

# **HEAVENN: Europe's first Hydrogen Valley**

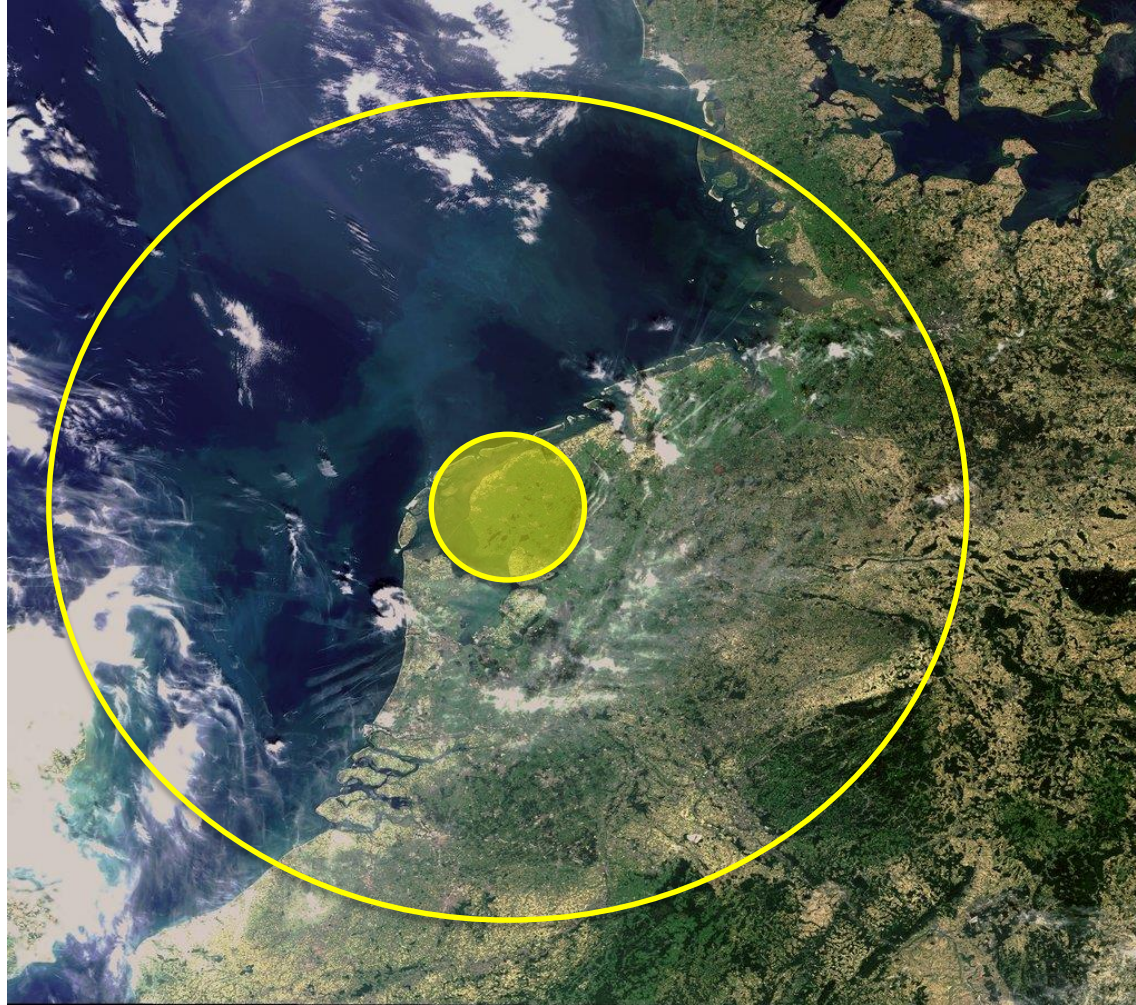
*Power to the molecules*

**Patrick Cnubben**

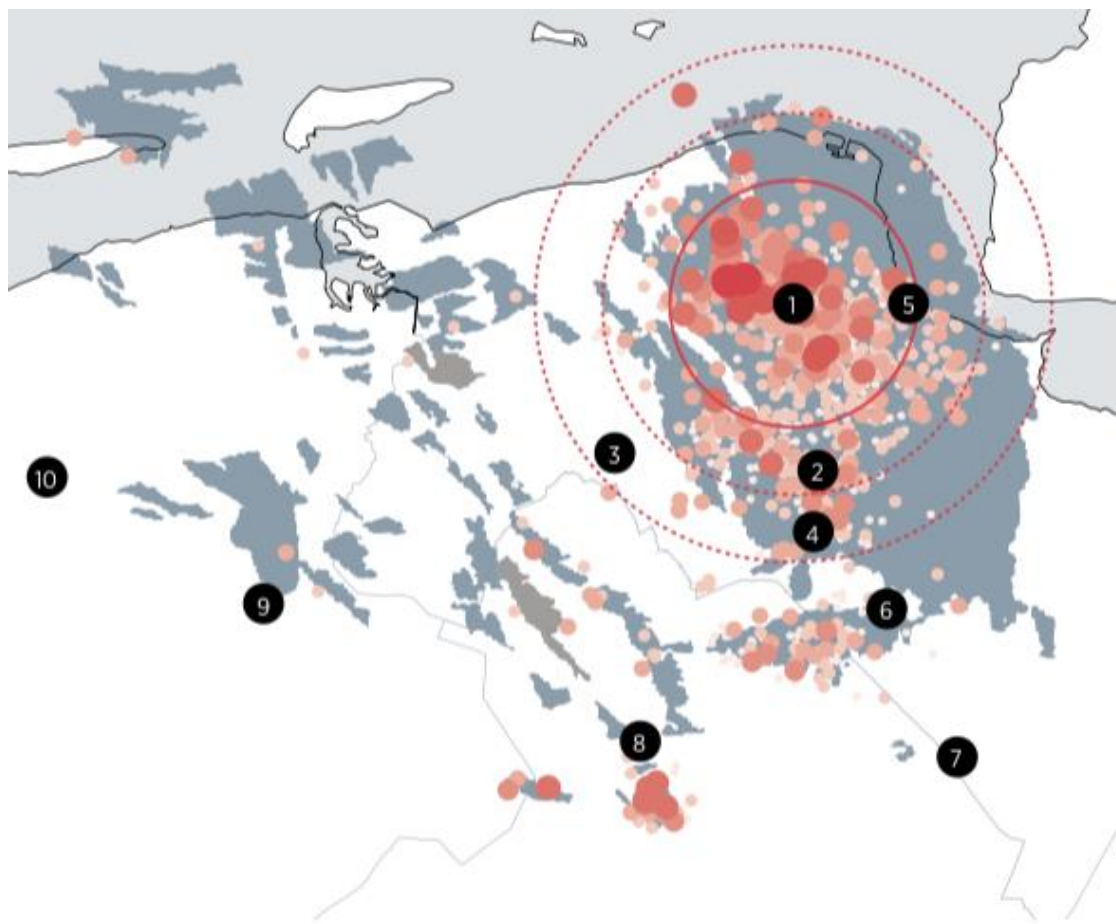
**Janke Kappenburg**

New Energy Coalition

# Where are we located?



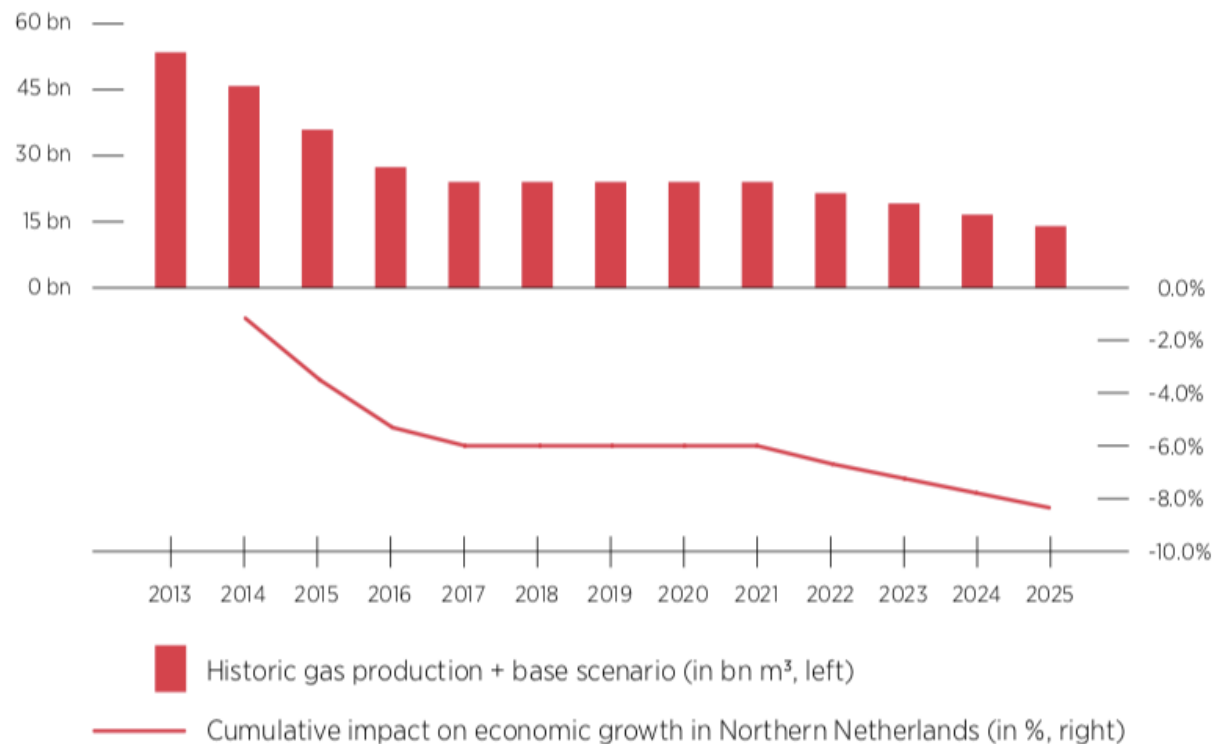
# Situation in the Northern Netherlands



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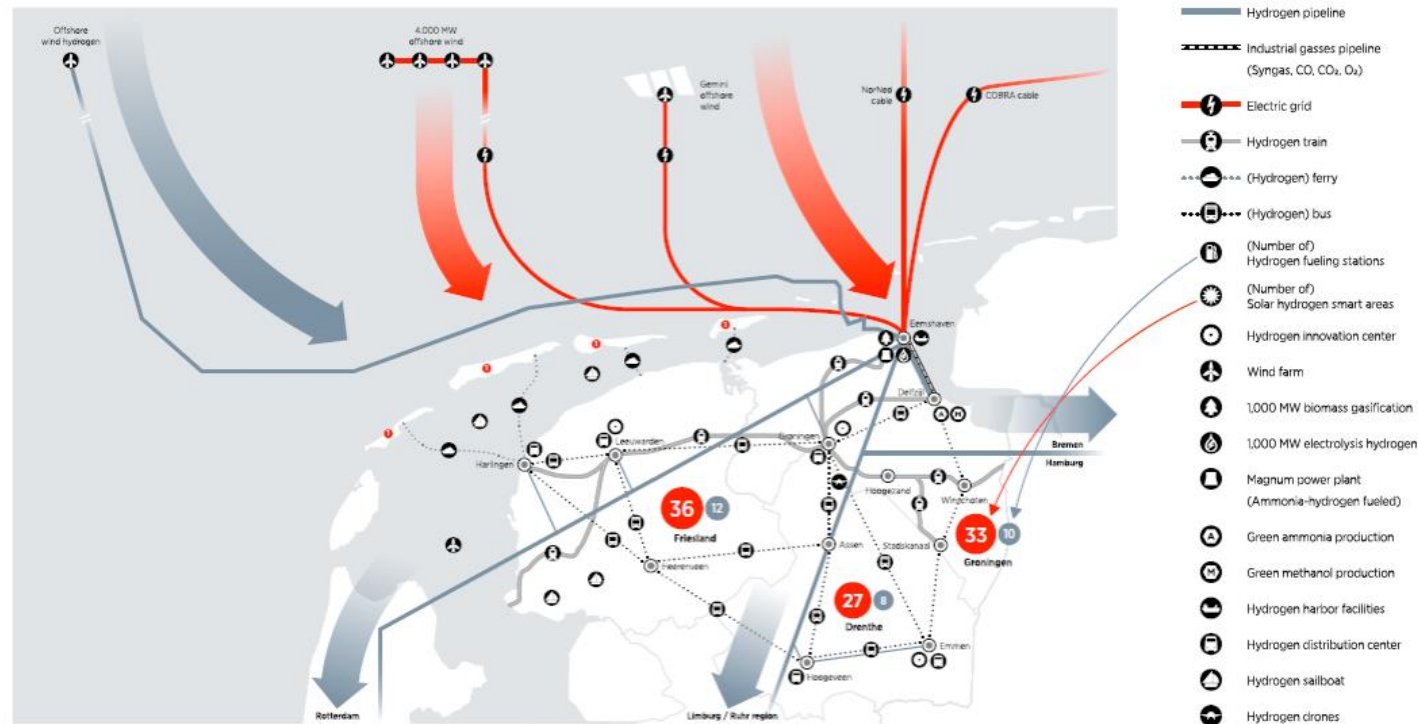


Gas production and cumulative economic impact - **baseline**



# A region needs a business H2 fits as a glove!

## Green Hydrogen Economy in the Northern Netherlands

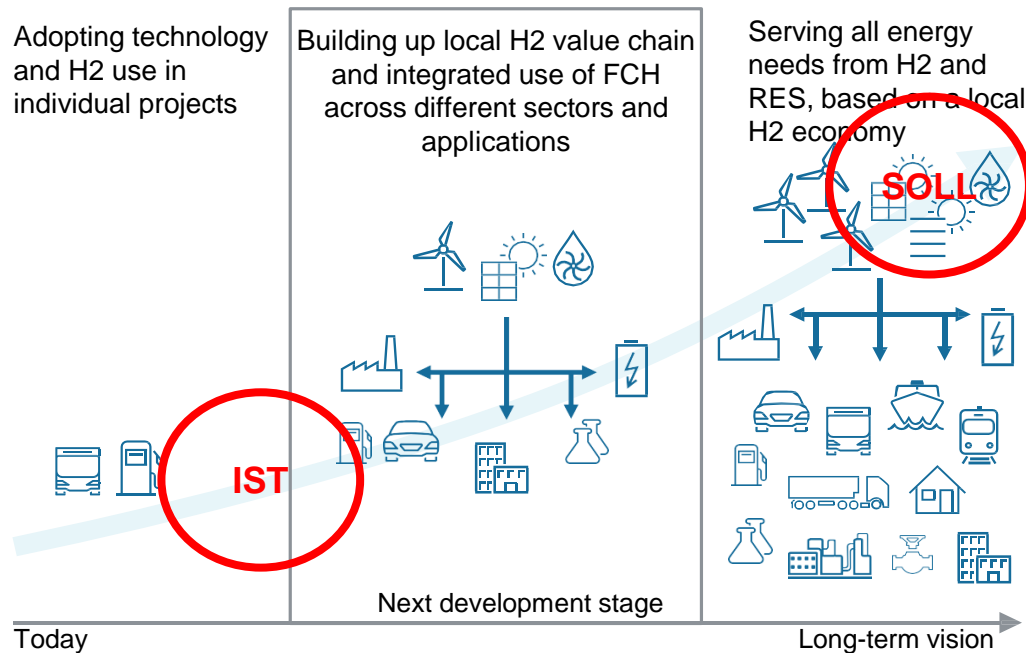




**We have a plan**

**Green Hydrogen  
Economy in the  
Northern Netherlands**

# Becoming an Integrated Hydrogen Economy



- By linking individual projects and developing local H2 infrastructure, establishing H2 Valleys represents the next development stage towards a local H2 economy in the long term
- H2 Valleys should establish local H2 nuclei from which further roll-out and uptake of local H2 use can be started
- Implementing H2 Valleys should be part of a clear local strategy to start a long-term green energy transition and be backed up by respective political commitment

# The North: Perfect match

- **The region is perfectly positioned and willing to develop an integrated green H2 economy, due to:**
  - The large-scale existing and planned supply of renewable electricity, including onshore and offshore wind, and solar PV, as well as strong interconnections with larger wind-based areas in Denmark and Germany
  - The existing large-scale chemical industry, already experienced in production and handling of H2
  - The existing gas transmission and large-scale underground storage infrastructure



# The North: Perfect match

- The potential to scale-up and export green H2 to other EU regions by land and sea
- The ongoing decarbonization of mobility in urban areas
- The strong knowledge and industry-led innovation infrastructure. The political support at local and regional level, e.g. through the three northern provinces (Groningen, Drenthe and Friesland), substantiated by the development of a “Green H2 Economy” roadmap in 2017, updated in 2019.

## **The consortium**

- New Energy Coalition
- 28 entities from 7 EU countries (NL, D, DK, B, UK, ES and E)
- Parties are: businesses (large, mid-sized and small), associations, knowledge institutions, expert advisories, regional development institutions

## **Broad national and international support**

- Over 60 parties from over 12 countries have given their support to the project by means of a Letter of Support
- The project can also rely on broad political support covering the whole political spectrum – nationally and EU level

# HEAVENN

New  
**Energy**  
Coalition



Nouryon

gasunie



HyEnergy  
TransStore



H<sub>2</sub>Tec BV

EWE

HYDROGEN VALLEY®



Qbuzz

Supported by:



## IS SUPPORTED BY:



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CEO of StratosFuel California USA (hydrogen station developer, producer and retailer of renewable hydrogen)



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**JAMES BARNEY CROCKETT**  
President of HyER



**JUSTINE GILLILAND**  
CEO of Venture Taranaki Trust New Zealand (regional development agency)



**LUUK BLOM**  
SG Benelux Union



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**HERMANN WESSELS**  
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Managing directors of Energienetze  
Steiermark GmbH, on behalf of the  
member associations of the European  
Research Institute for Gas and Energy  
Innovation (DVGW, DGC, SVGW/VSG, KVG  
and OVGW)

# HEAVENN MOVIE



# Industrial feedstock

- Facilitation of supply of green H<sub>2</sub> to ‘green’ methanol production process, full output 20 MW (Delfzijl)
- Facilitation of Supply of green H<sub>2</sub> to produce renewable “drop-in” e-fuels for transport applications, full output 40 MW (Delfzijl)

Total initial industrial H<sub>2</sub> demand estimated at 2.800 tpy, going up to > 7.000 tpy by 2022

# Heat & Power

- Heat for residential (100 and 250 houses in Hoogeveen) and municipal building (Groningen)
- 4 (-10) MW Electrolyser for industrial heat (Emmen)
- Back-up power data centre 100kW fuel cell supply based on green H<sub>2</sub> (Groningen)
- On-shore auxiliary power 100 kW for inland boats/barges (Delfzijl)

Total heat & power H<sub>2</sub> demand: expected to increase to > 500 tpy

# Mobility

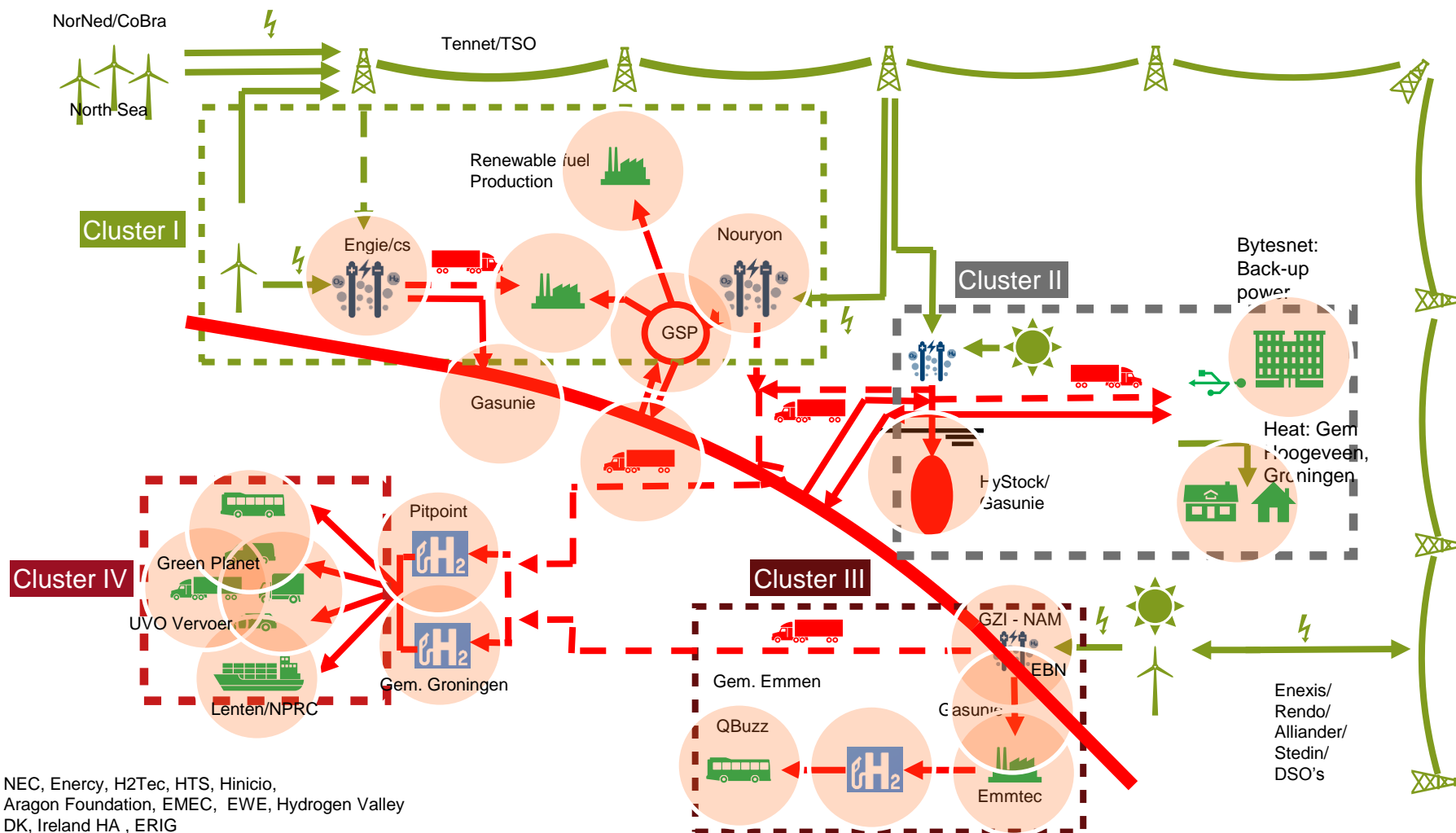
- Passenger and light duty: 105 FC passenger cars and 8 vans
- Heavy duty : 4 garbage trucks and 8 heavy goods vehicles
- 4 H2 Refuelling Stations (2 x 350 bar, 2 x extension/upgrade to 700 bar)
- Maritime/inland salt barge
- (Equivalent of) 10 FC buses (Qliner coaches, crafters, etc.)

Total mobility H2 demand: estimated 680 tpy

# Storage & Infrastructure

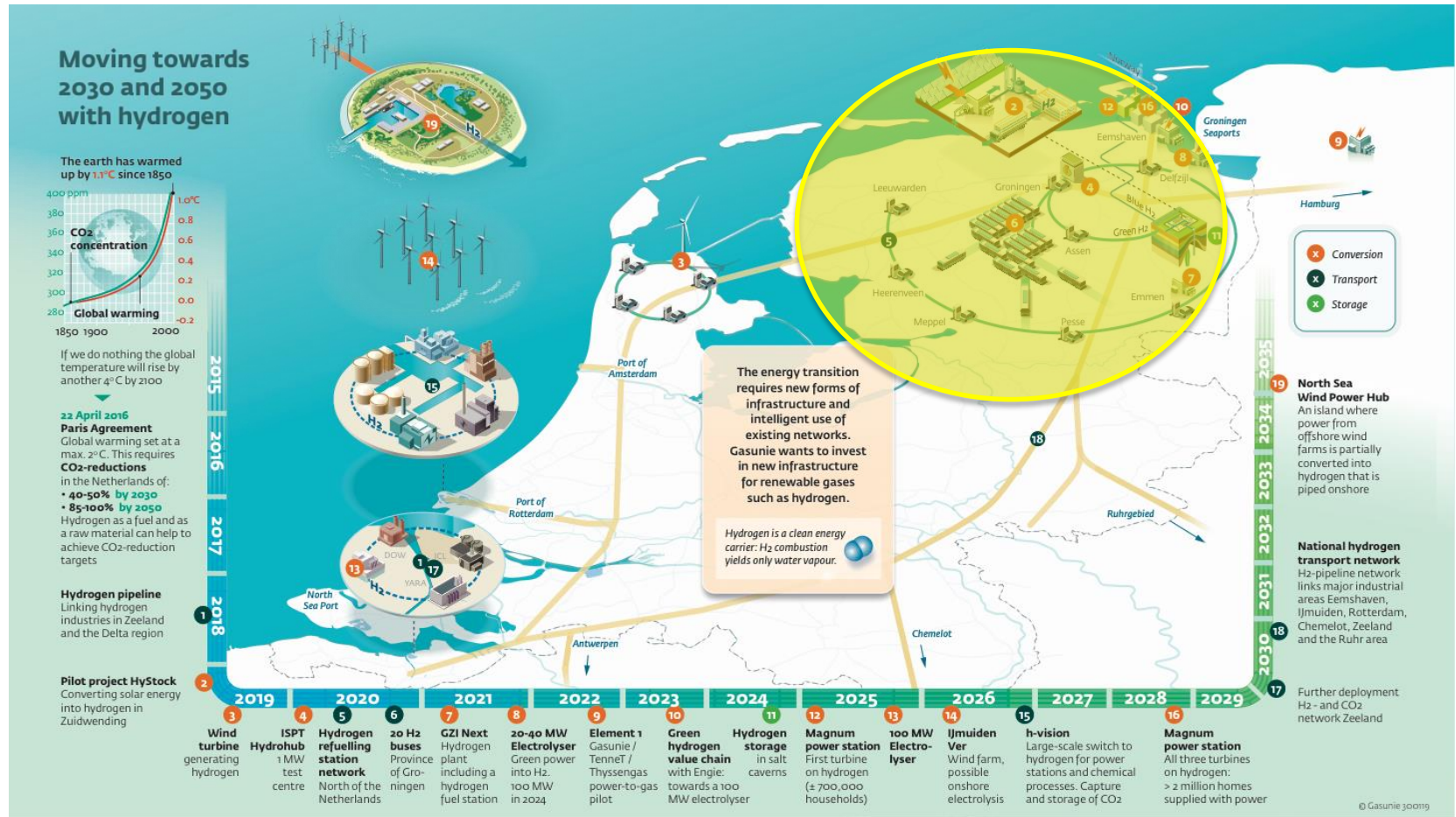
- Studies & preparatory work for the deployment of repurposed and new H2 pipelines
- Realisation of (polymer-based) pipeline connections on the Delfzijl Chemical Park connecting supply and demand
- Deployment of new H2 pipeline between GZI site and the Emmtec Industry Park
- Distribution of H2 across the region via trailers
- Deployment of underground gas storage system

# HEAVENN



# More than HEAVENN Roll out to mass application

New  
**Energy**  
Coalition





# Hydrogen Investment Plan 2.0

New  
**Energy**  
Coalition



# Join us in HEAVENN!

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