H21
Workshop on Hydrogen Production with CCS
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EDF, Chatou, Paris
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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
Hydrogen production

\[ \text{CH}_4 + \text{H}_2\text{O} + \frac{1}{2}\text{O}_2 = 3\text{H}_2 + \text{CO}_2 \]
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 m³
Heat decarbonisation options

Natural gas
- 50 £/MWh
- 100 g/KWh

Electrification
- 200 £/MWh
- 50 g/KWh

Hydrogen
- 75 £/MWh
- 15 g/KWh
Project timeline

- 2019: Critical safety evidence
  - Hy4Heat
  - H21 NIC
  - Field trial

- 2020: Strategic evidence
  - H21 NoE
  - H21 Strategic modelling

- 2022: H21 Domestic and commercial metering

- 2023: H21 FEED study
Thank you

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