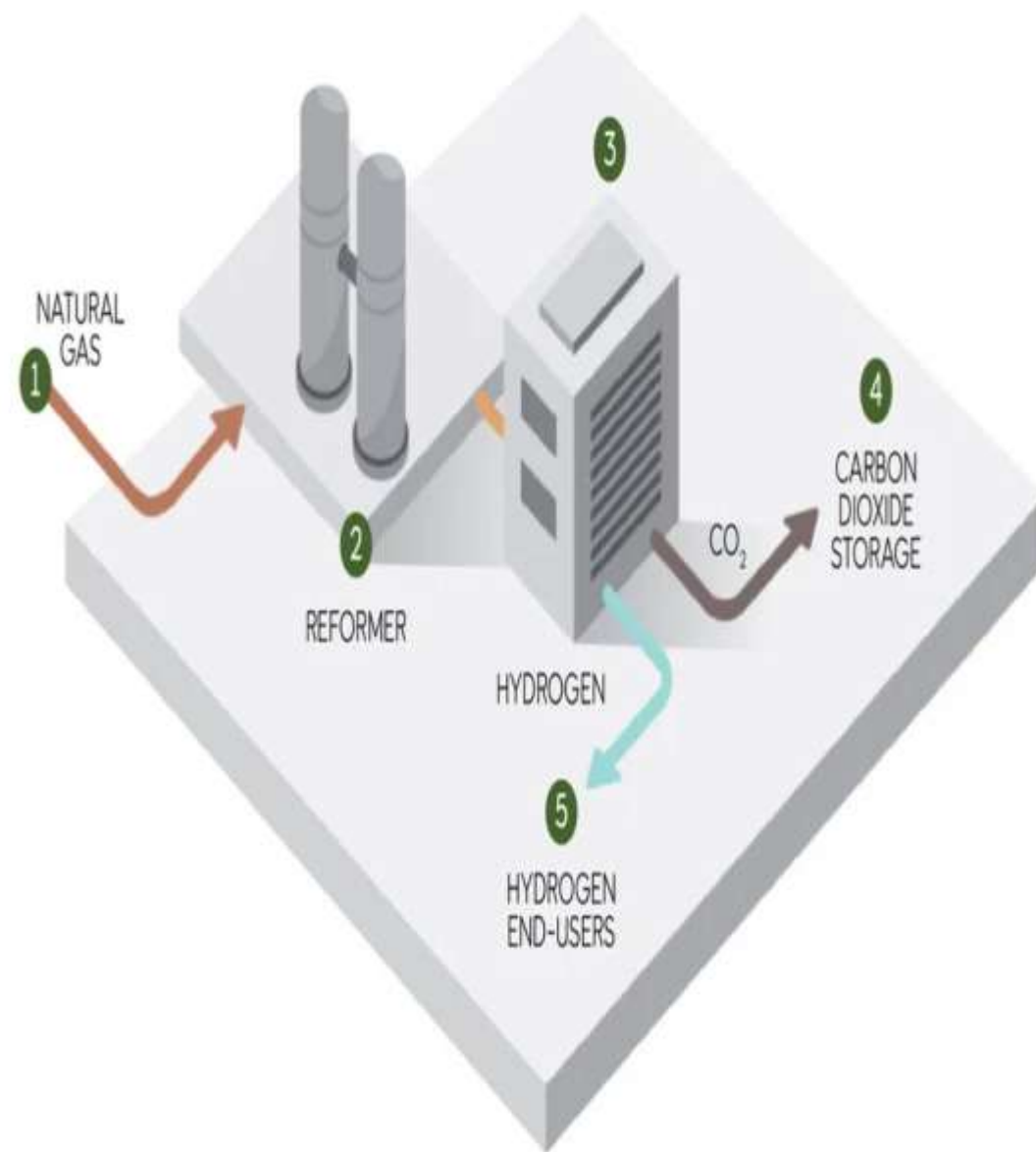


# H2H Supplier Event 25<sup>th</sup> & 26<sup>th</sup> November, 2021



Hosted and supported by:

Katheryn Gregory



[www.thesupplychainnetwork.co.uk](http://www.thesupplychainnetwork.co.uk)



[www.catchuk.org](http://www.catchuk.org)

## Safety moment

Always Safe

High Value

Low Carbon



## Safety in design

- Risk analysis in design
- ALARP
- Barrier management
- Avoid late design changes
- Good operability
- Emergency response

## Closed loop learning

- Internal
- External

I AM SAFETY



**Integrated in everything we do**

I always put safety and security first and understand my risks.  
Safety and security is what I do every day. I am a role model for safety and security.

I am **accountable, visible** and **engaged!**

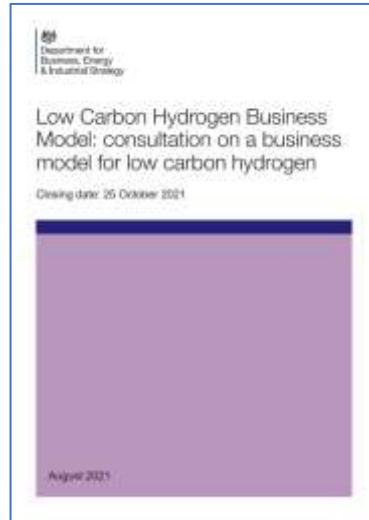
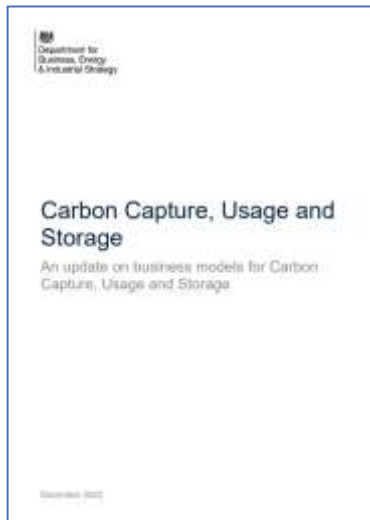




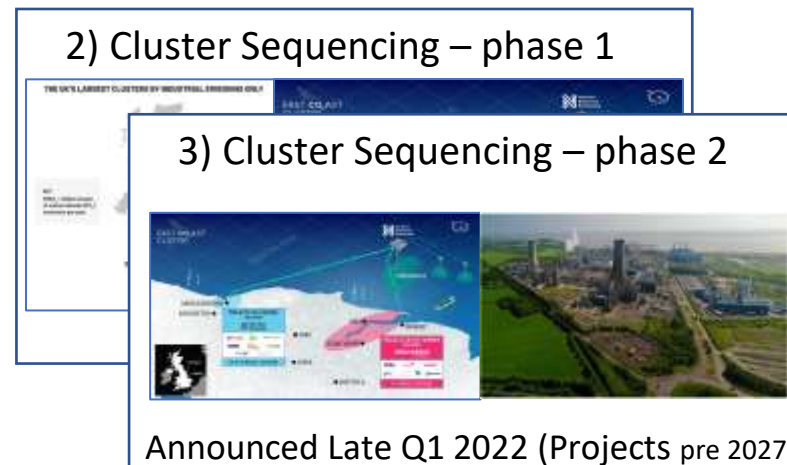
## 1) Policy and Legislation



## 2) Public:Private Funding



## 3) Business Models and Regulation



## 4) Government Selection and Negotiation

5) HMTreasury – The Affordability Envelope???



# EAST CO<sub>2</sub>AST CLUSTER

NORTH SEA

Northern  
Endurance  
Partnership



ENDURANCE

145km

103km

MIDDLESBROUGH ●  
DARLINGTON ●

## PROJECTS IN TEESSIDE INCLUDING

Net Zero  
Teesside



BOC



bp

CF Industries

kellas



NXT  
Power

suez

TV ERF

8 RIVERS

UP TO 10 MTCO<sub>2</sub>E CAPTURED

● YORK

● LEEDS

● SHEFFIELD

HULL ●

SCUNTHORPE ●

GRIMSBY

## PROJECTS IN THE HUMBER INCLUDING

ZEROCARBON  
HUMBER

drax

equinor

MITSUBISHI  
POWER

sse  
Thermal

TRITON POWER

uni  
per

VELOCYS

17+ MTCO<sub>2</sub>E CAPTURED





# EAST CO<sub>2</sub> AST CLUSTER

The Humber, including  
**ZEROCARBON**  
HUMBER

**drax**  
Negative emissions

BRIDLINGTON

**H2H SALTEND**

equinor TRITON POWER MITSUBISHI POWER

Blue hydrogen production, Hydrogen-blend CCGT, Low carbon chemicals & maritime fuel

BEVERLEY

HULL

Saltend Chemicals Park & Saltend Power Station

Immingham/Killingholme

GRIMSBY

SCUNTHORPE

**KEADBY 3 CC**

sse Thermal equinor

CCGT & Carbon Capture

equinor

Blue hydrogen

LOCATION TBC

**HYDROGEN HUB**

uni per

Blue and green hydrogen

**VELOCYS**

Waste to jet fuel

DONCASTER

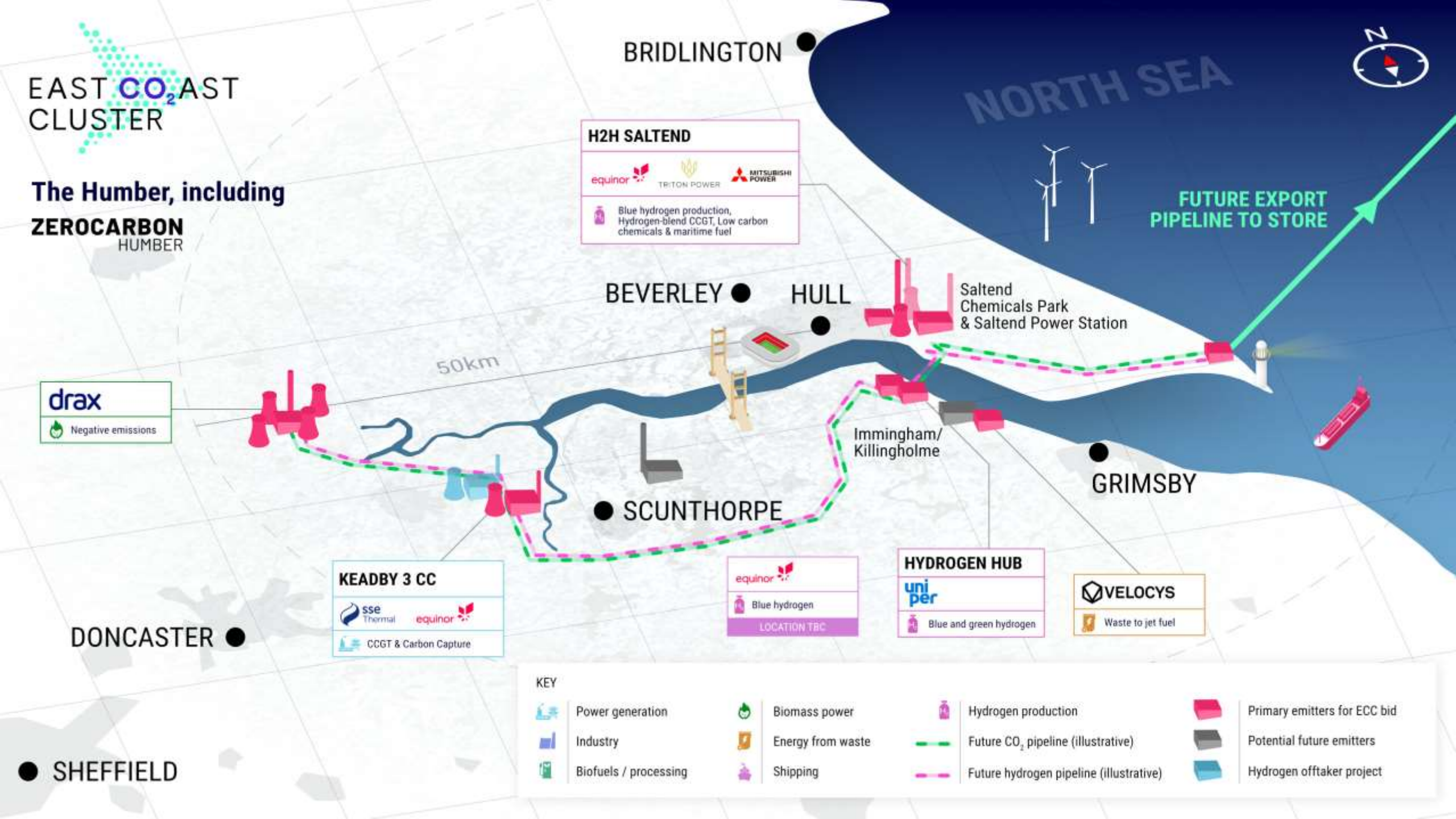
SHEFFIELD

**KEY**

Power generation	Biomass power	Hydrogen production	Primary emitters for ECC bid
Industry	Energy from waste	Future CO <sub>2</sub> pipeline (illustrative)	Potential future emitters
Biofuels / processing	Shipping	Future hydrogen pipeline (illustrative)	Hydrogen offtaker project



**FUTURE EXPORT PIPELINE TO STORE**



# Transition to a hydrogen economy across the North

- 'Deep decarbonisation' by converting the UK gas grid to hydrogen
- North of England as a starting point equating to 1/7<sup>th</sup> of UK's homes (12.5 GW installed capacity) with view to a UK-wide rollout





# Equinor Hydrogen to Humber (H2H) 2021-2030



- Demonstrate blue hydrogen production as one viable technical and commercial solution to Net Zero 2050 ambition
- UK government climate policy ambition within a Public Private Partnership (PPP) framework
- Operationalize the H2 Equinor in Humber, through **standardization**

- A UK/local context

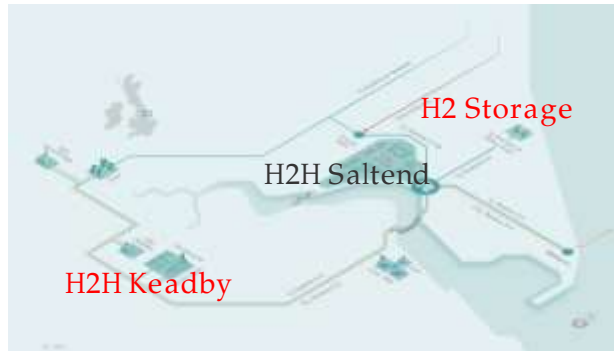
## Demonstrate the value chain – H2H Saltend 2026/2027



### 600 MW H<sub>2</sub> production

- Decarbonise Saltend Chemicals Park
- Incl 300MW ammonia plant
- Cost competitive and agile

## Scale up the value chain – H2H Southbank 2028/2029



### 1200-1500 MW additional H<sub>2</sub>

- Blend H<sub>2</sub>/gas at Keadby 2
- Supply to new H<sub>2</sub> power plant run on 100% H<sub>2</sub>
- Albrough Hydrogen storage

## 100% conversion of natural gas to hydrogen



### Decarbonisation heating sector

- H21 North of England project
- Developed with Cadent and Northern Gas Networks

- Large Direct Foreign Investment 2023-2029
- Job creation during construction/operation
- UK supply chain engagement





# H2H Saltend development 2026



## Design Competition



Design competition/EPC execution/O&M

Sept 2022  
Selection of Tier-1  
contractor

Late 2023  
Final Investment  
Decision (FID)

4Q2026  
Start-up

Design  
competition

Front End  
Engineering  
Design (EED)

Engineering, Procurement,  
Construction, Commissioning and  
start-up

Operation &  
Maintenance

## Site Selection



2026/2027

2028/2029

## Consent and Permitting



Local public engagement/community

## CO2/H2 infrastructure

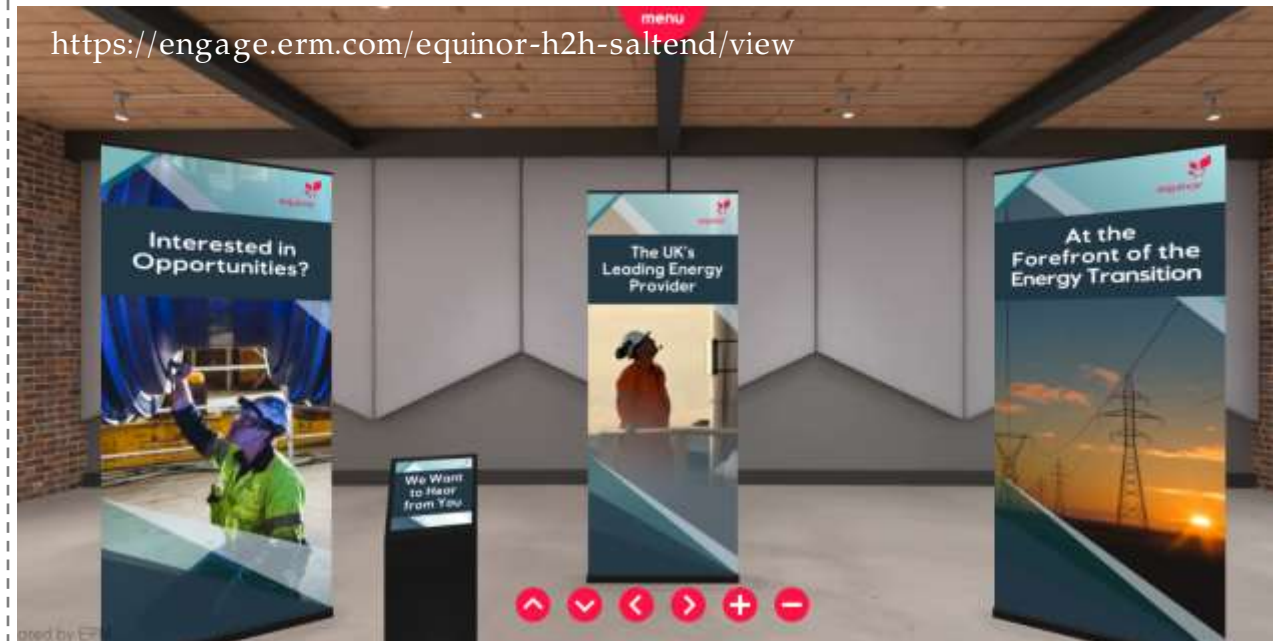


Value chain deployment



Unique decarbonisation strategy for the UK's most established chemicals site

<https://engage.erm.com/equinor-h2h-saltend/view>





# NUCLEAR AMRC

ADVANCED MANUFACTURING RESEARCH CENTRE

Advancing UK manufacturing



The  
University  
Of  
Sheffield.



Innovate  
UK



**NUCLEAR AMRC**  
ADVANCED MANUFACTURING RESEARCH CENTRE

## Building the supply chain for H2H Saltend

Jay Shaw, Programme Director

25/26 November 2021



## Our mission



To help UK companies win work in nuclear and other high-value manufacturing sectors.

Manufacturing innovation:

- Applying innovation.
- Increasing productivity.

Supply chain development:

- Increasing capability & capacity.
- Fit For... sector programmes



# Supply chain development

## Targeted support for manufacturers

Helping suppliers raise quality and develop capabilities to meet sector needs.

Building links between manufacturers and the top tier.

- Fit For Nuclear.
- F4OR and other sectors.
- Nuclear Sector Deal delivery.
- Demand modelling.





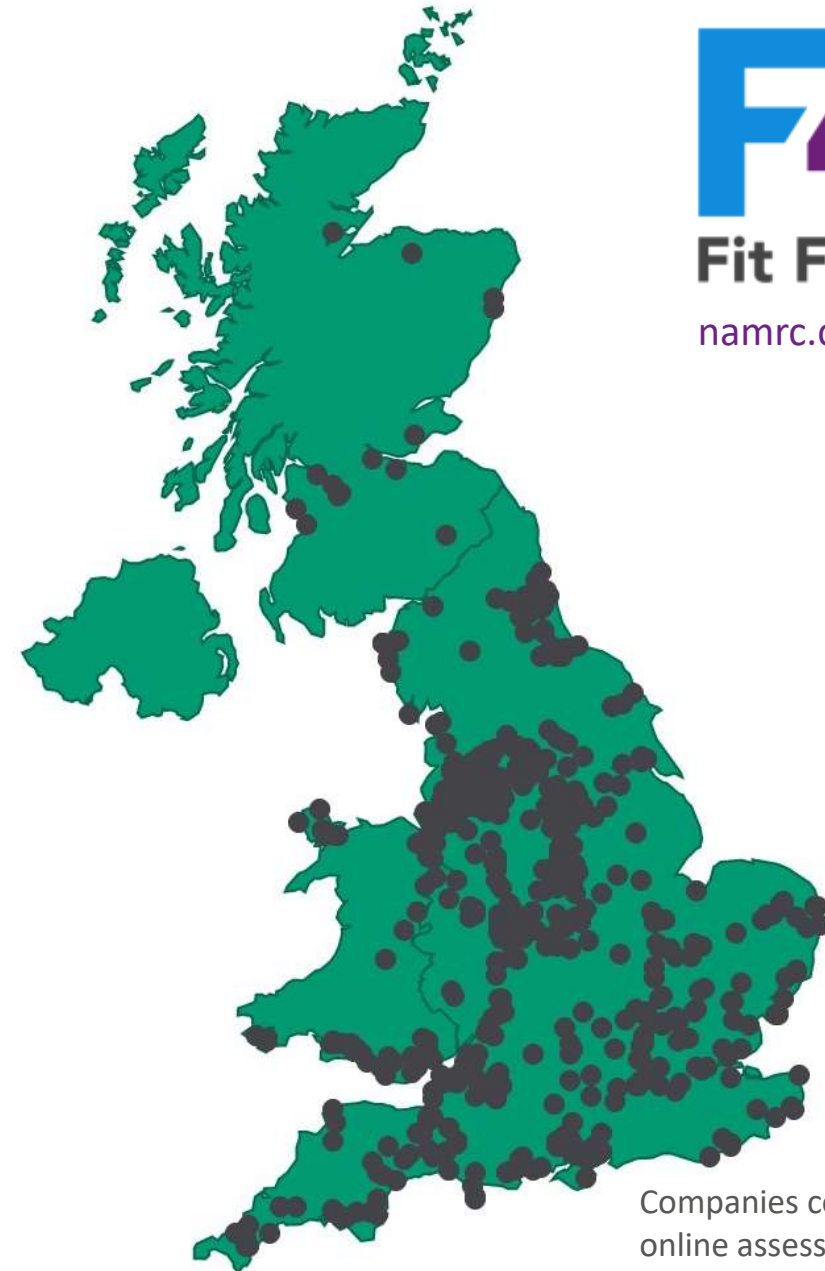
# Fit For Nuclear

## Test and develop your nuclear readiness

- Free online self-assessment.
- Site visit.
- Expert analysis and action plan.
- Ongoing support.

## Reach and impact

- c860 companies taken self-assessment.
- c120 currently granted F4N.
- £1.4 billion of new contracts won.



Companies completing  
online assessments

**F4N**  
**Fit For Nuclear**  
[namrc.co.uk/services/f4n](http://namrc.co.uk/services/f4n)





# Zero Carbon Humber



## Understanding the opportunities

- Develop & analyse demand data.
- Focus on high-value components.
- Assess supply chain readiness.
- Match to potential suppliers.

## Sector-focused supply chain support

- Targeted support for hydrogen & CCUS.
- Developing business capabilities.
- Removing barriers to entry.



## Two new sector-specific programmes

**F4H<sub>2</sub>**  
Fit For Hydrogen

Launching summer 2022

- 20 companies in pilot.
- Recruitment early 2022.
- 12-18 month journey.

To register interest:

[anna.boland@namrc.co.uk](mailto:anna.boland@namrc.co.uk)

**F4CCUS**  
Fit For Carbon Capture,  
Usage & Storage





# NUCLEAR AMRC

ADVANCED MANUFACTURING RESEARCH CENTRE

web: [namrc.co.uk](http://namrc.co.uk)

email: [jay.shaw@namrc.co.uk](mailto:jay.shaw@namrc.co.uk) / [t.Robinson@amrc.co.uk](mailto:t.Robinson@amrc.co.uk)

tel: 0114 222 9900

Twitter: [@NuclearAMRC](https://twitter.com/NuclearAMRC)





# H2H Supplier Event

Jonathan Lufkin

Proud history, bright future.



## KBR

### Process Licensor and Engineering Designer



Revenue

Full year 2020

**\$5.8 B**



Employees

**29,000+**



Global  
Presence

**80+** Countries



- Delivering Sustainable Technology Solutions to UK Government and Companies
- Designed and licensed 262+ grassroot hydrogen, syngas, ammonia plants since 1943:
- 250 syngas (H<sub>2</sub> & CO) generation from hydrocarbon reforming – including process CO<sub>2</sub> capture
- 244 ammonia production, ~50% of world's ammonia
- Technology evaluation, concept and feasibility studies, FEED and Detailed Designs on CCUS for over 60 years
- Hub office in Leatherhead, UK - capacity 1,000+; Full project lifecycle capability

## Tecnimont

### Process Licensor and EPC Contractor

MAIRE TECNIMONT GROUP is present worldwide in the following business:

PETROCHEMICALS | FERTILIZERS | OIL & GAS REFINING | ENERGETICS & NEW POWER | GREEN CHEMISTRY & RENEWABLES



Revenue

Full year 2020

**€2.6 B**



Employees

**9,000+**



Global  
Presence

**45+** Countries

- Over **50 operating companies** worldwide (I.e. MET T&S, UK)
- Over **1,500 successfully delivered projects**
- Over **9,000 people** in the overall group with 3,000 professionals in E&I



- KBR leading pre-FEED and Tecnimont leading FEED and EPC phases
- Technology being delivered out of KBR UK “Centre of Excellence” in UK
- KBR / Tecnimont have successfully executed and delivered multiple similar projects together (pre-FEED, FEED, EPC and O&M). Tried and tested delivery model
- KBR / Tecnimont know UK supply chain well and will seek to give UK service companies maximum opportunity
- It is important to register on the Tecnimont system as Tecnimont will lead EPC
- Main opportunities for UK suppliers will be in EPC project execution and O&M phase. This will be in circa 2023





**A**

## SUPPLY OF MATERIAL

About 200  
Purchase  
Orders to be  
awarded

Material  
required  
during  
Construction  
2023-2026

**B**

## CONSTRUCTION WORKS SUBCONTRACT

Subcontract/s  
Direct award by  
Tecnimont  
2023

Subcontracts  
Award by  
Tecnimont  
subcontractors  
2023-2026

**C**

## AFTER SALES OPPORTUNITIES WITH AWARDED VENDORS

Local services for  
Original  
Equipment  
Manufacturers

Italy-UK  
cooperation

**D**

## MAINTENANCE SERVICES

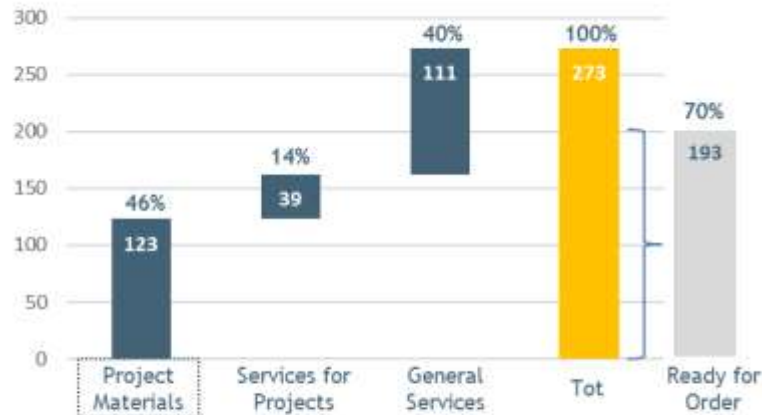
Routine  
maintenance  
and shutdown  
services

2026 onwards

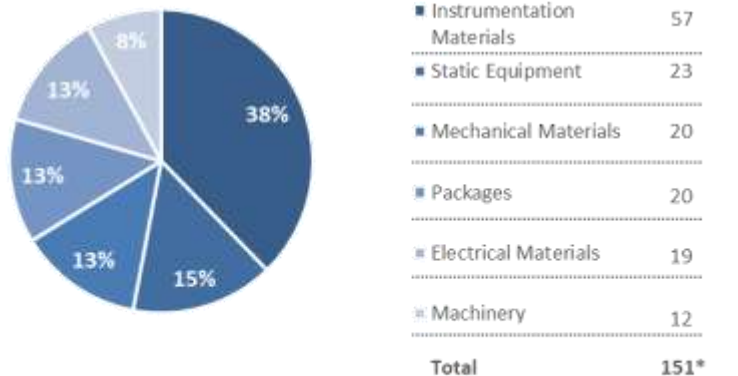


## CURRENT MET RELATIONSHIP WITH UK SUPPLY CHAIN

How Many Suppliers does Maire Tecnimont have in UK?

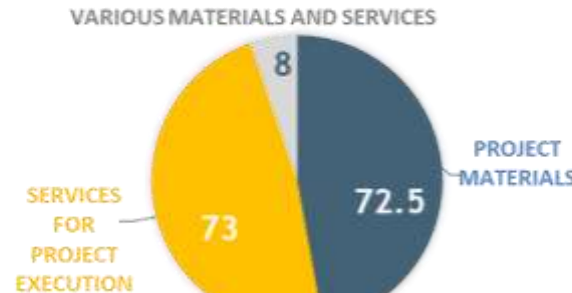


Split of Project Material Suppliers By Discipline\*



Maire Tecnimont booking with UK Suppliers in MEUR

Total UK Project Material booking: 135 M€



Project Material booking by discipline

Discipline	Millions €
ELECTRICAL COMPONENTS & SYSTEM	€ 1,5
INSTRUMENTATION	€ 6,5
PACKAGES	€ 40,0
ROTATING EQUIPMENT	€ 10,0
STATIC EQUIPMENT	€ 13,0
MECHANICAL	€ 1,5
<b>Total</b>	<b>€ 72.5</b>

## POTENTIAL OPPORTUNITIES

### 1 SUPPLY OF MATERIAL

- About 200 Purchase Orders to be awarded
- Material required during Construction 2023-2026

### 2 CONSTRUCTION WORKS SUBCONTRACT

- Subcontract/s Direct award by Tecnimont 2023
- Subcontracts Award by Tecnimont subcontractors 2023-2026

### 3 AFTER SALES OPPORTUNITIES WITH AWARDED VENDORS

- Local services for Original Equipment Manufacturers
- Italy-UK Cooperation

### 4 MAINTENANCE SERVICES

- Routine maintenance and shutdown services
- 2026 onwards



## Contact us

If you are interested to be part of H2H Project as Supplier or Sub-Contractor drop your Business Card and you will be contacted by Tecnimont staff

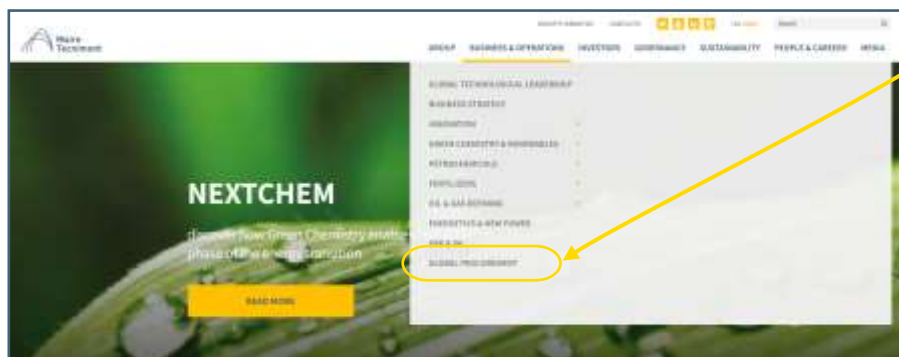
Or else, for spontaneous application please:

→ Complete the Qualification process on SupplHi platform at the address <https://vendor.supplhi.com> or visit our corporate site: [www.mairetecnimont.com](http://www.mairetecnimont.com)

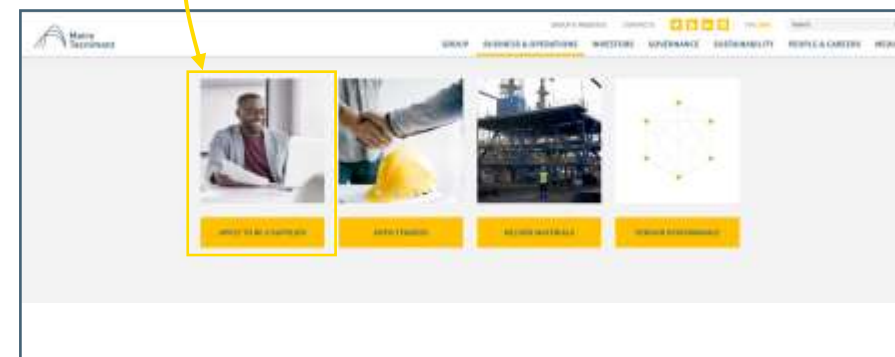


Project Vendor  
List

BUSINESS & OPERATION → GLOBAL PROCUREMENT



APPLY TO BE A SUPPLIER



→ For any other issue write email

To: [L.Tartara@tecnimont.it](mailto:L.Tartara@tecnimont.it)



Making our world more productive

# Introduction to Linde

Hydrogen to Humber (H2H)  
Supplier Event

Mark Finney – Lead RUK Project Execution



Linde is a leading industrial gas and engineering company  
Synergies are Built on Strong Engineering Foundations



Gases

Engineering



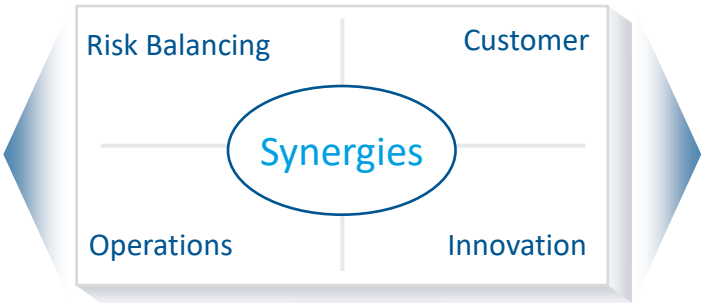
2020 Sales<sup>(1)</sup>  
USD 24,392 million

World-class operations of over  
1,000 plants



BOC (British Oxygen Company) is  
the largest provider of industrial,  
medical and special gases in the  
UK and Ireland

BOC operates and maintains several  
major air separation and hydrogen  
plants across the UK and Republic of  
Ireland (~200 employees in O&M)



2020 Sales  
USD 2,851 million

Technology-focused with  
more than 4,600 plants  
built

Four technology  
fields (Air Separation |  
Hydrogen & Syngas |  
Natural Gas |  
Petrochemicals)

(1) Combined sales of business segments Americas, EMEA and APAC and Other

# Linde Engineering: Product Segments



## For Linde and for Third-party Customers

### Air Separation



## For the Chemical and Energy-related Industries

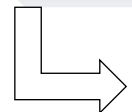
### Petrochemicals



### Hydrogen and Syngas



### Natural Gas



600 Hydrogen and Syngas plants built worldwide by LE, more than 150 plants operated by Linde Gas



# Linde Engineering: Supplier/Subcontractor Qualification Process



Suppliers/Subcontractors can contact Linde via the following email addresses:

- **Procurement**  
(Static/Rotating Equipment, E&I, Steel Structure, Piping & Bulk)  
SALTEND.SD\_PROCUREMENT@PROCORR.LINDE.COM
- **Construction, Civil, Fabrication**  
SALTEND.SD\_CONSTRUCTION@PROCORR.LINDE.COM
- **Services**  
(Accommodation, other site related services)  
SALTEND.SD\_SERVICES@PROCORR.LINDE.COM



## Steps:

1. Potential Supplier/Subcontractors contact Linde.
2. LE will issue specific questionnaires.
3. Submit questionnaire to contractors.
4. Contractors fill out questionnaire.
5. Contractors submit questionnaire to Linde.
6. PQ team starts parallel evaluation.
7. Final evaluation and recommendation of each discipline.
8. Add Supplier/Contractor to Linde project specific Vendor List.
9. Participation in bidding phase (next slide).
10. Performance of audits for competitive suppliers.

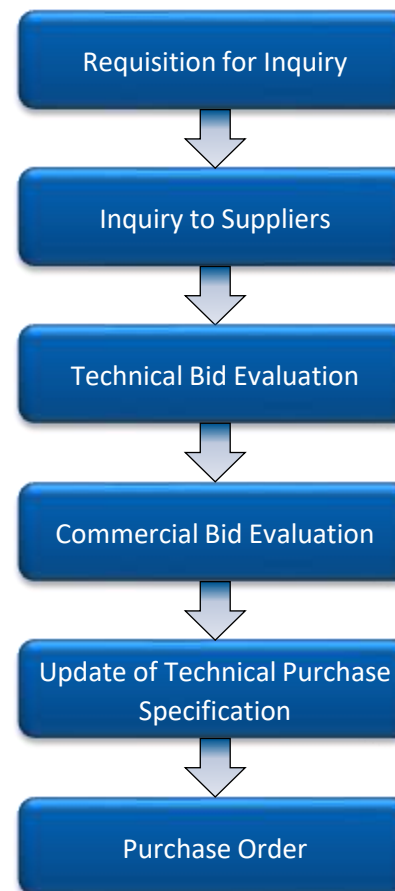
# Linde Engineering: Inquiry Process



## Pre-FEED/Proposal Phase:



## Project Execution Phase:



Performance of Audits

## Timeline:

- Overall timeline given by Equinor.
- Issue of Inquiries to pre-selected suppliers for EPC bidding phase expected in Q1/2022 based on current Equinor timeline.



Making our world more productive

**Thank You  
for Your Attention**







# Balfour Beatty

Joining forces for long lasting relations in the UK Energy Transition journey

Marc Bouchez, Consortium Project Director  
Barry Goldsworthy UK Interface Manager  
Richard Beament, Dpty Consortium Project Director  
Iain Wilson , Balfour Beatty Major Projects



TECHNIP  
ENERGIES

Hydrogen industry's global leader



## Energy transition is our business

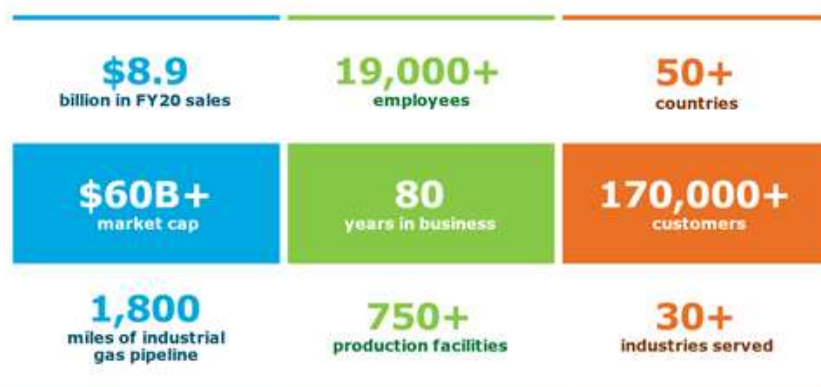
- Applying our core capabilities to today and tomorrow's key energy challenges
- 6Bi€ revenue
- 16.5Bi€ backlog
- 15.000 employees in 34 Countries
- 25+ leading proprietary technologies
- 450 projects under *exécution*, EPC skills
- 60+ years of operations experience



Technip Energies and Air Product, in Alliance since 1992, have formed the TENAP Consortium for H2H

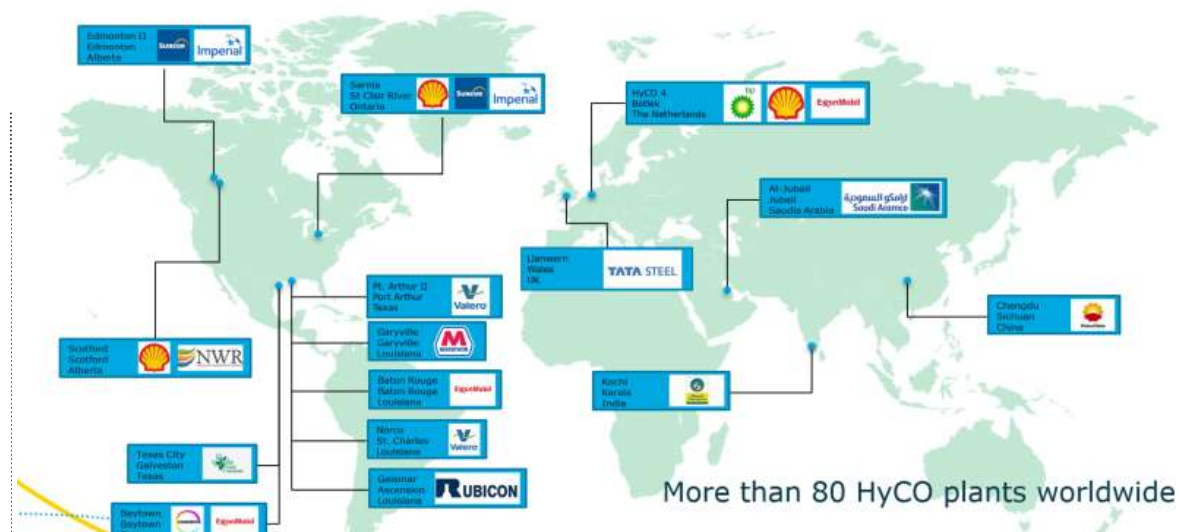
## • Think Global, Act Local

Air Products is a leading global industrial gas company, built on deep experience, strong performance and high ambitions



... and committed to invest > \$30 bn in capital for the 10-year period to 2027

## Air Products Global HyCO Presence



## Air Products Operational Experience in the UK





## A proud British business

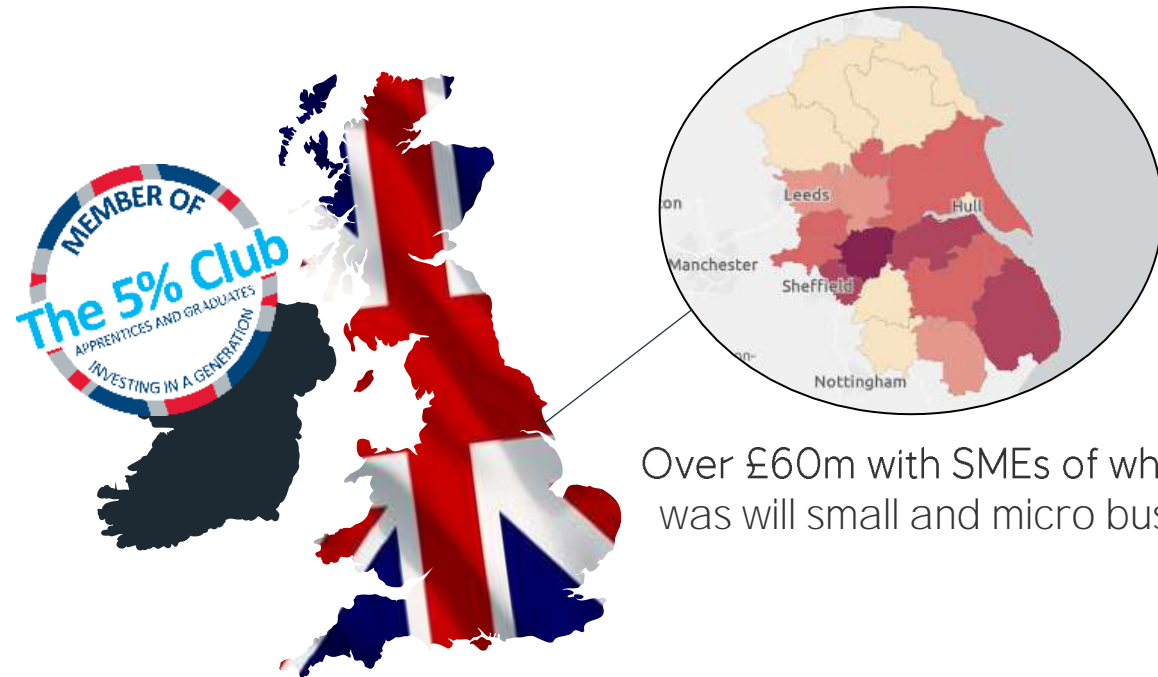
12,000 employees across the UK with over 6% in earn & learn roles

## First UK contractor to commit to a specific target spend with SMEs

We exceed the Government's target for SME supply chain spend at 40%, and can track our spend by location to support the Levelling Up agenda



A strong local presence  
in 2020 we had 59 live contracts within a 50 miles radius of site



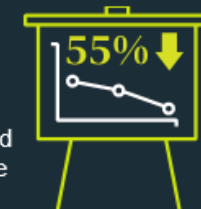
## Strong safety record

For six consecutive years, we've improved our Lost Time Injury Rate  
**66% improvement since 2014**



## Clear carbon and waste targets

We've seen a 55% reduction in carbon since 2010 and have bold targets and ambitions to go Beyond Net Zero and Generate Zero waste by 2040



## How the TENAP Consortium will engage on the H2H Journey?



Behavioral | Holistic  
**Safety**



Performance | Local partnership  
**Project economics**



Quality | Robustness  
**Certainty / Product delivery**



Integrated | Cooperation  
Trust | Extended Supply Chain  
**Partnership**



H2 & Carbon Capture  
best in Class proven Tec  
**Background Expertise**

**Cementing fundamental foundations for common success**

### Technip Energies contact point:

**Philippe Deschamps**

Global Sourcing & Procurement

[philippe.deschamps@technipenergies.com](mailto:philippe.deschamps@technipenergies.com)

### Air Products contact point:

**Phil Rigby**

Director Procurement & Contracts EMEA

[H2HEVENT@airproducts.com](mailto:H2HEVENT@airproducts.com)

### Balfour Beatty contact point:

**Sarah Jennings**

Procurement

[Sarah.jennings@balfourbeatty.com](mailto:Sarah.jennings@balfourbeatty.com)



Now starting the Pre-qualification phase to assess the local market