

The Humber: A 2030 Vision for Industrial Decarbonisation

SSE RENEWABLES, EQUINOR & ENI DOGGER BANK

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

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 £310m joint investment by **ABP** and **SIEMENS GAMESA**

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

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.

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

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**

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 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

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.

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 £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.

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.

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.

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.

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.

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.

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

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

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

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

IMMINGHAM

PRAX Lindsey Oil Refinery is the UK's third largest oil refinery and has invested £33m at its refinery in Killingholme.

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 930 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.

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**.

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

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

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.

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.