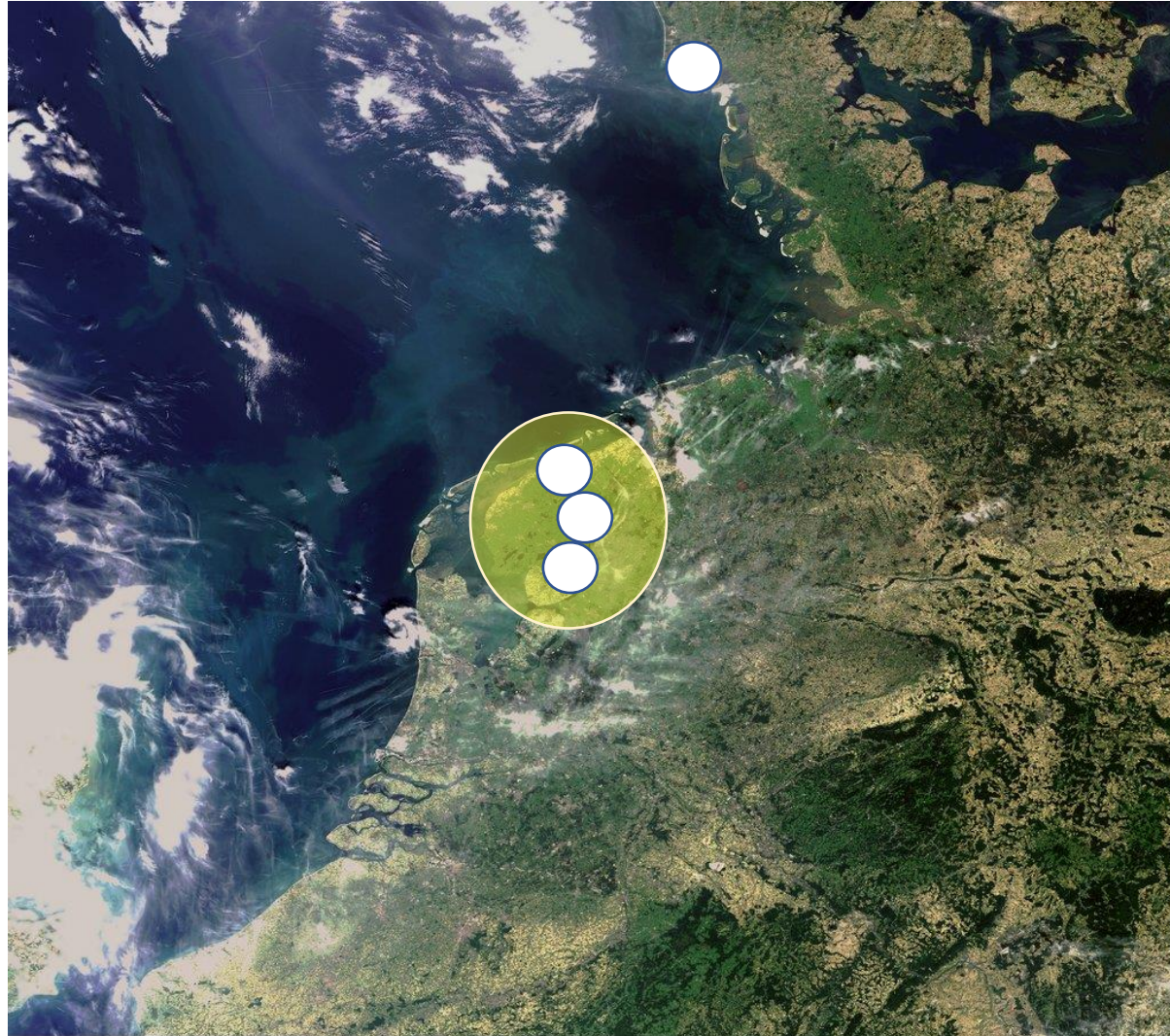# Synergy: TSO2020 as accelerator for green Hydrogen developments
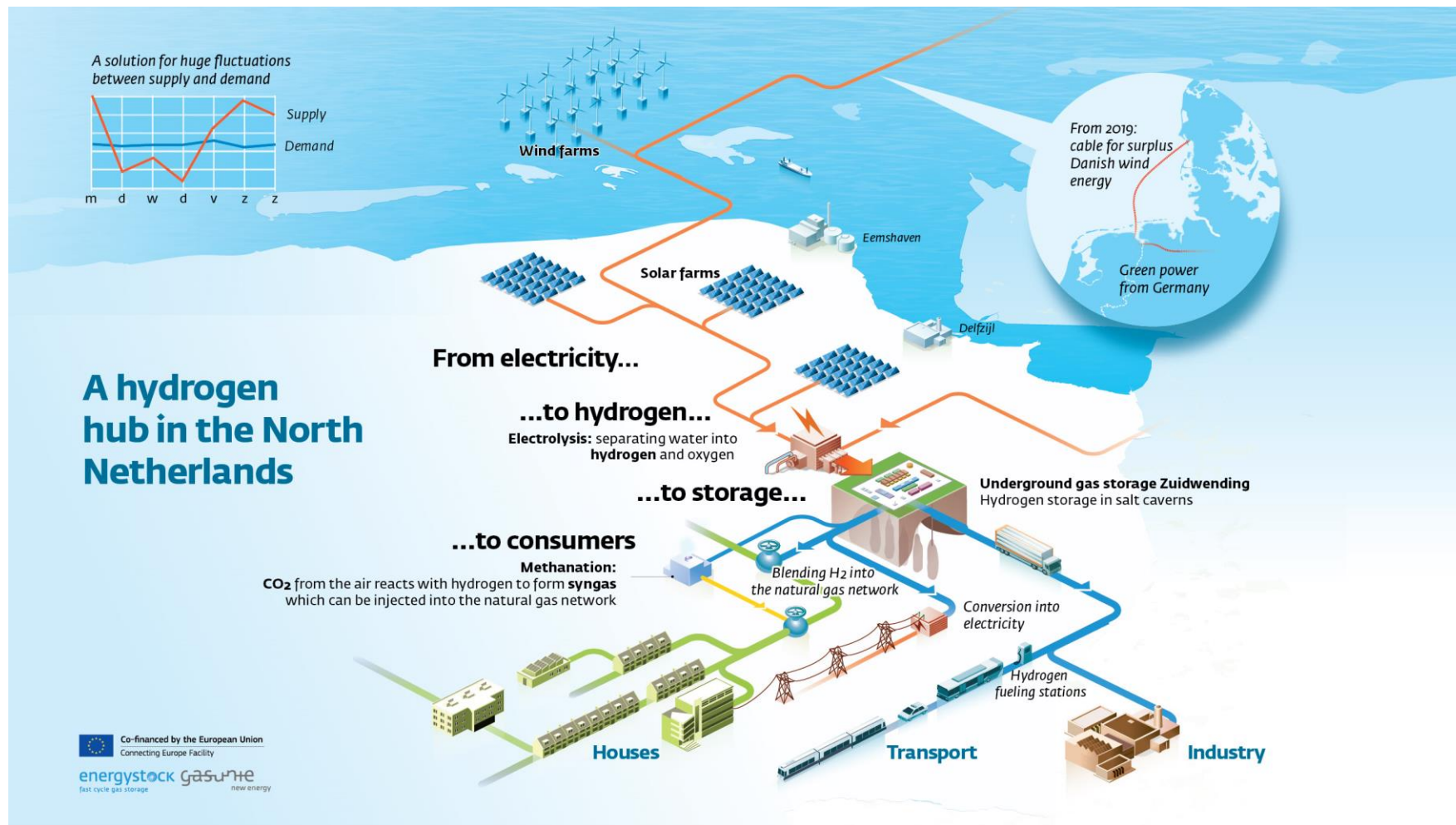
Patrick Cnubben

New Energy Coalition
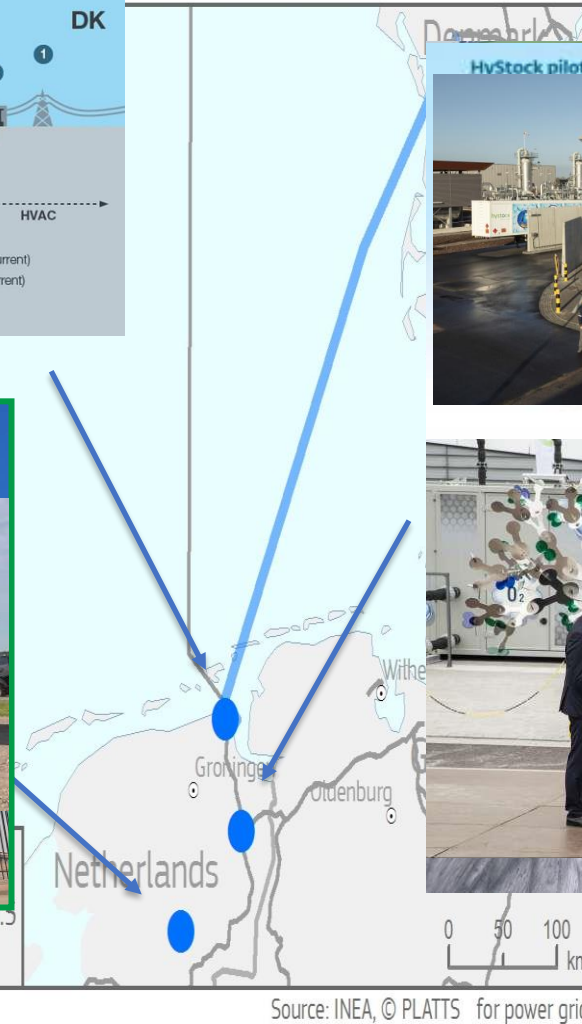
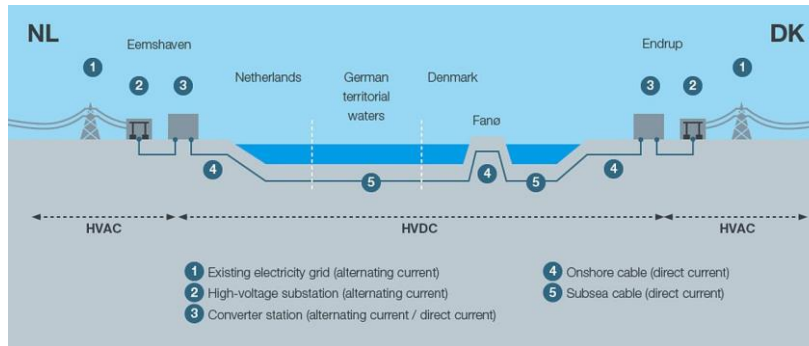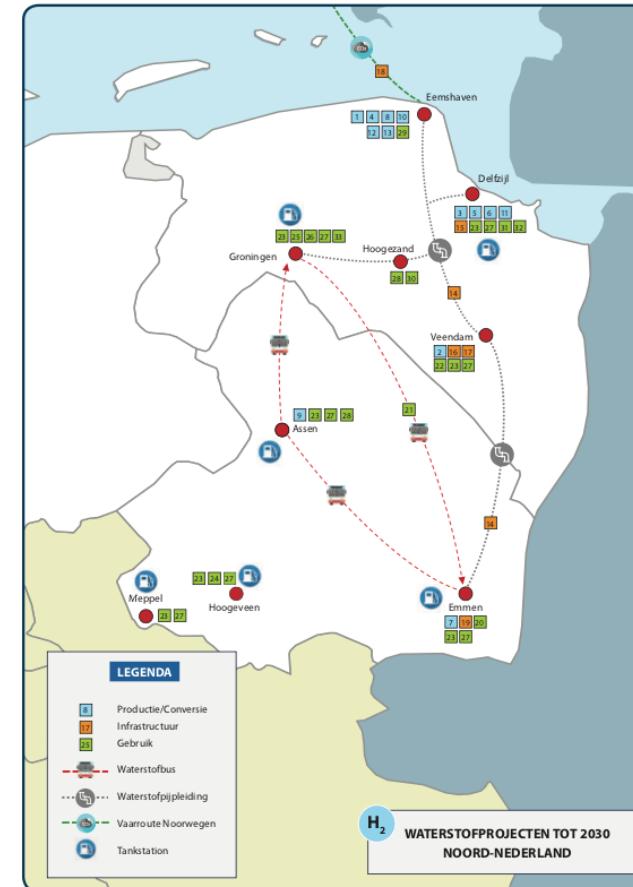# Where are we located?

TSO2020 - Closing Event

The Region as Green Hydrogen Hub

A hydrogen hub in the North Netherlands

A solution for huge fluctuations between supply and demand

Supply
Demand

Wind farms

Solar farms

Eemshaven

Delfzijl

From 2019: cable for surplus Danish wind energy

Green power from Germany

From electricity...

...to hydrogen...
Electrolysis: separating water into hydrogen and oxygen

...to storage...

Underground gas storage Zuidwending
Hydrogen storage in salt caverns

...to consumers

Methanation:
CO_2 from the air reacts with hydrogen to form syngas which can be injected into the natural gas network

Blending H_2 into the natural gas network

Conversion into electricity

Hydrogen fueling stations

Houses

Transport

Industry

Co-financed by the European Union
Connecting Europe Facility

energystock
fast cycle gas storage

gasunie
new energy

TSO 2020 concept

Investment agenda H2 North Netherlands

TSO2020 - Closing Event

The *first* Hydrogen Valley of Europe
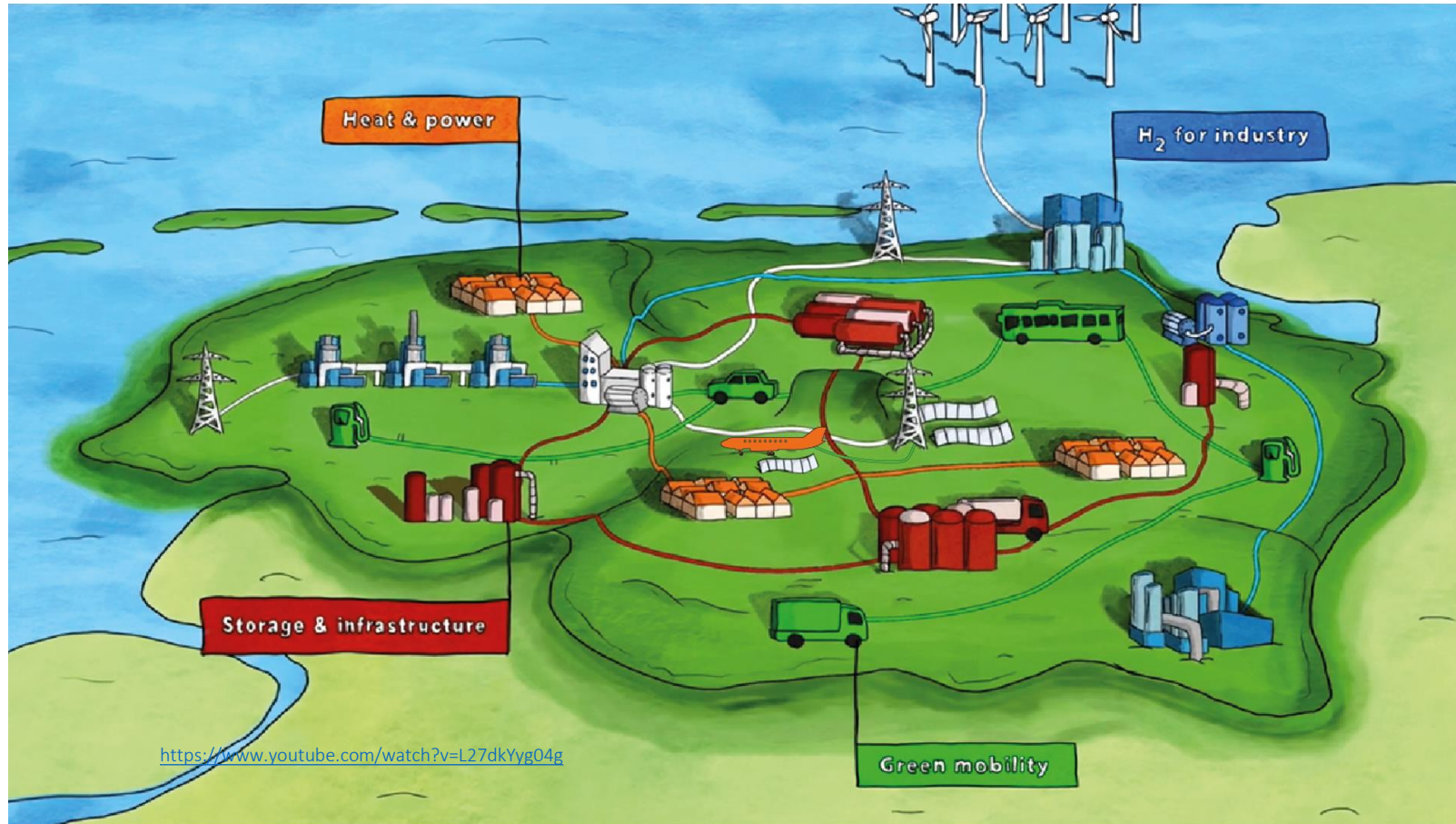
Heat & power

H₂ for industry

Storage & infrastructure

Green mobility

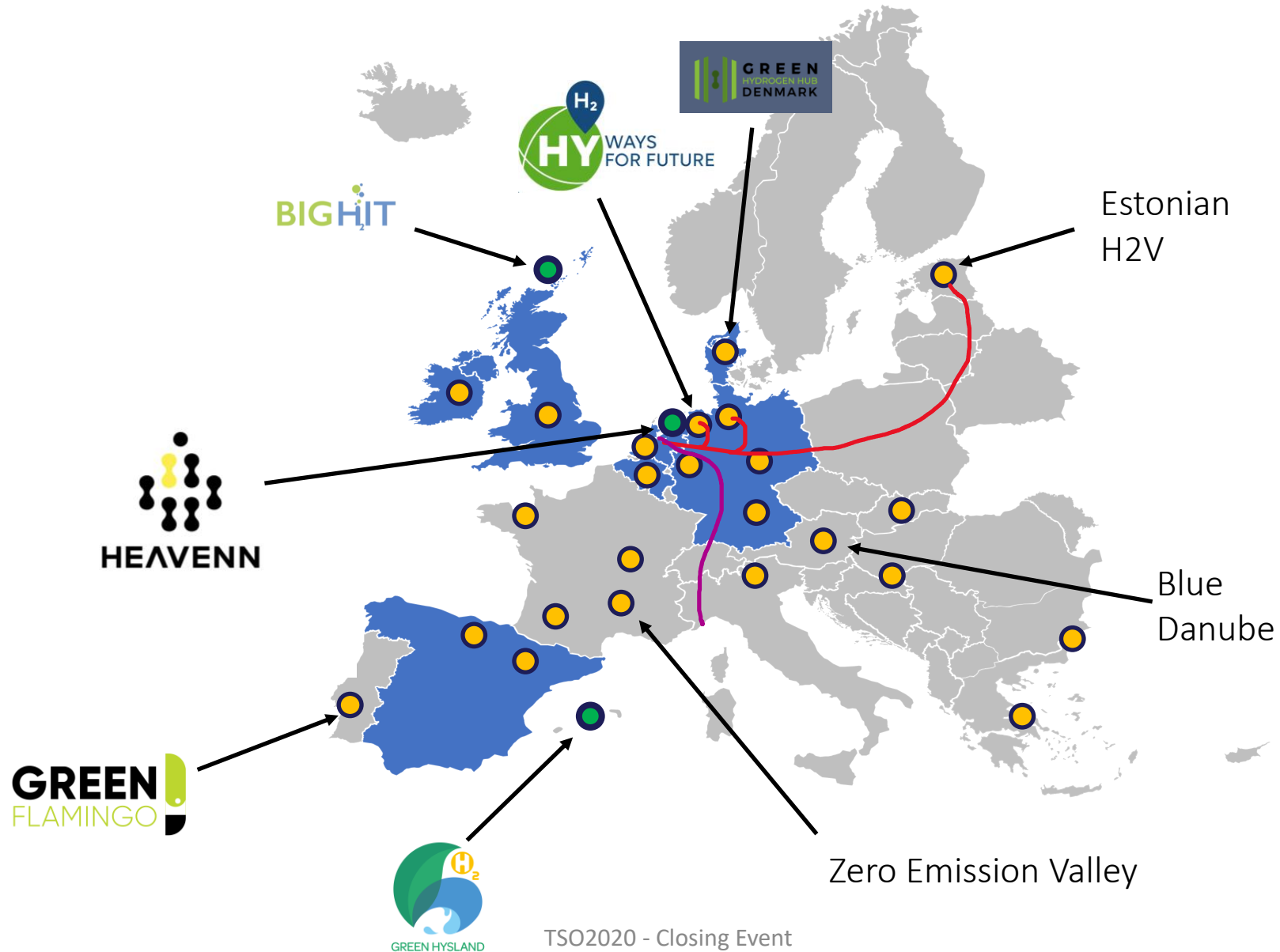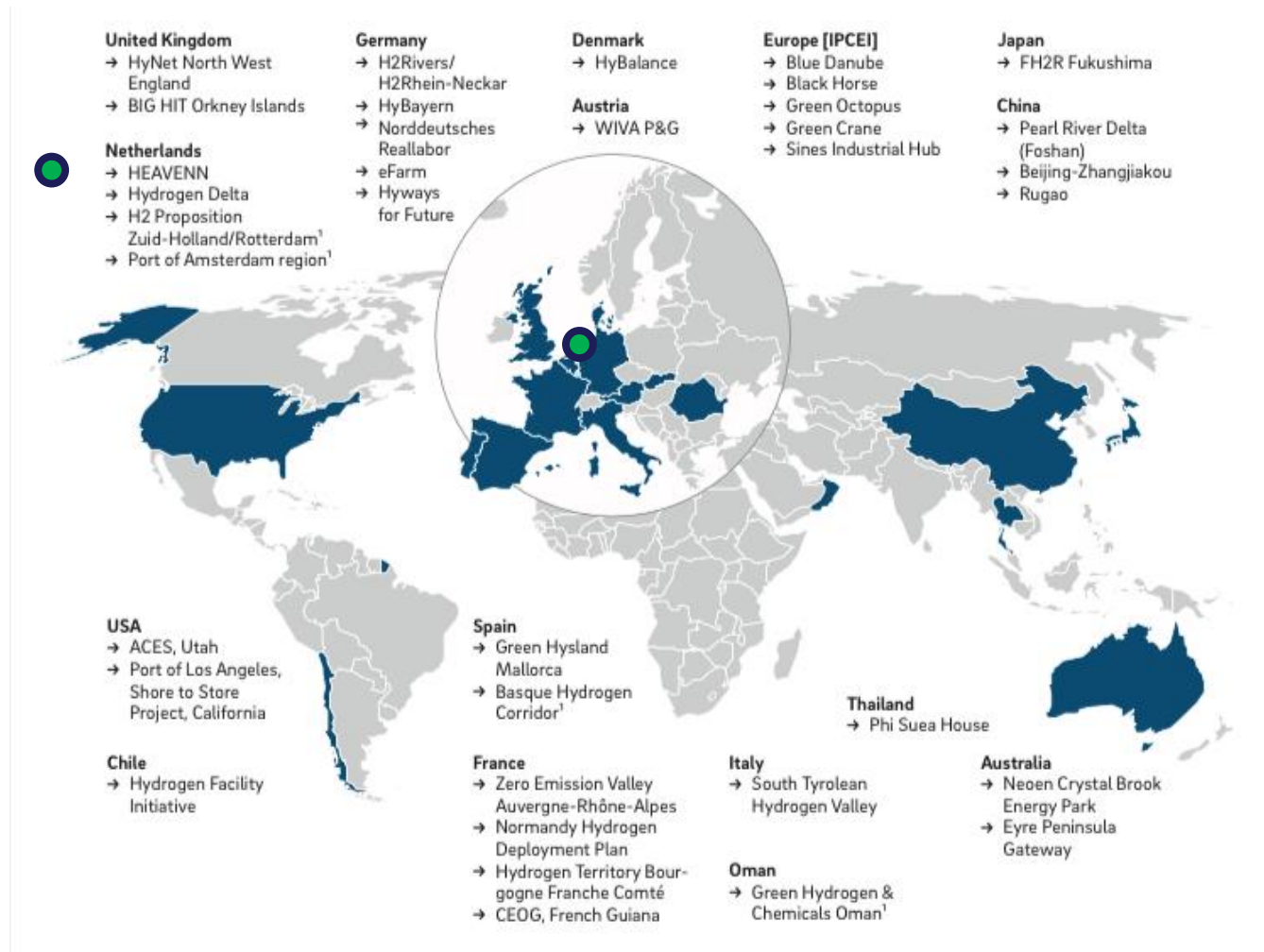https://www.youtube.com/watch?v=L27dkYyg04g

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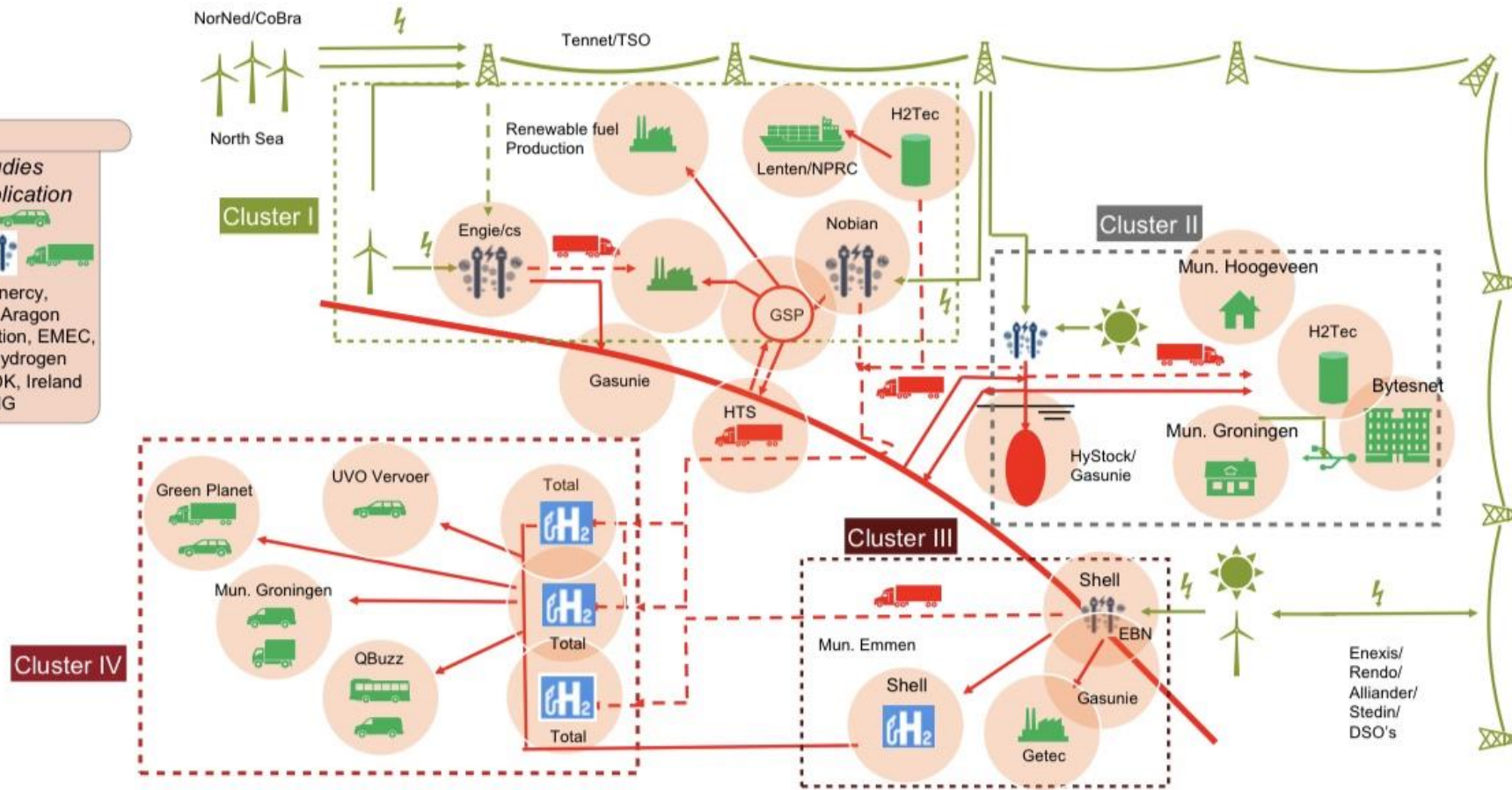
Roll out to mass application
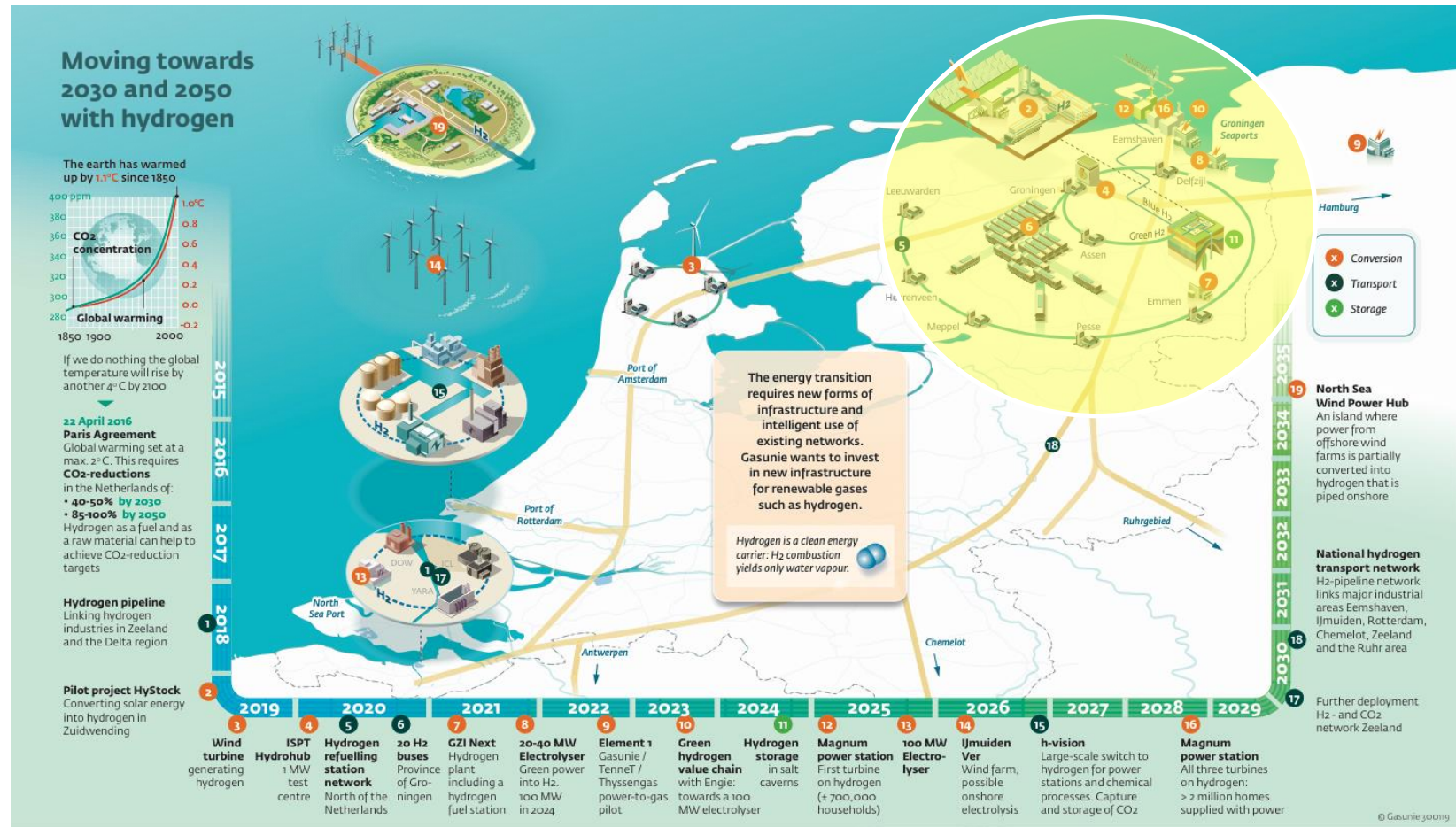
Hydrogen Investment Plan 2.0
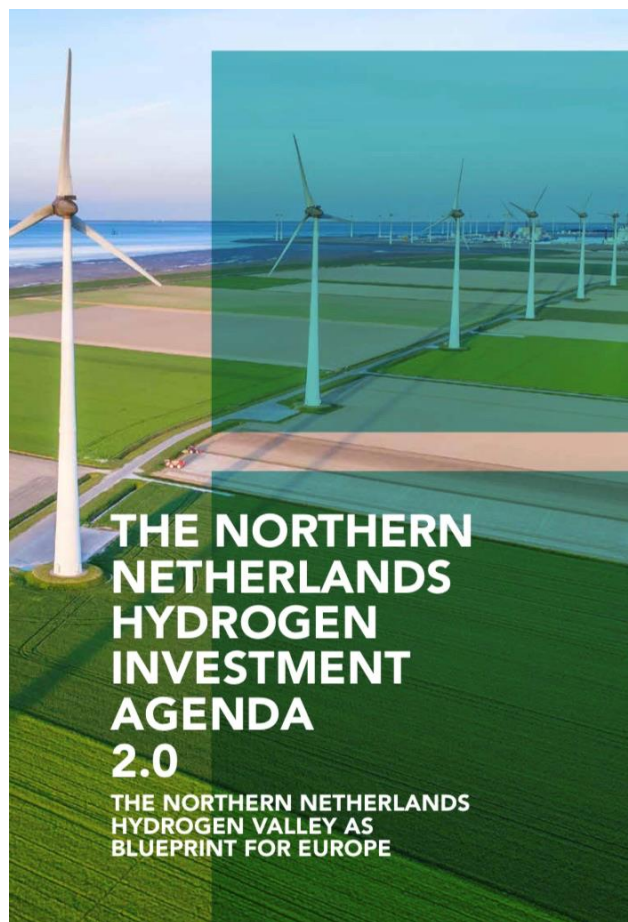
Connect Hydrogen Valley's

Mission Innovation Hydrogen Valley Platform

United Kingdom
→ HyNet North West England
→ BIG HIT Orkney Islands

Netherlands
→ HEAVENN
→ Hydrogen Delta
→ H2 Proposition Zuid-Holland/Rotterdam[1]
→ Port of Amsterdam region[1]

Germany
→ H2Rivers/ H2Rhein-Neckar
→ HyBayern
→ Norddeutsches Reallabor
→ eFarm
→ Hyways for Future

Denmark
→ HyBalance

Austria
→ WIVA P&G

Europe [IPCEI]
→ Blue Danube
→ Black Horse
→ Green Octopus
→ Green Crane
→ Sines Industrial Hub

Japan
→ FH2R Fukushima

China
→ Pearl River Delta (Foshan)
→ Beijing-Zhangjiakou
→ Rugao

USA
→ ACES, Utah
→ Port of Los Angeles, Shore to Store Project, California

Chile
→ Hydrogen Facility Initiative

Spain
→ Green Hysland Mallorca
→ Basque Hydrogen Corridor[1]

France
→ Zero Emission Valley Auvergne-Rhône-Alpes
→ Normandy Hydrogen Deployment Plan
→ Hydrogen Territory Bourgogne Franche Comté
→ CEOG, French Guiana

Italy
→ South Tyrolean Hydrogen Valley

Oman
→ Green Hydrogen & Chemicals Oman[1]

Thailand
→ Phi Suea House

Australia
→ Neoen Crystal Brook Energy Park
→ Eyre Peninsula Gateway

https://www.h2v.eu/

Hydrogen Valley's fuelling up the NSB Corridor

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TSO2020 .....

- Demonstrates the combination of harvesting electrons and using 'canned' Hydrogen as fuel for mobility

- Demonstrated that the SYNERGY concept works

- Accelerates the deployment of H2 as fuel for mobility

- Can be replicated in various sizes: S to XXXL

- Promotes the further development of PCI's and TEN-E policy enabling transport of green energy to the market(s)

- Promotes the development of green H2 utilization along the TEN-T corridors

TSO2020 …..

- Contributed to the development of an invest agenda and an investment plan promoting the large scale deployment of green Hydrogen

- Created the foundations for the development of the first Hydrogen Valley in Europe

- Accelerates the deployment of Cross border Hydrogen Valley's

- Initiates the development of HY3, RH2INE, H2-NSB projects

TSO2020 .....

- Advocates the design of novel Synergy calls

- Fits National and International Hydrogen ambitions and policies

- Answers to the request of President van der Leyen during her State of the Union address (17.09.2020)

- Is in line with the EU Green Deal targets

- Helps regions to become FIT FOR 55

TSO2020 .....

- Could not have been possible without the fantastic partners

TSO2020 .....

- Wants to thank:

Thank you for your attention

- Join us at *La Grande Finale* on 6 October 2021

Further information

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