

Low Carbon Technology Deployment

CCS and H₂

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**Mission: To remove
millions of tonnes of
CO₂ per annum**

Energy Infrastructure: Today



Energy Infrastructure: Net Zero



Cluster Delivery



HyNet North West



Bacton BH₂



HyNet North West infrastructure



HyNet North West

HyNet Infrastructure

- CO₂ transport and storage facilities
- Facilities to capture CO₂ emissions
- Low-carbon hydrogen production
- A hydrogen pipeline network and salt caverns in which hydrogen can be stored ready for use

Demand-led decarbonisation



UK Government Announcement

Nearly £22bn pledged for carbon capture projects



DARREN STAPLES/PA

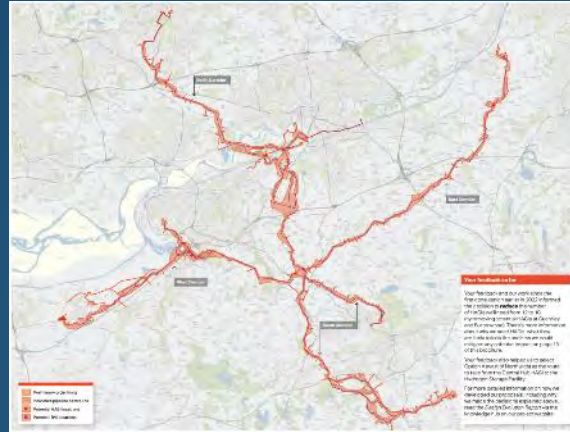
The prime minister made the announcement on a visit to the North West with Rachel Reeves and Ed Milliband



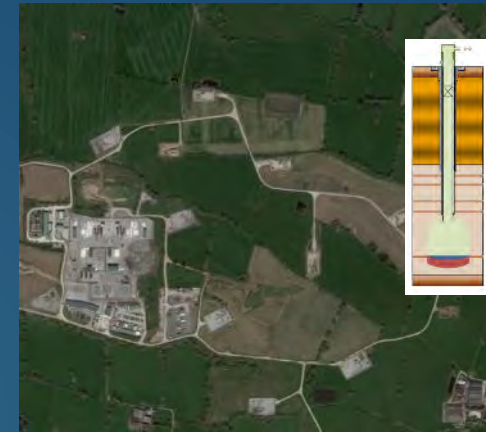
A Low Carbon Energy Ecosystem



H₂ Production



H₂ Network



H₂ Storage



H₂ Offtakers

CO₂ Storage

CO₂ Pipelines

CO₂ Capture

CO₂ solution



Focus on Need

Lesson #1

Focus on sectors needing solutions



ENCYCLIS



Viridor



ESSAR ENERGY TRANSITION
EET
HYDROGEN



Heidelberg
Materials

Why Hydrogen ? Decarbonising Fuels

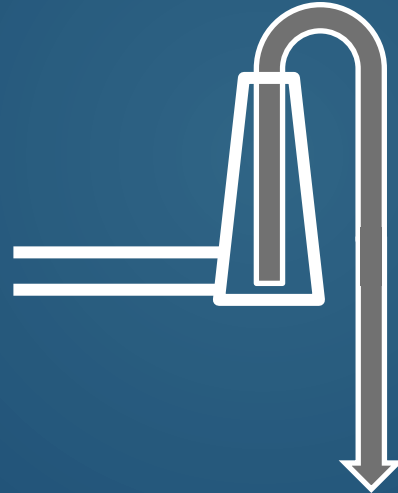
Unacceptable

Fuel in →



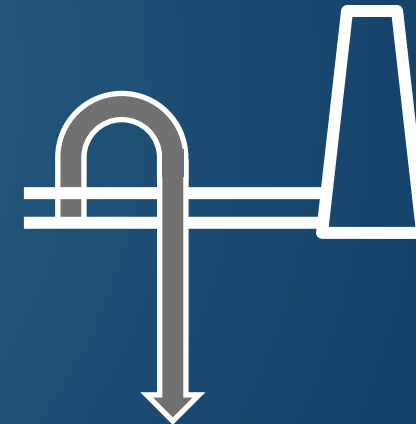
Unacceptable

Capture once
burned



Low pressure, low
concentration and
potentially
contaminated

Capture before
burning
(conversion to H_2)

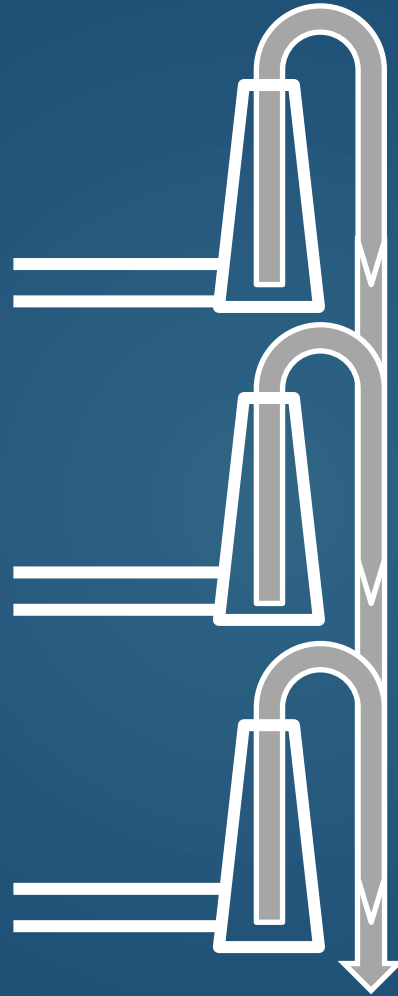


Capture from high pressure,
high concentration and
relatively pure streams
Futured Proofed

Decarbonising Fuels



Unacceptable



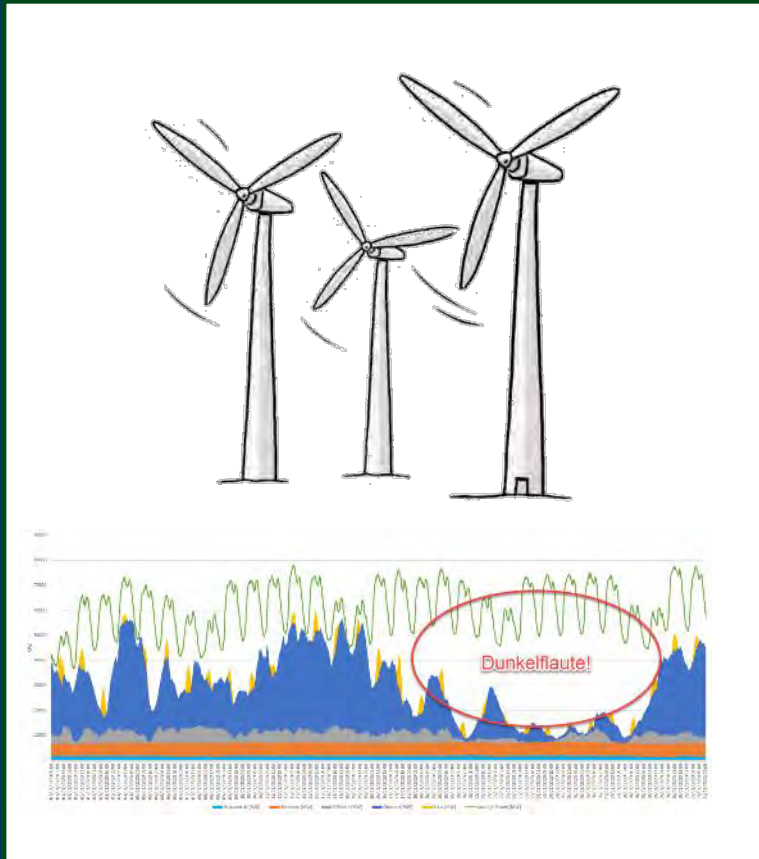
Multiple capture plants
& CO₂ network



Centralised capture & low
carbon gas network

Future proofed

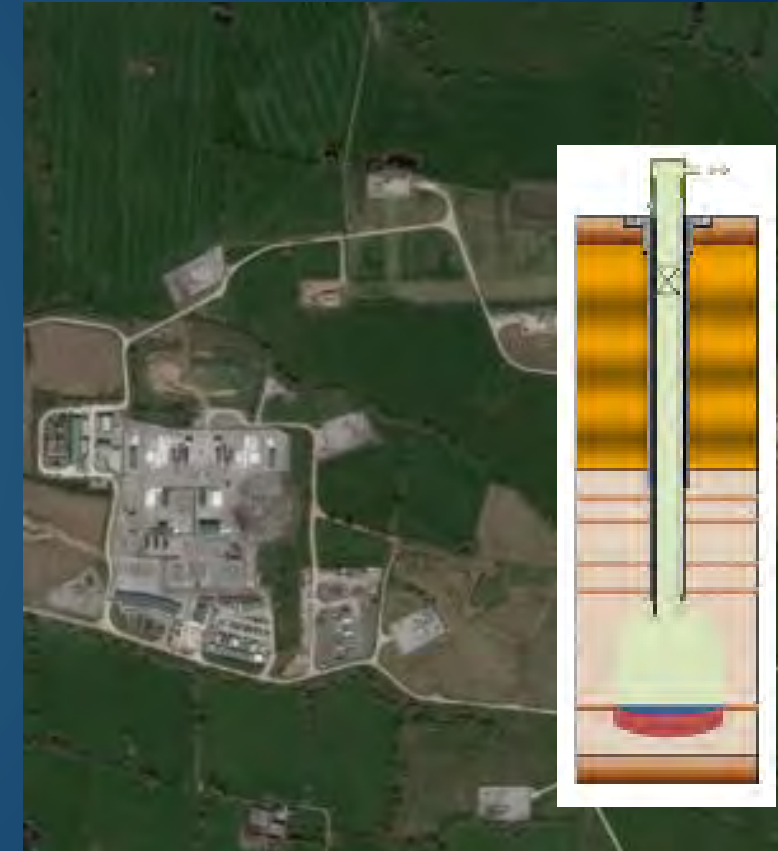
Resilient Low Carbon Electricity



Vital renewables



Manage intermittency



Hydrogen Storage

Lesson #2: The Journey



HyNet born
in 2016



Cluster
Commitment



Finishing line

HyNet

HyNet T1
Expansion



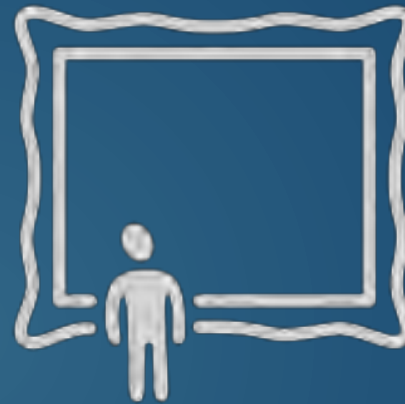
Unleash
more clusters

Lesson #3: Clusters & Planning

Partner Collaboration



- Consistent messaging
- Coordinated consultation
- Linked information



Big Picture

- Both broader vision and individual project elements
Includes stakeholder tours
- Consenting maps and timelines for transparency

Early & Proactive Engagement



- Address community concerns “Why” before “How”
- Strategic, long-term engagement with regulators
- Identify common issues across projects mitigate resourcing



Emerging Policy

- Proactively engage with national and regional policy development
- Critical National Priority status for net zero projects in the National Policy Statement.

Lesson #4: Be Family





An environmental and economic imperative

PEAK CLUSTER



Morecambe
Net Zero
CO₂
storage



IRISH SEA

Liverpool

Preston

Manchester

Northwich

Macclesfield

Buxton

Stoke-on-Trent

**Aggregate Industries
Cauldon cement plant**
Operational since 1957

**SigmaRoc Hindlow
lime plant**
Operational since 1903

**SigmaRoc Tunstead
lime plant**
Operational since 1882

**Tarmac Tunstead
cement plant**
Operational since 1929

**Breedon Hope
cement plant**
Operational since 1929

PEAK DISTRICT

Liver Building

River Mersey

Delamere Forest

Alderley Edge

Jodrell Bank

Salomon's Temple

Mam Tor

Ladybower Reservoir

PEAK CLUSTER

An environmental and economic imperative

The Peak Cluster cement and lime facilities together:

- Produce **40%** of the UK's lime and cement
- Employ approx. 2000 people
- Emit over **3 million tonnes** of CO₂ per year
- Account for over **23% of emissions** in Derbyshire and Staffordshire



Making it Happen

www.progressive-energy.com

