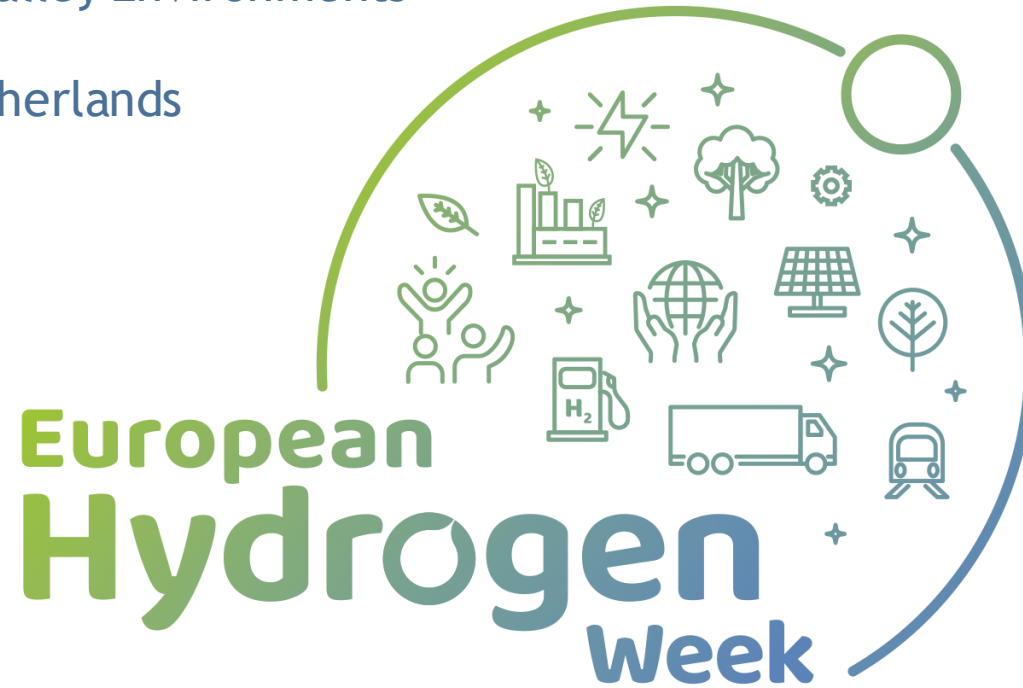


HEAVENN

H2 Energy Applications (in) Valley Environments

(for) Northern Netherlands



Geerte de Jong

New Energy Coalition

www.heavenn.org

g.dejong@newenergycoalition.org



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#EUResearchDays
#PRD2022
#CleanHydrogen



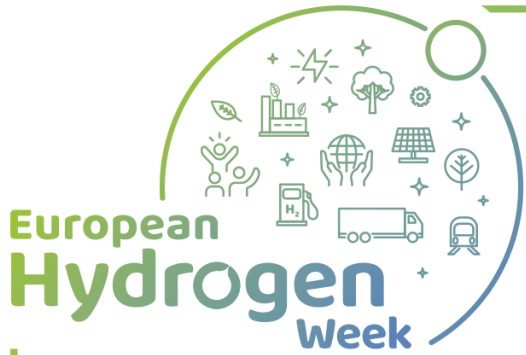
Project Overview

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



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Project Overview

HEAVENN FUNDING

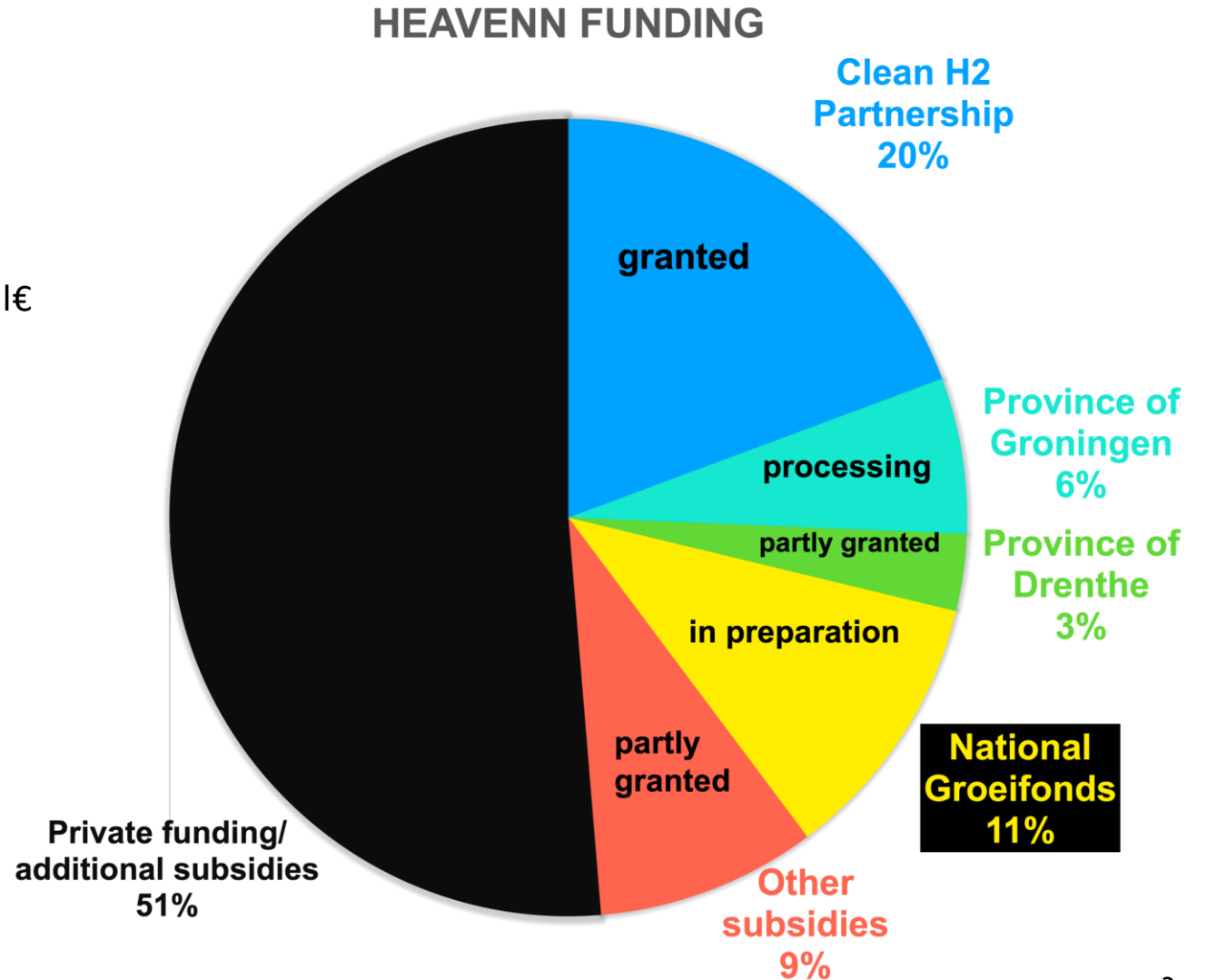
Total project budget: 96 mill€

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



Complementary investments

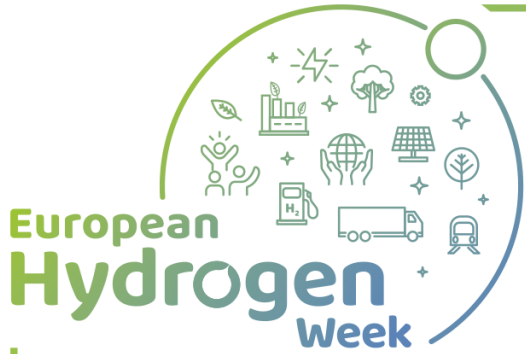
- HEAVENN is complemented with projects and investments supported outside of this project (EU and national)



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Co-funded by the European Union



Project Summary

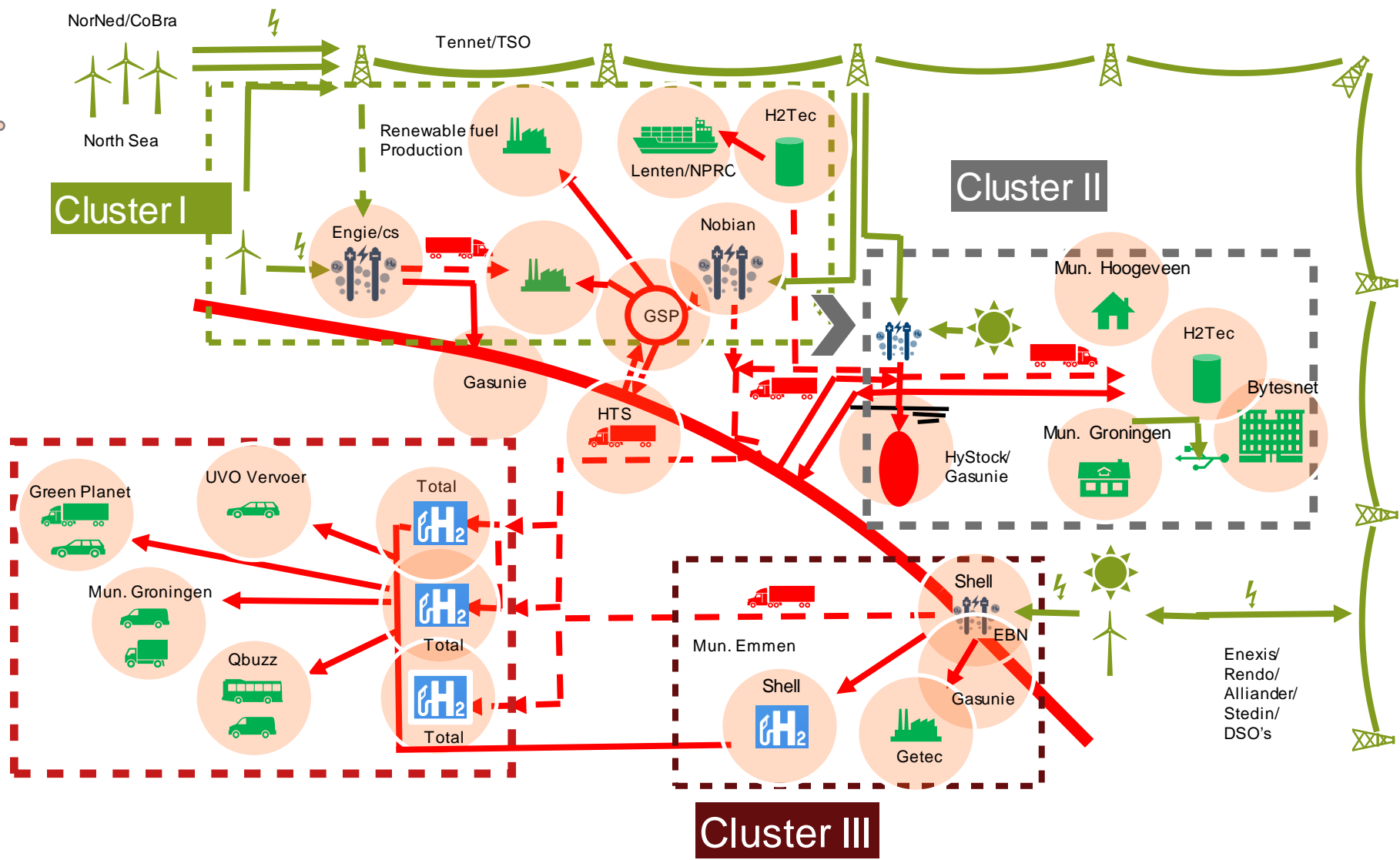
Main Objectives

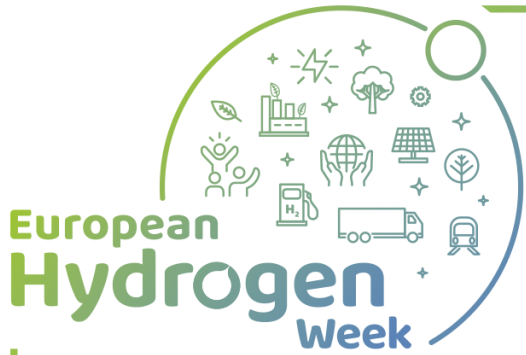
Strategic Objective

- 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 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

Studies & Replication


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



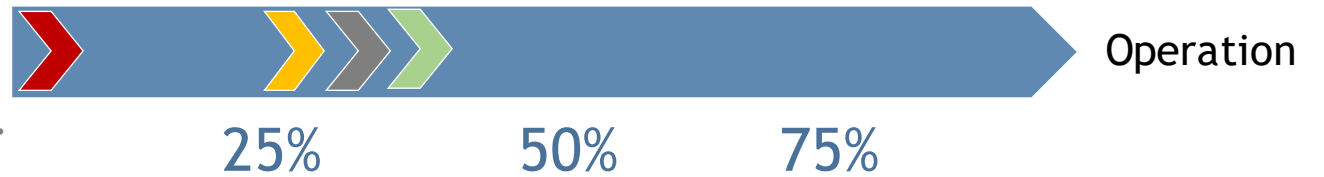


Progress Cluster I - Chemical Park Delfzijl

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.



H2 pipeline

- Working on permits

Salt barge

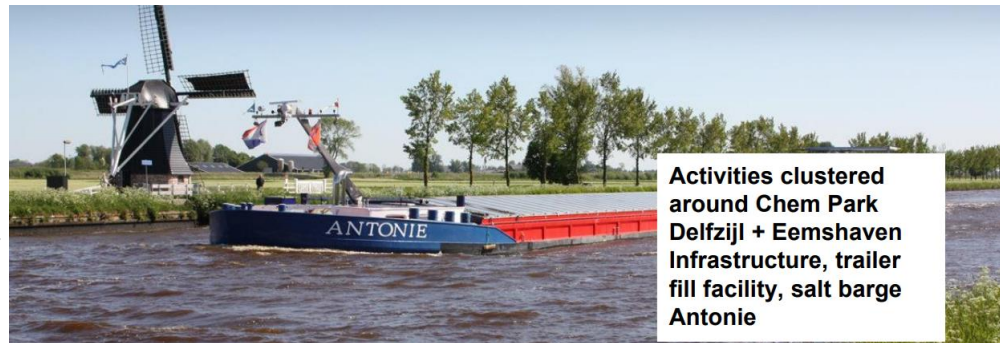
- Being built - progressing well

Ship HRS

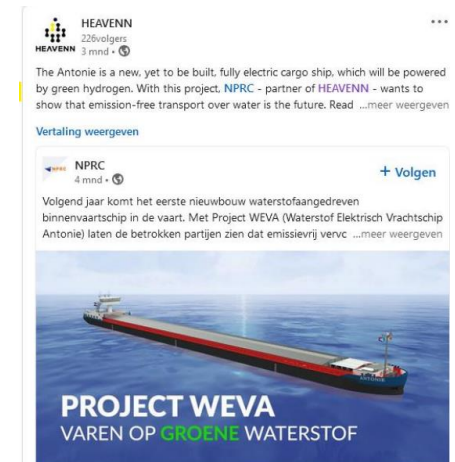
- looking for alternate plan since ship will be fuelled by container switch

Electrical Infrastructure

- WP2 finished, now to build



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



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Progress Cluster II - Storage & built environment

H2 storage (salt cavern), residential heating with H2



Achievement to-date

Salt cavern storage

Heating Hooerveen

Bytesnet data centre

Heating Groningen



25%

50%

75%

Operation

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

- Planning phase

Electrolyser

- Building a business case

HRS

- Operational

Steam generation (retrofitted gas turbines)

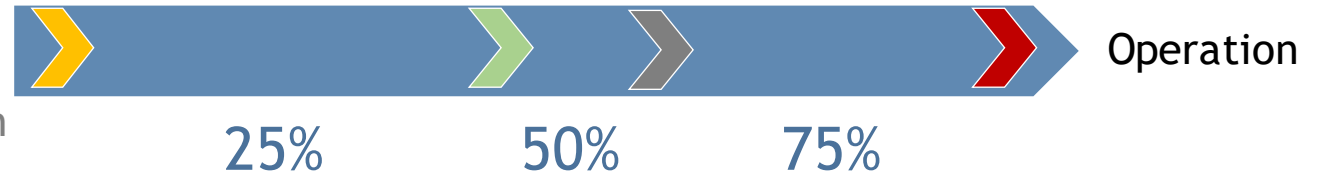
- Planning & testing phase

H2 pipeline

Electrolyser

HRS

Steam generation



rtv
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



Buichervuura pelt 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%

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.

Verduurzaming Groningen Airport Eelde gaat verder met komst waterstof tankstation

4 oktober, 14:14 • 1 minuut leestijd



Het waterstof tankstation op de luchthaven van Eelde © TotalEnergies

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



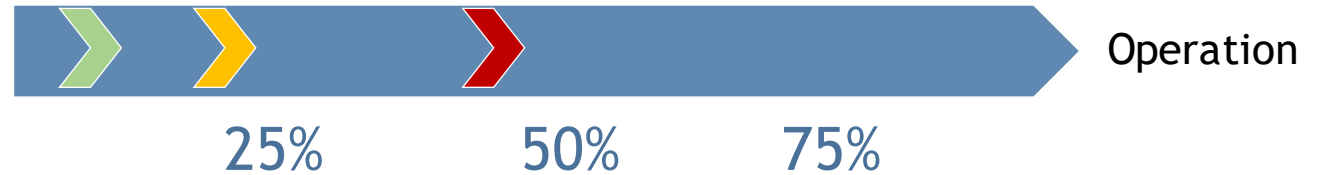


Progress - Work Packages 4,5,6

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

Achievement to-date

O&M
Impact, business models and replication
Future H2 Roll-out



Operation, Infrastructure Analysis and Data Management

- Including issuing of GOs

Impact Analysis and Business Models

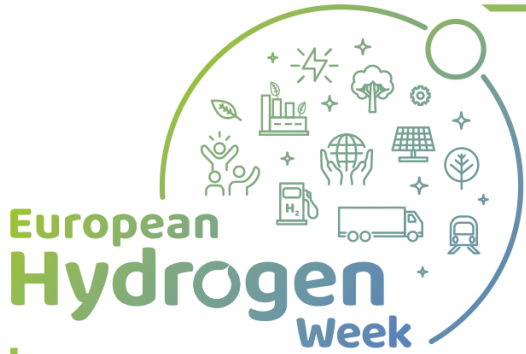
- Including replication across EU

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

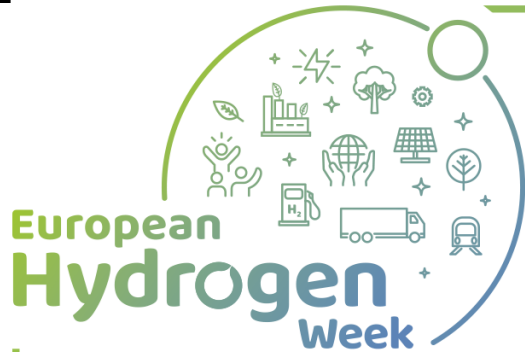
Challenges:

- 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 the first time in a big EU project/the first array into hydrogen (pioneering)



Communications Activities

Public awareness, engaging with end users, raising the profile of H2 Valleys Internationally

- Tour through the Hydrogen valley in the Northern Netherlands for journalists on 1 March 2022
- Visit from Danish ambassador at Qbuzz 2 March 2022
- Visit from Namibian and South African delegation on 22 March 2022
- Networking dinner with Israel on Hydrogen Valleys and HEAVENN on 31 March 2022
- Presentation during New Emmercy conference on 6 & 7 April 2022
- Interview with owner Antonie Ship Harm Lenten broadcasted on national television on 13 April
- Present during World Hydrogen Summit in Rotterdam 10 May 2022
- Visit from Israeli Hydrogen economy delegation 15-20 May 2022
- Hydrogen Cross Border conference in Leer 17 March 2022
- News item on website GZI Next on the construction of the hydrogen pipeline by Gasunie at GETEC 24 May 2022

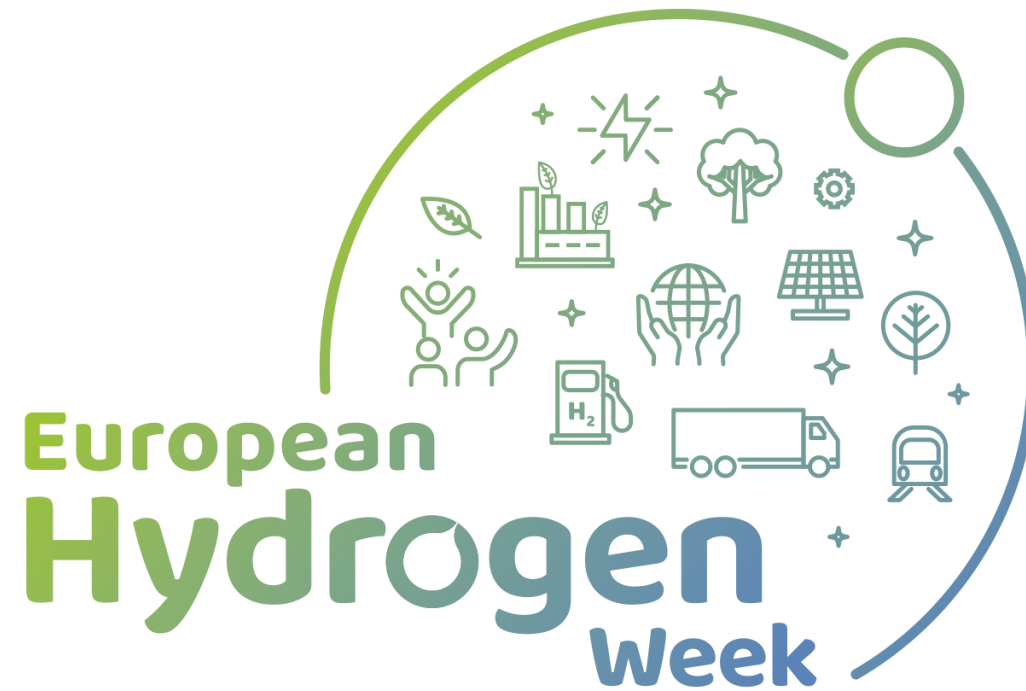


- Presentation to local political party (D66) about HEAVENN and sustainable aviation at Groningen airport Eelde
- Interview in 'Horizon The EU Research & Innovation Magazine' on Hydrogen Valleys and the role of HEAVENN as a blueprint on 2 June 2022
- Connecting Europe Days in Lyon 28-30 June 2022
- Two episodes on national television (RTL Z) have been broadcasted on the project and two new episodes have been recorded
- During Wind meets Gas, an international conference, HEAVENN participated in a parallel session on 6 October 2022



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European Hydrogen Week



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#EUResearchDays
#PRD2022
#CleanHydrogen