using H2 for powering cars, vans, buses, HHDV, building + upgrade of HRS

105 cars including taxis
8 light duty trucks
8 heavy duty trucks
4 garbage trucks
2 long distance buses
2 8-seater vans

5 HRS (350 and 700 bar)



Achievement to-date

Mobility apps
HRSs



Operation

25%

50%

75%



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.



H2 Mobility applications

- All partners are in the process of purchasing or having purchased but not yet delivered. Delay due to more research needed than foreseen.

HRSs (4)

- 1 HRS confirmed, others still in the process of confirming final location.

Progress - Work Packages 4,5,6

Studies into business case, replication, certification, impact analysis, etc.



Operation, Infrastructure Analysis and Data Management

- Including issuing of GOs

Impact Analysis and Business Models

- Including replication across EU

Studies Enabling Future H2 Roll Out

- Complements the HyNetherlands project (towards GW scale)

All studies that need results from the clusters experience the same delays as the clusters do.

All studies that can be done independent of ground work, are on schedule

Risks, Challenges and Lessons Learned

Challenges:

- Covid - shortage of labor and restrictions on working conditions
- Technical restrictions - mostly permitting & business case
- Lack of personnel (quarantine and illness, hard to attract skilled personnel)
- Scarcity of materials (mostly felt in Mobility cluster)

Co-funding:

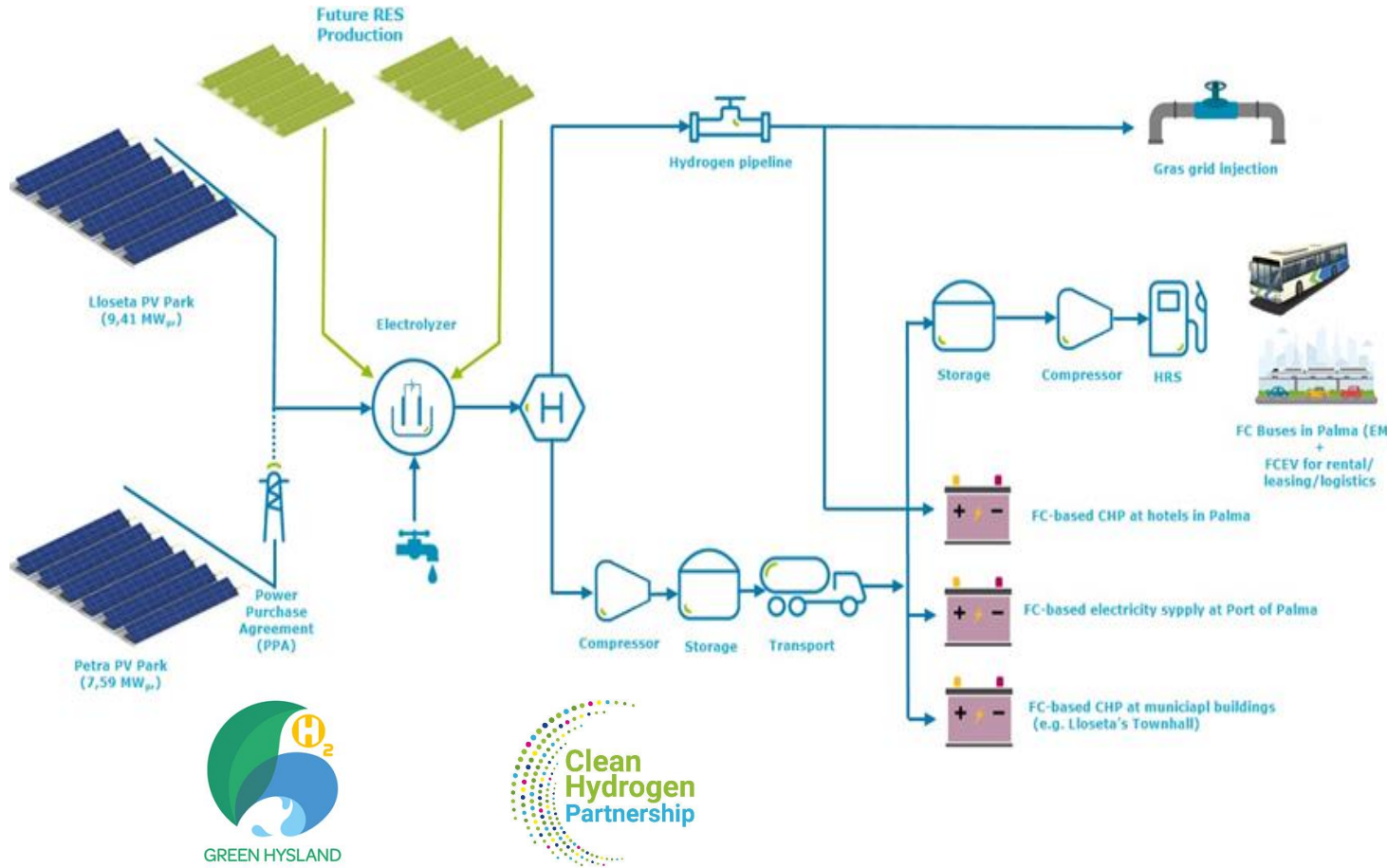
- Discussion on state aid

For many partners its their first time in a big EU project/the first foray into hydrogen (

Project Overview

- Call year: 2020
- Project dates: 01/01/2021 – 31/12/2026
- % stage of implementation October 2022: approx. 25%
- Total project budget: c50,000,000 €
- Clean Hydrogen Partnership max. contribution: 10,000,000 €

Green Hysland - Majorca





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Hydrogen Valleys

NEW VALLEY PROJECT

SH₂AMR^{CK}
Ireland's Emerald Hydrogen Valley



Hydrogen Valley – just approved

SH₂AMROCK – Ireland's first hydrogen valley

- A hydrogen valley spawned off the back of the [Galway Hydrogen Hub](#) (GH2), which was launched as a Irish sustainability project by the by head of state.
- Will feature expandable electrolysis production
- Focus on establishing a multi-modal hydrogen mobility hub across the three pillars of transport (road, maritime, aviation)
- Plus, demonstrating hydrogen for high-temperature heat in an Irish context

SH₂AMR☘CK
Ireland's Emerald Hydrogen Valley

Creating a hydrogen ecosystem in West of Ireland



Galway Harbour:

Integrated production,
storage and distribution of
hydrogen to onsite and
offsite users

Creating a hydrogen ecosystem in Ireland





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Interreg 
North-West Europe
GenComm
European Regional Development Fund

Thank You

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