Together

It is possible!

Humber Industrial Cluster Skills Update

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October 2022

www.humberindustrialclusterplan.org

HICP

Together it is possible!

HICP project partners

BRITISH STEEL

PHILLIPS 66

drax

equinor

sse Thermal | For a better world of energy

VPI

centrica storage

nationalgrid ventures

Strategic Observers

Harbour Energy

Singleton Birch

PRAX

EP SHB

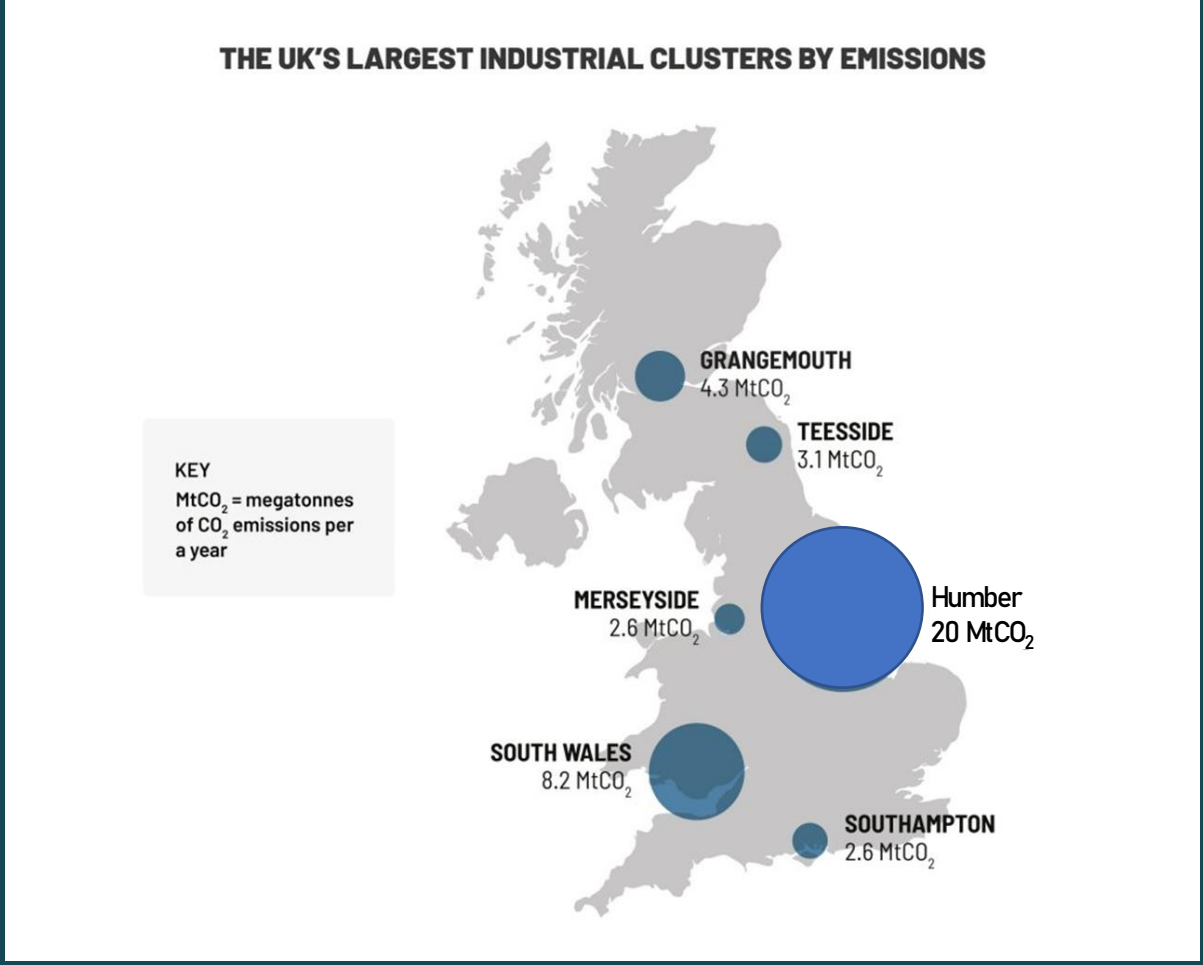
uniper

HEY Hull and East Yorkshire Local Enterprise Partnership

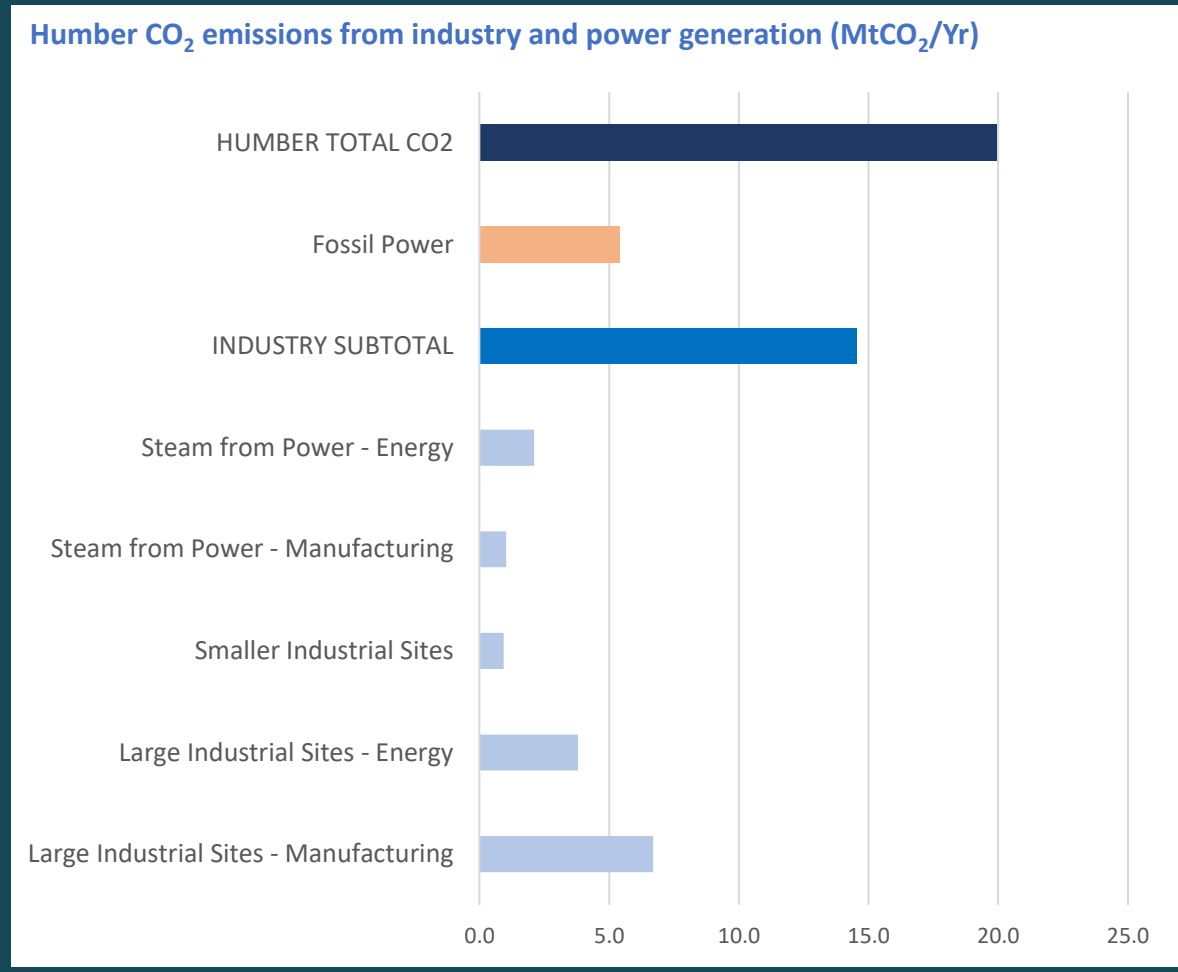
CATCH

UKRI UK Research and Innovation

Humber emissions in the UK



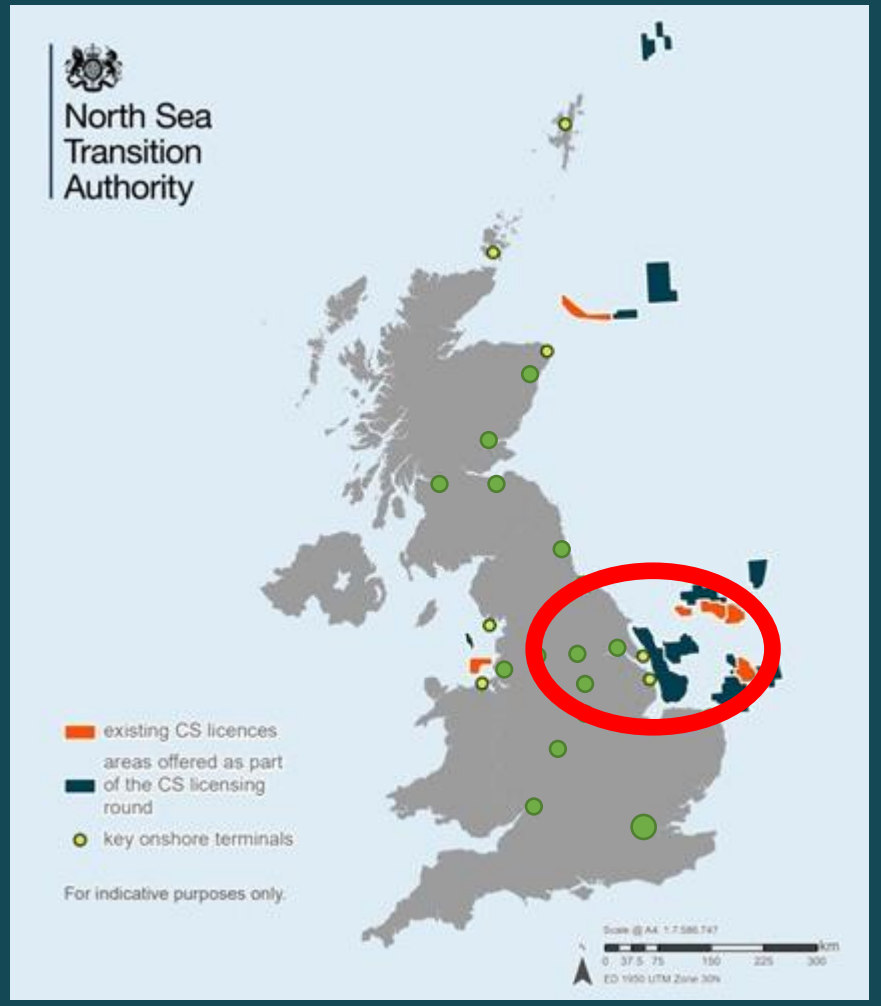
Source: Element Energy, Humber updated 2021



Source: Element Energy, Humber 2021

Why the Humber ?

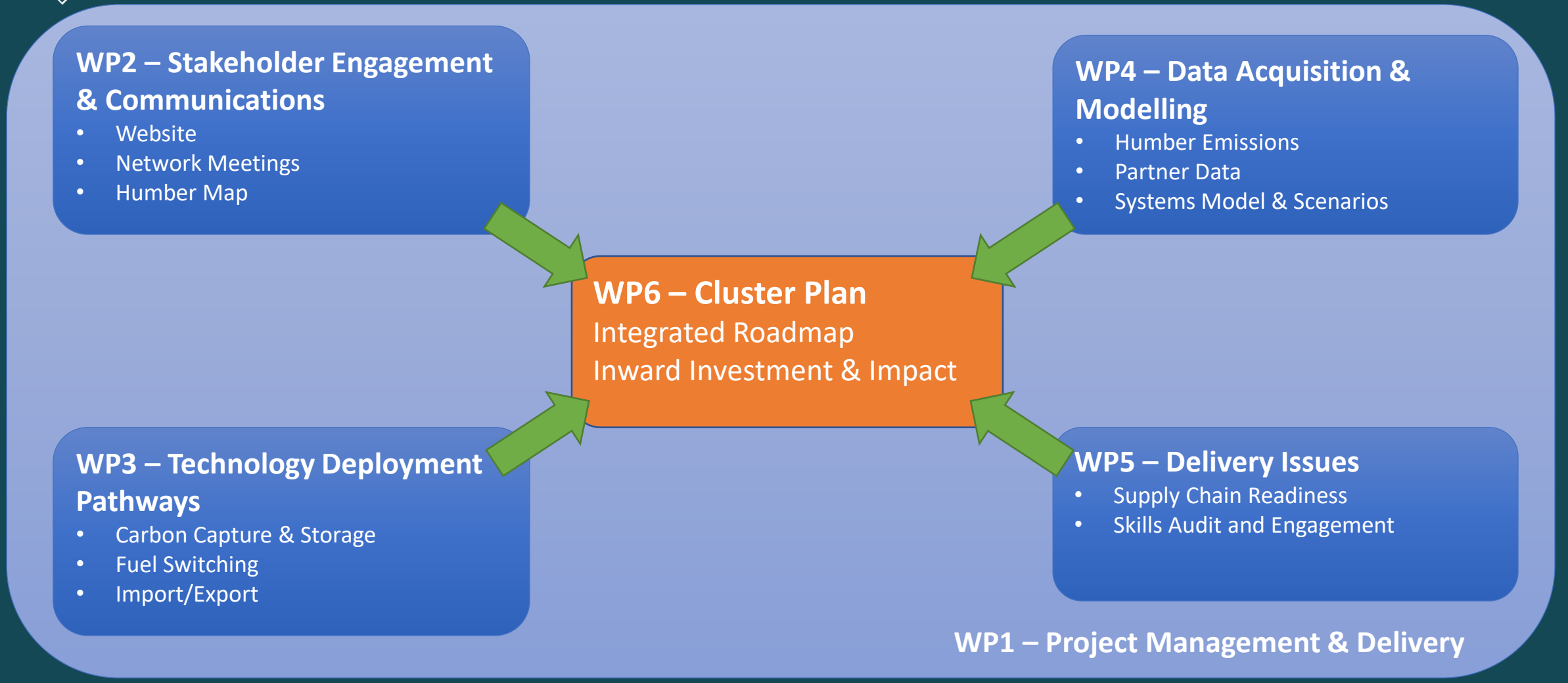
- UK's largest industrial cluster
- Proximity to planned CO_2 storage sites in southern north sea
- Proximity to Hydrogen storage options (previously, natural gas)
- Proximity to renewable power – biomass, wind (negative emissions)
- Process operations and supply chain capabilities
- Proximity to major UK conurbations/clusters & export facilities



HICP Summary

- UKRI-funded £2.6M project, led by CATCH & HEY LEP
- 8 private sector partners, 5 Strategic Observers
- Key work packages:
  - Systems Model
  - Risks & Barriers to deployment – markets, policies, regulatory & social
  - Supply Chain & skills study (2 parts)
- Project set to deliver our recommendations in the Cluster Plan by 31st March 2023

HICP Work Packages



The Humber: A 2030 Vision for Industrial Decarbonisation

HICP

px SALTEND CHEMICALS PARK

PENSANA's £100m rare earth processing facility is a world's first that produces earth oxides used in the manufacture of powerful permanent magnets.

INEOS operates a modern world-scale chemical plant producing ethyl acetate.

TRICOYA VENTURES operates the world's first Tricoya® wood elements manufacturing plant.

EQUINOR is developing the HYDROGEN TO HUMBER (H2H) SALTEND blue hydrogen production plant, which will provide around 600MW of low carbon hydrogen to decarbonise industrial users.

The **VIVERGO** Fuels plant will manufacture Bioethanol in early 2022 and help cut transport CO2 emissions by up to 750,000 tonnes per year.

TRITON POWER

ZERO CARBON HUMBER is a partnership formed to make the Humber the world's first net zero carbon industrial cluster through the production of low carbon hydrogen and CCS.

World-leading researchers from across the **UNIVERSITY OF HULL** are tackling global challenges/climate change and pioneering low-carbon innovation and offshore wind energy, including at its specialist Energy and Environment Institute (EEI) and Aura consortium.

DRAX

DRAX is set to run the world's first carbon negative power station with the largest decarbonisation project in Europe, reducing its emissions by more than 90%.

The River Humber is the **LARGEST** deep water estuary on the UK East Coast

RIVER HUMBER

BRITISH STEEL's ambition is for low-embedded carbon steel production with a phased reduction of CO2 intensity. Its Low-Carbon Roadmap will deliver net zero steel by 2050 and significantly reduce CO2 intensity by 2035.

SINGLETON BIRCH has its own Anaerobic Digestion facility which generates 70% of the site power consumption and has teamed up with **ORIGEN** to develop a new way of producing lime to remove carbon dioxide from the atmosphere.

KEADBY 3

BRITISH STEEL

SSE THERMAL and **EQUINOR** are developing a new CCS-equipped power station, Keadby 3 Carbon Capture Power Station, which could be operational by the mid-2020s, and the world's first major 100% hydrogen-fired power station, Keadby Hydrogen Power Station, which could be operational by 2030.

PORT OF HULL

The almost £500m **ABLE** Marine Energy Park (AMEP) is a bespoke port facility for the Renewable Energy Sector, potentially Europe's largest new port development.

The Humber has seen **£40bn** investment over the last eight years (2013 - 2021)

ABP's Port of Hull is home to Europe's **LARGEST** offshore manufacturing, logistics and port facilities on a site equivalent to 78 football pitches thanks to the £190m joint investment by **ABP** and **SIEMENS GAMESA**

The Humber Ports are the UK's busiest trading complex, handling **77m** tonnes of cargo worth **£75bn** each year

PORT OF IMMINGHAM

PORT OF GRIMSBY

HUMBERSIDE AIRPORT

Project Oyster is the innovative 'marinised' electrolyser project for renewable hydrogen production. It is integrated with offshore wind turbines and located at the **ØRSTED** East Coast Hub.

The Humber is the **UK'S ENERGY ESTUARY**

NORTH SEA

SSE THERMAL and **EQUINOR** are developing plans for one of the world's largest hydrogen storage facilities at the existing Aldbrough site. Aldbrough Hydrogen Storage could be storing low-carbon hydrogen by 2030.

The Humber Freeport is one of eight areas in the UK – a 45km area expanding across both banks of the Humber, bringing **c 7,000** jobs, and making the region a **GLOBAL GATEWAY**

The £200m **YORKSHIRE ENERGY PARK** combines on-site clean energy generation, data storage, education, R&D alongside business in a high quality campus setting and is to create c.4480 gross jobs.

The **EAST COAST CLUSTER**, a collaboration between ZERO CARBON HUMBER, NET ZERO TEESSIDE and NORTHERN ENDURANCE PARTNERSHIP, stands ready to remove 50% of the UK's industrial cluster CO2 emissions.

CENTRICA STORAGE is developing a project to convert the Rough gas storage reservoir into what would be the world's first and largest low carbon offshore hydrogen storage facility.

CENTRICA STORAGE

EASINGTON

NATIONAL GRID VENTURES' HUMBER LOW CARBON PIPELINES project is set to create an onshore network of underground pipelines for the Humber to transport captured Carbon Dioxide and Hydrogen as part of the ZERO CARBON HUMBER project.

RWE HUMBER GATEWAY

BP, ENI, EQUINOR, NATIONAL GRID, SHELL and TOTAL formed the **NORTHERN ENDURANCE PARTNERSHIP (NEP)** to develop offshore carbon dioxide (CO2) transport and storage infrastructure in the UK North Sea, with BP as operator.

SSE RENEWABLES, EQUINOR & ENI **DOGGER BANK**

The Humber is home to 6 offshore wind farms including the world's **LARGEST**, Hornsea One, with a further 2 in construction and 3 in development.

ØRSTED HORNSEA FOUR

ØRSTED HORNSEA TWO

ØRSTED HORNSEA THREE

ØRSTED HORNSEA ONE

The **HUMBER OFFSHORE WIND CLUSTER** is the UK's most established offshore wind cluster.

ØRSTED WESTERMOST ROUGH

FAST FACTS

The Humber is home to Europe's **LARGEST** bio-mass power station with potential for **16Mtpa** of BECCS - 1/4 of the UK's total target figure.

c. 50,000 new jobs created across the Humber industrial clusters as a result of deployment of CCS and hydrogen technologies.

The Humber has a Hydrogen store capacity of **10,000Gw** hours.

Deploying CCA and hydrogen technologies in the Humber would deliver a peak of **£3.2 billion** per year in direct, indirect and induced GVA.

Humber ambition to be first industrial cluster to reach net zero by 2040.

RWE TRITON KNOLL

ØRSTED RACE BANK EXTENSION

ØRSTED RACE BANK

The Humber boasts an immense offshore CO2 storage capacity: **28m** tonnes per year by 2030

The Viking Area carbon stores are high-quality depleted gas reservoirs that can be filled with captured CO2 and have over **300 MT** of storage potential

c 20,000 new jobs created across the Humber industrial clusters with the onset of Hydrogen economy

THEDDLETHORPE

ØRSTED LINCS

GLID LYNN AND INNER DOWSING

The **V NET ZERO HUMBER CLUSTER**, a collaboration between HARBOUR ENERGY, HUMBER ZERO (PHILLIPS 66 and VPI IMMINGHAM), EP UK INVESTMENTS and PRAX Lindsey Oil Refinery, will capture, safely transport and securely store up to more than 50% of the existing industrial emissions in the Humber region.

IMMINGHAM

PRAX Lindsey Oil Refinery is a world-class supplier of quality fuels. It has the capacity to process up to 113,000 barrels of oil a day.

HUMBER ZERO is an industry-led decarbonisation project to remove up to 8 million tonnes of Carbon Dioxide (MT/CO2) partners include PHILLIPS 66 & VPI IMMINGHAM.

PHILLIPS 66 Refinery is recognised as one of the best in the world and is key in the supply chain for battery technology development, with capacity equivalent to 1.3 million EVs per year today, with plans to expand.

UNIPER is developing a large-scale hydrogen production hub at its Killingholme site, with around 700MW blue hydrogen production and around 100MW green hydrogen production.

VPI IMMINGHAM is one of the largest combined heat and power plants in Europe, capable of generating 1,240mw and up to 950 tonnes of steam per hour.

CATCH is a leading cluster engagement partnership supporting the energy intensive industries on their journey to net zero.

The UK's flagship renewable green hydrogen project, **GIGASTACK**, aims to create a blueprint for the deployment of industry-scale renewable hydrogen from offshore wind.

The **EPUK** energy centre will use 600,000 tonnes of waste materials per year to produce enough low-carbon electricity to power 50,000 homes.

KEY

- HUMBER INDUSTRIAL CLUSTER PLAN PARTNERS
- REGIONAL DEPLOYMENT PROJECTS
- HYDROGEN
- CO2
- DOGGER BANK OFFSHORE CABLE CORRIDOR
- HORNSEA OFFSHORE CABLE CORRIDOR
- NORTHERN ENDURANCE PARTNERSHIP PIPELINE
- CO2 PIPELINE
- HYDROGEN PIPELINE
- PIPELINES ARE INDICATIVE

The **UNIVERSITY OF LINCOLN** is at the forefront of the UK's decarbonisation agenda, partnerships are wide in providing evidence-based, sustainable, and forward-thinking solutions in all forms of decarbonisation and the hydrogen economy.

Marketing Humber delivered by Bondholders

UK Research and Innovation

CATCH

HEY Hull and East Yorkshire Local Enterprise Partnership

Skills study – KPMG – objectives

The study will be available in the coming weeks and -

- Provides a high level estimate of the likely demand for skilled labour to develop a Net Zero industrial cluster in the Humber region
- Assesses the capacity of the current skills pipeline to meet the upswing in demand
- Identifies the underlying issues and blockers that may affect the region's ability to develop an adequate pipeline of skilled workers; and
- Develops recommendations to address key issues to feed into the overall plan and ensure that the region maximises the benefits from the investment that will flow into the cluster to meet Net Zero

Skills study – KPMG – key findings

- The report estimates that ***5100 new direct jobs*** are supported in engineering construction ***per £1billion invested***
- The current Engineering and Construction workforce in the Humber is estimated by ECITB to comprise around 1500 current jobs
- Cluster stakeholders are already experiencing significant challenges staffing existing operations, retaining their current workforce, and recruiting experienced individuals
- There was unanimous agreement from all stakeholders that without action there will be a critical skills shortage that will make it hard to achieve Net Zero ambitions
- Contractors are already finding it hard to maintain a steady workforce, with many employed on short-term contracts and a significant proportion reaching retirement age
- There are acute shortages in some areas – **steel fixers & erectors, pipe fitters, welders, construction supervisors & project managers, middle managers with trade experience, scaffolders & riggers, engineering technicians**

Skills study – KPMG – risks & blockers

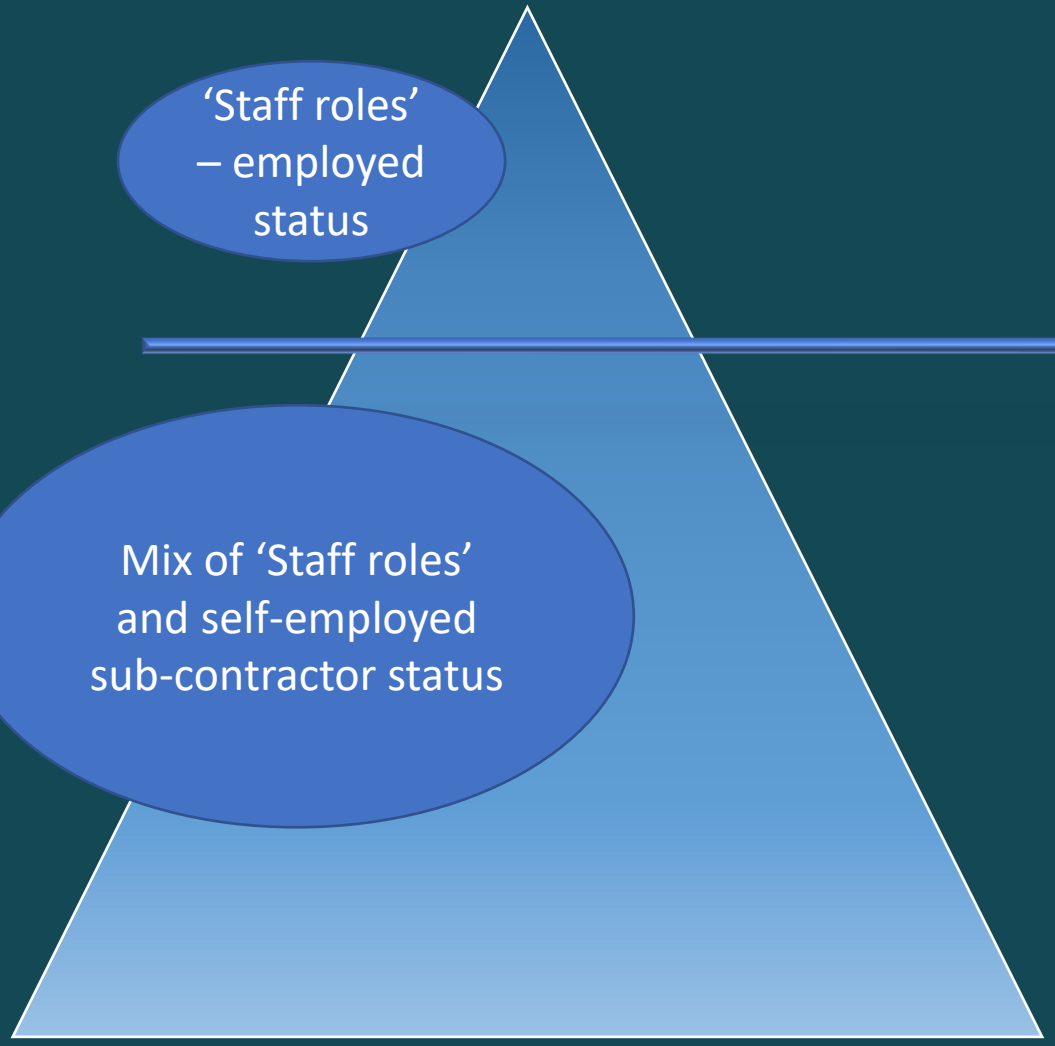
- Engineering construction contractors are finding it difficult to retain a permanent workforce
- Clear policy and certainty signals are required to deliver projects in time
- National government is needed to support local content growth
- There is a relatively low appetite for industrial career paths, particularly non-academic routes
- The apprenticeship levy has proven useful however is not being utilised by enough SMEs
- There lacks collaboration in the region to voice the skills shortage, and there is minimal robust quantitative information out there
- Local contractors are not guaranteed long term work, and are offered projects on very short notice

Skills study – scope extension

KPMG undertaken extensive stakeholder engagement around the skills/supply chain

- While stakeholders are unanimous that there is an issue with skills provision, such that it will be difficult to source the required amount of skilled labour locally, the market situation is very complex such that individual stakeholders do not have a complete understanding of all the issues involved
- Therefore, there is the need for a more in-depth examination of the overall environment for skills provision in the Humber region – training providers, policy makers and more supply chain engagement include role of recruitment agencies
- Such an analysis can form the basis for a targeted set of recommendations to address these issues

Engineering construction – a complex supply chain = layers of skills challenges



Investors including Government

Client/Site Operator/Asset owner

Tier 1 FEED/EPC Contractors*

Tier 2 Specialist Contractors – skilled engineering & construction trades

Recruitment Agencies 'BODY SHOPS'

Self employed Skilled Workers 'THE LABOUR POOL'

*FRONT END ENGINEERING DESIGN/ENGINEERING PROCURMENT CONTRACT