



# H21

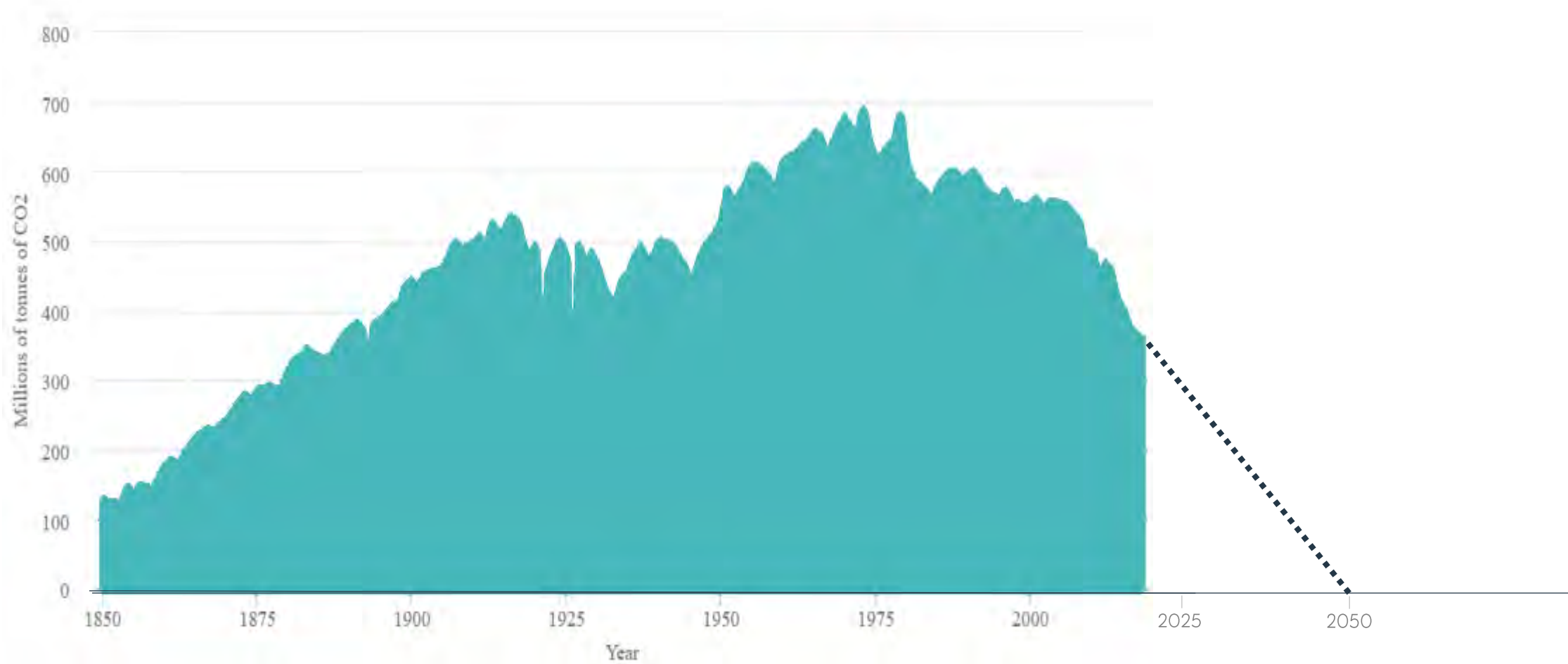
Workshop on Hydrogen Production with CCS

6. November 2019

EDF, Chatou, Paris

Anna Korolko

## Emissions in UK

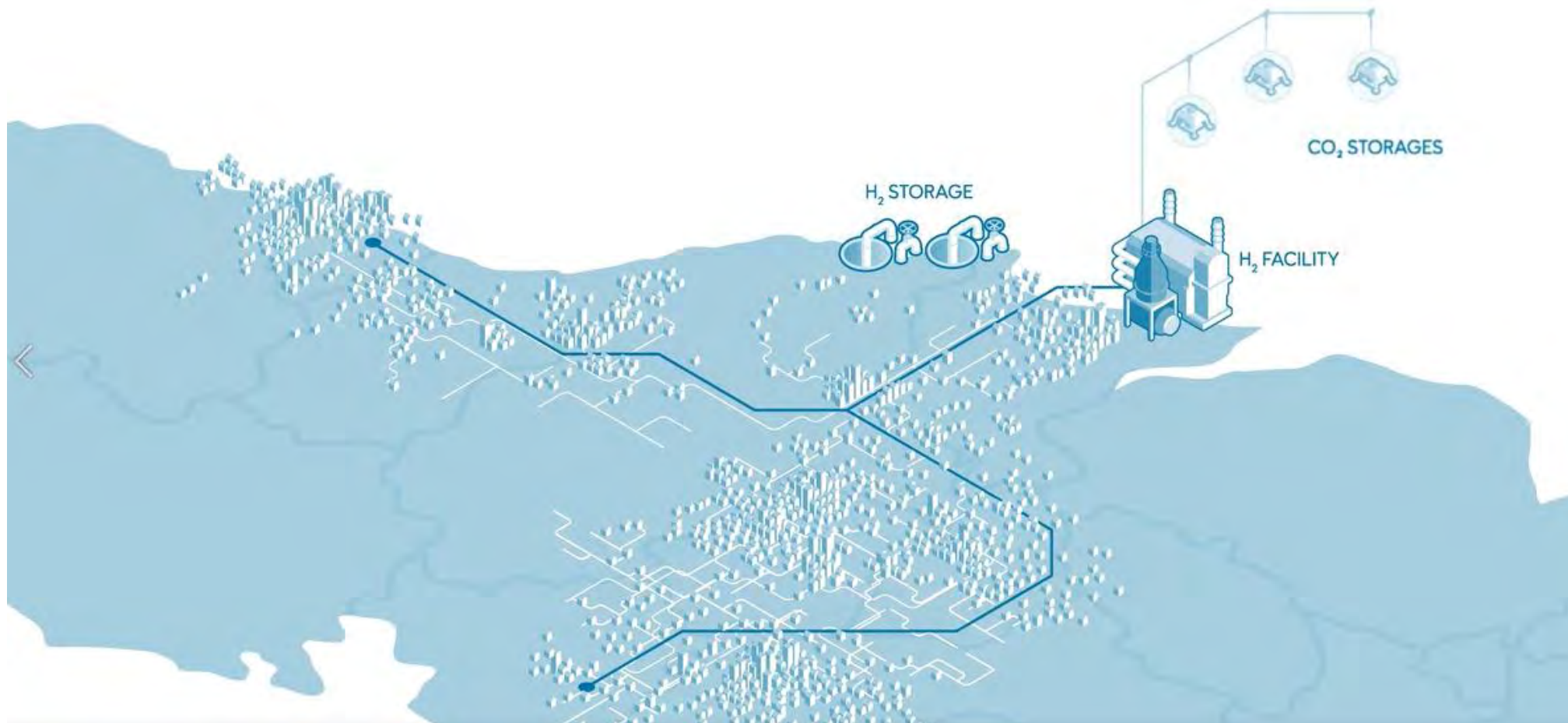


Source: carbonbrief.org



- **Hydrogen need** is 270 TWh of which is 225 TWh from natural gas with CCS
- **2020s:** Start large scale hydrogen production with CCS. Identification of low-regret hydrogen deployment opportunities.
- **Demonstration.** In order to establish the practicality of switching to hydrogen, trials and pilot projects will be required for buildings, industry and transport uses. It is also necessary to demonstrate that hydrogen production from CCS can be sufficiently low-carbon to play a significant role
- **2030s:** Hydrogen production should start at scale by 2030 at each of the industrial CCS clusters. Widespread deployment in industry, use in back-up electricity generation, heavier vehicles and potentially heating on colder days

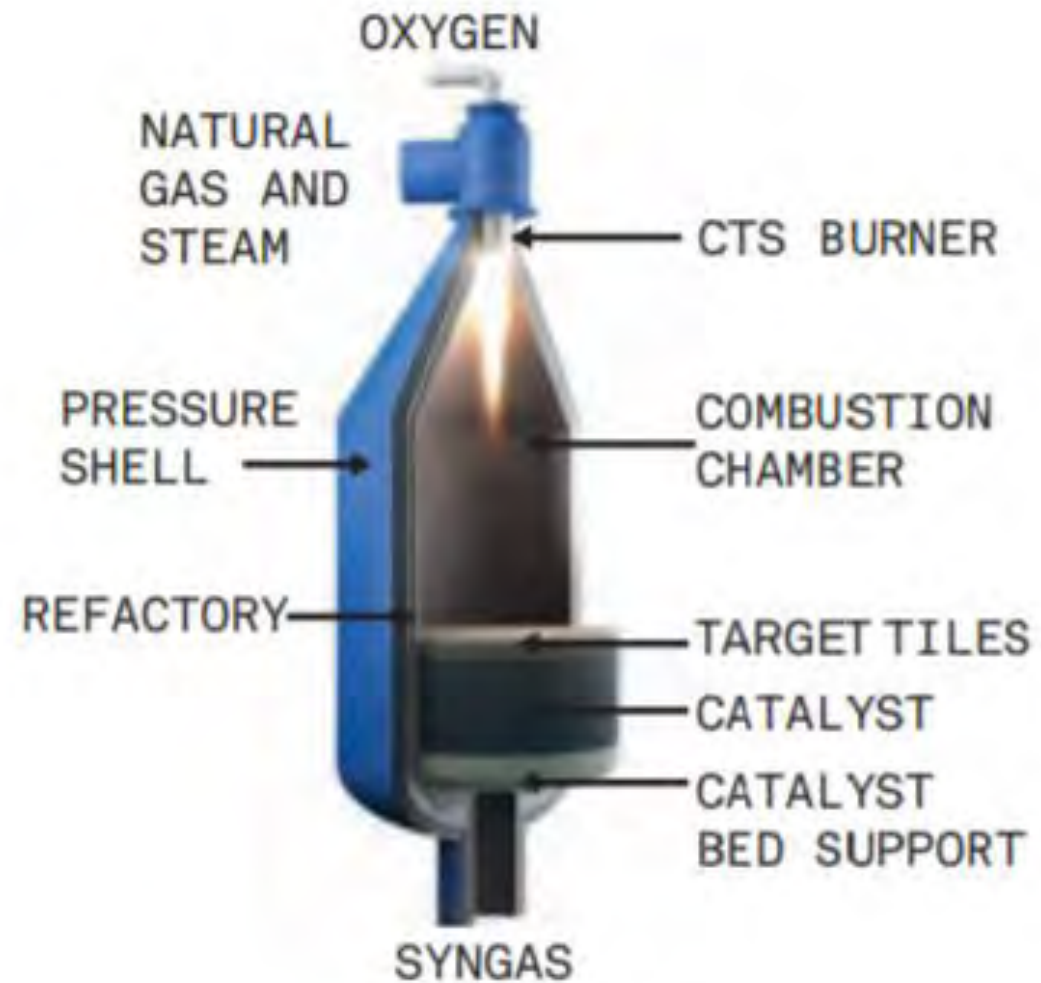
# H21 North of England



[Animation](#)

## Hydrogen production



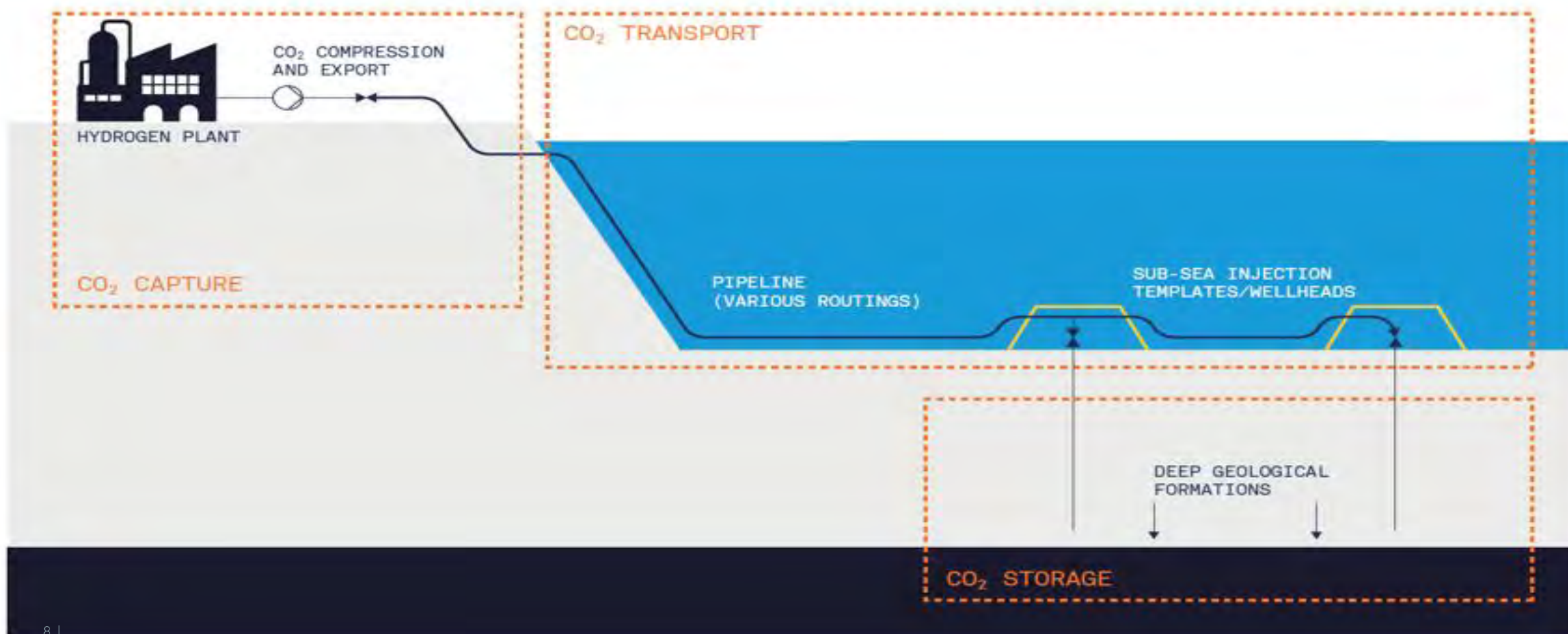


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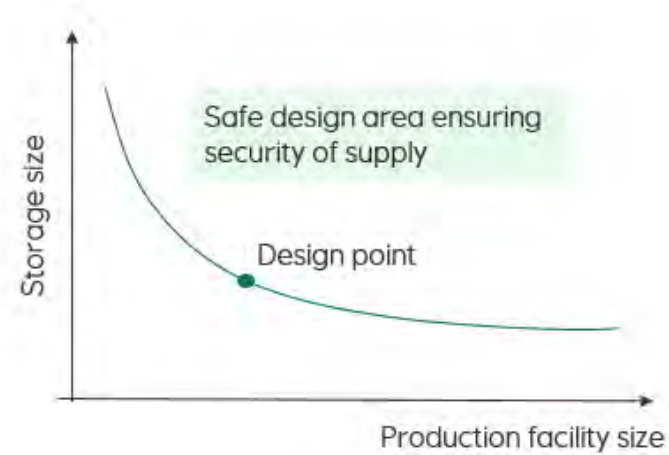
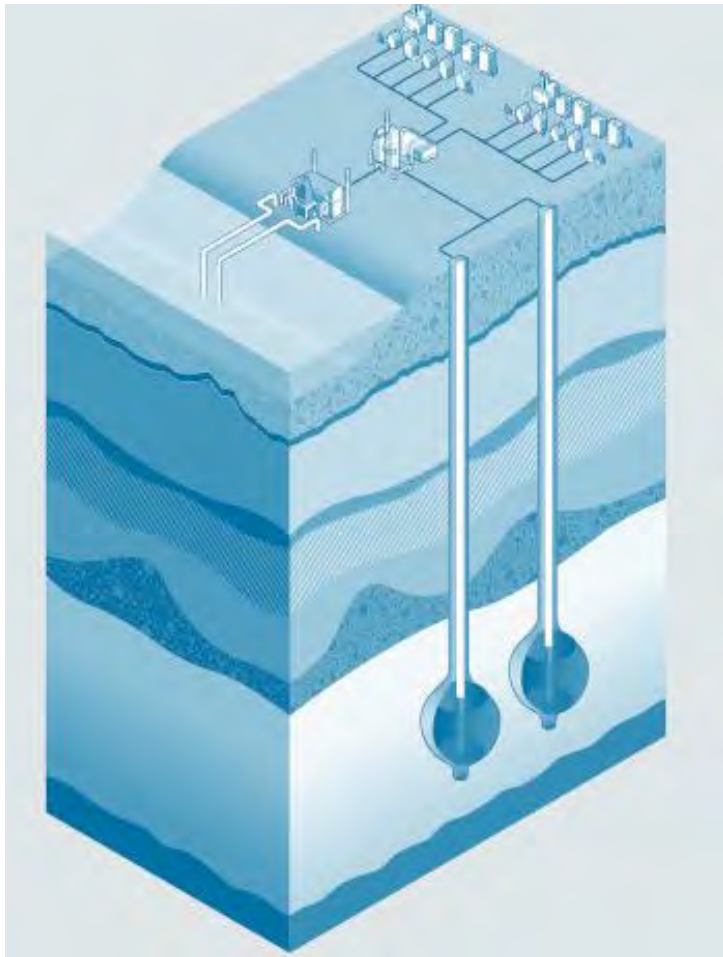
## Engineering concept study for a 17-20 Mtpa storage scheme for H21

- Assessed 3 Triassic Bunter sandstone structures in UK Southern North Sea
- Solutions involve 12 sub-sea wells
- Seasonal fluctuations assessed

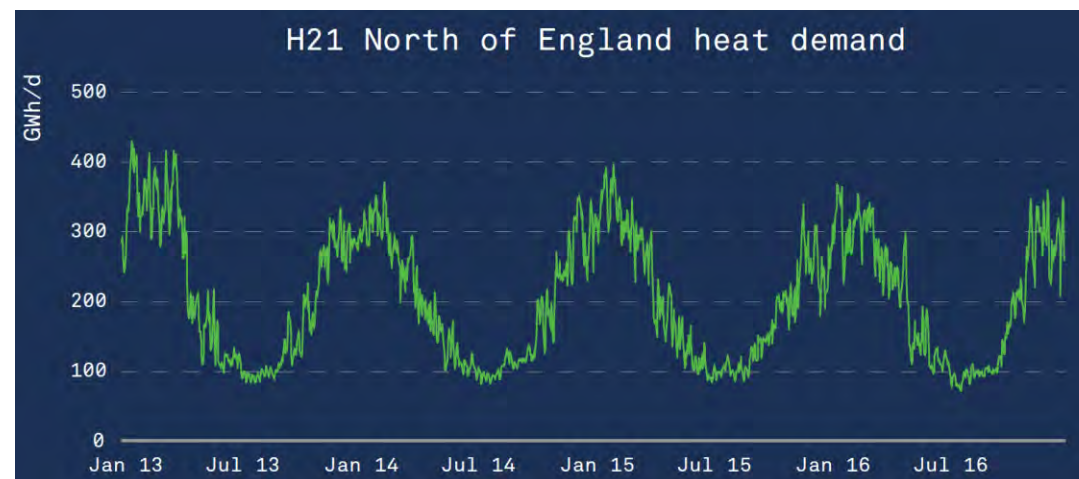




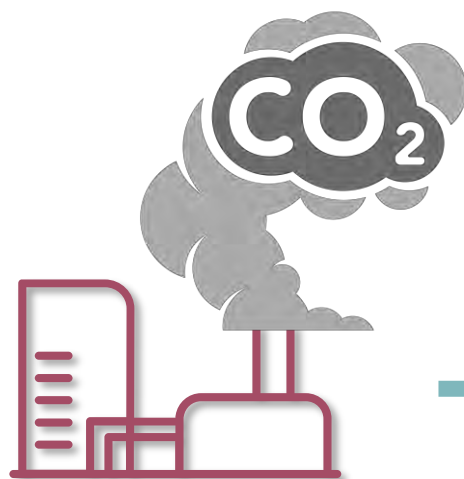
# Inter-seasonal hydrogen storage



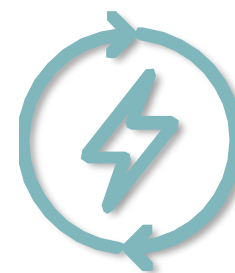
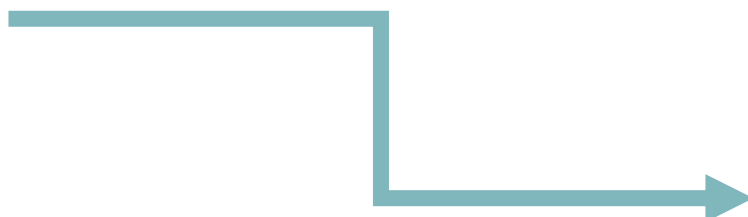
- Location: Aldbrough
- Capacity: 8 TWh (=62 000 Australian megabatteries)
- Configuration: 56 caverns at 300,000 m<sup>3</sup>



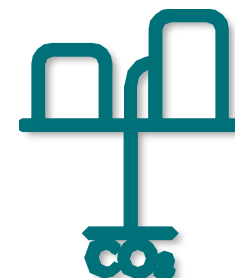
## Heat decarbonisation options



Natural gas  
**50** £/MWh  
**100** g/KWh

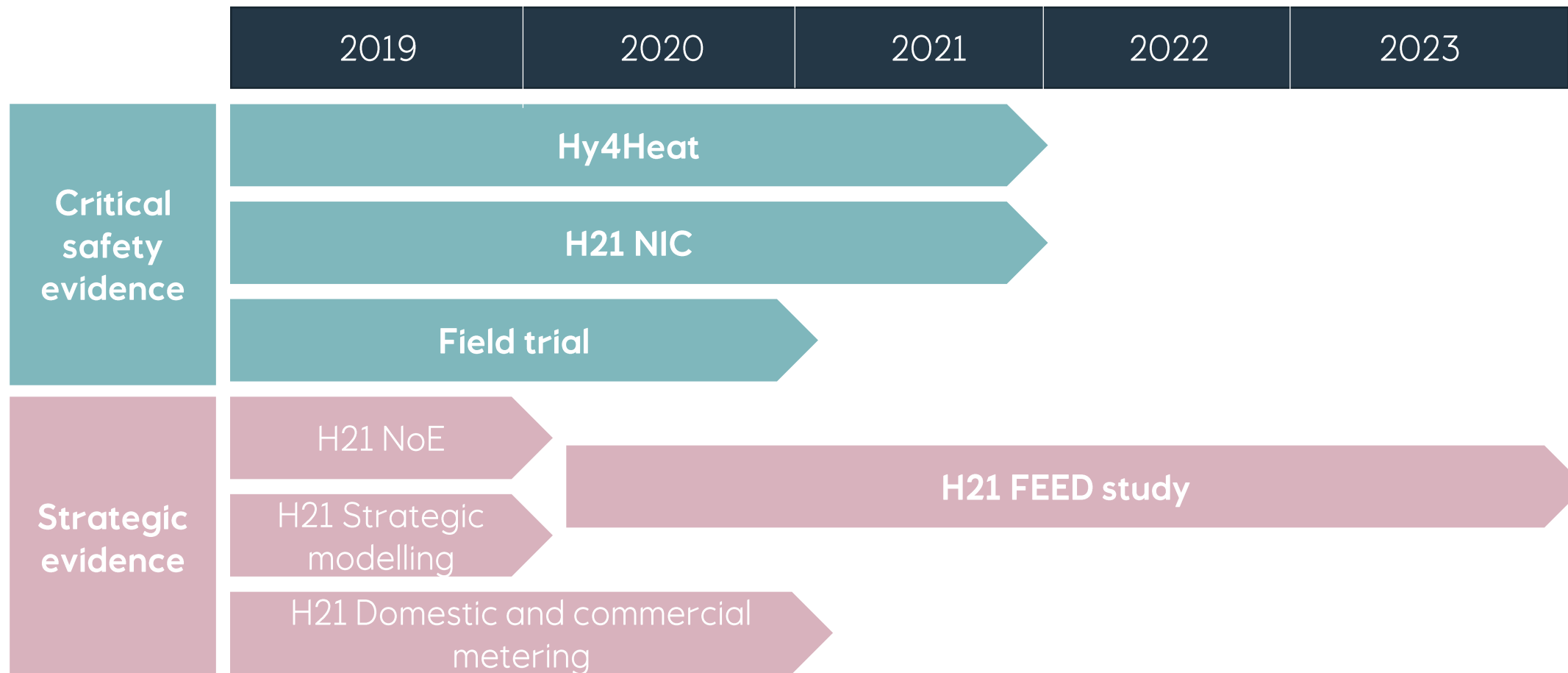


Electrification  
**200** £/MWh  
**50** g/KWh

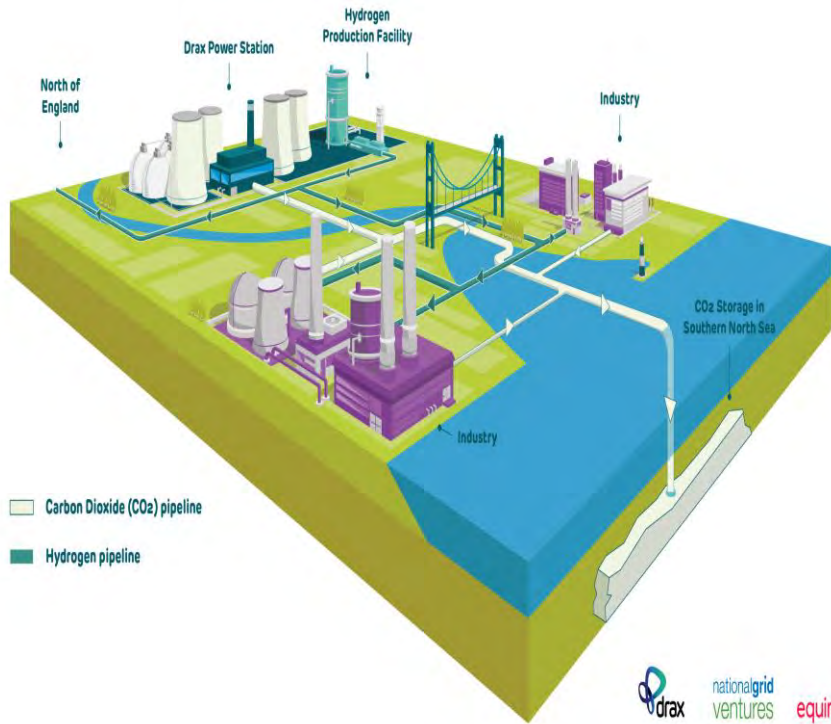


Hydrogen  
**75** £/MWh  
**15** g/KWh

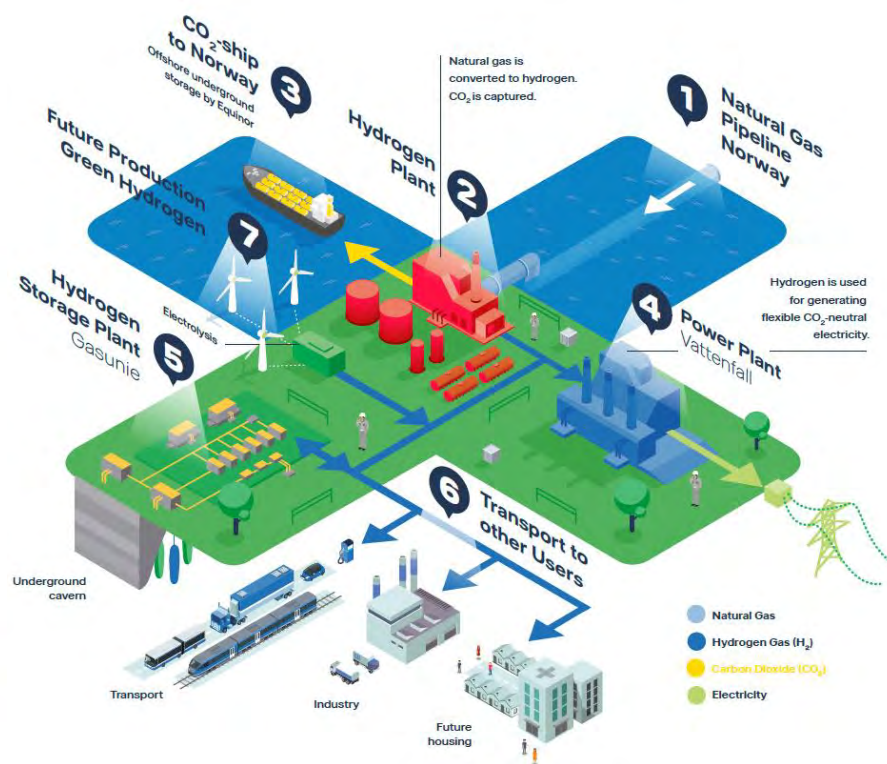
# Project timeline



# Zero Carbon Humber



# Magnum



# H2morrow





Thank you

Anna Korolko

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