



# Hydrogen Transport Economy for the North Sea Region 2

**Province of Drenthe / Municipality of Groningen**

Final Conference

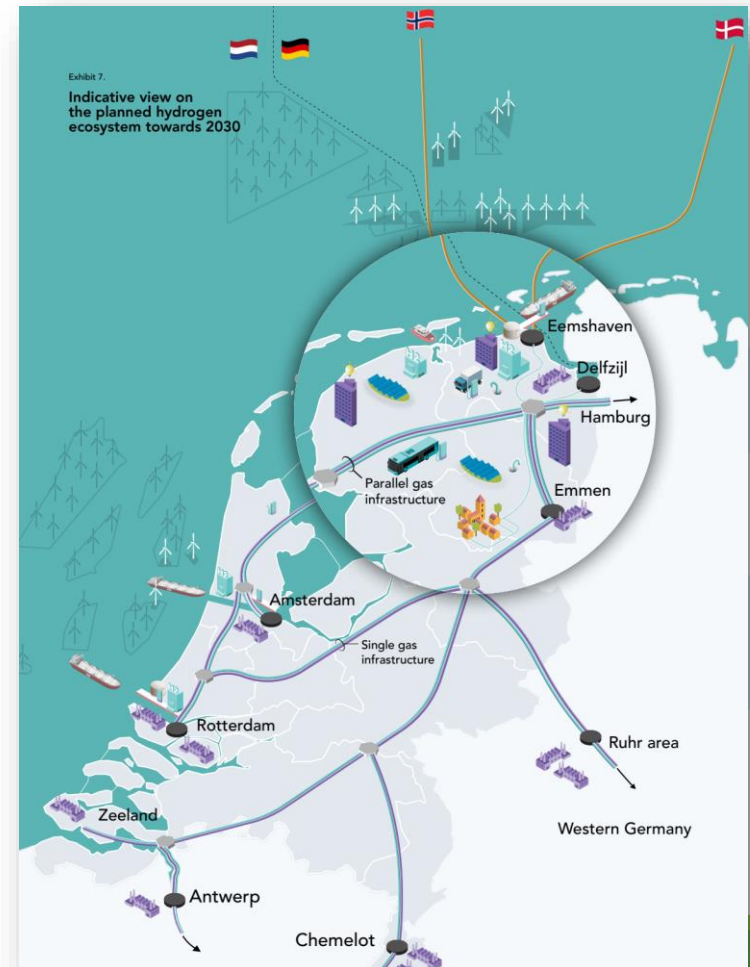
May 2023



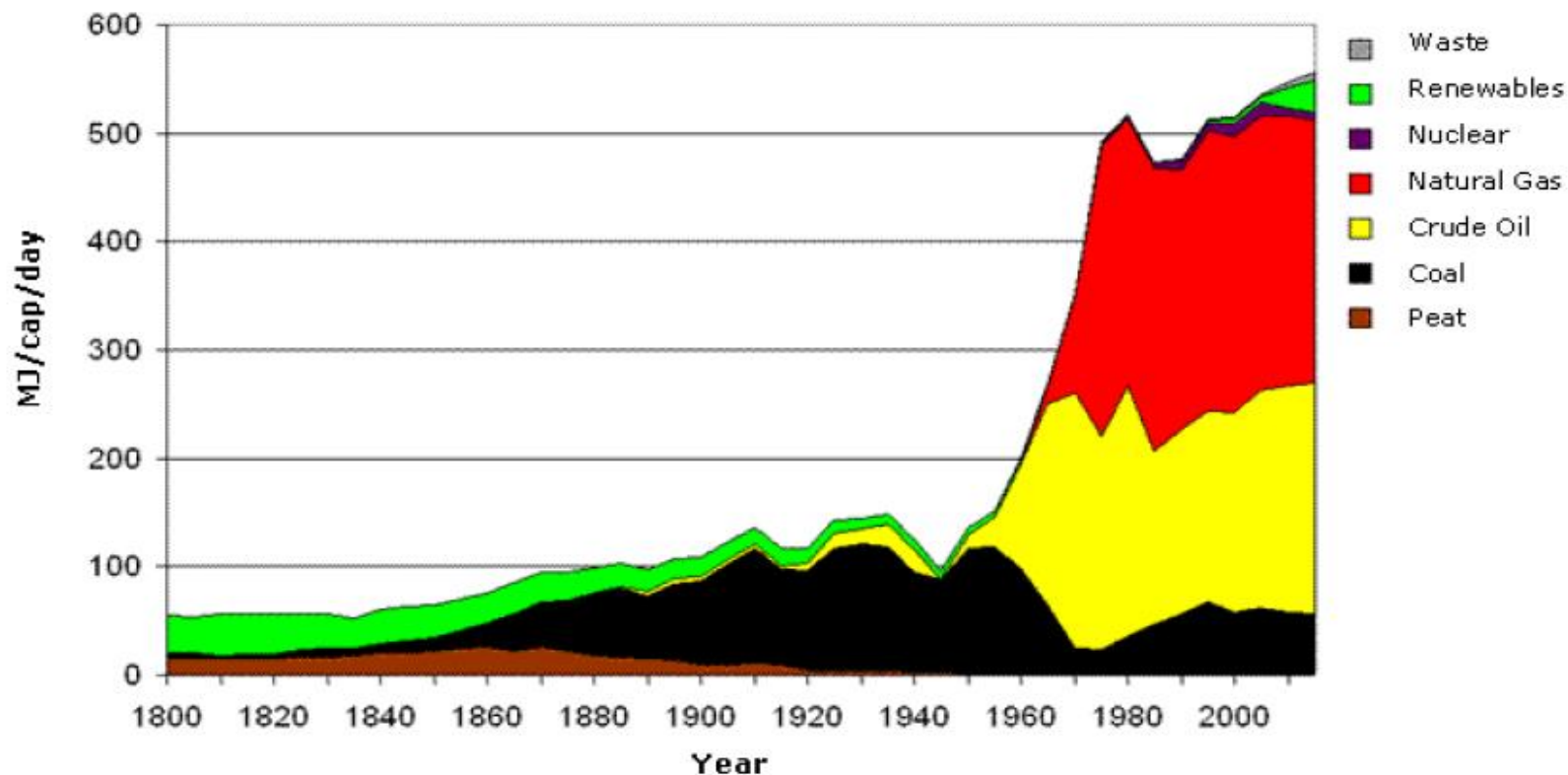
# Agenda



- Background
- Why H2
- H2 mobility in Groningen & Drenthe
- Legacy HyTrEc2



# Background

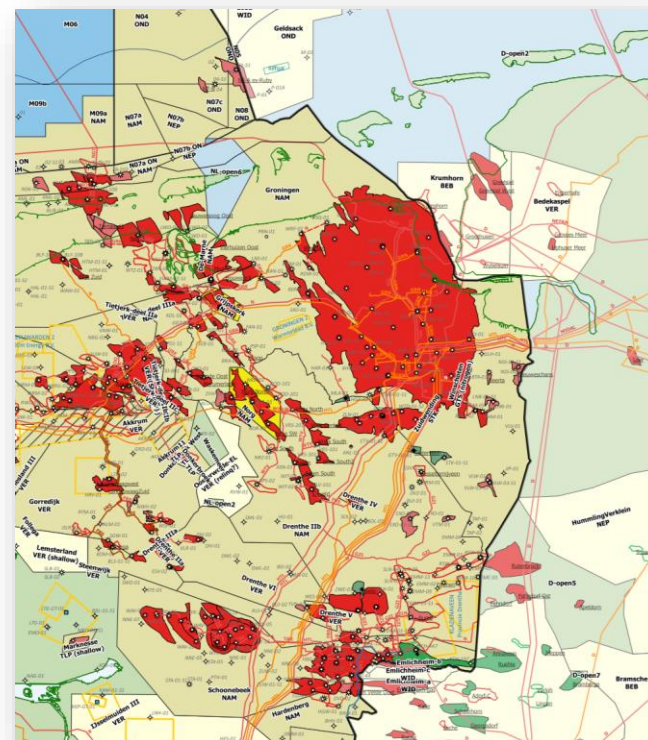




# Background



- The region have been the Dutch Energy Valley for decades, with large scale oil and gas production
- The Groningen gas field, Schoonebeek, many 'small fields', and the Zuidwending, Norg and Grijpskerk UGS
- The end of oil and gas production means an opportunity for hydrogen, with knowledge, people and infrastructure





## Why H2



- Range extender
- Heavy duty solution
- Dynamic off grid and net congestion solution



# H2 mobility Groningen





# H2 mobility Groningen



- 12 (Refuse) trucks
- 12 Light duty vehicles
- 5 Passenger cars
- 1 Hydrogen cargo bike
- 1 Site carrier
- 1 Road Sweeper
- 2 Hydrogen refueling stations (HRS)
- 1 Hydrogen storage facility





# H2 mobility Drenthe



## H2 mobility Drenthe



- 4 Hyundai Nexo passenger cars (HyTrEc2)
  - 2 Ground power units, H2-GPU (HyTrEc2)
  - Available for lease: 100 Toyota Mirai passenger cars
  - 5 Retrofitted H2 VW Crafters
  - 10 Van Hool H2 public transport busses
  - Available for lease: 8 H2 trucks
  - 1 Refuse truck
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- 3 Hydrogen refueling stations (HRS)





# H2 HYDROGEN ECOSYSTEM GRONINGEN AIRPORT EELDE

- 1 Solar Park
- 2 Electrolyser
- 3 H2 Storage Facility
- 4 H2 Fuel Station
- 5 H2 Ground Equipment



## Lessons learned

- It's a new technique: teething problems
- Acceptance of staff and citizens is needed
- Drivers determine success
- Right training for mechanics is needed
- Cooperate with local security services for safety
- Invest in refuelling stations (chicken and egg problem)
- Invest in adjustments of buildings for storage/depot

Next phase: further scaling up







