



Drivers of Change

H2IC-OG

Hydrogen for Cluster 6 industrial companies in East-Groningen

Catrinus Jepma, New Energy Coalition

Hydrogen Cross Border Conference

Scheemda, 13 March 2025

1

Offshore wind power to
Eemshaven

2

Offshore corridor

3

Harbour infrastructure

4

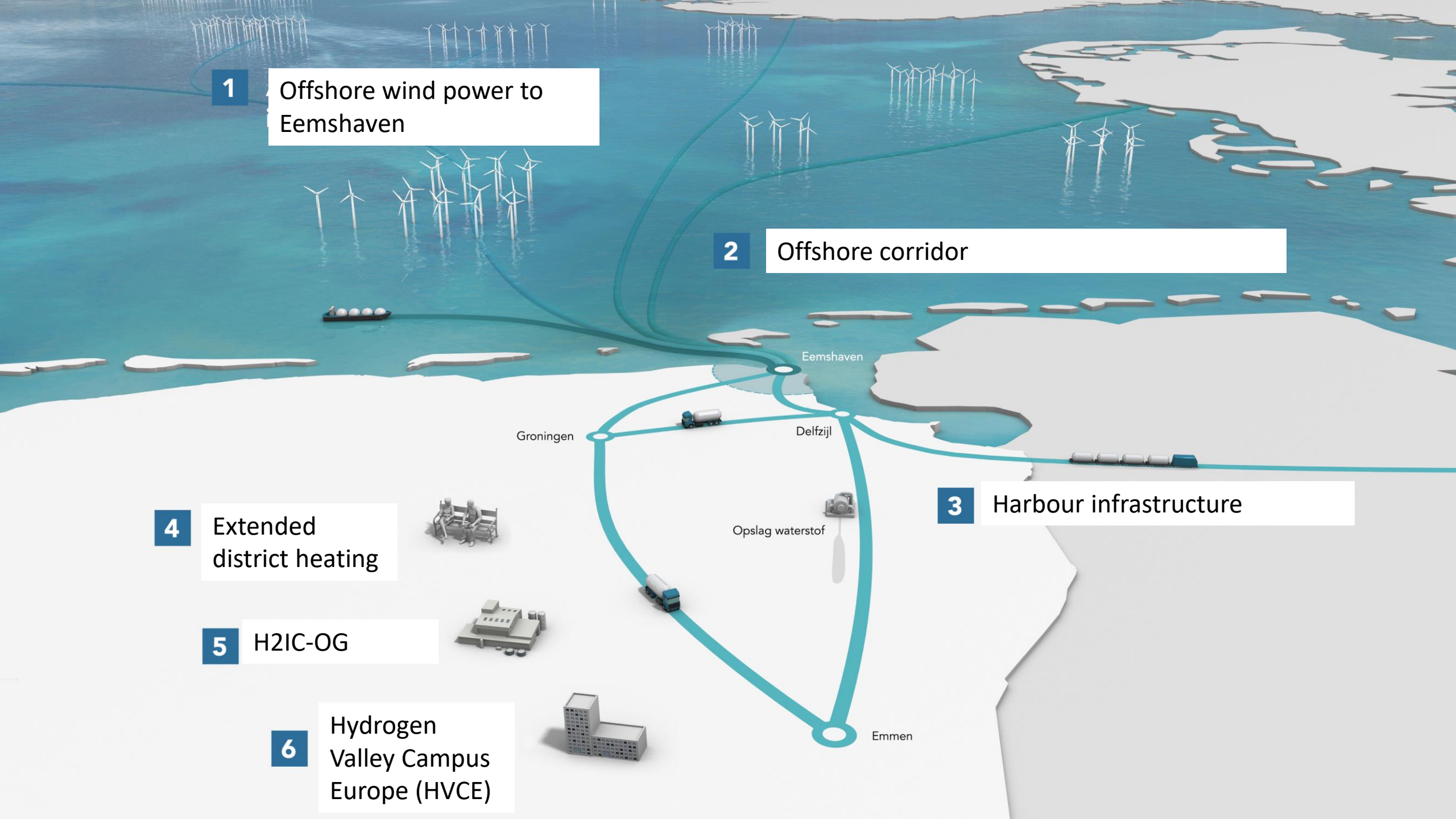
Extended
district heating

5

H2IC-OG

6

Hydrogen
Valley Campus
Europe (HVCE)

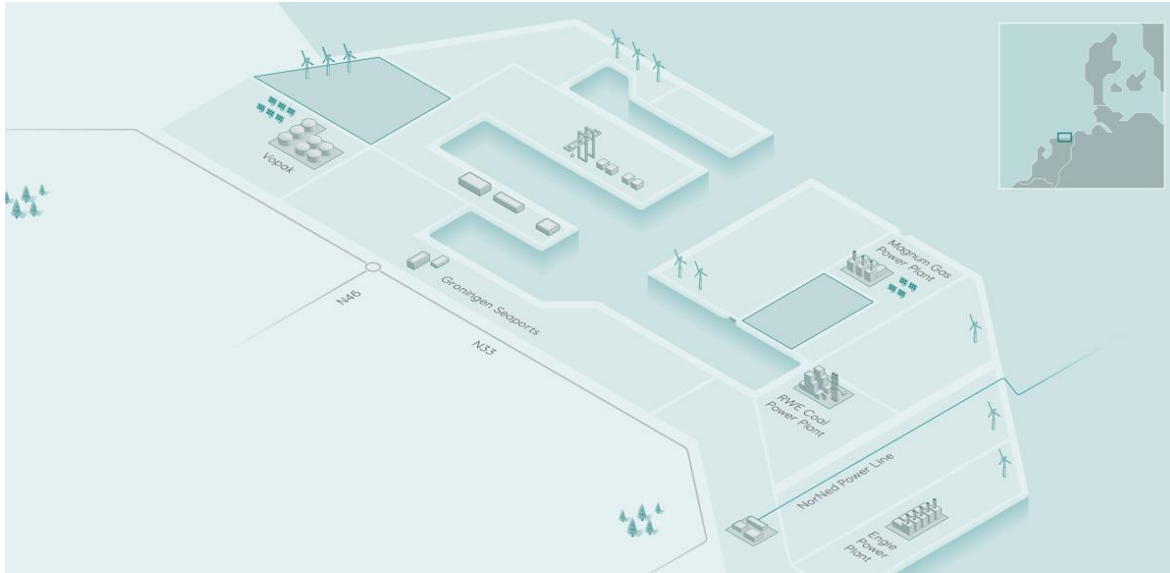


Value chain parties

- Supply side: Equinor, RWE and Engie
- Demand side: IC-OG-cluster
- Infrastructure: Enexis, Northgrid, Gasunie
- Aggregator: EBN
- Public authorities: Province of Groningen, Groningen Seaports, NOM
- Coordinator: New Energy Coalition

The IC-OG cluster: Avebe, Eska, Kisuma, Nedmag, PQ, SmurfitKappa, Solidus, Strating and Wellnesspet. Together they consume 215.000.000 Nm³ natural gas = ca. 56.000t hydrogen (ref. 2023). Related employment some 10.000 fte.

H2M Eemshaven



Project goals:

- **H₂ production volume:** **210 kton per year**
- **CO₂ emission reduction:** **1,7 Mton per year**
(>95% capture rate)
- **FID:** **2026**
- **Start up:** **2030**



Large-scale use of hydrogen for energy-intensive industry and back-up electricity production.

Switching raw materials and fuels from coal and natural gas to hydrogen.

Maximum use of existing assets: natural gas infrastructure, CCGTs, pipelines and storage

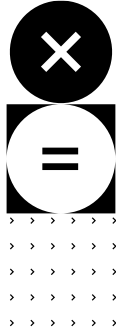
Close to large industrial clusters in NW Europe, using hydrogen backbone

Start-up of large-scale hydrogen value chain

Linde partner in H2M Eemshaven as of April 2024.

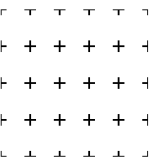
Pre-feasibility H2 value chain development between Eemshaven/HNS and East-Groningen

- Based on blue hydrogen, possibly combined with green hydrogen
- Costs of some 90 km H2 distribution grid: about EUR 60 mln
- Companies face adjustment costs and time: EUR 20-60 mln (estimate)
- Compensating unprofitable top is key: base case estimate EUR 250-330 mln (present value) if all natural gas is replaced by H2
- Role of aggregator and organizer is crucial
- Timing: if 2030 it would be a first serious regional pilot with H2 backbone connection

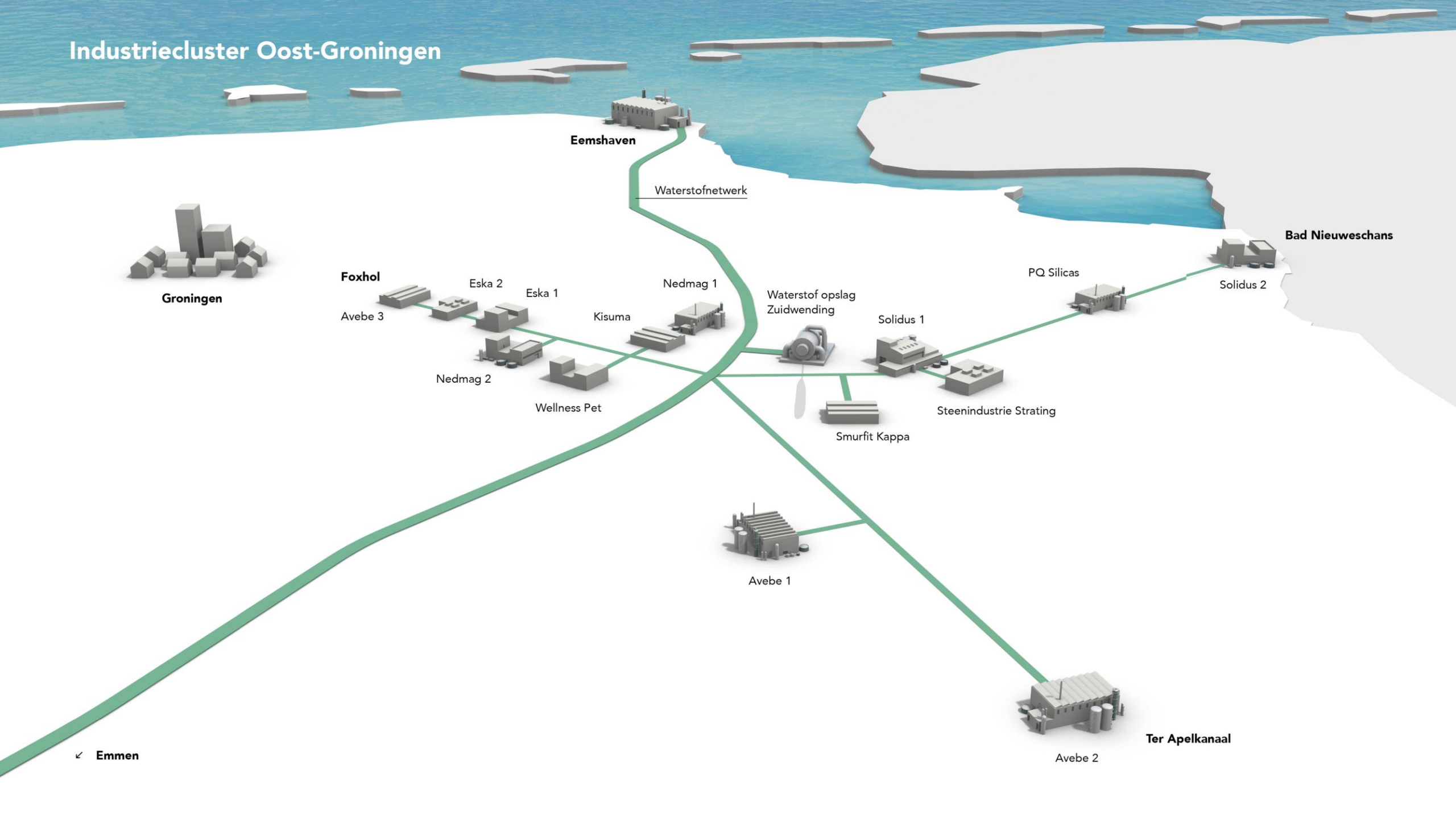


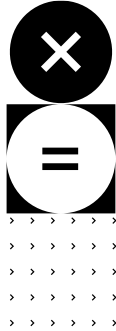
Why H2?

- CO2 penalties natural gas
- Without greening no future
- Electrification increasingly problematic (supply/demand congestion)
- Green gas increasingly no option
- Connection to backbone maybe feasible



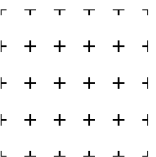
Industrieclasser Oost-Groningen





Key conditions

- Infrastructure: backbone H2 connection point Veendam distribution grid
- Regional supply blue and green hydrogen
- Functioning aggregator
- Unprofitable top covered
- Organisation of value chain



H2M Eemshaven to unlock Dutch and German hydrogen value-chain development

210.000

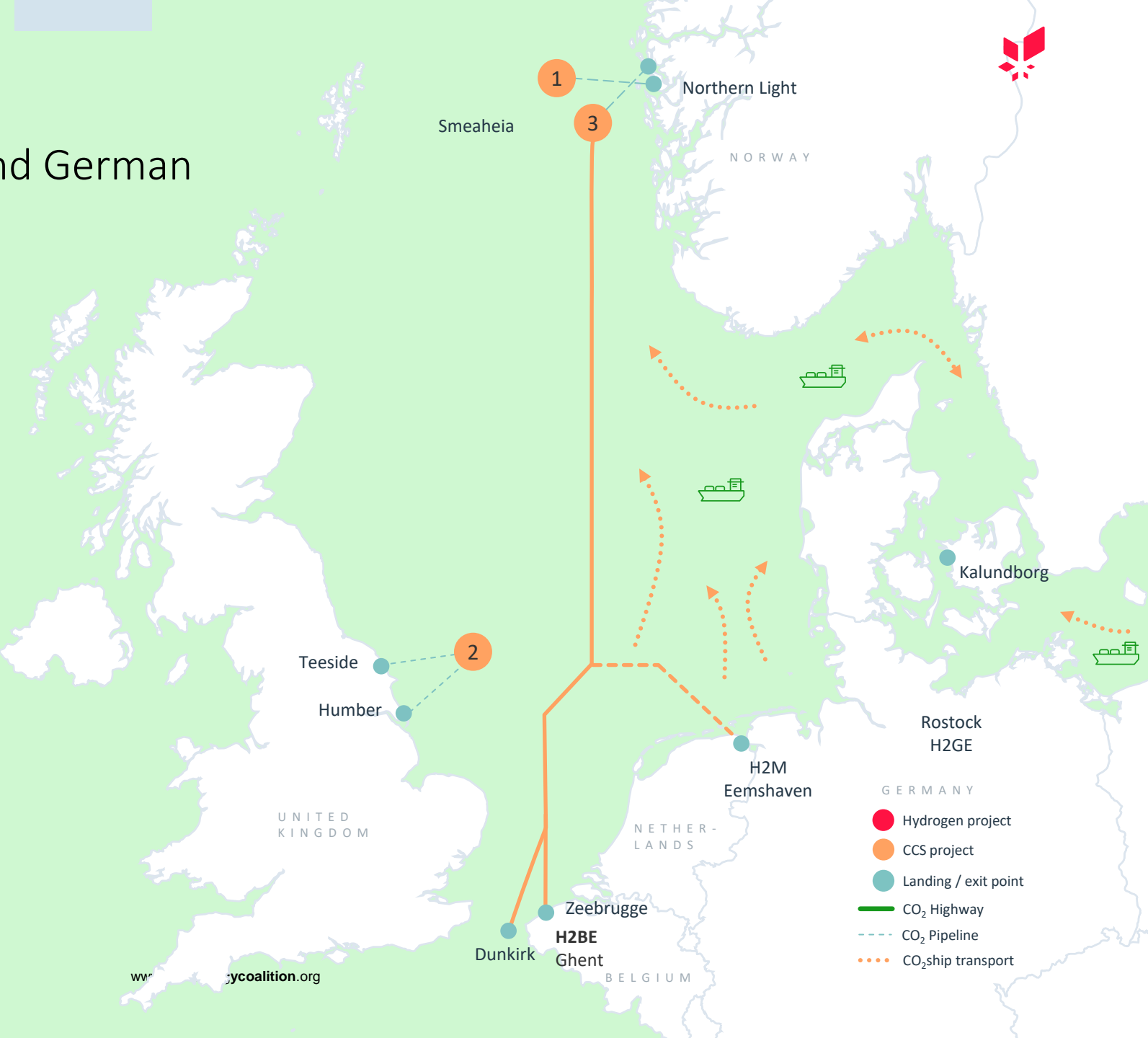
TONNES PER YEAR

Low carbon hydrogen

1.8

MILLION TONNES CO2

Transported and stored yearly



The pre-feasibility study IC-OG by Catrinus Jepma and Jeffrey Paays

- <https://www.newenergycoalition.org/kennisbank/waterstofperspectieven-voor-het-industriecluster-oost-groningen/>

